

General

1. This approval applies to UESI for:
 - 1) the continued operation of permanent petroleum contaminated soil remediation facility located at St. John's, NL. Specific terms and conditions for these activities are contained in Appendix A; and
 - 2) the continued operation of non-hazardous drilling muds solids remediation located at St. John's, NL. Specific terms and conditions for these activities are contained in Appendix B.
2. Prior to any expansion or modification of the facility, a letter of application shall be forwarded to the Department requesting an amendment to this approval.
3. Contaminated soil shall only be accepted during normal working hours with the exception of contaminated soil from an emergency oil spill response.
4. All contaminated soils received at the facility shall be placed on the approved receiving and/or treatment pads.
5. The facility shall be kept fenced and a lockable access gate shall be at the entrance to prevent unauthorized access.
6. A sign shall be posted at the gate listing the company name, hours of operations, contact name and number in the event of an emergency situation.
7. The facility is not approved to accept waste petroleum liquids for storage, discharge, or treatment.
8. The maximum total approved capacity for this facility is **44,000** tonnes of PCS, drilling muds, Bunker C, PAHs or any combination thereof. The total quantity of drilling muds solids accepted and bio-remediated on an annual basis shall not exceed **10,000** tonnes.

Definitions

9. In this Certificate of Approval:
 - a) **bioremediation (or biodegradation)** means any process (e.g. bioaugmentation and biostimulation etc.) that uses microorganisms or their enzymes to degrade the petroleum hydrocarbon compounds into the basic mineral constituents, carbon dioxide and water;
 - b) **bioaugmentation** means the introduction of group of natural microbial strains or a genetically engineered variant to treat petroleum hydrocarbon contaminated soil;
 - c) **biostimulation** means the modification or optimization of the microbial environment to entice or promote microbial activity resulting in mineralization of the petroleum hydrocarbon contaminants;
 - d) **BTEX** means benzene, toluene, ethylbenzene, and/or xylene;
 - e) **CCME** means Canadian Council of Ministers of the Environment
 - f) **CESQG** means CCME Canadian Environmental Soil Quality Guidelines

- g) **contaminant** means, unless otherwise defined in the regulations, a substance that causes or may cause an adverse effect;
- h) **Department** means Department of Environment, Conservation and Climate Change;
- i) **Drilling muds** for the purpose of this approval refer to non-hazardous drilling muds solids that have been pre-treated and dewatered by Terrapure using their approved centrifuge system located at Incinerator Road, St. John's, NL;
- j) **EPO** means Environmental Protection Officer of the Department of Government Services;
- k) **Minister** means Minister of the Department of Environment, Conservation and Climate Change;
- l) **OHS** means occupational health and safety;
- m) **PCS** means petroleum contaminated soils which: (a) have absorbed or adsorbed gasoline, diesel/furnace oil, mineral oil, kerosene, hydraulic oil, aviation fuel and other petroleum hydrocarbon compounds, mixtures and blends (C2-C32). This does not include Bunker C, crude oil or drilling fluids unless otherwise approved by the Department; (b) contain equal to or greater than 1000 ppm total petroleum hydrocarbons **OR** exceed limits for BTEX as outlined in the latest edition of CEQG (industrial land use for soil); (c) do not contain PAHs composed of more than four benzenoid rings in excess of concentrations normally found in the products noted in item (a) above (greases, and heavy lubricating oils are likely to contain compounds having more than four benzenoid rings); (d) do not contain petroleum and/or metal concentrations at levels toxic to microbes. Microbial toxicity testing maybe be required by the Department to demonstrate that it is possible to bioremediate the suspect soil; and (e) do not contain metal concentrations which are leachable as determined by the *Toxicity Characteristic Leaching Procedure* as defined in Schedule II of *The Interprovincial Movement of Hazardous Waste and Hazardous Recyclable Material Regulations under the CEPA, 2004*.
- n) **professional engineer** means an individual or company that is a member in good standing with the Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL) licensed to practice engineering in a field related to the task performed;
- o) **QA/QC** means Quality Assurance/Quality Control;
- p) **Regional Department** means the Department of the Government Services office in Clarenville;
- q) **Site Professional** means a professional engineer with professional errors and omissions liability insurance coverage for environmental work of at least \$1,000,000 individually or through a registered company;
- r) **TCLP** means toxicity characteristics leaching protocol as per US EPA Method 1311;
- s) **Third Party Site Professional** means a site professional engineer whom is not an employee of the proponent;
- t) **TPH** means total petroleum hydrocarbons as measured by the Atlantic PIRI method;
- u) **US EPA** means United States Environmental Protection Agency;

Application Submissions

- 10. Request for renewal of UESI soil treatment facility Certificates of Approval received via email.

11. UESI provided recent monitoring well results and updated site diagrams for all facilities.

Emergency & OHS Preparedness

12. UESI shall maintain an environmental emergency and health and safety contingency plan and shall continue submitting the annual updates for review and approval by January 31 of the following year to the Department.
13. UESI shall ensure that a copy of this approval, is kept on site at all times and that personnel directly involved in the operation of the remediation facility are made fully aware of the terms and conditions which pertain to this approval.
14. All responsible personnel who are directly involved with operation and maintenance of the processing system shall be provided copies of this approval.
15. In case of emergency UESI shall call emergencies and spill report line: **1-800-563-9089 or (709) 772-2083.**
16. All appropriate health and safety procedures shall be constantly maintained at the site in accordance with applicable legislation.

Further Assessment

17. The Minister may at any time, with reasonable notice, require the proponent to conduct or have conducted environmental studies, site assessments, sampling, testing, or investigations where, based upon reasonable and probable grounds, the Minister is of the opinion that the operation of this facility may have had, or has the potential to have, an adverse effect on the environment.

Compliance Inspections

18. Through a Memorandum-of-Understanding this Department has authorized Government Services to act on its behalf in monitoring this operation for compliance under this approval and all applicable provincial Acts and Regulations.

Legislation

19. The activities associated with this operation may involve, but not be limited to, the following provincial Acts and Regulations:
 - *Dangerous Goods Transportation Act and Regulations*
 - *Newfoundland Fire Prevention Act and Regulations*
 - *Environmental Protection Act*
 - *Air Pollution Control Regulations*
 - *Storage and Handling of Gasoline and Associated Products Regulations*
 - *Used Oil and Used Glycol Control Regulations*
 - *Water Resources Act*
 - *Environmental Control Water and Sewage Regulations*

20. The activities associated with this operation may involve, but not be limited to, the following federal Acts and Regulations:
- *Canadian Environmental Protection Act and Regulations (CEPA)*
 - *Cross Border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations*
 - *Transportation of Dangerous Goods Act and Regulations*
 - *Fisheries Act*
 - *National Fire Code*
21. UESI shall operate this permanent soil treatment facility according to the Guidelines for Construction and Operation of Facilities Using Ex-Situ Bioremediation for Treatment of Petroleum Contaminated Soil: GD-PPD-013 rev.4 or later revisions.

Financial Assurance

22. UESI shall maintain valid environmental liability impairment insurance in the amount of \$1,000,000 otherwise this approval is null and void.
23. UESI shall maintain a surety bond of \$20,000 with the Department, otherwise this approval is null and void.
24. UESI shall submit the annual updates of the financial assurance to the Department.
25. UESI shall provide the Department with three months advance notice if they intend to cancel and/or change the insurer or bonding agent.

Industrial Wastewater, Leachate and Site Runoff

26. UESI shall not release any substance from the facility to the surrounding watershed/ environment except as directed by this approval or with prior authorization from the Department.
27. All site runoff from the storage and treatment pads shall be directed to an oily water separator. The generated wastewater may be applied back to the biopile.
28. Used oil removed from oily water separators or oily water removed from site shall be done using a licensed hazardous waste transporter.

Groundwater Monitoring

29. Four times per calendar year, and not less than 30 days apart, UESI shall perform a groundwater monitoring chemical analysis program as per Table 1. Analytical results shall be submitted as per the Reporting section.

Table 1 - Water Chemistry Analysis Program		
Location	EDMS Code	Parameters

SJMW1	00767	General Parameters: nitrate + nitrite, nitrate, nitrite, pH, colour, sodium, potassium, calcium, sulphide, magnesium, ammonia, alkalinity, sulphate, chloride, fluoride, turbidity, reactive silica, orthophosphate, phosphorous, DOC, conductance, TDS (calculated), phenol, carbonate (CaCO ₃), hardness (CaCO ₃), bicarbonate (CaCO ₃), cyanide, TPH
SJMW2	00768	
SJMW3	00769	
SJMW4	00770	
SJMW5	00771	
SJMW6	00772	
		Metals Scan: aluminium, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, mercury, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc

30. All groundwater monitoring wells shall be:
- labelled;
 - protected from damage, and
 - locked, except when being samples.
31. If a representative groundwater sample cannot be collected because the groundwater monitoring well is damaged or is no longer capable of producing a representative groundwater sample:
- the groundwater monitoring well shall be cleaned, repaired or replaced,
 - a representative groundwater sample shall be collected and analyzed as soon as possible, and
 - the Department shall be notified in writing of the delay in monitoring
32. Sampling and analysis of groundwater shall be completed in accordance with guidance document GD-PPD-066 *Sampling of Water and Wastewater- Industrial Effluent Applications*, <https://www.gov.nl.ca/ecc/files/publications-env-protection-gd-ppd-066-waste-water.pdf>
33. The exact location of each sampling point shall remain consistent over the life of the monitoring programs, unless otherwise approved by the Department. Using a GPS or similar device, the northing and easting of each sampling location shall be recorded and submitted to the Department.

Laboratory Analysis & QA/QC

34. Unless otherwise stated herein, all liquid and solids analysis performed pursuant to this Approval shall be done by a contracted commercial or in-house laboratory as per the *Accredited Laboratory Policy PD:PP2001-01.2* (available at <https://www.gov.nl.ca/ecc/files/publications-env-protection-policy-directive-pd-pp.pdf>).
35. In-house laboratories have the option of either obtaining accreditation or submitting to an annual inspection by a representative of the Department, for which UESI shall be billed for each laboratory inspection in accordance with Schedule 1 of the *Accredited Laboratory Policy (PD:PP2001-01.02)*. Recommendations of the Department stemming from the annual inspections shall be addressed within 6

months; otherwise further analytical results shall not be accepted by the Department.

36. If UESI wishes to perform in-house laboratory testing and submit to an annual inspection by the Department, then a recognized form of proficiency testing recognition shall be obtained for compliance parameters for which this recognition exists. If using a commercial laboratory, UESI shall contact that commercial laboratory to determine and to implement the sampling and transportation QA/QC requirements for those activities.
37. UESI shall bear all expenses incurred in carrying out the environmental monitoring and analysis required under conditions of this Approval.

Monitoring Alteration

38. The Department has the authority to alter monitoring programs or require additional testing at any time when:
 - pollutants might be released to the surrounding environment without being detected;
 - an adverse environmental effect may occur; or
 - it is no longer necessary to maintain the current frequency of sampling and/or the monitoring of parameters.
39. The proponent may, at any time, request that monitoring program or requirements of this Approval be altered by:
 - requesting the change in writing to the Department; and
 - providing sufficient justification, as determined by the Department.
40. The requirements of this Approval shall remain in effect until altered, in writing, by the Department.

Monthly Reporting

41. Monthly reports containing the environmental compliance monitoring and sampling information required in this Approval shall be received by the Department in digital format within 30 calendar days of the reporting month. All related laboratory reports shall be submitted with the monthly report in XML format and Adobe Portable Document Format (PDF). Digital report submissions shall be uploaded through the EDMS web portal. The Pollution Prevention Division shall provide details of the portal web address and submission requirements.
42. Each monthly report shall include a summary of all environmental monitoring components and shall include an explanation for the omission of any requisite data. The monthly summary reports shall be in Microsoft Word or Adobe PDF and shall be uploaded through the EDMS web portal with the data submissions. If there is groundwater monitoring activity performed in the month, UESI shall indicate that there was no activity and provide this information to the Department.

Annual Reporting

43. Annual reports shall be submitted to the Department and the Government Services by January 31 each year summarizing activities of the previous year. The report shall include:
- date and time of arrival of contaminated soil;
 - source name and address for contaminated soil;
 - quantity (i.e. tonnes or cubic metres) of contaminated soil;
 - client name;
 - trucking company;
 - name of project manager or on site supervisor authorizing the shipment;
 - personnel responsible for soil treatment and their qualifications;
 - the total amount of treated soil removed from the site;
 - the disposal location of treated soil;
 - copies of current letters from owner operator of disposal sites;
 - batch number for each biopile;
 - date of letter of request for removal of treated soil (to Government Services) and letter of consent for disposal from Government Services;
 - post treatment laboratory results;
 - current insurance and bonding;
 - monitoring well results;
 - settling pond maintenance and discharge volumes; and
 - updates to the contingency plan.

Incident Reporting

44. All incidents of:
- contingency plan implementation;
 - non-conformance of any condition within this approval;
 - spillage or leakage of a regulated substance;
 - whenever discharge criteria is, or is suspected to be, exceeded; or
 - public complaints concerning possible non-compliance
- shall be immediately reported, within one working day, to a person or message manager or facsimile machine at Digital Government and Service NL by phoning or faxing:

Government Services (St. John's)
Telephone (709) 729-3699
Facsimile (709) 729-7400

45. A written report including a detailed description of the incident, summary of contributing factors and an action plan to prevent future incidents of a similar nature, shall be submitted to the respective Regional Department. The action plan shall include a description of actions already taken and future actions to be implemented, and shall be submitted within thirty days of the date of the initial incident.

Records

46. UESI shall record and retain all information in respect of any sampling conducted or analysis performed in accordance with this approval for a minimum of five years, unless otherwise authorized in writing by the Department.
47. UESI shall record and retain all of the following information for a minimum of five years:
 - a.) the name and address of the person(s) who make/discover any contravention of the Act, the regulations or this approval
 - b.) a detailed description of the remedial actions/measures taken in respect of the contravention of the Act, the regulations or this approval.

Decommissioning and Reclamation

48. A professional engineer on behalf of the approval holder shall develop and submit a plan for decommissioning to the Department which shall include, at the minimum, all of the following:
 - (a) a plan for dismantling the facility;
 - (b) a comprehensive study to determine the nature, degree and extent of contamination at the facility and affected lands;
 - (c) a plan to manage all wastes produced at the facility during operation and decommissioning;
 - (d) evaluation of remediation technologies proposed to be used at the plant and affected lands
49. Once approved, the Approval holder shall implement the Decommissioning plan as authorized in writing by the Department.
50. A professional engineer on behalf of the approval holder shall develop and submit a plan for the Land Reclamation to the Department which shall include, at a minimum, all of the following:
 - (a) the final use of the reclaimed area and how equivalent land capability will be achieved;
 - (b) removal of infrastructure;
 - (c) restoration of drainage;
 - (d) soil replacement;
 - (e) erosion control;
 - (f) re-vegetation
51. Once approved, the approval holder shall implement the Land Reclamation Plan as authorized in writing by the Department.
52. The Final Decommissioning and Land Reclamation Plans shall be submitted within

three months of the facility ceasing operations, unless otherwise authorized in writing by the Department.

53. Written notification shall be provided in advance to Government Services of decommissioning of this waste management system.
54. Decommissioning of this waste management system shall comply with the nine minimum acceptable decommissioning requirements for an industrial site in accordance with Section 3.2 of the *CCME National Guidelines for Decommissioning Industrial Sites*.

Expiration

55. This approval expires on November 30, 2030.
56. Should the approval holder wish to continue to operate beyond this expiry date, a written request shall be submitted to the Department for the renewal of this approval **two (2) months prior to expiration**.

cc.

Robert Locke, Department
Pollution Prevention Division
Department of Environment, Conservation
and Climate Change
rlocke@gov.nl.ca

Heather Jesso
Environment Canada
Heather.jesso@ec.gc.ca

Chris Parsons, Manager
Operations & Environmental Protection
Department of Government Services
chriswparsons@gov.nl.ca

Appendix A - PCS Bioremediation General

1. The approval holder shall maintain and operate the facility as described in the application submitted to the Department dated, July 2005, entitled: "Manual-Construction, Operation and Decommissioning of a Biopile Facility for Treatment of Petroleum Contaminated Soil, St. John's, Newfoundland", prepared by Fracflow Engineering Inc.
2. The approval holder shall have on site as described in the application, all of the following:
 - (a) Five lined (30 mil enviroliner) Treatment Pads.
 - (b) One Asphalt Receiving Pad.
 - (c) Oil-water separators servicing all pads.

Facility Inspection & Maintenance

3. The curb/berm surrounding and dividing the pads shall be inspected monthly. All damage, tears, cracks or other deterioration shall be repaired immediately.
4. The pads shall be cleaned thoroughly and visually inspected at least annually. All damage, tears, cracks, and other deterioration shall be repaired immediately.
5. The top of the curb/berm surrounding and dividing the receiving/treatment pads shall at all times be a minimum of 200 mm above the pads permanent working surface located immediately adjacent to and within 600 mm of the exposed base of the curb. The working surface is the permanent surface on which the contaminated soil is placed and may consist of a fixed layer of granular material or the original material of construction.
6. A minimum of 200 mm curb height shall be maintained at all times. Soil shall be placed on the treatment and receiving pads in a manner which provides for the continuous flow of accumulated rainfall and/or leachate along the curb toward the catch basin(s) leading to the leachate holding pond and/or storage tank(s).
7. The curb/berm surrounding the treatment and receiving pads shall at all times be clearly visible and shall not be covered with soil.
8. All overflows of accumulated wastewater over the pads shall be collected and treated. These shall be considered a spill as defined in the *Storage and Handling of Gasoline and Associated Products Regulations*. This includes standard reporting and response actions. Response and cleanup activity may cease once laboratory results of the wastewater and impacted soils reveal levels are within allowable levels for parameters of concern. Until this has been confirmed, response and cleanup shall proceed assuming that the wastewater exceeds allowable limits as per regulations and guidelines and is likely to cause pollution.

Pre-Delivery Soil Sampling

9. All PCS received at this facility shall be accompanied with a laboratory analysis confirming BTEX and TPH concentrations. Analysis for metals, PAH and other contaminants of concern will be required on a site specific basis.
10. If pre-delivery soil samples for the contaminated soil have not been provided by the client, then UESI must provide one sample for every **1500 tonnes** or less unless otherwise authorized in writing by the Department. The soil shall be well mixed to ensure the sample is representative. More intensive sampling will be required if the source of the soil suggests other contaminants may be present. Soil characterization determined through an environmental site assessment conducted by an independent, qualified and experienced company is deemed sufficient.
11. To reduce illegal dumping, this facility may accept loads of less than 15 tonnes without laboratory analysis.
12. This facility may accept up to 1500 tonnes of PCS from an emergency response incident without prior sampling or testing. The untested material shall be stored separately on the receiving and/or treatment pad until baseline testing is conducted.
13. All soils with analysis indicating contaminants in excess of limits prescribed in the latest edition of the CEQG shall be considered contaminated. For parameters not listed in the CEQG consultation with Government Services is required.
14. If the source of the soil suggests that additional contaminants of a dangerous or hazardous nature may be present, additional laboratory analysis shall be carried out as recommended by an independent consultant or as required by Government Services.
15. Soils containing contaminants which would cause them to be classified as waste dangerous goods, as defined in the *Cross Border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations* under the *CEPA* and in provisions under the Newfoundland and Labrador *Environmental Protection Act (SNL 2002)*, shall not be accepted for treatment and/or storage at this facility.
16. Other than PCS, hazardous wastes shall not be accepted at this facility for bioremediation treatment and/or storage. Hazardous wastes are those which are corrosive, reactive, flammable, ignitable, carcinogenic, teratogenic, mutagenic, infectious, oxidizing, radioactive, explosive, poisonous/toxic (i.e. acute and chronic), bioaccumulative, persistent, TCLP defined leachable or any waste which does not meet any of the above criteria but has other properties of concern which are significant enough to consider the material to be hazardous. Where there exists any doubt regarding the properties of a given waste, consultation with the Department is required.

Bioremediation of PCS

17. The use of cultured microbes may be regulated under the federal *New Substances Notification Regulations* under the Canadian *Environmental Protection Act*. For additional information on these regulations contact Environment Canada at (902) 426-9674. A copy of the notification shall be provided to the Department.
18. Covering of soils is permitted to control soil moisture content and temperature.
19. Leachate runoff may be managed with covering and/or directed to an oily water separator.
20. When required, moisture addition to the biopiles shall be accomplished utilizing collected waste water. Any additional water may be taken from an approved on-site water supply.
21. If constructed, all ductworks shall be mapped and marked to avoid any destruction during sample excavation/collection.
22. Mixing of clean soil with contaminated soil is prohibited. However, soils delivered to the site having a high percentage of clay and silt particles may be amended and/or internal ductwork installed to increase permeability. Acceptable material for soil amendments include: sand, straw, sawdust, woodchips and coarse-grained petroleum contaminated soil.

Post-Treatment Compliance Sampling & Third Party Validation

23. At least five working days advance notice to Department and Government Services of the intent to conduct post treatment sampling is required.
24. Post-treatment soil sampling shall be conducted or witnessed by a third party site professional (engineer). The sampling results shall be stamped, signed (by a third party site professional) and submitted to the Department.
25. Prior to removal of the treated soil from the site, compliance sampling shall be conducted to achieve the following:
 - **BTEX concentrations are below the industrial limits for soil in the latest edition of the CEQG; and**
 - **TPH concentration shall be equal or less than 1000mg/kg (ppm)**
26. Soils meeting the TPH and BTEX criteria may be removed from treatment pad to facilitate further treatment of the remaining soil in the biopile.
27. At a minimum, post-treatment compliance (composite) sampling shall be done

along the longitudinal axis of the biopile. Sampling location shall be conducted at 2 metre within the biopile on either end of the biopile and then at 12m intervals. These samples may be taken on different days.

28. Where laboratory results indicate that some samples do not meet these criteria, additional sampling may be conducted to delineate the volume in question.

Disposal & Storage of Treated Soils

29. Disposal or storage of treated soils on site is not permitted. Treated soils shall be disposed of at approved waste disposal sites with the permission of the owner/operator. **Reuse of treated soil at any other location is not permitted, unless otherwise approved by the Department.**

Appendix B - Bioremediation of Drilling Muds

1. An initial pre-treatment characterization of the waste drilling mud solids shall be completed, including BTEX/TPH and general chemistry with metals, with subsequent pre-treatment sampling being completed on a quarterly basis.
2. An initial pre-treatment radiochemical characterization of the waste drilling mud solids shall be completed, with subsequent pre-treatment sampling being completed on a quarterly basis.
3. Confirmatory compliance sampling shall be conducted on the treated solids, including BTEX/TPH/general chemistry/ leachable metals. The sampling schedule shall be as follows:
 - First 3 month period
 - i. sample and analyze each “batch” (see below) of treated solids;
 - ii. treated solids to be sent for final disposal if analytical data confirms compliance with disposal criteria
 - Second 3 month period
 - i. sample and analyze each “batch” (see below) of treated solids;
 - ii. treated solids to be sent for final disposal if analytical data confirms compliance with disposal criteria
 - Subsequent sampling
 - i. treated solids to be sent for final disposal when analytical data (for each “batch”) confirms compliance with disposal criteria
 - For the purposes of this approval, a “batch” shall be 400 tonnes i.e. equal amounts of waste drilling muds solids and PCS.
4. Any changes in the compliance sampling and monitoring program must be requested in writing from the Department, and must include sufficient justification as determined by the Department.
5. The Department reserves the right to require compliance sampling for additional parameters, as considered necessary to meet their requirements.
6. In the event that any odour or air contaminant problems are not addressed to the satisfaction of the Department, the Department reserves the right to require the installation of additional emission control equipment, as it deems necessary to remedy the problem(s).
7. The Department reserves the right to require ambient air monitoring and/or dispersion modeling to demonstrate compliance with the Air Pollution Control Regulations, 2004.
8. The Department reserves the right to place additional administrative and/or operational restrictions on the treatment activities, as it deems necessary to address concerns.

9. Bioremediation of drilling muds is also subject to all the applicable terms and conditions respecting the bioremediation of PCS listed in Appendix A.