DILLON CONSULTING

ENVIROSOIL LIMITED

Environmental Assessment Registration Document

Waste Oil Recycling and Water Treatment Facility, Dartmouth, Nova Scotia

April 2021 – 19-1742

April 1, 2021

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Attention: Rachel Bowers
Environmental Assessment Officer

Waste Oil Recycling and Water Treatment Facility
Environmental Assessment Registration Document

We respectfully submit the following Registration Document, in accordance to requirements for the Nova Scotia Environmental Assessment Regulations for a Class 1 project, regarding the proposed Waste Oil Recycling and Water Treatment Facility for Envirosoil Limited, located at 750 Pleasant Street, Dartmouth, Nova Scotia.

The Registration Document describes the project and identifies a proposed approach for installation of facility components and operational activities. It presents a balanced approach to achieving a defensible environmental assessment while considering environmental sustainability, community values, legislative requirements, business operations, and economic impact.

We look forward to your timely review of the documentation. Please contact the undersigned if you have any questions or require additional information.

Sincerely,

DILLON CONSULTING LIMITED

Paul Koke, M.A.
Project Manager

PEK:jes
Enclosure(s): Three (3) copies of EA Registration Document

Our file: 19-1742-1000

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1.0 Introduction

This document is an environmental assessment (EA) registration for the proposed Waste Oil Recycling and Water Treatment Facility proposed by Envirosoil Limited (Envirosoil), located at a portion of 750 Pleasant Street in Dartmouth, Nova Scotia (NS). The project consists of the construction and operation of a facility that will be used for receiving, processing and recycling of waste oil and the treatment of waste water. The project location is shown in **Figure 1** (provided in **Section 5.1**).

It is anticipated that construction and installation of the waste oil recycling and water treatment system infrastructure will commence pending EA approval and subsequent permitting and approvals. Construction of project components is estimated to be completed within two to three months, with the facility fully operational within three to four months of the construction start (assumed in summer of 2021). The facility is anticipated to be in operation for at least 25 years.

The proposed undertaking is on a previously disturbed industrial site, where a portion of the property is currently being used as an operating liquid asphalt receiving, storage and transfer facility. The waste oil recycling and water treatment components of the project will be sited on Parcel Identification Number (PID) 00260703. Access to the main facility from the Pleasant Street entrance will cross General Liquids Canada property (PID 41464280), as well as PID 00643238 which is owned by Canadian National Railway and serves as an active railway corridor (see **Figure 2** in **Section 5.0**).

1.1 Proponent Information

Company Description:
Envirosoil Limited (Envirosoil) is based in the Halifax Regional Municipality, Nova Scotia. Envirosoil is a private Canadian company. It is incorporated under the laws of Nova Scotia and registered to do business in Nova Scotia under the Nova Scotia Corporations Registration Act.

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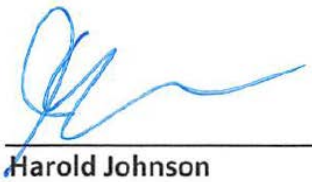
Authority:
Ken MacLean
Vice President
Tel: 902.222.7839

Harold Johnson
Vice President
Tel: 902.222.7839

Proponent Signature:

Ken MacLean — March 25, 2021
Vice President



Harold Johnson — March 25, 2021
Vice President

1.2 Principal Contact for Purpose of Environmental Assessment

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1.3 Corporate Leadership and Experience

Envirosoil Limited was established in 1992, and has access and authority to assemble project teams with the highest qualifications and skills to successfully complete this undertaking. Envirosoil has experience with the type of operations proposed by this project, including state of the art bioremediation technology for the treatment of hydrocarbon contaminated materials at its facility in Bedford, NS. Envirosoil's corporate philosophy is firmly rooted in the provision of value-added service that surpasses customer expectations and enhances the environment. This mandate encompasses recycling and restoring hydrocarbon contaminated materials to environmentally healthy and productive levels.

Envirosoil understands that key aspects to successfully storing and handling liquid products includes the proper heating systems, permitting, safety, transportation, tank construction, tank management, environment control, and quality control.

1.4 Envirosoil's Commitment to Quality

Envirosoil's policy is to provide quality, modern and sophisticated services to clients through excellent customer service at a reasonable cost. The company aims for continuous improvement in all aspects of its business that will result in benefits to the environment, customers, regulators, the community, and their employees. To achieve this goal, Envirosoil is committed to maintaining a quality management system that incorporates all the required elements of International Standardization Organization (ISO) 9001. Personnel at all levels have the required training, resources and necessary empowerment to allow them to carry out their responsibilities in support of the quality policy. This ensures that each phase of its activities has well-defined controls, checks and associated responsibilities that are known, available and understood by all employees.

1.5 Envirosoil's Commitment to Environmental Protection

Envirosoil is committed to the environment management standards of ISO 9001 and ISO 14001. As a company, its goal is to work with the environment in a progressive way, and be an industry leader through all aspects of its business.

Envirosoil is committed to reduce waste, protect water bodies and prevent pollution. They strive to continuously improve their performance and environmental practices based on their ISO 14001 continual improvement program. Envirosoil strives to inform the public and communicate appropriately with those who have interest in their various business operations. Adhering to environmental regulations, they strictly monitor of the natural environment components around the areas of operations and manage activities to prevent environmental impacts.

2.0 The Undertaking

2.1 Nature of the Undertaking

Envirosoil Limited is proposing to install and operate a Waste Oil Recycling and Water Treatment Facility ("the project" or "the facility") on a previously disturbed industrial site, located at 750 Pleasant Street in Dartmouth, Nova Scotia ("the site"). The project will be located entirely within a property currently owned and operated by General Liquids Canada. The facility will be used for receiving, treating and recycling waste oil and liquid waste waters. The facility will accept and treat waste water, bilge water, waste oil and ground spill waste. Liquid wastes will be treated to meet the required regulatory criteria and discharged to the local Halifax Regional Municipality sanitary sewer via a new 4" discharge line. Waste oils recovered/collected as part of the facility's recycling process will be sent to licensed and approved facilities for beneficial reuse. The proposed project qualifies as a Class I undertaking in Schedule A of the Environmental Assessment Regulations under the Nova Scotia Environment Act. This Environmental Assessment Registration Document (EARD) fulfills regulatory requirements to initiate the EA process.

The design, construction and operation of the facility will be based on proven technology and methods used by similar operations across Canada. As described in **Section 5.0**, the construction/installation phase of the project will generally consist of the installation of the required facilities, including the water treatment system, multi-purpose storage tanks and associated upgrades to the electrical and pipe connections at the existing General Liquids Canada facility. Storage and transfer of products to be received at the facility is carried out through the use of tanks, pipes and pumps which does not allow for uncontrolled emission of gas, vapours or objectionable odour.

Decommissioning will occur according to regulations at the time but the site and project is designed to be in operation for at least 25 years.

2.2 Purpose/Rationale/Need for the Project

This facility is proposing to accept up to a maximum of 8,000 m^3 of waste oil and 10,000 m^3 of waste water per year for treatment. Waste water and waste oil are common waste products from the domestic, industrial and commercial markets. Marine shipping in particular drives a requirement for effective treatment of waste water and waste oil, as it is a common effluent from bilges and fuel transfer. Given Halifax's status as a world class shipping hub, there is significant demand for effective treatment of this effluent, and this demand is best met by a local service supplier. The proposed location for this undertaking is close to marine shipping and other industrial activities, which would minimize the environmental and safety risks associated with secondary trucking of waste water and waste oil over considerable distances through environmentally sensitive areas (as the nearest two similar facilities are located in Goffs and Debert, NS).

Treating waste water and waste oil prior to disposal or reuse is regulated by provincial and federal regulations, and is a requirement for corporations and private citizens. Establishing this facility close to existing industrial facilities and a marine shipping economic sector, combined with a well-established treatment technology proposed for the system, provides Halifax with an important option for treating this common effluent. It is also noted that a number of industrial facilities in Nova Scotia currently rely on waste oil for process heat, which is often sourced from out of province. This proposed facility will provide a local and beneficial option through the recycling of waste oils, presenting both economic and environmental benefits to Halifax Regional Municipality and to the Province of Nova Scotia as a whole.

3.0 Environmental Assessment Approach

The general approach to the assessment of the project is discussed in this section, including:

- A brief introduction;
- A general overview of the approach taken for the project assessment; and
- A brief description of the environmental planning and management considerations that will be employed throughout the project.

3.1 What is an Environmental Assessment?

Environmental Assessment (EA) is a planning and decision-making process to predict environmental effects of proposed initiatives before they are carried out. The objectives of an EA are to:

- Promote better project planning by identifying potential effects before they occur, at the earliest stages of project development; and
- Incorporate environmental factors into decision making.

An EA identifies potential adverse environmental effects, proposes measures to mitigate adverse environmental effects, predicts whether there will be significant adverse environmental effects after mitigation measures are implemented, and includes a follow-up program to verify the accuracy of the EA and/or the effectiveness of the mitigation measures.

3.2 The Role of the EA Registration Document

As described in **Section 7.0** of this document, the physical environment is a key factor for planning and implementing the project in an environmentally-compatible manner. Preparation of the EARD has involved a variety of analyses of potential environmental effects, the development of measures for avoiding or mitigating potentially significant adverse environmental effects, requests to identify concerns of First Nations and local stakeholders, and the preparation of this EARD for public review and government review and approval.

Follow-up work is an integral part of the engineering design and corporate planning for the project so that the assessment is both a project planning tool and a government review and decision-making tool. As such, the EARD is a key mechanism for implementing sustainable development for the project.

In completing the EARD, potential environmental effects of the project have been considered for all phases of the project, including those potentially arising from credible accidents, malfunctions and unplanned events. Potential interactions and overlapping environmental effects with other past, present, or reasonably foreseeable future projects or activities have also been considered (refer to **Section 10.0** in relation to accidents, malfunctions etc., and **Section 12.0**).

The EARD is the first milestone in working to obtain project approvals and permitting. The EARD describes the project and identifies a proposed approach for construction/equipment installation and operation activities and associated mitigation and follow-up. It presents a balanced approach to assessing potential environmental effects while also considering community values, legislative requirements, business operation, and economic impact.

3.3 Overview: Environmental Planning and Management Considerations

The facility will be operated under Envirosoil's existing Environmental Management System (EMS), which includes Environmental Operating Plans and an Environmental Policy. The EMS will be consistent with General Liquids Canada's EMS at the site. Envirosoil is committed to developing the project in an environmentally responsible manner consistent with its environmental policy. Envirosoil has existing policies that govern its operations and as part of this new undertaking Envirosoil will implement project specific planning and management strategies that:

- Avoid or minimize the adverse environmental effects of the project, and enhance positive ones;
- Comply with the applicable laws and regulations; and
- Consider the presence of the project and compatibility with the way of life of the surrounding environment.

Environmental considerations include:

- Developing a waste oil recycling and water treatment facility which:
  - Includes standard mitigation and best practices for similar projects while considering the local requirements for site-specific mitigation as required; and
  - Evaluates the environmental effects of the project during all phases (including cumulative environmental effects) as well as for accidents, malfunctions and unplanned events.
- Establishing the facility at an existing industrial operation to eliminate the need to develop on an undeveloped, greenfield site;
- Implementing technically and economically feasible components and technologies that are proven; and
- Implementing progressive environmental protection, mitigation and management strategies and concepts that avoid or minimize adverse environmental effects, and enhance positive ones.

3.3.1 Design Standards and Codes

The project will be constructed to meet applicable environmental, industrial, building, and safety codes and standards. At a minimum, the project components will be designed to meet the National Building Code of Canada, the Canadian Standards Association, Transport Canada requirements, best practices, design codes and standards for waste oil recycling and water treatment. It is noted that General Liquids Canada's current operations at the site already meet these stringent design standards and codes, and Envirosoil's operations will be consistent in meeting these design standards and codes. These standards and codes provide factors of safety regarding environmental loading (e.g., snow load, high winds, seismic events), and project specific activities and events. Compliance with these standards and codes

reduces the potential for adverse environmental effects including those as a result of an accident, malfunction or unplanned event. Operation will be conducted under a provincial Part V Approval under the *Environment Act* and the *Activities Designation Regulations*.

3.3.2 Environmental Protection Measures

A variety of environmental protection and management measures have been adopted through the development of the project to date in order to guide the planning, design, construction, operation and maintenance. These include, but are not limited to, the following measures:

- Using an existing facility that has been sited such that the project components will avoid sensitive areas such as watercourses and critical and/or important habitat types;
- Employing good planning, design and management practices to comply with regulated standards for air emissions, water releases, storage or disposal of waste products, and handling and disposal of hazardous materials;
- Existing site water management, monitoring and control structures including groundwater wells that are routinely monitored to verify facility operations;
- Installing/constructing and operating the facility in a manner consistent with Envirosoil's Environmental Management System (EMS) which incorporates operational policies and practices for monitoring and management of, for example, land and soil resources, air and water, noise and vibration, hazardous materials and waste, community health and safety, and cultural heritage; and
- Developing and implementing a site Environmental Protection Plan (EPP) for treatment and processing activities that will be included in, and enforced through any system installation or construction contracts.

Further information on planned environmental management strategies and key mitigation to be employed to avoid or reduce environmental effects is provided in **Section 9.0**.

4.0 Regulatory Environment

4.1 Regulatory Context

The EA process in Nova Scotia is stipulated by Part IV of the Environment Act, 1995 and is set out in the Environmental Assessment Regulations. The Regulations list the activities that are included in Schedule A, which are classified as either Class I or Class II Undertakings.

Through project-related discussions between the Proponent and Nova Scotia Environment, NSE determined that the proposed Waste Oil Recycling and Water Treatment Facility is a Class I undertaking, in accordance with the Schedule E (1) of the Environmental Assessment Regulations:

E. Waste Management
   1. A facility for storing, processing, treating or disposing of waste dangerous goods that were not produced at that facility.

The proposed facility is not expected to be a designated project under the federal Impact Assessment Act.

This EARD fulfills regulatory requirements to initiate the EA process for a Class I undertaking. Should the undertaking be approved by the Minister of Environment, applicable applications for a provincial Part V Approval will be initiated for this project as per Division V of the Activities Designation Regulations and pursuant to Part V of the Environment Act. Envirosoil as the proponent will address the regulatory requirements identified in the following subsections.

4.1.1 Provincial Legislation

Legislation	Summary of Applicability	Potential Need for Approval/Permit
PROVINCIAL		
Environment Act and Regulations, Environmental Assessment Regulation	Project requires Ministerial Approval.	Yes
Environment Act and Regulations, Activities Designation Regulations	Anticipated Part V Approvals – 17(2)(h) a Used Oil Collection Facility; 10(1)(aa) a Waste Dangerous Goods Facility; 21(2) Wastewater and Wastewater Sludge Treatment	Yes

Legislation	Summary of Applicability	Potential Need for Approval/Permit
	Industrial Approval (IA) – the Waste Oil Recycling and Water Treatment Facility will be operated following the IA for Envirosoil's operation.	Yes
	Wetland or Watercourse Alteration not anticipated	No
Environment Act and Regulations, Contaminated Sites Regulations	Requirements for contaminated sites on provincial land (no contaminated sites identified). Applicable regulations will be adhered to if contaminated sites are identified during construction.	No
Environment Act and Regulations, Petroleum Management Regulations	As hydrocarbons will be contained on-site as a result of the effluent acceptance and treatment processing, the Petroleum Management Regulations will have requirements to be adhered to.	Yes
Environment Act and Regulations, Environmental Emergency Regulations	To meet requirements if environmental emergency occurs.	No
Endangered Species Act (NS ESA)	Protection of listed species (impacts to listed species not identified for project, however contingency planning in place).	No
Wildlife Act (NSWA)	Among other wildlife management requirements; prohibits killing of raptors, or disturbance of bird and turtle nests (disturbance of nests to be avoided; turtle nests not identified for property, however contingency planning in place).	No
Special Places Protection Act	Heritage Research Permits are required for archaeological assessment work. Not anticipated based on scope of work (installation of component in existing building and no subsurface activities) and industrial land use; however, contingency planning in place.	No
Forests Act – Forest Fire Protection Regulations	Requirements for fire suppression equipment for operations in forests to be met.	No
Sulphide Bearing Material Regulations	If within an area of sulfide-bearing material notification and approval required.	Not currently anticipated
Dangerous Goods Transportation Act and Regulations	Requirements for safe transport of dangerous goods to be met.	No permits required. All carriers will be in compliance with the Act and Regulations regarding placards and training

4.1.2 Canadian Federal Legislation

Legislation	Summary of Applicability	Potential Need for Approval/Permit
FEDERAL		
Impact Assessment Act	Project is not listed under the *Regulations Designating Physical Activities*, however for any project occurring on federal lands, the federal authority responsible for administering those lands or for exercising any power to enable the project to proceed must make a determination regarding the significance of environmental effects of the project. It is the responsibility of the federal authority to make and document this determination.	The requirement for Federal IAA review is not anticipated. No trigger identified.
Canada Shipping Act	The Act applies to all Canadian waters, which includes all inland waters and waters out to 200 nautical miles. It applies to vessels in those waters, oil handling facilities (OHF) engaged in or proposing to engage in the loading and unloading of oil to or from prescribed vessels.	No
Canadian Environmental Protection Act - Disposal at Sea (DAS) Regulations	Pollution prevention requirements and direction on priority substances and deleterious substances to be met where applicable. Disposal at Sea not proposed for the project.	No
Fisheries Act	Section 35 – Prohibition against "Harmful alteration, disruption or destruction" of fish habitat.	No
Fisheries Act – Marine Mammal Regulations	Protection of marine mammals.	No Prohibitions on killing/disturbance to be met.
Migratory Birds Convention Act (MCBA) and regulation (MBR)	Protection of migratory birds, nests, eggs and young. Prohibition related to deposit of substances harmful to migratory birds. Authorizations or permits are required to destroy or take a migratory bird nest or to be in possession of a live bird/nest/egg or a carcass. Disturbance of nests to be avoided. Environmental Management Plan to address accidents in place.	No No vegetation clearing anticipated. None to occur within breeding bird window in future, if maintenance is required.
Canadian Navigable Waters Act (NWA)	Potential triggers are activities that may interfere with navigation – e.g., construction activities in the marine environment. Not anticipated as part of the project. The Atlantic Ocean is a Scheduled Water under NWA.	No

Legislation	Summary of Applicability	Potential Need for Approval/Permit
Transportation of Dangerous Goods Act and Regulations	Documented handling, storage, emergency response requirements for transportation of dangerous goods, if to be used on-site either for construction or operation, to be met.	No permits required. All carriers will be in compliance with the Act and Regulations.

4.1.3 Other Requirements

Legislation	Summary of Applicability	Potential Need for Approval/Permit
Other Permitting/Approvals		
Various non-environmental permits/approvals may be applicable including those noted below.		
Labour Standards Codes, Building Code	Applicable labour requirements and building codes to be met.	No
Nova Scotia *Crown Lands Act* and Regulations (Beaches Act)	Crown land easements, leases and licences.	No
Nova Scotia *Public Highways Act*	Any work within the public road would require a Work Within Highway Right-of-Way from the Nova Scotia Department of Transportation and Infrastructure Renewal and approval from the Minister.	No
Nova Scotia *Used Oil Regulations*	Operation of a used oil facility and storage of used oil.	Yes
Railway Relocation and Crossing Act	Currently authorized use of the railway crossing on PID 00643238 (Canadian National Rail). Appropriate setback from railway corridor proposed.	No
Occupational Health and Safety Act and Regulations	Workplace health and safety requirements to be met.	Activity specific
Special Move Permit	Required to move a vehicle exceeding weight or dimension limits on a public road.	If required will be obtained by Contractor
Industrial Approval		
Permits to Construct and Operate	Permit to construct under Industrial Approval. IA to allow for the operation. Part V Approval anticipated.	Yes
Pesticide use or storage permits	Permitting for pesticide use and/or storage (if required) would be an amendment to the IA. Not anticipated.	No

Legislation	Summary of Applicability	Potential Need for Approval/Permit
Municipal		
Land Use By-law Municipality of Halifax Regional	Development/Building permit, as required, from Halifax Regional Municipality. HRM by-laws, including noise, will be complied with.	Yes (already acquired in 2019/2020)
Halifax Water Regulation Municipality of Halifax	Approval required to discharge treated waste water to the municipal sanitary sewer system. Treated waste water to meet regulatory discharge criteria.	Yes

5.0 Description of Undertaking

5.1 Geographical Location and Setting

The project location is in Dartmouth, NS, located at 750 Pleasant Street and approximately 6 kilometres (km) from the central urban waterfront area of Alderney Landing Ferry Terminal in Dartmouth, NS. The approximate centre of the EA study area is at Universal Transverse Mercator (UTM, NAD83) 20 T 458189 4942535. The facility will be operated on properties (as identified by PID in **Section 1.0**) with past and present industrial land uses, and will be bordered by industrial properties on each side. These include Cherubini Metal Works Ltd. to the east (PID# 40268849), and the now decommissioned Imperial Oil Refinery (PID# 41463985) to the west. To the north of the Facility main building structure, the property is owned by the Canadian National Railway (PID#00643238) which is crossed by an access road to Pleasant Street, and to the south is the Halifax Harbour. The site location and subject adjacent properties are presented in **Figures 1**, **2 and 3** below.

5.1.1 Existing On-site Structures, Access, and Land Use

Currently on a portion of the property, there is an existing facility that is an approved Liquid Asphalt Storage Facility operated by General Liquids Canada. Access to the site will be from the existing paved Pleasant Street facility entrance, which is gated and secured.

With the exception of ancillary effluent loading and discharging structures (water sanitary sewer system), the existing primary site building will contain the entire proposed treatment system. The main physical features of the existing site include the following:

- Liquid asphalt storage tank;
- Earthen berm around site perimeter;
- Surface water drainage control features, including French drain system and newly installed First Defence®-type system (Stormceptor equivalent, for reference);
- Primary site building (office space, washrooms, electrical room, boiler room);
- Access road, truck turning area, weigh station, and parking spaces;
- Electrical and control system;
- 8” diameter rigid steel pipeline and pumps (AC, hot oil);
- Hot oil boilers;
- Tanks that can be used for oil or water storage;
- Connection to Halifax Water infrastructure (water and sewer), power and natural gas;
- Site perimeter fencing, and
- Environmental controls (e.g., erosion and sediment controls).

The proposed site plan/layout for the project is presented in **Appendix A, Sheet No. 1**.

5.1.2 Adjoining and Nearby Properties

Land use adjacent the primary site building proposed to house the treatment system consists of undeveloped land, transportation corridors and commercial/industrial properties:

- East: PID #40268849; Cherubini Metal Works Ltd.
  - Metal Fabricator – In Operation
- West: PID 41463985; Imperial Oil Ltd.
  - Vacant land
- West: PID 41463977; Imperial Oil Ltd.
  - Imperial Oil Refinery - Decommissioned
- North: PID 00339648; Canadian National Railway Company
  - Railroad – In Operation
- North: PID 41464280; Nova Scotia Ltd.
  - Vacant Land
- South: Halifax Harbour - Water lot
- North-East: Residential Properties on Pleasant Street, Carleton Street and Belmont Avenue

Figure 1: Subject Property Location

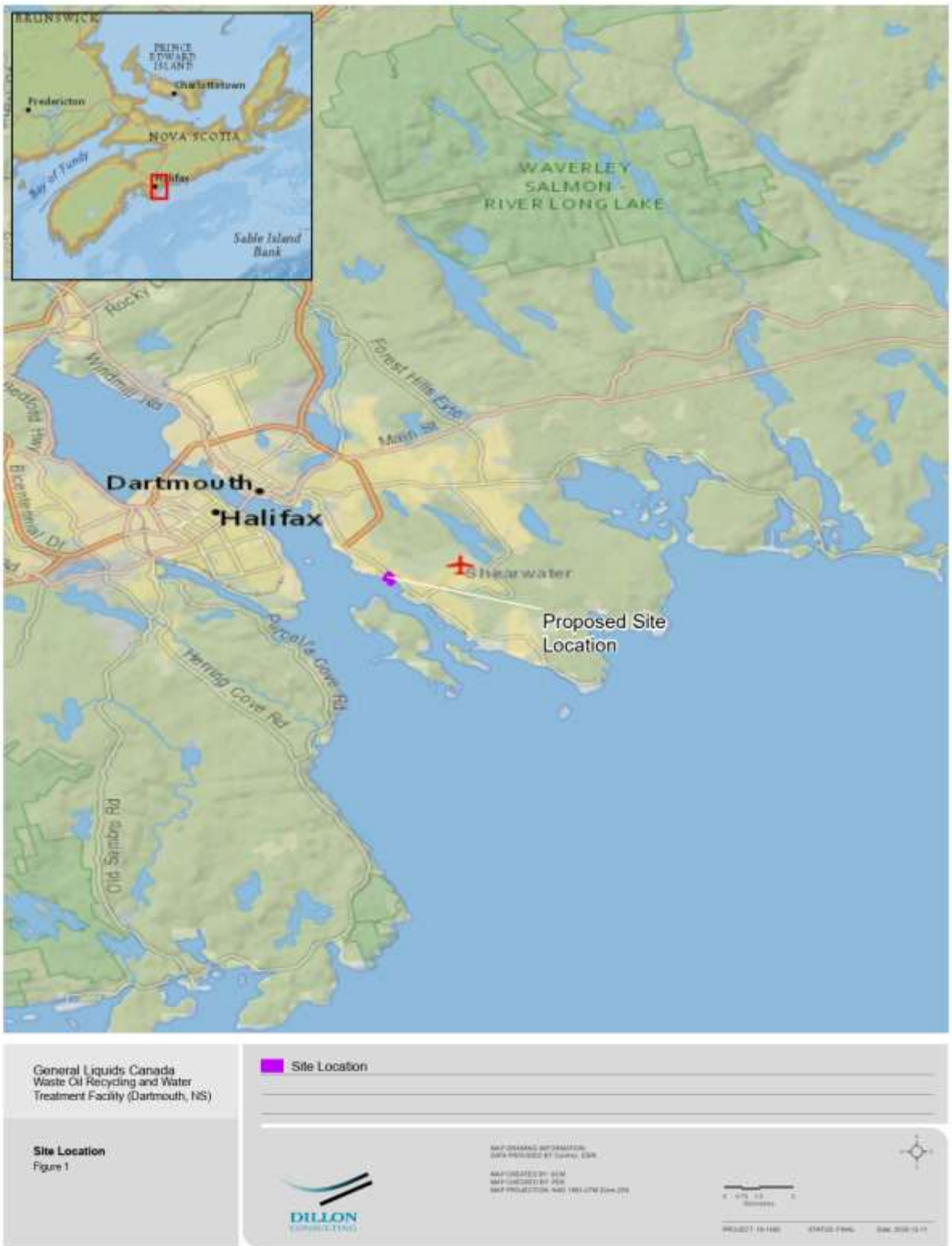


Figure 2: Google Map Aerial Site Image with PIDs Attached

Figure 3: Land Use Map

5.2 Project Overview

Envirosoil is proposing to install a modern, industry standard waste oil recycling and water treatment system within the existing primary site building. The treatment unit will employ a multi-stage system that includes optional stages and processes that can be adjusted and optimized to effectively treat the anticipated forms of waste oil and waste water that will be received.

The general layout for the proposed treatment process is presented in **Appendix A, Sheet No. 2** and **3**. It should be noted that there are numerous stages including, but not limited to, metering pumps, small bag filters, and screens between steps to enhance treatment. An overall layout and details of the treatment facility is presented in **Appendix A**.

Waste water and waste oil will enter the facility by truck via the existing Pleasant Street entrance to Envirosoil's facility. These trucks will connect to the external loading connection on the treatment facility, and product will be pumped into unheated waste water/waste oil storage tanks. This loading will be metered and volumes will be recorded. It is noted that all piping will be separate from the existing asphalt operations at the site, and therefore no potential exists for crossover/errors during movement of liquids.

The existing building operated by General Liquids Canada has a set of boilers that use a food grade (non-toxic) oil to transfer heat to the asphalt concrete tanks to enhance its ability to transport. These boilers have sufficient and excess capacity to provide a heat source for the proposed waste oil treatment system (refer to **Appendix C** and **Appendix D** for additional information). The following sections outline the specific processes proposed to treat waste water and waste oil at the facility.

5.2.1 Waste Oil Treatment Process

The overall process flow for the treatment process is displayed within **Figure 1** for reference. The waste oil recycling system will be able to accept and treat all waste oils as defined by the Nova Scotia Used Oil Regulations. The system can treat, recover and recycle waste oil using a two-stage process:

1) Gravity Separation; and
2) Demulsification.

In the gravity separation treatment process, waste oil is placed in a dedicated storage tank and any free water is allowed to naturally decant via gravity separation. After the gravity separation process, the separated water is drawn off and sent to the wastewater treatment system for treatment. The remaining waste oil is then sampled and analyzed for basic sediment and water (BS&W). If the BS&W exceeds 3% then the waste oil contains too much emulsified water to be recycled as fuel. The oil is then sent to the secondary treatment process (demulsification) for further refinement.

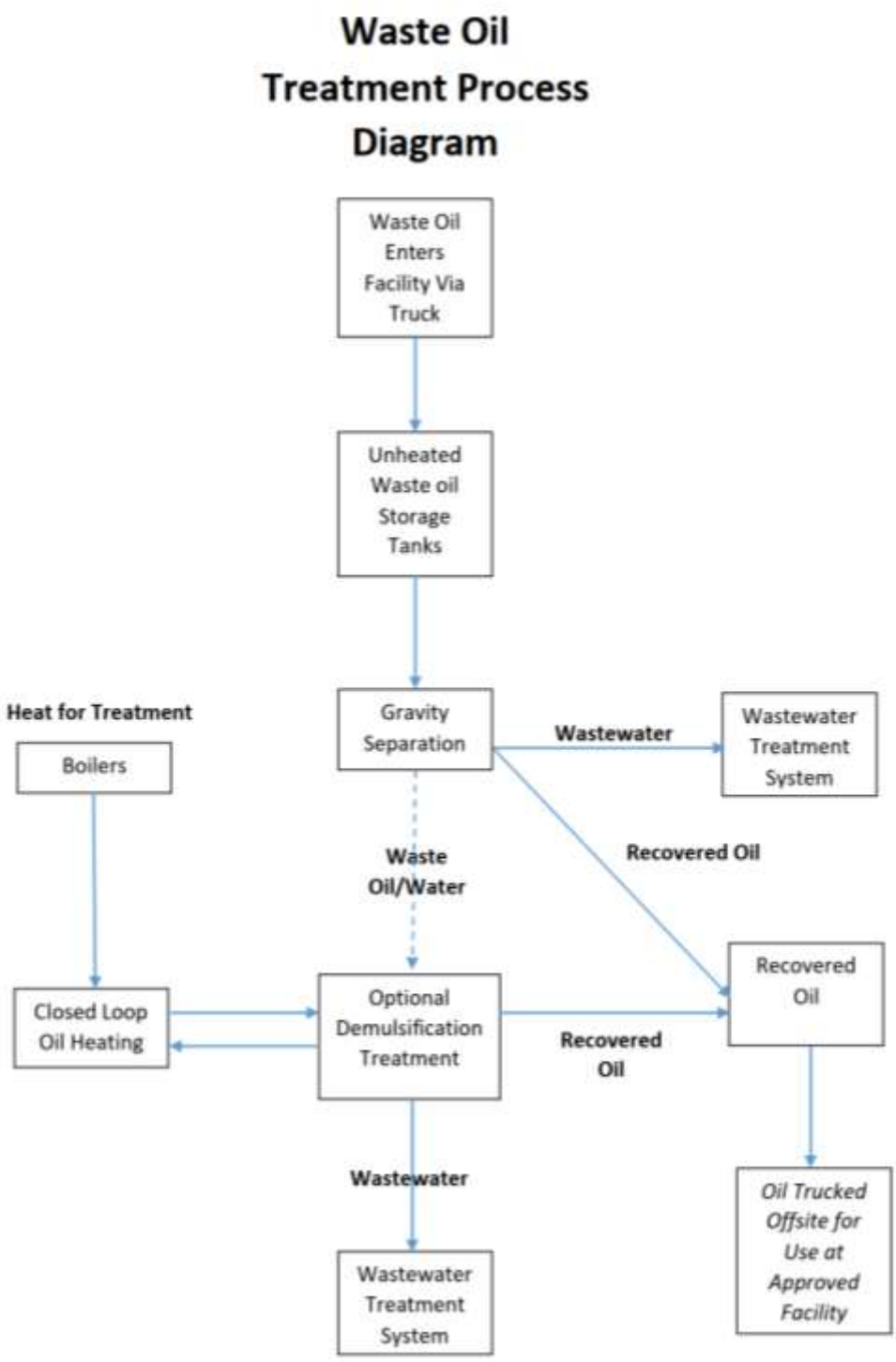
In the Demulsification treatment stage, the waste oil is heated via a closed loop from the onsite boilers and a demulsification chemical is added (if needed) in order to break the oil/water emulsion. Once the emulsion is broken the free water separates via gravity as a separate phase and is removed and treated via the wastewater treatment process described in the following section.

The demulsification process begins by transferring the waste oil into a Treater Tank. The Treater Tank consists of a vertical tank that contains a heating coil at the bottom. Once the Treater Tank is filled with waste oil, heating fluid (from the existing hot oil heaters) is allowed to pass through the coils and the waste oil is heated to 50 – 85 ºC (depending on the type of hydrocarbon in the waste oil). If needed, a chemical demulsifier is added to the waste oil to aid in the demulsification process.

The application of heat and/or demulsifier effectively breaks the emulsion and allows the remaining water to separate from the oil. The separated water is drawn off and sent to the wastewater treatment system for treatment while the remaining waste oil is then sampled and analyzed for BS&W. If the BS&W exceeds 3% then the treatment process is repeated. If the BS&W is < 3% then the waste oil is transferred to an appropriate tank and shipped offsite for beneficial reuse.

The chemical used in the demulsification process is a commercially available demulsifier such as EZ-DMULSE or Bunker Breaker II by Velocity Chemicals Ltd. or similar (see **Appendix M** for details).

Process Flow Diagram for Waste Oil Treatment



5.2.2 Waste Water Treatment Process

Envirosoil's proposed treatment facility will accept and treat a variety of waste waters. The system is comprised of two treatment trains: 1) Basic Treatment; and 2) Advanced Treatment. The Advanced Treatment process is an add-on/addition to the Basic Treatment train and is used for the treatment of specific contaminants and/or to achieve lower discharge requirements.

The Basic Treatment train is comprised of one or more of the following major pieces of process/treatment equipment:

- Duplex Solids Filtration Unit;
- Dual Bag Solids Filtration Unit;
- Multi-bag Solids Filtration Unit;
- Fine Filtration Unit;
- Oil/Water Separator & DAF Combination Unit;
- Activated Carbon Adsorption Unit;
- Organo-Clay/Zeolite Adsorption Unit;
- Flow meter;
- Online TPH & Solids Analyzer;
- Pumps, Piping & Instrumentation; and
- PLC control system and data logger.

The Advanced Treatment train augments the capabilities of the Basic Treatment train by adding one or more of the following process/treatment equipment elements (the actual components included will be based on the treatment requirements):

- Electrocoagulation Unit;
- Reverse Osmosis Unit;
- Membrane Filtration Unit (Micro/Ultra/Nano);
- Floculator Unit; and
- Screw/Filter Press Unit.

If required, an additional process step (i.e., Advanced Treatment) consisting of a polymer electrocoagulation, reverse osmosis or ultrafiltration system can be implemented, which enhances the removal of metals and other contaminants. A screw press may be employed to dewater any sludge generated from these treatment processes and the treated water is then passed on to the previously noted Basic Treatment System. Components of this system will be selected based upon further assessment of waste streams and the system itself will meet all applicable regulations and discharge permit conditions.

If the Advanced Treatment, such as electrocoagulation, reverse osmosis or ultra-filtration is used, the solid effluent from the screw press will be trucked to Envirosoil Limited or other appropriate and licensed treatment facility.

Although the system will be primarily designed to handle hydrocarbon contaminated waste waters, it will be capable of treating a variety of miscellaneous contaminants. The facility will be capable of treating waste waters containing compounds such as:

- Hydrocarbons;
- Suspended solids;
- Metals (i.e., lead, copper, zinc, etc.);
- Ammonia;
- Nitrite/nitrates;
- BOD; and
- COD.

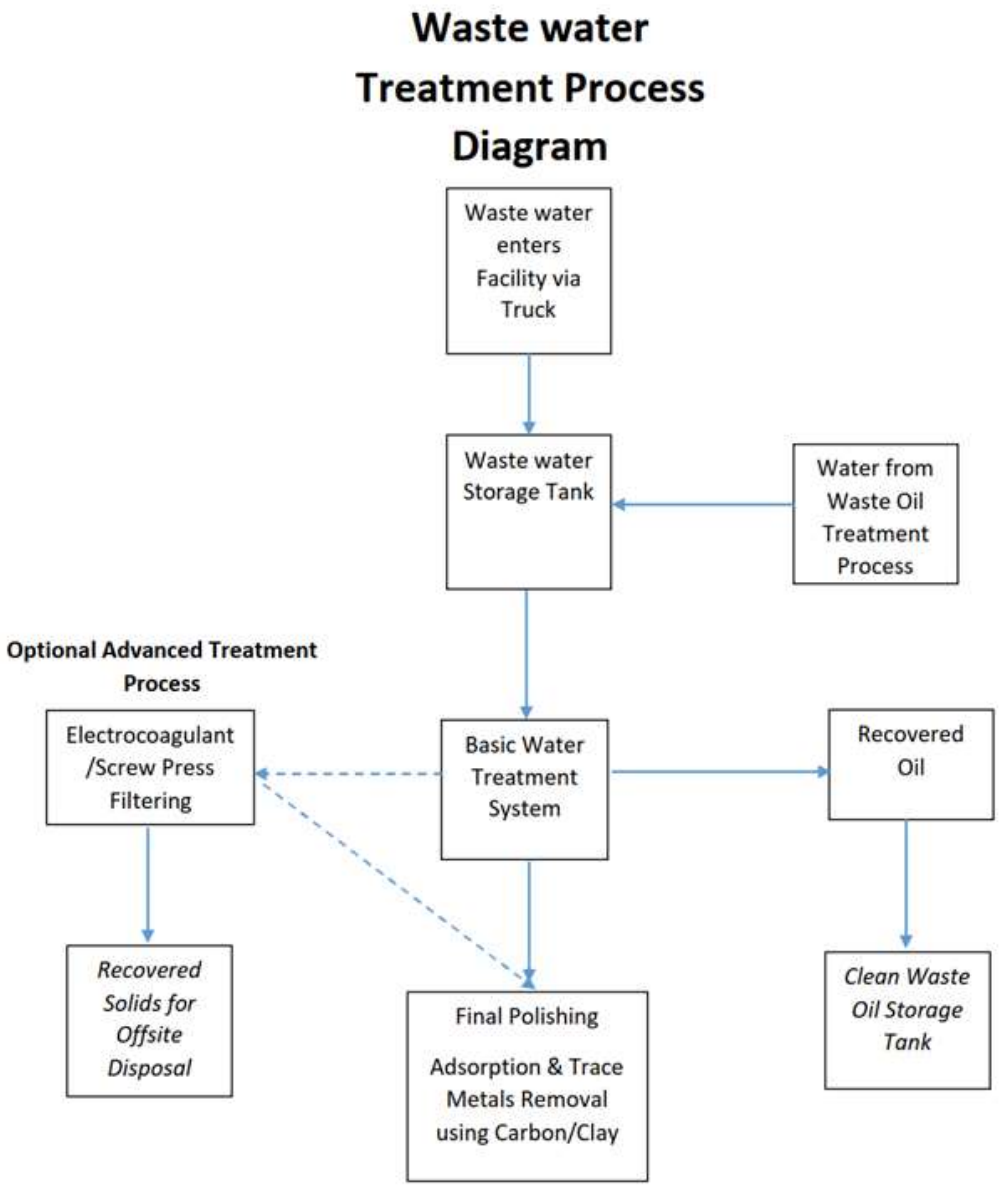
The wastewater treatment system is designed based on the following general process parameters:

Table 1: Preliminary Wastewater Treatment Design Parameters

Parameter	Nominal	Maximum
Flowrate (L/min)	100	200
Free Liquid Hydrocarbons (mg/L)	100,000	250,000
Dissolved Hydrocarbons (mg/L)	3,000	6,000
Emulsified Hydrocarbons (mg/L)	600	1,000
Total Suspended Solids (mg/L)	5,000	10,000
Total Dissolved Solids (mg/L)	4,000	8,000
COD (mg/L)	1,500	2,500
BOD	700	1,200
Ammonia (as N)	200	400
Nitrate (as N)	6	12
Nitrite (as N)	2	4
Arsenic (mg/L)	30	60
Cadmium (mg/L)	25	50
Chromium Total (mg/L)	40	80
Copper (mg/L)	50	100
Lead (mg/L)	50	100
Zinc (mg/L)	70	140
pH	4 - 9	2 - 11

It should be noted that Table 1 presents the nominal and maximum inlet contaminant concentrations at the specified flowrates under normal anticipated operational parameters. These inlet concentrations do not represent the maximum or upper limit that the system is capable of treating. The system can effectively treat higher levels of inlet contaminant concentrations by decreasing the flowrate and/or modifying individual treatment component process parameters.

Process Flow Diagram for Waste Water Treatment



5.2.3 Multi-use Tanks

There are six multi-use tanks that will be installed outside of the existing building. The current operational plan has these tanks being used to store recovered oil after treatment and prior to the oil being sent off site for beneficial reuse. They have been designed to be extensible, so if required in the future, these tanks could be used to store other liquid types as required by the treatment process (such as oily water). These tanks are displayed in the drawings presented in **Appendix A (Sheet No. 1** and **4)**, and will be located in a bermed and lined cell that complies with the Nova Scotia Standards for Construction and Installation for Petroleum Storage Tank System. For example, the system has storage capacity for 110% of the largest tank or 100% of the capacity of the largest tank plus 10% of the aggregate capacity of all the other tanks, whichever is greater. Water collected within this dyked area will be treated by a 15,000L underground double walled oil water separation system and treated and discharged to the Halifax Water sewer system.

5.2.4 Physical Features of the Project

Envirosoil will mobilize all of the necessary equipment to allow for the effective installation and operation of the waste oil recycling and water treatment facility. The following components are expected to be required as part of its operations:

- Laboratory and Testing Equipment (refer to **Appendix E** for details)
- Carbon Filter (Quantity: 2);
- Organoclay/Zeolite Filter (Quantity: 2);
- 6 Unit Bag Filter (Quantity: 4);
- Dual Bag Filter (Quantity: 2);
- Tank Skim;
- 3” DIA Diaphragm Unloading Pump;
- Used Oil Truck Loading Pump;
- Used Oil Tank Filling Pump;
- Tank Recirculation Pump;
- OWS Used Oil Tank Filling Pump;
- Process Feed Pump;
- Treater Tank Filling Pump;
- Clean Water Transfer Pump;
- Suction Hose to Diaphragm Pump
- Precast Concrete Sump c/w Standard Grated Lid for Collection of Wash Water/Spills;
- Polymer Metering/Injection Pump (Drum to Static Mixer)
- Polymer Drum
- Strainer c/w Coarse Filter;
- Heated Treater Tanks, 17500L (QTY 2);
- Existing Indoor Tanks, 45000L (QTY 2);
- External Storage Tanks (Multi-use tanks; 90000L (QTY 6);
- 15000L Double Wall Underground Oil Water Separator;

- Clean Water Tanks, 45000L (QTY 2);
- Unheated Oily Water Tanks, 45000L (QTY 4);
- Advanced Treatment Components as required (Electrocoagulation/Reverse Osmosis/ Ultrafiltration/Elevated Screw Press);
- Static Mixer;
- Mass Flow Meter; and
- TPH Meter Sample Discharge Tank.

The proposed plan/layout for the waste oil recycling and water treatment facility at the site is presented in **Appendix A**.

5.2.5 Project Infrastructure

The site, which was previously owned by Imperial Oil Ltd. and used for its operations, currently has a large above ground storage tank (approximate capacity of 8 million litres) used for liquid asphalt and an ancillary building that contains facilities such as electrical room and a boiler room, as well as general office space and washroom facilities.

The proposed undertaking will use the existing Pleasant Street site access, and the treatment system portion of the facility will be situated in an unoccupied space within the existing ancillary building. This system is presented in **Appendix A** of this document, and described in detail within **Section 5.2.1**.

Consistent with current operations at the site, onsite access roads will allow for full turning radius for product delivery trucks, and will be constructed of compacted asphalt. There will be employee and customer parking onsite, including an area for bicycle storage to encourage sustainable transportation.

5.3 Operation and Maintenance

Project operations can be generally grouped under the following activities:

- Pre-delivery product analysis review – receipt of waste profile sheet from shipper, describing source, laboratory analysis of waste, volume, etc.;
- Field level sampling and analysis;
- Monitoring and Process Control;
- Heating: Hot Oil Heating System;
- Storage: Tanks, Piping & Valves System;
- Delivery: Truck Loading System (Envirosoil's operation ends when trucks leave the site); and
- Preventative Maintenance and Inspections.

Product receiving, storage, processing/treatment, loading, transfer and handling will be contained fully at the site. Envirosoil staff will ensure that whenever products are being transferred that the process will be supervised by trained personnel at all times and in such a manner that the flow of products can be immediately shut off, if necessary. The operator controls the storage, receiving, and delivering process

using various flow meters, level indicators and valves based on the product demand of the facility. All facility processes and equipment will meet the applicable standards and codes.

Each general operational activity is described in the following subsections.

5.3.1 Monitoring and Process Control

The proposed system uses advanced sensing, monitoring, alarms and PLC control to control fluid flow tanks levels and treatment processes. These sensors and systems feed into the control room where an operator will be stationed during all treatment operations.

To ensure that recycling and treatment processes are maintaining acceptable recovered oil and water quality standards, an on-site laboratory will be located beside the control room. In addition to this on-site laboratory, there are several in-line water quality sensors that can provide logged quality information for record keeping and process control (detailed information and certifications are presented in **Appendix E**). These include, but are not limited to:

- Water Discharge Totalizer;
- In-line Total Petroleum Hydrocarbon Analyzer;
- Sampling ports; and
- Total Suspended Solids Analyzer.

These in-line computerized systems, combined with the on-site laboratory and testing equipment can provide Envirosoil with all the required testing and instrumentation to ensure Envirosoil meets and/or exceeds all relevant permit conditions and legislative requirements for treatment and product discharge. For QA/QC purposes, samples of treated water will also periodically be sent to an accredited lab for third party verification.

5.3.2 Heating

An existing closed-loop hot oil system will be used to heat the heated treater tanks. Paratherm NF Heat Transfer Fluid will be used. It is a food grade, mineral-oil based heat transfer fluid designed for extended service in closed-loop liquid-phase systems. The fluid is circulated through the tank's hot oil distribution system and is heated by the boiler. A total of 4.2 m^3 of Paratherm NF is proposed to be used in this system. Heating oil data sheets are presented in **Appendix C**.

The proposed undertaking will use the existing HC and HCS bro 8-90 (HC 300-3 million BTU) boilers made by Heatec (specifications provided in **Appendix D**). The heaters are 3 MMBTU/hour. The boiler will increase the temperature of the heating fluid to approximately 200°C. The natural gas for the boilers will be supplied to the site by Heritage Gas.

5.3.3 Storage

There are three types of storage that will be required for this proposed project:

- Unheated Waste Water Storage (Existing in building; 4 tanks x 55,000L);
- Recovered Oil Storage Tanks (Existing in building; 2 tanks x 55,000L, 1 tank x 3,170L);
- Storage Tanks (Exterior to building; 6 tanks x 90,000L); and
- Clean Water Storage Tanks (In building; 2 tanks x 55,000L).

The other tanks will be used for actively treating effluent (such as the heated treater tanks). The unheated waste water storage tanks, recovered oil storage tanks and the clean water storage tanks are each managed by a modern, industry standard programmable logic control system. This system uses traditional floats and an advanced radar system to ensure tanks are not overfilled and the process is controlled at all times.

5.3.4 Delivery

Trucks entering the site will typically be tanker trucks that meet the provincial capacity regulations which can range by province from 35 000 to 48 000 litres. They will enter the site from Pleasant Street through a controlled security gate and drive down to a weigh-in scale. An industry standard vehicle and operator tracking system will be in place to ensure only trained drivers are allowed onsite and that the trucks are properly loaded and documented. Volume of product is controlled through the use of a flow meter, and there will be a dedicated pump and pipe for this operation. Loading areas are designed to provide positive and effective protection against discharge of contaminants to storm water and underlying soil, and trucks are required to be grounded and have the wheels chocked during any loading. All transfers processes will be equipped with emergency shut-off switches.

A weigh scale is used to weigh the delivery trucks prior to product being supplied and after loading recycled waste oil being supplied to offsite customers to ensure compliance with local and provincial road restrictions. Standard Operating Procedures (SOPs) will be complied with by staff and drivers when on site. Adherence to SOPs has been ongoing at Envirosoil's primary operating site in Bedford, NS, for over 10 years, and more recently at the Pleasant Street facility, and there is a proven track record of successful execution. Personnel will be required to wear appropriate PPE while at the site and during any product transfers. For personnel new to the site and operations, a safety briefing and orientation will be required prior to working at the site.

5.3.4.1 Material Receipt

The following describes the possible regulated and non-regulated materials received and stored on site, the estimated annual volumes, and their location at the facility. As noted above in **Section 5.3**, all materials entering the proposed facility for processing will require a pre-delivery product analysis (e.g., laboratory confirmation) review from the shipper before any material is received by the facility.

Material	Estimated Annual Volumes (m^3)	*Location Stored
Waste Oil as defined by the NS Used Oil Regulations	3,000-8,000	On-site tanks
Waste water from Treatment of Waste Oil (generated internally)	1,000-2,500	On-site tanks
Waste water (all other types)	3,000-9,000	On-site tanks

***Site detailed figures are provided in Appendix A.**

5.3.5 Preventative Maintenance and Inspections

5.3.5.1 Preventative Maintenance

This undertaking's preventative maintenance program will be performed in an effort to prevent breakdowns and failures by adjustment, repair or replacement of equipment and parts. Equipment and systems preventative maintenance includes:

- Maintaining, calibrating and servicing online monitors for TPH and TSS, and high level alarms on product storage tanks;
- Verification of operation of all process control elements including pressure, temperature, flow rate, liquid level and emergency shutdown valves;
- Asset integrity inspections of all product transfer pipelines and storage tanks. Asset integrity program follows API standards and utilizes a variety of best practice inspection methods. Tank supports, and foundations are included within asset integrity inspections;
- Operations personnel conduct multiple daily rounds of the project area; and
- Safety and Emergency Response assets are inspected regularly.

5.3.5.2 Daily Inspections

Inspections of all storage tanks, piping and associated equipment and secondary containment areas are completed by personnel on their rounds daily and documented on a checklist.

5.3.5.3 Monthly Inspections

Once per month, a more thorough and detailed tank inspection is performed at the facility. Completed inspection checklists are retained at the facility for a minimum of five years. The monthly inspections are also conducted to satisfy the requirements of API 653, requiring monthly inspections of all above ground storage tanks constructed to the API 650 standard.

Emergency response equipment is also inspected monthly for deterioration and operability and records are maintained on site.

5.3.5.4 Five-year Inspections

Every five years, tanks shall be externally inspected as per API Standard 653.

5.3.5.5 Ten-year Inspections

Every ten years, tanks shall be internally inspected as per API Standard 653.

5.4 Commissioning

Commissioning is the process of a series of tests and verifications to confirm all systems and components have been installed to specification, and operation can begin. Commissioning will be completed by the contractor and main equipment supplier(s) in conjunction with Envirosoil. Commissioning will first involve confirming installation, controls and operation between the contractor and the manufacturer. This includes items such as pressure testing of tanks and pipes. Any water discharges from pressure testing will be controlled and not released to the environment.

5.5 Project Schedule

Envirosoil is providing this anticipated schedule below that outlines the regulatory and installation processes for the Waste Oil Recycling and Water Treatment facility. The installation and commissioning will take approximately two to three months to complete. The anticipated schedule is shown in **Table 2** below. Operation of the proposed facility is anticipated to commence in September/October 2021.

Table 2: Anticipated Schedule (2021)

	May	June	July	August	September	October
EA Approval	X					
Industrial Application Approval		X				
Installation/Assembly			X	X	X	
Commissioning				X	X	
Initiation of Operation					X	X

The anticipated timelines reflect information known at this time and are subject to change.

5.5.1 Labour Requirements

Development of the project will provide direct and indirect benefits for the local and provincial economy. During construction, activities will be carried out largely by in-house staff, with some support from third party equipment and technical contractors. All contractor(s) will work under the supervision of an Envirosoil representative (or designate).

During operations, the proposed project would employ five technical personnel, 12 hours per day, five to seven days per week depending on market demand. Hours of operation may be expanded to 24 hours, 7 days per week as market demands require.

Decommissioning requirements are unknown at this time. However, it is assumed that third party equipment contractor(s) would be required to undertake these activities.

5.6 Emissions and Waste Discharges

The anticipated emissions and wastes associated with the project are discussed in this section. Envirosoil, through the conditions of the permits and approvals it will receive to enable installation of facility components and operation of the project, will meet or exceed the compliance standards outlined in applicable regulations and guidelines. Where no such standards exist, industry best practices will be adopted, where applicable. Volumes of wastes and concentrations of contaminants will be reduced through best management practices, following applicable legislation, and mitigation planning.

5.6.1 Air Contaminant and GHG Emissions

Air contaminant emissions from the project may occur during the construction/installation and operation phases. The potential air contaminant emissions of concern will be limited to particulate matter (PM, including its common size fractions PM10 and PM2.5) from fugitive sources and the normal combustion gas emissions such as carbon monoxide (CO), nitrogen oxides (NOX), and sulphur dioxide (SO_2) from the combustion of fossil fuel by vehicles. Measurable emissions of other air contaminants (other than greenhouse gases (GHGs)) are not expected.

There are two existing boilers in the building to facilitate heating requirements for the tanks. Boiler emissions for the boiler system, using the power flame emissions details are identified in **Table 3**. Boiler specifications are provided in **Appendix D**.

Table 3: Power Flame Emissions Details

	Natural Gas	L.P Gas	#2 Fuel Oil
Carbon Monoxide-CO	.037lb CO 10^6 BTU input (50 PPM)	.037lb CO 10^6 BTU input (50 PPM)	.037lb CO 10^6 BTU input (50 PPM)
Sulfur Dioxide- SO_2	(1.05) x (% Sulfur by weight in fuel) = lb SO_2 per 10^6 BTU input		
Particulate Matter	.0048 lb PM per 10^6 BTU input	.0048 lb PM per 10^6 BTU input	.0143 lb PM per 10^6 BTU input
Hydrocarbons	.025 lb HC's per 10^6 BTU input	.025 lb HC's per 10^6 BTU input	.038 lb HC's per 10^6 BTU input
CO_2	9 % to 10 %	10 % to 12 %	10 % to 13 %
Standard C ® Burners	.088 lb NO_x per 10^6 BTU input (75 PPM)	.092 lb NO_x per 10^6 BTU input (75 PPM)	.12 lb NO_x per 10^6 BTU input (75 PPM)

GHG emissions from the project will mostly occur during operations. The primary sources of GHGs are CO_2, methane (CH_4), and nitrous oxide (N_2O), as carbon dioxide equivalents (CO_2e), from fossil fuel combustion in trucks, boilers and other mobile equipment. All Emission control equipment will be maintained and operated to the specifications and recommendations of the manufacturer. Air emissions

at the site are not anticipated to change (from existing operations) in a substantive way through the addition of the proposed waste oil recycling and water treatment activities. The addition of one to two trucks per day accessing the site will be the main cause for a minor change in air emissions.

5.6.2 Odour

For land-based consideration such as local residents, industries, and recreation no interaction is anticipated. Odour potential is often an area of interest identified during community and stakeholder engagement associated with new commercial/industrial developments. Odour reduction was a priority for Envirosoil, and prevention was a basic design criteria used in the development of the project. Storage and transfer of product is conducted through the use of tanks, pipes and pumps which does not allow for uncontrolled emission of gas, vapours or objectionable odour.

Venting of the storage tanks in the building will be connected with a series of pipes and conveyed to an industry standard activated carbon filter to remove VOCs and odours. The activated carbon filters will be managed with a regular maintenance program. Activated carbon filters are designed for odour management and typically remove 90% of odours.

No off-site odour impacts are anticipated as a result of the project, and on-site odours will be very limited.

5.6.3 Acoustic Environment

The acoustic environment focuses on ambient noise within the study area, both natural and man-made. Noise levels can be of concern in relation to human health, socioeconomic values, and in relation to potential disturbance of ecological functions. During installation, noise is expected to be primarily related vehicle and truck traffic at the site. Installation of the majority of system components will be completed inside the existing building, thus significantly reducing any exterior noise.

The site is situated in a developed industrial area that is separated from residential areas and sensitive land uses. Both the site and adjacent properties have been used for light to heavy industrial purposes since before the 1960s. Pleasant Street is the main commercial and truck route connecting Dartmouth to Eastern Passage, in the area east of its intersection with Nova Scotia Highway 111. In addition to noise associated with typical commercial and trucking activities along Pleasant Street, other notable noise sources in the area include Royal Canadian Air Force 12 Wing Shearwater (plane and helicopter activities), located approximately 500 m to the east of the site, and routine marine vessel activity on Halifax harbour. Based on the types of activities proposed as part of Envirosoil's installation and operations, it is not anticipated that noise levels will be increased in surrounding areas above existing levels in the area. A busy four-lane road corridor (Pleasant Street), mature tree buffer, large berm (native soils), and an active Canadian National Railway corridor separate residential receptors from the site. It is also noted that the operations will be occurring down gradient of Pleasant Street and residential land uses in the area.

Noise during operations will be primarily from vehicles entering and exiting the property. Noise levels are expected to be very short term in nature, and localized. Predicted noise levels are not expected to exceed the NSE Noise Guideline, and local noise by-laws will be adhered to. A baseline noise survey was completed in July 2020 for the existing liquid asphalt storage facility at the site and it found that the average LAeq values for the two monitoring locations ranged from the mid-50's to the high 60's with the dominant contributing factor to background noise being traffic on Pleasant Street and the adjacent railway. The L90 baseline results indicated that during 90 percent of the day, evening and night, the levels are 10-20 decibels lower and are below the NSE guidelines. Refer to **Appendix G** for the background noise baseline noise survey report.

5.6.4 Liquid and Hazardous Wastes

Liquid wastes generated during installation of system components may include oils, grease and fuels from trucks delivering project components and other mobile equipment used to move and install those components, plus any inadvertent fuel spills (refer to **Section 10.0**). These wastes will be collected and disposed of in accordance with applicable local and provincial regulations. Liquid wastes from construction crews, including sewage and domestic waste water, will also be collected and disposed of consistent with local and provincial standards.

Liquid wastes typically produced during operations and maintenance will be primarily treated water from the water treatment process. Treated water will be directed towards the municipal sanitary waste water treatment system. Prior to facility operation, approval will be obtained from the Halifax Water to discharge to the municipal system.

Other anticipated liquid wastes include lube oil for the pumps and other mechanical equipment which will be changed regularly. This waste stream will be removed from the site in barrels, for delivery to an approved disposal and/or recycling facility.

5.6.5 Solid Wastes

Solid wastes generated during installation may include extra subsoil, temporary fencing, signs, metal containers, canisters as well as welding rods, and domestic wastes. Scrap paper and other office wastes will also be generated. During operation and maintenance, a limited amount of solid wastes may be generated in addition to other solid wastes that are produced during daily operation of a typical small office environment and industrial facility. The waste water treatment process will generate activated carbon, used organoclay and used bag filters as solid waste stream items. If the Advanced Treatment option is employed, there may be some sludge residual (< 5% of any volume treated).

Similar to existing operations at the subject site, Envirosoil will continue to actively cooperate with municipal waste reduction and recycling programs and will encourage conservation throughout its facilities. Solid wastes will be collected and disposed of in a manner consistent with local and provincial standards. Non-hazardous wastes will be separated as recyclable and non-recyclable, with recyclable

material collected and transported to a licensed recycling facility. Non-recyclable wastes will be disposed of according to Envirosoil's existing waste management procedures.

5.7 Funding

No public or government funding is involved in the execution of this undertaking. All costs will be borne by Envirosoil Limited.

5.8 Standard Mitigation Measures

Standard mitigation measures will be employed, as applicable, to reduce or eliminate adverse effects associated with project activities. These measures are outlined in this section.

5.8.1 General Construction and Operations

- All components will be constructed according to applicable regulations, safety codes, and standards;
- All necessary approvals, licences and permits required for a particular activity or construction site are obtained prior to the commencement of the applicable activity or construction at the site;
- All deliveries to the site and transportation of construction and waste materials will be managed within the legal loading requirements and according to spring weight restrictions (as necessary);
- Site grading will be localized and limited to the pad area for the six new exterior multi-use storage tanks. This area will be appropriately graded to manage surface water runoff which will be diverted to a new onsite oil-water separator, designed to NSE requirements, before being discharged to the HRM sewer (details provided in **Appendix A, Sheet No. 4** and **5**);
- Provision of gas, sewer, water and power utilities will be conducted by the supplier (HRM, Heritage Gas) following standard methodologies and meeting regulatory requirements. All utilities are already installed and operational at the site, as part of the existing industrial operations; and
- The loading and unloading areas consist of existing impermeable collection areas that drain to an existing French drain and First Defence® (Stormceptor-type) system, allowing for easy and periodic monitoring. This system can also be closed in the event of a spill onsite.

5.8.2 Vegetation Clearing and Disposal and Restoration

As noted previously, due to the disturbed nature of the site, the vegetation is relatively limited and consists of relatively sparse vegetation, including shrubs, grasses, and some immature deciduous and coniferous trees, mainly along property boundaries. No vegetation clearing will be required as part of the proposed undertaking.

5.8.3 Protection of Wildlife and Wildlife Habitat

The following mitigation measures are planned to reduce environmental effects on wildlife and wildlife habitat:

- Activities at the site should not harm or harrass migratory birds. If during installation it is noted that migratory birds are present, then installation work will be scheduled to the extent possible outside of

the normal breeding bird and migratory bird season (April 15 to August 31) to ensure that eggs and flightless young are not inadvertently harassed or destroyed. At a minimum, if complete avoidance of these activities during the specified timeframe is not feasible, nest searches will be undertaken by a qualified biologist and avoidance setbacks will be established around active nests;

- Existing infrastructure and previously disturbed areas (e.g., roads, mowed areas, parking areas, etc.) will be used;
- All equipment will be maintained in good working order to limit emissions, including noise generation;
- All machinery and equipment will be cleaned prior to entering the site to limit the potential spread of exotic or invasive plant species;
- All food and food waste will be stored and disposed of properly to avoid attracting wildlife;
- If workers encounter birds that they suspect may be nesting within the project area, a biologist will be contacted to determine whether nesting is occurring and to locate the nest. Note: nests should not be flagged since this increases the probability of predation;
- If a nest is found within project area, an appropriate setback developed in consultation with the Canadian Wildlife Service (CWS) will be established around the nest in which humans activities will be restricted until the young fledge and leave the area or until the nest naturally fails; and
- If a species at risk is encountered, contact will be made to a Species at Risk Biologist at Nova Scotia Department of Lands and Forestry to discuss immediate actions and future mitigation.

5.8.4 Erosion and Sedimentation Control

- The undertaking is proposed to be located at an existing and developed site with impermeable surfaces (asphalt access driveway and parking areas) outside, and the majority of facility components are contained within an existing building structure. Six additional storage tanks will be installed outside of the building at a developed (graded, gravelled) area of the site, immediately adjacent an existing liquid asphalt storage tank. Ground disturbance or exposure of soil surfaces is anticipated to be very minimal. It will include a shallow (< 60 cm) disturbance in the area of the new exterior storage tanks, and small area of disturbance required for installation of the new oil-water separator. No native materials (only fill) will be disturbed as part of this ground disturbance. Erosion of site features is not anticipated to occur as part of the undertaking, and sedimentation control structures are not planned. However, it is noted that all site surface water is currently directed to the on-site French drain system with a First Defence® (Stormceptor equivalent) system already installed and maintained.

5.8.5 Dust and Air Emissions Control

- Envirosoil has an anti-idling policy for its vehicles; therefore vehicles and equipment will be turned off when not in use, unless required for effective or safe operation;
- Burning of brush or slash will not be permitted;
- When dust is a concern, dust suppressants (e.g., water) will be applied to exposed surfaces;
- Petroleum products will not be applied as a dust suppressant; and

- All emission control equipment will be maintained and operated to the specifications and recommendations of the manufacturer, and will meet provincial and Halifax Regional Municipality noise by-laws.

5.8.6 Waste Management

Construction and equipment installation related materials such as survey staking, pallets, and construction signage will be removed on completion. Waste storage will be minimized by prompt removal of waste following equipment servicing, and the site will be kept free of loose waste material and debris. However, if liquid waste storage is required, the storage areas will be located following regulatory requirements for fuel and lubrication storage and will not be located within 30 m of a watercourse or wetland. Solid waste produced will include materials such as strapping, temporary fencing, signs, and containers.

Equipment installation specifications will also include requirements for litter control and management of construction wastes. Non-hazardous solid waste will be collected and disposed of at an approved facility by a licensed contractor. Food and food waste will be stored and disposed of properly to avoid attracting wildlife.

5.8.7 Dangerous Goods Management

- Basic petroleum spill clean-up equipment must be on-site and all spills or leaks must be promptly contained, cleaned up and reported to the 24-hour environmental emergencies reporting system: 1-800-565-1633;
- Spills will be reported as required under Nova Scotia Environmental Regulations – Sections 74, 136 and 171 of the Environmental Act;
- All fuels and lubricants used will be stored in designated areas. Storage areas will be located at least 100 m from Halifax Harbour, where possible, except where secondary containment is provided;
- Equipment used will be well-maintained and free of fluid leaks (checks to be conducted);
- Refuelling of machinery will not occur within 30 m of Halifax Harbour, and will be completed on an impermeable surface;
- Storage of all dangerous goods will comply with the Workplace Hazardous Materials Information System (WHMIS) requirements and applicable federal and provincial regulations;
- Transportation of dangerous goods will comply with the federal and provincial regulations, including the Transportation of Dangerous Goods Act;
- Emergency response procedures will be in place for spill response, with trained personnel present on-site at all times; and
- Training will include proper spill response equipment to trained personnel. A formal training plan will be put in place as part of the facility management system which will be ISO 9001 and ISO 14001 certified.

5.8.8 Fire Prevention

- There is an existing fire hydrant at the site;
- Proper disposal methods for welding rods, cigarette butts and other hot or burning material will be used;
- Smoking will only occur in designated areas;
- Appropriate fire-fighting equipment will be kept on site; and
- Burning of slash (fine or coarse wood debris) will not be permitted.

5.8.9 Site Access Control

- The facility is enclosed with security fencing and access is limited to authorized personnel only;
- Facility operators will inspect the entire facility at least once during each shift;
- All visitors and deliveries must check in at the facility office; and,
- Product valves are closed and secured with a chain and lock when they are in non-operating status. Authorized facility operators have the keys for these locks and are responsible for opening and closing all valves.

5.9 Emergency Response and Contingency Plan (ERCP)

A Draft project-specific ERCP for unplanned events has been prepared, and is presented in **Appendix I**. This will include spill management and response procedures to prevent and respond to spills. In the case of an accidental release of materials, reporting and clean-up procedures will follow provincial emergency spill regulations as required. Lubricants and other petroleum products will be stored and waste oils will be disposed of in accordance with provincial regulations. Small spills will be contained by onsite personnel using spill kits kept at the site.

It is anticipated that elements of the ERCP will include:

- purpose and scope of plan coverage;
- general facility identification information (e.g., name, owner, address, key contacts, phone number);
- component and infrastructure locality information (e.g., maps, drawings, description, layout);
- discovery/initial response;
- termination and follow-up actions/prevention of recurrence;
- notification protocols (internal, external, and agencies);
- response management system (e.g., incident commander, safety, liaison, evacuation plan);
- assessment/monitoring, discharge or release control;
- containment, recovery, and decontamination;
- logistics – medical needs, site security, communications, transportation, personnel support, equipment maintenance and support, emergency response equipment (e.g., Personal Protective Equipment (PPE), respiratory, fire extinguishers, first aid);
- incident documentation (accident investigation and history);
- a description of biological and human-use resources that could be impacted;

- an inventory of oil and chemical products and associated storage locations for both construction and operation phases;
- the identification of spill response equipment that will be onsite or available in case of emergency events;
- procedures for responding to operational spills and releases;
- an incident reporting system, including notification and alerting procedures;
- a list of responsible organizations and clarification of the roles of each organization;
- clean-up and disposal procedures;
- training and exercises/drills;
- plan review and modification; prevention;
- regulatory compliance; and
- a log of all maintenance activities of critical emission control devises will be maintained. The log will record the following:
    - Identification of the unit
    - Time/date of log entry
    - Nature of event
    - Time and duration of event
    - Action taken

The ERCP will also reference relevant and appropriate standards to supplement code requirements as applicable. Envirosoil commits to submitting a Final ERCP to appropriate regulatory agencies for review prior to operations.

For additional emergency response support, Envirosoil intends to work with industry service providers such as ECRC (Dartmouth), Terrapure Environmental (Dartmouth), and CleanEarth Technologies (Goffs, NS). Envirosoil also has access to internal emergency response team locally (Rocky Lake Drive, Bedford) that is available to respond to incidents during the project. The capacity of local fire and ambulance services to respond to incidents has been evaluated during preparation of the draft ERCP. Envirosoil will continue to work closely with related agencies on the issue of public safety during all phases of the project.

6.0 Indigenous and Stakeholder Engagement

6.1 Indigenous Engagement

The Proponent consulted with the Nova Scotia Office of Aboriginal Affairs to help identify the appropriate Indigenous groups to engage regarding the proposed undertaking (correspondence is included in **Appendix I**). In early December 2020, project notification letters were sent by email to the following Mi'kmaq communities and organizations:

- Millbrook First Nation;
- Sipeknakatik (Shubenacadie) First Nation; and
- Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO).

The project notification letters described the purpose and need for the undertaking and the proposed facility and operations, including the typical types of materials that will be handled at site. Follow up correspondence by phone and email to representatives of the above noted communities and organization was carried out over the course of December 2020 and early January 2021.

To date, no First Nations have responded to the project notification letters, or demonstrated interest in the proposed undertaking. However, Envirosoil has attempted to design the project in a manner that mitigates typical issues of concern to the public and Indigenous groups, including components such as odour and noise. Issues associated with protection of surface water and vegetation, as well as cultural and archaeological features of interest have also been identified as often being of notable interest and concern to Indigenous stakeholders. As noted throughout this EARD, it is not anticipated that these valued features will be impacted by the proposed undertaking since the installation of the waste oil recycling and water treatment system components will be at an existing and developed industrial facility and no ground disturbance, vegetation clearing or liquid discharges to the natural environment is planned.

6.2 Other Public and Stakeholder Engagement

In December 2020, Dillon Consulting, on behalf of the Proponent, provided project notification to both the Pleasant Woodside Neighbourhood Association (PWNA) and the South Woodside Community Association, as potential local stakeholder organizations (refer to **Appendix J**). The PWNA is a membership-based organization that aims to enhance the local community in the immediate Project area, bringing together residents and businesses to work on local improvement projects and to communicate with local government bodies, including Halifax Regional Municipality. The South Woodside Community Association is a volunteer run group that aims to serve the recreation and social needs of the residents of the South Woodside community. No questions have been received from these organizations to date, and no issues of concern with the respect to the project have been identified.

Project notification was also provided by email to Barbara Adams, as the Nova Scotia Member of Legislative Assembly for Cole Harbour-Eastern Passage, as well as Becky Kent, as the Halifax Regional Municipality Councillor for District 3 (Dartmouth South – Eastern Passage). Hard copy pre-EARD submission project notification letters were also made publically available to local residents who reside in the neighbourhood immediately to the north of the 750 Pleasant Street, including distribution through the Pizza Time location at 731 Pleasant, which is the single commercial/retail outlet serving the local neighbourhood (refer to **Appendix J** for notification documentation). No questions have been received from these individuals or organizations to date, and no issues of concern with the respect to the project have been identified.

As noted above in **Section 6.0**, Envirosoil has considered typical issues of public and stakeholder concern with respect to undertakings of this nature, and incorporated these considerations into the design of the project.

Additional consultation will be conducted as per the requirements for a Class 1 Undertaking outlined in Section 9(1) of Nova Scotia's Guideline for Environmental Assessments.

A notice of registration will be published in two newspapers to notify the public of the Registration and where they can review the EA Registration Document, including physical copies. The notice will invite the public to submit comments in writing to Nova Scotia Environment's Environmental Assessment Branch.

As a Class 1 project, the EA Registration document will be publically available on NSE's website for Environmental Assessments and the NSE review will follow the typical timeline of approximately 50 calendar days.

Copies of the EA Registration Document will be provided to government agencies and Mi'kmaq for review.

7.0 Summary of Environmental Setting

7.1 Site Background

In April 2018, as part of the due diligence in buying land for industrial usage, a Phase I Environmental Site Assessment (ESA) was completed by OCL Services Ltd. A Phase 1 ESA can provide historical context for a site and identify areas of potential soil or groundwater contamination, however, it is important to note that no excavation or disturbance of native materials is planned for the proposed undertaking.

The Phase I ESA focused on two vacant lots previously owned by Imperial Oil Ltd., which form the area of GLC's existing facility, and Envirosoil's proposed project. The lots were being subdivided for land parcels to be sold. Lot 1 (Subdivision of 600 Pleasant Street, PID 00260711) and Lot 2 (Subdivision of 700 Pleasant Street, PID 00249490) (refer to Legal Survey Plan in **Appendix B**).

The Phase I ESA included a review of historical information and a site review. No further sampling was completed during this Phase I by OCL Services Ltd, which complied with the Canadian Standards Association standard CAN/CSA Z768-01. In this review, referenced surveys and investigations included:

- WSP Canada Inc. 26 October 2017. Plan of Survey, Lot 1, being a subdivision of PID 00260711, lands conveyed to Imperial Oil Limited and a survey of Lot 2, being a subdivision of PID 00249490, lands conveyed to Imperial Oil Ltd., Pleasant Street, Dartmouth, County of Halifax and the Province of Nova Scotia.
- Golder Associates Ltd. 29 March 2018. Phase II Environmental Site Assessment, South End Surplus Property, 600 Pleasant Street, Dartmouth, Nova Scotia. Submitted to Imperial Oil Limited, Dartmouth, NS.
- Stantec Consulting Ltd. 13 February 2010. Test Pit Investigation- General Chemical Canada Ltd. – 750 Pleasant St. Dartmouth, Nova Scotia. Prepared for Municipal Enterprises, Bedford, NS.

There were no other available ESAs pertaining to the subject property. Recommendations provided in the Phase I ESA report suggested that the site was compatible for Industrial usage and confirmed site conditions met the Tier 1 Environmental Quality Standards for a commercial/industrial property. The proposed undertaking will connect to municipal water and sewer services, and will not be using groundwater on the property.

The Subject Property is zoned "I-3" which is Harbour Oriented Industrial Usage pursuant to the Halifax Regional Municipality Land-Use By-Law for Dartmouth (3 June 2017).

7.1.1 Physical Environment

7.1.1.1 Topography and Boundary Properties

The northern or upper lot (PID 41464280) is triangular in shape, and is bordered by Pleasant Street, Imperial Oil Ltd. and the CN railway corridor. The southern or lower lot (PID 00260703) is bordered by the CN railway corridor, Cherubini Metal Works Ltd., Halifax Harbour and Imperial Oil Ltd.

The upper lot has been developed as the entrance from Pleasant Street to the existing asphalt storage facility and features a paved driveway, electronic and monitored security access gate, chain link perimeter fence and retaining wall. A mix of mature coniferous and deciduous trees as well as shrubs line the parcel boundary with Pleasant Street, providing an additional visual buffer between Pleasant Street and the upper lot. Most of the upper lot is 14 to 15 m above sea level (asl) with a gradient down to the northeast at Pleasant Street and down to the south to 12 m asl at the CN railway right-of-way.

The lower part of the property is an irregularly shaped land parcel and the southern boundary is defined by the Ordinary High-Water Mark (OHWM) of Halifax Harbour. The topography has been graded toward the harbour to suit the infrastructure of the existing liquid asphalt storage facility. (Refer to **Appendix A**).

7.1.1.2 Vegetation and Wildlife

Due to decades of industrial activities at, and adjacent to the site, onsite vegetation is limited and consists of relatively sparse vegetation, including shrubs, grasses, and a mix of mature and immature deciduous and coniferous trees along the property margins. Priority flora (plant) species that have formal regulatory protection (under provincial and/or federal legislation) are not anticipated and were not observed at the site during reconnaissance in the fall of 2019, and spring and summer of 2020, prior to development of the site as a liquid asphalt storage facility. No Salvageable timber exists at the site.

The provincial viewer (https://nsgi.novascotia.ca/plv/) does not identify significant habitat within the proposed project properties. The nearest identified significant habitats are over 1 km to the south on McNabs Island and species at risk habitat for birds over 3 km to the south on McNabs Island (see Section 7.11.7 below). Wildlife present in the area are anticipated to be typical of the industrial/urban and harbour front nature (e.g., Norway rat – *Rattus norvegicus*), and there is limited potential for priority species. If species at risk wildlife are encountered, contact will be made to a Species at Risk Biologist at Nova Scotia Department of Lands and Forestry to discuss immediate actions and future mitigations.

7.1.1.3 Geology

The underlying bedrock is Meguma Group/Halifax Formation, a group of iron sulphide minerals, the excavation and management of which is regulated pursuant to the Sulphide Bearing Materials Disposal Regulations. There are no outcrops or exposed bedrock and in all the borehole logs, as reported in the 2018 Phase II Environmental Site Assessment, indicated a mixture of silty sand and clay horizons to 8 m

below grade with no bedrock. As this project involves installation of equipment at and existing facility, no excavation will be required and bedrock will not be encountered through any project phases.

The area of Dartmouth that the site is located has a low risk for potential radon inside buildings as it sits on the Meguma Group/Halifax Formation. The facility building has a flat concrete pad for foundation with no basement. The building will be vented as well, lowering any effects of radon gas buildup from the natural setting.

7.1.1.4 Soils

Previous environmental investigations at the site indicated alternating horizons of silty clays, clays and silty sands to a depth of 8m below the surface. These conditions were quite consistent across the property.

There was no indication of bedrock, boulder or other inert materials in previous environmental investigations at the site, or during recent fall 2019, and spring and summer 2020 reconnaissance visits. Fill is present overlying native materials throughout the property.

7.1.1.5 Groundwater

Groundwater is the water found in the cracks and spaces in soil and rocks, generally at depth but can also be found at surface under flowing artesian conditions (e.g., springs). There are no artesian springs evident at the site. Ground water direction was reported in the 2017 Phase II Assessment (OCL, 2018) as being south, towards Halifax Harbour. Previous excavation activities at the property did not encounter groundwater.

The proposed undertaking will use existing municipal water and sewer services at the site, and will not be using groundwater on the property. There are no known groundwater users (for potable or non-potable purposes) in the vicinity of the project.

A groundwater quality monitoring program was developed for the Industrial Approval for the asphalt storage facility which includes annual groundwater sampling at 6 wells on the site. Groundwater will be analysed for benzene, toluene, ethylbenzene and total xylenes (BTEX), total petroleum hydrocarbons and polycyclic aromatic hydrocarbons. To date, no impacts to groundwater have been identified.

7.1.1.6 Surface Water Features

The Halifax Harbour (Atlantic Ocean marine environment) borders the site to the south. There are no defined freshwater waterbodies, watercourses, wetlands or other surface water features located at the subject property. The nearest freshwater features include Morris Lake and Russell Lake, located upgradient of the property approximately 2.6 km to the north and northwest. No surface water from the active part of the site is captured within this undefined channel.

The existing asphalt storage facility has a stormwater management plan in place to mitigate flow volumes from the site to Halifax Harbour. Runoff is contained on-site, including all loading and unloading areas, by a perimeter berm and ditching. Site grading and ditching directs runoff from all areas, including loading and unloading, towards a French drain (consisting of a stone-filled infiltration trench and perforated pipe) to promote infiltration and intercept and remove total suspended solids (TSS) from runoff. A First Defence® High Capacity FD-6HC model (equivalent to Stormceptor EFO6 model) oil-water separator is in place downstream of the perforated pipe to allow for separation of solids and other pollutants prior to discharge.

The stormwater collected at the site is monitored for both quality and quantity in accordance with the Industrial Approval for the asphalt storage facility. Surface water monitoring focusses on water sampling for Total Suspended Solids, and is undertaken on a quarterly basis (one set in each of December to February, March to May, June to August, and September to November with no one set within one month of previous sampling).

7.1.1.7 Birds

The vast majority of bird species found in Nova Scotia are migratory and either breed in the province during the summer months, or pass through it during the spring and fall migratory periods. Relevant information regarding bird species in the area of the project was derived from several secondary sources, including existing online databases and previous local reports, as well as existing knowledge of the subject area by a Dillon avian species specialist.

To provide information on potential occurrences of rare and endangered bird species, and unique or sensitive bird habitats potentially existing within and/or near the project, a review of the following existing data and information sources was conducted:

- Listed species by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC);
- Listed species under the federal *Species at Risk Act* (SARA);
- Listed species under the Nova Scotia *Endangered Species Act* (NS ESA); and
- Species ranked as 'S3' or rarer by the Atlantic Canada Conservation Data Centre (ACCDC).

Other available background information sources and mapping reviewed to identify and assess wildlife and wildlife habitat presence at the Project location included:

- Ecological Reserves in the Maritimes;
- Environmentally Sensitive Areas database;
- Important Bird Areas of Canada;
- Federally-designated Migratory Bird Sanctuaries; and
- The Second Atlas of Breeding Birds of the Maritime Provinces.

The nearest Important Bird Areas (IBAs) are the Musquodoboit Region (NS014) and the Grassy Island Complex (NS026). The Musquodoboit Region IBA is located approximately 30 km to the east. It is

described as a tidal inlet, largely enclosed by a barrier sand beach and many wooded islands. The area is important for large congregations of migrating Canada geese (*Branta Canadensis*) and American black ducks (*Anas rubripes*). The Grassy Island Complex IBA, as the name suggests, represents three islands within Mahone Bay and St. Margaret's Bay, the closest of which is located approximately 33 km to the northwest of the project. These three islands, Grassy Island, Big Tancook and Flat Island, are important because they have regularly supported nesting Roseate Terns (*Sterna dougallii*), which are listed as Endangered both federally under the *Species-at Risk Act* (SARA) and provincially under the Nova Scotia *Endangered Species Act* (NSESA).

A list of species identified within the region and potentially present in the vicinity of the project, as well as an assessment of potential to occur at the site and potential interactions and mitigation is provided in **Appendix F**. Although unlikely given the predominantly cleared, graded, and developed nature of the subject property, if species at risk birds are encountered, contact will be made to a Species at Risk Biologist at Nova Scotia Department of Lands and Forestry to discuss immediate actions and future mitigations.

7.1.1.8 Marine Habitat Species

The Halifax Harbour is immediately adjacent the project area. Marine species present in the Halifax Harbour reflect the industrial nature of the harbour and presence of mobile species from surrounding environments. Phytoplankton (small algae/plants within the water column) and zooplankton (small animals within the water column) provide a source of food for other organisms and vary naturally in concentrations based on seasonal conditions. Benthic (bottom dwelling) organisms typically reflect the bottom type (substrate). Bottom animals typical of soft sediments such as within the Halifax Harbour include; worms (marine polychaetes), small shellfish (bivalves) and amphipods. In areas consisting of harder substrate, starfish, crabs, sea urchins, mussels and lobsters are more likely.

Marine fish known to occur in the Halifax Harbour include cod (*Gadus morhua*), herring (*Clupea harengus*), haddock (*Melanogrammus aeglefinus*), pollock (*Pollachius virens*), sculpin (various species), flounder (various species) and mackerel (*Scomber scombrus*). Several marine mammals are also occasionally present in the harbour including porpoises, seals, and occasional whale species. Additional Species at Risk potentially occurring within 20 km of the project site in adjacent marine habitat (https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html) include fin whale (*Balaenoptera physalus*), blue whale (*Balaenoptera musculus*), northern wolffish (*Anarhichas denticulatus*), North Atlantic right whale (*Eubalaena glacialis*), leatherback sea turtle (*Dermochelys coriacea*) and white shark (*Carcharodon carcharias*). No critical habitat for these species is identified within this 20 km^2 area.

A variety of seabirds may use the harbour waters. The most likely users are gulls, cormorants and waterfowl (for additional information on birds see Section 7.1.1.7 above).

There are no marine discharges anticipated as part of the project.

7.1.1.9 Cultural/Historical Features

The subject property is not a Registered Heritage Property (municipal or provincial) and is not located in a Heritage District or Streetscape (OCL, 2018). No excavation is planned for the project, and as a result, encounters with cultural resources are not anticipated.

8.0 Environmental Assessment Methods and Scope

8.1 Scope of the Environmental Assessment

The proposed undertaking qualifies as a Class I undertaking in Schedule A of the Environmental Assessment Regulations under the Nova Scotia Environment Act. This EARD fulfills regulatory requirements of the EA registration process.

Consistent with the project components discussed in **Section 5.0**, the scope of the assessment covers:

- Construction and Commissioning; and
- Maintenance and Operation.

Decommissioning is anticipated to occur at least 25 years or more from commissioning and will be conducted in accordance with requirements at that time. Remediation of the site during the closure or decommissioning phase of the facility would include the removal of the storage tanks, piping, building and any other remaining structures allowing for the natural regrowth of the local flora. A Preliminary Closure and Reclamation Plan is presented in **Appendix K**.

8.1.1 Impact Evaluation/Effects Assessment Methods

During the environmental effects assessment, project-VEC (Valued Environmental Components) interactions are identified through an internal review process. The identification of potential interactions between the project and the VECs is undertaken in consideration of the nature of the project and its planned activities. Following an identification of project interactions with the environment, potential environmental effects in the absence of mitigation were reviewed to determine if an interaction between the project and the VEC could occur. Additionally, accidents and malfunctions were considered separately in **Section 10.0**.

Following the identification of Project-VEC interactions, effects that may occur as a result of the interactions are predicted and proposed mitigation is outlined. Effects were assessed assuming that standard industry design/mitigation practices will be implemented (as outlined throughout this EARD). A summary of the assessment for the VEC is provided, leading to an overall conclusion in respect of the effects of the project on the VEC. The significance of residual environmental effects is then determined.

8.1.2 Selection of Valued Components

The selection of Valued Environmental Components (VECs) was based on input from the Proponent, and regulatory agencies, the professional judgment of Dillon, and the potential interactions between the proposed project and the surrounding physical and ecological environment. Although specific concerns

have not been identified by the public or Indigenous peoples or other stakeholders prior to the EA registration, the assessment addresses those items typically considered for a project of this nature. It is also noted that a Complaint Resolution Plan will be in place at the facility to address any concerns received about the Project, and all documentation will be maintained at the on-site office. A draft Plan is presented in **Appendix L**.

Identification and scoping of each applicable VECs is detailed in **Table 4** in **Section 9.2** below.

9.0 Assessment of the Environmental Interactions with the Project

This section covers identification of the project VECs and assesses potential interactions, potential effects, proposed mitigation and net effects for each identified interaction.

9.1 Project VECS

Table 3 below provides a screening of VECs to identify for the project.

9.2 Project Interactions with the Environment

This initial screening (i.e., project interaction matrix) assists in determining if an interaction occurs between the activities being carried out in each phase of the proposed project and the VEC. A qualitative rating system was used to evaluate the potential for interactions between the project and the environment. One of the following two ratings was prescribed for each individual VEC:

- An interaction between the project and the environment could occur (which is identified with a checkmark in the matrix below); or
- No interaction occurs between the project and the environment.

Based on the description of project phases (refer to **Section 5.0**), the general environmental setting of the area, and the scope of the EA (refer to **Section 8.0**), the potential interactions between the project and the environment are summarized in **Table 4** below. Note that this table does not include potential interactions that may occur as a result of accidents, malfunctions or unplanned events (refer to **Section 10.0**).

Table 4: Project VEC Scoping

Component	Scoping	Valued Environmental Component (VEC)		
		Yes	No	Rational
Physical Environment				
Geology	The proposed project is not anticipated to have interactions with or effects on the site's current geology. There will be no disturbance to the substrate (fill) or bedrock as a result of this undertaking		X	Not a VEC; no anticipated potential interactions with or effects on geology.
Surface Water Resources (Marine)	The proposed project is not anticipated to interact with surface water resources (marine). Treated water will be discharged to the municipal sanitary sewer under approval by Halifax Water. Primary and secondary containment measures of the proposed facility are highlighted throughout **Section 5.0**.		X	Not a VEC; no anticipated potential interaction with marine environment surface water through storm drainage system, as well as relative location to Halifax Harbour; potential effects on surface water quality.
Surface Water Resources (Freshwater)	The proposed project could potentially interact with surface water resources (freshwater runoff) in the event of accidental leakage or spill during vehicle/truck loading/unloading. Primary and secondary containment measures of the proposed facility are highlighted throughout **Section 5.0**.	X		VEC; potential interaction with freshwater surface water through stormwater drainage system; potential effects on surface water quality.
Groundwater Resources	The proposed project is not anticipated to have interactions with or effects on groundwater resources. In the unlikely event of leakage or spill during loading/unloading, primary and secondary containment areas inside and the facility and as part of the loading/unloading apron would contain the spill to a minimum 10% of the total storage volume. Potential for impacts are considered under surface water resources (freshwater). The project is located within an area serviced by HRM and groundwater users are not present.		X	Not a VEC; no anticipated potential interactions or effects between the Project and groundwater resources.
Atmospheric and Air Quality	The subject site is situated in a Harbour Oriented Industrial Usage zone (I-3) under the Dartmouth Municipal Strategy and Land Use By-law. The closest residential development is approximately 20 m to the northeast on Pleasant Street, opposite the entrance to the site on Pleasant Street. The waste oil recycling and water treatment activities are located well over 100 m from residential receptors, within a contained building structure. The proposed project is not anticipated to interact with or cause potential effects to the atmosphere or air quality.		X	Not a VEC; no anticipated potential interactions with or effects on the atmospheric environment or air quality.

Component	Scoping	Valued Environmental Component (VEC)		
		Yes	No	Rational
Biological Environment				
Flora and Fauna, including Birds	The proposed project will be located in a developed industrial area within an existing, approved facility, which is comprised of gravel and paved areas, existing buildings, and is surrounded by a chain link fence. As the proposed project will occur on the existing site, the majority of which is enclosed, and in an area that does not contain natural habitat environments or associated wildlife/priority species; there are no potential anticipated interactions or effects between the project and flora or fauna VEC. No vegetation clearing will be required. Therefore, no disturbances to flora or fauna are anticipated.		X	Not a VEC; no anticipated potential interactions with or effects on flora or fauna VEC.
Terrestrial and Aquatic Habitat (including wetlands)	The proposed project will be located within an existing, approved facility in a developed industrial area, which is comprised of gravel and paved areas, and existing buildings. As the proposed project will occur on an existing site where there is a void of natural terrestrial and aquatic habitat there are no potential anticipated interactions or effects between the project and terrestrial and aquatic habitats. Therefore, no disturbance to or loss of natural terrestrial and aquatic habitat is anticipated. Potential impacts to downgradient habitat is considered under surface water resources (freshwater).		X	Not a VEC; no anticipated potential interactions with or effects on terrestrial or aquatic habitat.
Socioeconomic Environment				
Archaeological and Cultural Resources	The proposed project will be located within in an existing facility in a highly disturbed and developed industrial area. The site is comprised of gravel and paved areas and existing buildings. Due to past disturbance at the site and extent of fill, the potential for interactions with Archaeological and Cultural Resources is not anticipated (OCL, 2018).		X	Not a VEC; no anticipated potential interactions with or effects on archaeological or cultural resources are anticipated.
Transportation	The existing Liquid Asphalt Storage Facility is expected to improve transport efficiency of General Liquids Canada Operations and the proposed waste oil recycling and water treatment project operated by Envirosoil Limited will see an average of two trucks per day entering the site from Pleasant Street. As such, no significant increase in truck traffic is expected regionally. Pleasant Street is located in a General Industrial Zone in Dartmouth where a minimal increase in truck traffic to this specific site through addition of the waste oil recycling and water treatment facility would have negligible impact.		X	Not a VEC; no significant increase in truck traffic is expected, and based on the industrial setting potential impacts are considered negligible.

Component	Scoping	Valued Environmental Component (VEC)		
		Yes	**No**	**Rational**
Noise	The existing Pleasant Street site is situated in a developed industrial area that is separated from the residential areas and sensitive land uses. The new proposed project is not anticipated to generate increased noise levels or differing sounds from existing activities at this location. Noise is commonly identified by the public as a concern with respect to proposed nearby undertakings. A baseline noise survey was completed for the site, and is included in **Appendix H** for reference.		X	Not a VEC; no significant increase or variation of noise levels during construction and operation compared to current operation noise levels.

Table 5: Project Interactions with Valued Components of the Environment

Valued Environmental Component (VEC)	Project Phases		
	Construction	Commissioning	Maintenance & Operation
Surface Water Resources (Freshwater)	✓	✓	✓

Legend: ✓ = Potential

Due to the limited scope of the project and its proposed location in an urban environment on and surrounded by existing industrial sites (past and present), surface water resources (freshwater) was the only VEC identified to have potential interaction with the proposed project activities. Surface water (freshwater) is considered from the perspective of water quality. The potential effects to surface water resources, described below, were determined and considered using knowledge of the existing infrastructure at the site, the specific proposed project activities, and Dillon's professional judgment. It is noted that storm water runoff from the site is directed to an existing French drain and First Defence® (Stormceptor equivalent), and a new oil-water separator will be installed in the area of new exterior storage tanks, as control and management features (as described in **Sections 5.1.1** and **5.8.4** and identified in the detailed drawing included in **Appendix A, Sheet No. 4**). The only other potential surface water collection point at the site is the drainage ditch located along the eastern extent of the property between the subject site and the neighbouring property owned by Cherubini's Metal Works.

9.2.1 Key Environmental Effects

9.2.1.1 Surface Water Resources (Freshwater)

Key interactions between the project and surface water with the potential to result in both direct and indirect adverse effects to surface water include:

- Degradation of surface water quality, specifically along the eastern ditch, from waste water or petroleum hydrocarbon spills or leakage during product transfer to trucks.

9.2.2 Mitigation

9.2.2.1 Surface Water Resources (Freshwater)

Key mitigation that is existing at the property or will be implemented during installation of process equipment and operations include:

- The existing facility is equipped with a containment berm (soil) around the property perimeter;
- Maintain existing buffer between project components and surface water and/or drainage feature, allowing for appropriate setback;
- Work will follow environmental management planning as outlined in **Section 3.3**;
- Any equipment used on site will arrive in a clean condition free of fluid leaks;
- All construction materials will be removed from site upon completion of project components;
- Detailed mitigation measures to be implemented if there is an unlikely occurrence of an accident, malfunction and unplanned event are presented in **Section. 10.0**;

- The storm water system includes a valve that will isolate flow from the storm system during loading and unloading activities. During loading and unloading the valve will always be closed in case of a leakage or spill to prevent contaminated water from flowing into the storm drainage system. If a spill were to occur, it would be cleaned up before the valve was opened again and water was allowed to flow into the drainage system;
- The indoor storage tanks are within an area with secondary containment, constructed with a containment berm and hydrocarbon resistant water stops;
- The proposed exterior infrastructure that will house the six new multi-use storage tanks will include a petroleum resistant secondary containment dike c/w liner, with oil-water separator system; and
- The facility will assign trained personnel for offloading who will be responsible for monitoring transfer of waste water and/or waste oil. If a transfer conduit or a connection leaks during a transfer operation, the responsible person will ensure all discharging operations are to be shut down immediately. Discharging operations will not to be resumed if doing so will interfere with the immediate, effective, and sustained response to the spill incident.

In addition to the freshwater resources, and in consideration of the marine environment, over 300 m of 18" fence boom (as well as all the necessary support equipment) will be located at the site and will be immediately available if a spill migrates beyond the site's perimeter berm. The pre-planned and expedient deployment of this boom would minimize the effects of any spills to the marine environment. This fence boom is already in place at the site as an emergency response measure for the existing operations at the site.

9.3 Summary

9.3.1 Surface Water Resources (Freshwater)

No in-water work is proposed as part of this undertaking, and there are no situations where there is a high probability of occurrences of long or extended-term residual environmental effects on surface water quality of high magnitude, or high probability of occurrences of an irreversible residual environmental effect of high magnitude. With the implementation of the identified mitigation measures (in addition to those outlined in **Section 10.0 -** Accidents, Malfunctions and Unplanned Events), the residual environmental effects of the project on surface water during all phases of the project are rated not significant, with a high level of confidence. Given the lack of substantive interaction of the project with surface water, the high level of confidence of the significance prediction, and the implementation of known mitigation that is effective at preventing environmental effects to surface water, no follow-up measures are proposed nor required to verify the environmental effects predictions or the effectiveness of mitigation, beyond compliance monitoring. It is noted that a detailed and NSE approved and regulated surface water (and groundwater) monitoring program is currently active at the site for the existing operations.

10.0 Accidents, Malfunctions and Unplanned Events

This section identifies accidents, malfunctions, or unplanned events that could occur during any phase of the proposed project. The assessment focuses on events that are considered credible based on the project description and the experience of the assessment team in evaluating similar projects.

Contingency planning is a key component of Envirosoil's approach to its existing operations. Envirosoil has developed detailed operational procedures to guide its everyday operations, and has developed contingency and emergency response procedures to quickly process upsets or abnormal operating conditions while limiting environmental effects. Various emergency scenarios will be incorporated in planning for operation of the project, including potential for failure and repair.

A key consideration is that the project will be situated at an existing industrial facility and, therefore, accidents or malfunctions related to earthworks during construction nor the discovery of heritage resources are not considered potential events as no ground disturbance will be undertaken. Another consideration is that the existing facility has been designed to contain and control potential accidental releases of petroleum hydrocarbon products.

As described in **Section 5.9**, Envirosoil will also develop an ERCP to address malfunctions or accidents that may occur during operation and maintenance activities. A Draft ERCP is provided in **Appendix H**, which will be finalized as part of the Part V NSE Industrial Approval process.

The proposed operation will have robust emergency response and contingency plans with respect to accidents and malfunctions. The implementation of spill containment measures and experienced staff with thorough training will significantly reduce the likelihood of accidents and malfunctions at this site. Spill containment measures will be implemented on areas where spills or leakages are likely to occur, specifically in the loading/unloading and processing areas. Fire, spill, and medical response plans will be in place to address potential accidents or malfunctions that may arise from operations, and will be amended during NSE's Industrial Approval application process to include any specifics necessary for effective management of the proposed operations.

10.1 Approach

The general approach to assessing the potential environmental effects of the selected potential accident, malfunction, or unplanned event scenarios involves the following:

- describing the potential accident, malfunction, or unplanned event;
- considering if the potential accident, malfunction, or unplanned event could occur during the life of the project, and during which phase(s) or activity(ies);

- describing the project planning and safeguards established to minimize the potential for such occurrences to happen;
- consideration of the contingency or emergency response procedures applicable to the event; and
- in consideration of the above, assessing the residual environmental effects of accidents, malfunctions, and unplanned events on surface water or other features, and determining the significance of the potential residual environmental effects of these accidents, malfunctions, or unplanned events (and their likelihood of occurrence, as applicable).

10.2 Description of Potential Credible Accidents, Malfunctions, and Unplanned Events

Based on the nature of the project, the study team's knowledge of the environment within which the project is located, as well as the experience of the Proponent, the following credible accidents, malfunctions, and unplanned events have been selected for this assessment, and are described in greater detail in the following sections.

10.2.1 Accidental Release of a Hazardous Material

An accidental release of fuel or other liquid hazardous materials (e.g., petroleum, oil, lubricants - POL) used in vehicles or equipment on-site may occur during refuelling of machinery or trucks as a result of human error or equipment malfunction during construction activities. During operation of the facility, there is potential for release of chemicals used in operations as well. Such a spill may contaminate soils and groundwater and, through runoff, contaminate surface water resources.

10.2.2 Accidental Release of Waste Oil and Petroleum Hydrocarbons

An accidental release of waste oil, untreated waste water and/or petroleum hydrocarbons could occur at the transfer locations or within the processing area, during the operation and maintenance phase of the project. An accidental release may be the result of equipment failure, human error, or material failure. A release of untreated waste water or petroleum hydrocarbons from the transfer areas or process area could affect soil or water quality (surface water) if not contained.

An accident or malfunction of this nature would be limited to the operation and maintenance phase of the project.

10.2.3 Vehicle Accident

A vehicle accident is possible during all phases of the project. A vehicle accident includes a potential collision with other vehicles, pedestrians, wildlife, or structures/objects, and potentially poses a risk to the health and safety of workers, the public, or wildlife and potential for damage to infrastructure. A fire or fuel spill could also occur as a consequence of a vehicle collision, compounding the initial effects by potentially threatening surface water, groundwater, soils and other environmental features.

A vehicle accident would be most likely to occur during the construction/installation phase of the project, as transportation during typical operations is limited to employees going to/from the facility, and delivery of waste water and waste petroleum hydrocarbons at the site.

10.3 Potential Environmental Effects from Accidents, Malfunctions, and Unplanned Events

This section assesses the environmental effects of each of the credible accidents, malfunctions, and any unplanned event identified in the above section, and identifies mitigation measures to address the potential residual environmental effects. The significance of potential residual environmental effects following the implementation of mitigation or consideration of emergency or contingency response procedures is also discussed.

10.3.1 Accidental Release of Hazardous Materials

The accidental release of a hazardous material through a spill could affect primarily surface water resources, groundwater, soils and air quality on a temporary and localized basis. Untreated waste water or fuel spills may enter a waterbody potentially affecting water quality and fish and their habitat, with the extent of effects depending upon the quantity released.

10.3.1.1 Mitigation

- Key mitigation to prevent an accidental release of a hazardous material is described in **Section 5.8** – Standard Mitigation Measures.

10.3.1.2 Potential Residual Environmental Effects

With spill containment provided during operation and maintenance, and careful implementation of best practices, the risk of spills resulting during both construction and operation and maintenance phases of the project is expected to be low. The risk of contamination from spills and leaks during the operation and maintenance phase will be reduced further by preventive measures, contingency planning and spill response and mitigation. Based on the project's design, and with the implementation of mitigation measures, contingency and emergency response procedures, and best practices, the potential residual environmental effects of an accidental release of a hazardous material during all phases of the project are not significant, with a high level of confidence.

10.3.2 Accidental Release of Untreated Waste Water and/or Petroleum Hydrocarbons

An accidental release of untreated waste water and/or petroleum hydrocarbons could occur at the transfer locations or the processing area during the operation and maintenance phase of the project. An accidental release of untreated wastewater and/or petroleum hydrocarbons may be the result of equipment failure, human error, or material failure. A release of untreated waste water and/or waste petroleum hydrocarbons from the transfer locations or processing area could affect soil or water quality (groundwater or surface water).

An accident or malfunction of this nature could occur during construction or operation and maintenance phases of the project.

10.3.2.1 Mitigation

Key mitigation to prevent an accidental release of untreated waste water and/or waste petroleum hydrocarbons includes:

- Transfer of waste water and waste oil will only occur on a containment pad;
- Trained operators will control the transfer of material form delivery trucks via pumps;
- Receiving tanks will be equipped with high-level float which will terminate pumping if the high-level condition is reached to eliminate the potential for overfill;
- Operation of the facility will include regular inspection of all piping, hoses and tanks for leaks or potential points where a leak could occur, such as fractures and breaks;
- Storage tanks will be inspected, repaired and reconfigured in accordance with API 653 – Tank Inspection, Repair, Alteration and Reconstruction;
- External tanks are fully lined and have a dike capable of holding 100% of the largest tanks capacity + 10% of each additional tank;
- Surface water flows are directed to a French drain system and a Stormceptor that can be monitored and gated closed, if required;
- The project area is fully secured by fencing reducing the risk of intentional vandalism to the facility and its components; and
- Over 300 m of 18” fence boom (as well as all the necessary support equipment) will be located at the site (consistent with the contingency measure for the existing asphalt storage facility at the site) and will be immediately available if required in the event of a spill. The pre-planned and expedient deployment of this boom would minimize the effects of any spills to the marine environment.

Facility operations personnel will be given adequate training and orientation to allow them to perform their jobs safely and to respond to minor spills and leaks. Employees will be informed of potential hazards and safe operating procedures and will be familiar with the facility’s Site Safety Plan and Safety Data Sheets (SDSs) for products used and stored at the site.

It is also noted that the berm surrounding the site is designed to contain releases from the processing and transfer areas. If released to the environment, untreated waste water and /or waste petroleum hydrocarbons will be contained on site.

Other key mitigation to prevent an accidental release of waste water and/or petroleum hydrocarbons is described in **Section 5.8** – Standard Mitigation Measures.

10.3.2.2 Potential Residual Environmental Effects

Regular inspection of all components in industrial facilities is a standard component of a management system (e.g., SOPs) to prevent costly and potentially damaging leaks. Identifying potential issues early though an inspection plan allows for repairs or replacement of problem sections before a release occurs. Through the implementation of an inspection plan, the potential residual environmental effects of an accidental release of waste water and/or petroleum hydrocarbons to the environment during all phases of the project are not significant, with a high level of confidence.

10.3.3 Vehicle Accident

A vehicle accident is possible during all phases of the project. A vehicle accident includes a potential collision with other vehicles, pedestrians, wildlife, or structures/objects, and potentially poses a risk to the health and safety of workers, the public, or wildlife and potential for damage to infrastructure. A fire or fuel spill could also occur as a consequence of a vehicle collision, compounding the initial effects by potentially threatening surface water, groundwater, soils and other environmental features.

A vehicle accident would be most likely to occur during the installation/construction phase of the project, as transportation during operations is limited to employees going to/from the facility, and vehicles engaged in delivery or receipt of material to and from the facility.

10.3.3.1 Mitigation

Key mitigation to prevent a vehicle accident includes:

- Vehicles travelling to and from the Project site will adhere to posted speed limits, weight restrictions, and other traffic safety rules, and drivers will be expected to adjust their speed to conditions accordingly;
- Safety zones with posted speeds will be identified throughout the Project site;
- Pedestrian zones will be identified to allow workers access throughout the work area on foot;
- A Project-specific Emergency Response and Contingency Plan (ERCP) with defined contingency and emergency response procedures in the event of a vehicle accident at the facility will be developed and implemented; and
- Effective road design and motor vehicle regulations will minimize the potential for accidents involving vehicles engaged in delivery or receipt of material to and from the facility.

10.3.3.2 Potential Residual Environmental Effects

Though vehicle accidents may occur with any project, particular attention will be paid to conducting project operations in a careful and safe manner so as to reduce the risk of a serious vehicle accident. With the implementation of mitigation measures, contingency and emergency response procedures, and best practices, the potential residual environmental effects of a vehicle accident on the environment during all phases of the project are not significant, with a high level of confidence.

10.4 Summary

The potential occurrence of accidents, malfunctions, or unplanned events has been considered as part of the project design. The potential for accidents, malfunctions, or unplanned events to occur will be carefully considered during planning for the project, and measures will be developed and implemented such that their potential is reduced. Safeguards will be implemented throughout the construction, operation and maintenance, and decommissioning phases. Contingency and emergency response plans will be developed before any work is initiated on the proposed project so that incidents can be managed effectively. By ensuring that all aspects of the project adhere to applicable codes and standards and implementing the mitigative measures outlined above, the potential for adverse environmental effects arising from accidents, malfunctions, or unplanned events is greatly reduced.

Given the nature of the project and the credible accident and malfunction scenarios, their low likelihood of occurrence, and proposed mitigation and contingency response planning, the potential residual environmental effects of all identified project-related accidents, malfunctions, and unplanned events on the all affected VECs (surface water resources) as well as other environmental features assessed above during all phases of the project are rated not significant, with a moderate to high degree of confidence.

11.0 Effects of the Environment on the Project

The project could be exposed to extremes in temperature which will be taken into consideration in the design of facility components. However, the vast majority of project components will be housed within a climate controlled building. In exterior areas, allowances will be made for build-up of snow around exterior fixtures (e.g., Multi-use oil tanks) and associated facilities, and for areas to dispose of snow ploughed from the access road and parking lot. Significant rainfall events were considered during the development of the surface water infrastructure plan for the existing Liquid Asphalt Storage Facility at the site, and the design of the existing facility includes measures to minimize erosion and control water movement and sedimentation. Project components are also located well above the high water mark, and will not be impacted by sea level rise as a result of climate change.

12.0 Cumulative Impacts

No significant cumulative impacts (i.e., impacts arising from the project in combination with ongoing site activities or foreseen activities) are envisioned for the project. The project itself occupies a small footprint at a large, existing facility in an area previously disturbed by industrial activity and surrounded by industrial land uses. The land adjacent to the site is also unlikely to be further developed for other uses, and any future expansion to the north at the site is restricted by the CN Railway corridor.

It is anticipated that there will be an increase in vehicle traffic at the site, projected to increase by an additional one to two trucks/vehicles per day on average. This will result in a very minor increase in vehicle/truck traffic levels along Pleasant Street, which will have a very minimal impact on the local socio-economic environment. Similarly, this will slightly increase the likelihood of vehicle accidents at both the site and in the general area of the project.

13.0 References

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General Liquids Canada Ltd. 2010. Liquid Asphalt Storage Terminal, Waverly, NS. Available at: https://novascotia.ca/nse/ea/GLC.liquid.asphalt.storage.terminal.waverley.asp: Accessed on November 23, 2020.

Golder Associates Ltd. 2018. Phase II Environmental Site Assessment, South End Surplus Property, 600 Pleasant Street, Dartmouth, Nova Scotia. Prepared for Imperial Oil Limited, Dartmouth, NS.

Nova Scotia Department of Lands and Forestry. 2020. Geology Maps of Nova Scotia. Available at: https://novascotia.ca/natr/meb/geoscience-online/maps-interactive.asp. Accessed on November 24, 2020.

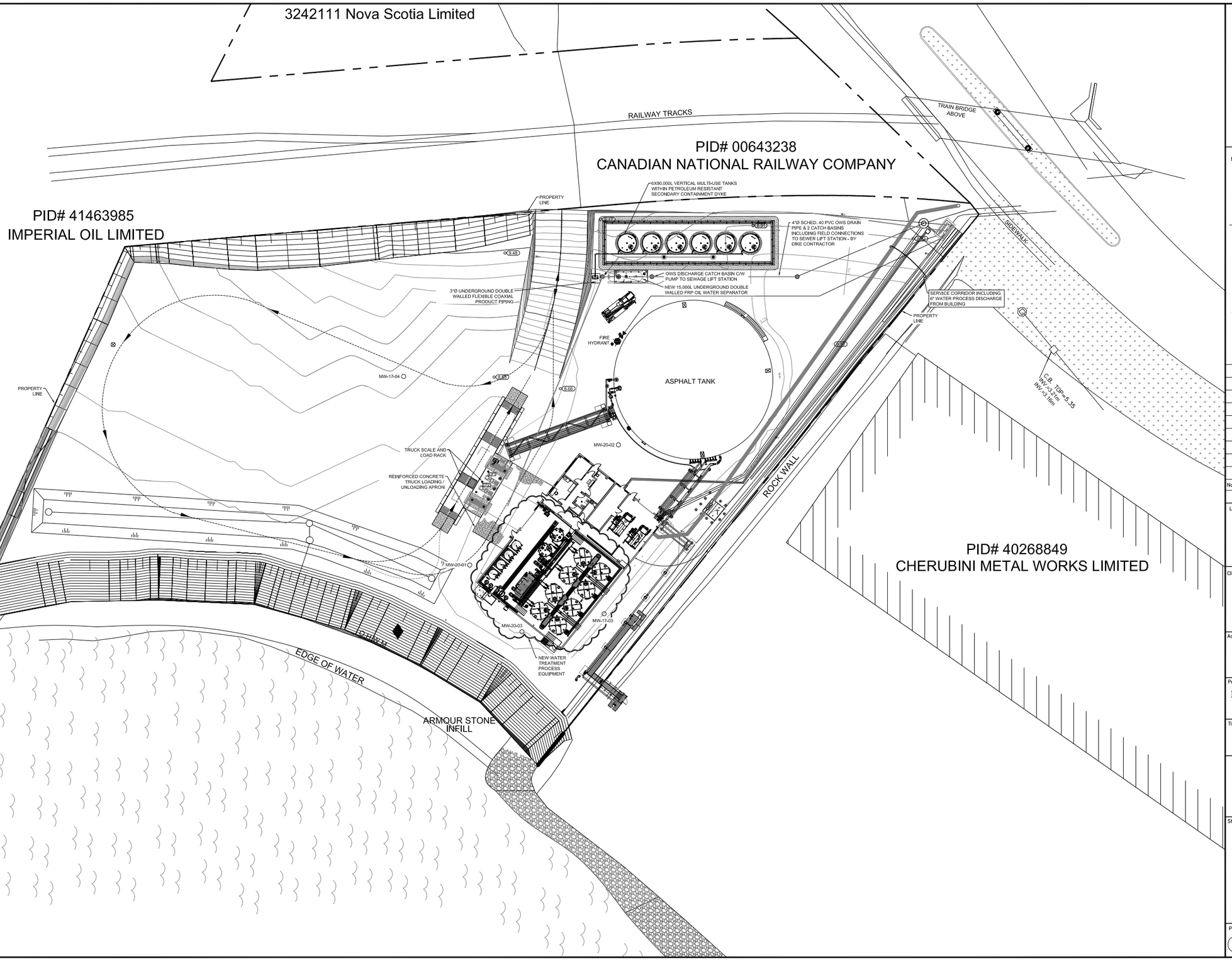
OCL Group Environmental Management Consultants. 2018. Phase I Environmental Site Assessment "Lot 1" (Subdivision of 600 Pleasant Street, PID 00260711) and "Lot 2" (Subdivision of 700 Pleasant Street, PID 00249490) Dartmouth, Halifax Regional Municipality, Nova Scotia. Prepared for Municipal Group of Companies.

Stantec Consulting Ltd. 2010. Test Pit Investigation- General Chemical Canada Ltd. – 750 Pleasant St. Dartmouth, Nova Scotia. Prepared for Municipal Enterprises, Bedford, NS.

WSP Canada Inc. 26 October 2017. Plan of Survey, Lot 1, being a subdivision of PID 00260711, lands conveyed to Imperial Oil Limited and a survey of Lot 2, being a subdivision of PID 00249490, lands conveyed to Imperial Oil Ltd., Pleasant Street, Dartmouth, County of Halifax, Province of Nova Scotia.

Appendix A

Site and Facility Plans & Drawings



ISSUE

	FOR	BY	DATE
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■	– FOR APPROVAL	TJG	MAR 30, 2021
☐	– FOR TENDER		
☐	– FOR CONSTRUCTION		
☐	– FOR AS BUILT		

NOTES:

- INSTALLER TO VERIFY LOCATION OF BUILDING AND PROPERTY LINES BEFORE BEGINNING WORK
- INSTALLER TO CHECK SITE FOR EXISTING SITE SERVICES SUCH AS: WATER AND SEWER LINES, ELECTRICAL LINES, ETC... PRIOR TO ANY EXCAVATION.
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- INSTALLATION WORK TO BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE CODES.
- THIS PETROLEUM STORAGE SYSTEM CONFORMS TO ALL APPLICABLE ULC REQUIREMENTS AND STANDARDS INCLUDING ULC–S601, "SHOP FABRICATED STEEL ABOVEGROUND VERTICAL TANKS FOR PETROLEUM PRODUCTS," AND API 650 "WELDED STEEL TANKS FOR OIL STORAGE", LATEST EDITION.
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- CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO COMMENCING WORK.
- ALL TANKS TO BE INSTALLED LEVEL

CONCRETE SPEC:

32MPa
5%–8% AIR
400MPa REBAR YIELD STRENGTH
80mm SLUMP

No.	DESCRIPTION	BY	DATE

REVISIONS

Logo: envirosoil ISO 14001 · ISO 9001

Client: ENVIROSOIL

Address: PLEASANT STREET
DARTMOUTH, NS

Project: NEW WASTE OIL RECYCLING & WASTE WATER TREATMENT FACILITY

Title: SITE PLAN

GALLAGHER TECHNICAL SERVICES LIMITED
22 DOUGLAS DRIVE
QUISPAMSIS, NB
E2G 1Y3
PHONE: 506 849 4116
FAX: 506 847 1070

Stamp:

DESIGN:
DRAWN:
CHECKED:
DATE: MAR 30, 2021
SCALE: 1" = 30'–0"
REV.: △

PROJECT NUMBER: GTS–1645

SHEET No. 1

WASTEWATER FROM FLOOR TRENCH #2

WASTEWATER FROM SUCTION HOSE / CATCH BASIN ETC

WASTEWATER FROM TRUCK UNLOADING

COARSE RIGID DUPLEX BASKET STRAINER

DUAL BAG FILTERS

MICROMOTION METER

COMP AIR TO TREATMENT AREA

ATM VENT

OILY WATER

CAMLOCK

RECOVERED OIL

DRAWN OFF WATER FOR FURTHER TREATMENT

DUAL BAG FILTERS

HOT OIL TO TREATER TANKS

HOT OIL BACK TO BOILER

BUNKER BUSTER FROM TOTE TO TREATER TANKS

CHEMICAL METERING PUMP

1500–2000LB SCRUBBER UNIT

MIXER MOTOR

VENT

TREATER TANK

MIXER

TREATER TANK BYPASS

RECOVERED OIL

TREATER TANK DRAWN OFF WATER FOR FURTHER TREATMENT

ATM VENT

PLC

100 MICROMOTION METER

RECOVERED OIL

CLEAN WATER

MICROMOTION METER

CLEAN OIL TO TRUCK SCALES

HOSE CONNECTION TO OILY WATER TANKS

HOSE CONNECTION TO OILY WATER TANKS

TO SANITARY

DISCHARGE TOTALIZER

TPH ANALYZER

TSS ANALYZER

ANALYZER BYPASS

TPH ANALYZER DISCHARGE DAY TANK

TREATMENT LOOP BACK TO TREATER TANKS

COMP AIR

GRAVITY DRAIN

OIL DAY TANK

OIL WATER SEPARATOR / DAF UNIT

MICRO BUBBLER

OIL WATER SEPARATOR BYPASS

6 UNIT BAG FILTER

POLYMER FROM TOTE TO PROCESS

POLYMER METERING PUMP

M

OPTIONAL ENHANCED TREATMENT

SECONDARY ENHANCED TREATMENT

6 UNIT BAG FILTER

EC BYPASS

STATIC MIXER

SCREW PRESS

SLUDGE TO DUMPSTER

GRAVITY DRAIN

SCREW PRESS BYPASS

HPV

CLAY FILTER

CARBON FILTER #1

CARBON FILTER #2

METALS FILTER

6 UNIT BAG FILTER

CLEAN WATER DAY TANK

METER

6 UNIT BAG FILTER

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CONCRETE SPEC:
32MPa
5%–8% AIR
400MPa REBAR YIELD STRENGTH
80mm SLUMP

No.	DESCRIPTION	BY	DATE

REVISIONS

Logo: envirosoil ISO 14001 • ISO 9001

Client: ENVIROSOIL

Address: PLEASANT STREET
DARTMOUTH, NS

Project: NEW WASTE OIL RECYCLING & WASTE WATER TREATMENT FACILITY

Title: SIMPLIFIED PROCESS FLOW DIAGRAM

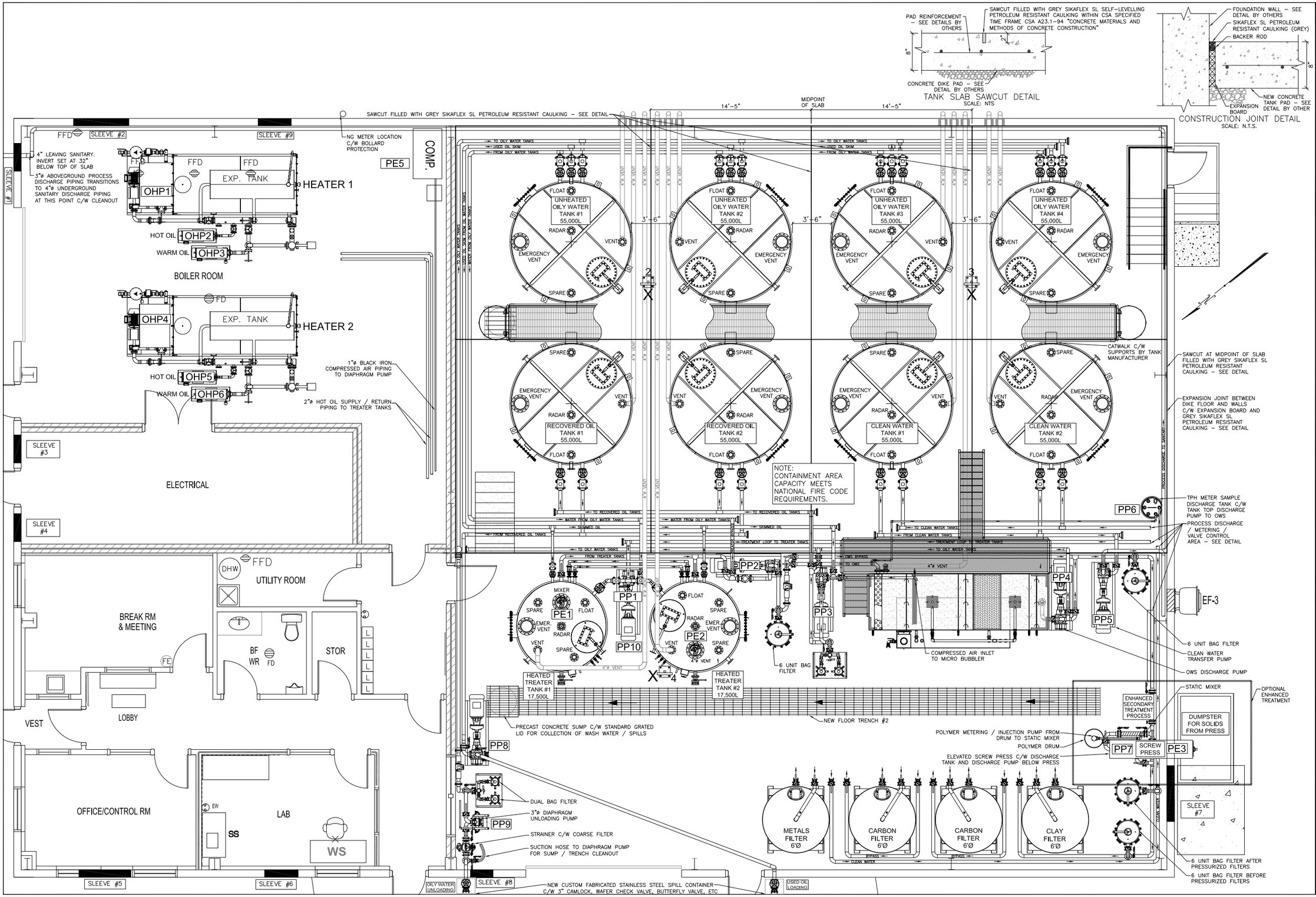
GALLAGHER TECHNICAL SERVICES LIMITED
22 DOUGLAS DRIVE
QUISPAMSIS, NB
E2G 1Y3
PHONE: 506 849 4116
FAX: 506 847 1070

Stamp:

DESIGN:
DRAWN:
CHECKED:
DATE: MAR 30, 2021
SCALE: 3/8" = 1'–0"
REV.: △

PROJECT NUMBER: GTS–1645

SHEET No. 2



PAD REINFORCEMENT – SEE DETAILS BY OTHERS

SAWCUT FILLED WITH GREY SIKAFLEX SL SELF-LEVELLING PETROLEUM RESISTANT CAULKING WITHIN CSA SPECIFIED TIME FRAME CSA A23.1-94 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION"

8"

CONCRETE DIKE PAD – SEE DETAIL BY OTHERS

TANK SLAB SAWCUT DETAIL
SCALE: NTS

FOUNDATION WALL – SEE DETAIL BY OTHERS

SIKAFLEX SL PETROLEUM RESISTANT CAULKING (GREY)

BACKER ROD

8"

EXPANSION BOARD

NEW CONCRETE TANK PAD – SEE DETAIL BY OTHER

CONSTRUCTION JOINT DETAIL
SCALE: N.T.S.

ISSUE

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CONCRETE SPEC:

32MPa
5%–8% AIR
400MPa REBAR YIELD STRENGTH
80mm SLUMP

No.	DESCRIPTION	BY	DATE

REVISIONS

Logo: envirosoil ISO 14001 · ISO 9001

Client: ENVIROSOIL

Address: PLEASANT STREET DARTMOUTH, NS

Project: NEW WASTE OIL RECYCLING & WASTE WATER TREATMENT FACILITY

Title: WATER TREATMENT SYSTEM BUILDING – GENERAL ARRANGEMENT

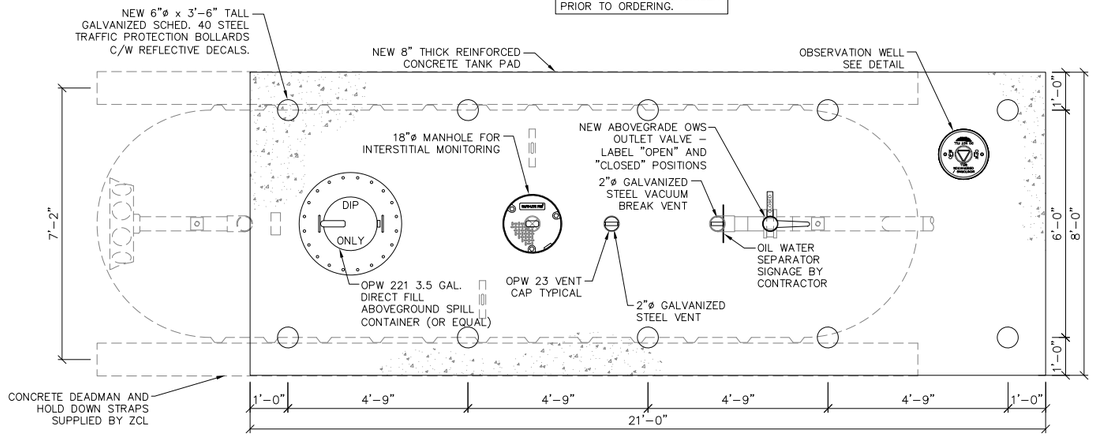
GALLAGHER TECHNICAL SERVICES LIMITED
22 DOUGLAS DRIVE
QUISPAMSIS, NB
E2G 1Y3
PHONE: 506 849 4116
FAX: 506 847 1070

Stamp:

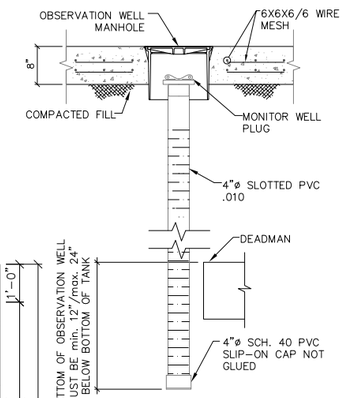
DESIGN:
DRAWN:
CHECKED:
DATE: MAR 30, 2021
SCALE: 1/4" = 1'–0"
REV.: △

PROJECT NUMBER: GTS–1645

SHEET No. 3



TANK TOP CONCRETE - PLAN VIEW



OBSERVATION WELL - DETAIL
SCALE: NTS

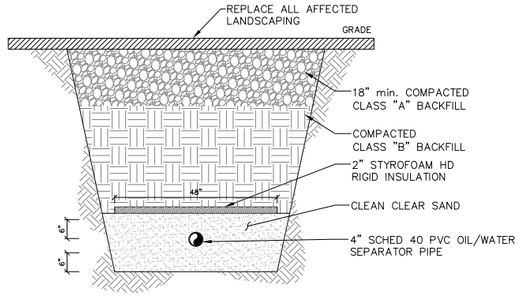
OBSERVATION WELL NOTES

1. (1) 4" DIA. PVC SLOTTED WELL SCREENS (MAX. SLOT .010") WILL BE INSTALLED AS REQUIRED BY LOCAL CODE. SLOTS WILL EXTEND TO WITHIN 24" BELOW GRADE.
2. EXTEND TANK NEST OBSERVATION WELL A MINIMUM OF 12" BELOW BOTTOM OF TANKS.
3. DO NOT PAINT INSIDE MANHOLE.
4. DO NOT GLUE REDUCERS, CAPS, OR COLLARS WITH PVC SOLVENT ADHESIVE.

NOTE:
EXCAVATION MUST BE SLOPED OR BENCHED TO WITHIN 4 ft OF THE BOTTOM OF THE EXCAVATION OR TRENCH WITH THE SLOPE OR BENCH NOT EXCEEDING 1 ft OF VERTICAL RISE TO EACH 1 ft OF HORIZONTAL RUN.

NOTE:
GEOTEXTILE TO FULLY LINE EXCAVATION, INCLUDING THE TOP OF THE TANKS ONCE 2 ft OF APPROVED BACKFILL HAS BEEN PLACED OVER TANK TOPS.

NOTE:
UNSTABLE SOILS AT BOTTOM OF EXCAVATION TO BE INSPECTED BY A GEOTECHNICAL ENGINEER FOR SUPERVISION AND INSTRUCTIONS TO ENSURE THE REQUIRED SOILS BEARING PRESSURE IS ACHIEVED.



PVC PIPE TRENCH DETAIL
SCALE: NTS

CLASS "A" GRAVEL	
SIEVE SIZE	PERCENT PASSING
1 1/2"	100
1 1/4"	95-100
3/4"	70-88
1/2"	55-78
3/8"	45-72
No. 4	30-57
No. 8	20-46
No.16	14-35
No.30	9-27
No.50	5-19
No.100	2-12
No.200	0-5

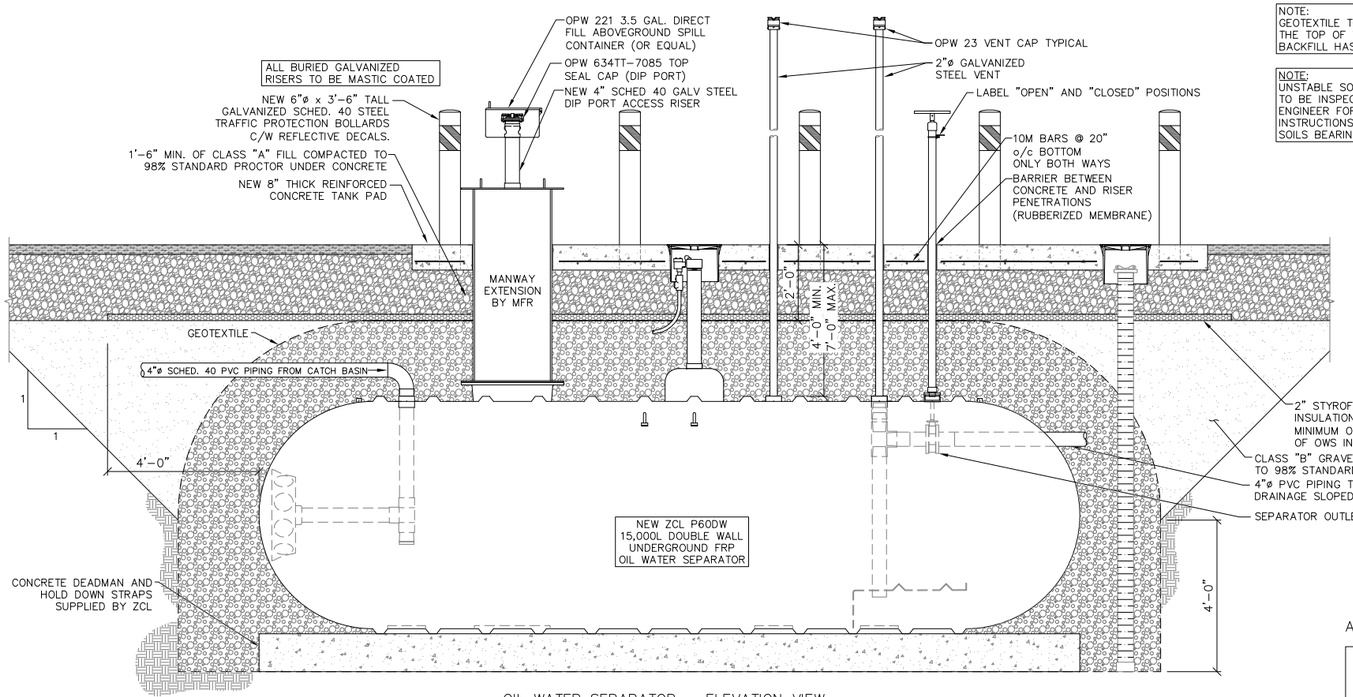
NOTE: CLASS "A" GRAVEL

CLASS "A" GRAVEL SHALL BE CRUSHED GRAVEL OR CRUSHED QUARRIED STONE OF HARD DURABLE PARTICLES FREE FROM SILT, CLAY, SLATE, FRIABLE PARTICLES, CEMENTATION, FROZEN MATERIAL, ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES.

CLASS "B" GRAVEL	
SIEVE SIZE	PERCENT PASSING
5"	100
4"	95-100
3"	82-100
2"	62-100
1"	39-100
3/4"	30-94
3/8"	22-80
No. 4	16-66
No. 8	12-55
No.16	9-44
No.50	4-25
No.200	0-5

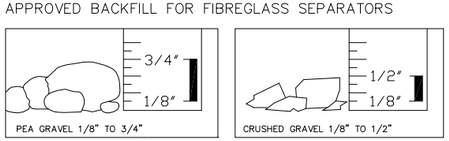
NOTE: CLASS "B" GRAVEL

FILL MATERIALS SHALL BE HARD, DURABLE PIT GRAVEL OR QUARRIED ROCK, FREE FROM SILT, CLAY, SLATE, FRIABLE PARTICLES, CEMENTATION, FROZEN MATERIAL, ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES.

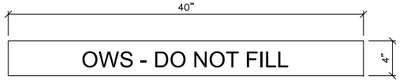


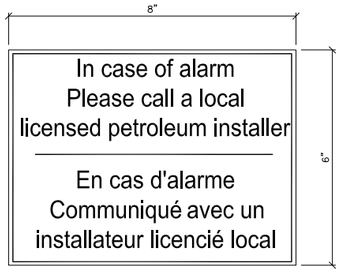
OIL WATER SEPARATOR - ELEVATION VIEW

APPROVED BACKFILL FOR FIBREGLASS SEPARATORS



NO PARTICLES LESS THAN 1/8" SIZE
SEE MANUFACTURES INSTRUCTIONS FOR ADDITIONAL DETAILS.



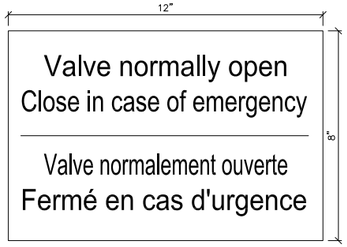


REQUIREMENTS:
MATERIAL: ALUMINUM OR COREX
SIZE: 8" X 6" (200mm X 150mm)
COLOURS: BLACK TEXT ON SILVER BACKGROUND
INSTALLATION INSTRUCTIONS: INSTALL NEAR OWS ELECTRONIC MONITORING PANEL.

ELECTRONIC MONITORING PANEL SIGNAGE
SCALE: NTS

REQUIREMENTS:
MATERIAL: DECAL
SIZE: 40" X 4" (1016mm X 100mm)
COLOURS: BLACK TEXT ON SILVER BACKGROUND
INSTALLATION INSTRUCTIONS: INSTALL AT ALL OIL WATER SEPARATORS. LOCATE ON DIP PORT SPILL CONTAINER.

OWS DIP PORT DECAL
SCALE: NTS



REQUIREMENTS:
MATERIAL: ALUMINUM OR COREX
SIZE: 12" X 8" (300mm X 200mm)
COLOURS: BLACK TEXT ON SILVER BACKGROUND
INSTALLATION INSTRUCTIONS: INSTALL NEAR EMERGENCY SHUT OFF VALVE OF OIL WATER SEPARATORS.

OWS EMERGENCY SHUT OFF VALVE SIGN
SCALE: NTS

ISSUE

	FOR	BY	DATE
☐	FOR REVIEW ONLY		
■	FOR APPROVAL	TJG	MAR 30, 2021
☐	FOR TENDER		
☐	FOR CONSTRUCTION		
☐	FOR AS BUILT		

NOTES:
- INSTALLER TO VERIFY LOCATION OF BUILDING AND PROPERTY LINES BEFORE BEGINNING WORK
- INSTALLER TO CHECK SITE FOR EXISTING SITE SERVICES SUCH AS: WATER AND SEWER LINES, ELECTRICAL LINES, ETC... PRIOR TO ANY EXCAVATION.
- ALL EQUIPMENT TO BE INSTALLED AND TESTED AS PER MANUFACTURES RECOMMENDATIONS
- INSTALLATION WORK TO BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE CODES.
- THIS PETROLEUM STORAGE SYSTEM CONFORMS TO ALL APPLICABLE ULC REQUIREMENTS AND STANDARDS INCLUDING ULC-S601, "SHOP FABRICATED STEEL ABOVEGROUND VERTICAL TANKS FOR PETROLEUM PRODUCTS," AND API 650 "WELDED STEEL TANKS FOR OIL STORAGE", LATEST EDITION.
- THIS DESIGN HAS ADDRESSED THE ISSUE OF POSSIBLE COLLECTION OF FLAMMABLE VAPOUR AND/OR LIQUID IN UNDERGROUND SUMPS.
- ALL WORK TO BE COMPLETED BY A PETROLEUM INSTALLER LICENSED BY THE PROVINCE OF NOVA SCOTIA.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO COMMENCING WORK.
- ALL TANKS TO BE INSTALLED LEVEL

CONCRETE SPEC:
32MPa
5%-8% AIR
400MPa REBAR YIELD STRENGTH
80mm SLUMP

PRELIMINARY

No.	DESCRIPTION	BY	DATE

REVISIONS

Logo: envirosoil ISO 14001 · ISO 9001

Client: ENVIROSOIL

Address: PLEASANT STREET DARTMOUTH, NS

Project: NEW WASTE OIL RECYCLING & WASTE WATER TREATMENT FACILITY

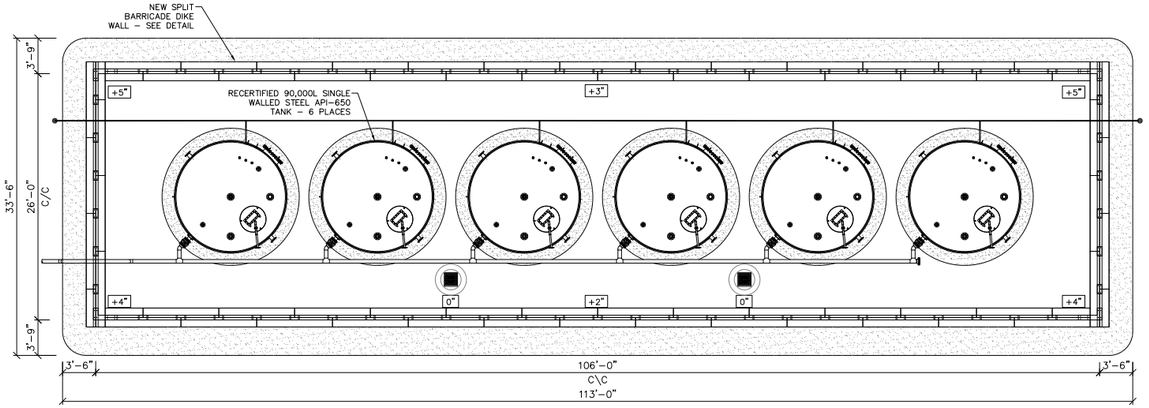
Title: UNDERGROUND OIL WATER SEPARATOR DETAILS

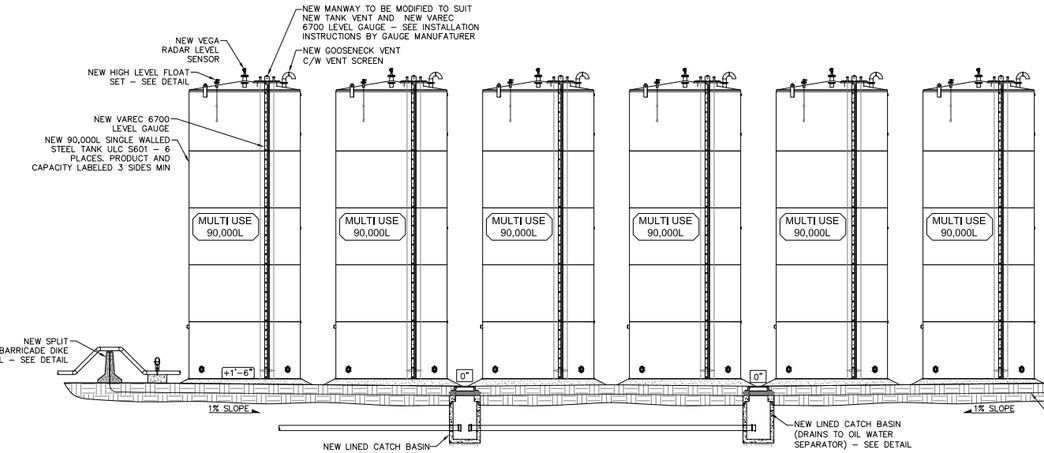
GALLAGHER TECHNICAL SERVICES LIMITED
22 DOUGLAS DRIVE
QUISPAMSIS, NB
E2G 1Y3
PHONE: 506 849 4116
FAX: 506 847 1070

Stamp:

DESIGN:
DRAWN:
CHECKED:
DATE: MAR 30, 2021
SCALE: 1/2" = 1'
REV.: 0

PROJECT NUMBER: GTS-1645
SHEET No. 4





TANK FARM – ELEVATION VIEW

GENERAL NOTES:

1. GROUND RESISTANCE SHALL BE LESS THAN 10 OHMS MEASURED IN DRY CONDITIONS.
2. IF THIS VALUE CANNOT BE OBTAINED, ADD ANOTHER GROUNDING ROD 6.2m AWAY.
3. IF WATER OR SEWER PIPES ARE NEARBY, IT WILL BE NECESSARY TO GROUND THEM TO THE SYSTEM.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LOCAL AND CANADIAN ELECTRICAL CODES.
5. BURY GROUND CONDUCTORS 300mm BELOW GRADE, TYPICAL OR AS NOTED. (ABOVE LINER INSIDE OF DYKE)
6. GROUND CONDUCTORS SHALL BE RUN CONTINUOUS THROUGH CONNECTIONS TO EQUIPMENT. DO NOT CUT AT CONNECTIONS. SPLICES WHERE ABSOLUTELY REQUIRED SHALL BE BURNDY SERVIT KS-23
7. COMPRESSION SPLICE BURNDY YS-L.
8. USE MANUFACTURERS RECOMMENDED COMPRESSION DIES WITH EACH CONNECTOR. ALL SURFACES OF CONNECTORS AND FITTINGS TO BE COATED WITH PENTROX COMPOUND.
9. ALL GROUNDING AND BONDING COPPER WIRES SHALL BE BURIED TO A MINIMUM OF 300mm. PROTECTION OF THE WIRES SHALL BE PROVIDED FROM THE BOTTOM OF TRENCHES TO ABOVE BALLAST AT TRACK SIDES AND WITHIN 150mm WHERE THEY RISE ABOVE GRADE LEVEL. FLEXIBLE SLEEVES SHALL BE PROVIDED TO THIS EFFECT TO AVOID ANY DAMAGE TO THE COPPER WIRES.
10. COPPER WIRE ELECTRICAL RESISTANCE:
    No.4 AWG, 0.8153 ohm/km
    No.6 AWG, 1.2966 ohm/km
11. "BURNDY" CATALOGUE NO. SHOWN FOR IDENTIFICATION ONLY. THERMOWELD, CALDWELD OR EQUAL CONNECTIONS MAY BE SUBSTITUTED ON NEW INSTALLATIONS.

NOTES

EXCAVATION AND FILL REQUIREMENTS

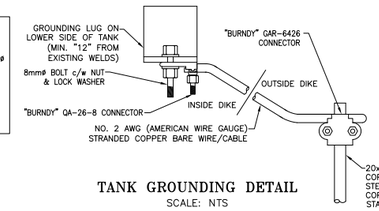
1. EXCAVATE TO THE REQUIRED LINES, LEVELS AND GRADES. DO NOT EXCAVATE OR DISTURB BEYOND THE REQUIRED LINES, LEVELS OR GRADES UNLESS REQUIRED BY THE ENGINEER.
2. WHERE THE REQUIRED LINES, LEVELS AND GRADES ARE NOT DEFINED, EXCAVATE AS NECESSARY FOR THE ITEMS WHICH ARE TO BE PLACED IN THE EXCAVATION.
3. DO NOT PLACE FILL UNTIL SUBGRADE HAS BEEN COMPACTED TO 95% OF MAX. DRY DENSITY BY MOD. PROCTOR.
4. DO NOT COVER ANY SUBGRADE OR WORK UNTIL AUTHORIZED BY THE ENGINEER,BUT OTHERWISE PLACE THE FILL AS SOON AS POSSIBLE.
5. REMOVE ALL DISTURBED MATERIAL AND ALL MATERIAL WHICH HAS BECOME UNSTABLE DUE TO INADEQUATE PROTECTION, DEWATERING AND/OR ANY OTHER REASON. REPLACE SUCH MATERIAL WITH GRANULAR "B" OR SUITABLE MATERIAL AS APPROVED BY THE ENGINEER IN 250mm LIFTS AND COMPACTED TO 95% OF MAX. DRY DENSITY BY MODIFIED PROCTOR.

LINER DETAILS

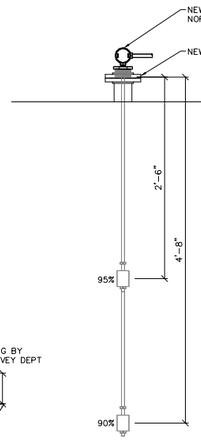
1. WHERE PIPES GO THROUGH THE DYKE, THE PERFORATION OF THE LINER MUST BE MADE BY USE OF THE SLEEVE SUPPLIED AS PART OF THE LINER.
2. THE LINER SHALL BE SEALED TO THE SUMP BASIN LOCATED AT THE LOW POINT OF THE TANK FARM FLOOR
3. GRANULAR "A" TO BE COMPACTED TO 100% BY MOD. PROCTOR.
4. EARTH DYKE AND SUB- BASE TO BE COMPACTED IN 150mm LIFTS, USING MECHANICAL EQUIPMENT, TO 100% STANDARD PROCTOR DRY DENSITY.
5. SLOPE LINER FROM CORNERS OF DYKE WALL TO SUMP.

NOTES:

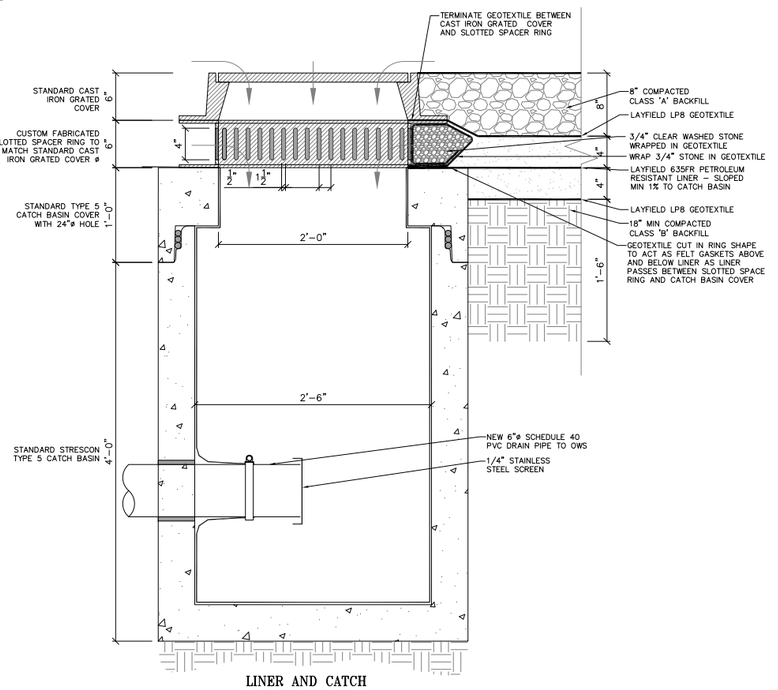
1. WHEN TANK TO GROUND RESISTANCE IS GREATER THAN 10 OHMS, USE 2 GROUND RODS ON OPPOSITE SIDES FOR TANKS OF 30.5m ø OR LESS. IF MORE THAN 30.5m ø USE 3 GROUND RODS.
2. WHEN SAND-BLASTING A TANK, MAKE SURE THE SANDER AND SURFACE TO BE SANDED ARE BONDED TOGETHER.
3. RUN ALL GROUND WIRE BENEATH TANK FARM FLOOR SURFACE (GRAVEL OR CONCRETE), BUT ABOVE LINER.
4. DO NOT INSTALL GROUND ROD INSIDE DYKE AREA



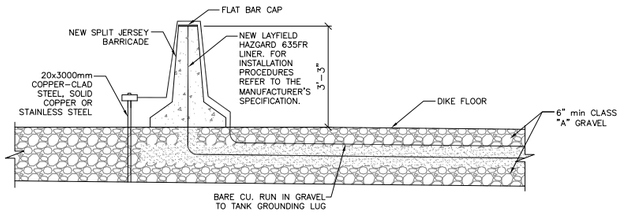
TANK GROUNDING DETAIL
SCALE: NTS



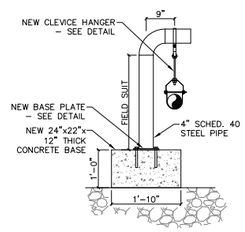
HIGH LEVEL FLOAT SWITCH – DETAIL
SCALE: NTS



LINER AND CATCH BASIN DETAIL
SCALE: NTS



DIKE WALL DETAIL
SCALE: NTS



PIPE SUPPORT DETAIL
SCALE: NTS

CLASS "A" GRAVEL	
SIEVE SIZE	PERCENT PASSING
1 1/2"	100
1 1/4"	95–100
3/4"	70–88
1/2"	55–78
3/8"	45–72
No. 4	30–57
No. 8	20–46
No.16	14–35
No.30	9–27
No.50	5–19
No.100	2–12
No.200	0–5

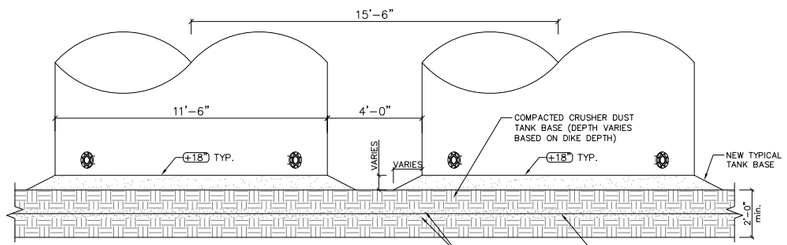
NOTE: CLASS "A" GRAVEL

CLASS "A" GRAVEL SHALL BE CRUSHED GRAVEL OR CRUSHED QUARRIED STONE OF HARD DURABLE PARTICLES FREE FROM SILT, CLAY, SLATE, FRIABLE PARTICLES, CEMENTATION, FROZEN MATERIAL, ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES.

CLASS "B" GRAVEL	
SIEVE SIZE	PERCENT PASSING
5"	100
4"	95–100
3"	82–100
2"	62–100
1"	39–100
3/4"	30–94
3/8"	22–80
No. 4	16–66
No. 8	12–55
No.16	9–44
No.50	4–25
No.200	0–5

NOTE: CLASS "B" GRAVEL

FILL MATERIALS SHALL BE HARD, DURABLE PIT GRAVEL OR QUARRIED ROCK, FREE FROM SILT, CLAY, SLATE, FRIABLE PARTICLES, CEMENTATION, FROZEN MATERIAL, ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES.



TYPICAL TANK BASE DETAIL
SCALE: NTS

NOTE:
ELEVATIONS SHOWN ARE RELATIVE TO EACH OTHER ONLY AND ARE NOT INTENDED TO RELATE TO ANY OTHER ELEVATIONS THROUGH THE DRAWING SET

NOTE:
THE THICKNESS OF CRUSHER DUST BACKFILL UNDER THE TANKS INCREASES AS GROUND SLOPES DOWN TOWARDS CATCH BASIN (TO KEEP TANK BOTTOM ELEVATIONS EQUAL).

NOTE:
BONDING CONNECTIONS SHALL BE ELECTRICALLY AND MECHANICALLY FIRM. JACKS, PLUGS, CLAMPS AND CONNECTING POINTS SHALL BE CLEAN UNPAINTED METAL TO PROVIDE POSITIVE ELECTRICAL CONNECTION.

DIKE CAPACITY CALCULATION:

–NFC REQUIRES A DIKE BE ABLE TO HOLD 100% OF THE LARGEST TANK + 10% OF EACH ADDITIONAL TANK.

VOLUME REQUIRED = 100% OF LARGEST TANK + 10% OF EACH ADDITIONAL TANK
= 90,000L + 7(9,000L)
= 90,000L + 63,000L
= 153,000L (5,404 ft³)

–CONSERVATIVELY, REMOVE FOOTPRINT OF ALL TANKS FROM TOTAL DIKE AREA, LEAVING THE FOLLOWING AVAILABLE CONTAINMENT AREA:

AVAILABLE AREA = 1960FT²

–WALL HEIGHT REQUIRED:

5,404 ft³ = 1960FT² X H
H = 2.76 ft

ADD 6" FREEBOARD = WALL HEIGHT TO BE 39"

GEOTECHNICAL INSTRUCTIONS:

EXCAVATE TO 600mm (2') BELOW THE UNDERSIDE OF THE TANK FARM ELEVATIONS. THE EXPOSED SUBGRADE SURFACE SHALL THEN BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED AND APPROVED BY THE ENGINEER. ANY SOFT AREAS SHALL BE SUBEXCAVATED AND REPLACED WITH GRANULAR "B" MATERIAL (SEE BELOW).

THE SUBBASE SHALL CONSIST OF 450mm (1.5') GRANULAR "B" PLACED IN TWO LIFTS.

THE BASE SHALL CONSIST OF 150mm (6") OF GRANULAR "A" MATERIAL AND ELEVATED CRUSHER DUST TANK PADS.

ALL GRANULAR MATERIALS TO BE COMPACTED TO 100% OF THE STANDARD PROCTOR
MAXIMUM DRY DENSITY USING SUITABLE VIBRATORY COMPACTION EQUIPMENT. COMPACTION TESTING WILL BE PROVIDED BY THE ENGINEER (PROVIDE 3 DAYS NOTICE).

ISSUE

	FOR	BY	DATE
☐	– FOR REVIEW ONLY		
■	– FOR APPROVAL	TJG	MAR 30, 2021
☐	– FOR TENDER		
☐	– FOR CONSTRUCTION		
☐	– FOR AS BUILT		

NOTES:

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- CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO COMMENCING WORK.
- ALL TANKS TO BE INSTALLED LEVEL

CONCRETE SPEC:

32MPa
5%-8% AIR
400MPa REBAR YIELD STRENGTH
80mm SLUMP

No.	DESCRIPTION	BY	DATE

REVISIONS

Logo: envirosoil ISO 14001 • ISO 9001

Client: ENVIROSOIL

Address: PLEASANT STREET
DARTMOUTH, NS

Project: NEW WASTE OIL RECYCLING & WASTE WATER TREATMENT FACILITY

Title: EXTERIOR USED OIL STORAGE DIKE

GALLAGHER TECHNICAL SERVICES LIMITED
22 DOUGLAS DRIVE
QUISPAMSIS, NB
E2G 1Y3
PHONE: 506 849 4116
FAX: 506 847 1070

Stamp:

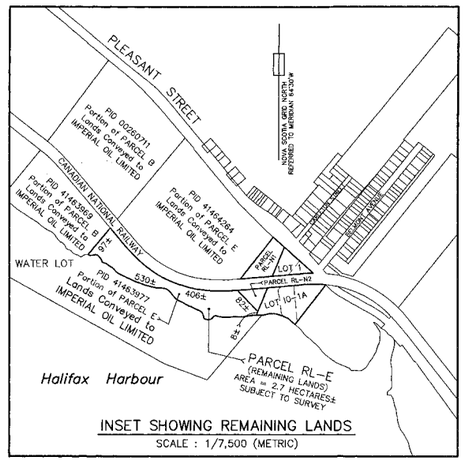
DESIGN:
DRAWN:
CHECKED:
DATE: MAR 30, 2021
SCALE: 1/8" = 1'-0"
REV.: △

PROJECT NUMBER: GTS-1645

SHEET No. 5

Appendix B

Legal Survey Plan



INSET SHOWING REMAINING LANDS

SCALE : 1/7,500 (METRIC)

NOVA SCOTIA GRID NORTH
REFERRED TO MERIDIAN 64°30'W

PID 41464264
Portion of PARCEL E
Now or Formerly
IMPERIAL OIL LIMITED
BOOK 1903, PAGE 863

PID 41464272
Portion of PARCEL N
Lands Conveyed to
IMPERIAL OIL LIMITED
BOOK 1903, PAGE 863

see compiled plan by
Servant, Dunbrack, McKenzie & MacDonald Ltd.,
signed by H. James McIntosh, N.S.L.S.,
dated September 5, 2012
(S.D.M.M. file no. 1-7-270 (29235)
(S.D.M.M. plan no. 14-1574-0
(not recorded at L.R.O.)

PARCEL RL-N1
(REMAINING LANDS)
AREA = 6,001.9 SQ.M.±
SUBJECT TO SURVEY

PARCEL N1
AREA = 2,735.2 SQ.M.±

LOT 1
AREA = 4,002.1 SQ.M.±
(43,079 SQ.FT.±)
(0.99 ACRES±)

PID 41464280
PARCEL 10-1Y
AREA = 1,266.9 SQ.M.±
Lands Conveyed to
IMPERIAL OIL LIMITED
PARCEL 10-1B BOOK 1903, PAGE 863
(RIGHT OF WAY)
L.R.O. DOC. NO. 97967427

PARCEL N2
AREA = 3,768.9 SQ.M.±

LOT 10-1A
AREA = 12,067.9 SQ.M.±
(SUBJECT TO SURVEY)

PARCEL A
AREA = 7,403.4 SQ.M.±
(79,690 SQ.FT.±)
(1.83 ACRES±)

PID 41463985
Portion of PARCEL N
Lands Conveyed to
IMPERIAL OIL LIMITED
BOOK 1903, PAGE 863

PID 41463993
PARCEL 10-1Z
AREA = 3,806.1 SQ.M.±
Lands Conveyed to
IMPERIAL OIL LIMITED
BOOK 1903, PAGE 863

PARCEL RL-N2
(REMAINING LANDS)
AREA = 2,722.2 SQ.M.±
SUBJECT TO SURVEY

PARCEL RL-E
(REMAINING LANDS)
AREA = 2.7 HECTARES±
SUBJECT TO SURVEY
(SEE INSET)

PID 41463977
Portion of PARCEL E
Lands Conveyed to
IMPERIAL OIL LIMITED
BOOK 1903, PAGE 863

see compiled plan by
Servant, Dunbrack, McKenzie & MacDonald Ltd.,
signed by H. James McIntosh, N.S.L.S.,
dated September 5, 2012
(S.D.M.M. file no. 1-7-270 (29235)
(S.D.M.M. plan no. 14-1574-0
(not recorded at L.R.O.)

PARCEL E1
AREA = 28.4 SQ.M.±

PID 41464280
PARCEL 10-1Y
Lands Conveyed to
3242111 NOVA SCOTIA LIMITED
L.R.O. DOC. NO. 97967427

see plan by Thompson Conn Limited,
signed by Allan J. Owen, N.S.L.S.,
dated May 1, 2004
(not recorded at L.R.O.)

also see plan by Frank Longstaff Surveying Ltd.,
signed by Frank Longstaff, N.S.L.S.,
dated December 20, 1973,
approved February 26, 1974
(L.R.O. plan no. 19742820325)

PID 00339648
Now or Formerly
CANADIAN NATIONAL RAILWAY COMPANY
(30.175m. Wide)
(L.R.O. plan no. 30843)

PID 00260703
PARCEL 10-1A
Lands Conveyed to
3242111 NOVA SCOTIA LIMITED
L.R.O. DOC. NO. 97967427

PID 40268849
BLOCK W
Now or Formerly
CHERUBINI METAL WORKS LIMITED
BOOK 6714, PAGE 412

see plan by Servant, Dunbrack, McKenzie & MacDonald Ltd.,
signed by Granville Leopold, N.S.L.S.,
dated June 12, 1978, approved June 27, 1978
(L.R.O. plan no. 18820)

Halifax Harbour

Downtown Dartmouth

CARLETON STREET

PLEASANT STREET
(Width Varies)

BELMONT AVENUE

Eastern Passage

N.S.H.P.N. 228251
N 4,944,385.158
E 25,577,240.499
NAD83 (EPOCH 2010)

L.R.O. PLAN IN BOOK 2922 AT PAGE 325 SHOWS PARCEL 10-1C AS A 20.117m. WIDE PRIVATE RIGHT OF WAY CROSSING THE CANADIAN NATIONAL RAILWAYS RIGHT OF WAY. NO DOCUMENTATION WAS FOUND AT THE LAND REGISTRATION OFFICE FOR THE CONVEYANCE OF A LIMITED INTEREST IN RAILWAYS FROM CANADIAN NATIONAL RAILWAYS. CANADIAN NATIONAL RAILWAYS HAS NO RECORD OF A GRANT OF RIGHT OF WAY TO ANY OF THE PREDECESSORS IN TITLE TO 3242111 NOVA SCOTIA LIMITED.

PROPOSED LAND PARTITIONING AS SHOWN ON PLAN SIGNED BY ADAM STEPHEN, N.S.L.S. (NOT RECORDED AT L.R.O.)

GNSS BLOCK

GNSS SURVEY TYPE	NRTK
NRTK SOURCE	CANNET

DATUM BLOCK

HORIZONTAL DATUM:	NAD83 (CSRS)
EPOCH:	2010.0
VERTICAL DATUM:	CGVD2013
OFFSET TO CGVD28:	H_CGVD2013 = H_CGVD28-0.634
PROJECTION:	3° MTM, ZONE 5

CONTROL MONUMENTS

TYPE	POINT NO.	NORTHING	EASTING	ELEVATION	C.S.F. (COMBINED SCALE FACTOR)
N.S.H.P.N.	228251	4,944,385.158	25,577,240.499	12.745	0.999975
N.S.H.P.N.	205336	4,945,409.021	25,575,995.326	10.097	0.999973

HALIFAX REGIONAL MUNICIPALITY
THIS FINAL PLAN OF SUBDIVISION
IS APPROVED FOR
LOT(S) 1, Parcel A as an addition to Parcel 10-1A to create Lot 10-1B (Sect 4)
DATE: NOV 19 2018
endorsed by Development Officer
Janice MacEwen

WATERCOURSE ALTERATION & PROVINCIAL PERMITS

In the interest of water quality preservation, it is advised that there is a legal requirement under the NS Environment Act and the Activities Designation Regulations to obtain approval from the Dept. of Environment and Labour prior to commencing any work in or around the immediate vicinity of any watercourse, including the bed and shore of every river, stream, lake, creek, pond, spring, lagoon, swamp, marsh, wetland, ravine, gulch or other natural body of water, whether it contains water or not.

HRM WATERCOURSE BUFFERS & DEVELOPMENT

HRM by-laws contain requirements for watercourse buffers relative to adjacent development. Buffers vary in width from a minimum of 20 metres increasing to a maximum of 90 metres, depending on slopes. Activity within buffers is limited and may affect the development of the lots shown on this plan. For specific information concerning watercourse buffer requirements, please contact HRM before applying for construction permits.

CENTRAL SERVICES

LOT(S) 1
IS ARE CAPABLE OF BEING SERVICED WITH MUNICIPAL WATER AND SEWER.
SERVICE LATERALS FROM THE MAINS TO THE BUILDING SHALL BE THE RESPONSIBILITY OF THE OWNER.

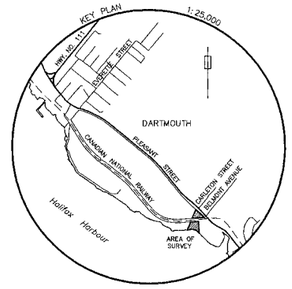
Lot 10-1A does not appear to have sufficient frontage on Pleasant Street to access the HRWC water, wastewater and stormwater systems contained within Pleasant Street. Private easements and/or a private crossing of the CN Railway maybe required.

PUBLIC STREETS

THE FOLLOWING STREETS ARE OWNED AND MAINTAINED BY HALIFAX REGIONAL MUNICIPALITY:
Pleasant Street
(Lot 10-1A does not meet the streets by-law 5300 as it pertains to access)

HALIFAX COUNTY LAND REGISTRATION OFFICE
I certify that this plan was registered or recorded as shown here.
Iain MacKay, Registrar
113 Survey 70 LR/RO/DD
NOV 28 2018 12:51:51 PM
MM DD YYYY Time

KEY PLAN 1:25,000



LEGEND:

PLACED SURVEY MARKER	⊙
FOUND SURVEY MARKER	⊙ Fd.
IRON BAR	○ I.B.
NOVA SCOTIA HIGH PRECISION NETWORK MONUMENT	△ N.S.H.P.N.
PLACED	PL.
FOUND	Fd.
WITNESS	WIT.
RADIUS ; ARC ; CHORD	R ; A ; C
POINT OF CURVATURE	P.C.
POINT OF COMPOUND CURVATURE	P.C.C.
CALCULATED ; MEASURED ; SET	(C) ; (M) ; (S)
PLAN OF PREVIOUS SURVEY ; DEED	(P) ; (D)
LANDS DEALT WITH BY THIS PLAN	
LAND REGISTRATION OFFICE	L.R.O.
PROPERTY IDENTIFICATION NUMBER	PID
SQUARE METRES	SQ.M.
ORDINARY HIGH WATER MARK	O.H.W.M.
LIGHT STANDARD	L.S.
UTILITY POLE	U.P.
GUY WIRE	
OVERHEAD WIRES	
FENCE	
CATCH BASIN	C.B.
MONITORING WELL	MW
SIGN	
THOMPSON CONN LIMITED	(TCL)

NOTES RE: LOT 10-1A:

THE ONLY BOUNDARIES SHOWN ON THIS PLAN WHICH HAVE BEEN SURVEYED ARE THE BOUNDARIES OF PARCEL A, THE COMMON BOUNDARY BETWEEN EXISTING PARCEL 10-1A AND PARCEL A WHICH IS SHOWN BY A HEAVY BROKEN LINE IS HEREBY CERTIFIED AS HAVING BEEN THE COMMON BOUNDARY.

THE REMAINING BOUNDARIES OF THE RESULTING LOT 10-1A SHOWN ON THIS PLAN ARE A GRAPHIC REPRESENTATION ONLY AND DO NOT REPRESENT THE ACCURATE SHAPE OR POSITION OF THE LOT BOUNDARIES WHICH ARE SUBJECT TO A FIELD SURVEY.

ADAM STEPHEN, N.S.L.S.

SURVEYOR'S CERTIFICATE:

I, ADAM STEPHEN, NOVA SCOTIA LAND SURVEYOR, HEREBY CERTIFY THAT THE SURVEY REPRESENTED BY THIS PLAN WAS CONDUCTED UNDER MY SUPERVISION AND THAT THE SURVEY AND PLAN WERE MADE IN ACCORDANCE WITH THE LAND SURVEYORS ACT, REGULATIONS AND STANDARDS MADE THEREUNDER.

DATED THIS 4TH DAY OF JUNE, 2018.

ADAM STEPHEN, N.S.L.S.

THE ASSOCIATION OF NOVA SCOTIA LAND SURVEYORS
Nº 55659

THE ASSOCIATION OF NOVA SCOTIA LAND SURVEYORS
FOUNDED 1890
ADAM STEPHEN N.S.L.S.
653
MEMBER

SUBDIVISION FILE NO. --21709
HALIFAX REGIONAL MUNICIPALITY

WSP Canada Inc.
1 Spectacle Lake Drive
Dartmouth, Nova Scotia
Canada, B3B 1X7
T 902-835-9655
F 902-835-1645
www.wsp.com

Plan of Survey of LOT 1 being a Subdivision and Consolidation of a Portion of PARCEL N and PARCEL 10-1Y, Lands Conveyed to IMPERIAL OIL LIMITED and Survey of PARCEL A, being a Subdivision and Consolidation of a Portion of PARCEL E, a Portion of PARCEL N and PARCEL 10-1Z, Lands Conveyed to IMPERIAL OIL LIMITED and Showing LOT 10-1A

PLEASANT STREET
DARTMOUTH
COUNTY OF HALIFAX
PROVINCE OF NOVA SCOTIA

10 8 6 4 2 0 10 20 30 40 50

SCALE : 1/500 (METRIC)
JUNE 4, 2018

REF. NO. 171-14462

DWG. NO. 171-14462-050

Form 28

Purpose: to record a non-enabling document in a parcel register

For Office Use

Registration District: HALIFAX COUNTY

Submitter's User Number: 2757

Submitter's Name: HFX REGIONAL MUN - DARTMOUTH

Take notice that the attached plan/document relates to the following parcels registered under the Land Registration Act

PID: 260703	PID: 41463977	PID: 41463985	PID: 41463993
PID: 41464272	PID: 41464280		

Municipal file number or land registration file number (insert file number used when PIDs were originally assigned during pre approval): MF21709Revised

In the matter of the recording of the following non-enabling instrument (select one) :

- [x] plan
- [ ] boundary line agreement
- [ ] instrument of subdivision
- [ ] statutory declaration regarding de facto consolidation
- [ ] condominium declaration
- [ ] initial condominium bylaws
- [ ] condominium plan
- [ ] repeal of subdivision
- [ ] termination of condominium
- [ ] other (specify)

And in the matter of registered owner (insert name): **IMPERIAL OIL LIMITED**

Note: An amending Parcel Description Certification Application may be required.

Dated at **HALIFAX,** in the County of **HALIFAX ,** Province of Nova Scotia, **Nov 19, 2018.**

Signature of applicant/municipal official/owner/agent

Name: HFX REGIONAL MUN - DARTMOUTH

Address: 40 ALDERNEY DR PO BOX 1749 HALIFAX NS CA B3J 3A5

Phone: 902-490-3993

Email: EASTREG@HALIFAX.CA

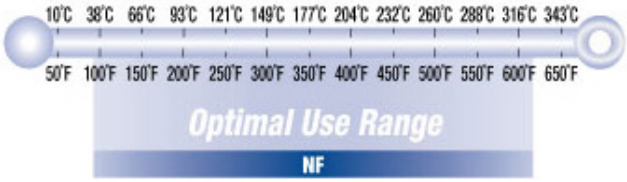
Fax: 902-490-4645

Appendix C

Heating Oil Data Sheets

Paratherm™ NF

Heat Transfer Fluid



Food Grade • *Low Viscosity for Easy Start Up*

ENGINEERING BULLETIN NF 817

The Paratherm™ NF Heat Transfer Fluid is a food grade, mineral-oil based heat transfer fluid designed for extended trouble-free service in closed-loop liquid-phase systems up to 600°F (316ºC) in fuel-fired heaters and 630°F (232ºC) in electric immersion heaters.

Applications include:

- Chemical reactors
- Food processing
- Portable electric temperature control units
- Electric heaters

Food Grade Means Less Maintenance

The food grade level of quality is not only important for food processing, it also makes Paratherm NF Heat Transfer Fluid one of the lowest maintenance fluids on the market. Impurities that naturally occur in crude oil (such as asphaltenes and sulfur compounds) tend to break down first in the heater and, if severely overheated, can form coke deposits on the heater surfaces. The extensive refining process that makes Paratherm NF food grade removes these impurities so degradation-induced maintenance is reduced.

Low Viscosity Promotes Fast Startups

Minimum startup temperature is a realistic Liquid-phase systems should be brought up to temperature slowly until the fluid is in fully turbulent flow. This prevents localized fluid overheating. Once viscosity decreases enough that turbulent flow is achieved, the outlet temperature can be increased as fast as the equipment can handle. The lower the temperature when that transition occurs, the faster the system will reach operating temperature. Paratherm NF has the lowest viscosity range of any mineral-oil based fluid.

Typical Properties*

Chemical Name		Hydrotreated Naphthenic
Appearance		Water White Liquid
Odor		Odorless
Maximum Recommended Film Temperature		650˚F/343˚C
Maximum Recommended Operating Temperature - Fired Heaters		600˚F/316˚C
Maximum Recommended Operating Temperature - All Others		630˚F/332˚C
Minimum Operating Temperature 20 cPs (20 mPa-s)		97°F/36°C
Minimum Start-up Temperature 300 cPs (300 mPa-s)		24°F/-4°C
Viscosity cSt:	40˚C (104˚F)	18.1
	100˚C (212˚F)	3.8
	288˚C (550˚F)	0.53
Density at 60˚F/15.5˚C lb/gal (kg/m³)		7.4 (880)
Flash Point Pensky-Martens Closed Cup (D93)		>300˚F/149˚C
Boiling Point (14.7 psia/101 kPa)		>649˚F/343˚C
Vapor Pressure @ maximum operating temperature psia (kPa)		2.5 (17)
% Volume expansion over recommended operating temperature per 100˚F (˚C)		6.0 (10.8)
Average Molecular Weight		330
Dielectric Breakdown Voltage D1816-04 (kV, 0.1" gap)		34.37
Dielectric Constant (1 KHz) D924-04		2.183
Dissipation Factor (1 KHz) D924-04		0.000003
Volume Resistivity at 100V (Ω-cm) D257-07		$3.40X10^{14}$
Heat of Combustion (approximate) BTU/lb (kJ/kg)		20,000 (46,300)
Heat of Vaporization (approximate) BTU/lb (kJ/kg)		91 (210)

** These are typical laboratory values, and are not guaranteed for all samples*

High Heat Transfer Coefficients Extend Fluid Life

In heat transfer fluids, the most important advantage of a high heat transfer coefficient is that it reduces the heater surface temperature required to achieve set-point temperature. Lower temperature means less thermal degradation which means longer life. Paratherm NF has the highest heat transfer coefficient of any mineral oil based fluid.

Fluid Storage

Drums should be stored inside to prevent water from getting into the heat transfer fluid. If sealed drums must be left outdoors, they should be stored on their sides. While unopened totes are weatherproof, they should not be stacked if left outdoors. If the fluid is to be stored outside below its minimum pumpable temperature, the containers should be moved indoors to warm up before charging the fluid into the system.

Visit http://paracalc.paratherm.com for detailed properties in a choice of temperature increments.

Replacing Existing Fluid

In many cases, changing fluid involves a straightforward drain and fill. There are very few fluids that are so incompatible that 10-15% residue will affect the new Paratherm. If you have any questions, contact us.

Charging New Systems

Unless required for product quality reasons, new systems do not need to be cleaned before Paratherm is charged. The amount of chemical coatings, oils, and other manufacturing residues are usually not enough to affect the fluid life. All that is necessary is to install a Y-strainer with a minimum 60 mesh screen up stream of the pump to catch any metal or welding residue. The screen can be removed once the system has been cycled twice through its operating temperature.

Fluid Analysis

The fluid in new systems should be tested within 9 to 12 months of start-up. New fluid in existing systems should be tested within the first month of operation to establish a base line for future testing.

Paratherm™
HEAT TRANSFER FLUIDS

A Division of Lubrizol

2009 Renaissance Boulevard
King of Prussia, PA 19406 USA
Ph: +1 610-941-4900 ■ Fx: +1 610-941-9191
+1 800-222-3611
E-mail: info@paratherm.com
Web: www.paratherm.com

Visit http://thermalprops.paratherm.com for detailed properties in a choice of temperature increments.

SAFETY DATA SHEET

1. Identification

Identification

Product name: **PARATHERM™ NF**

Additional identification

Chemical name: Mineral oil

Recommended use and restriction on use

Recommended use: Heat Transfer Fluid
Restrictions on use: None identified.

Details of the supplier of the safety data sheet

Supplier

Company Name: PARATHERM
A DIV. OF THE LUBRIZOL CORPORATION

Address: 2009 Renaissance Boulevard
King of Prussia, PA 19406
US

Telephone: 610-941-4900

Emergency telephone number:
FOR TRANSPORT EMERGENCY CALL CHEMTREC (+1)703 527 3887, OR WITHIN USA 800 424 9300

2. Hazard(s) identification

Hazard Classification

Health Hazards

Aspiration Hazard	Category 1

Unknown toxicity

Acute toxicity, oral	0.0 %
Acute toxicity, dermal	0.0 %
Acute toxicity, inhalation, vapor	100.0 %
Acute toxicity, inhalation, dust or mist	0.2 %

Label Elements:

Hazard Symbol:

Signal Word: Danger

Hazard Statement: May be fatal if swallowed and enters airways.

Precautionary Statements:

Response: IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.

Storage: Store locked up.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: None identified.

3. Composition/information on ingredients

General information:

Chemical name	CAS number	Percent by Weight
Mineral oil	8042-47-5	90 - 100%

4. First-aid measures

Ingestion: Do NOT induce vomiting. Aspiration of material due to vomiting can cause chemical pneumonitis which can be fatal. If vomiting occurs naturally, the casualty should lean forward to reduce the risk of aspiration. Immediately call a POISON CENTER/doctor.

Inhalation: Remove exposed person to fresh air if adverse effects are observed.

Skin Contact: Wash with soap and water. Get medical attention if symptoms occur. Launder contaminated clothing before reuse.

Eye contact: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses.

Most important symptoms/effects, acute and delayed

Symptoms: See section 11.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. Fire-fighting measures

General Fire Hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: CO2, Dry chemical or Foam. Water can be used to cool and protect exposed material.

Unsuitable extinguishing media:	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical:	A solid stream of water will spread the burning material. Material creates a special hazard because it floats on water. See section 10 for additional information.

Special protective equipment and precautions for firefighters

Special fire fighting procedures:	No data available.
Special protective equipment for fire-fighters:	Recommend wearing self-contained breathing apparatus.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:	Personal Protective Equipment must be worn, see Personal Protection Section for PPE recommendations.
Methods and material for containment and cleaning up:	Dike far ahead of larger spill for later recovery and disposal. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material.
Environmental Precautions:	Avoid release to the environment. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling:	Avoid contact with eyes and prolonged or repeated contact with skin. Open container in a well ventilated area. Avoid breathing vapors. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures. Use grounding and bonding connection when transferring material. In case of spills, beware of slippery floors and surfaces. Observe good industrial hygiene practices. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid contact with eyes and prolonged or repeated contact with skin. Open container in a well ventilated area. Avoid breathing vapors. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures. Use grounding and bonding connection when transferring material. In case of spills, beware of slippery floors and surfaces.
Maximum Handling Temperature:	Not determined.
Conditions for safe storage, including any incompatibilities:	Store away from incompatible materials. See section 10 for incompatible materials.
Maximum Storage Temperature:	Not determined.

8. Exposure controls/personal protection

Control Parameters:

Occupational Exposure Limits

Chemical name	Type	Exposure Limit Values	Source
Mineral oil - Inhalable fraction.	TWA	5 mg/m3	US. ACGIH Threshold Limit Values (02 2012)
Mineral oil - Mist.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
Mineral oil - Mist.	STEL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
Mineral oil - Mist.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

Appropriate engineering controls: Adequate ventilation should be provided so that exposure limits are not exceeded.

Individual protection measures, such as personal protective equipment

General information: Use personal protective equipment as required.

Eye/face protection: If contact is likely, safety glasses with side shields are recommended.

Skin Protection

Hand Protection: Nitrile. Gloves should always be inspected before each use and discarded if they show tears, pinholes, or signs of wear. Consult clothing/glove manufacturer to determine appropriate type of glove for given situation.

Other: No data available.

Respiratory Protection: Use disposable dust/mist mask if the recommended exposure limit is exceeded. Consult with an industrial hygienist to determine the appropriate respiratory protection for your specific use of this material. A respiratory protection program compliant with all applicable regulations must be followed whenever workplace conditions require the use of a respirator. Use disposable dust/mist mask if the recommended exposure limit is exceeded.

Hygiene measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned.

9. Physical and chemical properties

Appearance

Physical state:	liquid
Form:	liquid
Color:	Clear, Colorless
Odor:	Mild petroleum/solvent
Odor threshold:	No data available.
pH:	No data available.

Freezing point:	No data available.
Boiling Point:	> 649 °F (343 °C)
Flash Point:	> 300 °F (149 °C) (ASTM D93 (Pensky-Martens (A and B Closed Cup)))
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	0.1 kPa (20 °C 68 °F)
Vapor density:	No data available.
Relative density:	0.883 68 °F (20 °C)
Solubility(ies)	
Solubility in water:	Insoluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	18.9 mm2/s (104 °F (40 °C))

Other information

10. Stability and reactivity

Reactivity:	No data available.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Will not occur.
Conditions to avoid:	Do not expose to excessive heat, ignition sources, or oxidizing materials.
Incompatible Materials:	Strong oxidizing agents.
Hazardous Decomposition Products:	Thermal decomposition or combustion may generate smoke, carbon monoxide, carbon dioxide, and other products of incomplete combustion.

11. Toxicological information

Information on likely routes of exposure

Inhalation:	No data available.
Ingestion:	No data available.
Skin Contact:	No data available.
Eye contact:	No data available.

Information on toxicological effects

Acute toxicity

Oral

Product: Not classified for acute toxicity based on available data.

Dermal

Product: Not classified for acute toxicity based on available data.

Inhalation

Product: Not classified for acute toxicity based on available data.

Skin Corrosion/Irritation:

Product: Not classified as a primary skin irritant.
Remarks: Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, and cracking of the skin.

Serious Eye Damage/Eye Irritation:

Product: Remarks: Not classified as a primary eye irritant.

Respiratory sensitization:

No data available

Skin sensitization:

Mineral oil Classification: Not a skin sensitizer. (Literature)

Specific Target Organ Toxicity - Single Exposure:

Mineral oil If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.

Aspiration Hazard:

Product: May be fatal if swallowed and enters airways.

Chronic Effects

Carcinogenicity:

Product: This mineral oil has been severely refined and is not considered carcinogenic.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity:

No data available

Reproductive toxicity:

No data available

Specific Target Organ Toxicity - Repeated Exposure:

No data available

12. Ecological information

Ecotoxicity

Fish

Mineral oil

LC 50 (Not reported, 96 h): > 10,000 mg/l
NOEC (Not reported, 96 h): > 10,000 mg/l

Aquatic Invertebrates

Mineral oil

EC 50 (Water flea (Daphnia magna), 2 d): > 100 mg/l
NOEC (Water flea (Daphnia magna), 2 d): >= 100 mg/l
EC 50 (Water flea (Daphnia magna), 21 d): > 10 mg/l
NOEC (Water flea (Daphnia magna), 21 d): 10 mg/l

Toxicity to Aquatic Plants

Mineral oil

LC 50 (Algae (Pseudokirchneriella subcapitata), 3 d): > 100 mg/l
NOEC (Algae (Pseudokirchneriella subcapitata), 3 d): > 100 mg/l

Toxicity to soil dwelling organisms

No data available

Sediment Toxicity

No data available

Toxicity to Terrestrial Plants

No data available

Toxicity to Above-Ground Organisms

No data available

Toxicity to microorganisms

No data available

Persistence and Degradability

Biodegradation

Mineral oil

OECD TG 301 F, 31.13 %, 28 d, Not readily degradable.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

No data available

Partition Coefficient n-octanol / water (log Kow)

No data available

Mobility:

No data available

Other Adverse Effects: No data available.

13. Disposal considerations

Disposal instructions: Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.
Since emptied containers retain product residue, follow label warnings even after container is emptied.

Contaminated Packaging: Container packaging may exhibit hazards.

14. Transport information

DOT
Not regulated.

IMDG
Not regulated.

IATA
Not regulated.

Transport in bulk according to Annex II of MARPOL and the IBC Code
None known.

The DOT shipping information in this section is based on a bulk container. Please review the accompanying shipping papers for the correct shipping descriptions based the size of the package. Shipping descriptions may vary based on mode of transport, quantities, temperature of the material, package size, and/or origin and destination. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material. During transportation, steps must be taken to prevent load shifting or materials falling, and all relating legal statutes should be obeyed. Review classification requirements before shipping materials at elevated temperatures.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4)
None present or none present in regulated quantities.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 311 Classifications
Aspiration Hazard

SARA 302 Extremely Hazardous Substance
None present or none present in regulated quantities.

SARA 304 Emergency Release Notification
None present or none present in regulated quantities.

SARA 313 (TRI Reporting)
None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65
No ingredient regulated by CA Prop 65 present.

Inventory Status

Australia (AICS)
All components are in compliance with chemical notification requirements in Australia.

Canada (DSL/NDSL)
All substances contained in this product are in compliance with the Canadian Environmental Protection Act and are present on the Domestic Substances List (DSL) or are exempt.

China (IECSC)
All components of this product are listed on the Inventory of Existing Chemical Substances in China.

European Union (REACh)
To obtain information on the REACH compliance status of this product, please e-mail REACH@SDSInquiries.com.

Japan (ENCS)
All components are in compliance with the Chemical Substances Control Law of Japan.

Korea (ECL)
All components are in compliance in Korea.

New Zealand (NZIoC)
All components are in compliance with chemical notification requirements in New Zealand.

Philippines (PICCS)
All components are in compliance with the Philippines Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 (R.A. 6969).

Switzerland (SWISS)
All components are in compliance with the Environmentally Hazardous Substances Ordinance in Switzerland.

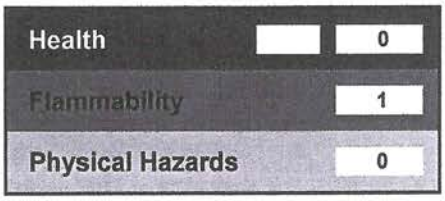
Taiwan (TCSCA)
All components of this product are listed on the Taiwan inventory.

United States (TSCA)
All substances contained in this product are listed on the TSCA inventory or are exempt.

The information that was used to confirm the compliance status of this product may deviate from the chemical information shown in Section 3.

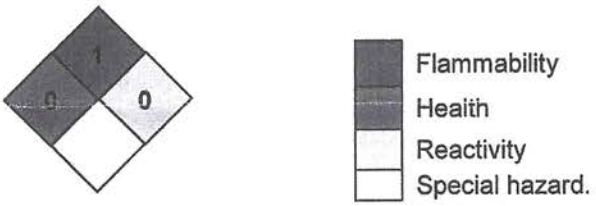
16.Other information, including date of preparation or last revision

HMIS Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; *Chronic health effect

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date:	02/19/2018
Version #:	3.0
Source of information:	Internal company data and other publically available resources.
Further Information:	Contact supplier (see Section 1)
Disclaimer:	As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state, and local regulations remains the responsibility of the user.

Appendix D

Boiler Specifications and Emissions

HELICAL COIL HEATERS

FOR HOT MIX ASPHALT

HC-120 with side pumps and Stackpack heat exchanger

HEATEC THERMAL FLUID (hot oil) heaters for the hot mix asphalt (HMA) industry are designed around a helical coil. Our coil meets ASME code.

Although we make several other types of heaters for other industries, our helical coil heaters are the most popular heater in the HMA industry. Their popularity comes from their simplicity, efficiency, low maintenance and relatively low cost.

MODELS AND OUTPUTS

Nine standard models are available. Rated thermal outputs range from 0.7 to 4 million Btu per hour. All can be customized to meet your specific needs.

TWO BASIC CONFIGURATIONS

Heatec helical coil heaters are available in two basic configurations: HC and HCS. The HC configuration (above) has a manifold that enables the heater to operate with multiple thermal fluid circuits.

HEATEC

Heatec HCS helical coil heater for single thermal fluid circuit

LH side of Heatec HCS helical coil heater

The HCS configuration is virtually identical to the HC except that it is intended to operate with a single circuit. It has no manifold.

HCS heater can be upgraded

However, the HCS heater can be upgraded to the HC configuration by adding an optional manifold. The upgrade can be done at any time as needed.

High efficiency reduces costs

A hallmark of our helical coil heater is high thermal efficiency. Thermal efficiencies of our standard heaters range up to 85 percent LHV, depending upon fluid outlet temperature and fuel.

Thermal efficiency is the total amount of heat produced by the burner versus the portion actually transferred to thermal fluid flowing through the coil. Thus, in our heaters, up to 85 percent of the total heat is transferred to the thermal fluid. Increasing efficiency reduces fuel usage.

Achieving super-efficiency

Adding a **STACKPACK™** heat exchanger boosts thermal efficiency another 5 percent. It makes our current heater super-efficient. That extra percentage reduces monthly fuel usage by 261 gallons of No. 2 fuel oil or 345 therms of natural gas. The Stackpack heat exchanger usually pays for itself in a year or less.

Controls

Heater controls automatically maintain the operating temperature set by the operator. Accuracy is within a half percent of set temperature. The temperature of thermal fluid at the heater's outlet can be maintained up to 450 degrees F (depending on variables).

Numerous safety features ensure heater operation is always within prescribed limits. Heaters shut down automatically if an abnormal operating condition occurs.

Switches and sensors in a ***limit*** circuit ensure normal operation. They monitor burner flame, thermal fluid temperature, exhaust gas temperature, flow of thermal fluid, and combustion air pressure.

Burner controls

Fireye™ burner management controls known as BurnerLogix™ provide proper and safe operation of the burner. They include a display, burner control, programmer, annunciator and flame scanner.

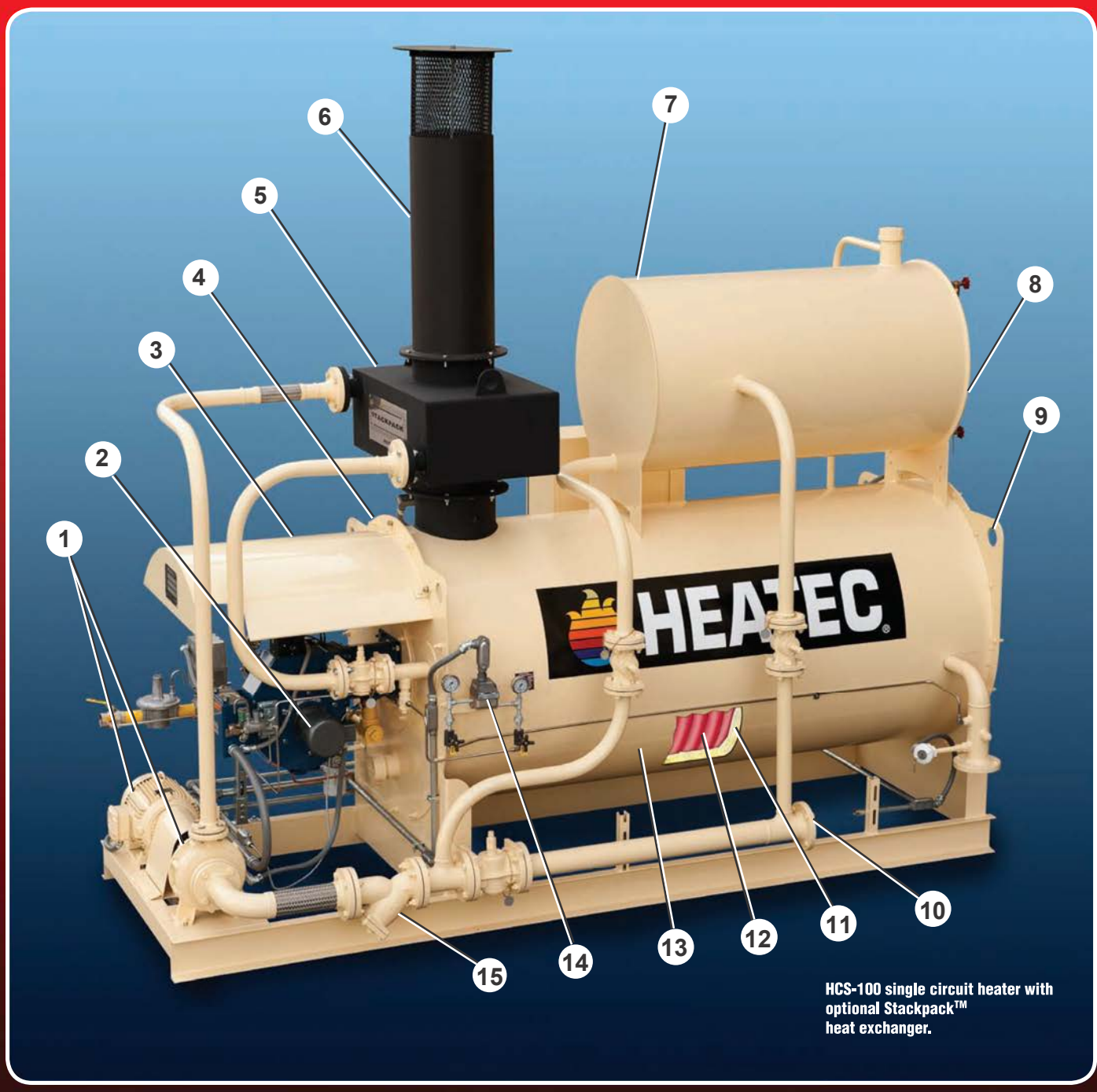
The burner control uses a microprocessor for its management functions. The processor provides the proper burner sequencing, ignition and flame monitoring protection.

The controls provide important messages about the operating status of the heater. If there is an alarm condition, a message will appear on the display. The message identifies the cause of the alarm, including which safety device in the *limit* circuit may have caused the shuddown.

Control panel

Main controls are in a UL approved NEMA-4 panel, which protects against windblown dust and rain, splashing water and hose-directed water. Wiring workmanship is meticulous and meets strict standards. All wires and terminals are labeled for easy identification of circuits. A laminated circuit diagram is furnished.

NOTE: Fireye and BurnerLogix are trademarks of Fireye, Inc.



HCS-100 single circuit heater with optional Stackpack™ heat exchanger.

1. Hot oil (thermal fluid) recirculation pump and motor.
2. Fully modulating burner.
3. Rain shield.
4. End plates bolt on and have lifting eyes.
5. Stackpack™ heat exchanger (optional).
6. Exhaust stack.
7. Thermal fluid expansion tank.
8. Low media level switch (not visible).
9. One of four lifting eyes.
10. Single circuit configuration shown can be upgraded to multiple circuit by adding manifold.
11. 3" ceramic fiberglass insulation.
12. Helical coil. Built to ASME code.
13. Heater shell. Welded A-36 steel plate.
14. Pressure differential switch.
15. Thermal fluid Y-strainer.

SPECIFICATIONS

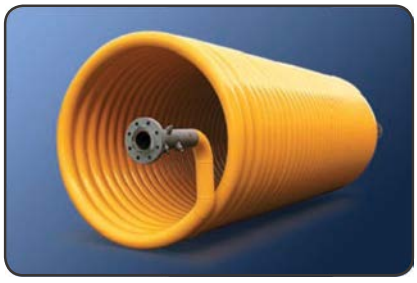
BASIC MODEL	MAXIMUM OUTPUT	FUEL USED PER HOUR		RECIRCULATION PUMP		EXPANSION TANK	APPROXIMATE OVERALL SIZE			NET WEIGHT
	Btu/Hour	No. 2 Fuel Oil Gallons	Natural Gas Cubic feet/hour	Hp	GPM	Gallons	Length	Width	Height	Pounds
SINGLE CIRCUIT HEATERS										
HCS-70	700,000	6	910	10	100	100	10'-5"	5'-7"	8'-10"	3,700
HCS-100	1,200,000	11	1,560	10	100	175	12'-1"	5'-9"	9"-0"	5,000
HCS-175	2,000,000	18	2,600	15	150	280	14'-5"	6'-3"	9'-7"	6,500
HCS-250	3,000,000	27	3,900	15	150	280	15'-9"	7'-4"	10'-6"	9,300
HCS-350	4,000,000	36	5,200	15	200	400	18'-1"	7'-4"	11'-5"	10,700
MULTI-CIRCUIT HEATERS										
HC-120	1,200,000	11	1560	10	100	175	12'-1"	5'-11"	9"-0"	5,100
HC-200	2,000,000	18	2600	15	150	280	14'-5"	6'-5"	9'-7"	6,600
HC-300	3,000,000	27	3,900	15	150	280	15'-9"	7'-6"	10'-6"	9,500
HC-400	4,000,000	36	5,200	15	200	400	18'-1"	7'-6"	11'-5"	10,900

The amount of fuel used is for a thermal efficiency of 85% and one hour of operation at maximum output. A properly sized heater normally runs for intermittent periods at lower outputs. No. 2 fuel usage is based on 132,000 Btu per gallon, its LHV (low heating value). Natural gas usage is based on 905 Btu per cubic foot, its LHV. Heights include the exhaust stack without a Stackpack heat exchanger. The Stackpack exchanger for the HCS-350 and HC-400 weighs 800 pounds and adds 2'-7" to their height. For all other models it weighs 460 pounds and adds 1'-9" to their height.

NOTE: Specifications are subject to change without prior notice or obligation.

Burner modulation

The heater has a fully modulating burner with appropriate turndown ratios. Modulation allows its firing rate to closely match the heat demand. This conserves fuel, reduces temperature overshooting and eliminates constant on-off recycling.



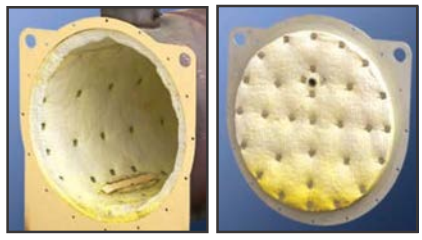
Helical coils

Helical coils in our heaters set us apart from others that produce helical coil heaters for the HMA industry. We are the only heater manufacturer that builds *all* coils to ASME code. Certification is optional.

Coils in HCS heaters have a three year warranty. Coils in HC heaters have a five year warranty.

Insulation

The shell of our heater is fully insulated with 3 inches of ceramic fiberglass insulation. The end plates are also insulated. All insulation is treated to retard errosion.



Options

Options include: Stackpack heat exchanger, seven-day time clock, sock filter, automated monitor (dialer), burners for various fuels, and steel valves. A variety of electrical power options are available.

Factory testing and startup

All HC and HCS heaters are factory-tested. We provide startup services with fees based on time at site plus travel time and expenses.

Warranty and factory support

Our heaters have a one-year limited warranty. Additionally, the coils have an extended warranty as noted earlier. Round-the-clock support is available from our in-house parts and service departments.

HEATEC

Publication 8-09-229

HEATEC, INC. an Astec Industries Company

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Power Flame Incorporated

9/28/2006
Rev. 02/28/2012

Typical Flue Product Emissions Data for Power Flame Burners

	Natural Gas	L.P. Gas	# 2 Fuel Oil [1]
Carbon Monoxide - CO	.037 lb CO 10^6 BTU input (50 PPM)	.037 lb CO 10^6 BTU input (50 PPM)	.037 lb per 10^6 BTU INPUT (50 PPM)
Sulfur Dioxide - SO_2	(1.05) x (% Sulfur by weight in fuel) = lb SO_2 per 10^6 BTU Input		
Particulate Matter	.0048 lb PM per 10^6 BTU input	.0048 lb PM per 10^6 BTU input	.0143 lb PM per 10^6 BTU input
Hydrocarbons	.025 lb HC's per 10^6 BTU input	.025 lb HC's per 10^6 BTU input	.038 lb HC's per 10^6 BTU input
CO_2	9 % to 10%	10% to 12%	10% to 13%
Nitrogen Oxides - NO_x			
Standard J, FDM & X4 Gas Burners	.088 lb NO_x per 10^6 BTU input (75 PPM)	.092 lb NO_x per 10^6 BTU input (75 PPM)	N/A N/A
Standard C(R) Burners	.088 lb NO_x per 10^6 BTU input (75 PPM)	.092 lb NO_x per 10^6 BTU input (75 PPM)	.12 lb NO_x per 10^6 BTU Input (90) PPM[2]
LNIC(R) Burners Fire box/Cast Iron boilers	.029 lb NO_x per 10^6 BTU input (25 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.12 lb NO_x per 10^6 BTU Input (90) PPM[2]
LNIC(R) Burners Water tube boilers	.024 lb NO_x per 10^6 BTU input (20 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.12 lb NO_x per 10^6 BTU Input (90) PPM[2]
LNIAC Burners	.029 lb NO_x per 10^6 BTU input (25 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.12 lb NO_x per 10^6 BTU Input (90) PPM
CM Burners	.070 lb NO_x per 10^6 BTU input (60 PPM)[4]	.074 lb NO_x per 10^6 BTU input (60 PPM)[4]	.146 lb NO_x per 10^6 BTU Input (110) PPM
LNICM Burners Scotch Boiler	.033 lb NO_x per 10^6 BTU input (30) PPM	.033 lb NO_x per 10^6 BTU input (30) PPM	.12 lb NO_x per 10^6 BTU Input (90) PPM
LNICM Burners Fire box/Cast Iron boilers	.029 lb NO_x per 10^6 BTU input (25) PPM	.031 lb NO_x per 10^6 BTU input (25) PPM	.12 lb NO_x per 10^6 BTU Input (90) PPM
LNICM Burners Water tube boilers	.029 lb NO_x per 10^6 BTU input (20) PPM	.031 lb NO_x per 10^6 BTU input (20) PPM	.12 lb NO_x per 10^6 BTU Input (90) PPM
NPM Premix Burners	.029 lb NO_x per 10^6 BTU input (25) PPM	.031 lb NO_x per 10^6 BTU input (25) PPM	N/A N/A
Nova Plus Burners NVC AND NP2	.010 lb NO_x per 10^6 BTU input (9) PPM	.015 lb NO_x per 10^6 BTU input (12) PPM	N/A N/A

(1) NOx emissions at 3 % 02 will vary based on the percent of fuel bound nitrogen (these are based on .02%) and boiler or heat exchanger configurations

(2) 90 PPM NOx on cast iron sectional, fire box and water tube boiler, 120 PPM on fire tube boilers. (.159 lb NOx per 10^6 BTU Input)

(3) Burning natural gas the VOC are estimated at 0.003 # per million BTU and SO_x are 0.0005 # per million BTU.

(4) In some applications the CMAX will achieve less than 60 PPM without flue gas recirculation - consult factory.

These emission rates are general estimates and do not constitute guarantees by Power Flame Inc.
In instances where guarantees are required, please consult the factory with the specific application information.
All NOx numbers stated are corrected to 3% O_2

Appendix E

Monitoring and Testing Equipment Specifications and Certifications

SOLITAX®sc TURBIDITY & SUSPENDED SOLIDS SENSORS

Applications

- Drinking Water
- Wastewater
- Beverage
- Industrial Water
- Power

PROGNOSYS™ READY

Accurate, color-independent suspended solids and turbidity measurements.

Greater Accuracy, Less Maintenance

Hach Solitax sc sensors provide accurate, color-independent measurement of turbidity and suspended solids in drinking water, wastewater and industrial process applications. A self-cleaning device prevents biological growth and interference of gas bubbles. This system's reliable performance and full data communication capability help improve process control and reduce treatment costs associated with polymer use, digester volume, and sludge handling.

Excellent Correlation to Laboratory Analysis

Solitax sc sensors show an exceptional correlation to laboratory analysis. On-line measurement not only saves time on manual analysis, but also provides critical real-time measurements that can be used to operate the plant more efficiently.

Fully Serviceable Sensors

Conventional turbidity and suspended solids sensors are potted and are discarded when they no longer function. Solitax sc sensors are fully serviceable, which often doubles the useful life of the sensor.

Easy One-point Calibration

Factory calibrated in conformity with DIN EN ISO 7027 for long-term calibration stability. Calibration is easy with a simple correction factor procedure.

Multi-channel, Multi-parameter System

Any two Solitax sc sensors can be installed on one Hach SC200 Controller. The same controller can also accommodate any combination of parameters. All of Hach's model sc sensors are "plug and play" with no complicated wiring or set-up procedure necessary.

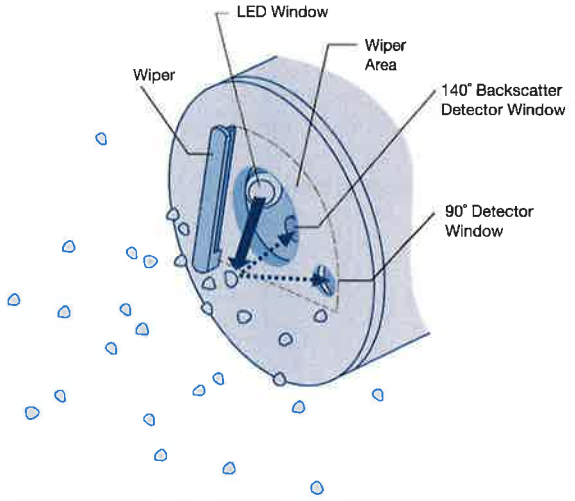
Specifications*

	For insertion in pipes		For immersion in open tanks		
Model	INSERTION inline sc	INSERTION highline sc	IMMERSION t-line sc	IMMERSION ts-line sc	IMMERSION hs-line sc
Parameter	Suspended Solids, Turbidity	Hight Range Suspended Solids, Turbidity	Turbidity	Suspended Solids, Turbidity	Hight Range Suspended Solids, Turbidity
Measuring Range Turbidity	0.001 to 4000 NTU	0.001 to 4000 NTU	0.001 to 4000 NTU	0.001 to 4000 NTU	0.001 to 4000 NTU
Measuring Range TSS-Content	0.001 mg/L to 50 g/L	0.001 mg/L to 500 g/L		0.001 mg/L to 50 g/L	0.001 mg/L to 500 g/L
Unit	Turbidity: User selectable—NTU, FNU, or TE/F Suspended Solids: User selectable—g/L, mg/L, ppm, or % solids				
Accuracy	Turbidity up to 1000 NTU; without calibration < 5% of the measured value ±0.01 NTU; with calibration < 1% of the measured value ±0.01 NTU				
Repeatability	Suspended solids content: < 3 %				
	Turbidity: < 1 %				
Response Time	1 s < T90 < 300 s (adjustable)				
Calibration Method	Turbidity: Formazin or StablCal Standard (at 800 NTU). Suspended Solids: Sample specific, based on gravimetric TSS analysis with a correction factor procedure.				
Certifications	CE certified to EN 61326-1, EN 61326/A1, EN 61326/A2, EN 61010-1				
Flow	Max. 3 m/s (the presence of air bubbles affects the measurement)				
Operating Temperature Range	0 to 40 °C (32 to 104°F)				
Pressure Limit	Stainless steel: 6 bar or 60 m (87 psi) PVC: 1 bar or 10 m (14.5 psi) Stainless steel: 6 bar or 60 m (87 psi) PVC: 1 bar or 10 m (14.5 psi)				
Material	Optics Carrier and Sleeve: stainless steel 1.4571 or black PVC Wiper Arm: stainless steel 1.4581; Wiper Blade: silicone (standard) Optional: Viton (LZX578); Wiper Shaft: stainless steel 1.4571 Threaded cable fitting: stainless steel 1.4305 or white PVC		Optics Carrier and Sleeve: stainless steel 1.4571 or black PVC Wiper Arm: stainless steel 1.4581; Wiper Blade: silicone (standard) Optional: Viton (LZX578); Wiper Shaft: stainless steel 1.4571 Threaded cable fitting: stainless steel 1.4305 or white PVC	
Weight Sensor	Insertion stainless steel: 2.4 kg (5.29 lb.)		Immersion stainless steel: 1.38 kg (3.0 lb.) Immersion PVC: 0.52 kg (1.2 lb.)		
Cable Length	10 m (optional extension cables available)				
					Subject to change without notice

Principle of Operation

Solitax sc ts-line sensor with dual-beam optics and added backscatter detector

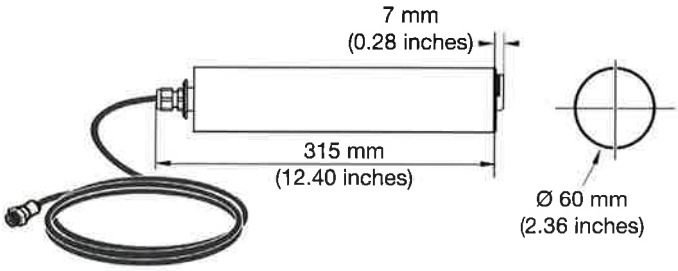
- Dual infrared light beams. LED light source transmits light at 45° to sensor face.
- Nephelometric photoreceptors detect light at 90° to the transmitted light beam.
- Backscatter photoreceptor (included on all models except the Solitax sc t-line) detects light at 140° to the transmitted light beam to measure suspended solids in heavily loaded sample streams.
- Self-cleaning wiper, optional.
- T-line probes measure turbidity only. TS, HS, inline, and highline sensors measure either turbidity or suspended solids.



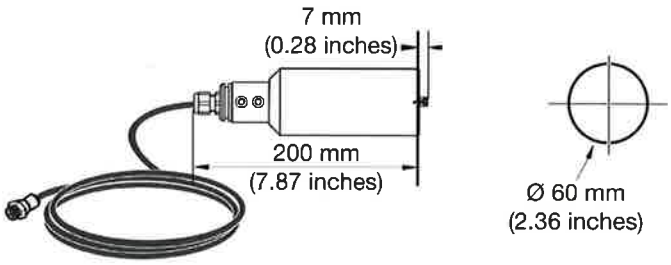
Dimensions

Hach Solitax sc sensors can be fixed to the rim of the tank for immersion applications or inserted directly through the sidewall of a pipeline for insertion applications. A variety of installation kits are available.

Solitax sc Insertion Probe

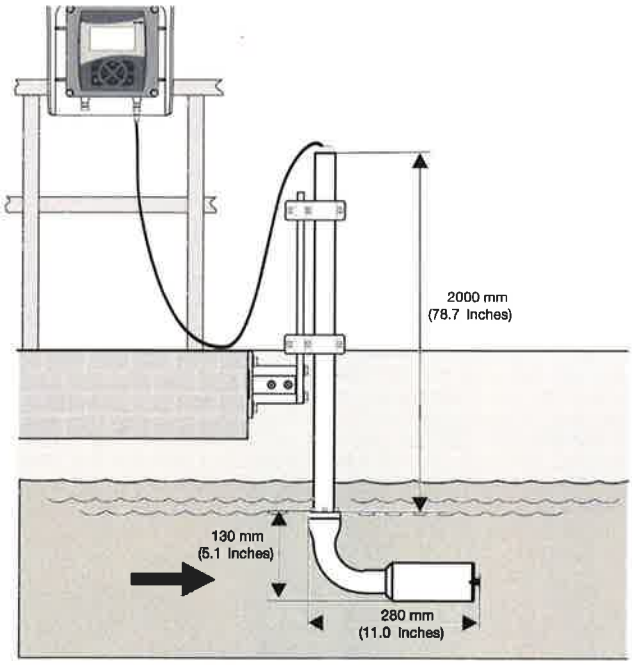


Solitax sc Immersion Probe

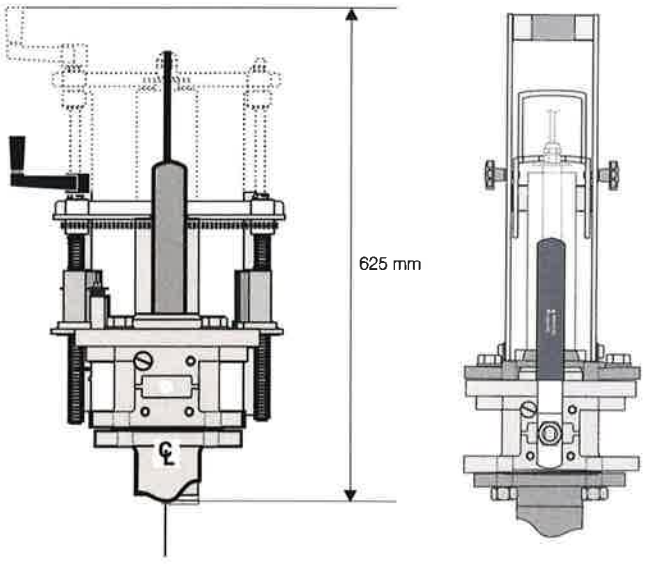


Installation / Mounting

Installation for mounting Solitax sc for immersion in open tanks. (Stainless steel pole mount kit, Prod. No. LZY714.99.53120)



Fixture with ball valve for mounting Solitax sc models inline and highline sensors in pipes., minimum pipe size 100 mm (4-in.) (Prod. No. LZX337, max pressure 6 bar; Prod. No. 936, max. pressure 1 bar.



Ordering Information

Common Configurations: Solitax sc Turbidity and Suspended Solids Analyzers with SC200 controller and sensors shown

Immersion in Open Tanks Applications

2983400	Turbidity Analyzer, t-line sc, PVC, with wiper (0.001 to 4000 NTU)
2983500	Turbidity and Suspended Solids Analyzer, ts-line sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L)
2983600	Turbidity and High Range Suspended Solids Analyzer, hs-line sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L)

Insertion in Pipes Applications (includes insertion mounting kit)

2983700	Turbidity and Suspended Solids Analyzer, inline sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L)
2983900	Turbidity and High Range Suspended Solids Analyzer, highline sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L)

NOTE:
1. *Power cords must be ordered separately.*
2. *Fixed point installation kit or handrail mount kit must be ordered separately for all immersion analyzers.*

Individual Solitax sc Sensors

Immersion Sensors

LXV423.99.10000	Turbidity, t-line sc, PVC with wiper (0.001 to 4000 NTU)
LXV423.99.12000	Turbidity, t-line sc, PVC without wiper (0.001 to 4000 NTU)
LXV423.99.10100	Turbidity and Suspended Solids, ts-line sc, PVC with wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L)
LXV423.99.12100	Turbidity and Suspended Solids, ts-line sc, PVC without wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L)
LXV423.99.00100	Turbidity and Suspended Solids, ts-line sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L)
LXV423.99.02100	Turbidity and Suspended Solids, ts-line sc, stainless steel without wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L)
LXV423.99.10200	Turbidity and Suspended Solids, hs-line sc, PVC with wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L)
LXV423.99.12200	Turbidity and Suspended Solids, hs-line sc, PVC without wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L)
LXV423.99.00200	Turbidity and Suspended Solids, hs-line sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L)
LXV423.99.02200	Turbidity and Suspended Solids, hs-line sc, stainless steel without wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L)

Insertion Sensors

LXV424.99.00100	Turbidity and Suspended Solids, inline sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L)
LXV424.99.02100	Turbidity and Suspended Solids, inline sc, stainless steel without wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L)
LXV424.99.00200	Turbidity and Suspended Solids, highline sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L)
LXV424.99.02200	Turbidity and Suspended Solids, highline sc, stainless steel without wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L)

Installation Accessories

LZY714.99.53120	Stainless Steel pole mount kit for Solitax t-line, ts-line, and hs-line immersion sensors, including 10 cm base and 2 m pole with sensor adapter
5738400	Insertion Mounting Kit for inline and highline insertion sensors (ball valve safety armature and extraction system). Kit includes a 4 inch pre-coped Carbon Steel Flange. Non-coped flanges are available
AHA033NPT	Sensor Adapter, straight 1-1/2 FNPT
AHA034NPT	Sensor Adapter, elbow 1-1/2 FNPT 90°
MH236B00Z	Handrail Mounting Kit (for sensor to be used with either adapter above) includes 1.5-inch diameter by 7.5-ft long CPVC pipe and swivel/pivot/ pipe clamp assembly
LZX337	Stainless steel ball valve safety armature/ extraction fitting for in-line and hi-line probes w/o welding flange, maximum operating pressure 6 bar/87 psi
LZX936	Stainless steel ball valve armature, maximum operation pressure 1 bar/14.5 psi
LZX660	Non-coped stainless steel welding flange for insertion kit
LZX661	Non-coped carbon steel welding flange for insertion kit

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HACH®
Be Right™

Monitoring Oil in Wastewater

The Situation

A wastewater treatment company operated an oil/water separation facility on a multi-acre industrial site in Northern California. Its purpose was to recycle oil products for profit while at the same time providing a wastewater treatment service for industries based in Northern California.

The oily water mixes processed by the company were obtained from tanker bilges, contaminated rainwater runoff, truck spills, oil spills into waterways, crankcase drain oils, hydraulic oils and industrial lubricants, contaminated fuel oils, and rinsate from fuel tanks. The water treatment system on this site was designed to treat the water, which was separated from the "oily water mixes" before being discharged to the local publicly owned treatment works (POTW).

The Problem

The success of this facility as a profitable enterprise depended on its economical operation. This company chose to avoid the cost of large storage tanks, the associated land mass, and more costly equipment used for "batch" treatment and discharge. A significant component to the company's success was its dependence on continuously discharging treated wastewater to the local sewer authority.

The economic advantage of continuous discharge could only be achieved at this location by meeting strict discharge limits for the level of hydrocarbons present in the discharged water. Local ordinances required continuous monitoring for continuous discharge of the company's treated wastewater. Continuous hydrocarbon monitoring verifies removal of hydrocarbons from the water by the wastewater treatment system. The maximum discharge limit for hydrocarbons in water is 10 ppm for this application.

> "The local sewer authority would not issue a permit to continuously discharge treated water without verifying treatment with a continuous online monitor."

The Solution

Continuous discharge required continuous monitoring. The wastewater treater chose the Turner Designs TD-4100 continuous online monitor to meet their monitoring needs. The monitor was a mandatory component of their treatment system. In the words of the sewer authority, "Continuous monitoring of the discharge will let me sleep at night."

The treatment system consisted of a dissolved air flotation system (DAF), solids centrifuge, and three (3) 2000 lb carbon beds. The online monitor measured water samples between two carbon beds. The TD-4100 was configured with a mixed fuel filter kit which permited the detection and measurement of gasoline, diesel, jet fuel, and lubricating oils in water. The monitor provided continuous uninterrupted analysis of the treated water and served two functions: a treatment verification tool to maintain discharge permit compliance, and a carbon breakthrough tool to maximize the economics of carbon bed replacement.

Monitoring Fuels in Stormwater

The Situation

A major pipeline company has large storage tank farms throughout the Western States. The pipeline company transports, stores, blends additives, and distributes gasoline, diesel, and jet fuel to retail service stations and airports. Due to the quantity and movement of fuel at these facilities, there is always the potential for fuel spills. These facilities prevent out of compliance discharge by capturing all stormwater in storm drains, which is then sent to treatment systems prior to discharge. At some sites, groundwater from ongoing remediation is mixed with stormwater at the treatment system prior to local discharge.

Problem

The challenge requires developing a system or program for continuous uninterrupted pollution prevention and environmental discharge compliance. Traditional grab or batch sample analysis is not a viable option for continuous discharge programs. It only provides snapshot status of a treatment system's performance, it is highly prone to missing upsets and it carries the burden of recurring laboratory costs.

Previous continuous online measurement and detection of fuel in water has been difficult. The difficulty was the need to detect fuel in water at 1 ppm for discharge compliance at these facilities. Fuel at or below concentrations of 1 ppm is, physically, fully dissolved in the water. Turbidity, ultrasonic, and light scatter oil in water monitors cannot detect dissolved hydrocarbons water. However, optical instruments called fluorometers can "see" dissolved petroleum hydrocarbons in water, and at very low concentrations. TD-4100 series monitors are fluorometry based and can measure ppb to ppm for both dissolved and dispersed aromatic hydrocarbons in water.

Solution

Continuous discharge requires continuous monitoring. The pipeline facility chose a Turner Designs TD-4100 series continuous online monitor to verify treatment of contaminated stormwater runoff.

Although the technology used at each site is unique, a typical treatment system utilizes large tanks for primary fuel/water separation. The water from the storage tanks is then treated with two activated carbon beds and a "polish" or cleaning is performed with an ozone treatment system. The TD-4100 typically monitors treated water between carbon beds.

The TD-4100 was configured with a mixed fuel filter kit, which permits the detection and measurement of gasoline, diesel, and jet fuel in water. The monitor now provides continuous uninterrupted analysis of their treated water. The TD-4100 is calibrated to report concentration units for fuel at a high alarm level of 1 ppm and serves as a treatment verification tool to maintain discharge permit compliance.

TURNER DESIGNS
Hydrocarbon Instruments

Monitoring Hydrocarbons in Bilge Water

The Situation

Various processes onboard ships, such as machinery wash-down, maintenance, and leakage, generate oily wastewater. This contaminated water flow collects in the bilge of the ship. Marine diesel, lubricating oils, grease, as well as other contaminants may be present in bilge water. The bilge water is discharged overboard, with oil and grease concentrations in the discharged water limited by national and international regulations.

In the United States territorial waters, the U.S. Coast Guard (USCG) limits the discharge of oil in bilge water to 15 ppm. The USCG further limits bilge water and oily discharges that cause a visible sheen on the water. Bilge water discharges in international waters are limited to 15 ppm by the International Maritime Organization (IMO). Ship operators who violate the discharge limits are subject to large fines by the jurisdictional authority as well as possible criminal prosecution of responsible personnel. Recently, cruise ship lines and cargo ships have incurred record fines for discharge violations.

Problem

The maritime industry needs an effective and accurate analyzer to monitor the oil concentration in the bilge water before discharge. Online analyzers manufactured by several companies have been employed for this application, yet to date, none of these analyzers have been effective or accurate, despite being certified monitors.

Most analyzers monitor oil in water by using a contact flow cell through which the bilge water flows. The flow cell is regularly fouled by oil and other material. Even mechanical wipers cannot keep the flow cell free of fouling. Most monitors require considerable maintenance for proper operation or measure the oil concentration indirectly by turbidity, which is subject to interference by solid material present in bilge water.

Solution

TD-4100 series monitors eliminate the problems associated with other bilge water monitors. The TD-4100XD uses a non-fouling, non-contact flow cell to monitor the hydrocarbon concentration by fluorescence, which is directly proportional to the oil concentration. The flow cell eliminates contact between the water and optical windows, thereby preventing fouling. TD-4100XD measurements can be verified with a CheckPOINT™ solid standard. Bilge water monitors require certification. The TD-4100XD is certified by the USCG as an Oil Content Meter/15 ppm bilge alarm according to IMO 107(49). The alarm relays can activate discharge control devices and/or alert operators.

U. S. Department of Homeland Security
United States Coast Guard
Certificate of Approval

Coast Guard Approval Number: 162.050/9061/0 Expires: 10 January 2023

OIL POLLUTION PREVENTION EQUIPMENT
The following device has been tested in accordance with IMO Resolution MEPC.107(49)

Turner Designs Hydrocarbon Instruments, Inc.
2027 North Gateway Boulevard
Suite 109
Fresno CA 93727-1623

TD-107C; 15 ppm Bilge Alarm

This is to certify that the equipment listed has been examined and tested in accordance with the requirements of the specifications contained in Annex 13 to the guidelines and specifications contained in IMO Resolution MEPC.107(49).

Equipment is manufactured by Turner Designs Hydrocarbon Instruments, Inc to specification/assembly drawing no. TD-107C dated 30 Jan 2008.

The unit is not certified for use in hazardous locations.

A copy of this Certificate should be carried aboard a vessel fitted with this equipment at all times. IMO Certificates of Type Approval do not expire and are valid for equipment manufactured at any time during the period of validity of this Certificate. Test data and results attached in the appendix.

This certificate documents compliance with 46 CFR 162.050.

*** End ***

THIS IS TO CERTIFY THAT the above named manufacturer has submitted to the undersigned satisfactory evidence that the item specified herein complies with the applicable laws and regulations as outlined on the reverse side of this Certificate, and approval is hereby given. This approval shall be in effect until the expiration date hereon unless sooner canceled or suspended by proper authority.

GIVEN UNDER MY HAND THIS 10th DAY OF JANUARY 2018, AT WASHINGTON, D.C.

C. J. Robuck

C. J. ROBUCK
Chief, Engineering Division
BY DIRECTION OF THE COMMANDANT

TERMS: The approval of the item described on the face of the Certificate has been based upon the submittal of satisfactory evidence that the item complies with the applicable provisions of the navigation and shipping laws and the applicable regulations in Title 33 and/or Title 46 of the Code of Federal Regulations. The approval is subject to any conditions noted on this Certificate and in the applicable laws and regulations governing the use of the item on vessels subject to Coast Guard inspection or on other vessels and boats.

Consideration will be given to an extension of this approval provided application is made 3 months prior to the expiration date of this Certificate.

The approval holder is responsible for making sure that the required inspections or tests of materials or devices covered by this approval are carried out during production as prescribed in the applicable regulations.

The approval of the item covered by this certificate is valid only so long as the item is manufactured in conformance with the details of the approved drawings, specifications, or other data referred to. No modification in the approved design, construction, or materials is to be adopted until the modification has been presented for consideration by the Commandant and confirmation received that the proposed alteration is acceptable.

NOTICE: Where a manufacturer of safety-at-sea equipment is offering for sale to the maritime industry, directly or indirectly, equipment represented to be approved, which fails to conform with either the design details or material specifications, or both, as approved by the Coast Guard, immediate action may be taken to invoke the various penalties and sanctions provided by law including prosecution under 46 U.S.C. 3318, which provides:

"A person that knowingly manufactures, sells, offers for sale, or possesses with intent to sell, any equipment subject to this part *(Part B. of Subtitle II of Title 46 U.S.C.).* and the equipment is so defective as to be insufficient to accomplish the purpose for which it is intended, shall be fined not more than $10,000, imprisoned for not more than 5 years or both."

APPENDIX

United States Coast Guard Certificate of Approval
Coast Guard Approval Number: 162.050/9061/0
Expires: 10 January 2023

TEST DATA AND RESULTS OF TESTS CONDUCTED ON A 15 PPM BILGE ALARM IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS CONTAINED IN IMO RESOLUTION MEPC.107(49)

15 ppm Bilge Alarm submitted by:
Turner Designs Hydrocarbon Instruments, Inc.

Test location:
Testing Services-Plumbing Laboratory

Method of sample analysis:
ISO 9377-2-2000(E)

Samples analyzed by:
Director, Tei-Testing Services-Analytical Laboratory

Environmental testing of the electrical and electronic sections of the 15 ppm Bilge Alarm has been carried out in accordance with the guidelines and specifications contained in IMO resolution MEPC.107(49). The equipment functioned satisfactorily on completion of each test specified on the environmental test protocol.

Calibration Test and Response Time Test

	"A"		"B"		"C"	
	Measured	Grab	Measured	Grab	Measured	Grab
0 ppm	0.0	< 0.5	0.0	< 0.5	0.0	< 0.5
15 ppm	14.8	14.3	15.6	14.8	14.7	15.2
Full Scale	29.3	28.8	29.0	29.2	29.6	30.1
Water Temperature	22.0°C		24.0°C		24.0°C	
Re-zero	No		No		No	
Recalibrate	No		No		No	
Response Time (seconds)	3.2		3.2		3.1	

Contamination and Color Test

	Oil Content Meter Reading
Clean Water and Test Fluid "B" at 10 ppm	10.0 ppm
Very Salt Water and Test Fluid "B" at 10 ppm	10.0 ppm
Iron Oxide at 10 ppm	9.6 ppm
Iron Oxide at 50 ppm	9.3 ppm
Iron Oxide at 100 ppm	8.9 ppm

Sample Pressure or Flow Test

15 ppm Bilge Alarm reading shift at 50% of normal	0 ppm
15 ppm Bilge Alarm reading shift at 200% of normal	0 ppm
Deviations:	No deviations to the test method were made.

APPENDIX

United States Coast Guard Certificate of Approval
Coast Guard Approval Number: 162.050/9061/0
Expires: 10 January 2023

TEST DATA AND RESULTS OF TESTS CONDUCTED ON A 15 PPM BILGE ALARM IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS CONTAINED IN IMO RESOLUTION MEPC.107(49)

Shut Off Test

15 ppm Bilge Alarm reading before shut off	15.0 ppm
15 ppm Bilge Alarm reading after shut off	14.2 ppm
Damage to 15 ppm Bilge Alarm:	No damage was caused by this test to the 15 ppm Bilge Alarm.

Utilities Supply Variation Test

110% Voltage Effects	There was no change in the Bilge Alarm reading.
90% Voltage Effects	There was no change in the Bilge Alarm reading.
110% Air Pressure Effects	Not applicable
90% Air Pressure Effects	Not applicable
110% Hydraulic Pressure Effects	Not applicable
90% Hydraulic Pressure Effects	Not applicable

Calibration and Zero Drift Test

Calibration Drift	0.5 ppm
Zero Drift	0.0 ppm

Diagram of test rig attached.
Diagram of sampling arrangement attached.

*** END ***

U. S. Department of Homeland Security
United States Coast Guard
Certificate of Approval

Coast Guard Approval Number: 162.050/9018/1 Expires: 13 March 2017

OIL POLLUTION PREVENTION EQUIPMENT
The following device has been tested in accordance
with IMO Resolution MEPC.107 (49)

Turner Designs Hydrocarbon Instruments, Inc.
2023 North Gateway Boulevard
Suite 101
Fresno CA 93727-1623

TD-4100; 15 ppm Bilge Alarm

This is to certify that the bilge alarm listed has been examined and tested in accordance with the requirements of the specifications contained in IMO Resolution MEPC.107(49).

Equipment manufactured by Turner Designs Hydrocarbon Instruments, Inc. to general arrangement drawings located within the TD-4100 Design, Installation, & Operations Guide, Revision 1, dated December 21, 2004.

A copy of this certificate should be carried aboard a vessel fitted with this equipment at all times.

IMO Certificates of Type Approval do not expire and are valid for equipment manufactured at any time during the period of validity of this certificate.

Test data and results attached in the appendix.

This certificate documents compliance with 46 CFR 162.050.

*** END ***

THIS IS TO CERTIFY THAT the above named manufacturer has submitted to the undersigned satisfactory evidence that the item specified herein complies with the applicable laws and regulations as outlined on the reverse side of this Certificate, and approval is hereby given. This approval shall be in effect until the expiration date hereon unless sooner canceled or suspended by proper authority.

GIVEN UNDER MY HAND THIS 13th DAY OF MARCH 2012, AT WASHINGTON D.C.

S. J. KELLY
Chief, Engineering Division
U.S. Coast Guard Marine Safety Center

DEPT. OF HOMELAND SECURITY, USCG, CGHQ-10030
(REV. 3-03)

TERMS: The approval of the item described on the face of the Certificate has been based upon the submittal of satisfactory evidence that the item complies with the applicable provisions of the navigation and shipping laws and the applicable regulations in Title 33 and/or Title 46 of the Code of Federal Regulations. The approval is subject to any conditions noted on this Certificate and in the applicable laws and regulations governing the use of the item on vessels subject to Coast Guard inspection or on other vessels and boats.

Consideration will be given to an extension of this approval provided application is made 3 months prior to the expiration date of this Certificate.

The approval holder is responsible for making sure that the required inspections or tests of materials or devices covered by this approval are carried out during production as prescribed in the applicable regulations.

The approval of the item covered by this certificate is valid only so long as the item is manufactured in conformance with the details of the approved drawings, specifications, or other data referred to. No modification in the approved design, construction, or materials is to be adopted until the modification has been presented for consideration by the Commandant and confirmation received that the proposed alteration is acceptable.

NOTICE: Where a manufacturer of safety-at-sea equipment is offering for sale to the maritime industry, directly or indirectly, equipment represented to be approved, which fails to conform with either the design details or material specifications, or both, as approved by the Coast Guard, immediate action may be taken to invoke the various penalties and sanctions provided by law including prosecution under 46 U.S.C. 3318, which provides:

"A person that knowingly manufactures, sells, offers for sale, or possesses with intent to sell, any equipment subject to this part *(Part B, of Subtitle II of Title 46 U.S.C.)*, and the equipment is so defective as to be insufficient to accomplish the purpose for which it is intended, shall be fined not more than $10,000, imprisoned for not more than 5 years or both."

APPENDIX

United States Coast Guard Certificate of Approval
Coast Guard Approval Number: 162.050/9018/1
Expires: 13 March 2017

TEST DATA AND RESULTS OF TESTS CONDUCTED ON A 15 PPM BILGE ALARM IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS CONTAINED IN IMO RESOLUTION MEPC.107(49)

15 ppm Bilge Alarm submitted by:

Turner Designs Hydrocarbon Instruments, Inc.

Test location:

Testing Engineers International, Inc.
Testing Services-Plumbing Laboratory
4121 South 500 West
Salt Lake City, UT 84123-1399

Method of sample analysis:

ISO 9377-2-2000(E)

Samples analyzed by:

Director, Tei-Testing Services-Analytical Laboratory

Environmental testing of the electrical and electronic sections of the 15 ppm Bilge Alarm has been carried out in accordance with the guidelines and specifications contained in IMO resolution MEPC.107(49). The equipment functioned satisfactorily on completion of each test specified on the environmental test protocol.

Calibration Test and Response Time Test

	"A"		"B"		"C"	
	Measured	Grab	Measured	Grab	Measured	Grab
0 ppm	0.0	< 0.5	0.0	< 0.5	0.0	< 0.5
15 ppm	15.0	15.7	15.2	17.3	14.4	18.1
Full Scale	29.3	28.1	30.4	33.7	31.2	34.5
Water Temperature	25 - 27.5°C		25 - 27.8°C		24 - 26.8°C	
Re-zero	No		No		No	
Recalibrate	No		No		No	
Response Time (seconds)	1.2		0.9		1.3	

Contamination and Color Test

	Oil Content Meter Reading
Clean Water and Test Fluid "B" at 10 ppm	9.7 ppm
Very Salt Water and Test Fluid "B" at 10 ppm	9.3 ppm
Iron Oxide at 10 ppm	9.7 ppm
Iron Oxide at 50 ppm	9.6 ppm
Iron Oxide at 100 ppm	9.7 ppm

Sample Pressure or Flow Test

15 ppm Bilge Alarm reading shift at 50% of normal	14.7 ppm
15 ppm Bilge Alarm reading shift at 200% of normal	14.2 ppm
Deviations:	No deviations to the test method were made.

APPENDIX

United States Coast Guard Certificate of Approval
Coast Guard Approval Number: 162.050/9018/1
Expires: 13 March 2017

TEST DATA AND RESULTS OF TESTS CONDUCTED ON A 15 PPM BILGE ALARM IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS CONTAINED IN IMO RESOLUTION MEPC.107(49)

Shut Off Test

15 ppm Bilge Alarm reading before shut off	15.6 ppm
15 ppm Bilge Alarm reading after shut off	15.1 ppm
Damage to 15 ppm Bilge Alarm:	No damage was caused by this test to the 15 ppm Bilge Alarm.

Utilities Supply Variation Test

110% Voltage Effects	There was no change in the Bilge Alarm reading.
90% Voltage Effects	There was no change in the Bilge Alarm reading.
110% Air Pressure Effects	There was no change in the Bilge Alarm reading.
90% Air Pressure Effects	There was no change in the Bilge Alarm reading.
110% Hydraulic Pressure Effects	There was no change in the Bilge Alarm reading.
90% Hydraulic Pressure Effects	There was no change in the Bilge Alarm reading.

Calibration and Zero Drift Test

Calibration Drift	0.1 ppm
Zero Drift	0.0 ppm

Diagram of test rig attached.
Diagram of sampling arrangement attached.

*** END ***

Appendix F

Memo: Avian Species Review, Assessment and Mitigation

Memo

To: Envirosoil Limited

From: Christopher Kennedy, M.Sc.

Date: Nov. 24, 2020

Subject: Avian Species Review, Assessment and Mitigation (750 Pleasant Street, Dartmouth, Nova Scotia) – Proposed Waste Oil Recycling and Water Treatment Facility

Our File: 19-1742

To provide information on potential occurrences of rare and endangered bird species, and unique or sensitive bird habitats potentially existing within and/or near the proposed project by Envirosoil Limited at 750 Pleasant Street, a review of the following existing data and information sources was conducted by Dillon Consulting:

- Listed species by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC);
- Listed species under the federal *Species at Risk Act* (SARA);
- Listed species under the Nova Scotia *Endangered Species Act* (NS ESA); and
- Species ranked as 'S3' or rarer by the Atlantic Canada Conservation Data Centre (ACCDC).

Other available background information sources and mapping reviewed to identify and assess wildlife and wildlife habitat presence at the project location included:

- Ecological Reserves in the Maritimes;
- Environmentally Sensitive Areas database;
- Important Bird Areas of Canada;
- Federally-designated Migratory Bird Sanctuaries; and
- The Second Atlas of Breeding Birds of the Maritime Provinces.

Resident and Migratory Birds

The vast majority of bird species found in Nova Scotia are migratory and either breed in the province during the summer months, or pass through it during the spring and fall migratory periods. Jurisdiction for many migratory birds is federal, since migratory birds cross both provincial and international boundaries. The *Migratory Birds Convention Act* (MBCA) is the federal law which protects migratory birds in both Canada and the United States. The Act prohibits killing, injuring or harassing migratory birds, their nests, or their young. Most species of bird that occur in Canada, including the Maritime Provinces, are protected under the MBCA.

Furthermore, species listed pursuant the federal *Species at Risk Act* (SARA) or the Nova Scotia *Endangered Species Act* (NS ESA) are afforded further protection as harm, the destruction of their nest, eggs or young is prohibited.

Birds not addressed under federal jurisdiction include grouse, quail, pheasants, ptarmigan, hawks, owls, eagles, falcons, cormorants, pelicans, crows, jays, and kingfishers. Most birds not included in this list, however, are afforded protected under provincial laws, most notably the Nova Scotia *Wildlife Act*.

The Nova Scotia *Wildlife Act* protects all wildlife species (including all vertebrate animals, including birds) from angling, hunting, trapping and other forms of intentional take, except under the authority of permits or licences. The Act also specifically prohibits the disturbance, gathering or collection of the nests or eggs of any bird species, except under the authority of a permit.

Environment and Climate Change Canada (ECCC) through its Canadian Wildlife Service (CWS) provides general avoidance information for migratory birds, including regional nesting periods during which most migratory bird species covered under the MBCA are likely to breed. The project area is located in Breeding Zone C3, where most migratory birds breed from mid-April to late August each year (ECCC 2020). However, it is noted that some avian species nest outside of this period, including corvids, crossbills, owls and waxwings.

Atlas of Breeding Birds of the Maritime Provinces – 2nd Edition

The Maritime Breeding Bird Atlas (MBBA) database (Stewart et al. 2015) provides information on the presence of breeding bird species in counts conducted between 2006 and 2010. Within the MBBA Second Atlas, the project area lies within Region #20 (Chebucto – Musquodoboit) in Square #20MQ54 (Halifax). During the MBBA period of 2006-2010, a total of 120 species of birds were recorded within this square. Of these species, six (6) species listed on either the federal SARA, the NS ESA, or both. These species are summarized in Table 1 (below) and included: eastern wood-pewee, chimney swift, barn swallow, common nighthawk, eastern whip-poor-will and Canada warbler (see **Attachments**)

Table 1. Bird Species at Risk Observed during the 2nd Ed. MBBA

Species	Status[1]	Breeding Habitat	Potential to Occur in Project Area
Eastern Wood-pewee	**COSEWIC:** Special Concern **SARA:** Special Concern **NSESA**: Vulnerable **S-Rank:** S2B,S2M	This species prefers mature deciduous forests, but will nest in nearly any type of wooded habitat in the southeastern Canada including mixed woodlands, urban parkland and even roadside trees. They are usually found in clearings and forest edges.	This species may nest in the vicinity of the project area, but it is considered unlikely.
Chimney Swift (*Chaetura pelagica*)	**COSEWIC:** Threatened **SARA:** Threatened **NSESA:** Endangered **S-Rank:** S2S3B,S2M	Historically, the Chimney Swift used mainly large hollow trees for nesting sites, but have adopted chimneys as preferred nesting sites. They are generally associated with urban and rural areas where chimneys are available	This species may forage in the vicinity of the project area, but interactions are considered unlikely.

Species	Status[1]	Breeding Habitat	Potential to Occur in Project Area
		for nesting and roosting. Chimney swifts are aerial foragers and tend to concentrate near water where insects are abundant (COSEWIC 2007a).	
Barn Swallow (*Hirundo rustica*)	**COSEWIC:** Threatened **SARA:** Threatened **NSESA:** Endangered **S-Rank:** S2B,S2M	Barn swallows typically nest on human-made structures such as abandoned buildings or barns and forages in open areas (COSEWIC 2011).	This species may forage in the vicinity of the project area. Additionally, nesting habitat for this species does exist within the LAA (i.e. many human-made structures nearby).
Common Nighthawk (*Chordeiles minor*)	**COSEWIC:** Special Concern **SARA:** Threatened **NSESA:** Threatened **S-Rank:** S3B,S4M	Common nighthawk typically breeds throughout the Maritimes and nests on the ground in open vegetation free habitats (COSEWIC 2007b).	This species may forage in the vicinity of the project area. Additionally, nesting habitat for this species does exist within the project area (i.e. disturbed, graveled areas).
Eastern Whip-Poor-Will (*Antrostomus vociferous*)	**COSEWIC:** Threatened **SARA:** Threatened **NSESA:** Threatened **S-Rank:** S2B,S2M	Eastern whip-poor-will (a SAR) breeds in mature deciduous and mixed wood forest types, typically with no little or no understory (Cornell 2019).	This species may nest in the vicinity of the project area, but it is considered unlikely.
Canada Warbler (*Cardellina Canadensis*)	**COSEWIC:** Threatened **SARA:** Threatened **NSESA:** Endangered **S-Rank:** S3B, S3M	Canada warbler typically breeds throughout Maritimes and southeastern Canada. Typical habitat includes a variety of forest types (COSEWIC 2008). They prefer wet mixed forest with well-developed shrub layer as well as regenerating areas.	This species is not anticipated to occur in the vicinity of the project area as no appropriate habitat exists nearby

Notes: [1]AC CDC S-Ranks as follows: S1: extremely rare in province; S2: rare in province; S3: uncommon in province; S4: widespread, common and apparently secure in province; S5: widespread, abundant and demonstrably secure in province S#S# = a numeric range rank used to indicate any range of uncertainty about the status of the species or community. B= Breeding, N = Nonbreeding, M = Migrant, U = Unrankable. (AC CDC 2020)

Important Bird Areas and Significant Habitat

The nearest Important Bird Areas (IBAs) are the Musquodoboit Region (NS014) and the Grassy Island Complex (NS026). The Musquodoboit Region IBA is located approximately 30 km to the east. It is described as tidal inlet, largely enclosed by a barrier sand beach and many wooded islands. The area is important for large congregations of migrating Canada geese (*Branta canadensis*) and American black ducks (*Anas rubripes*). The Grassy Island Complex IBA, as the name suggests, represents three islands within Mahone Bay and St. Margarets Bay, the closest of which is located approximately 33 km to the west. These three islands, Grassy Island. Big Tancook and Flat Island, are important because they have regularly supported nesting Roseate Terns (*Sterna dougallii*), which are listed as *Endangered* both federally (SARA) and provincially (NSESA).

Potential Interactions

The primary possible interactions with birds due to the project include habitat alteration in a small shoreline area, destruction of nests, direct mortality due to collision, and noise disturbance. The purpose of the desktop review is to refine constraints mapping by identifying protected species, habitats or features (such as a colony tree or raptor nest) to ensure effective mitigation in order to be compliant with federal and provincial legislation.

The project may interact with birds and bird habitat in the following ways:

- Direct mortality via collision with equipment and materials during construction and operational activities;
- Noise from project construction activities may deter birds from migrating into and using the project area;
- Noise from project construction activities may result in the abandonment of nests or increased rates of predation and exposure of hatchlings and eggs during temporary abandonment; and,
- There is the potential for some ground nesting species to occupy, inhabit and possibly nest within the construction area, such as killdeer (*Charadrius vociferus*), common nighthawk (*Chordeiles minor*) and be directly disturbed by construction activities.

In addition, the project may result in sensory disturbance to and avoidance by birds due to noise and human activity, and incidental bird collisions with vehicles travelling around the project area.

Mitigation

The following mitigation measures are planned to reduce environmental effects on birds and bird habitat.

- The size of the project area will be limited to that necessary to accomplish the project purpose;
- Activities that may harm or harass migratory birds will be scheduled to the extent possible outside of the normal breeding bird and migratory bird season (April 15 to August 31) to ensure that eggs and flightless young are not inadvertently harassed or destroyed. At a minimum, if complete avoidance of these activities during the specified timeframe is not feasible, nest

searches will be undertaken by a qualified biologist and avoidance setbacks will be established around active nests. Nest searches will only be completed following consultation with Environment and Climate Change Canada (Canadian Wildlife Service) and by a qualified biologist;

- Existing infrastructure and previously disturbed areas (e.g., roads, mowed areas, parking areas, etc.) will be preferentially used where feasible to reduce ground disturbance;
- All machinery and equipment will be maintained in good working order to limit emissions, including noise generation;
- All machinery and equipment will be cleaned prior to entering the site to limit the potential spread of exotic or invasive plant species;
- All food and food waste will be stored and disposed of properly to avoid attracting wildlife, including avian species;
- On-site workers will receive training and reference material that will help them identify bird species that could be attracted to habitats created by project operations (e.g., killdeer and common nighthawk). If workers encounter birds that they suspect may be nesting within the project area, a biologist will be contacted to determine whether nesting is occurring and to locate the nest. Note: nests should not be flagged since this increases the probability of predation;
- If a nest is found within the project area, an appropriate setback developed in consultation with the Canadian Wildlife Service (CWS) will be established around the nest in which humans activities will be restricted until the young fledge and leave the area or until the nest naturally fails.

If a species at risk is encountered, contact will be made to a Species at Risk Biologist at Nova Scotia Department of Lands and Forestry to discuss immediate actions and future mitigation.

Appendix G

Background Noise Monitoring Study

August 4, 2020

137 Chain Lake Drive
Suite 100
Halifax, Nova Scotia
Canada
B3S 1B3
Telephone
902.450.4000
Fax
902.450.2008

The Municipal Group of Companies
927 Rocky Lake Drive
Bedford, NS
B4A 3Z2

Attention: Patrick Rooney
Director of Manufacturing

Liquid Asphalt Storage Facility, 750 Pleasant Street – Background Noise Monitoring

Introduction

Dillon Consulting Limited (Dillon) is pleased to provide General Liquids Canada (GLC) with the results of the background noise monitoring for the proposed Liquid Asphalt Storage Facility; located at 750 Pleasant Street in Dartmouth, Nova Scotia, hereafter referred to as the "Site" or "subject property", see Attachment 1, Figure 1. The monitoring locations are illustrated in Attachment 1, Figure 2. Details of the monitoring program as well as the results are discussed below.

Objectives

Based on the site activities of the proposed Liquid Asphalt Storage Facility, as well as the terms and conditions associated with the Environmental Assessment Approval (Section 4.1 f)), a compliance noise monitoring plan has been developed. The purpose of the noise monitoring plan is to:

- Evaluate background noise generated near the site before construction and operational activities commence, for the purpose of differentiating existing noise in the area from new noise being introduced.

It is noted that background noise monitoring data will be compared to Noise Guidelines for Nova Scotia (NSDOE 1999).

Weather Conditions

Weather conditions are documented during each site visit and are supplemented with Environment Canada weather data from their nearby station. Conditions during the three days were generally sunny to overcast with minor amounts of precipitation (<5mm on July 17th and 18th, 2020 combined). The wind speed ranged from no wind

to light wind (0 km/h – 17 km/h), with wind direction being predominately from the north and northeast. Atmospheric pressure was recorded as downward trending on July 17th and 18th, 2020, rising again in the morning on July 20th, 2020 and falling in the afternoon.

Methodology and Results

Approximately 72 hours of continuous noise monitoring was recorded using Type II noise meters, equipped with data loggers. The A-weighted maximum, minimum and average hourly sound level equivalents (LAeq) for daytime (07:00 – 19:00), evening (19:00 – 23:00) and night time (23:00 – 07:00) are presented in Table 1. Also included in this table are the 90th percentile sound levels (i.e., Lp90) for each monitoring location. The two noise monitoring locations (Location 1 and Location 2) are presented in Attachment 1, Figure 2. The raw data is included in Attachment 2.

Table 1 Noise Monitoring Program Results

Location ID	Monitoring Location	Average LAeq (dBA)	Minimum Hourly Leq (dBA)	Maximum Hourly Leq (dBA)	Average Lp90 (dBA)
Daytime (07:00 – 19:00)					
Location 1	New entrance, northern property boundary	68	37	95	59
Location 2	Eastern corner of the site	64	38	95	55
Evening (19:00 – 23:00)					
Location 1	New entrance, northern property boundary	65	33	88	50
Location 2	Eastern corner of the site	61	37	86	47
Nighttime (23:00 – 07:00)					
Location 1	New entrance, northern property boundary	59	29	88	38
Location 2	Eastern corner of the site	56	32	99	41

NSE Noise Guidelines for Nova Scotia (NSDOE 1999):
65 dBA from 7am to 7pm (Daytime);
60 dBA from 7pm to 11pm (Evenings); and
55 dBA from 11pm to 7am (Nights).

The average LAeq values for the two monitoring locations range from mid-50's to high 60's, depending on the time of day. The dominant contributor to the background noise levels is the traffic on nearby Pleasant Street and the adjacent railway. The L90 baseline results indicates that in 90 percent of the day, evening and night, the levels are 10-20 decibels lower and are below the NSE guidelines. The peak (maximum)

noise levels measured at each monitoring location are likely associated with short duration events that resulted in the higher ambient noise levels. The gathered baseline data will be used to determine the noise impact associated with the proposed construction and operational activities at the site.

Closing

We trust that this report is adequate for your needs. Upon your direction, a copy will be forwarded to NSE. In the meantime, please contact the undersigned should you have any questions or comments.

Sincerely,

DILLON CONSULTING LIMITED

David McGinnis, CET
Senior Environmental Technologist

Paul Koke, M.A., CISEC.
Project Manager

JIE/DGM:lmk

Attachments:
Figure 1 – Site Location
Figure 2 – Site Figure with Noise Monitoring Locations
Location 1 Data File
Location 2 Data File

Our file: 20-2779

Attachment 1

Figure 1 – ***Site Location***

Figure 2 – Site Figure with Noise Monitoring L***ocations***

GENERAL LIQUIDS CANADA
LIQUID ASPHALT STORAGE FACILITY
750 PLEASANT STREET,
DARTMOUTH, NS

SITE LOCATION MAP
FIGURE 1

DILLON CONSULTING

MAP/DRAWING INFORMATION
National Topographic System Mapsheet 11D/12.

CREATED BY: TLR
CHECKED BY: PEK
DESIGNED BY: DGM

File Location:
c:\users\50tlr\desktop\pleasant street\dave\202779-05-03 fig1.dwg July, 29, 2020 3:17 PM

SCALE 1:50,000
0 250 500 1000m

N W E S

PROJECT: 20-2779

DATE: JULY 2020

GENERAL LIQUIDS CANADA
LIQUID ASPHALT STORAGE FACILITY
750 PLEASANT STREET,
DARTMOUTH, NS

BACKGROUND NOISE MONITORING LOCATIONS
FIGURE 2

PROPERTY BOUNDARY

BACKGROUND NOISE MONITORING LOCATIONS

File Location:
c:\users\50tlr\desktop\pleasant street\dave\202779-05-03 fig2.dwg
July, 29, 2020 3:40 PM

MAP/DRAWING INFORMATION
Revised Grading May 13, 2020 Plan provided by client and Google Earth Imagery.

CREATED BY: TLR
CHECKED BY: PEK
DESIGNED BY: DGM

15 0 15
SCALE 1:750 METRES

N
W E
S

DILLON CONSULTING

PROJECT: 20-2779
DATE: JULY 2020

Attachment 2

Location 1 Data File
Location 2 Data File

Background Noise Measurement at Location 1

Record #	Time	Measurement Time	LAeq	LAE	LAmax	LAmin	LA05	LA10	LA50	LA90	LA95	Lppeak
1	2020-07-17 11:39	1:00:00	68.9	104.5	89.4	45.6	72.5	71.3	67.2	60.8	58.3	112.2
2	2020-07-17 12:39	1:00:00	68.6	104.2	89.9	47.4	72.3	71.2	66.9	60.8	57.9	107.3
3	2020-07-17 13:39	1:00:00	68.7	104.3	81	48.6	72.6	71.6	67.2	61.3	58	105.7
4	2020-07-17 14:39	1:00:00	68.9	104.5	80.1	47.8	72.7	71.8	68	62.4	59.5	109.4
5	2020-07-17 15:39	1:00:00	69.8	105.4	90.2	51.8	73.1	72.3	68.5	62.2	59.8	110.1
6	2020-07-17 16:39	1:00:00	70.1	105.7	88.4	43.8	73.8	72.8	69	62	59.3	110.8
7	2020-07-17 17:39	1:00:00	68.8	104.4	80.4	46.2	73.1	71.9	67.5	61.4	59.1	110.3
8	2020-07-17 18:39	1:00:00	69.3	104.9	87.6	47.6	73.3	72	67.2	60.3	56.9	109.8
9	2020-07-17 19:39	1:00:00	69.7	105.3	87.8	45.6	73.6	72	66.9	59.3	56.2	112.7
10	2020-07-17 20:39	1:00:00	66.1	101.7	79.9	37.2	70.8	69.6	64.2	53.7	49.2	105.1
11	2020-07-17 21:39	1:00:00	64.3	99.9	80.2	37.4	69.6	68.2	61.4	47	44.2	108.3
12	2020-07-17 22:39	1:00:00	64.5	100.1	85.3	39.5	70.2	68.5	60.3	46.3	44.1	104.3
13	2020-07-17 23:39	1:00:00	61.7	97.3	79	32.6	68.5	66.3	51.8	36.6	34.6	99.9
14	2020-07-18 0:39	1:00:00	60.5	96.1	76.8	31.9	67.8	64.9	44.3	34.3	33.4	98.5
15	2020-07-18 1:39	1:00:00	56.3	91.9	73	30.7	64.1	59.7	35	32.3	32	94.7
16	2020-07-18 2:39	1:00:00	54	89.6	79.1	28.7	60.1	52.4	32.6	30.6	30.3	96
17	2020-07-18 3:39	1:00:00	58.2	93.8	85.9	29.7	63	57.8	38.9	32.3	31.6	107
18	2020-07-18 4:39	1:00:00	57.8	93.4	77.3	36.5	64.9	61.7	44.6	38	37.5	100
19	2020-07-18 5:39	1:00:00	63	98.6	75.5	36.9	69.7	67.6	56.9	41.1	39.9	96
20	2020-07-18 6:39	1:00:00	66.3	101.9	82.4	39.3	71.8	70.2	63.3	55.4	49.5	108.7
21	2020-07-18 7:39	1:00:00	67.7	103.3	85	40.7	72.8	71.1	64.2	54.7	51	112.5
22	2020-07-18 8:39	1:00:00	66.8	102.4	82.9	37.1	71.5	70.2	64.9	56.4	53	106.8
23	2020-07-18 9:39	1:00:00	66.6	102.2	83.1	41	71.2	69.9	64.5	53.3	49.7	103.9
24	2020-07-18 10:39	1:00:00	66.6	102.2	81.2	41.4	70.9	69.9	65.1	56.5	53.2	104.9
25	2020-07-18 11:39	1:00:00	68.2	103.8	92.5	43.7	71.2	70.3	66	58.8	55.7	112.6
26	2020-07-18 12:39	1:00:00	67.2	102.8	81.9	45.8	71.4	70.3	65.9	59	56.2	106.6
27	2020-07-18 13:39	1:00:00	67.7	103.3	81.2	42.7	71.6	70.6	66.3	59.1	55.5	106.3
28	2020-07-18 14:39	1:00:00	67	102.6	83.2	45.8	71	70	65.6	58.4	55.5	106.2
29	2020-07-18 15:39	1:00:00	67.7	103.3	86	40.4	71.4	70.4	65.9	59.1	54.8	111
30	2020-07-18 16:39	1:00:00	68.2	103.8	83.1	44.9	71.7	70.6	66.7	60.3	57.9	108.7
31	2020-07-18 17:39	1:00:00	67.1	102.7	81.4	39.4	71.4	70.3	65.2	56.8	53.4	104.7
32	2020-07-18 18:39	1:00:00	66.9	102.5	86.5	42.6	71.2	70	64.7	55.8	52.5	108.8
33	2020-07-18 19:39	1:00:00	66.7	102.3	82.3	43.2	71.3	70	64.7	54.6	49.9	110.4
34	2020-07-18 20:39	1:00:00	65.9	101.5	81.9	37.7	70.6	69.4	63.4	50.6	47.6	104.5
35	2020-07-18 21:39	1:00:00	64.5	100.1	85.7	37.9	69.1	67.8	61.7	49.4	47.2	107.6
36	2020-07-18 22:39	1:00:00	62.7	98.3	78	37.2	68.4	66.9	59.2	45.1	43.1	104.6
37	2020-07-18 23:39	1:00:00	60.9	96.5	74.9	36.3	67.4	65.7	54.3	41.2	39.7	96.4
38	2020-07-19 0:39	1:00:00	71.8	107.4	99.7	35.4	67.2	64.1	47.3	37.9	37.1	112.6
39	2020-07-19 1:39	1:00:00	56.2	91.8	75	35	63.8	60.1	41.3	36.4	36.1	100.3
40	2020-07-19 2:39	1:00:00	54.3	89.9	75.8	35.1	61.5	54.7	37.8	36.4	36.1	93.2
41	2020-07-19 3:39	1:00:00	52.5	88.1	72	33.8	59.6	52	37.1	35.4	35.1	99.6
42	2020-07-19 4:39	1:00:00	55.6	91.2	76.1	34.5	62.7	59.6	40.7	36.3	35.9	99.4
43	2020-07-19 5:39	1:00:00	60.4	96	75.6	34.2	66.9	65	52.7	40.1	38.2	102.4
44	2020-07-19 6:39	1:00:00	63.4	99	80	35.3	69.1	67.1	58.6	43.9	41.4	107.1
45	2020-07-19 7:39	1:00:00	64.2	99.8	81.5	37	69.4	67.6	60.2	47.5	44.8	107
46	2020-07-19 8:39	1:00:00	65.2	100.8	79.7	43.5	69.7	68.4	63.5	54.5	50.5	103.2
47	2020-07-19 9:39	1:00:00	66.2	101.8	84.5	46.9	70.2	69.1	64.9	58.5	55.9	106.7
48	2020-07-19 10:39	1:00:00	67.4	103	83.4	48.2	71.4	70.5	66.2	59.9	56.9	106.4
49	2020-07-19 11:39	1:00:00	68.2	103.8	84.7	47.8	71.8	70.7	66.8	61.7	59.6	105.4
50	2020-07-19 12:39	1:00:00	68.3	103.9	82.6	47.8	71.8	71	67.5	62.4	60.6	106.4
51	2020-07-19 13:39	1:00:00	68.5	104.1	86.7	47.5	71.9	71	67.5	61.9	59.5	111.3
52	2020-07-19 14:39	1:00:00	70	105.6	88.8	49	72.7	71.6	67.6	62.5	60.7	113.1
53	2020-07-19 15:39	1:00:00	69.4	105	82.5	52.7	72.8	71.8	68.5	63.8	62.2	108.6
54	2020-07-19 16:39	1:00:00	69.3	104.9	83.4	50.9	73	71.8	68.1	63.1	60.8	111.6
55	2020-07-19 17:39	1:00:00	68.8	104.4	84	52.5	72.8	71.6	67.3	61.1	59	109
56	2020-07-19 18:39	1:00:00	68.8	104.4	95.1	46.2	72	70.8	66.4	57.9	54.5	108.9
57	2020-07-19 19:39	1:00:00	66.8	102.4	79.6	42.6	71.2	70.1	65.4	56.8	53.8	108.1
58	2020-07-19 20:39	1:00:00	64.7	100.3	79.9	38.6	69.7	68.4	62.7	52.8	49.2	103.7
59	2020-07-19 21:39	1:00:00	65.2	100.8	87.7	36.5	69.1	67.5	60.1	44.3	41.6	108.5
60	2020-07-19 22:39	1:00:00	62.7	98.3	82.9	32.5	68.1	66.1	55.8	39.5	37.8	107.2
61	2020-07-19 23:39	1:00:00	57.4	93	74.6	31.1	64.9	62.1	43.4	33.7	33.1	97.3
62	2020-07-20 0:39	1:00:00	54.4	90	71.2	29.9	61.8	58.2	35.1	31.9	31.6	108.7
63	2020-07-20 1:39	1:00:00	55.6	91.2	80.6	30.4	61.2	55.6	35.3	31.6	31.3	99.5
64	2020-07-20 2:39	1:00:00	54.6	90.2	77.9	29.3	59.9	50.8	33.3	30.8	30.3	95.4
65	2020-07-20 3:39	1:00:00	55.4	91	75.9	30.4	61.9	58.4	37.4	33.1	32.2	99.8
66	2020-07-20 4:39	1:00:00	60.6	96.2	79.8	35	66.8	64.9	52.6	40.5	38.3	107.8
67	2020-07-20 5:39	1:00:00	66.2	101.8	78.8	39.9	71	69.9	64.4	53.1	50	101
68	2020-07-20 6:39	1:00:00	69.5	105.1	83.7	49.4	73.5	72.4	68.2	62.5	60.5	106.6
69	2020-07-20 7:39	1:00:00	68.7	104.3	80.8	50.1	73.1	71.8	67.1	60.1	57.3	109.9
70	2020-07-20 8:39	1:00:00	67.3	102.9	80.6	46.6	72	70.8	65.6	56.9	53.1	109.1
71	2020-07-20 9:39	0:35:44	67.4	100.7	79.4	45.6	71.5	70.6	65.9	58.2	54	105

Time Period	Max:	Min:	Geo Mean	Lp90
Daytime (7am - 7pm)	95	37	68	59
Evening (7pm - 11pm)	88	33	65	50
Nighttime (11pm - 7am)	88	29	59	38

Background Noise Measurement at Location 2

Record #	Time	Measurement Time	LAeq	LAE	LAmax	LAmin	LA05	LA10	LA50	LA90	LA95	Lppeak
1	2020-07-17 11:48	1:00:00	64.8	100.4	88.9	42.4	68	66.6	62.4	56.4	54.2	107.9
2	2020-07-17 12:48	1:00:00	63.7	99.3	78.4	44.8	67.7	66.3	62.4	56.3	54.1	102.2
3	2020-07-17 13:48	1:00:00	64.7	100.3	81.5	46	68	66.7	62.7	56.6	54.1	107.4
4	2020-07-17 14:48	1:00:00	63.8	99.4	80.7	48.9	67.7	66.4	62.7	57	55.2	104
5	2020-07-17 15:48	1:00:00	63.7	99.3	79.4	49.9	67.2	66.1	62.6	57.5	55.3	106.3
6	2020-07-17 16:48	1:00:00	64.9	100.5	80.4	44.3	68.9	67.8	63.3	57	54.7	105
7	2020-07-17 17:48	1:00:00	63.3	98.9	76.4	49.3	67.5	66.5	62	55.8	54.1	103.7
8	2020-07-17 18:48	1:00:00	64.5	100.1	80.5	47.1	68.8	67.4	62.4	55.3	52.7	107.6
9	2020-07-17 19:48	1:00:00	64.9	100.5	79.4	43.1	70.3	67.3	61.6	52.9	50.8	108.1
10	2020-07-17 20:48	1:00:00	61	96.6	76.7	40.9	65.9	64.7	58.6	48.6	46	99.7
11	2020-07-17 21:48	1:00:00	58.9	94.5	71.8	39.7	64.4	63	55.4	44.6	43.2	103.2
12	2020-07-17 22:48	1:00:00	59.6	95.2	79.1	38.2	65.1	63.6	54.9	45.2	43.3	97.3
13	2020-07-17 23:48	1:00:00	57.1	92.7	71.7	35.5	63.9	62.1	47.1	38.9	37.9	95
14	2020-07-18 0:48	1:00:00	54.6	90.2	71.8	35.3	62	59.3	42.1	37.9	37.3	100.1
15	2020-07-18 1:48	1:00:00	52.7	88.3	73.1	33.5	59.8	54.6	39.1	36.5	35.9	91.5
16	2020-07-18 2:48	1:00:00	48.6	84.2	66.7	32.1	54.2	46.1	36.4	34.5	33.9	98.7
17	2020-07-18 3:48	1:00:00	52.5	88.1	69.1	31.6	59.2	54.7	44.3	35.4	34.3	99.7
18	2020-07-18 4:48	1:00:00	56.5	92.1	73.5	37.8	63.5	60.9	48.7	42.2	40.9	96.3
19	2020-07-18 5:48	1:00:00	60.3	95.9	74	38.3	66.6	65.1	53.4	43.2	41.9	92.6
20	2020-07-18 6:48	1:00:00	61.9	97.5	75.5	42.2	67.6	66.2	57.4	48.1	47.2	99.5
21	2020-07-18 7:48	1:00:00	63.6	99.2	76.2	41	68.8	67.4	61.2	49.8	47.6	106.6
22	2020-07-18 8:48	1:00:00	63.7	99.3	73.2	44.6	68.6	67.4	62.1	51.7	49.3	95.4
23	2020-07-18 9:48	1:00:00	64	99.6	80.8	43.9	68.4	67.3	62.6	53.1	50.2	97.2
24	2020-07-18 10:48	1:00:00	64.5	100.1	74.5	44.2	68.4	67.5	63.6	56	53.3	99.6
25	2020-07-18 11:48	1:00:00	64.2	99.8	80.1	45.6	68.1	67.1	63	56.2	53.3	101.3
26	2020-07-18 12:48	1:00:00	63.4	99	84.5	45.5	67.5	66	61.7	54.7	52.3	106.9
27	2020-07-18 13:48	1:00:00	62.4	98	77.1	45.9	66.5	65.3	61	54	51.1	105.1
28	2020-07-18 14:48	1:00:00	62.5	98.1	80.8	45.9	66.5	65.3	61.1	54.1	51.8	102.7
29	2020-07-18 15:48	1:00:00	63.4	99	88.4	45.4	66.4	65.5	61.4	55.2	52.7	101.8
30	2020-07-18 16:48	1:00:00	63.5	99.1	80.9	47.6	67.7	66.6	62	54.6	52.2	106.2
31	2020-07-18 17:48	1:00:00	63.2	98.8	76.9	45.8	67.2	66.2	61.9	53.8	51.7	103.5
32	2020-07-18 18:48	1:00:00	63	98.6	81	45.1	67.1	66.1	61.6	53.3	51.3	101.2
33	2020-07-18 19:48	1:00:00	62.6	98.2	79.8	42	67.1	65.9	60.8	50.8	48.5	102.5
34	2020-07-18 20:48	1:00:00	61.7	97.3	78.1	42.3	66.5	65.3	59.4	48.7	47.2	100.2
35	2020-07-18 21:48	1:00:00	59.7	95.3	74.5	42.7	65	63.6	56.5	46.7	45.4	102.6
36	2020-07-18 22:48	1:00:00	58.5	94.1	76.9	39.9	64.4	62.9	52.9	44.7	43.3	102.9
37	2020-07-18 23:48	1:00:00	68.3	103.9	98.9	40.2	63.7	61.6	49.3	43.9	43	107.1
38	2020-07-19 0:48	1:00:00	64.7	100.3	96.9	38	61.6	59.2	46	40.7	39.7	106.1
39	2020-07-19 1:48	1:00:00	52.4	88	71.4	39.5	59.9	55.5	44.3	41.5	40.9	94.8
40	2020-07-19 2:48	1:00:00	49.5	85.1	68.6	37.7	54	48.9	41.6	39.4	39	84.5
41	2020-07-19 3:48	1:00:00	51.2	86.8	66.5	36.6	57.5	54.4	43.7	39.3	38.6	93.2
42	2020-07-19 4:48	1:00:00	55.5	91.1	77.5	36.5	61.5	58.1	47.8	40.8	39.9	98.3
43	2020-07-19 5:48	1:00:00	57.8	93.4	73.3	36.7	64.5	62.6	50.3	41.9	40.4	90.9
44	2020-07-19 6:48	1:00:00	59.6	95.2	73.7	36.5	66	64.5	53.7	43.7	42	98.9
45	2020-07-19 7:48	1:00:00	60.5	96.1	75.4	38.2	65.9	64.7	56.7	47	45.3	101.1
46	2020-07-19 8:48	1:00:00	61.5	97.1	73.2	41.1	66.5	65.3	59	49.4	47.3	95.3
47	2020-07-19 9:48	1:00:00	62.5	98.1	76.1	45.3	66.8	65.8	61	52.6	50.5	98.3
48	2020-07-19 10:48	1:00:00	63.3	98.9	77.7	47	67.6	66.3	62	54.3	52.4	108.6
49	2020-07-19 11:48	1:00:00	63.2	98.8	73.9	47.4	67.2	66.2	62.1	55.3	53.2	105.7
50	2020-07-19 12:48	1:00:00	63.5	99.1	76.6	49.2	67	66.1	62.7	57.2	55.4	101.4
51	2020-07-19 13:48	1:00:00	63.7	99.3	80.7	45.5	67.7	66.7	62.5	55.7	53.7	106.4
52	2020-07-19 14:48	1:00:00	64.6	100.2	80.1	48.5	68.4	67.1	62.8	57.1	55.1	105
53	2020-07-19 15:48	1:00:00	65	100.6	76.4	48.9	70	67.8	63.7	57.8	55.8	103.5
54	2020-07-19 16:48	1:00:00	64.6	100.2	76.3	50.5	68.7	67.4	63.4	57.4	55.7	104.5
55	2020-07-19 17:48	1:00:00	67.4	103	94.6	46.8	68.1	66.9	62.5	54.6	52.1	112.5
56	2020-07-19 18:48	1:00:00	62.8	98.4	76.1	44.2	67.4	66.2	61.3	53.2	50.4	102.1
57	2020-07-19 19:48	1:00:00	64	99.6	86.3	43.3	67	65.7	59.8	50.4	48.7	112.4
58	2020-07-19 20:48	1:00:00	60.4	96	83.5	39.8	65.3	64	56.8	46.9	45.5	111.9
59	2020-07-19 21:48	1:00:00	59.4	95	82.3	38.3	65	63.1	53.6	42.9	41.4	106.3
60	2020-07-19 22:48	1:00:00	57.2	92.8	71.4	37.4	64.1	61.7	48.1	40.6	39.8	93.9
61	2020-07-19 23:48	1:00:00	52.8	88.4	71.5	35.3	60	56.3	40.7	37.3	36.9	95.2
62	2020-07-20 0:48	1:00:00	49.8	85.4	66.4	34.9	57.3	51.1	38.7	36.3	36	104.6
63	2020-07-20 1:48	1:00:00	52.1	87.7	73.1	34.9	57.2	50.7	39.6	36.5	36.1	98.5
64	2020-07-20 2:48	1:00:00	52	87.6	74.2	33.6	53.6	45.7	39	35.7	35.1	92
65	2020-07-20 3:48	1:00:00	53.4	89	74.5	34.7	60.2	55.6	42.3	38.4	37.7	95.7
66	2020-07-20 4:48	1:00:00	58.9	94.5	73.6	38.8	65.3	63.7	52	44.8	43.4	99.5
67	2020-07-20 5:48	1:00:00	65	100.6	82.1	45.4	69.7	68.5	63.4	53.7	51	100.5
68	2020-07-20 6:48	1:00:00	66.4	102	83.6	49.3	70.5	69.1	65.1	58.9	56.9	105.8
69	2020-07-20 7:48	1:00:00	64.8	100.4	74.4	44.8	69.2	68.1	63.7	54.6	52	107
70	2020-07-20 8:48	1:00:00	63.7	99.3	78.9	44.9	68	66.7	62.3	54.4	52.2	101.1
71	2020-07-20 9:48	0:20:35	63.9	94.8	77.7	47.3	67.9	66.7	62.3	54.8	52.9	98.7

Time Period	Max:	Min:	Geo Mean	Lp90
Daytime (7am - 7pm)	95	38	64	55
Evening (7pm - 11pm)	86	37	61	47
Nighttime (11pm - 7am)	99	32	56	41

Appendix H

Emergency Response and Contingency Plan (ERCP; DRAFT)

CONTINGENCY AND EMERGENCY RESPONSE PLAN (DRAFT)

Envirosoil Limited

Waste Oil Recycling and Water Treatment Facility

Dartmouth, Nova Scotia

February 2021

Revision Tracking Sheet

Revision Description	Revision No.	Revised By	Pages	Date of Revision	Comments

Table of Contents

1 Introduction

Envirosoil Limited (Envirosoil) plans to operate a Waste Oil Recycling and Water Treatment Facility ("the project" or "the facility"), located at 750 Pleasant Street in Dartmouth, Nova Scotia ("the site"). The site currently operates as a Liquid Asphalt Storage Facility, operated by General Liquids Canada, and regulated by Nova Scotia Environment. The property identification numbers (also referred to as PIDs) for the site are 41464280 and 00260703. The facility will be used for receiving and processing liquid waste materials, including but not limited to, bilge waters, surface water spills, and used oil. As Envirosoil is an ISO 9001 and 14000 certified company, a system of occupational health and safety and environmental management is built into the company's day-to-day operations and has developed a culture of safety for planning for and responding to emergencies.

The following document provides Emergency Preparedness (or Contingency) Planning information for the facility, meeting the requirements under the Nova Scotia Environment Act respecting the receiving, processing and storage of liquid waste materials, as well as the treatment of water. Details included in the Province of Nova Scotia's Contingency Planning Guidelines (dated October 2019) were adhered to in developing this document. The plan provides procedures for reporting, containing, removing, and cleaning up events that may result in reasonably foreseeable sudden or gradual release of a substance that is likely to have an adverse effect to the environment, including human health.

This Emergency and Contingency Plan was completed in February 2021.

1.1 Policy Statement

Envirosoil Limited is committed to operating the facility in an environmentally responsible manner consistent with its environmental policy. Envirosoil will implement project planning and management strategies that:

- Avoid or minimize the adverse environmental effects of the project, and enhance positive ones;
- Comply with the applicable laws and regulations; and
- Consider the presence of the project and compatibility with the way of life of the surrounding environment.

Every effort shall be made to protect the assets of the Company, but at no time shall the protection of such assets compromise the safety of personnel. The objective of instituting this plan is to ensure effective and efficient response to emergencies. This will help to prevent injuries, reduce property damage and minimize downtime or production setbacks.

2 Planning

2.1 Hazard Assessment

The following describes the possible Transportation of Dangerous Good (TDG) regulated and non-regulated materials anticipated to be processed on site.

Materials	Estimated Annual Volume (m^3) Processed	Dangerous/waste dangerous goods type, name, CAS and UN Number	Maximum Storage Capacity / good type	Material Storage Locations
Waste Oil as defined by the NS *Used Oil Regulations*	3,000 – 8,000	*	*	**
Wastewater from Treatment of Waste Oil (generated internally)	1,000 – 2,500	*	*	**
Marine Bilge Waters	1,000 – 2,500	*	*	**
Wastewater – Hydrocarbon Contaminated	1,000 – 3,000	*	*	**
Wastewater – PAH contaminated	300 – 1,000	*	*	**
Wastewater – Metals contaminated	300 – 1,000	*	*	**
Wastewater – Miscellaneous (i.e. low level Ammonia, COD, etc.)	500 – 2,000	*	*	**

*** Provided as part of NSE Part V Application for Approval Process; See Site Plan in Appendix.**

2.2 Possible Emergency Types

An emergency is defined as a combination of circumstances that requires immediate action.

The following is a list of emergencies that might be reasonably expected to occur on-site and off-site:

- Fire
- Explosion
- Petroleum or Chemical Spill (note: waste oils, and includes discharges, emissions, escapes, leaks or spills)
- Natural Gas Release
- Volatile Emission
- Workplace Injury
- Power Failure

3 Roles and Responsibilities

The Facility Manager or Designate is responsible for day to day operations of the facility including environmental and safety emergency response. In the event of an emergency the Facility Manager or their designate will assume the role of Response Commander. Facility Operators are responsible for oil releases to the marine environment with support from ECRC as required.

3.1 Duties of Facility Manager or Designate

3.1.1 Advance Preparation

The following personnel will be instructed in the manner in which their assigned duties are to be carried out in the event of an emergency. Once an incident is discovered or reported, the Facility Manager or their Designate assumes the role of Response Commander.

- Site Security personnel will meet emergency vehicles (fire truck, ambulance, spill response unit, police) at facility entrance on Pleasant Street and direct them to the emergency site or command centre. This person shall not talk to the media.
- In a power failure situation operations personnel will monitor Heaters 1 and 2.
- The Facility Manager or Designate may request others to call emergency services (ambulance, fire, police).
- Personnel should go to their assigned posts and remain there (if safe to do so) until:
  - They carry out their function
  - They are called back
  - They have been relieved of their duty (breaks, lunch, etc.)
  - The "all clear" has been given
- The Facility Manager or Designate is responsible to provide management with a list of emergency personnel.

3.1.2 Field Coordination

- The Response Commander will evaluate:
  - The seriousness of the incident
  - If the emergency situation can be stopped or controlled quickly
  - What is required to stop or control the incident
  - If it is necessary to shut down the operation

- In the event that there are casualties or injuries, the Response Commander shall use the ECMA technique for evaluation:
  - Evaluate the Environment: electrical, chemical equipment hazards
  - Evaluate the Mechanism: What was the cause – weather, equipment, fall, etc.
  - Evaluate the Casualties: Number, extent of injuries.
  - Evaluate the Assistance required: Ambulance, fire department, police etc.

- The Response Commander will coordinate:
  - Response and/or evacuation
  - Any necessary search and rescue efforts
  - Advise necessary personnel to meet emergency vehicles at the gate and guide them to the scene

- Cordon off or secure the emergency area as required
- The taking of a personnel head count
- Ensure that there are trained personnel on standby to deal with first aid, spill response (outside help if necessary)
- Take whatever actions required to deal with the situation as determined by the initial evaluation
- Contact Management and Safety Coordinator as required

3.1.3 Field Decisions

The Response Commander will initiate the activation of the Evacuation Plan when:

- There is immediate possibility of danger to personnel
- There is possibility the incident may worsen (out of control) to the extent of danger of danger to the personnel
- Notify personnel through telephone and radio system of sending a person if it is safe to do so

4 Emergency Command Centre

The building control room will be used as the primary emergency command centre. If, due to circumstances at the facility, it is not safe to remain on site, the back up operations centre will be at Envirosoil's headquarters on Rocky Lake Drive in Bedford, NS. Both locations will have a copy of the Emergency and Contingency Plan.

In the event of a marine oil spill and depending upon the amount of oil released, the Command Centre may be established at the ECRC facility at 41 Mount Hope Avenue in Dartmouth, NS.

5 Public Relations

All communication or information releases will be managed by the Envirosoil General Manager or their designate.

6 Implementation and Operation

6.1 Activation

6.1.1 Notification

The telephone is the main emergency communication system.

- Telephone (office and laboratory lines)

- Cell phone
- Portable radios
    - Radio Protocol
        - Speak clearly and slowly.
        - Give the emergency type.
        - Give the location.
        - Type of assistance required.
        - Repeat the message two times.

Maintain open communications with the scene and forward any pertinent information such as:

- The cause of the incident
- The type of material used
- Hazards which still exist
- Possible problems with protection of personnel
- Updates of any changes in the incident or area conditions

6.1.2 Emergency Contact List (to be updated prior to initiation of operations)

Internal

Facility Manager:
Assistant Facility Manager:
Facility Operators:

External

Fire, Ambulance, Police	911
Poison Control Centre	1-800-565-8164
Department of Labour	1-800-952-2687 / (1-800-9-Labour)
Nova Scotia Environment	1-800-565-1633
For critical injuries or environmental incidents	
See Section 5 communication list or contact Safety Department at	(902) 835-3381
Marine Petroleum Spill	
Canadian Coast Guard Spill #	1-800-565-1633
CANUTEC (24-hr number for dangerous goods)	1-613-966-6666
ECRC Response	1-613-930-9690/(902) 461-9170

7 Response Procedures

The following is a description of the procedures for managing the response to the most probable emergencies at the facility.

7.1 Evacuation

The entire facility shall be evacuated if the Response Commander has evaluated that the there is an immediate possibility of danger to personnel or if there is a possibility the incident may worsen to the extent of danger to personnel. The Response Commander shall announce the evacuation through the communication system.

7.1.1 Evacuation Procedures

- Stop work immediately.
- Shut down any equipment being used. Use your specific shutdown instructions for the equipment.
- If working in the building leave your work area and go to the closest exit (if safe to do so).
  - Do not go through other areas of the building.
- Go to the assembly area (Muster Station).
- Follow a safe route to the assembly areas.
- Report to the Response Commander or Designate.
- Remain at the assembly area until the all clear is given, unless otherwise instructed by the Response Commander or Designate.
- Visitor and contractor safety is the responsibility of the Envirosoil personnel under whose charge they are working/visiting.

7.1.2 Assembly of Personnel

The Response Commander must ensure that all people onsite are accounted for. During an emergency situation, all persons are to proceed to a muster station location that is determined by the wind direction as indicted by the windsocks; either at the main building or main gate. The Response Commander is to:

- Ensure a total head count.
- Report any discrepancies in the head count so search efforts may be initiated (if safe to do so).
- Ensure visitors are accounted for – Visitors names can be verified by using the visitor register.
- Contact or phone on-site contractors to have a current list of personnel on site.

Note: Team leaders may assist with this duty by ensuring that all personnel are accounted for and moved to a designated assembly area. This will include any outside contractors and visitors to the facility.

7.1.3 Visiting Personnel

All visiting personnel will leave with the Envirosoil personnel that they were visiting with then there is an evacuation.

7.1.4 Assembly Areas

The facility main gate is designated as the muster station.

7.1.5 All Clear Signal

The Response Commander or Designate will notify when the possibility of danger to personnel has been removed. Once the all clear is given, personnel may return to their work stations/sites and wait for further start-up instructions.

7.2 Fire

7.2.1 Initial Discovery

Upon discovery of a fire by any employee, the following steps shall be taken:
Announce the fire via:

- Call the office/laboratory.
- Use a portable radio if you have one.
- Send someone else or going yourself.

Use the extinguishing methods at your disposal if the fire is still in the incipient stage and you know how to fight it as a result of experience and training.

- If the Fire is beyond the incipient stage, announce the fire suing the steps noted above.

Communicate calmly and clearly:

- The type of fire (size).
- The location of the fire.
- Who is reporting the fire and your location.
- Repeat the message twice.

REMAIN CALM – THE EFFECTIVENESS OF THE INITIAL RESPONSE CAN DEPEND ON CLARITY AND ACCURACY OF THE INFORMATION

7.2.2 Fire Alarm

There is no separate facility alarm. Use the procedure outlined in Section 7.2.1

7.2.3 Response

Upon receipt of the report of a fire, communicate this information to the Facility Manager or Designate (Response Commander).

If the fire is beyond the incipient stage:

- The Response Commander or Designate will notify the personnel at the site via radio.
- The Response Commander or Designate will make the decision if the fire department is to be contacted.
- The Response Commander or Designate will notify Envirosoil management.

7.2.4 Evacuation

Should evacuation of the site be necessary, refer to the evacuation procedures in Section 7.1

7.3 Explosion

7.3.1 Assessment of Situation

In the event of an explosion, the Response Commander will make decisions after the initial assessment. That is:

- Evacuate the area
- Evacuate the building
- Call for emergency help
- Ambulance
- Fire department
- Spill response
- Police
- Senior management
- Cordon off the area

7.3.2 Evacuation

Should evacuation of the site be necessary, refer to the evacuation procedures in Section 7.1

7.4 Chemical Spill

7.4.1 Spill Emergency

If a spill occurs, the Facility Manager or Designate (Response Commander) shall assist at the incident scene and take whatever steps deemed necessary to contain the spill. Consult the Safety Data Sheet (SDS) if necessary (Appendix D).

7.4.2 Evacuation

Should evacuation of the site be necessary, refer to the evacuation procedures in Section 7.1.

7.4.3 Evacuation Because of Outside Influence

If it necessary to evacuate the facility because of an outside influence (chemical spill), then proceed to one of the assembly areas described in Section 7.3 if it safe to do so.

7.4.4 Area Evacuation

The governing factors on area evacuation will be:

- The conditions of the assembly area and the local authorities (if applicable).

7.4.5 Specific Spills

Any leakage or spill must be reported to the Response Commander immediately.

Ensure that any non-authorized personnel are kept away from and leaks or spills.

- When working around open or spilled liquid waste materials, diesel fuel (from trucks only) and hot oil heating fluid, the following personal protective equipment shall be worn:
  - Rubber gloves.
  - Chemical resistant goggles.

In cases of any substantial leaks or spills, the spill shall be contained by using the material in the spill kit and forming a dyke to absorb as much liquid as possible.

Carefully shovel all of the absorbent/contaminant into open top containers. Do not fill or cover the containers.

Pour liquid decontaminant/neutralizing solution liberally over the remaining spill area and spread evenly to ensure contact. Let stand for 10-15 minutes at 25 degrees Celsius or longer at lower temperatures. Then wash down with water.

7.5 Natural Gas

7.5.1 Natural gas Emergency

Contact Heritage Gas immediately at **1-866-313-3030** in the event of a leak in any of the lines feeding the facility from the distribution pipe on Pleasant Street.

7.5.2 Natural Gas Leak without Fire

- Use a landline phone to call – leave the area of the leak before calling Heritage Gas
- Do not start any vehicles
- Do not turn on any electrical or appliance switches
- Do not smoke or use lighters
- If the leak is inside a building, call Heritage Gas immediately and open windows and doors to ventilate the building.
    - If the smell (the additive, mercaptan smells like rotten eggs) worsens or you hear a hissing sound, leave the building immediately, leaving windows and doors open and call Heritage Gas from a safe distance.
- If the leak is outside a building, call Heritage Gas immediately and keep windows and doors closed to prevent gas from entering the building.

7.6 Volatile Emission

Sources for Volatile Organic Compounds (VOCs) and particulate matter will be primarily associated hot oil heaters in the building, as well as the asphalt storage tanks associated with pre-existing activities at the site. *Make sure to read and understand the SDS before working with the product. Use appropriate personal protective equipment (PPE) as instructed in the SDS (Appendix D).*

In case of emergency:

- Immediately remove the victim to fresh air. (When administering first aid, ensure that you and other responders are wearing appropriate PPE according to the incident.
- If rapid recovery does not occur, call 911 immediately for additional assessment and treatment.
- The Facility Manager or Designate (Response Commander) will inform senior management of the incident.
- Take all reasonable steps to minimize the discharge of air contaminant.
- Ensure there are no ignition sources in the affected area.

If the incident occurs indoors, keep the temperature and humidity a low as possible or comfortable. Chemicals off gas more readily in high temperatures and humidity.

7.6.1 Evacuation

Should evacuation of the site be necessary, refer to the evacuation procedures in Section 7.1

7.6.2 Evacuation Because of Offsite Influence

If it necessary to evacuate the facility because of an offsite influence (volatile emission) then proceed to one of the assembly areas described in Section 7.3 if it safe to do so. You should always position yourself upwind of the emission source (note position of windsock).

7.6.3 Area Evacuation

The governing factors on area evacuation will be:

- The conditions of the assembly area and the local authorities (if applicable).

7.7 Workplace Injury

7.7.1 Initial Discovery

- Send someone to immediately report the incident to the Facility Manager or Designate (Response Commander) or report it yourself as conditions dictate. Communicate calmly and clearly.
    - There is a workplace injury
    - The location of the incident
    - The nature of the injury
    - Identify who is reporting the incident and your location.
- The Response Commander will respond immediately and will take whatever actions deemed necessary:
    - Evaluate the seriousness of the incident.
    - Administer first aid if it is safe to do so.
    - Call 911 if necessary.
    - Shut down the operation where the incident occurred, secure the incident site and post a guard if it is safe to do so.
    - Evacuate personnel that may be at risk due to the incident.

7.7.2 In the Event of Critical Injury or Death

The Response Commander shall contact the Department of Labour using the telephone list in Section 15 or in the accident report package.

In the event of a fatality, it is a requirement to notify the police.

The response Commander will notify the Safety Coordinator and Senior Management immediately.

Under Section 63 of the ***Nova Scotia Health and Safety Act***, it is imperative to comply as follows re:

(1) The employer shall send written notice to the Director
    a. Of a fire or accident at the workplace that occasions bodily injury to an employee, within seven days of its occurrence
    b. Of an accidental explosion at the workplace, whether any person is injured or not, within twenty-four hours of its occurrence; and
    c. Where at the workplace a person is killed from any cause or is injured from any cause in a manner likely to prove fatal, within twenty-four hours of the occurrence of the death or injury.

(2) A true copy of the notice of accident require to be given by an employer to the Worker's Compensation Board, pursuant to the Worker's Compensation Act, may be delivered or mailed to the Director as sufficient notice pursuant to this section.

(3) Where a notice is require to be sent to the Director pursuant to this Section, the employer shall furnish the committee or representative at the workplace, if any, with a copy of the notice. *1996, c. 7 s. 63*

7.7.3 Disturbance of an accident scene

Except and otherwise directed by and officer, no person shall disturb the scene of an accident that results in serious injury or death except as it is necessary to:

(a) attend to persons injured or killed;
(b) prevent further injuries; or
(c) Protect property that is endangered as a result of the accident. *1996 c. 7 s. 64*

Nothing at the scene of the accident may be removed, disturbed or destroyed until permission has been given by the Department of Labour Inspector, unless it is necessary to rescue a worker or to provide first aid.

7.7.4 Evacuation

Should evacuation of the site be necessary, refer to the evacuation procedures in Section 7.1.

7.8 Power Failure

In the event of a power failure, all personnel will:

- Shut down any machinery being used (control switches).
- Remain in the area of work.
- Do not go through the facility/building unless authorized, you may be enter a hazardous area.
- Follow existing power failure procedures
- If you have a radio, change from channel 1 to channel 3

Operator:

- Verify all hot oil heaters are running.
- Check to see if thermal oil is circulating well through the system.
- Begin re-start procedures.

Power Outage Information

- Contact Nova Scotia Power to find out what has occurred (**24hr service – 1-877-428-6004**)
- When there is a power failure, all equipment stops with the exception of those units power by the back-up generator.

7.8.1 Emergency Lighting

Emergency lighting is used to provide adequate illumination for personnel to safely shut down equipment/machinery and await further instructions in the work area.

8 Fire and Emergency Equipment

8.1 Fire and Emergency Equipment Procedures

- Monthly, a qualified party shall inspect and ensure that all fire extinguishers are charged and at the designate locations.
- The on-site fire hydrant shall be inspected annually by a qualified party. Copies of the inspection reports should be kept onsite in the event they are requested by Halifax Regional Fire and Emergency inspectors.
- If fire hoses are installed, they shall be checked to ensure they are property rolled, in good condition and ready to use. Hoses must be pressure tested at least annually to ensure good condition.
- The inspection checklist for each location shall be checked, dated and initialed by the inspector. Each equipment location shall be identified to ensure all of the equipment is verified and a checklist shall be provided to the inspector for completion of these tasks.

- Emergency lights shall be tested semi-annually by a qualified person to ensure working condition.
- Any equipment found to be defective must be replaced or repaired immediately.
- Any worker who observes damage or breakage to fire and emergency equipment must report it to their supervisor.
- No welding, grinding or hot work shall be performed where there is no fire protection.
- **No smoking is permitted on site!**

8.2 Inventory of Emergency Equipment

The following is an inventory of potential response equipment. Once the facility is operational, an inventory of emergency equipment will be maintained with an inspection schedule.

Fire Response Equipment:

- Fire extinguishers
- Fire blankets

Containment Equipment:

- Large (200 L) Universal Spill Kits
- Small (40l L) Universal Spill Kits

Note: Spill kits include PPE as well as containment and clean up materials in keeping with the spill size they are designed for.

Decontamination Equipment:

- Eye wash Station/shower combination
- Personal Eye Wash Stations

First Aid Equipment

- Nova Scotia #2 First Aid Kit (or equivalent)

9 Rehabilitation

The intent of rehabilitation following an incident is to return the impacted area(s) to the pre-incident conditions.

Releases will be contained and cleaned up using the appropriate methods as dictated by the material spilled.

Impacted ground surfaces will be sampled by a qualified professional and submitted to an accredited laboratory to confirm effectiveness of the initial clean up.

Soil and other affected material (e.g. concrete, asphalt) will continue to be removed until contaminants are no longer detected.

Replace removed soil and other material to the original state prior to the incident.

If required, obtain approval from Nova Scotia Environment.

10 Disposal

Transport and Disposal of recovered material will be managed by Envirosoil and will be disposed of through provincially approved facilities. These facilities are located within the Halifax Regional Municipality. Out-of-province disposal is not anticipated based on the nature of the activities proposed at the site.

11 Reporting

If requested, Envirosoil will provide NSE with a report detailing the following information regarding spills/releases:

- Date and Time of Release;
- Weather/Atmospheric Conditions at the time of the release and throughout the response;
- The cause of the release;
- A description of the substance(s) released and the quantities released;
- The affected environment and/or properties;
- Identification of all parties and individuals involved in the response or exposed to the product included by-products of combustion;
- Health and safety concerns;
- Containment measures used;
- Mitigation (clean up) techniques employed;
- Site remediation (restoration) completed and planned;
- The current status of the response;
- A log of the actions taken; and
- Preventative measures implemented to prevent any re-occurrence.

An incident report form template is provided in Appendix B. (*Note: this Form would be inserted once the facility is operational)

12 Administrative

12.1 Training

Provide details of proposed training including:

- Envirosoil's commitment to training its personnel in company policy and procedures for responding to emergencies.
- Orientation for new or returning personnel.
- Required training for employees including standard training and specialized training.
- Frequency of the training described.
- Procedures for updating the training curriculum.

12.2 Exercises

Training exercises including response drills for the waste oil recycling and water treatment facility will be conducted in accordance with Envirosoil's ISO 14000 Environmental Management procedure.

12.3 Procedure Review

The Emergency Procedures will be reviewed annually or whenever a change is required to ensure they are kept current with applicable standards, industrial codes of practice, or legislation. Changes must be communicated to the Safety Coordinator. The Safety Department will initiate the review, set the review date and notify personnel of the date.

13 Emergency General Information

13.1 Posted Emergency Procedures

The emergency procedures will be distributed to all personnel. Supervisors will ensure each member of their respective team has a copy.

13.2 Start-Up Procedures

The Facility Manager or Designate will be responsible for delivering the "all clear" status when the emergency is over. Start-up procedures will be under the direction of the Shift Supervisor.

14 Other Contingencies

14.1 Vegetation and Wildlife

Should nesting birds or their young or species at risk be encountered on the site, personnel making the discovery will advise the Facility Manager or their Designate who will have the area cordoned off to prevent further disturbance. The Facility Manager or their Designate will then contact the Nova Scotia Department of Lands and Forestry Wildlife Division (902-679-6097) to discuss immediate actions and mitigation.

14.2 Archaeological and Indigenous Resources

If an archaeological or Indigenous resource/artifact or human remains is unearthed or discovered during the construction or operation and maintenance phases of the Project, the following procedure will be followed:

- Work will be stopped and the area will be marked to prevent further disturbance;
- Immediately contact the Special Places Program (Nova Scotia Department of Communities, Culture and Heritage; 902-424-6475), to notify of the discovery and establish a mitigation plan;
- No additional work will be permitted at the site until approval has been received from the Special Places Program;
- If human remains are found, work in the area must cease and the RCMP should be immediately notified.
- No one shall disturb, move or rebury any uncovered human remains.
- If it is a suspected First Nations burial site, the First Nations should be contacted.

Appendices

Appendix A: Site Plans (including muster station, wind sock, etc.)

Appendix B: Incident Report Forms (note: this Form would be inserted once the facility is operational)

Appendix C: Material Safety Data Sheets (to be included in version kept on site)

Appendix I

Indigenous Engagement

Koke, Paul <pkoke@dillon.ca>

GLC Waste Oil Recycling and Water Treatment Facility - EA Registration Memo

Koke, Paul <PKoke@dillon.ca> Fri, Dec 4, 2020 at 10:46 AM
To: chiefsack@sipeknekatik.ca
Bcc: 191742 <191742@dillon.ca>

Chief Michael Sack,

General Liquids Canada, represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration Document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia. Part of this EA process is to engage the Mi'kmaq communities put forth by the Office of Aboriginal Affairs (OAA), which included SFN.

Please find attached a memo detailing the proposed project and its location. A hard copy of this memo will also be mailed to you. If you have any questions or comments, please do not hesitate to reach out to us.

Thanks in advance.

Paul

--

Paul Koke
Associate
Dillon Consulting Limited
137 Chain Lake Drive Suite 100
Halifax, Nova Scotia, B3S 1B3
T - 902.450.5015 ext. 5065
F - 902.450.2008
PKoke@dillon.ca
www.dillon.ca

Chief and Council Letter (Waste Oil Recycling and Water Treatment Facility), 3-Dec-2020_SFN.pdf
2154K

GLC | GENERAL LIQUIDS CANADA

December 3, 2020

Chief and Council
Sipeknekatik (Shubenacadie) First Nation
522 Church Street
Indian Brook, Nova Scotia
B0N 1W0

Dear Chief and Council,

General Liquids Canada Ltd.'s Pleasant Street Waste Oil Recycling and Water Treatment Facility – Environmental Registration Document for a Class 1 Undertaking Under Section 9 (1) of the NS Environment Assessment Regulations

General Liquids Canada (GLC), represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia (see attached Figures).

The Project consists of the development of a waste oil recycling and water treatment facility on private property which is accessed from Pleasant St. The approximate center of the study area is at Universal Transverse Mercator (UTM) 20 T 458189 4942535. The facility will be constructed and operated at an existing commercial/industrial operation, currently regulated by Nova Scotia Environment. Industrial land uses border on each side of the property proposed for the development, specifically Cherubini Metal Works to the east and the now decommissioned Imperial Oil Refinery to the west.

The purpose of the Project is to provide a local option for waste oil recycling and water treatment services for liquid waste materials, including but not limited to, bilge waters, surface water spills, and used oil.

It is anticipated that the EA Registration document will be submitted to Nova Scotia Environment (NSE) on December 23, 2020. If possible, we would appreciate any pre-submission comments you may have prior to December 21, 2020. Comments can be sent via email or in writing to the project contacts listed below.

GLC | GENERAL LIQUIDS CANADA

As a Class 1 project, the EA Registration document will also be publically available on NSE's website for Environmental Assessments and the NSE review will follow the typical timeline of approximately 50 calendar days.

We extend the offer to provide the EA Registration document directly at your request.

If you have any questions or comments during the interim, or wish to meet to discuss the project, please contact either:

Paul Koke, Project Manager
Dillon Consulting Limited
137 Chain Lake Drive, Suite 100
Halifax, NS, B3S 1B3
Ph: 902.450.5015 ext. 5065
Email: pkoke@dillon.ca

Patrick Rooney, Director of Manufacturing
Municipal Group of Companies
927 Rocky Lake Dr.
Bedford, NS, B4A 3Z2
Ph: 902.835.3381
Email: prooney@dexter.ca

Sincerely,

GENERAL LIQUIDS CANADA

Patrick Rooney, Director of Manufacturing

PEK:scm
Attachment(s): Site Figures
cc: Office of Aboriginal Affairs

Our file: 19-1742-1000

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Location
Figure 1

Site Location

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 0.75 1.5 3
Kilometres

PROJECT: 19-1482 STATUS: FINAL Date: 2020-04-23

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Plan
Figure 2

Project Development Area
GLC Property
Approximate Adjacent Parcels

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 12.5 25 50
Meters

PROJECT: 19-1742 STATUS: FINAL Date: 2020-12-03

Koke, Paul <pkoke@dillon.ca>

GLC Waste Oil Recycling and Water Treatment Facility - EA Registration Memo

Koke, Paul <PKoke@dillon.ca> Fri, Dec 4, 2020 at 10:46 AM
To: chief@millbrookband.com
Bcc: 191742 <191742@dillon.ca>

Chief Bob Gloade,

General Liquids Canada, represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration Document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia. Part of this EA process is to engage the Mi'kmaq communities put forth by the Office of Aboriginal Affairs (OAA), which included Millbrook First Nation.

Please find attached a memo detailing the proposed project and its location. A hard copy of this memo will also be mailed to you. If you have any questions or comments, please do not hesitate to reach out to us.

Thanks in advance.

Paul

--

Paul Koke
Associate
Dillon Consulting Limited
137 Chain Lake Drive Suite 100
Halifax, Nova Scotia, B3S 1B3
T - 902.450.5015 ext. 5065
F - 902.450.2008
PKoke@dillon.ca
www.dillon.ca

Chief and Council Letter (Waste Oil Recycling and Water Treatment Facility), 3-Dec-2020_MFN.pdf
2154K

GLC | GENERAL LIQUIDS CANADA

December 3, 2020

Chief and Council
Millbrook First Nation
P.O. Box 634
Truro, Nova Scotia
B2N 5E5

Dear Chief and Council,

General Liquids Canada Ltd.'s Pleasant Street Waste Oil Recycling and Water Treatment Facility – Environmental Registration Document for a Class 1 Undertaking Under Section 9 (1) of the NS Environment Assessment Regulations

General Liquids Canada (GLC), represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia (see attached Figures).

The Project consists of the development of a waste oil recycling and water treatment facility on private property which is accessed from Pleasant St. The approximate center of the study area is at Universal Transverse Mercator (UTM) 20 T 458189 4942535. The facility will be constructed and operated at an existing commercial/industrial operation, currently regulated by Nova Scotia Environment. Industrial land uses border on each side of the property proposed for the development, specifically Cherubini Metal Works to the east and the now decommissioned Imperial Oil Refinery to the west.

The purpose of the Project is to provide a local option for waste oil recycling and water treatment services for liquid waste materials, including but not limited to, bilge waters, surface water spills, and used oil.

It is anticipated that the EA Registration document will be submitted to Nova Scotia Environment (NSE) on December 23, 2020. If possible, we would appreciate any pre-submission comments you may have prior to December 21, 2020. Comments can be sent via email or in writing to the project contacts listed below.

GLC | GENERAL LIQUIDS CANADA

As a Class 1 project, the EA Registration document will also be publically available on NSE's website for Environmental Assessments and the NSE review will follow the typical timeline of approximately 50 calendar days.

We extend the offer to provide the EA Registration document directly at your request.

If you have any questions or comments during the interim, or wish to meet to discuss the project, please contact either:

Paul Koke, Project Manager
Dillon Consulting Limited
137 Chain Lake Drive, Suite 100
Halifax, NS, B3S 1B3
Ph: 902.450.5015 ext. 5065
Email: pkoke@dillon.ca

Patrick Rooney, Director of Manufacturing
Municipal Group of Companies
927 Rocky Lake Dr.
Bedford, NS, B4A 3Z2
Ph: 902.835.3381
Email: prooney@dexter.ca

Sincerely,

GENERAL LIQUIDS CANADA

Patrick Rooney, Director of Manufacturing

PEK:scm
Attachment(s): Site Figures
cc: Office of Aboriginal Affairs

Our file: 19-1742-1000

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Location
Figure 1

Site Location

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 0.75 1.5 3
Kilometres

PROJECT: 19-1482 STATUS: FINAL Date: 2020-04-23

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Plan
Figure 2

Project Development Area
GLC Property
Approximate Adjacent Parcels

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 12.5 25 50
Meters

PROJECT: 19-1742 STATUS: FINAL Date: 2020-12-03

Koke, Paul <pkoke@dillon.ca>

GLC Waste Oil Recycling and Water Treatment Facility - EA Registration Memo

Koke, Paul <PKoke@dillon.ca> Fri, Dec 4, 2020 at 10:46 AM
To: info@mikmaqrights.com
Bcc: 191742 <191742@dillon.ca>

To whom it may concern:

General Liquids Canada, represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration Document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia. Part of this EA process is to engage the Mi'kmaq communities put forth by the Office of Aboriginal Affairs (OAA), which included the KMKNO.

Please find attached a memo detailing the proposed project and its location. A hard copy of this memo will also be mailed to you. If you have any questions or comments, please do not hesitate to reach out to us.

Thanks in advance.

Paul

--

Paul Koke
Associate
Dillon Consulting Limited
137 Chain Lake Drive Suite 100
Halifax, Nova Scotia, B3S 1B3
T - 902.450.5015 ext. 5065
F - 902.450.2008
PKoke@dillon.ca
www.dillon.ca

Assembly Letter (Waste Oil Recycling and Water Treatment Facility), 3-Dec-2020_KMKNO.pdf
2154K

GLC | GENERAL LIQUIDS CANADA

December 3, 2020

Assembly of Nova Scotia Mi'kmaq Chiefs
Kwilmu'kw Maw-klusuaqn Negotiation Office
75 Treaty Trail, Millbrook, NS
B6L 1WS

Dear Assembly Members,

General Liquids Canada Ltd.'s Pleasant Street Waste Oil Recycling and Water Treatment Facility – Environmental Registration Document for a Class 1 Undertaking Under Section 9 (1) of the NS Environment Assessment Regulations

General Liquids Canada (GLC), represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia (see attached Figures).

The Project consists of the development of a waste oil recycling and water treatment facility on private property which is accessed from Pleasant St. The approximate center of the study area is at Universal Transverse Mercator (UTM) 20 T 458189 4942535. The facility will be constructed and operated at an existing commercial/industrial operation, currently regulated by Nova Scotia Environment. Industrial land uses border on each side of the property proposed for the development, specifically Cherubini Metal Works to the east and the now decommissioned Imperial Oil Refinery to the west.

The purpose of the Project is to provide a local option for waste oil recycling and water treatment services for liquid waste materials, including but not limited to, bilge waters, surface water spills, and used oil.

It is anticipated that the EA Registration document will be submitted to Nova Scotia Environment (NSE) on December 23, 2020. If possible, we would appreciate any pre-submission comments you may have prior to December 21, 2020. Comments can be sent via email or in writing to the project contacts listed below.

GLC | GENERAL LIQUIDS CANADA

As a Class 1 project, the EA Registration document will also be publically available on NSE's website for Environmental Assessments and the NSE review will follow the typical timeline of approximately 50 calendar days.

We extend the offer to provide the EA Registration document directly at your request.

If you have any questions or comments during the interim, or wish to meet to discuss the project, please contact either:

Paul Koke, Project Manager
Dillon Consulting Limited
137 Chain Lake Drive, Suite 100
Halifax, NS, B3S 1B3
Ph: 902.450.5015 ext. 5065
Email: pkoke@dillon.ca

Patrick Rooney, Director of Manufacturing
Municipal Group of Companies
927 Rocky Lake Dr.
Bedford, NS, B4A 3Z2
Ph: 902.835.3381
Email: prooney@dexter.ca

Sincerely,

GENERAL LIQUIDS CANADA

Patrick Rooney, Director of Manufacturing

PEK:scm
Attachment(s): Site Figures
cc: Office of Aboriginal Affairs

Our file: 19-1742-1000

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Location
Figure 1

Site Location

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 0.75 1.5 3
Kilometres

PROJECT: 19-1482 STATUS: FINAL Date: 2020-04-23

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Plan
Figure 2

Project Development Area
GLC Property
Approximate Adjacent Parcels

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 12.5 25 50
Meters

PROJECT: 19-1742 STATUS: FINAL Date: 2020-12-03

Appendix J

Community Engagement

NOTICE

Re: General Liquids Canada Ltd.'s Pleasant Street Waste Oil Recycling and Water Treatment Facility – Environmental Registration Document for a Class 1 Undertaking Under Section 9 (1) of the NS Environmental Assessment Regulations

General Liquids Canada (GLC), represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration document for a proposed Waste Oil Recycling and Water Treatment Facility at 750 Pleasant Street in Dartmouth, Nova Scotia.

The Project consists of the development of a waste oil recycling and water treatment facility on private property which is accessed from Pleasant St. The approximate center of the study area is at Universal Transverse Mercator (UTM) 20 T 458181 4942493. The facility will be constructed and operated at an existing commercial/industrial operation, currently regulated by Nova Scotia Environment. Industrial land uses border on each side of the property proposed for the development, specifically Cherubini Metal Works to the east and the now decommissioned Imperial Oil Refinery to the west.

The purpose of the Project is to provide a local option for waste oil recycling and water treatment services for liquid waste materials, including but not limited to, bilge waters, surface water spills, and used oil. Liquid waste materials will be accepted from offshore and onshore sources via truck through the existing Pleasant Street entrance. Adding this functionality to GLC's existing commercial/industrial operation will involve the following site and operational changes:

- The operation of an enclosed waste oil recycling and water treatment facility 5 days a week 12 hours a day that will comply with all relevant regulations and standards.
- The addition of an average of two trucks per day entering the site via the existing Pleasant street facility entrance. Site access is controlled via a secure access gate and fencing.
- The construction of the following pieces of infrastructure on site:
    - A treatment system within a pre-existing building on site. This system will include installation of the following:
        - Two 17,500L heated treater tanks; and
        - Assorted process piping, separators, filters and pumps; and,
        - A treated effluent discharge pipe from the treatment facility.

It is anticipated that the EA Registration document will be submitted to Nova Scotia Environment (NSE) in late December 2020 to early January 2021. If possible, we would appreciate any pre-submission comments you may have prior to December 21, 2020. Comments can be sent via email or in writing to the project contacts listed below.

As a Class 1 project, the EA Registration document will also be publically available on NSE's website for Environmental Assessments (https://novascotia.ca/nse/ea/projects.asp) and the NSE review will follow the typical timeline of approximately 50 calendar days.

We extend the offer to provide the EA Registration document directly at your request.

If you have any questions or comments during the interim, please contact the below:

Attention to: New Waste Oil Recycling & Water Treatment Facility
General Liquids Canada Headquarters
1233 Rocky Lake Drive
Waverley, Nova Scotia
B2R 1S1
Tel: 902.835.3311
Fax: 902.835.4292
Email: questions@general-liquids.ca

DILLON CONSULTING

Koke, Paul <pkoke@dillon.ca>

Nova Scotia Environmental Assessment | 750 Pleasant Street | Waste Oil Recycling and Water Treatment

1 message

Koke, Paul <PKoke@dillon.ca> Wed, Dec 9, 2020 at 9:10 AM
To: bernadettecranford@gmail.com

Good morning,

Re: 750 Pleasant Street - Environmental Assessment for Waste Oil Recycling and Water Treatment Project

I am reaching out to the South Woodside Community Association as a potential local stakeholder organization for the subject project. For your information and consideration, please see attached proposed project notification letter.

Best Regards,
Paul

--

DILLON CONSULTING

CANADA BEST MANAGED COMPANIES
Platinum member

Paul Koke
Associate
Dillon Consulting Limited
137 Chain Lake Drive Suite 100
Halifax, Nova Scotia, B3S 1B3
T - 902.450.5015 ext. 5065
F - 902.450.2008
PKoke@dillon.ca
www.dillon.ca

Stakeholder Letter (Waste Oil Recycling and Water Treatment Facility) 8-Dec-2020_South Woodside Community Association.pdf
2119K

December 8, 2020

Bernadette Cranford, South Woodside Community Association
Via Email

Re: General Liquids Canada Ltd.'s Pleasant Street Waste Oil Recycling and Water Treatment Facility – Environmental Registration Document for a Class 1 Undertaking Under Section 9 (1) of the NS Environment Assessment Regulations

Dear Ms. Cranford,

General Liquids Canada (GLC), represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia. Please see the attached figures which display the proposed site location details.

The Project consists of the development of a waste oil recycling and water treatment facility on private property which is accessed from Pleasant St. The approximate center of the study area is at Universal Transverse Mercator (UTM) 20 T 458181 4942493. The facility will be constructed and operated at an existing commercial/industrial operation, currently regulated by Nova Scotia Environment. Industrial land uses border on each side of the property proposed for the development, specifically Cherubini Metal Works to the east and the now decommissioned Imperial Oil Refinery to the west.

The purpose of the Project is to provide a local option for waste oil recycling and water treatment services for liquid waste materials, including but not limited to, bilge waters, surface water spills, and used oil. Liquid waste materials will be accepted from offshore and onshore sources via truck through the existing Pleasant Street entrance. Adding this functionality to GLC's existing commercial/industrial operation will involve the following site and operational changes:

- The operation of an enclosed waste oil recycling and water treatment facility 5 days a week 12 hours a day that will comply with all relevant regulations and standards.
- The addition of an average of two trucks per day entering the site via the existing Pleasant street facility entrance. Site access is controlled via a secure access gate and fencing.
- The construction of the following pieces of infrastructure on site:
    - A treatment system within a pre-existing building on site. This system will include installation of the following:
        - Two 17,500L heated treater tanks; and

- Assorted process piping, separators, filters and pumps; and,
- A treated effluent discharge pipe from the treatment facility.

It is anticipated that the EA Registration document will be submitted to Nova Scotia Environment (NSE) in late December 2020 to early January 2021. If possible, we would appreciate any pre-submission comments you may have prior to December 21, 2020. Comments can be sent via email or in writing to the addresses listed below.

As a Class 1 project, the EA Registration document will also be publically available on NSE's website for Environmental Assessments (https://novascotia.ca/nse/ea/projects.asp) and the NSE review will follow the typical timeline of approximately 50 calendar days.

We extend the offer to provide the EA Registration document directly at your request.

If you have any questions or comments during the interim, please contact the below:

Attention to: New Waste Oil Recycling & Water Treatment Facility
General Liquids Canada Headquarters
1233 Rocky Lake Drive
Waverley, Nova Scotia
B2R 1S1
Tel: 902.835.3311
Fax: 902.835.4292
Email: questions@general-liquids.ca

Sincerely,

GENERAL LIQUIDS CANADA

Attachment(s): Site Location Figures

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Location
Figure 1

Site Location

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 0.75 1.5 3
Kilometres

PROJECT: 19-1482 STATUS: FINAL Date: 2020-04-23

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Plan
Figure 2

Project Development Area
GLC Property
Approximate Adjacent Parcels

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 12.5 25 50
Meters

PROJECT: 19-1742 STATUS: FINAL Date: 2020-12-03

DILLON CONSULTING

Koke, Paul <pkoke@dillon.ca>

Nova Scotia Environmental Assessment | 750 Pleasant Street | Waste Oil Recycling and Water Treatment

1 message

Koke, Paul <PKoke@dillon.ca> Wed, Dec 9, 2020 at 9:11 AM
To: Pleasant Woodside <pleasantwoodside@gmail.com>

Good morning,

Re: 750 Pleasant Street - Environmental Assessment for Waste Oil Recycling and Water Treatment Project

I am reaching out to the Pleasant-Woodside Neighbourhood Association as a potential local stakeholder organization for the subject project. For your information and consideration, please see attached proposed project notification letter.

Best Regards,
Paul

--

DILLON CONSULTING

CANADA BEST MANAGED COMPANIES
Platinum member

Paul Koke
Associate
Dillon Consulting Limited
137 Chain Lake Drive Suite 100
Halifax, Nova Scotia, B3S 1B3
T - 902.450.5015 ext. 5065
F - 902.450.2008
PKoke@dillon.ca
www.dillon.ca

Stakeholder Letter (Waste Oil Recycling and Water Treatment Facility) 8-Dec-2020_Pleasant Woodside Neighbourhood Association.pdf
2119K

December 8, 2020

Grant MacDonald (Chair), Pleasant-Woodside Neighbourhood Association
Via Email

Re: General Liquids Canada Ltd.'s Pleasant Street Waste Oil Recycling and Water Treatment Facility – Environmental Registration Document for a Class 1 Undertaking Under Section 9 (1) of the NS Environment Assessment Regulations

Dear Ms. Cranford,

General Liquids Canada (GLC), represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia. Please see the attached figures which display the proposed site location details.

The Project consists of the development of a waste oil recycling and water treatment facility on private property which is accessed from Pleasant St. The approximate center of the study area is at Universal Transverse Mercator (UTM) 20 T 458181 4942493. The facility will be constructed and operated at an existing commercial/industrial operation, currently regulated by Nova Scotia Environment. Industrial land uses border on each side of the property proposed for the development, specifically Cherubini Metal Works to the east and the now decommissioned Imperial Oil Refinery to the west.

The purpose of the Project is to provide a local option for waste oil recycling and water treatment services for liquid waste materials, including but not limited to, bilge waters, surface water spills, and used oil. Liquid waste materials will be accepted from offshore and onshore sources via truck through the existing Pleasant Street entrance. Adding this functionality to GLC's existing commercial/industrial operation will involve the following site and operational changes:

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- The addition of an average of two trucks per day entering the site via the existing Pleasant street facility entrance. Site access is controlled via a secure access gate and fencing.
- The construction of the following pieces of infrastructure on site:
    - A treatment system within a pre-existing building on site. This system will include installation of the following:
        - Two 17,500L heated treater tanks; and

- Assorted process piping, separators, filters and pumps; and,
- A treated effluent discharge pipe from the treatment facility.

It is anticipated that the EA Registration document will be submitted to Nova Scotia Environment (NSE) in late December 2020 to early January 2021. If possible, we would appreciate any pre-submission comments you may have prior to December 21, 2020. Comments can be sent via email or in writing to the addresses listed below.

As a Class 1 project, the EA Registration document will also be publically available on NSE's website for Environmental Assessments (https://novascotia.ca/nse/ea/projects.asp) and the NSE review will follow the typical timeline of approximately 50 calendar days.

We extend the offer to provide the EA Registration document directly at your request.

If you have any questions or comments during the interim, please contact the below:

Attention to: New Waste Oil Recycling & Water Treatment Facility
General Liquids Canada Headquarters
1233 Rocky Lake Drive
Waverley, Nova Scotia
B2R 1S1
Tel: 902.835.3311
Fax: 902.835.4292
Email: questions@general-liquids.ca

Sincerely,

GENERAL LIQUIDS CANADA

Attachment(s): Site Location Figures

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Location
Figure 1

Site Location

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 0.75 1.5 3
Kilometres

PROJECT: 19-1482 STATUS: FINAL Date: 2020-04-23

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Plan
Figure 2

Project Development Area
GLC Property
Approximate Adjacent Parcels

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 12.5 25 50
Meters

PROJECT: 19-1742 STATUS: FINAL Date: 2020-12-03

Koke, Paul <pkoke@dillon.ca>

Nova Scotia Environmental Assessment | 750 Pleasant Street | Waste Oil Recycling and Water Treatment

1 message

Koke, Paul <PKoke@dillon.ca> Wed, Dec 9, 2020 at 9:09 AM
To: becky.kent@halifax.ca

Good morning,

Re: 750 Pleasant Street - Environmental Assessment for Waste Oil Recycling and Water Treatment Project

I am reaching out to you as HRM Councillor for District 3, and for your awareness as a community representative in the area of a proposed project. For your information and consideration, please see attached proposed project notification letter.

Best Regards,
Paul

--

Paul Koke
Associate
Dillon Consulting Limited
137 Chain Lake Drive Suite 100
Halifax, Nova Scotia, B3S 1B3
T - 902.450.5015 ext. 5065
F - 902.450.2008
PKoke@dillon.ca
www.dillon.ca

Stakeholder Letter (Waste Oil Recycling and Water Treatment Facility) 8-Dec-2020_B.Kent.pdf
2119K

December 8, 2020

Councillor Becky Kent
Via Email

Re: General Liquids Canada Ltd.'s Pleasant Street Waste Oil Recycling and Water Treatment Facility – Environmental Registration Document for a Class 1 Undertaking Under Section 9 (1) of the NS Environment Assessment Regulations

Dear Ms. Kent,

General Liquids Canada (GLC), represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia. Please see the attached figures which display the proposed site location details.

The Project consists of the development of a waste oil recycling and water treatment facility on private property which is accessed from Pleasant St. The approximate center of the study area is at Universal Transverse Mercator (UTM) 20 T 458181 4942493. The facility will be constructed and operated at an existing commercial/industrial operation, currently regulated by Nova Scotia Environment. Industrial land uses border on each side of the property proposed for the development, specifically Cherubini Metal Works to the east and the now decommissioned Imperial Oil Refinery to the west.

The purpose of the Project is to provide a local option for waste oil recycling and water treatment services for liquid waste materials, including but not limited to, bilge waters, surface water spills, and used oil. Liquid waste materials will be accepted from offshore and onshore sources via truck through the existing Pleasant Street entrance. Adding this functionality to GLC's existing commercial/industrial operation will involve the following site and operational changes:

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- A treated effluent discharge pipe from the treatment facility.

It is anticipated that the EA Registration document will be submitted to Nova Scotia Environment (NSE) in late December 2020 to early January 2021. If possible, we would appreciate any pre-submission comments you may have prior to December 21, 2020. Comments can be sent via email or in writing to the addresses listed below.

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We extend the offer to provide the EA Registration document directly at your request.

If you have any questions or comments during the interim, please contact the below:

Attention to: New Waste Oil Recycling & Water Treatment Facility
General Liquids Canada Headquarters
1233 Rocky Lake Drive
Waverley, Nova Scotia
B2R 1S1
Tel: 902.835.3311
Fax: 902.835.4292
Email: questions@general-liquids.ca

Sincerely,

GENERAL LIQUIDS CANADA

Attachment(s): Site Location Figures

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Location
Figure 1

Site Location

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 0.75 1.5 3
Kilometres

PROJECT: 19-1482 STATUS: FINAL Date: 2020-04-23

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Plan
Figure 2

Project Development Area
GLC Property
Approximate Adjacent Parcels

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 12.5 25 50
Meters

PROJECT: 19-1742 STATUS: FINAL Date: 2020-12-03

DILLON CONSULTING

Koke, Paul <pkoke@dillon.ca>

Nova Scotia Environmental Assessment | 750 Pleasant Street | Waste Oil Recycling and Water Treatment

Koke, Paul <PKoke@dillon.ca> Wed, Dec 9, 2020 at 9:08 AM
To: Barbara Adams <barbadamsmla@gmail.com>

Good morning,

Re: 750 Pleasant Street - Environmental Assessment for Waste Oil Recycling and Water Treatment Project

I am reaching out to you as MLA for Cole Harbour-Eastern Passage, and for your awareness as a community representative in the area of a proposed project. For your information and consideration, please see attached proposed project notification letter.

Best Regards,
Paul

--

DILLON CONSULTING

CANADA BEST MANAGED COMPANIES
Platinum member

Paul Koke
Associate
Dillon Consulting Limited
137 Chain Lake Drive Suite 100
Halifax, Nova Scotia, B3S 1B3
T - 902.450.5015 ext. 5065
F - 902.450.2008
M - 902.499.9505
PKoke@dillon.ca
www.dillon.ca

Stakeholder Letter (Waste Oil Recycling and Water Treatment Facility) 8-Dec-2020_B. Adams.pdf
2537K

December 8, 2020

Barbara Adams, MLA
Via Email

Re: General Liquids Canada Ltd.'s Pleasant Street Waste Oil Recycling and Water Treatment Facility – Environmental Registration Document for a Class 1 Undertaking Under Section 9 (1) of the NS Environment Assessment Regulations

Dear Ms. Adams,

General Liquids Canada (GLC), represented by Dillon Consulting Limited, is in the process of preparing an Environmental Assessment (EA) Registration document for a proposed Waste Oil Recycling and Water Treatment Facility on Pleasant Street in Dartmouth, Nova Scotia. Please see the attached figures which display the proposed site location details.

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- The construction of the following pieces of infrastructure on site:
    - A treatment system within a pre-existing building on site. This system will include installation of the following:
        - Two 17,500L heated treater tanks; and

- Assorted process piping, separators, filters and pumps; and,
- A treated effluent discharge pipe from the treatment facility.

It is anticipated that the EA Registration document will be submitted to Nova Scotia Environment (NSE) in late December 2020 to early January 2021. If possible, we would appreciate any pre-submission comments you may have prior to December 21, 2020. Comments can be sent via email or in writing to the addresses listed below.

As a Class 1 project, the EA Registration document will also be publically available on NSE's website for Environmental Assessments (https://novascotia.ca/nse/ea/projects.asp) and the NSE review will follow the typical timeline of approximately 50 calendar days.

We extend the offer to provide the EA Registration document directly at your request.

If you have any questions or comments during the interim, please contact the below:

Attention to: New Waste Oil Recycling & Water Treatment Facility
General Liquids Canada Headquarters
1233 Rocky Lake Drive
Waverley, Nova Scotia
B2R 1S1
Tel: 902.835.3311
Fax: 902.835.4292
Email: questions@general-liquids.ca

Sincerely,

GENERAL LIQUIDS CANADA

Attachment(s): Site Location Figures

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Location
Figure 1

Site Location

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 0.75 1.5 3
Kilometres

PROJECT: 19-1482 STATUS: FINAL Date: 2020-04-23

General Liquids Canada
Proposed Pleasant Street Treatment Facility (Dartmouth, NS)

Site Plan
Figure 2

Project Development Area
GLC Property
Approximate Adjacent Parcels

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY CanVec, ESRI

MAP CREATED BY: SCM
MAP CHECKED BY: PEK
MAP PROJECTION: NAD 1983 UTM Zone 22N

0 12.5 25 50
Meters

PROJECT: 19-1742 STATUS: FINAL Date: 2020-12-03

Appendix K

Preliminary Closure and Reclamation Plan (Draft)

Preliminary Closure and Reclamation Plan

Envirosoil Limited currently anticipates that the Project will operate indefinitely with ongoing equipment upgrades and regular planned maintenance. If the Project is to cease operations, Envirosoil will take a methodical approach to returning the site to a similar condition as it was prior to their acquisition and development of the property.

Prior to closing the site, Envirosoil will prepare a detailed plan for submission to Nova Scotia Environment that will include methods for removal and disposal of all infrastructure related to the waste oil recycling and water treatment processes and reclaiming the site. Once the project infrastructure (e.g., storage tanks and piping systems) has been removed, soil and groundwater will be sampled and analyzed to ensure that it continues to meet the same criteria as pre-development conditions (refer to the Groundwater Monitoring Plan included in this EARD). Any deficiencies in soil or groundwater conditions will be addressed through industry best practices and regulatory agency approved remediation techniques before the site is returned to its pre-development condition. It is noted; however, that the site has been used for industrial uses for decades and significant earthworks have been completed at the site over the years. For Envirosoil's particular project activities at the property, specifically grading works, returning the site to its previous state would result in potentially greater impacts to the environment (e.g., modifying slopes, vegetation removal, and ground disturbance). In these instances, surface soils will be stabilized and grades will not be modified.

Due to its relative location to a marine environment, Envirosoil will implement bank and riparian protection and reclamation measures along the southern portion of the site immediately following any required grading. Any disturbed areas will be seeded with appropriate seed mix and native plantings, where feasible. An evaluation of the success of the re-vegetation re-establishment will also be completed to confirm that soils are effectively stabilized, and erosion and sedimentation issues are mitigated.

Particular attention will be given to areas of terrain instability that may be prone to erosion. If warranted, detailed vegetation assessments will be completed at sites where reclamation problems are identified. If invasive plant species are identified, a control plan will be developed and implemented in consultation with Nova Scotia Department of Lands and Forestry.

Appendix L

Complaint Resolution Plan (Draft)

Complaint Resolution Plan

During the construction and operation of the Waste Oil Recycling and Water Treatment Facility, complaints from the public regarding dust, traffic, light, odour, and noise may occur. A Complaint Resolution Plan and clearly defined process to address all concerns with the Project will be in place, and documentation will be maintained at the on-site office.

Complaints will be received at the Main Office building and will be directed to the Facility Manager for assessment and resolution. The Assistant Facility Manager will act as an alternate in the event that the Facility Manager is not immediately available. The telephone number for Envirosoil Limited is public information and any member of the public who wishes to lodge a complaint can do so using Envirosoil's main number (provided below).

The complaint will be recorded in a Complaint Log maintained in the Main Office. A response will be made to the complainant as soon as possible and to the site's best efforts on the same day confirming the receipt and nature of the complaint, and to give results of the assessment of the complaint and any follow-up actions as a result. If a complaint cannot be resolved within a reasonable time period, the complainant will be notified of what action will be taken and when it will be taken. Any complaints received after hours will be recorded using an answering machine or answering service.

The Complaint Log will be kept on file, along with copies of any correspondence or records of discussions with the complainant. The Log will indicate the following information:

- Date and time of day that the complaint was received.
- Date and time of day the complaint incident occurred.
- If provided, the complainant's name, address, and telephone number.
- Location and nature of complaint (e.g., noise, dust, odour, etc.).
- Method of receipt of complaint (phone, letter, site visit, personal communication).
- Nature and result of any investigation or follow-up.
- Weather conditions and meteorological measurements at the time of the complaint.

Weather conditions at the time of the complaint will be carefully and thoroughly noted. As in most cases, this information could be used to validate the complaint.

Formation of Community Liaison Committee

If required by Nova Scotia Environment (NSE), Envirosoil Limited will develop a plan for the formation of a Community Liaison Committee (CLC) to provide stakeholders with a means of bringing forward issues that may arise through the operation of the project. Even with a CLC in place, there is the potential for

complaints to be directed to Nova Scotia Environment or other regulatory agencies from the public and/or other stakeholders regarding the project.

The Facility Manager will be the first point of contact for regulatory agencies. The Facility Manager and Envirosoil management will work with the appropriate agencies to address complaints in a timely manner. If complaints are raised outside of the CLC to NSE or other regulatory agencies, the issue will be shared with the CLC, as will the resolution process.

Key Contacts

At the present time, it is anticipated that the following named Positions will be NSE's points of contact for the facility, and will be accountable in carrying out the Complaint Resolution Plan:

Facility Manager
Assistant Facility Manager

Contact Number: (902) 835-3381
Contact Address: 750 Pleasant Street, Dartmouth, Nova Scotia, Canada

Appendix M

Demulsifier Information Sheets

Faster. Smarter. Safer.

Recycle oil waste more cost-efficiently with EZ-DMULSE, a highly effective multi-purpose low-high temperature demulsifier that removes water from slop oil, lube oil, crankcase oil and bunker oil waste quickly and easily. Trusted by industry leaders and formulated using only environmentally acceptable chemicals, it reclaims more oil for recycling while adhering to all industry regulations.

VELOCITY Chemicals

EZ-DMULSE

Multi-Purpose Low-High Temp Demulsifier for Bunker/Waste Oil Treatment

Perfect for bunker and waste oil treatment, EZ-DMULSE is specially formulated to work at lower temperatures, successfully separating water from lube, crankcase and slop oil so that they can be re-used as recycled bunker fuel oil.

Faster Cleaner

EZ-DMULSE's carefully engineered formula separates water from waste bunker and lube oil in less than 24-hours, cutting maintenance time and costs.

Smarter Cleaner

Because EZ-DMULSE removes more water at lower temperatures, the recycled oil is a higher quality and is ready to use immediately.

Safer Cleaner

Comprising only environmentally acceptable chemicals, the demulsifying process satisfies the strictest industry regulations – even when used at lower temperatures.

AVAILABLE QUANTITIES

20L pails
200L drums
1000L tote tanks

CONTACT US

Phone Support: 1-604-881-4700
Website: VelocityChemicals.com
Email: info@VelocityChemicals.com

CUSTOM FORMULATION

Velocity Chemicals will partner with you to ensure you get the right product to suit your needs – precisely, safely and economically.

MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet complies with the Canadian Controlled Products Act

****NOTE: THE FOLLOWING INFORMATION PROVIDED IS FOR THE PRODUCT CONCENTRATE ONLY, NOT FOR USE-DILUTIONS****

SECTION 1 – PRODUCT IDENTIFICATION

PRODUCT IDENTIFIER:	**EZ-DMULSE**	
PRODUCT USE:	MULTI-PURPOSE LOW-HIGH TEMP DEMULSIFIER FOR BUNKER/WASTE OIL WASTE TREATMENT	
SUPPLIER:	Velocity Chemicals Ltd. Unit #1, 9515- 190th St., Surrey, B.C. V4N-3S1 Emergency Telephone: (604) 881-4700 Facsimile: (604) 881-4701	In case of transporation emergency or product spill, contact: In Canada- CANUTEC @ 613-996-6666 (24 hrs.)

SECTION 2 – HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	% (W/W)	CAS NUMBER	LD50	LC50	EXPOSURE LIMITS
Alkyl Benzenesulfonic Acid	30-60	68584-22-5	Not available	Not available	Not established
Methyl Alcohol	5-10	67-56-1	5628mg/kg (oral,rat), 15.8g/kg(skin,rabbit)	64000ppm (inhal.,4hrs, rat)	OSHA Skin-250ppm(STEL), 200ppm(TWA) ACGIH Skin- 200ppm(STEL), 200ppm(TWA) IDHL= 6000ppm
Sulfuric Acid	1-5	7664-93-9	2140 mg/kg (oral, rat)	510 mg/m3 (inhal.,2hrs,rat) 160 mg/m3 (inhal.,4hrs,mouse)	OSHA(PEL)= 1mg/m3(TWA) ACGIH = 0.2mg/m3(TWA), 3mg/m3 (STEL)

SECTION 3 – PHYSICAL DATA

Physical state: liquid	**Vapour Density:** not determined
Solubility: soluble	**Vapour Pressure:** not determined
Odour and Appearance: clear, amber with a mild odor	**Evaporation Rate:** not determined
pH (100%) @ 20°C: < 2.0	**Boiling Point (°C):** not determined
Specific Gravity @ 20°C: 1.032	**Freezing Point (°C):** not determined
Odour Threshold (ppm): not established	**Coefficient of water/oil distribution:** not determined

EZ-DMULSE

SECTION 4 – FIRE AND EXPLOSION DATA

Flammability: Yes, combustible under WHMIS B3	**Flash Point (°C) and method:** 54°C (PMCC)
If yes, under what condition: heat, open flames, sparks and other ignition sources	**Upper Flammable limit (% volume):** not applicable
Means of Extinction: Dry chemical, alcohol foam, CO_2, water spray. Use extinguishing media suitable for surrounding fires.	**Lower Flammable limit (% volume):** not applicable
Special Fire Fighting Procedures: Wear NIOSH/OSHA approved, self contained breathing apparatus for fire fighting situations. Use water spray to cool all nearby fire exposed surfaces.	**Autoignition temperature (°C):** not applicable
Explosion Data-	**Hazardous combustion products:** carbon oxides, sulfur oxides, toxic sulfuric acid vapors and other toxic organic vapours.
Sensitivity to impact: None	
Sensitivity to static discharge: None	

SECTION 5 – REACTIVITY DATA

Chemical Stability: yes, stable under normal storage conditions

If no, under what conditions:

Incompatibility with other substances: yes

If so, under what conditions: strong acids, alkalis and oxidizers

Reactivity, and under what conditions: none known

Hazardous Decomposition Products: carbon oxides, sulfur oxides and toxic sulfuric acid vapors upon thermal decomposition.

SECTION 6 – TOXICOLOGICAL PROPERTIES

Primary route of entry: skin and eye contact, skin absorption and inhalation

Effects of Acute Exposure to Product: Product exposure may cause irritation or burns to skin and eyes. Inhaling mist or vapors may cause immediate irritation to mucous membrane, discomfort to respiratory system and central nervous system(CNS) effects. Symptoms may include headaches, loss of coordination, nausea, etc. May be harmful if inhaled or absorbed through skin.

Effects of Chronic Exposure to Product: Prolonged exposure may cause skin dermatitis. May cause CNS, blood and liver disorder or damage, impaired vision and blindness, and adverse reproductive effects through repeated exposure of Methanol (based on animal test data).

Exposure Limits: see Section 2 under Hazardous Ingredients

Irritancy of Product: may be corrosive to skin, eyes and respiratory system.

Sensitization: none known

Reproductive Toxicity: Methanol is observed to cause birth defects in experimental animals.

Mutagenicity: Methanol is observed to be mutagenic in experimental animals.

Carcinogenicity: Sulfuric acid (acid mists only)-IARC (Group 1-human cacinogen), ACGIH(A2-suspect human carcinogen)

Teratogenicity: Methanol is observed to be teratogenic in experimental animals.

Synergistic Products: none known

EZ-DMULSE

SECTION 7 – PREVENTATIVE MEASURES

Respiratory Protection: Use a NIOSH/OSHA approved for acid mist/dust and organic vapor respirator.

Gloves: butyl or nitrile rubber

Eye Protection: splash proof chemical goggles or face shield.

Footwear: boots

Clothing: long sleeve coveralls

Other: butyl or nitrile apron

Engineering Controls: General ventilation for normal operating conditions or local exhaust for confined areas.

Leak and Spill Procedures: Wear protective equipment. Extinguish all nearby ignition sources. Contain spill. Prevent runoff to drains or sewers. Recover material by vacuum or pump into a suitable flammable waste container. Soak up residue with suitable absorbent ,and then dispose of into a flammable waste container. Reuse material if possible, or otherwise neutralize with soda ash before disposal. Dispose in accordance with local regulations.

Waste Disposal: Dispose of in accordance with local environmental regulations.

Handling Procedures and Equipment: Use good hygiene practices. Avoid contact with eyes, skin and clothing. Avoid breathing vapors or mists. Use with adequate ventilation. Use proper grounding procedures when handling. Empty container may contain flammable residues/vapors. Do not cut, puncture, or weld near empty container. Safety Shower and Eye wash station should be available in the immediate work area.

Storage Requirements: Store in a cool, dry place away from all nearby ignition sources and incompatibles. Do not mix with any other chemicals. Keep container closed when not in use. Keep storage temperature between 4°C to 30°C.

Special Shipping Information:

WHMIS Classification: B3, D2A, E

TDG Classification:

Flammable Liquid, Corrosive, N.O.S. (Alkylsulfonic acids, liquid with < 5% free sulfuric acid & methanol mixture), Class 3(8), UN 2924, P.G. III

SECTION 8 – FIRST AID MEASURES

Inhalation: Remove victim to fresh air, apply artificial respiration if necessary. Seek medical help.
Ingestion: Give large amounts of water if conscious. Do not induce vomiting. Get medical help immediately.
Skin Contact: Wash thoroughly with water for 15 minutes. If irritation persist, seek medical attention.
Eye Contact: Flush immediately with water for 15-20 minutes. Seek medical help.

SECTION 9 - OTHER INFORMATION

REVISIONS:	May 12, 2011	SUPERCEDES: March 18, 2011	
PREPARED BY:	Technical Department (Customer Service phone number: 604-881-4700)		
DISCLAIMER:	The information in the Material Safety Data Sheet is offered for your consideration and guidance when exposed to this product. Velocity Chemicals Ltd. expressly disclaims all expressed or implied warranties and assumes no responsibilities for the accuracy or completeness of the data contained herein. The data in this MSDS does not apply to use with any other product or in any other process.		

MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet complies with the Canadian Controlled Products Act

****NOTE: THE FOLLOWING INFORMATION PROVIDED IS FOR THE PRODUCT CONCENTRATE ONLY, NOT FOR USE-DILUTIONS****

SECTION 1 – PRODUCT IDENTIFICATION

PRODUCT IDENTIFIER:	**BUNKER BREAKER II**	
PRODUCT USE:	DEMULSIFIER FOR BUNKER/ LUBE OIL WASTE TREATMENT	
SUPPLIER:	Velocity Chemicals Ltd. Unit #1, 9515- 190th St., Surrey, B.C. V4N-3S1 Emergency Telephone: (604) 881-4700 Facsimile: (604) 881-4701	In case of transporation emergency or product spill, contact: In Canada- CANUTEC @ 613-996-6666 (24 hrs.)

SECTION 2 – HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	% (W/W)	CAS NUMBER	LD50	LC50	EXPOSURE LIMITS
Kerosene	40-70	8008-20-6	>5 g/kg (oral,rat) > 2g/kg (skin,rabbit)	>2.5 g/m3 (inhal.,4hrs, rat)	ACGIH= 200mg/m3 (TLV-TWA)
Alkyl Benzenesulfonic Acid	15-40	68584-22-5	Not available	Not available	Not established

SECTION 3 – PHYSICAL DATA

Physical state: liquid **Solubility:** dispersible in water **Odour and Appearance:** clear, dull dark grey with petroleum odor **pH (100%) @ 20°C:** < 2.0 **Specific Gravity @ 20°C:** 0.92 **Odour Threshold (ppm):** not established	**Vapour Density:** not determined **Vapour Pressure:** not determined **Evaporation Rate:** not determined **Boiling Point (°C):** not determined **Freezing Point (°C):** not determined **Coefficient of water/oil distribution:** not determined

BUNKER BREAKER II

SECTION 4 – FIRE AND EXPLOSION DATA

Flammability: Yes, combustible under WHMIS B3 **If yes, under what condition:** heat, open flames, sparks and other ignition sources **Means of Extinction**: Dry chemical, alcohol foam, CO_2, water spray. Use extinguishing media suitable for surrounding fires. **Special Fire Fighting Procedures**: Wear NIOSH/OSHA approved, self contained breathing apparatus for fire fighting situations. Use water spray to cool all nearby fire exposed surfaces. **Explosion Data-** **Sensitivity to impact:** None **Sensitivity to static discharge**: None	**Flash Point (°C) and method:** 41°C (PMCC) **Upper Flammable limit (% volume):** not applicable **Lower Flammable limit (% volume):** not applicable **Autoignition temperature (°C):** not applicable **Hazardous combustion products:** carbon oxides, sulfur oxides, toxic sulfuric acid vapors and other toxic organic vapours.

SECTION 5 – REACTIVITY DATA

Chemical Stability: yes, stable under normal storage conditions

If no, under what conditions:

Incompatibility with other substances: yes

If so, under what conditions: strong acids, alkalis and oxidizers

Reactivity, and under what conditions: none known

Hazardous Decomposition Products: carbon oxides, sulfur oxides and toxic sulfuric acid vapors upon thermal decomposition.

SECTION 6 – TOXICOLOGICAL PROPERTIES

Primary route of entry: skin and eye contact, inhalation

Effects of Acute Exposure to Product: Product exposure may cause irritation or burns to skin and eyes. Inhaling mist or vapors may cause immediate irritation to mucous membrane, discomfort to respiratory system and central nervous system(CNS) effects. Symptoms may include headaches, loss of coordination, nausea, etc.

Effects of Chronic Exposure to Product: Prolonged exposure may cause skin dermatitis.

Exposure Limits: see Section 2 under Hazardous Ingredients **Irritancy of Product:** may be corrosive to skin, eyes and respiratory system. **Sensitization:** none known **Reproductive Toxicity:** none known	**Mutagenicity:** none known **Carcinogenicity:** none known **Teratogenicity:** none known **Synergistic Products:** none known

BUNKER BREAKER II

SECTION 7 – PREVENTATIVE MEASURES

Respiratory Protection: Use a NIOSH/OSHA approved for acid mist/dust and organic vapor respirator. **Gloves:** nitrile, neoprene or viton **Eye Protection:** splash proof chemical goggles or face shield.	**Footwear:** boots **Clothing:** long sleeve coveralls **Other:** neoprene apron

Engineering Controls: General ventilation for normal operating conditions or local exhaust for confined areas.

Leak and Spill Procedures: Wear protective equipment. Extinguish all nearby ignition sources. Contain spill. Prevent runoff to drains or sewers. Recover material by vacuum or pump into a suitable flammable waste container. Soak up residue with suitable absorbent ,and then dispose of into a flammable waste container. Reuse material if possible, or otherwise neutralize with soda ash before disposal. Dispose in accordance with local regulations.

Waste Disposal: Dispose of in accordance with local environmental regulations.

Handling Procedures and Equipment: Use good hygiene practices. Avoid contact with eyes, skin and clothing. Avoid breathing vapors or mists. Use with adequate ventilation. Use proper grounding procedures when handling. Empty container may contain flammable residues/vapors. Do not cut, puncture, or weld near empty container. Safety Shower and Eye wash station should be available in the immediate work area.

Storage Requirements: Store in a cool, dry place away from all nearby ignition sources and incompatibles. Do not mix with any other chemicals. Keep container closed when not in use. Keep storage temperature between 4°C to 30°C.

Special Shipping Information:

WHMIS Classification: B3, E

TDG Classification:

Flammable Liquid, Corrosive, N.O.S. (Kerosne & AlkylBenzenesulfonic Acid Mixture), Class 3(8), UN 2924, P.G. III

SECTION 8 – FIRST AID MEASURES

Inhalation: Remove victim to fresh air, apply artificial respiration if necessary. Seek medical help.
Ingestion: Give large amounts of water if conscious. Do not induce vomiting. Get medical help immediately.
Skin Contact: Wash thoroughly with water for 15 minutes. If irritation persist, seek medical attention.
Eye Contact: Flush immediately with water for 15-20 minutes. Seek medical help.

SECTION 9 - OTHER INFORMATION

REVISIONS:	September 7, 2010	SUPERCEDES: August 10, 2010	
PREPARED BY:	Technical Department (Customer Service phone number: 604-881-4700)		
DISCLAIMER:	The information in the Material Safety Data Sheet is offered for your consideration and guidance when exposed to this product. Velocity Chemicals Ltd. expressly disclaims all expressed or implied warranties and assumes no responsibilities for the accuracy or completeness of the data contained herein. The data in this MSDS does not apply to use with any other product or in any other process.		

Appendix N

Adsorption Media

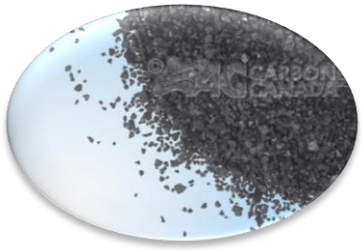
CARBONE CANADA INC.
30e
1979 - 2009

Carbone Activé & Produits Liés
Activated Carbon & Related Products
300, rue Brosseau
St-Jean-sur-Richelieu (Québec) J3B 2E9
Tel. 450-348-1807 Fax. 450-348-3311
accarbon@accarbone.com

CANADA'S ONLY ACTIVATED CARBON MANUFACTURER.
MANUFACTURER & DISTRIBUTOR OF ACTIVATED CARBON & RELATED PRODUCTS SINCE 1979.

PRODUCT SPECIFICATION

ACTIVATED CARBON
GRADE: BC-830
BITUMINOUS COAL BASED CARBON



TYPICAL PROPERTIES

Iodine Number (ASTM D-4607)	950-1000 mg/g
Moisture Content (ASTM D-2867)	5% Maximum (as packed)
Particle Size (ASTM D-2862)	8 x 30 US Mesh, 90% Minimum
Water Soluble Ash	Minus 1%
Mean Particle Diameter	1.5 - 1.7 mm
Effective Size	0.70 – 1.00 mm
Uniformity Coefficient	2.1 Maximum
Hardness (ASTM D-3802)	95%
Abrasion Resistence	75 - 85
Apparent Density (ASTM D-2854)	0.46 - 0.54 g/cc
Surface Area, BET N_2	950-1100 m^2/g
Carbon Tetrachloride Activity (ASTM D3467)	60%
Methylene Blue No.	200 mg/g, +/- 35mg/g

* (ASTM D -….) = Reference number from ¨American Society of Testing Method¨ for Activated Carbon.

NOTES

- ***A.C. Carbone is continually improving its products and updating its product specifications. Please contact A.C. Carbone for a detailed review of your application before proceeding.***

- Unless otherwise specified, particle size distribution will be 5% maximum on the top screen and 5% maximum through the bottom screen.
- In the event the moisture exceeds our 5% maximum, A.C. Carbone Canada will weight adjust to the 5% limit.
- Dust and fines may be present in product due to the nature of this product. A.C. Carbone controls and minimizes dust content and fines to the best of its ability.
- Generation of dust and fines can be increased from handling and transportation, please review the MSDS.

- **ALL INFORMATION IS GIVEN IN GOOD FAITH, WITHOUT GUARANTEE.**
- **An MSDS is available upon request.**

Continental Carbon Group

(/)

CC-OC200 ORGANOCLAY MEDIA

DESCRIPTION:

CC-OC200 is a selective water treatment adsorbent that bonds with hydrocarbons, organics and other contaminants upon contact. Extensive field application and laboratory analysis has shown CC-OC200 is capable of removing a wide range of contaminants to non-detectable levels. The resulting discharge water meets or exceeds typical regulatory requirements.

APPLICATIONS:

For treatment of hydrocarbons, heavy metals, and other organic contaminants, the optimal solution is efficient oil and water separation followed by CC-OC200 at full strength or blended with other media in certain applications. Since it is capable of adsorbing up to 70% of its weight in hydrocarbons, the life of CC-OC200 inside a filtration vessel is much longer than that of other process media such as activated carbon. The media can also be used as a stand-alone treatment process or upstream of other filtration processes and media such as reverse osmosis, activated carbon and resins.

TYPICAL PROPERTIES:

Media Type: Granular (8 x 14 mesh)
Cation Exchange Capacity: Yes
Active Ingredient: Quaternary Amine
Active Media by Volume: 100%
Substrate: Zeolite Bulk Density: 58 lbs/ ft3

FEATURES:

- Does not swell when exposed to water
- Prolongs life of activated carbon and resins, reducing costs and increasing efficiency
- Has more active product per cubic foot than other blended organophilic clays
- Cost effective and environmentally sound technology
- Part of a series of products; can be used at full strength or custom-blended

Request a Quote

(/)

1100 South Service Rd, Suite 321 Stoney Creek, ON
L8E 0C5

Tel: 905-643-7615 (tel:905-643-7615)

Hydrosil International LTD.
125 Prairie Lake Road - East Dundee, IL 60118
Phone: 847-844-0680
Emergency Phone: 847-844-0680
Fax: 847-844-0799

HS-200

Liquid Phase, Pure Organoclay

Hydrosil s **HS-200** is designed to remove oil, heavy metals, and similar organics from water. The **HS-200** is manufactured using a safe and naturally occurring element zeolite.
The **HS-200** series can remove 70% plus of its own weight in hydrocarbons; Therefore, its life inside a still bed is much longer than that of other filtration media such as granular activated carbon. The **HS-200** series:

Does not swell upon water exposure;
Has more active ingredients per cubic foot than other organoclays;
Is cost effective and environmentally sound technology;
Does not support biological growth;
Can be custom blended; and
Prolongs life of activated carbon and resins thereby reducing costs and increasing efficiency.

Industries that use the **HS-200** vary from environmental service companies to wastewater treatment facilities. The **HS-200** is commonly used in oil water separators, frac tanks, pump and treat systems, condensate systems, stormwater run-offs, excavation and de-watering projects.

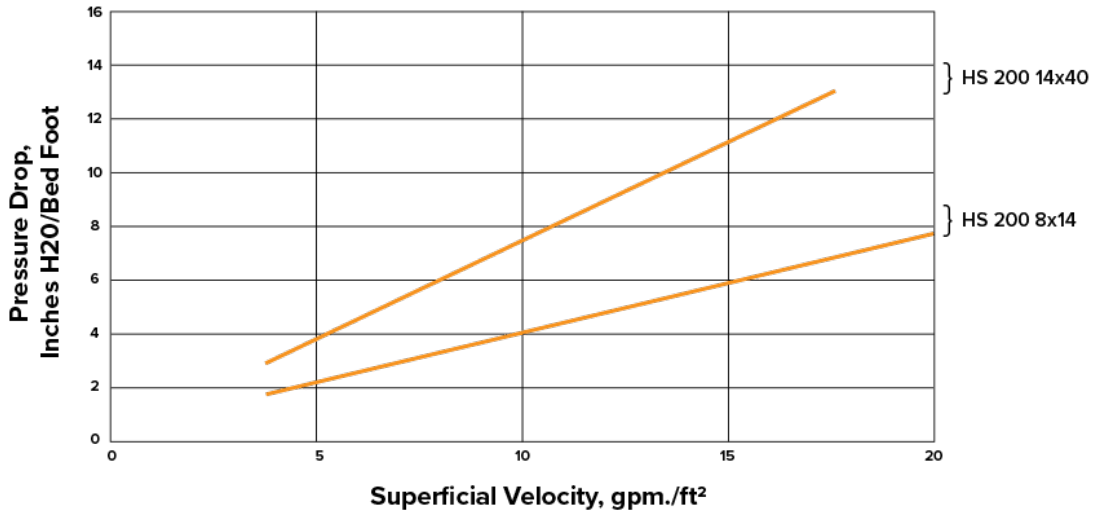
What is Organoclay?

Organoclay, also known as **HS-200**, is a sorbent media which is designed to remove organic components. The media is a naturally occurring mineral (commonly zeolite or bentonite clay) which is chemically alternated to create a unique surface on the mineral. Additives such as cationic surfactants are added to the mineral to modify the surface. By modifying the surface, we create a strong affinity with organic compounds, meaning the media is organophilic. The surface of the media forms a surfactant bilayer which attracts ionic species. Ionic species are components that in solution are grouped as either anionic (anions) or cationic (cations). Anions have a negative charge and cations have a positive charge. The **HS-200** has a high cation exchange capacity. The most common cations include ammonia, sodium, calcium, potassium, and magnesium, many of which are desirable in numerous biological and industrial processes.

Hydrosil s Organoclay Series

Hydrosil has several zeolite based products for water treatment; These products are referred to as the Organoclay Series . The Organoclay Series includes products for removing cations, anions, low molecular weight hydrocarbons, high molecular weight hydrocarbons, and select heavy metals. Contact us at **sales@hydrosilintl.com** for more information on selecting the optimal media for your application.

Pressure Drop



Typical Physical Properties

Property:	**Value:**
pH stable range	4-10
Apparent Density, lb/ft 3	57-59
U.S. Standard Sieve Size (Mesh Size)	8x14, 14x40
Thermally Stable, ℉	33-170
Mohs Scale	4.0
Specific Surface, ft 2 /g	431

CARBONE CANADA INC.
30e
1979 - 2009
Carbone Activé & Produits Liés
Activated Carbon & Related Products
300, rue Brosseau
St-Jean-sur-Richelieu (Québec) J3B 2E9
Tel. 450-348-1807 Fax. 450-348-3311
accarbon@accarbone.com

Modified Clay Media (MCM-830)

-Modified Clay Media (MCM), also commonly known as organo-clay is composed of 60% specially formulated and blended organically modified Bentonite- Zeolite clay, and a 30 to 40% anthracite coal filler to reduce media caking and allow proper flow through media.
-MCM is designed specifically to remove high-molecular-weight hydrocarbons, chlorinated hydrocarbons and heavy metals. Because it absorbs oils and grease outside the basic clay and zeolite particle, it is not subject to pore plugging and has a total capacity of 60-70% of its own weight. -MCM works well upstream of activated carbon to extend the life of the carbon.
-Less swelling due to new formulated blend

Applications:

* protection of activated carbon for most applications
* ground water/waste water treatment
* breaking oil/water emulsions
* protection of ion exchange and reverse osmosis equipment
* treatment of boiler water
* clean up of water at oil production wells
* clean up of oil and fuel spills
* pre-treatment for activated carbon for mineral oil, grease, diesel fuel, kerosene, jet fuels,
. Heating fuel oils, Benzene, PCP, PCB, TCP, etc..
* removal of chlorophenols and creosote in wood treatment plant effluents.

PRODUCT SPECIFICATIONS

Typical Prperties

Moisture Content, ASTM D-2867	10-15%
Particle Size, ASTM D-2862 ,80%	8x30 US mesh
Density, 55.lbs/ft^3	
Water retention, drained 15-40%	

Design Criteria & Information

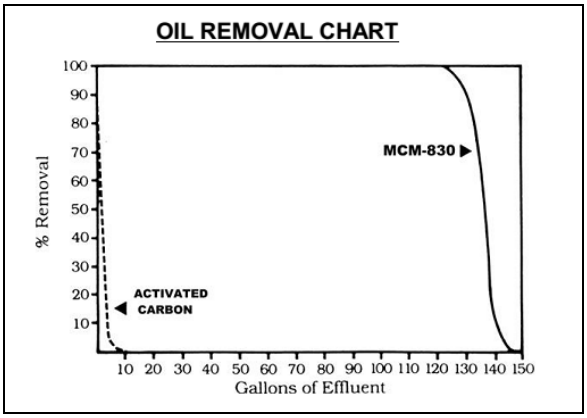
*Liquid Loading rate 1-7 gpm/ft^2
*Contact time 5-25 minutes
*Bed depth 28"-36"+, typical
*Bed expansion(back wash)10- 20%
*pd 5"water./ft @ 5gpm/ft^2
*pd 1.5"water./ft @ 2gpm/ft^2
*Requires media support bed
*Requires distributor manifold(s)
*allow adequate room for backwashing
*Prefiltration: 25 to 50 micron w/backwash
* 5-15 micron w/o backwashing

PACKAGING

#55.lbs bags, Boxes, Plastic pails
55 gallon drums and bulk bags

Additional Products

* Coconut Shell
* Coal
* Wood
* Modified Clay Media
* Green sand
* Bone Char media
* Anthracite Filter coal
* Specialty Impregnated Carbons
* ZeoSorb Media
* Pelletized and Granular Activated carbon
* Custom and Specially Blended Media
* Cansorber and Custom made filters/Vessels/Housings
* Wide Range of Products Covering both Vapor and Liquid Phase Applications



LENNTECH

LENNSORB **101**

LENNSORB 101 | Granular Ferric Hydroxide for Heavy metals removal

Product Description

LENNSORB 101 is a high performance adsorbent based on granularferric hydroxide. Made in a patented manufacturing process, it was special developed for selective removal of heavy metals and other toxic elements from water.

Recognized for its high quality, LENNSORB 101 adsorbent complies with all requirements of DIN EN15029

Application Sectors

LENNSORB 101 has been succesfully used for many years for heavy metal removal in groundwater purification as well as in treatment of process wastewaters and lanfill leachates.

LENNSORB 101 can be used in adsorption filters, underground filtration beds and permeable reactive barriers around polluted soil.

LENNSORB 101 adsorbs heavy metals such as chromium, uranium, copper and lead, as well as other toxic elements including arsenic, antimony, vanadium, molybdenum and selenium. Its adsorption capacity depends on the composition and properties of the water to be treated and the operating conditions.

Source of solutions.

Granular Ferric Hydroxide for Heavy metals removal

Properties

Chemical composition	ß-FeOOH and $Fe(OH)_3$
Dry solids content	57 % (± 10 %)
Iron content	610 g/kg (± 10 %), relative to dry solids
Particle size range	0.2 – 2.0 mm
Oversize fraction	< 10 %
Undersize fraction	< 10 %
Bulk density, backwashed	1150 kg/m³ (± 10 %)
Specific surface area (BET method)	approx. 300 m²/g

Recommended Operating Conditions

Adsorption filters	
Bed depth	0.8 – 1.6 m
Freeboard height	50 % of bed depth
Filtration velocity	≤ 20 m/h
Empty bed contact time (EBCT)	≥ 3 min
Pressure drop	max. 0.5 bar (7 psi)
Backwash velocity	26 m/h (backwash with water only)
Duration of backwashing	until outlet water is clear

Transport and Storage

LENNSORB 101 is supplied in plastic drums, FIBC's ("big bags") or tank trucks in the specific quantities required by the customer. The product is not subject to degradation in storage and has a storage life of at least 1 year. The product must not be permitted to dry out (e.g. do not expose to intense sunlight).

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Quality management system certified
in accordance with ISO 9001:2008

Water Filtration

HYDROSIL
INTERNATIONAL LTD.

The Media Is The Key....

The KEY to successful water treatment and filtration is selecting the right combination of media and hardware. For treatment of hydrocarbons, heavy metals, and other organic contaminants, the optimal solution is efficient oil and water separation followed by the HS-200 series. Because HS-200 series can adsorb up to 70% of its weight in hydrocarbons, its life inside a still bed canister is much longer than that of other process media such as granular activated carbon.

HS-200 *KING OF LIQUID FILTRATION*

- NO SWELLING UPON WATER EXPOSURE
- MORE ACTIVE INGREDIENTS PER CUBIC FOOT THEN OTHER ORGANOCLAYS
- CAN BE USED AT FULL STRENGTH OR CUSTOM BLENDED
- PROLONGS LIFE OF ACTIVATED CARBON AND RESINS THEREBY REDUCING COSTS AND INCREASING EFFICIENCY
- COST EFFECTIVE AND ENVIRONMENTALLY SOUND TECHNOLOGY

HYDROSIL INTERNATIONAL LIMITED is a modified Zeolite provider setting new standards in economical water treatment, including treatment of processed water and wastewater. Hydrosil's corporate headquarters and manufacturing facilities are located in Elgin, IL. With over 16 years of filtration experience, we specialize in our own Zeolite based organoclay products called HS-200.

ZEOLITE BASE Zeolite is the base of our filtration media. Zeolite belongs to a family of naturally occurring volcanic minerals with unique physical and chemical characteristics. Generally speaking, natural zeolites are hydrated aluminosilicates. They consist of an open, three-dimensional cage-like structure and a vast network of open channels extending throughout. Loosely bound, positively charged atoms called cations are attached at the junctures of the negatively charged aluminosilicate lattice structure. Zeolite has a crystalline structure (similar to a honeycomb) consisting of a network of interconnected tunnels and cages. Zeolite has a high specific surface area; it's rigid framework eliminates shrinking and swelling. Perhaps the most commercially valuable and dynamic property of zeolite is its cation exchange capacity. The most common exchangeable cations found in zeolite molecules are ammonia, sodium, calcium, potassium, and magnesium, many which are desirable in numerous biological and industrial processes. The ability to release beneficial elements while capturing and binding other, often less desirable, materials makes zeolite an ideal media for selective adsorption of certain elements and compounds from soil, water and air.

The cornerstone of Hydrosil International's success is the HS-200 series, the future of Zeolite based organoclays. Our proprietary modification process transforms high-grade Zeolite into a powerful, selective water treatment adsorbent that bonds with hydrocarbons, organics and other contaminants upon contact, locking them inside its molecular structure. Hydrosil's Contaminant Encapsulation Technology yields a granular filtration media capable of adsorping approximately 70% of its weight in hydrocarbons. Extensive application use and field testing of the HS-200 series, analyzed by independent laboratories, has demonstrated removal of a wide range of contaminants to nondetectable levels. The resulting discharge water meets or exceeds typical regulatory requirements.

HS-200 Applications

HS-200 series has been used against a wide array of industrial waste streams:

- Creosote Plants
- Wood Processing
- Pulp and Paper Mills
- Carbon Black Plants
- Oil Production
- Firefighting Academy
- Industrial Laundry Services
- Shipyards
- Plastic Manufactures
- Tank and Storage Vessel Cleaning
- Pesticide Manufacturers
- Condensate Systems
- Pipeline Pressure Testing Runoff
- Industrial Water Runoff


HS-200 series


HS-200 series blend

The HS-200 Series Blends

HS-250 a blend of HS-200 and 8x30 Anthracite Coal

- Contains 66% more active ingredient per cubic foot than activated clays on the market

HS-250-AC a blend of HS-200 and 6x12 Virgin Activated Carbon

- This blend is the best of both worlds with the added benefits of Virgin Activated Carbon

HS-270 a blend of HS-200 and 8x30 Anthracite Coal

- Was created to be a 1 to 1 replacement for Organoclays/Activated Clays on the market that have swelling issues

HS-200 Series, the Results Are In

The following Constituents have had a 95%+ Reduction when treated with the HS-200 series

Acenaphthene
Acenaphthylen
Ammonia
Anthracene
Arsenate
Arsenic
Benzo (a) Anthracene
Benzo (b) Fluoranthene
Benzo (a) Pyrene
Benzo (g,h,i) Perylene
BOD's
BTEX
Cadmium
4-Chloro-3-Methylphenol
Chromate
Chromium
Chrysene
COD's
Copper
1,1 Dichloroethane
1,2 Dichloroethene
1,4 Dioxane
Fluoranthene
Fluorene
Gasoline Range Hydrocarbons
Lead
Mercury
2-Methylnaphthalene
Motor Oil
Naphthalene
Nickel
Oil and Grease
PCP (Pentachlorophenol)
Phenanthrene
Phenolics (recoverable)
Pyrene
Selenate
TCE (Trichloroethylene)
TOC (Total Organic Compounds)
Total Phosphorous
TPH (Total-Petroleum Hydrocarbons)
TSS's
Vinyl Chloride
Zinc

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Hydrosilintl.com

HS-200 Series Versatility

- **Free Standing Mode:**
  Used on its own, HS-200 series can be loaded in drums for use as an efficient stillbed filtration medium. Other applications include tank cleaning, oil spill mitigation, and lining/capping projects.

- **Pre-Treatment Mode:**
  HS-200 Series can be used upstream to enhance the performance and extend the useful life of other filtration processes and media such as reverse osmosis, activated carbon and resins.

- **Post-Treatment Mode:**
  HS-200 Series utilized downstream of an oil-water separator or coalesce filter, has the ability to act as an effective cleaning and polishing agent.

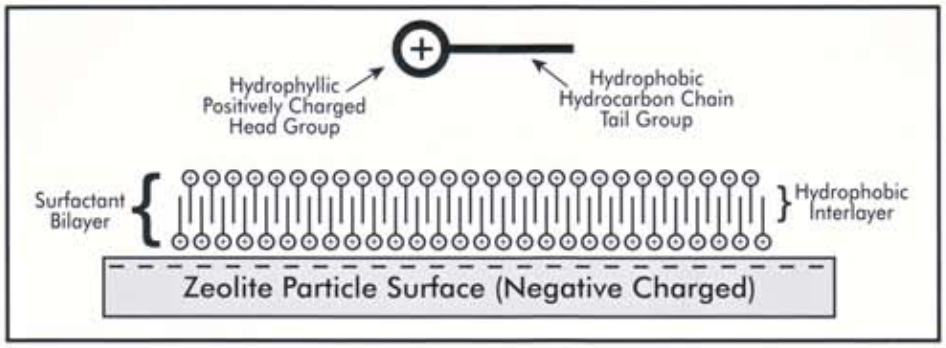
Application Parameters:

Bulk Density: 58 lbs/Ft^3 (928 kg/M^3)

10 - 15 minutes depending on solubility of contaminant(s) to be removed.

Temperature Range: 33 - 170 F° (1 - 77 C°)
pH Range: 4 - 10

Pre-treatment prior to activated carbon and ion exchange resin columns; Pre-treatment for RO systems; Polishing for oil and water separators and DAF units.



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GWT Natural Zeolite Filtration Media

Product Application Data Sheet

Around the world there is an increasing need for enviromentally safe methods of providing high-quality drinking wather and for the treatment of a wide range of commercial, industrial and municipal water contamination and air pollution issues.

Zeolite is an inorganic micro porous alumino-silicate material with many unique filtration properties including a high cation exchange capacity (CEC). GWT natural media is a cost effective, environmentally safe solution for treating both water and air pollution issues.

PHYSICAL PROPERTIES

- Density (lb/ft³): 55
- Bed depth (inches): 24-30
- Color: Grey-Green
- Mesh Size: 14x40

CONDITIONS OF OPERATION

- Service flow (gpm/ft³): 12-18
- Backwash flow (gpm/ft²): 11-13
- Filter Bed Depth: 36" (depending upon flow rate)
- Gravel Underbed Required
- Media will need to fully soak prior to initial backwash

APPLICATION

WATER TREATMENT:

- Turbidity Reduction to 3-5 micron for water filtration systems
- Removal of heavy metal cations, certain hydrocarbons and other contaminants including bacteria
- Can be used as a direct replacement media for sand filtration system with 2.8x sediment loading capacity

WASTE WATER TREATMENT/POLLUTION CONTROL:

- Waste water ammonia removal in municipal/industrial waste water
- Pollution Control-media can increase biological activity, reduce nutrient levels, cut sludge volume and odors, reduce ammonia and BOD levels in ion exchange columns or bed effluent, can be back flushed and regencerated, with ammonia recovered for fertilizer, increases sewerage plat capacity and life cycle.

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Genesis Water Technologies, Inc.

"Using Innovation To Meet The Water Needs Of The World"

PROCESS WATER TREATMENT:

- Turbidity Reduction to 3-5 micron for water filtration systems
- Removal of heavy metal cations, certain hydrocarbons and other contaminants including bacteria

AQUA CULTURE/FISHING INDUSTRY:

- Fish Hatchery wather treatment
- Ammonia control
- Biofiltration media

MINING:

- Gas/Odor Removal
- Absorption and Retention of certain dangerous heavy metals and oils in mining waste water

BENEFITS AND ADVANTAGES:

- Cost-effective replacement for sand, garnet & multimedia
- Lower pressure drop for a given flow rate (gpm/ft2)
- High CEC (caption exchange capacity) for ion exchange of charged contaminants (dissolved metals, sodium, ammonia)
- Highest solids loading reduces backwash interval frequency and consumption of backwash water
- Superior filtration performance at high flux rates
- All natural, environmentally safe product
- Low Density media reduces shipping and handling costs

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GEH® 101 Granular Ferric Hydroxide for Waste Water Treatment

- ✔ Purification of industrial and municipal wastewater
- ✔ Groundwater remediation
- ✔ Preparation and treatment of process water
- ✔ Treatment of (landfill) leachate

Product Description

How to specifically remove heavy metals and other contaminants from wastewater?

Using our high performance adsorbent GEH® 101, based on granular ferric hydroxide. It complies to all requirements of the DIN EN 15029, guaranteeing a high quality for the best performance.

Guard the water resources with GEH® for waste water treatment.

Target Substances

Contaminants, which are removed by GEH® 101 from water:

- Arsenic (As)
- Copper (Cu)
- Molybdebum (Mo)
- Lead (Pb)
- Antimony (Sb)
- Uranium (U)
- Vanadium (V)
- Zinc (Zn)
- Hydrogen Peroxide (H_2O_2)
- Hydrogen Sulfide (H_2S)
- Phosphate (PO_4)
- Silicate (SiO_4)

Source of solutions.

Granular Ferric Hydroxide for Waste Water Treatment

GEH® 101

Properties

Chemical composition	ß-FeOOH and $Fe(OH)_3$
Dry solid content	58 % (± 10 %)
Iron content, relative to dry solids	600 g/kg (± 10 %)
Particle size range	0.2 – 2.0 mm
Oversize fraction	< 10 %
Total oversize and undersize fraction	< 20 %
Bulk density, backwashed	1150 kg/m³ (± 10 %)
Specific surface area (BET-method)	approx. 300 m²/g

Underground Filter Beds

When dimensioning an underground filter, in addition to the calculation of the required quantity of GEH® 101, as well as the hydraulic load of the system, also information about the geological situation is required. The adsorption capacity depends on the water parameters and operating conditions. A specialized planner should be involved for the dimensioning and design.

Transport and Storage

The packaging takes place in big bags or plastic drums, whereby the filling quantities are directed to the individual customers' needs.
The product is stable and can be stored for at least one year. To prevent the material from drying out, the big bags should be closed and, if possible, not stored outdoors. Outdoor storage is possible in plastic bags or protected from direct sunlight and at moderate temperatures (0 - 25° C). The big bags must not be stacked.

Individual Application Advice

Every application in water treatment has its own special requirements. A meaningful dimensioning of the plant and definition of the operating conditions can only be made after examining the individual case. The recommendations contained in this data sheet are therefore legally not binding. We will gladly advise you in detail on your application.

In addition, the General Terms and Conditions of GEH Wasserchemie GmbH & Co. KG apply.

NSF Certified to NSF/ANSI 61

TÜV NORD CERT GmbH DIN EN ISO 9001

Quality management system certified in accordance with ISO 2018|2019 INNOVATIVE THROUGH RESEARCH GEH8598OSN

GEH wasserchemie

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HS-200

Liquid Phase, Pure Organoclay

Hydrosil s **HS-200** is designed to remove oil, heavy metals, and similar organics from water. The **HS-200** is manufactured using a safe and naturally occurring element zeolite.
The **HS-200** series can remove 70% plus of its own weight in hydrocarbons; Therefore, its life inside a still bed is much longer than that of other filtration media such as granular activated carbon. The **HS-200** series:

Does not swell upon water exposure;
Has more active ingredients per cubic foot than other organoclays;
Is cost effective and environmentally sound technology;
Does not support biological growth;
Can be custom blended; and
Prolongs life of activated carbon and resins thereby reducing costs and increasing efficiency.

Industries that use the **HS-200** vary from environmental service companies to wastewater treatment facilities. The **HS-200** is commonly used in oil water separators, frac tanks, pump and treat systems, condensate systems, stormwater run-offs, excavation and de-watering projects.

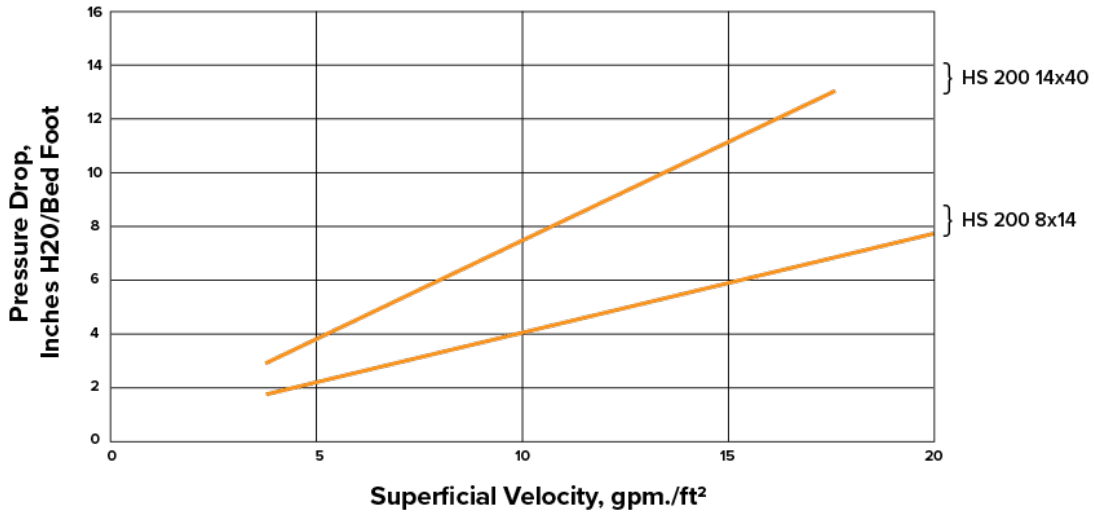
What is Organoclay?

Organoclay, also known as **HS-200**, is a sorbent media which is designed to remove organic components. The media is a naturally occurring mineral (commonly zeolite or bentonite clay) which is chemically alternated to create a unique surface on the mineral. Additives such as cationic surfactants are added to the mineral to modify the surface. By modifying the surface, we create a strong affinity with organic compounds, meaning the media is organophilic. The surface of the media forms a surfactant bilayer which attracts ionic species. Ionic species are components that in solution are grouped as either anionic (anions) or cationic (cations). Anions have a negative charge and cations have a positive charge. The **HS-200** has a high cation exchange capacity. The most common cations include ammonia, sodium, calcium, potassium, and magnesium, many of which are desirable in numerous biological and industrial processes.

Hydrosil s Organoclay Series

Hydrosil has several zeolite based products for water treatment; These products are referred to as the Organoclay Series . The Organoclay Series includes products for removing cations, anions, low molecular weight hydrocarbons, high molecular weight hydrocarbons, and select heavy metals. Contact us at **sales@hydrosilintl.com** for more information on selecting the optimal media for your application.

Pressure Drop



Typical Physical Properties

Property:	**Value:**
pH stable range	4-10
Apparent Density, lb/ft 3	57-59
U.S. Standard Sieve Size (Mesh Size)	8x14, 14x40
Thermally Stable, ℉	33-170
Mohs Scale	4.0
Specific Surface, ft 2 /g	431