



**GENERAL LIQUIDS CANADA LTD.
LIQUID ASPHALT STORAGE TERMINAL, WAVERLEY, NS**

**Registration Document for a Class 1 Undertaking Under Section 9 (1)
of the NS Environment Assessment Regulations**

March 31, 2010

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1.0 INTRODUCTION

General Liquids Canada Ltd. of Bedford, Nova Scotia is proposing to construct an asphalt cement storage and transhipment terminal on an existing, previously-disturbed industrial site on Rocky Lake Drive in Bedford, Nova Scotia. An approval to construct the Terminal is required under the Nova Scotia Environmental Assessment Regulations. The registration of this Environmental Assessment is in response to Schedule A of the Environmental Assessment Regulations, Undertaking A.1., "A storage facility that has a total storage capacity of over 5000 m³ and is intended to hold liquid or gaseous substances, such as hydrocarbons or chemicals other than water."

2.0 NAME OF THE UNDERTAKING

General Liquids Canada Ltd. proposes to construct and operate an Asphalt Cement Storage Terminal for the handling and storage of asphalt cement (bitumen) used in the road construction industry. The proposed undertaking will be referred to in this document as the Terminal.

3.0 LOCATION OF THE UNDERTAKING

The site is located in Waverly, Nova Scotia along Highway 2 (Rocky Lake Road) near Rocky Lake, 1:50000 NTS 11D-13, 450893 northing, 4955866 Easting, Zone UTM Zone 20, Air Photo 87, L-6, 3 July 2003 (Figures 1 & 2 (below) and Drawing 1). The site is positioned within the industrially zoned area along the south side of Rocky Lake Drive. The property that is being developed has previously been disturbed as a result of quarrying and construction material processing activities.

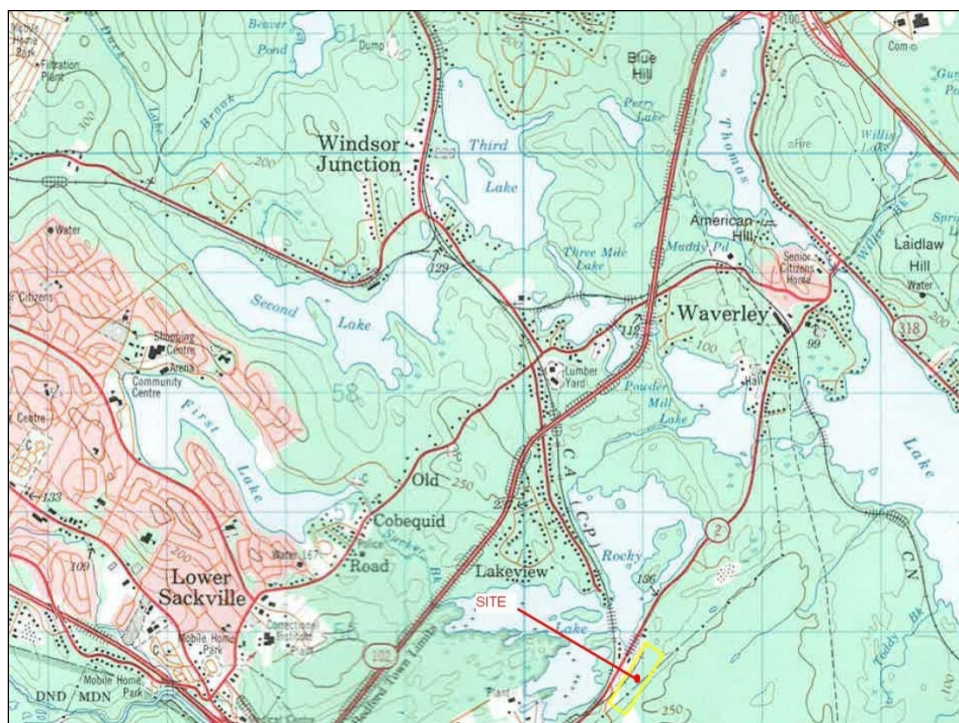


Figure 1 - Project Location

3.1 Land Ownership

The property is wholly owned by Municipal Enterprises Ltd. and is presently zoned for industrial usage. The Terminal will encompass approximately 2 hectares and will be leased by General Liquids Canada Ltd. from Municipal Enterprises Ltd.

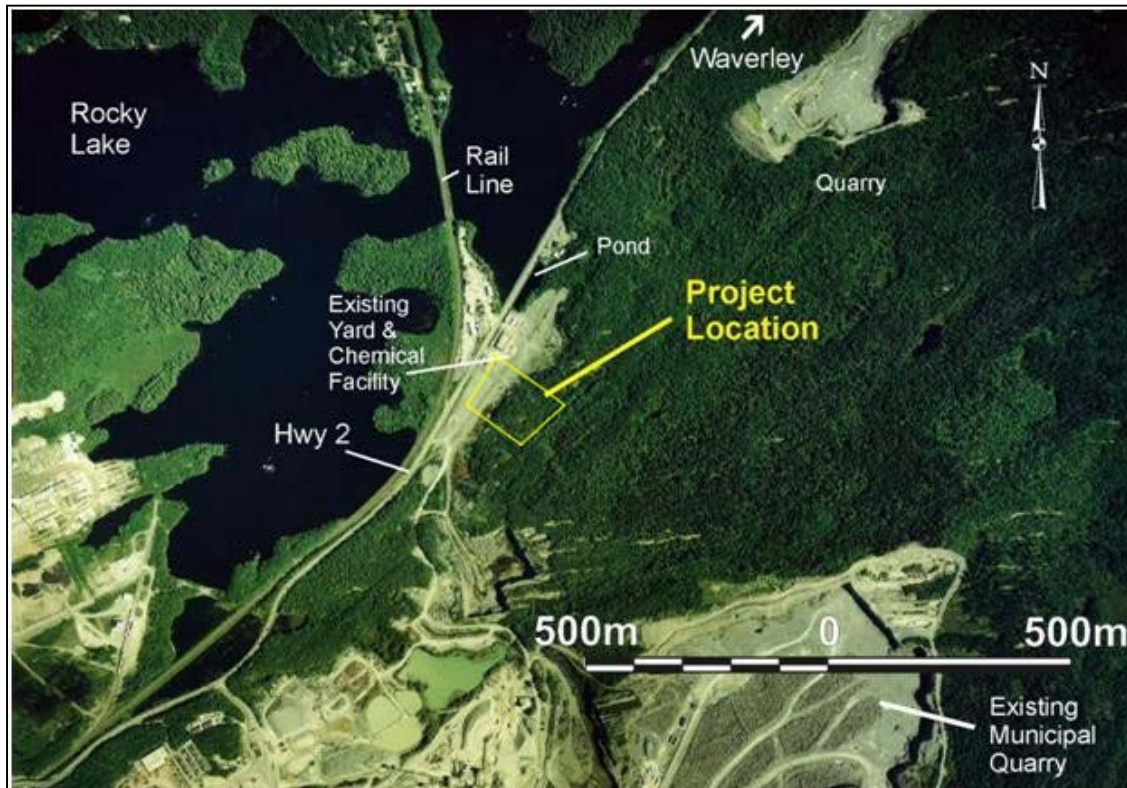


Figure 2 – Site Location and Adjacent Land Uses

4.0 NAME, ADDRESS AND IDENTIFICATION OF THE PROPONENT

Company Description

General Liquids Canada Ltd. 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.

Address:

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5.0 NATURE OF THE UNDERTAKING

General Liquids Canada Ltd. proposes to construct and operate an Asphalt Storage Terminal for the handling and storage of asphalt cement (AC), also known as bitumen, used in the road construction industry. The project as described in Section 8.0 represents a private capital investment in excess of \$10 million dollars, employment of approximately 50 people during construction and approximately 12 during the operational phase. The project provides road construction contracting companies within the area with an alternative source of liquid asphalt cement used in the road construction industry. The undertaking also provides for new opportunities for technical professionals within the province.

6.0 PURPOSE AND NEED OF THE UNDERTAKING

Road construction requires Hot Mix Asphalt (HMA) and the key ingredient is the binding agent - Asphalt Cement (AC). AC is a by-product of the oil refining process, and although it is derived from petroleum, its characteristics mean that it is not classified as a petroleum product. This means that the storage and handling requirements for AC are different than petroleum.

The supply of AC has been under pressure in North America as refineries continue to modify their operations to extract more fuel derivatives from the refining process, resulting in less AC being produced. General Liquids Canada Ltd. is planning to establish its own AC storage/warehousing Terminal to provide the area with additional storage capacity and secure supply for key customers. Its primary customer will be Municipal Contracting Ltd. who have been expanding their business in the road construction industry, and currently operate 12 HMA producing plants throughout Atlantic Canada. Current supply of AC for Nova Scotia is limited to the Eastern Passage area either from the Imperial Oil refinery or McAsphalt Ltd. During peak operating seasons, these existing facilities have struggled in meeting volume demand, resulting in delays in projects and high prices.

Due to the complexity of supplying the number of asphalt plants in operation and the importance of delivering AC in a “just in time” manner to these plants, an improved delivery and storage system is required. Value-added projects are requiring different types of surface applications creating a need to store different types of AC. The proposed AC terminal storage/warehousing Terminal and operation will meet these challenges.

This Terminal will initially provide over 25 000 tonnes of AC storage with provision for future growth as demand increases. The project provides further additional benefits to the area by ensuring the diversification of supply of AC resulting in improved competitiveness in the construction industry and the establishment of a team of highly skilled technical professionals required for the monitoring, formulating and testing of the AC. This will greatly benefit the economic standing of the region and the Province as a whole.

The design and construction of the Terminal will be based on proven technology and methods used by other terminal operations. The proposed warehousing Terminal consists of a series of storage tanks, a hot oil heating unit (to keep the asphalt cement in liquid form), a steam boiler (to warm up rail cars for offloading) and loading racks to empty or load tanker trucks. Technical personnel will be required for the monitoring, formulating and testing of the AC.

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. The Terminal will also take advantage of the existing rail service on the site. This operation meets the requirements of the existing I-3 Light Industrial zoning.

7.0 PROPOSED CONSTRUCTION AND OPERATION SCHEDULES

For the Terminal as described in Section 8.0, construction will consist of:

- berm construction
- surface water drainage design and construction
- concrete construction
- steel construction (tanks and racks)
- rail improvements
- vehicle traffic and parking spaces
- electrical and control system installation
- pipe lines and pumps (AC, Hot Oil, Steam)
- hot oil boiler systems
- fencing, and
- environmental controls.

The construction period to commissioning of the Project is expected to be 9 months:

Permitting – Spring 2010

Design & Development – Spring 2010

Civil Construction – Summer 2010

Loading Rack – Summer 2010

Boiler Building – Summer 2010

Small Tank Construction – Summer 2010

Medium Tank Construction – Fall 2010

Large Tank Construction – Winter 2010/2011

Rail Modification – Winter 2010/2011

Phases of the project have been underway in order to provide a clear project definition in selecting suppliers and defining world class technologies.

Nominal design life of the process facilities will be twenty years. It is customary that with maintenance, technical upgrading and replacement, facilities continue to operate indefinitely.

8.0 PROJECT/UNDERTAKING

The various components and operational procedures associated with the proposed undertaking are described in the following sections. Refer to Drawings 1 and 2 for locations and additional information.

8.1 Project Components and Structures

The following process diagram (Figure 3) and description is for a typical AC warehousing terminal, as is proposed for the current project. The facility layout is detailed in Drawing 2, located before the appendices.

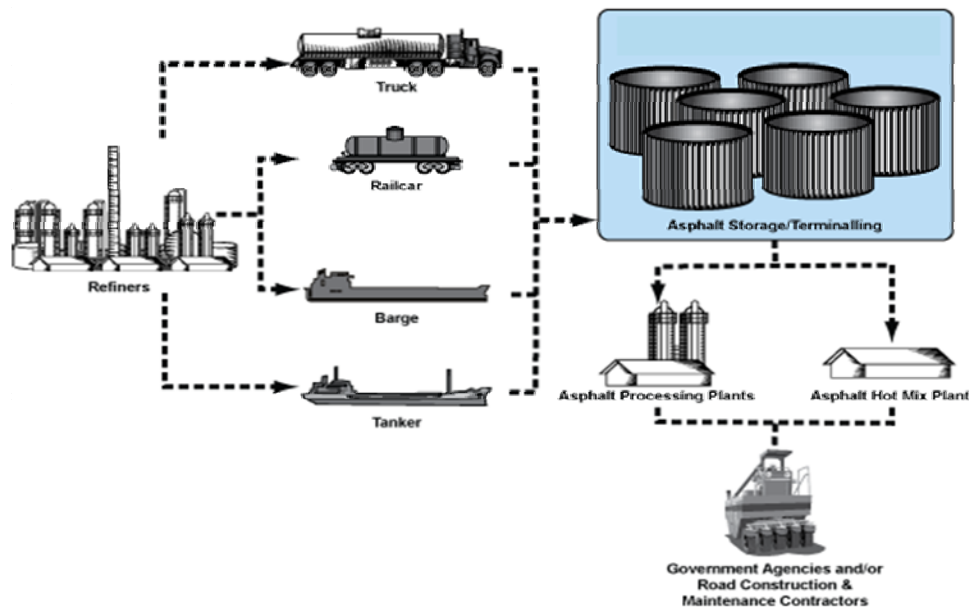


Figure 3 – Process Diagram

The terminal operation can broadly defined under the following headings:

Supply: Rail and Truck Supply System

Heating: Hot Oil and Steam Heating System

Storage: Tanks and Piping System

Delivery: Customer and Truck Loading System

Each is described in the following subsections.

8.1.1 Supply

Refineries located across North America are the main sources of AC. AC is transported from the refineries through the use of tanker trucks, rail cars, and barge/ship. For our proposed operation, delivery of AC will be by truck and rail.

- a) Truck delivery is conducted with asphalt tankers meeting provincial capacity regulations (can range from 35 000 L to 48 000 L). They enter the property and weigh in on the

scale and then proceed to off-load the AC directly in an off-loading pump and piped to the storage tank. The pump will have the capacity of pumping at a rate of 2000 Lpm.

- b) Rail delivery will use the existing rail lines. Tanker rail cars (80 000 to 85 000 L capacity) are brought in 8 to 10 at a time, hooked up to a water steam pipe (at 1034 kPa and 185 °C) to liquefy the AC, and subsequently pumped through pipes to the storage tanks. CN Rail will conduct and monitor the rail car movements.

Additives as listed in Table 1 and similar types of products (yet to be determined) will be used in blending with the AC. These additives will be stored in smaller tanks that will be constructed adjacent to the larger asphalt storage tanks.

Table 1 - Examples of Additives

Additive	Volume on Site	Storage & handling	CAS #
Polyphosphoric Acid	23,000 L	Tanks in a Containment Area near the small AC tanks for direct mixing into the tanks and product.	8017-16-1
Sulphur	5000 kg	Stored in storage building on pallets	7704-34-9
Adhesion Promoters (Anti-Stripping)	45,000 L	Storage tanks with secondary containment. Located near loading rack – injected before loading on tankers	68910-93-0

Secondary containment will be provided through the use of double-walled tanks or impermeable containment area, as required, and in accordance with all applicable regulations and codes. Additives are blended with the asphalt in batches through the use of the pumps and piping associated with the storage Terminal. Some additives are added just prior to loading onto tanker trucks.

Different types of mineral spirits will also be used for cleaning purposes. These will be supplied in limited quantities (expected to consist of 4 to 8 x 200L drums or equivalent) and disposed of at approved facilities.

Material Safety Data Sheets (MSDSs) for the additives are provided in Appendix A. Note that the brand and specific types of additives may change over time.

8.1.2 Heating

A closed-loop hot oil system is used to heat the AC pipe lines, AC storage tanks, and other components which must be kept hot. Liquid fuel will be stored in double-wall fuel tanks that will have a total capacity of between 40,000 and 80,000 L (to be determined in the detailed design phase).

The boiler then heats up thermal oil to a temperature of 200 °C. The oil is circulated to the various components that require heat. The Terminal proposes the use of two 8 million BTU boilers. One of the boilers will be dedicated to the AC storage tanks and the other to the steam boiler and piping. Steam is used to liquefy the rail tankers prior to unloading the AC at the Terminal. Depending on the weather and the state of the AC in the rail cars, it can take between 6 and 24 hours to liquefy the AC. Once liquefied, the AC is pumped into the storage

units. A steam recovery system is used to collect the spent steam, recover the hot water to be reused for new steam. The control system also provides burner safety interlocks and controls to regulate temperature and volume of the AC.

8.1.3 Storage: Tanks and Piping

An initial storage capacity of approximately 25 000 T of AC will be established consisting of the following storage units:

- two 54 000 barrels (bbl)
- one 26 000 bbl
- four 5000 bbl

Additional capacity up to 25 000 T may be added in phases as demand for AC increases.

The storage tanks will be surrounded by a berm (1m high) that will provide secondary containment in the unlikely result of a spill. The containment area will be designed to retain 110% of the largest tank and 10% of the total capacity of the additional storage tanks in accordance with National Fire Code requirements. AC, once exposed to ambient air, will quickly solidify and does not penetrate the underlying soil. Any spilled material will be recovered and returned to storage.

The AC is heated by hot oil flowing through coils and kept at a temperature range of 130 °C to 170 °C. Different types and grades of AC can be stored. The smaller storage units are used to blend and store AC at a temperature that is necessary for delivery. Venting of the storage units are connected with a series of pipes and conveyed to an activated carbon filter to remove VOCs and odours.

The plant operator controls the storage receiving and delivering process using various flow meters, level indicators and valves based on the AC demand of the asphalt plants. 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 (see Appendix B).

8.1.4 Delivery

Customers that require AC will send their tanker trucks to the Terminal to pick up the product. A complete tracking system will be in place to ensure only trained drivers are allowed on site and that the trucks are properly loaded and documented. Loading is carried out at the loading rack (refer to Drawing 2) where the volume of AC loaded onto the truck is controlled through the use of a flow meter. A weigh scale is used to weigh the tanker trucks before product is supplied to ensure compliance with road restrictions.

8.2 Controls during Construction and Operation

Potential air, noise and water impacts that may result from the construction or operation of the terminal are described below.

8.2.1 Construction Activities

- No burial or burning of any construction waste will be permitted at the site.
- Strive to ensure that any construction waste is recycled and reused wherever possible, or disposed of at an appropriate waste disposal facility.

- Implement measures to minimize the release of particulate matter to the air or stormwater runoff.
- Standard mitigation measures will be incorporated into plans and construction drawings, and implemented to prevent the release of sediment-laden water from any portion of the project site into fish bearing waters.
- Contractors will have a suitable emergency spill response kit on site. All spills or leaks shall be promptly contained, cleaned up and reported to the 24 hour environmental emergencies reporting system (1-800-565-1633).
- All areas of soil exposed as a result of the project will be immediately stabilized to prevent erosion and subsequent sediment deposition into the aquatic environment. All areas will be stabilized with vegetation or crushed stone.
- Blasting at the adjacent quarry sites will not affect construction activities. A seismic activity level of 12 mm/s has been incorporated into the design specifications. This is the maximum level allowed by the quarry's Approval and is much higher than that generated in actual practice.

8.2.2 Material Handling

- Ensure that whenever products are being transferred they 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.
- Product storage, loading, transfer and handling will only be conducted in contained areas.

8.2.3 Storage

- All storage vessels and spill containment systems will be visually inspected for leakage on a regular basis.
- All storage vessels will meet the applicable standards and codes.
- Fuel tanks will be double walled.
- Asphalt Cement storage will be placed within an area that has a containment berm.

8.2.4 Water Emissions

- The site will be appropriately graded to manage surface runoff and be diverted to the oil/water separator located near the loading rack.
- All sanitary wastes will be diverted to a holding tank and will be hauled to an approved wastewater treatment facility. The system will be permitted under the On-site Sewage Disposal Systems Regulations.
- Precipitation that accumulates within the bermed area around the storage tanks will be diverted to a temporary holding pond before it is released to the environment. Control will be managed with a valve system and water will only be released if no visual evidence of impact is identified. If impacts are observed, the water will be removed and disposed at a licensed facility.
- The loading and unloading areas include impermeable collection areas that drain to an oil/water separator.

8.2.5 Spills

- Asphalt cement is a complex mixture of heavy hydrocarbon compounds, and while it contains PAHs, the low solubility and high partition coefficients of the compounds means that they strongly tend to stay in the asphalt mixture rather than mobilize into the environment. Most roadways in Nova Scotia are made with asphalt cement and many are located adjacent to watercourses, just as Rocky Lake Drive skirts the south east shore of Rocky Lake. Asphalt cement will be contained in industry-standard infrastructure and any spilled product will be recovered and returned to the system, therefore the duration of exposure to weathering agents will be short. For these reasons, it is anticipated that PAHs impacts to stormwater runoff or groundwater from spilled asphalt cement will be negligible.
- The berm that surrounds the asphalt cement tanks will contain any releases from the tanks and piping. If released to the environment, the asphalt cement hardens in a very short period of time; therefore it could not realistically reach a water course.
- Less viscous material (i.e., fuels, certain additives) will be stored within secondary containment as required by the National Fire Code and relevant provincial legislation.
- Transfer, fuelling and lubrication of equipment will occur in such a manner as to minimize the possibility of contamination to the aquatic environment. Hoses and tanks will be inspected regularly to prevent fractures and breaks.
- All hazardous materials, including fuels and lubricants, will be handled by trained personnel only. Training will include proper use of spill response equipment. A formal training plan will be put in place as part of the facility management system which will be ISO 9001 & ISO 14001 certified.
- If a spill were to occur, it will be contained on site, and the AC will be reheated, recovered and placed back in a tank.
- Spills will be reported as required under Nova Scotia Environmental Regulations - Sections 74, 136, and 171 of the Environment Act (contacting the environmental emergencies reporting centre by telephone at (902) 426-6030 or at 1-800-565-1633).
- A formal spill contingency plan will be developed as part of the Application for a Part IV Approval under the Designated Activities Regulations.
- Three groundwater monitoring wells will be installed as shown on Drawing 2. Any surface and groundwater monitoring requirements will be determined through the Dangerous Goods Approval process and administered by a third party consultant.
- Monitoring & Emission Control Equipment: All emission control equipment will be maintained and operated to the specifications and recommendations of the manufacturer.
- A log of all maintenance activities of critical emission control devices 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

8.2.6 Air Emissions

Sources for VOCs (Volatile Organic Compounds) and particulate matter will be primarily associated with the asphalt storage tanks and hot oil boiler. The hot oil boiler will be maintained to ensure the proper combustion of the fuel. These will be managed with a regular maintenance program.

Air emissions were modelled using Tier 1 Modeling screening as described in the Ministry of the Environment of Ontario (MOE) in the Air Dispersion Modelling Guideline for Ontario (Table 3-1 – Conservative Dispersion Factors), the EPA TANKS program for tank emissions, and the vendor's emission calculations for the boilers. The following summarizes the inputs, assumptions and outputs of the modelling exercise. Detailed outputs are provided in Appendix C.

Asphalt Terminal Emissions

- Assumptions: Based on a total configuration of (4 Large Tanks, 1 Medium Tank, 4 Day tanks & filling 2 truck tankers at one time)
- Dispersion factor for the tanks at a distance of 150 m from off-site location (factor is $3500 \mu\text{g}/\text{m}^3$ per g/s emission)
- Dispersion factor for the trucks at a distance of 60 m from off-site location (factor is $5900 \mu\text{g}/\text{m}^3$ per g/s emission)
- The total estimated emissions is:
 - $68.5 \mu\text{g}/\text{m}^3$ per g/s of emissions
 - Limits are:
 - Asphalt Exposure limit of = $0.5 \text{ mg}/\text{m}^3$ TWA over 8 hrs (inhalable fraction, as benzene-soluble aerosol converted to 24 hr)
 - $367 \mu\text{g}/\text{m}^3$ 24 hr standard
 - OSHA has set a limit of .2 milligrams of PAHs per cubic meter ($.2 \text{ mg}/\text{m}^3$)
 - $200 \mu\text{g}/\text{m}^3$ 24 hr standard
 - VOC Limit (Based on Stoddard Solvent 8052-41-3 aka mineral spirits) limit is $2600 \mu\text{g}/\text{m}^3$
 - $2600 \mu\text{g}/\text{m}^3$ 24 hr standard
- Assuming that the emitted asphalt would be 100% of either emission (VOC, or PAH or Benzene Soluble Aerosol), the limits would not be exceeded.
- The estimated asphalt offsite concentration falls well below the limit as defined by the ACGIH (American Conference of Governmental Industrial Hygienists) Exposure limit of = $0.5 \text{ mg}/\text{m}^3$ TWA (inhalable fraction, as benzene-soluble aerosol) over 8 hours.

- Averaging Periods (Conversion Factor Calculation) per MTO Guideline C0 = $C1 \times (t1/t0)^{0.28}$ where $C1 = 500 \mu\text{g}/\text{m}^3$, $t1 = 8 \text{ hrs}$, $t0 = 24 \text{ hr} = 367 \mu\text{g}/\text{m}^3$
- OSHA has set a limit of 0.2 milligrams of PAHs per cubic meter ($0.2 \text{ mg}/\text{m}^3$) (ref: ToxFAQs for Polycyclic Aromatic Hydrocarbons (PAHs) - Agency for Toxic Substances & Disease Registry)
- VOC Limit (based on Stoddard Solvent 8052-41-3 (a.k.a. mineral spirits)) limit is $2600 \mu\text{g}/\text{m}^3$ Ontario Reg 419 24 hr standard.

Boiler Emissions

- Calculations are made using the Screen 3 (EPA Modelling Software) and the parameters as shown in the boiler emission table.
- Assumptions: Based on a total configuration of two 8 million BTU boiler units.
- Dispersion factor for the boilers at a distance of 60 m from off-site location (factor is $5900 (\mu\text{g}/\text{m}^3)$ per g/s emission).
- The total estimated emissions from the two boilers is:
 - SO_2 : 50.4 T per year: This is based on 16 MBTU 24/7. Realistically the average will be 2 MBTU which equates to 6 T per year.
 - NO_x : 13.4 T per year: This is based on 16 MBTU 24/7. Realistically the average will be 2 MBTU which equates to 2.2 T per year.

The ground level concentrations for the two boilers operating at full capacity (very conservative) would result in the following 1 hr maximum ground level concentration:

Table 2 - NSE Air Quality Regulations Criteria

Parameter	Predicted 1-hour maximum ($\mu\text{g}/\text{m}^3$)	Schedule A Criteria ($\mu\text{g}/\text{m}^3$)
PM (TSP)	19	120
SO_2	705	900
CO	47	34 600
NO_x (as NO_2)	188	400

All predicted results are below the NSE Air Quality Management Regulations Schedule A criteria.

Noise and Odours

Nuisance noise and odours will not be created as a result of the construction, operation, or alteration of the Terminal.

8.2.7 Impacts from Emergency Response

In the unlikely event of a fire at the Terminal, the following infrastructure and procedures will be used to minimize contaminated runoff from impacting the environment.

Discharges occurring during emergency fire fighting activities (i.e. flows necessary for the protection of life and property) will be controlled to the extent possible (when not interfering with health and safety).

The post-emergency rehabilitation and maintenance of response equipment must be performed in a manner that complies with applicable legislation.

The facility is equipped with several systems that will minimize impacts to surface water and groundwater. The emergency shutdown system has the capability to shutdown various systems and equipment such as valves and pumps at loading racks and boiler systems, etc. The fire response system will include fire suppression equipment located throughout the site, spill containment kits and response procedures to deal with spilled material and water from managing any fires. The operating crew of the Terminal will be trained in dealing with first response to fire and other incidents.

The terminal site and berm will have a storm water system that controls the release of storm water. A catch basin will be established as part of the drain system for the berm allowing the operators the opportunity to verify the water condition before being released to the rest of the property (Drawing 2). This capability is useful after extensive fire fighting water usage. Any sign of contamination will be dealt with, minimizing the risk of impacting the environment (i.e., off-site disposal, on-site treatment, etc.).

8.3 Utilities, Infrastructure and Support Systems

Utilities, infrastructure and support systems dedicated for the terminal will consist of:

- Programmable Logic Controls (PLC)-based control system are used to provide real-time data on the status of the tanks (temperatures, volumes) as well as the status of the various valves and pumps. Logical safe guards will be programmed to prevent overfilling of the tanks, inadvertent opening of valves, alarms for sudden loss of pressure, and data collection of the various controls (pressure, temperature, burner, steam, etc) in place. PLCs are a useful tool to assist the operators to stay on top of the operation of the terminal.
- Emergency shutdown system – In the event of an emergency, the various systems and equipment will have an emergency shutdown capability. This may partly be controlled by the PLC system as well as locally where the controls of valves and pumps can be operated such as the loading racks, boiler systems, etc.
- Electric power distribution and control systems – The Motor Control Center will be housed in a separate building which control the various pump motors and actuators for the site. Working in conjunction with the PLC system, all systems will be controlled and maintained by qualified electricians. Some systems, such as the boilers, will have a “chatter box” that will be accessible remotely to gauge the status of the boiler systems, and will also be programmed to automatically call trained personnel if key parameters have failed (temperature, pressure, etc).
- Hazard detection system – Fuel distillates used by the system will be stored in double walled tanks where vacuum indicators will indicate a loss of pressure if one of the shells has been compromised. Burning temperature alarms will be set indicating issues with the combustion for the boilers.

- Security system and facilities – the property will have security gates at the entrances where the truck vehicles enter to load or off-load material. Camera systems will also be installed at key locations to allow the operators with views of key areas of the site. Buildings where the boiler and MCC will be located will be appropriately secured.
- Fire response system – The operating crew of the Terminal will be trained in dealing with first response to fire and other incidents. This will include fire suppression equipment located throughout the site, spill containment kits and response procedures to deal with spilled material and water from managing any fires.
- Storm water system – the Terminal site and berm will have a storm water system that controls the release of storm water. A catch basin will be established as part of the drainage system for the berm allowing the operators the opportunity to verify the water condition before being released. This capability is useful after a heavy rainfall event or after any extensive fire fighting water usage. Any sign of contamination will be dealt with, minimizing the risk of impacting the environment (i.e., off-site disposal, on-site treatment, etc.).
- Other facilities will be provided as required to support safe, efficient and reliable operation. The terminal will have properly trained staff, have the tools necessary to operate effectively and with minimal risk to health to the workforce and the environment.

Personnel will be trained in the use and maintenance of all systems listed above.

8.4 General Operations

Operation of the Terminal consists of receiving tanker trucks and rail tanker cars, liquefying the AC and pumping the AC into the storage tanks. The AC is then prepared (blended, injected with additives) and pumped into delivery tanker trucks for subsequent delivery to the final destination.

This development is a positive addition to the municipality and Nova Scotia, creating technical employment opportunities and introducing advanced technological road construction capabilities to the region. The development of this site will not impact any physical or cultural heritage in the area. No known structure, site or other resources has been identified that may have historical, archaeological, paleontological or architectural significance.

Drawing 2 shows the proposed layout design of the Terminal.

9.0 EXISTING ENVIRONMENT

9.1 Biophysical Assessment

A description of the Existing Environment is provided in the report *Biophysical Assessment of an Asphalt Storage and Transshipment Terminal—533 Rocky Lake Drive, Waverley, N.S.* (Envirosphere, 2009) found in Appendix D. It is noted that the area of the proposed undertaking was extensively disturbed through quarrying and related activities in the 1970s and 1980s, and portions were re-disturbed in the 1990s. These disturbances are evident in the form of waste

rock piles and excavated areas, as well as anthropogenic materials beneath boulders and in excavated areas.

As part of the Biophysical Assessment, a botanist (J. Jotcham, M.Sc., Marbicon Inc.) reviewed the list plants of conservation significance occurring within a radius of 10 km of the project site for potential occurrence at the project site. All species listed are associated with quartzite, sand or heath barrens, habitats which occur far to the east of the study site and not within the project footprint, and so are unlikely to occur in the study area.

9.2 Hydrogeology

The site is located within the footprint of a large industrial property. This site Topography is generally rolling with the slope predominantly to the southwest toward the on site pond and onward to Rocky Lake. It is anticipated that the surficial and shallow groundwater flow mirror the topographic flow. Therefore, it is anticipated that the local/site specific shallow groundwater will flow towards Rocky Lake (west/south-west). It also appears that the bedrock aquifer is under fracture flow regime. The onsite drilled water well was observed to be under artesian conditions. The noted area has been previously disturbed and altered, thereby potentially altering the groundwater flow regime in the immediate area, however it is anticipated that ultimate groundwater flow would be towards Bedford Basin.

The site work will not alter the groundwater flow as the area has been previously disturbed. Shallow groundwater is expected to discharge to the on-site Pond and to Rocky Lake; where ultimately it would become part of the surface water regime. The deeper bedrock groundwater regime in this area is used for potable water source. A search of the NSE well log database lists only three (3) water wells in the vicinity of this site, one of which is the water well on the Emulsification Plant property (operated by the proponent of the proposed undertaking) located immediately to the west. The remaining two wells are greater than a kilometre away from the site. It is anticipated that there may be additional water wells in the area; however they are not listed in the NSE well log database. The planned construction is likely to cause less disturbance than the ongoing operations at the adjacent quarry; therefore it is not anticipated that the construction of this area will adversely affect the groundwater. Groundwater protection is discussed in Section 8.2.5 regarding potential spills.

Three groundwater monitoring wells will be installed as shown on Drawing 2. Any surface and groundwater monitoring requirements will be determined through the Dangerous Goods Approval process. In addition to the baseline groundwater quality data available for the adjacent asphalt emulsion facility, the three new wells will be sampled prior to construction and the results reported to NSE.

9.3 Freshwater Aquatic Environments/Wetlands

No watercourses are located within the area of the proposed undertaking, although areas of ponded water are located in the gravel operating/parking areas adjacent to Rocky Lake Drive. Drainage for the site is mainly via infiltration and overland to the northwest via swales and ditches towards Rocky Lake. The nearest water body is Rocky Lake, located approximately 200m to the west of the study area. Rocky Lake in turn drains into Powder Mill Lake, and further along into Lake William, all of which lie in the Shubenacadie River watershed.

Rocky Lake has been fragmented near the study area by the construction of the rail bed and Rocky Lake Drive; the latter has crossed an arm of the lake, creating a small pond on the north west boundary of the property and east of the highway. The pond is apparently not directly connected with the lake.

10.0 PREDICTING ENVIRONMENTAL EFFECTS / SIGNIFICANCE AND MITIGATION OF IMPACTS ON VALUED ECOSYSTEM COMPONENTS

Valued Environmental Components (VECs) are features or things in the environment that are important because of their ecologic, social, economic or cultural attributes. The environmental assessment addresses potential impacts of the project on each VEC identified. To do so involves identifying all the activities or outcomes of the project which interact with each VEC, and then determining and rating the magnitude of the impact in a standard way, in this case in a manner guided by standard approaches which have been developed for assessments under CEAA. The information used in this assessment was obtained from consultants' personal knowledge, from reviews of available information, and knowledge of the purpose and proposed design of the project, principally the Terminal.

Where interactions were identified and significant impacts were likely to occur, mitigations for the impact must be implemented before the project can proceed. The process ensures that all potentially significant impacts on VECs are identified and all potential impacts on them have been considered and sufficient mitigation planned.

The list of Valued Ecosystem Components considered used for the assessment, and interactions with project components, are presented in Table 3. The environmental effects and potential impacts of the project along with their significance and suggested mitigations are outlined in the following and are summarized in Table 4.

10.1 Socioeconomic Impacts

10.1.1 Water Supply, East Hants

Although the site is located adjacent to Rocky Lake, and is in the watershed supplying Enfield, there is a low likelihood of hydrocarbon spills or asphalt-associated compounds (hydrocarbons, solvents) impacting surface waters or groundwater at the site (refer to Section 8.2.5). Secondary containment in the form of double-wall tanks or containment berms will be provided for all products that require such containment due to their nature or volume. Unloading areas are equipped with an oil/water separator to ensure product is not released to the environment. The potential for impacts to Rocky Lake and subsequently the East Hants water supply is low.

10.1.2 Tourism

The area of the site already has an industrial appearance and character which will not be changed significantly by the project. No significant changes to current vehicle traffic and train movement are anticipated that might hinder tourist movement and therefore impact tourism.

10.1.3 Recreational Fishing

The project is unlikely to create contamination that could interfere with water quality in Rocky Lake and the associated watershed, therefore interference with fishing is not likely.

10.1.4 Parks and Protected Areas

Areas around the site are designated for possible Provincial Park expansion. Specifically, these locations are Second Lake (approximately 2.5 km NNW of the Site) and Portabello (approximately 4 km WSW of the Site). Neither are located hydraulically downgradient of the Site. The project will have a small footprint and not interfere with future uses of adjacent lands for parks.

10.1.5 Industrial Uses

The operation of the Terminal will result in tanker truck traffic due to customers loading product, and suppliers bringing materials to the site. Conversely, tanker truck traffic in the HRM area to supply the existing asphalt plant (located in the Rocky Lake Quarry) will be decreased as supply using rail will displace tanker truck delivery volumes. The net change in truck traffic will be minimal and will not significantly increase truck traffic on Rocky Lake Drive, therefore there will be insignificant conflicts with the operation of the adjacent industrial properties in the area, such as the quarry and the concrete operations. Rail car movements will increase slightly from current levels.

10.1.6 Cultural/Historical

The site has a small footprint on an already disturbed land surface and therefore would be unlikely to disturb cultural or archaeological resources. The Terminal would have a small footprint and would not greatly influence the character of the area.

10.1.7 Infrastructure

As mentioned above, a modest increase in truck and rail traffic is expected, but will not significantly affect the use of the transportation infrastructure in the area. The Terminal will not be connected to municipal water or sewer infrastructure, therefore no effects will be seen. Additional employment during construction (estimated to be 50 people) and operation (estimated to be 12 people) will cause additional commuter trips.

10.1.8 Residential Use/Health and Safety

The small increase in truck traffic during construction and operation will mainly be between the Terminal site and Duke Street/Highway 102, and will have an insignificant affect on residential neighbourhoods and schools outside of that corridor.

10.1.9 Aesthetics/Viewscape

The project will result in changes to the viewscape at the site. Measures to partially mask the tanks by placing them behind a corridor of trees will be pursued.

10.2 Biophysical Impacts—Impacts of the Project on the Environment

10.2.1 Terrestrial Vegetation

Construction—Vegetation communities in the footprint of the project will be removed during the construction phase. Construction activities will take place in areas that were extensively disturbed and excavated in the past 30 years. Plant communities at the site are not unique or significant; however it is important to minimize damage to the site through design and construction practices.

Operation—In general, no effects on terrestrial vegetation are foreseen by the routine operation of the facilities. Weed species which grow around such sites will intrude into natural areas, so the plant composition will change. Vegetation control will be achieved without the use of herbicides.

10.2.2 Waterfowl

Construction—Apart from the potential for accidental spills of fuel for vehicles and other heavy equipment to reach Rocky Lake, there are no potential impacts on waterfowl, such as common loon, which could nest along the shoreline of Rocky Lake.

Operation—In general, no effects on waterfowl are foreseen by the routine operation of the facilities. Accidental spills of fuels from vehicles into the nearby watershed, however, could potentially affect waterfowl.

10.2.3 Terrestrial Ecosystem

Construction—The existing terrestrial ecosystem (plants and animals) will be removed by construction of the facilities. While its loss is not likely significant in terms of unique habitat or species, it remains an important element of the local landscape and may provide an important visual buffer for the site. Efforts will be made at the design and construction stage to minimize damage to the terrestrial ecosystem and if possible to restore unused adjacent areas of the site.

Operations — Once in place the facilities become a focus for activities and there is a likelihood that other activities such as equipment storage will take place adjacent, further damaging the existing terrestrial ecosystem. With good planning, areas within the property currently underutilized used for storage and other purposes could be designated, rather than using existing natural areas.

10.2.4 Fish Habitat, Rocky Lake

Construction— Apart from the potential for accidental spills of fuel from vehicles and other heavy equipment to reach Rocky Lake or contaminate groundwater, there are no potential impacts of the construction phase on fish habitat in Rocky Lake.

Operations—Routine operation of the Terminal will not affect Rocky Lake fish habitat. While there is the potential for releases of hydrocarbons and asphalt during transport, spills from the tank storage cannot penetrate into the soil or contaminate local groundwater due to the nature of AC.

10.2.5 Terrestrial Birds

Construction—Plant communities in the footprint of the project will be removed during construction and affect any nesting birds there. Noise from the operation of equipment, construction, and movement of materials etc., as well as lights used in night operations, could disturb breeding birds.

Operations—Operation of facilities is not expected to interfere with bird populations. Some birds (e.g. pigeons, gulls) may be attracted to the site.

10.2.6 Species at Risk

Construction—No species at risk are expected to be harmed in the construction phase, particularly if key nesting seasons of terrestrial birds are avoided. Rusty Blackbird, the only migratory bird likely to occur on land is unlikely to occur at the project site, but bird surveys can be carried out before any major construction event in the nesting season to confirm presence and distribution of the key species. Spills of fuel from vehicles on site could reach Rocky Lake where various waterfowl species, particularly the Common Loon, nest. No plant species at risk are likely to occur at the site and be potentially removed by the project.

Operations—Routine operations of the project can impact species at risk only through spills of hydrocarbons and asphalt during transport or asphalt after tank rupture and during transfer to carriers, or through contamination of groundwater and on site drainage leading to Rocky Lake. None of these options has a significant likelihood of occurring.

Table 3 - Potential Interactions Between Project Activities and Operations and Valued Environmental Components (VECs)

General Category of VEC	Biophysical						Socioeconomic									
	Terrestrial Plant Communities	Waterfowl	Terrestrial Birds	Fish Habitat-Rocky Lake	Terrestrial Ecosystem	Species at Risk	Tourism	Recreational Fishing	Parks and Protected Areas	Industrial Activity	Cultural/ Historical	Infrastructure – Highway and Rail Maintenance	Health and Safety – Traffic Levels	Aesthetics - Viewscape	East Hants Water Supply	Residential Use
Construction																
- Site Preparation	✓		✓	✓	✓		✓				✓		✓	✓	✓	
- Construct Support Facilities	✓		✓	✓	✓		✓				✓	✓	✓			
- Construct Tanks	✓		✓	✓	✓		✓					✓	✓			
- Accidents (Oil/ Fuel Spills)	✓	✓	✓	✓	✓	✓		✓	✓	✓						
Operation																
- Routine Loading Operations												✓	✓	✓	✓	
- Truck and Rail Transport							✓			✓		✓	✓			✓
- Accidents (Oil/ Fuel Spills)	✓	✓	✓	✓	✓	✓		✓	✓	✓						

Table 4 - Summary of Impacts and Mitigation on Valued Ecosystem Components (Construction of Operation)

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
BIOPHYSICAL COMPONENTS						
Terrestrial Vegetation	Construction	Removal of Existing Communities	Significant	Negative	If possible restore damaged and unused parts of the site	Not significant
	Construction	Accidental hydrocarbon spills contaminate, cause die-offs and/or enrichment.	Significant	Negative	Provide pollution prevention and emergency measures & response capability.	Not significant
Waterfowl	Construction & Operation	Accidental hydrocarbon spills cause thermal stress and sickness and death if ingested.	Significant	Negative	Provide pollution prevention and emergency measures. Oil spill booms and waterfowl emergency numbers.	Not significant
Fish Habitat	Construction and Operation	Accidental hydrocarbon spills contaminate, cause die-offs	Significant	Negative	Provide pollution prevention and emergency measures.	Not significant

Table 4 - Summary of Impacts and Mitigation on Valued Ecosystem Components (Construction of Operation)

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
Terrestrial Birds	Construction	Removal of nests; noise and activity from construction	Significant	Negative	Avoid breeding season; conduct work during daylight where possible.	Not significant
	Operation	Loss of habitat	Significant	Negative	If possible restore damaged and unused parts of the site	Not significant
Terrestrial Ecosystem	Construction	Damage to Land and Plant Communities adjacent to Project Site	Significant	Negative	Avoid damage to adjacent areas.	Not significant
	Operation	Reduced habitat.	Significant	Negative	If possible restore damaged and unused parts of the site	Not significant
Species at Risk – Rusty Blackbird	Construction	Damage nests/disturb nesting	Significant	Negative	Monitor for presence of species; avoid breeding season if present.	Not significant
	Operation	Disturb nesting			Awareness program/Identify and avoid nesting areas.	Not significant

Table 4 - Summary of Impacts and Mitigation on Valued Ecosystem Components (Construction of Operation)

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
Species at Risk – Atlantic Salmon and Striped Bass	Construction & Operation	Accidental Hydrocarbon and Chemical Spills	Not Significant	Negative	Control spills and accidental discharges.	Not applicable
SOCIOECONOMIC COMPONENTS						
Tourism	Operation	View of site and industrial character	Not Significant	Negative	Maintain and landscape the property	Not applicable
Recreational Fishing	Construction & Operation	Accidental hydrocarbon spills contaminate Rocky Lake and groundwater	Significant	Negative	Provide pollution prevention and emergency measures & response capability.	Not significant
Parks and Protected areas	Construction	View of site and industrial character	Not Significant	Negative	Maintain and landscape the property	Not significant
Local Industry	Operation	Conflicts with traffic and activities	Not Significant	Negative	Collaborate in planning and carrying out activities.	Not significant
Cultural/Historical Features	Construction & Operation	Damage to Existing Features	Not Significant	Negative	Do not disturb adjacent lands unnecessarily	Not significant
Highway Maintenance	Operation	Increased wear and tear on highway	Not Significant	Negative	Not applicable	Not applicable

Table 4 - Summary of Impacts and Mitigation on Valued Ecosystem Components (Construction of Operation)

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
Health and Safety	Construction & Operation	May increase risk of accidents in nearby residential and industrial areas	Significant	Negative	Schedule activities to take place during off peak usage and daylight hours.	Not applicable
Aesthetics— Viewscape	Construction & Operation	Appearance of Tanks and Installations	Not Significant	Negative	Keep tanks maintained and painted.	Not significant
Residential Use	Construction & Operation	Truck traffic leading to accidents in residential areas	Not Significant	Negative	Schedule activities to take place during off peak usage and daylight hours.	Not applicable
Health and Safety - Traffic Levels	Operation	Increased use of Hwy 304 by tour buses	Significant	Negative	Use good directional signs, viewing pull-offs, posted speed limits.	Not significant
Health and Safety – Increased Tourists on Shore	Operation	Harm due to waves and accidents on slippery rocks/ seaweed etc.	Significant	Negative	Provide adequate signage and safe access points.	Not significant
Residential Use	Construction	Traffic of Construction vehicles/ equipment	Not Significant	Negative	Not applicable	Not applicable

11.0 IMPACTS OF THE ENVIRONMENT ON THE PROJECT

11.1 Air temperature, wind, and precipitation

The site could be exposed to extremes in temperature which will be taken into consideration in design of facilities. Allowances will be made for build-up of snow around tanks and associated facilities, and for areas to dispose of snow ploughed from access roads. Heavy rains can lead to erosion particularly on access roads to the storage tanks, and design will include measures to minimize erosion and control water movement and sedimentation.

12.0 CUMULATIVE IMPACTS

No significant cumulative impacts (i.e., impacts arising from the project in combination with ongoing or foreseen activities) are envisioned for the project. The project itself occupies a small footprint in an area previously disturbed by industrial activity and the main potential impact is biological habitat removal. The land adjacent to the site is unlikely to be further developed for other uses. The small increase in traffic levels that may result from the project will impact the socio-economic environment than the biophysical environment.

13.0 COMMENTS FROM THE PUBLIC

Project representatives met with the local MLA, Minister Percy Paris, the local Municipal Councillor, Barry Dalrymple, and the Waverley Ratepayers Association, all of whom are keenly attuned to the interests of local residents and other stakeholders in the area.

At the meeting with the Waverley Ratepayers Association on the evening of January 14, 2010, the project representatives provided an illustrated presentation of the project and the members in discussion and to provide comment. The questions posed by the members and the responses provided by the project team are summarized in Appendix E.

The Waverley Ratepayers Association (WRA) has been active as a volunteer community organization for more than 25 years. Its past executive has included longstanding citizens of the area as well as individuals who have more recently relocated there. The general aims of the WRA are community-focused and span a broad range of environmental and community development / welfare issues. The size and structure of the WRA executive has varied over the years. At one point it included a number of subcommittees with specific responsibilities for fire and safety, community infrastructure "care and feeding", and environmental monitoring of local lakes. Today's executive consists of about 7-9 individuals that represent the various sub regions of the community-at-large.

Over the past several years, the WRA has become active in projects aimed at:

1. Enhancing the utility of the "village green"
2. Evaluating the need for additional sidewalks within the greater community, and
3. Establishing partnerships with organizations that are involved in projects that impact on the community in the broadest sense.

In addition to the above, a letter was sent to the Chief and Council of the Indian Brook First Nation, with copies to the Kwilmu'kw Maw-klusuaqn Negotiation Office, the Native Council of NS, and the Office of Aboriginal Affairs outlining the nature and details of the Project and

inviting comment (Appendix E). If requested to do so, the Proponent plans to meet with the aboriginal community in order to address any questions or concerns the First Nations groups may have about the Project.

14.0 PROJECT CLOSURE

Remediation of the affected environment during the closure or decommissioning phase of the terminal will include removal of the storage tanks, elimination of any remaining structures and allowing the natural re-growth of the local flora.

15.0 APPROVAL OF UNDERTAKING

General Liquids Canada Ltd. will comply with all provisions of the Nova Scotia Environment Act and Regulations. An application for Approval under Division IV of the Activities Designation Regulations will be submitted to the Regional office of Nova Scotia Environment. No Division I Approvals (Water Approvals) will be required for this undertaking.

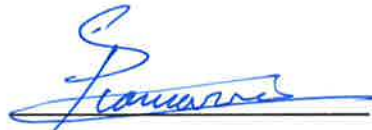
16.0 FUNDING

No public or other government funding is involved in the execution of this undertaking. All costs are borne by General Liquids Canada Ltd.

17.0 SIGNATURE OF CEO AND DATE

March 31, 2010

Date





Signature of Company Representative

COPY



NOTES

LEGEND

-  LOCATION OF PROPOSED UNDERTAKING (APPROXIMATE)
-  PREVIOUSLY DISTURBED AREA

ROCKY LAKE

ROCKY LAKE DRIVE

GENERAL LIQUIDS CANADA LTD.
 PROPOSED ASPHALT CEMENT STORAGE
 TERMINAL
 ROCKY LAKE DRIVE
 WAVERLY, NS

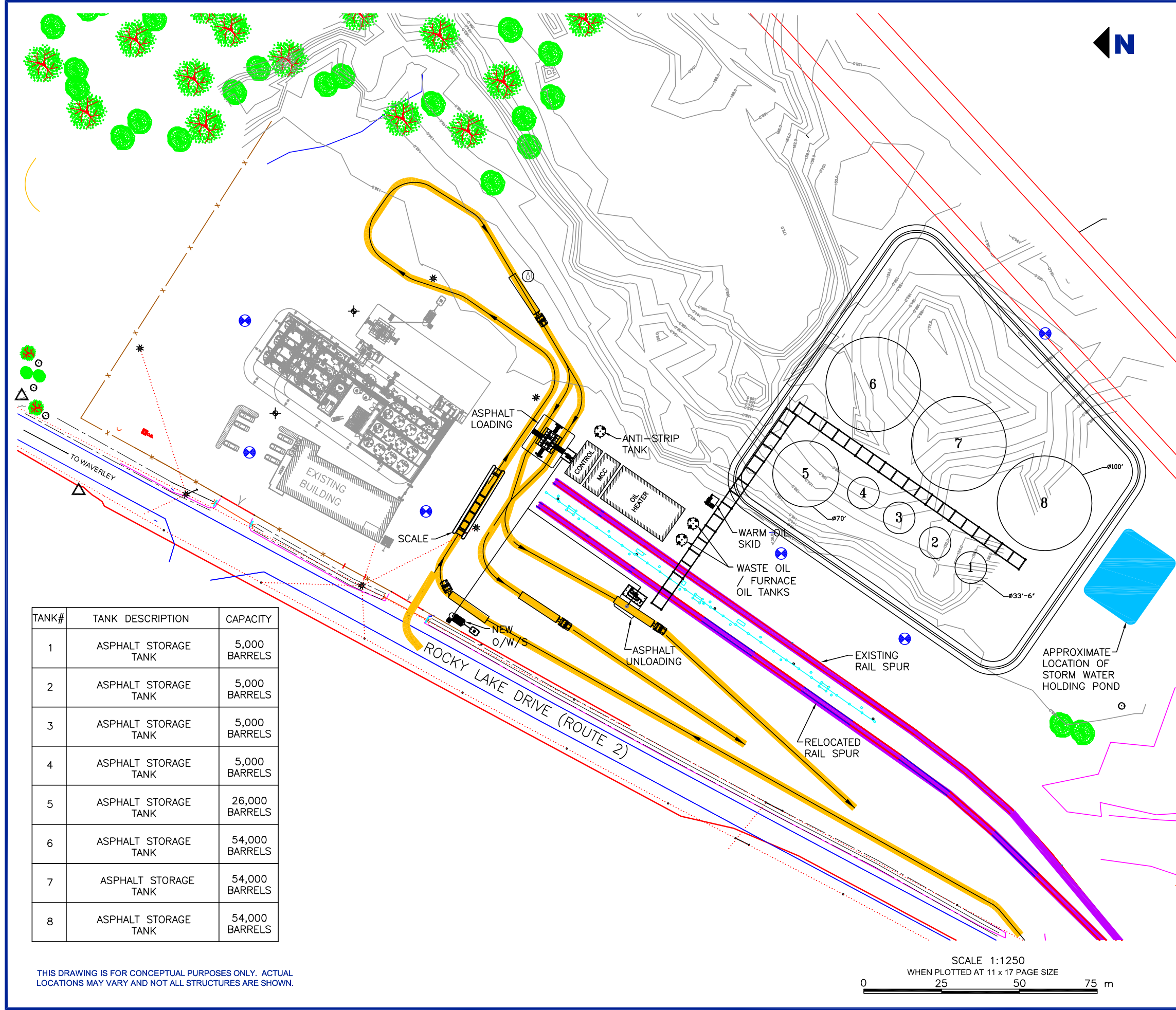
Report CLASS 1 ENVIRONMENTAL SITE
 ASSESSMENT

Drawing SITE LOCATION PLAN

Date	March 27, 2010	Scale	NTS	Drawing No.	1
File Name	S_210-05726-00-A1	Project No.	210.05726.00		

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.





NOTES
 DRAWING COMPILED GALLAGHER TECHNICAL SERVICES LIMITED,
 PROJECT NUMBER GTS-540, DATE FEBRUARY 18, 2010

LEGEND

- x — x — FENCE
- TRUCK ROUTE
- RAIL ROUTE
- ⊙ PRE-EXISTING DOMESTIC WELL LOCATION
- ⊕ PRE-EXISTING MONITORING WELL LOCATION
- △ SURFACE WATER SAMPLE LOCATION
- ⊗ PROPOSED MONITORING WELL LOCATION

UTILITIES AND SYMBOLS

- CB CATCH BASIN
- HP HYDRO POLE
- ⋯ O/H ELECTRICAL

TOTAL CONTAINMENT VOLUME REQUIRED = 303187.5 FT³
 (LARGEST TANK)
 BERMED AREA = 101745 FT² (WITHOUT TANKS)
 TANK AREA = 23085 FT² (LEAKING TANK NOT INCLUDED)
 AVAILABLE BERMED AREA = 78660 FT²
 REQUIRED BERM WALL HEIGHT (FOR TANKS 1-8) =
 4'-5" (INCLUDING 6" FREEBOARD)

TANK#	TANK DESCRIPTION	CAPACITY
1	ASPHALT STORAGE TANK	5,000 BARRELS
2	ASPHALT STORAGE TANK	5,000 BARRELS
3	ASPHALT STORAGE TANK	5,000 BARRELS
4	ASPHALT STORAGE TANK	5,000 BARRELS
5	ASPHALT STORAGE TANK	26,000 BARRELS
6	ASPHALT STORAGE TANK	54,000 BARRELS
7	ASPHALT STORAGE TANK	54,000 BARRELS
8	ASPHALT STORAGE TANK	54,000 BARRELS

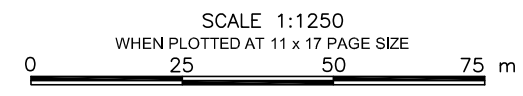
**GENERAL LIQUIDS CANADA LTD.
 PROPOSED ASPHALT CEMENT STORAGE
 TERMINAL
 ROCKY LAKE DRIVE
 WAVERLY, NS**

Report **CLASS 1 ENVIRONMENTAL SITE
 ASSESSMENT**

Drawing **SITE PLAN**

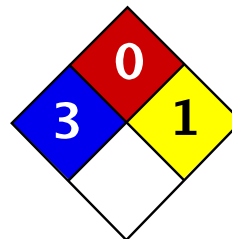
Date March 27, 2010	Scale AS SHOWN	Drawing No. 2
File Name S_210-05726-00-A2	Project No. 210.05726.00	

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL
 LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.



**APPENDIX A
MSDSs FOR ADDITIVES**

Class 1 Environmental Assessment
Asphalt Cement Storage Terminal
Waverley, Nova Scotia



Health	3
Fire	0
Reactivity	1
Personal Protection	

Material Safety Data Sheet Polyphosphoric Acid MSDS

Section 1: Chemical Product and Company Identification

Product Name: Polyphosphoric Acid

Catalog Codes: SLP3724

CAS#: 8017-16-1

RTECS: Not available.

TSCA: TSCA 8(b) inventory: Polyphosphoric Acid

CI#: Not available.

Synonym:

Chemical Name: Polyphosphoric Acid

Chemical Formula: Not available.

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Polyphosphoric Acid	8017-16-1	100

Toxicological Data on Ingredients: Polyphosphoric Acid LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator), of eye contact (corrosive). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Classified 4 (No evidence.) by NTP, None. by OSHA, None. by NIOSH.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation.

Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks

of bronchial infection.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available.

Risks of explosion of the product in presence of static discharge: Not available.

Slightly explosive in presence of heat.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:

Reacts with metals to produce flammable hydrogen gas. When heated to decomposition it emits highly toxic fumes of phosphorus oxides and polyphosphates.

Special Remarks on Explosion Hazards: Mixtures with nitromethane are explosive.

Section 6: Accidental Release Measures

Small Spill:

Dilute with water, neutralize acid with lime or soda ash, and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:

Corrosive liquid.

Stop leak if without risk. If the product is in its solid form: Use a shovel to put the material into a convenient waste disposal container. If the product is in its liquid form: Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Absorb with an inert material and put the spilled material in an appropriate waste disposal. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

Section 7: Handling and Storage

Precautions:

Keep container dry. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, combustible materials, metals, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Hygroscopic.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Personal Protection:

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 1 STEL: 3 (mg/m³) from ACGIH (TLV) [United States]

TWA: 1 STEL: 3 (mg/m³) from NIOSH [United States]

TWA: 1 (mg/m³) from OSHA (PEL) [United States]

Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Viscous liquid.)

Odor: Odorless.

Taste: Not available.

Molecular Weight: Not available.

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 300°C (572°F) - 550 C.

Melting Point: 29°C (84.2°F) - 38 C.

Critical Temperature: Not available.

Specific Gravity: 1.9 - 2.1(Water = 1)

Vapor Pressure: 0 kPa (@ 20°C)

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility:

Soluble in cold water.

Soluble in water with generation of heat and hydrolysis to Phosphoric acid.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, water, moisture, excess heat.

Incompatibility with various substances:

Reactive with oxidizing agents, combustible materials, metals, alkalis.

Slightly reactive to reactive with moisture.

Corrosivity: Not available.

Special Remarks on Reactivity:

Polyphosphoric acid:

Hygroscopic; keep container tightly closed.

Reacts with water to generate heat and form Phosphoric acid. The reaction is not violent.

Reacts with metals to produce flammable hydrogen gas.

Phosphoric Acid:

Incompatible with sodium tetrahydroborate producing a violent exothermic reaction.

Heat generated with: alcohols, glycols, aldehydes, amides, amines, azo-compounds, carbamates, caustics, esters, ketones, phenols and cresols, organophosphates, epoxides, combustible materials, unsaturated halides, organic peroxides.

Formation of flammable gases, with aldehydes, cyanides, mercaptins, and sulfides.

Formation of toxic fumes with cyanides, fluorides, halogenated organics, sulfides, and organic peroxides.

Do not mix with solutions containing bleach or ammonia.

Incompatible with nitromethane, chlorides + stainless steel.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

LD50: Not available.

LC50: Not available.

Chronic Effects on Humans: CARCINOGENIC EFFECTS: Classified 4 (No evidence.) by NTP, None. by OSHA, None. by NIOSH.

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (irritant), of ingestion, .

Hazardous in case of skin contact (corrosive, permeator), of eye contact (corrosive), of inhalation (lung corrosive).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects:

Corrosive!

Skin: Corrosive. Causes severe skin irritation and can cause severe skin burns. May affect behavior (somnia or excitement) if absorbed through skin.

Eyes: Corrosive. Liquid or vapor causes severe eye irritation and can cause severe eye burns leading to permanent corneal damage or chemical conjunctivitis.

Ingestion: Corrosive. May be harmful if swallowed. Causes severe irritation and burns of the gastrointestinal (digestive) tract. Causes severe abdominal pain/discomfort, burning sensation behind the breastbone, nausea, vomiting, diarrhea hematemesis, gastrointestinal hemorrhaging, and shock. May cause corrosion and permanent tissue destruction of the esophagus and digestive tract. May affect behavior and urinary system, liver (hepatocellular damage, hepatic enzymes increased), blood (blood dyscrasia). May also cause Hypocalcemia, Hyperphosphatemia or Hypophosphatemia, and acidosis.

Inhalation: Corrosive. Causes irritation and chemical burns of the respiratory tract and mucous membranes with sore throat, coughing, shortness of breath and delayed lung edema.

Chronic Potential Health Effects:

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: Not available.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Corrosive Liquid, acidic, inorganic, n.o.s. (Polyphosphoric Acid) UNNA: 3264 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: Polyphosphoric Acid

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS E: Corrosive liquid.

DSCL (EEC):

R34- Causes burns.

S25- Avoid contact with eyes.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.

S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 1

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:

Gloves.

Full suit.

Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 11/06/2008 12:00 PM

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MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT IDENTIFICATION

Product Name: Sulphur
Synonym(s): Sulfur
 Flowers of sulphur

Product Use: Industrial process ingredient, anti-fungal agent

WHMIS Class: Class B - Division 4 - Flammable Solid, Class D - Division 2B

DOT Classification: SOLID: Sulfur, UN1350, Class 4.1, PG III;
 LIQUID: Sulfur, molten, UN2448, Class 4.1, PGIII

TDG Classification: SOLID: SULPHUR, UN1350, Class 4.1, PG III;
 LIQUID: MOLTEN SULPHUR, UN2448, Class 4.1, PGIII

Manufacturer/Supplier: Irving Oil Refining G.P.
 Box 1260
 Saint John, NB E2L 4H6 CA
 Phone: (506) 202-2000
 Refinery: (506) 202-3000
 Emergency Phone: 1-800-424-9300 (CHEMTREC)

LEGEND HMIS/NFPA		Health	Flammability	Physical Hazard	Personal Protection
Severe	4	/	2	1	X
Serious	3				
Moderate	2				
Slight	1				
Minimal	0				



SECTION II - HAZARDOUS INGREDIENTS

<u>Ingredient(s)</u>	<u>CAS #</u>	<u>Wt%</u>	<u>OSHA PELS</u>	<u>ACGIH-TLV</u>	<u>LC50</u>	<u>Oral LD50</u>
Sulfur	7704-34-9	60 - 100	Not established	Not established	6.23 mg/l/4h rat	> 5000 mg/kg human; 3000 mg/kg rat
Hydrogen sulfide	7783-06-4	< 0.1	20 ppm - CEIL	10 ppm - TWA; 15 ppm - STEL	1 mg/l/4h rat	Not available

SECTION III - PHYSICAL DATA

Boiling Point:	444.44 °C (832 °F)	Specific Gravity:	Solid: 2.1 @ 20°C, Liquid: 1.8 @ 25°C
Freezing Point:	115.22 °C (239.4 °F)	Coefficient of Water/Oil Distribution:	Not available
Vapor Pressure:	0.000004 mmHg @ 30°C	% Volatile:	Not available
Vapor Density:	Not available	Evaporation Rate:	Not available
Solubility in Water:	Not available	pH:	Not applicable
Physical State:	Solid	Viscosity:	Not available
Appearance:	Yellow solid or amber liquid	Odor Threshold:	<0.15 ppm for H2S
Odor:	Odourless when pure. Hydrocarbon impurities may cause an oily or rotten egg odour. The rotten egg odour comes from H2S. Note: H2S deadens the sense of smell. Absence of rotten eggs smell does not mean absence of H2S.		

SECTION IV - FIRE AND EXPLOSION DATA

Flammability:	Flammable by WHMIS/OSHA criteria.		
Flash Point (Closed Cup):	207 °C (404.60 °F)	LEL: 35 g/m3 dust in air	UEL: 1400 g/m3 dust in air
Hazardous Combustion Products:	May include and are not limited to: Oxides of sulphur.		
Autoignition Temperature:	Not available		
Explosion Data:	Sensitivity to Mechanical Impact: Yes. Sensitivity to Static Discharge: Yes. May be ignited by static discharge. Fine dusts of sulphur dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Burns with a pale blue flame that may be difficult to see in the daylight. Transfer using proper grounding procedures.		

Means of Extinction:	Carbon dioxide. Foam. Sand. Dry chemical. Powdered form in air or in contact with oxidizers is explosive. Blue flame may be difficult to see in daylight. Note: Fire may re-ignite after being extinguished.
Special Fire Hazards:	Firefighters should wear a self-contained breathing apparatus.

SECTION V - REACTIVITY DATA

Conditions for Chemical Instability:	Stable under recommended storage conditions.
Incompatible Materials:	Oxidizers.
Reactivity, and Under What Conditions:	Reacts violently with strong oxidizers including and not limited to bromine, bromates, chlorine, chlorates, fluorine, peroxides, perchlorates, nitrates and nitric acid. Forms explosive, shock-sensitive, or pyrophoric mixtures with ammonia, ammonium nitrate, metal carbides, charcoal, hydrocarbons, and iron. Reacts violently with potassium, lithium, sodium, tin, uranium, and zinc. Attacks steel when moist.
Hazardous Decomposition Products:	May include and are not limited to: Oxides of sulphur.

SECTION VI - TOXICOLOGICAL PROPERTIES

Route of Entry: Eye, Skin contact, inhalation, Ingestion.

EFFECTS OF ACUTE EXPOSURE:

Eye:	Contact with hot sulphur will cause severe burns to eyes. At high concentrations product causes severe inflammation of conjunctiva and cornea. Hydrogen sulphide is very toxic. At concentrations as low as 1 to 5 ppm, nausea and severe eye irritation may occur.
Skin:	Contact with hot sulphur will cause severe burns to skin. Contact with skin can cause irritation and allergic reaction (sensitization) in some individuals.
Inhalation:	Sense of smell may be impaired at concentrations of hydrogen sulphide at approximately 20 ppm, with headache and respiratory tract lung irritation. At 250 to 500ppm, potentially fatal pulmonary edema may occur. Dizziness, sudden (often fatal) collapse, unconsciousness and death occur at higher concentrations. Pulmonary edema may be delayed as long as 48 hours after exposure.
Ingestion:	May cause stomach distress, nausea or vomiting.

EFFECTS OF CHRONIC EXPOSURE:

	Prolonged or repeated exposure can cause drying, defatting and dermatitis.
Skin:	Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.
Irritancy:	Skin, eyes, respiratory tract.
Respiratory Tract Sensitization:	Contains a potential skin sensitizer.
Carcinogenicity:	Not classified or listed by IARC, NTP, OSHA and ACGIH.
Teratogenicity:	Non-hazardous by WHMIS/OSHA criteria.
Mutagenicity:	Non-hazardous by WHMIS/OSHA criteria.
Reproductive Effects:	Non-hazardous by WHMIS/OSHA criteria.
Synergistic Materials:	Other irritants can be expected to produce additive or synergistic effects.

SECTION VII - PREVENTATIVE MEASURES

Gloves:	Heat-protective gloves.
Eye Protection:	Wear safety glasses with side shields. Emergency responders should wear full eye and face protection.
Respiratory Protection:	Do not attempt rescue of an hydrogen sulphide knockdown victim without the use of proper respiratory protective equipment. Where exposure guideline levels may be exceeded, use an approved NIOSH respirator. Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2).
Other Protective Equipment:	Use full body, long sleeved garments to prevent skin contact from hot or molten material If clothing or footwear becomes contaminated with the product, remove it and completely decontaminate it before re-use, or discard it.
Engineering Controls:	General ventilation normally adequate.

Leak and Spill Procedure: Remove sources of ignition. Before attempting clean up, refer to hazard data given above. Use broom or dry vacuum to collect material for proper disposal without raising dust. Rinse area with water. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice.

Waste Disposal: Dispose in accordance with all applicable regulations.

Handling Requirements: Use good industrial hygiene practices in handling this material. When using do not eat or drink. Wash hands before breaks and immediately after handling the product. All equipment used when handling the product must be grounded.

Storage Requirements: Keep out of reach of children. Store in a closed container away from incompatible materials.
Bond and ground containers for transfer.

SECTION VIII - FIRST AID

Eye: Flush with cool water. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.

Skin: Quickly and gently blot away excess chemical. Gently remove contaminated clothing and shoes. Wash gently and thoroughly with water and non-abrasive soap. Get medical help. NOTE: Removal of solidified molten material from skin requires medical assistance.

Inhalation: If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.

Ingestion: Do not induce vomiting. Never give anything by mouth if victim is unconscious, or is convulsing. Get medical attention immediately.

SECTION IX - PREPARATION INFORMATION

Effective Date: 01-Nov-2009

Expiry Date: 01-Nov-2012

Issue Date: 05-Nov-2009

Prepared By: Dell Tech Laboratories Ltd. (519) 858-5021

For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

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Sulphur



Flammable solid. Contains a potential skin sensitizer. Eye and skin irritant.

Avoid contact with eyes and skin. Wear rubber gloves and safety glasses with side shields. Keep out of reach of children.

EYE: Flush with cool water. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.

SKIN: Quickly and gently blot away excess chemical. Gently remove contaminated clothing and shoes. Wash gently and thoroughly with water and non-abrasive soap. Get medical help. **NOTE:** Removal of solidified molten material from skin requires medical assistance.

INHALATION: If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.

INGESTION: Do not induce vomiting. Never give anything by mouth if victim is unconscious, or is convulsing. Get medical attention immediately.

READ MATERIAL SAFETY DATA SHEET BEFORE USING PRODUCT

Solide inflammable. Contient un agent sensibilisateur potentiel de la peau. Irritant pour les yeux et la peau.

Éviter le contact avec les yeux et la peau. Porter des gants en caoutchouc et des lunettes de sécurité pourvues de protections latérales. Tenir hors de la portée des enfants.

YEUX: Rincer à grande eau froide. Enlever les verres de contact, le cas échéant, et continuer à rincer. Obtenir de l'attention médicale si l'irritation persiste.

PEAU: Sécher rapidement et doucement l'excès du produit chimique. Enlever les vêtements et les chaussures contaminés. Laver à fond, en frottant doucement avec de l'eau et du savon non abrasif. Cherchez de l'assistance médicale. **NOTE :** L'assistance médicale est requise afin d'enlever les matériaux en fusion solidifiés et adhérents à la peau.

INHALATION: En cas de symptômes, placer la victime à l'air frais. Si les symptômes persistent, obtenir de l'attention médicale. Si la victime ne respire pas du personnel qualifié devrait immédiatement commencer la réanimation cardio-pulmonaire.

INGESTION: Ne pas faire vomir. Ne jamais rien faire boire ou avaler à une victime inconsciente, ou si la victime a des convulsions. Obtenir une assistance médicale immédiate.

LIRE LA FICHE SIGNALÉTIQUE AVANT D'UTILISER CE PRODUIT

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: INDUSTRIAL ASPHALT FLUX STOCK
Product Description: Mildly Refined Base Oils
MSDS Number: 8447
Intended Use: Asphalt/bitumen, Feedstock

COMPANY IDENTIFICATION

Supplier: Imperial Oil Products Division
240 4th Avenue
Calgary, ALBERTA. T2P 3M9 Canada
24 Hour Environmental / Health Emergency Telephone: 519-339-2145
Transportation Emergency Phone Number: 519-339-2145
Product Technical Information: 1-800-268-3183
Supplier General Contact: 1-800-567-3776

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	Acute Toxicity
Heavy Paraffinic Distillate (Petroleum)	64741-51-1	100%	None

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 3 HAZARDS IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

PHYSICAL/CHEMICAL EFFECTS

Thermal burn hazard - contact with hot material may cause thermal burns.

HEALTH EFFECTS

May cause cancer. Under conditions of poor personal hygiene and prolonged repeated contact, some polycyclic aromatic compounds (PACs) have been suspected as a cause of skin cancer in humans. Hydrogen sulphide, a highly toxic gas, may be present. Signs and symptoms of overexposure to hydrogen sulphide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odour does not provide a reliable indicator of the presence of hazardous levels in the atmosphere. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID: Health: 1 Flammability: 1 Reactivity: 0
HMIS Hazard ID: Health: 1* Flammability: 1 Reactivity: 0

Note: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary

from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Incomplete combustion products, Oxides of carbon, Sulphur Oxides, Aldehydes, Smoke, Fume

FLAMMABILITY PROPERTIES

Flash Point [Method]: 275C (527F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

Notification Procedures

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid all personal contact. Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Substance Name	Form	Limit/Standard			Note	Source
HEAVY PARAFFINIC VACUUM DISTILLATE	Aerosol.	TWA	0.1 mg/m3		benzene solubles	Supplier
Hydrogen Sulphide		STEL	15 ppm			ACGIH
Hydrogen Sulphide		TWA	10 ppm			ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

Personal Protection

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No protection is ordinarily required under normal conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended. If contact with forearms is likely wear gauntlet style gloves.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical / oil resistant clothing if contact with material is likely.

Specific 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 and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES
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Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Form: Viscous
Colour: black
Odour: Characteristic
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.85
Flash Point [Method]: 275C (527F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: 350C (662F) - 600C (1112F)
Vapour Density (Air = 1): > 1 at 101 kPa
Vapour Pressure: [N/D at 20°C] | < 1 kPa (7.5 mm Hg) at 38C
Evaporation Rate (N-Butyl Acetate = 1): < 1
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): N/D
Solubility in Water: Negligible
Viscosity: [N/D at 40°C] | 31 cSt (31 mm²/sec) at 100C
Oxidizing properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A

SECTION 10	STABILITY AND REACTIVITY
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STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11	TOXICOLOGICAL INFORMATION
-------------------	----------------------------------

Acute Toxicity

<u>Route of Exposure</u>	<u>Conclusion / Remarks</u>
INHALATION	
Toxicity (Rat): LC50 > 5000 mg/m³	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
INGESTION	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	

Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

For the product itself:

Material contains polycyclic aromatic hydrocarbons and is expected to be carcinogenic in lifetime skin painting assays in mice.
 Base oil, mildly refined or unrefined: Carcinogenic in animals studies. Representative material fails IP-346, Modified Ames test, and/or other screening tests. Studies of polycyclic aromatic compounds/PAC-containing oils resulted in reproductive/developmental effects in test animals. Possible allergen or photoallergen.

Additional information is available by request.

CMR Status:

Chemical Name	CAS Number	List Citations
Heavy Paraffinic Distillate (Petroleum)	64741-51-1	1

--REGULATORY LISTS SEARCHED--

- | | | |
|-------------|---------------|--------------|
| 1 = IARC 1 | 3 = IARC 2B | 5 = ACGIH A1 |
| 2 = IARC 2A | 4 = ACGIH ALL | 6 = ACGIH A2 |

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- May cause long-term adverse effects in the aquatic environment.

MOBILITY

Material -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Material -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

SECTION 14 TRANSPORT INFORMATION

LAND (TDG) : Not Regulated for Land Transport

LAND (DOT)

Proper Shipping Name: ELEVATED TEMPERATURE LIQUID, N.O.S
Hazard Class & Division: 9
ID Number: 3257
Packing Group: III
ERG Number: 128
Label(s): 9
Transport Document Name: ELEVATED TEMPERATURE LIQUID,N.O.S., CLASS 9, UN 3257 PG III

Footnote: Material is not regulated when shipped at temperatures below 100°C/212°F and its flash point.

SEA (IMDG)

Proper Shipping Name: ELEVATED TEMPERATURE LIQUID, N.O.S
Hazard Class & Division: 9
EMS Number: F-A,S-P
UN Number: 3257
Packing Group: III
Label(s): 9 (ET)
Transport Document Name: ELEVATED TEMPERATURE LIQUID, N.O.S., 9 (ET), UN3257, PG III,

AIR (IATA)

Proper Shipping Name: FORBIDDEN

[Footnote: Material is not regulated when shipped at temperatures below 212 F and its flash point.]

SECTION 15 REGULATORY INFORMATION

WHMIS Classification: Class D, Division 2, Subdivision A: Very Toxic Material

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations.

CEPA: All components of this material are either on the Canadian Domestic Substances List (DSL), exempt, or have been notified under CEPA.

National Chemical Inventory Listing: AICS, KECI, PICCS, IECSC, TSCA, EINECS, DSL

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = TSCA 4
2 = TSCA 5a2

3 = TSCA 5e
4 = TSCA 6

5 = TSCA 12b
6 = NPRI

SECTION 16	OTHER INFORMATION
------------	-------------------

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

Section 05: Fire Fighting Measures - Fire Fighting Instruction was modified.

Section 06: Notification Procedures - Header was modified.

Section 13: Empty Container Warning was modified.

Section 09: Phys/Chem Properties Note was modified.

Section 09: Boiling Point C(F) was modified.

Section 08: Personal Protection - Header was modified.

Section 08: Hand Protection was modified.

Section 09: Vapour Pressure was modified.

Section 06: Accidental Release- Spill Management- Water was modified.

Section 09: Relative Density - Header was modified.

Section 09: Flash Point C(F) was modified.

Section 09 Viscosity was modified.

Section 15: National Chemical Inventory Listing - Header was modified.

Section 15: National Chemical Inventory Listing was modified.

Section 14: IATA Footnote was modified.

Section 16: Water Spill was modified.

Section 11: Chronic Tox - Component - Header was added.

Section 11: Other Health Effects Header was added.

Composition: CAS Number was added.

Composition: Concentration - Header was added.

Composition: Primary Ingredient Name was added.

Composition: Substances Table - Header was added.

Composition: No components was added.

Composition: Concentration Footnote was added.

Section 08: OEL Table - Substance Name Column - Header was added.

Section 08: OEL Table - Form Column - Header was added.

Section 08: OEL Table - Limit Column - Header was added.

Section 08: OEL Table - Notation Column - Header was added.

Section 08: OEL Table - Source Column - Header was added.
Section 13: Regulatory Disposal Information - Header was added.
Section 13: Regulatory Disposal Information - Header was deleted.
Composition: Concentration Footnote was deleted.
Section 11: Other Health Effects Header was deleted.
Composition: Primary Ingredient Name was deleted.
Composition: CAS Number was deleted.
Composition: Concentration - Header was deleted.
Composition: Substances Table - Header was deleted.
Composition: No components was deleted.
Section 11: Chronic Tox - Component - Header was deleted.
Section 08: OEL Table - Form Column - Header was deleted.
Section 08: OEL Table - Limit Column - Header was deleted.
Section 08: OEL Table - Notation Column - Header was deleted.
Section 08: OEL Table - Source Column - Header was deleted.
Section 08: OEL Table - Substance Name Column - Header was deleted.

Precautionary Label Text:

WHMIS Classification: Class D, Division 2, Subdivision A: Very Toxic Material

HEALTH HAZARDS

May cause cancer.

PHYSICAL HAZARDS Material can accumulate static charges which may cause an incendiary electrical discharge.

FIRST AID

Eye: Flush thoroughly with water. If irritation occurs, get medical assistance.

Skin: Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

FIRE FIGHTING MEDIA

Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

SPILL/LEAK

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Report spills as required to appropriate authorities. Seek the advice of a specialist before using dispersants.

Use

Not intended or suitable for use in or around a household or dwelling.

The information and recommendations contained herein are, to the best of Imperial Oil's knowledge and belief, accurate and reliable as of the date issued. Imperial Oil assumes no responsibility for accuracy of information unless the document is the most current available from an official Imperial Oil distribution system. The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. If buyer repackages this product, legal counsel should be consulted to insure proper health, safety and other necessary information is included on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted.

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Prepared By: Imperial Oil Limited, IH and Product Safety

APPENDIX B
ACTIVATED CARBON FILTER INFORMATION

Class 1 Environmental Assessment
Asphalt Cement Storage Terminal
Waverley, Nova Scotia

NIXTOX[®] PDB

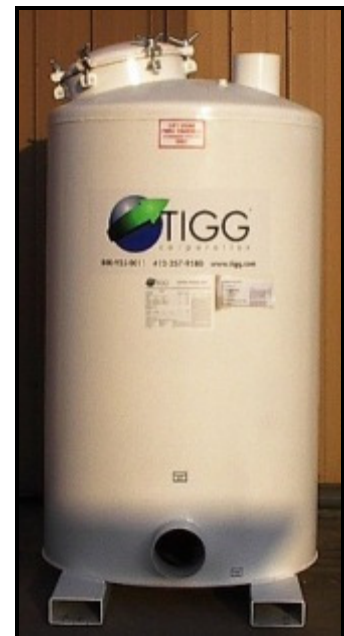
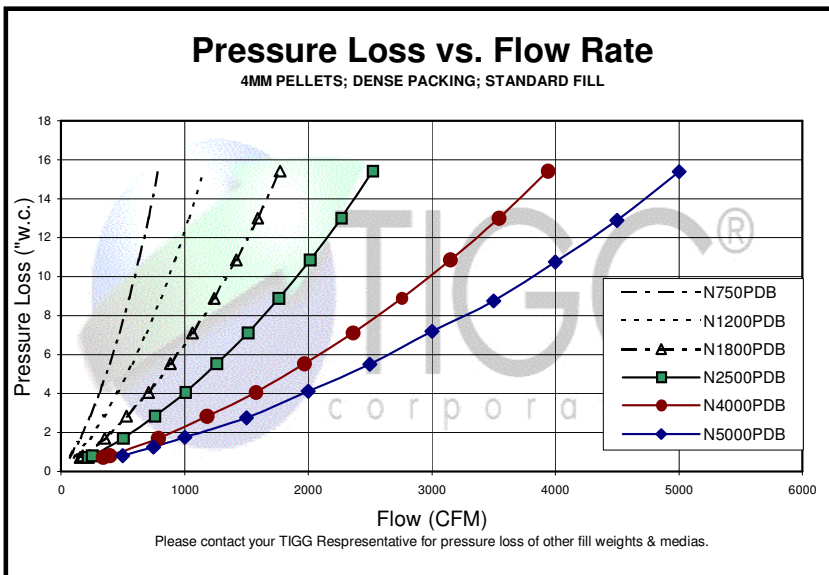
STEEL VESSELS

MODEL	MAXIMUM FLOW (CFM)	MAX PRESS (PSIG)	MAX TEMP (deg F)	INLET / OUTLET (IN)	DIAMETER / APPROX HEIGHT (IN)	STANDARD ADSORBENT FILL (LBS)	MAXIMUM ADSORBENT FILL (LBS)	SHIPPING WEIGHT - STANDARD FILL (LBS)
N-750 PDB	750	15	180	6 / 6	38 / 81	650	700	1500
N-1200 PDB	1200	15	180	8 / 8	46 / 94	1000	1400	2200
N-1800 PDB	1800	15	180	10 / 10	57 / 95	1500	2000	2925
N-2500 PDB	2500	15	180	12 / 12	68 / 96	2000	2700	4860
N-4000 PDB	4000	15	180	14 / 14	85 / 110	3200	5200	5935
N-5000 PDB	5000	15	180	20 / 20	96 / 126	4400	7400	7515

NOTES:

- 1) Desired contact time may allow higher or lower flow rates.
- 2) Dry virgin activated or reactivated carbon provided as standard adsorbent.
- 3) Adsorbent fill is based on a poured density of 27 lb/ft³.
- 4) Adsorbent fill can differ based on variable bed density and alternate adsorbents.
- 5) Pressure drop curves are based on a dense packed bed of activated carbon.
- 6) Maximum temperature is based on unit with stainless steel bed retention plate; units with PE plates have maximum temperature of 140 deg. F.

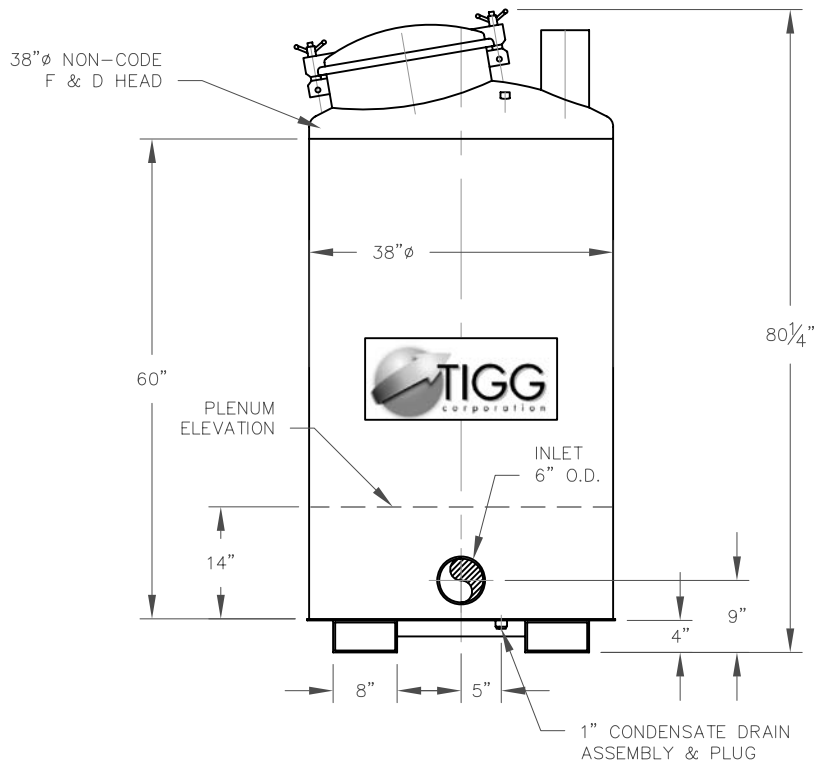
The NIXTOX Series Modular Adsorbers are designed for applications with relatively high flow rates or where more on-line adsorbent is required. Model numbers reflect maximum design flow for air and other vapors. The vessels are fabricated of carbon steel and provided with a high solids epoxy lining. Where process conditions dictate, the vessels can be fabricated from other materials such as stainless steel. In addition, a different lining can be substituted for the high solids epoxy. Manways are 20 inches in diameter, hinged style, for easy access and the removal and replacement of carbon or other media. The vessels are provided with fork channels. *Specifications and properties are subject to change without notice.*



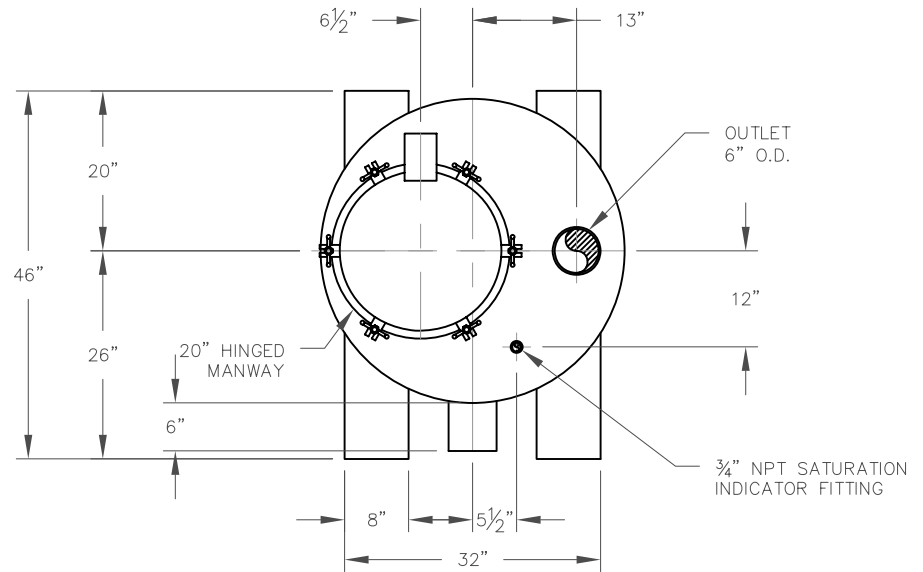
N-1200 PDB ILLUSTRATION



1 Willow Avenue
Oakdale, PA 15071
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(724) 703-3026 Facsimile
www.tigg.com
info@tigg.com



ELEVATION



PLAN

* STAINLESS STEEL BED RETENTION PLATE; 140°F WITH PE PLATE

VESSEL STANDARDS

VESSEL MATERIALS : A36 CARBON STEEL	LIQUID DRAIN ASSEMBLY : 1" HDPE PLUG
LINING : HIGH SOLIDS EPOXY	VOLUME OF VESSEL : 30 FT ³ (NOT INCLUDING TOP HEAD)
EXTERIOR PAINT : ACRYLIC ALKYD ENAMEL	STANDARD / MAX. CARBON FILL : 650 LBS / 700 LBS
HEAD THICKNESS : 3/16"	SHIP WT. STD.FILL : 1500 LBS
SHELL THICKNESS : 3/16"	CARBON TYPE : TIGG 4MM PELLET VAPOR PHASE
INTERNALS : PLENUM	MAX. OPERATING PRESSURE : 15 PSIG
ADSORBENT OUTLET ASSEMBLY : 20" MANWAY	MAX. OPERATING TEMP. : 180°F

5	CHANGE MANWAY TO HINGED STYLE	JB	8/29/06
4	REVISE CARBON FILL	JB	1/20/04
3	REMOVE VENT	JB	5/14/03
2	CHANGE EXTERIOR PAINT	JB	5/7/03
1	TITLE BLOCK	JB	1/10/03
NO.	REVISION	BY	DATE

PROJECT

PROJ. NO. SALES

P.O. NO.

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DRAWN BY JB

DESIGN BY BL

CHKD. BY BL

DATE 9/24/02

SCALE NTS



N-750PDB

DWG. NO. N-750PDB-1001 REV. 5

APPENDIX C
AIR MODELLING OUTPUT

Class 1 Environmental Assessment
Asphalt Cement Storage Terminal
Waverley, Nova Scotia

Pollutant Emission Rates

Customer: **Dexter Construction** **Location:** **Waverly, NS (Canada)**

Unit: **HC-800** Hot oil Heater
Burner: **Powerflame HAC6-GO6** Nominal 8-mBtu/hr combination gas/oil burner

Total Airflow:	2916	ACFM	Stack Dimensions:	18	height (ft) dia (in) sq.ft. ft/sec ft/min
Standard Airflow:	1307	DSCFM	Stack Area:	24	
Maximum Heat Input:	11.55	mbtu/hr	Stack Velocity:	3.14	
Exhaust Temperature:	600	F		15.5	
Exhaust Moisture:	10	%		928.2	

NOTE: DSCFM = dry, standard cubic feet per minute; airflow @ 68F, 1 atm, dry

Burner Fuels - Net Heating Values & Usage Rates:

No. 2 fuel oil

137000	Btu/gal	0.5	sulfur %
80.1	gal/hr	701.6E+3	gal/year

POLLUTANT	CASRN	MW	FACTOR	lb/hr	ton/year	
			lb/10 ³ gal			
Criteria Pollutants Tables 1.3-1 & 1.3-3	PM		2	0.160	0.70	
	SO ₂	7446-09-5	64.06	142 * S	5.686	24.9
	CO	630-08-0	28.01	5	0.400	1.75
	NO _x (as NO ₂)	10102-44-0	46.05	24	1.922	8.4
	VOC (as C ₃ H ₈)	74-98-6	44.1	0.2	1.6E-02	7.0E-02

POLLUTANT	CASRN	MW	FACTOR	lb/hr	ton/year	
			lb/10 ³ gal			
Toxic Pollutants Tables 11.1-10	Benzene	71-43-2	78.1	0.000214	1.71E-05	7.51E-05
	Ethylbenzene	100-41-4	106.2	0.0000636	5.09E-06	2.23E-05
	Formaldehyde	50-00-0	30.0	0.033	2.64E-03	1.16E-02
	Naphthalene	91-20-3	127.2	0.00113	9.05E-05	3.96E-04
	1,1,1-Trichloroethane	71-55-6	133.4	0.000236	1.89E-05	8.28E-05
	Toluene	108-88-3	92.1	0.0062	4.97E-04	2.17E-03
	o-Xylene	95-47-6	106.2	0.000109	8.73E-06	3.82E-05
	Acenaphthene	83-32-9	154.21	0.0000211	1.69E-06	7.40E-06
	Acenaphthylene	208-96-8	152.2	0.000000253	2.03E-08	8.88E-08
	Anthracene	120-12-7	178.23	0.00000122	9.77E-08	4.28E-07
	benz(a)anthracene	56-55-3	228.3	0.00000401	3.21E-07	1.41E-06
	Benzo(b,k)fluoranthene	205-99-2	252.3	0.00000148	1.19E-07	5.19E-07
	Benzo(g,h,i)perylene	191-24-2	276.3	0.00000226	1.81E-07	7.93E-07
	Chrysene	218-01-9	228.3	0.00000238	1.91E-07	8.35E-07
	Dibenzo(a,h)anthracene	53-70-3	278.4	0.00000167	1.34E-07	5.86E-07
	Fluoranthene	206-44-0	202.3	0.00000484	3.88E-07	1.70E-06
	Fluorene	86-73-7	166.2	0.00000447	3.58E-07	1.57E-06
	Indo(1,2,3-cd)pyrene	193-39-5	276.3	0.00000214	1.71E-07	7.51E-07
	Phenanthrene	85-01-8	178.2	0.0000105	8.41E-07	3.68E-06
	Pyrene	129-00-0	202.3	0.00000425	3.40E-07	1.49E-06
OCDD	3268-87-9	459.7	3.1E-09	2.48E-10	1.09E-09	

Pollutant Emission Rates

Customer: **Dexter Construction** **Location:** **Waverly, NS (Canada)**

Unit: **HC-800** Hot oil Heater
Burner: **Powerflame HAC5-GO6** Nominal 6-mBtu/hr combination gas/oil burner

Total Airflow:	2916	ACFM	Stack Dimensions:	18	height (ft) dia (in) sq.ft. ft/sec ft/min
Standard Airflow:	1307	DSCFM	Stack Area:	24	
Maximum Heat Input:	11.55	mbtu/hr	Stack Velocity:	3.14	
Exhaust Temperature:	600	F		15.5	
Exhaust Moisture:	10	%		928.2	

NOTE: DSCFM = dry, standard cubic feet per minute; airflow @ 68F, 1 atm, dry

Burner Fuels - Net Heating Values & Usage Rates:

Recycled Fuel Oil

143100	Btu/gal	0.5	sulfur %
76.7	gal/hr	671.7E+3	gal/year

POLLUTANT	CASRN	MW	FACTOR	lb/hr	ton/year	
			lb/10 ³ gal			
Criteria Pollutants Tables 1.3-1 & 1.3-3	PM		2	0.153	0.67	
	SO ₂	7446-09-5	64.06	150 * S	5.75	25.2
	CO	630-08-0	28.01	5	0.383	1.68
	NO _x (as NO ₂)	10102-44-0	46.05	20	1.534	6.7
	VOC (as C ₃ H ₈)	74-98-6	44.1	0.2	1.5E-02	6.7E-02

POLLUTANT	CASRN	MW	FACTOR	lb/hr	ton/year	
			lb/10 ³ gal			
Toxic Pollutants Tables 11.1-10	Benzene	71-43-2	78.1	0.000214	1.64E-05	7.19E-05
	Ethylbenzene	100-41-4	106.2	0.0000636	4.88E-06	2.14E-05
	Formaldehyde	50-00-0	30.0	0.033	2.53E-03	1.11E-02
	Naphthalene	91-20-3	127.2	0.00113	8.66E-05	3.80E-04
	1,1,1-Trichloroethane	71-55-6	133.4	0.000236	1.81E-05	7.93E-05
	Toluene	108-88-3	92.1	0.0062	4.75E-04	2.08E-03
	o-Xylene	95-47-6	106.2	0.000109	8.36E-06	3.66E-05
	Acenaphthene	83-32-9	154.21	0.0000211	1.62E-06	7.09E-06
	Acenaphthylene	208-96-8	152.2	0.000000253	1.94E-08	8.50E-08
	Anthracene	120-12-7	178.23	0.00000122	9.35E-08	4.10E-07
	benz(a)anthracene	56-55-3	228.3	0.00000401	3.07E-07	1.35E-06
	Benzo(b,k)fluoranthene	205-99-2 207-08-9	252.3	0.00000148	1.13E-07	4.97E-07
	Benzo(g,h,i)perylene	191-24-2	276.3	0.00000226	1.73E-07	7.59E-07
	Chrysene	218-01-9	228.3	0.00000238	1.82E-07	7.99E-07
	Dibenzo(a,h)anthracene	53-70-3	278.4	0.00000167	1.28E-07	5.61E-07
	Fluoranthene	206-44-0	202.3	0.00000484	3.71E-07	1.63E-06
	Fluorene	86-73-7	166.2	0.00000447	3.43E-07	1.50E-06
	Indo(1,2,3-cd)pyrene	193-39-5	276.3	0.00000214	1.64E-07	7.19E-07
	Phenanthrene	85-01-8	178.2	0.0000105	8.05E-07	3.53E-06
	Pyrene	129-00-0	202.3	0.00000425	3.26E-07	1.43E-06
OCDD	3268-87-9	459.7	3.1E-09	2.38E-10	1.04E-09	

APPENDIX D
BIOPHYSICAL ASSESSMENT REPORT

Class 1 Environmental Assessment
Asphalt Cement Storage Terminal
Waverley, Nova Scotia

Biophysical Assessment of an
Asphalt Storage and Transshipment Facility—533
Rocky Lake Drive, Waverley, N.S.

Submitted to:

SLR Environmental
Halifax, Nova Scotia

November 20, 2009

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1 INTRODUCTION

Municipal Group of Companies, Bedford, Nova Scotia is proposing to construct an asphalt storage and transshipment facility on an existing industrial site and adjacent lands at 533 Rocky Lake Drive, Waverley, Nova Scotia. An approval to construct the facility is required under the Nova Scotia Environment Assessment Act. SLR Consulting, acting on behalf of the proponent, contracted EnviroSphere Consultants Limited of Windsor, Nova Scotia, to prepare a biophysical overview and assessment in support of the application. This report contains the results of the overview and assessment. It presents a description of the methodology and scope, existing environment, environmental effects, cumulative effects, discussions, and conclusions. The level of detail of the assessment is sufficient to ensure that all information necessary to allow adequate review of the project is provided; and to demonstrate how the assessment was conducted, and the information on which the conclusions were based.

2 INFORMATION SOURCES

Information for the biophysical overview and assessment was collected through interviews with representatives of the Department of Natural Resources, review of existing information including soil surveys, geology, natural history (e.g. *Natural History of Nova Scotia*), relevant websites (DNR Significant Habitat and Wetland Databases, Atlantic Canada Conservation Data Centre, and Nova Scotia Museum of Natural History) as well as technical documentation such as aerial photos and 1:50,000 topographic maps were also used in interpretations. Site visits and a walkover were carried out on October 23 and November 11, 2009 by project personnel.

3 SITE LOCATION AND STUDY AREA

The site is located southwest of Waverley, Nova Scotia along Highway 2 (Rocky Lake Road) near Rocky Lake, 1:50000 NTS 11D-13, 450893 northing, 4955866 Easting, Zone UTM Zone 20, Air Photo 87, L-6, 3 July 2003 (Figures 1 & 2).

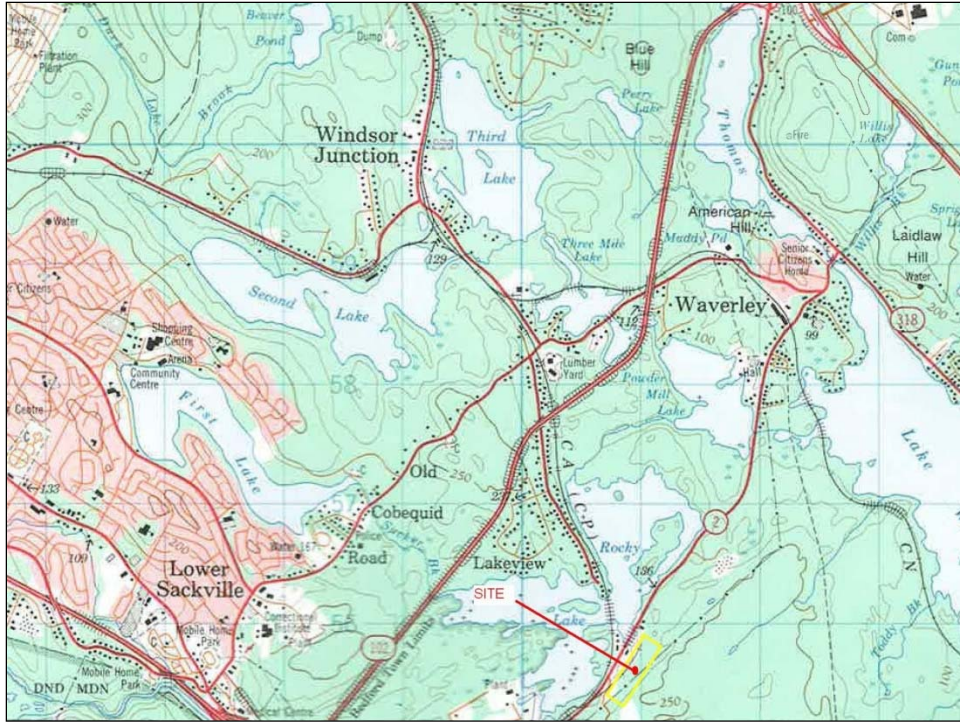


Figure 1. Project location

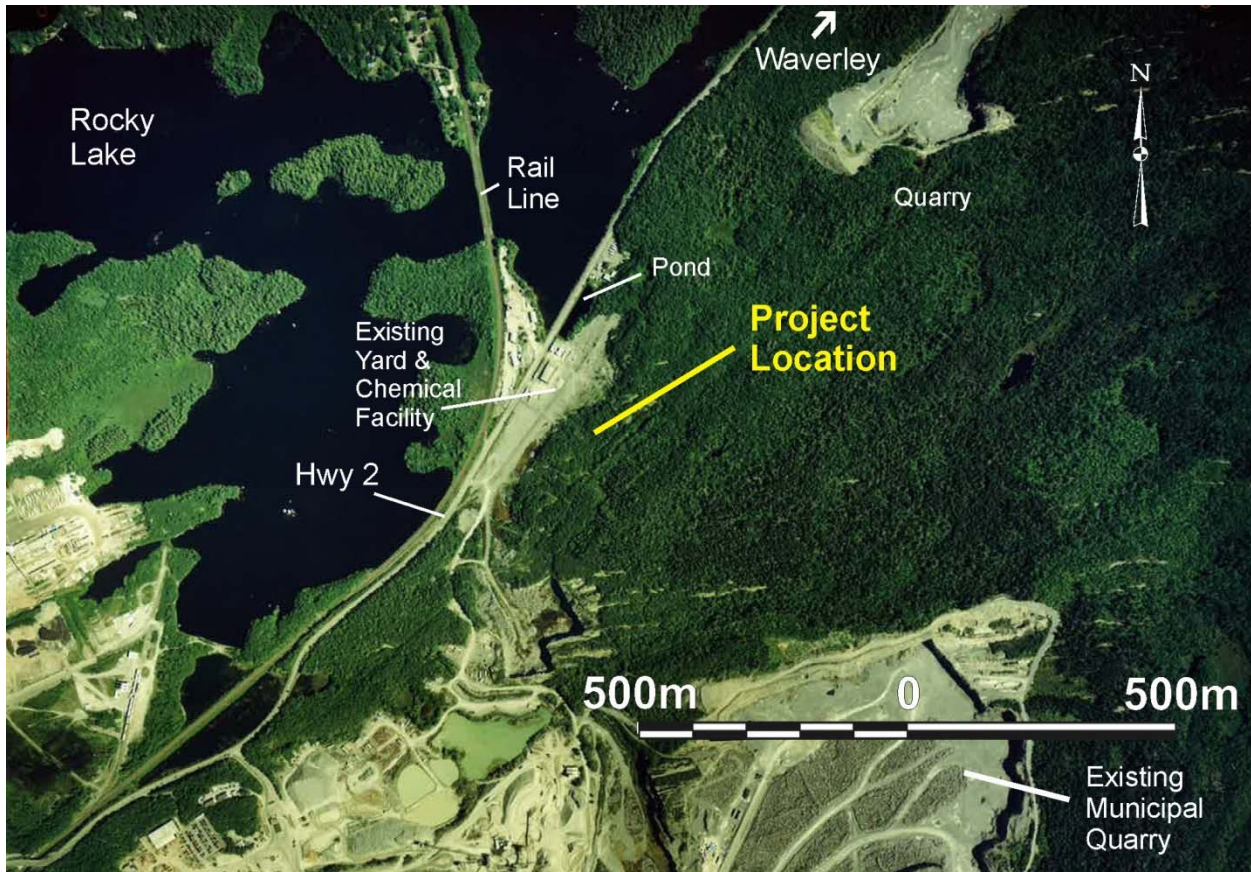


Figure 2. Project location and adjacent area

4 EXISTING ENVIRONMENT

4.1 PHYSICAL ENVIRONMENT

4.1.1 TOPOGRAPHY AND GEOLOGY

The study area is on the northwest margin of the upland located between Bedford Basin and the chain of lakes (Lake MicMac, Charles and Lake William) which dominates the northeast section of the Bedford-Dartmouth metropolitan area. This area is underlain by non-acid bearing quartzite and slates of the Goldenville formation; topography is gently undulating to gently rolling, comprised of a series of low bedrock ridges separated by low swales characterized by an accumulation of boulders in the troughs and exposed bedrock in the ridges. Several areas of barrens with extensive exposures of bedrock occur several kilometres east of the study site, but the site itself is uniformly forested, and is adjacent to an area of extensive forest cover (Figure 2). Soils are Halifax type—thin, well-drained stony sandy loam till, derived from quartzite in the underlying Halifax formation bedrock—except in quartzite barrens where Rockland soils predominate. Land in the area slopes gradually (1:8 to 1:15) upward from Rocky Lake towards the southeast. The site proposed for the placement of the asphalt storage tanks is on a level area on a ridge overlooking the adjoining yard area. The top of the ridge over much of the site has been modified. In the back of the study site, the property slopes into a swale, and on either end is occupied by low bedrock ridges and associated troughs, with bedrock exposures on the ridges.

4.2 BIOLOGICAL RESOURCES AND HABITAT

4.2.1 TERRESTRIAL HABITAT

The study area is on a wooded upland on the southeast margin of an existing industrial yard previously operated by a lumber yard, and currently occupied by a chemical storage and transshipment facility (Alpha Chemicals). The natural forest in the area is a mixed deciduous forest dominated by medium-aged white pine, red spruce, and red oak; however much of the site (on the upland) has been modified by movement of and storage of rock and gravel at some time in the past and has been recolonized by common forest species, principally paper birch and poplar. The edge of the study area along the existing yard is occupied by a levelled work area with piles of gravel and boulder along the upland margin. Low marginal areas are occupied by speckled alder and cattails around intermittent ponds (Figure 2). Slopes and upland portions of the project area are disturbed over a wide area and are forested in low, young paper birch, wire birch (Figure 1), speckled alder, scattered white spruce, red oak, and poplar; as well as understorey and shrub species including goldenrod, coltsfoot, *Spirea*, grasses, and bindweed. Troughs between bedrock ridges are generally occupied by boulders but in places low areas are dominated by grasses with occasional occurrence of sensitive fern (*Onoclea sensibilis*). Areas with less disturbance, chiefly the north and south ends of the study as well as the eastern margin, have medium-aged forest with tree species including paper birch, white pine, maple, and red spruce, and understorey species with sweet fern and wood fern species.

4.2.2 FRESHWATER AQUATIC ENVIRONMENTS/ WETLANDS

Several shallow freshwater ponds have formed along the margins of the yard area adjacent to the upland. No natural surface waters or watercourses occur in the study area (Figure 1). No significant habitats listed in the NSDNR significant habitats database occur in the study area. Drainage for the site is largely through the water table in the bottom of boulder-filled swales, and to the northwest through the yard area towards Rocky Lake. The nearest water body is Rocky Lake, across Highway 2, which drains into Powder Mill Lake, and further along into Lake William, all of which lie in the Shubenacadie River watershed. The lake at the site has been fragmented by the construction of the rail bed and the highway which cross it near the site; the latter has crossed an arm of the lake, creating a small pond occurring on



Figure 3. Study site above yard area looking northeast, and marginal pond developed on the leveled surface, November 11, 2009.

the north boundary of the property and east of the highway. The pond is apparently not directly connected with the lake. Apart from the margin of the pond, no areas of undisturbed original shoreline of Rocky Lake adjoin the property. Ponds which have formed surrounding the work area on the property have a fringe of marsh vegetation (cattails). A small wetland (a marsh 0.025 ha in area) occurs in the northeast portion of the study area (Figure 2).



Figure 4. View of landscape at the study site, looking northeast from Highway 2, October 23, 2009.

4.2.3 RAPTORS, WATERFOWL, AND OTHER BIRDS

Various terrestrial bird species are expected to occupy the site. Several osprey nests occur in the immediate vicinity and Rocky Lake is used by various species of waterfowl, including: mergansers, black ducks (possibly nesting), ringneck ducks, and common loons (D. Archibald, Wildlife Biologist, DNR, personal communication 2009). Lake William, into which Rocky Lake drains has nesting common loons, and would be a feeding area for osprey and bald eagles. The site is likely to be occupied by migratory birds in the spring-summer period. An American Woodcock was flushed during the November site visit. One hundred seventeen (117) bird species are suspected or have been confirmed to breed in the general vicinity (adjacent 10 x 10 km squares enclosing the site), Maritime Breeding Birds Atlas, web site) (Table 1).

4.2.4 WILDLIFE

No significant or unique concentrations of mammals are known from the site. White-tailed deer are common in the area and in particular to the immediate east of the site (D. Archibald, DNR, personal communication 2009).



Figure 5. Upland on subject property, November 2009.



Figure 6. Modified level area at proposed location of storage tanks, showing typical vegetative cover of paper birch and poplar, November 11, 2009.



Figure 7. Swale between ridges in study area showing typical accumulation of boulders and regrowth of birch and poplar, November 11, 2009.



Figure 8. Excavated pit and modified surface at proposed location of storage tanks, November 11, 2009.



Figure 9. Typical exposed bedrock in study area.



Figure 10. Swale between bedrock ridges, southwest end of study area, October 23, 2009.

Table 1. Bird species with potential to breed in the vicinity of the project site, including upland areas and yarding areas, as well as adjacent waters of Rocky Lake, based on presence of suitable habitat.		
Common Species		Uncommon Species
Alder Flycatcher	Killdeer	American Woodcock
American Black Duck	Magnolia Warbler	Blue-winged Teal
American Crow	Mallard	Canada Goose
American Goldfinch	Northern Flicker	Common Loon
American Redstart	Red-eyed Vireo	Common Merganser
American Robin	Ring-necked Duck	Great Black-backed Gull
Belted Kingfisher	Ruby-throated Hummingbird	Great Blue Heron
Blue Jay	Ruffed Grouse	Great Horned Owl
Blue-headed Vireo	Song Sparrow	Green-winged Teal
Chestnut-sided Warbler	Spotted Sandpiper	Hermit Thrush
Chipping Sparrow	Swainson's Thrush	Herring Gull
Common Grackle	Tennessee Warbler	Least Flycatcher
Common Nighthawk	Tree Swallow	Lincoln's Sparrow
Common Yellowthroat	White-throated Sparrow	Merlin
Dark-eyed Junco	Yellow Warbler	Mourning Dove
Downy Woodpecker	Yellow-bellied Flycatcher	Mourning Warbler
Eastern Wood-Pewee	Yellow-bellied Sapsucker	Olive-sided Flycatcher
Hairy Woodpecker	Yellow-rumped Warbler	Pied-billed Grebe
		Whip-poor-will
		Wilson's Warbler
		Winter Wren

4.2.5 FISH

There are no freshwater streams or natural standing waters at the site. Rocky Lake, supports various fish species including brook trout, smallmouth bass, white sucker, black bass, American eel and gaspereau. Striped bass and Atlantic salmon can be found lower in the Shubenacadie River watershed, in Lake William. Both species are at reduced numbers and are considered at risk both provincially and under federal species at risk legislation, the latter as part of the Inner Bay of Fundy population.

4.2.6 REPTILES AND AMPHIBIANS

No potential for significant occurrences of reptiles and amphibians were identified for the site.

4.2.7 SPECIES AT RISK

Species at Risk are those plants or animals whose existence is threatened or which are in danger of being threatened, by human activities or natural events. Species, which are considered to be at risk, are selected by provincial, national and international conservation and biological organizations. The Canadian Committee on the Status of Endangered Wildlife in Canada (COSEWIC) presently recommends species to be listed under the federal Species at Risk Act, and species are also listed at provincial levels.

Information on species of concern in the vicinity of the study area includes 1243 records of vascular plant species of concern (272 species), and 44 records non-vascular flora (9 species) within a 100 km radius of the study site (ACCDC, 2009)(Table 2). In terms of animal species of concern, there are 1003 records of vertebrate species (77 species) and 301 records of invertebrate taxa (58 species) within a 100 km radius (ACCDC 2009). Within 10 km of the study site, there are nine provincial red status species including plants (Hairy Goldenrod, Eastern White Cedar, Peck's Sedge, Rock Rose, Large St. John's Wort, Southern Twayblade, and Greene's Rush), insects (Taiga Bluet, Bog Elfin), as well as four federally listed species at risk—Rusty Blackbird, Striped Bass, Wood Turtle and Atlantic Salmon (ACCDC, 2009)(Tables 1 & 2). None of the habitat types required by these species are likely to occur on the project site, due to the combination of absence of bogs, wetlands and watercourses; and disturbance including changes to the landscape and forest removal. A botanist (J. Jotcham, M.Sc., Marbicon Inc) reviewed the list plants of conservation significance occurring within a radius of 10 km of the project site for potential occurrence at the project site (Appendix B, attached). All species listed are associated with quartzite, sand or heath barrens, habitats which either occur far to the east of the study site or not at all, and not within the project footprint, and so are unlikely to occur here. The small wetland on the northeast portion of the site is small, isolated and may be artificial, and hence is unlikely to support any of the water associated species of concern. Some of the species, in particular Striped Bass and Atlantic Salmon occur lower in the watershed of the site. For the federally listed species at risk:

- Rusty Blackbird is federally listed as a *species of concern*. The preferred habitat for the species is on the shores of slow moving rivers/streams, in Canada's boreal region.
- Striped Bass is a federally listed as a *threatened* species under the Species at Risk Act. It is an anadromous fish, which spawns and spends its early life in freshwater and at a juvenile stage migrates downstream to estuarine water and later on saltwater to feed and grow to maturity. The species occurs lower in the Shubenacadie River watershed.
- Wood Turtle is federally listed as a *threatened* species that has been observed within a 10 km radius of the study site (ACCDC 2009), in the Sackville River watershed. Wood Turtles are generally active between April to October and nest in the late-June to July period, with hatchlings emerging in September to October.
- Atlantic Salmon is federally listed as an *endangered* species (the species is at low numbers world-wide and the population, in rivers in the Inner Bay of Fundy (including the Shubenacadie River) is listed under the federal *Species at Risk Act as threatened*.

Table 2. Provincially listed species of concern with potential to occur in the vicinity of the project site.
Nova Scotia Museum records (R. Ogilvie, NS Museum, pers. comm., 2009)

Scientific Name	Common Name	Provincial Status	ACCDC ¹
PLANTS			
<i>Minuartia groenlandica</i>	Mountain Sandwort	yellow	S2
<i>Symphyotrichum undulatus</i>	Waxy-leaved Aster	yellow	S2
<i>Bidens connata</i>	Swamp Beggar Tick	yellow	S1
<i>Carex Reckii</i>	Peck's Sedge	red	
<i>Eleocharis olivacea</i>	Capitate Spike Rush	yellow	S2
<i>Empetrum Gamsii</i>	Purple Crowberry	yellow	S2S3
<i>Euthamia tenuifolia</i>	Grass-Leaved Goldenrod	yellow	S3
<i>Fraxinus nigra</i>	Black Ash	yellow	S3
<i>Helianthemum canadense</i>	Rockrose	red	Not Determined
<i>Hudsonia ericoides</i>	Golden-Heather	yellow	S2
<i>Hypericum majus</i>	Large St. Johns Wort	red	S1
<i>Juncus I reenei</i>	Greene's Rush	red	S1S2
<i>Listera australis</i>	Southern Twayblade	red	S1
<i>Ophioglossum pusillum</i>	Adder's Tongue	yellow	S2S3
<i>Polygala sanguinea</i>	Field Milkwort	yellow	S2S3
<i>Vaccinium cespitosum</i>	Dwarf bilberry	yellow	S2
INVERTEBRATES			
<i>Coenagrion resolutum</i>	Taiga bluet (Damselfly)	red	S1
<i>Callophrys lanoraieensis</i>	Bog Elfin (butterfly)	red	S1S2
<i>Alasmidonta undulata</i>	Triangle Floater (mussel)	yellow	S2S3
FISH			
<i>Morone saxatilis</i>	Striped Bass	yellow	S1
<i>Salmo salar</i>	Atlantic Salmon	not listed	S2
REPTILES & AMPHIBIANS			
<i>Glyptemys insculpta</i>	Wood turtle	vulnerable	S3
<i>Hemidactylium scutatum</i>	Four-toed Salamander	green	S3
1. Atlantic Canada Conservation Data Centre Status			

Table 3. Records of species of concern within a 10 km radius of Rocky Lake, Halifax Regional Municipality, from Atlantic Canada Conservation Data Centre (ACCDC) Database, November 2009. E=endangered; T=threatened; SC=Species of Concern; NAR=not at risk.

Family/Scientific Name		Common Name	Rank		
			National	Provincial	Sub-National
Plants					
Asteraceae	<i>Euthamia caroliniana</i>	Grass-Leaved Goldenrod		Yellow	S3
	<i>Euthamia galetorum</i>	Narrow-Leaf Fragrant Goldenrod		Green	S3S4
	<i>Hieracium Malmii</i> var. <i>Kalmii</i>	Kalm's Hawkweed		?	S2?
	<i>Solidago hispida</i>	Hairy Goldenrod		Red	S1?
	<i>Symphotrichum undulatum</i>	Wavy-leaf American-Aster		Yellow	S2
Betulaceae	<i>Betula Michauxii</i>	Michaux's Dwarf Birch		"	S2
Caryophyllaceae	<i>Minuartia groenlandica</i>	Mountain Sandwort		"	S2
Cistaceae	<i>Hudsonia ericoides</i>	Golden-Heather		"	S2
Clusiaceae	<i>Hypericum dissimulatum</i>	Disguised St. John's-Wort		"	S2S3
Cupressaceae	<i>Thuja occidentalis</i>	Eastern White Cedar		Red	S1S2
Cyperaceae	<i>Carex adusta</i>	Crowded Sedge		Yellow	S2S3
	<i>Eleocharis olivacea</i>	Capitate Spikerush		"	S2
Juncaceae	<i>Juncus Greenei</i>	Greene's Rush		Red	S1S2
Oleaceae	<i>Fraxinus nigra</i>	Black Ash		Yellow	S3
Orchidaceae	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	Large Yellow Lady's-Slipper		?	S2
	<i>Liparis Loeselii</i>	Loesel's Twayblade		Green	S3S4
Ophioglossaceae	<i>Ophioglossum pusillum</i>	Adder's Tongue		Yellow	S2S3
Polygalaceae	<i>Polygala sanguinea</i>	Field Milkwort		"	S2S3
Sparganiaceae	<i>Sparganium fluctuans</i>	Floating Bur-Reed		Undetermined	S3?
Animals-Birds					
Accipitridae	<i>Accipiter gentilis</i>	Northern Goshawk	NAR	Yellow	S3B
Alaudidae	<i>Eremophila alpestris</i>	Horned Lark		Green	S2B, S4N
Anatidae	<i>Anas strepera</i>	Gadwall		"	S2B
	<i>Bucephala clangula</i>	Common Goldeneye		"	S2BS4N
Caprimulgidae	<i>Caprimulgus vociferous</i>	Whip-Poor-Will		"	S1? B
Cardinalidae	<i>Cardinalis cardinalis</i>	Northern Cardinal		"	S2B
Fringillidae	<i>Loxia curvirostra</i>	Red Crossbill		Undetermined	S3S4
Icteridae	<i>Dolichonyx oryzivorus</i>	Bobolink		Yellow	S3B
	<i>Euphagus carolinus</i>	Rusty Blackbird	SC	"	S3B
	<i>Icterus galbula</i>	Baltimore Oriole		Green	S3B
Mimidae	<i>Mimus polyglottos</i>	Northern Mockingbird		"	S3B
Mimidae	<i>Toxostoma rufum</i>	Brown Thrasher		"	S1?B
Animals-Birds (con't)					
Sternidae	<i>Sterna hirundo</i>	Common Tern		Yellow	S3B
Thraupidae	<i>Piranga olivacea</i>	Scarlet Tanager		Green	S2B

Table 3. Records of species of concern within a 10 km radius of Rocky Lake, Halifax Regional Municipality, from Atlantic Canada Conservation Data Centre (ACCDC) Database, November 2009. E=endangered; T=threatened; SC=Species of Concern; NAR=not at risk.

Family/Scientific Name		Common Name	Rank		
			National	Provincial	Sub-National
Tyrannidae	<i>Myiarchus crinitus</i>	Great Crested Flycatcher		“	S2S3B
	<i>Sayornis phoebe</i>	Eastern Phoebe		“	S2S3B
Vireonidae	<i>Vireo gilvus</i>	Warbling Vireo		“	S1?B
Animals-Dragonflies & Damselflies					
Aeshnidae	<i>Aeshna clepsydra</i>	Mottled Darner		Green	S3
	<i>Gomphaeschna furcillata</i>	Harlequin Darner		Yellow	S3
Coenagrionidae	<i>Coenagrion resolutum</i>	Taiga Bluet		Red	S1
Corduliidae	<i>Epitheca princeps</i>	Prince Baskettail		Yellow	S2
Lestidae	<i>Erynnis juvenalis</i>	Juvenal’s Duskywing		Green	S2S3
	<i>Hesperia comma laurentina</i>	Laurentian Skipper		“	S3
Libellulidae	<i>Nannothemis bella</i>	Elfin Skimmer		“	S3
Animals-Butterflies					
Hesperiidae	<i>Amblyscirtes hegon</i>	Salt and Pepper Skipper		Green	S2
	<i>Amblyscirtes vialis</i>	Common Roadside-Skipper		“	S2
Lycaenidae	<i>Callophrys henrici</i>	Henry’s Elfin		“	S2
	<i>Callophrys lanoraieensis</i>	Bog Elfin		Red	S1S2
	<i>Callophrys niphon</i>	Eastern Pine Elfin		Green	S2
	<i>Callophrys polios</i>	Hoary Elfin		“	S3S4
	<i>Feniseca tarquinius</i>	Harvester		“	S3S4
	<i>Satyrrium calanus</i>	Banded Hairstreak		Undetermined	S2
	<i>Satyrrium liparops</i>	Striped Hairstreak		“	S3
Nymphalidae	<i>Enodia anhedon</i>	Northern Pearly-Eye		Green	S3
	<i>Euphydryas phaeton</i>	Baltimore Checkerspot		“	S3
	<i>Nymphalis vaualbum j-album</i>	Compton Tortoiseshell		“	S1S2
	<i>Polygonia faunus</i>	Green Comma		“	S3
	<i>Polygonia interrogationis</i>	Question Mark	G5	“	S3B
	<i>Polygonia progne</i>	Gray Comma		“	S3S4
Pieridae	<i>Speyeria aphrodite</i>	Aphrodite Fritillary		“	S3S4
	<i>Pieris oleracea</i>	Mustard White	G4G5	Undetermined	S2
Animals-Fish					
Percichthyidae	<i>Morone saxatilis</i>	Striped Bass	T	Red	S1
Salmonidae	<i>Salmo salar</i>	Atlantic Salmon	E	Not listed	S2

Table 3. Records of species of concern within a 10 km radius of Rocky Lake, Halifax Regional Municipality, from Atlantic Canada Conservation Data Centre (ACCDC) Database, November 2009. E=endangered; T=threatened; SC=Species of Concern; NAR=not at risk.

Family/Scientific Name		Common Name	Rank		
			National	Provincial	Sub-National
Animals-Amphibians and Reptiles					
Geoemydidae	<i>Glyptemys insculpta</i>	Wood Turtle	T	Vulnerable	S3
Animals-Other					
Plethodontidae	<i>Hemidactylium scutatum</i>	Four-toed Salamander	NAR	Green	S3
Unionidae	<i>Alasmidonta undulata</i>	Triangle Floater		Yellow	S2S3

- S1 Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
- S2 Rare throughout its range in the province (6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
- S3 Uncommon throughout its range in the province, or found only in a restricted range, even if abundant in at some locations. (21 to 100 occurrences).
- S4 Usually widespread, fairly common throughout its range in the province, and apparently secure with many occurrences, but the Element is of long-term concern (e.g. watch list). (100+ occurrences).
- S5 Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions.
- S#S# Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the Element (e.g., S1S2).
- SH Historical: Element occurred historically throughout its range in the province (with expectation that it may be rediscovered), perhaps having not been verified in the past 20 - 70 years (depending on the species), and suspected to be still extant.
- SU Unrankable: Possibly in peril throughout its range in the province, but status uncertain; need more information.
- SX Extinct/Extirpated: Element is believed to be extirpated within the province.
- S? Unranked: Element is not yet ranked.
- SA Accidental: Accidental or casual in the province (i.e., infrequent and far outside usual range). Includes species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded.
- SE Exotic: An exotic established in the province (e.g., Purple Loosestrife or Coltsfoot); may be native in nearby regions.
- SE# Exotic numeric: An exotic established in the province that has been assigned a numeric rank.
- SP Potential: Potential that Element occurs in the province, but no occurrences reported.
- SR Reported: Element reported in the province but without persuasive documentation, which would provide a basis for either accepting or rejecting (e.g., misidentified specimen) the report.
- SRF Reported falsely: Element erroneously reported in the province and the error has persisted in the literature.
- SZ Zero occurrences: Not of practical conservation concern in the province, because there are no definable occurrences, although the species is native and appears regularly. An NZ rank will generally be used for long distance migrants whose occurrences during their migrations are too irregular (in terms of repeated visitation to the same locations) or transitory. In other words, the migrant regularly passes through the province, but enduring, mappable Element Occurrences cannot be defined.

4.3 HUMAN USES OF THE ENVIRONMENT

4.3.1 WATER SUPPLY AREAS

The site is located on the water supply area for East Hants Municipality, which is taken from the Shubenacadie River at Enfield.

4.3.2 ABORIGINAL FISHING

Rocky Lake and adjacent waters do not support aboriginal fisheries.

4.3.3 RECREATIONAL FISHING

There are no streams supporting recreational fishing at the site, although recreational fishing (brook trout, smallmouth bass) takes place in adjacent waters including Rocky Lake, Powdermill Lake and Lake William.

4.3.4 ARCHAEOLOGICAL RESOURCES

No records of archaeological resources of significance for in the study area occur in the study area (R. Ogilvie, Nova Scotia Museum of Natural History, personal communication). Most of the site has been disturbed significantly in past, and the terrain is difficult, and as well lacks natural open areas, reducing the likelihood of occurrence of archaeological resources. Recorded sites, however, occur to the northwest and northeast, including pre-Contact sites of the Archaic tradition, and an archaeological assessment has been recommended by the Museum.

4.3.5 PARKS, PROTECTED AND RECREATIONAL AREAS

There are no parks, protected or recreational areas in the vicinity of the site. The site is part of a large tract which has been extensively exploited by quarrying operations and is backed by an extensive quarry. Crown Land in the area forms part of the Provincial Portobello and Second Lake park reserves (ACCDC 2009).

4.3.6 RECREATIONAL ACTIVITIES

The site is on a tract of private land which has prohibited access due to quarrying and industrial activities and is therefore not likely to be used by the public. Rocky Lake can be used by canoers.

4.3.7 RESIDENTIAL/COMMERCIAL DEVELOPMENT

The Highway 2 corridor which runs past the site, as well as the lands between the site and Bedford, are heavily developed. The Municipal Group Quarry is situated in back (southeast of the project site) and the land immediately adjacent is occupied by a chemical transshipment facility (Alpha Chemicals) and portions of the quarry. A ready mix concrete company (“Redi Rock”) is situated across the highway from the chemical facility, and a container shipping company (“Cargo Link”) is located along the highway north of Alpha chemicals. The nearest residential development occurs in the community of Lakeview on Rocky Lake, approximately 500 m from the site.

4.3.8 CULTURAL ACTIVITIES

No cultural activities are carried out in the vicinity of the project.

4.3.9 LAND USE BY ABORIGINAL PEOPLES

The site is not known to be used by aboriginal peoples.

4.3.10 VIEWSCAPE

Highway 2 at the site is one of the main routes for traffic from Bedford to Waverley, and would include both local and industrial, as well as tourist traffic. At present, the view of the proposed site from the highway is only of a low, gradually rising upland vegetated with mainly deciduous trees (birch and poplar) and with little view of adjacent forest to the southwest. The foreground of the viewcape is dominated by facilities and equipment associated with the chemical plant, rail spur, and security gates, access roads and signage associated with the Municipal quarry. The area proposed for tank installation is on the upland part of the property with relatively low elevation; storage tanks would be set back with a forested buffer so the bases of the tanks would be hidden by forest development. More significant forests and associated views, including the Rocky Lake, on the north and south ends of the study area would not be impacted by the project.

5 ASSESSMENT APPROACH AND METHODS

Information for the assessment was obtained from consultants' personal knowledge, from reviews of available information, and knowledge of the purpose and proposed design of the project, principally the asphalt storage tanks. The approach to environmental assessment under the Canadian Environmental Assessment Act (CEAA) has been followed. In general, for this project, a list of valued environmental components (VECs)¹, and project activities and outcomes for the construction and operation of the storage and transshipment facility were developed, and the potential for interactions identified. Where interactions were identified and significant impacts were likely to occur, mitigations for the impact must be implemented before the project can proceed. The process ensures that all potentially significant impacts on VECs are identified and all potential impacts on them have been considered and sufficient mitigation planned.

6 PREDICTING ENVIRONMENTAL EFFECTS / SIGNIFICANCE AND MITIGATION OF IMPACTS ON VALUED ECOSYSTEM COMPONENTS

The list of Valued Ecosystem Components considered used for the assessment, and interactions with project components, are presented in (Table 4). The environmental effects and potential impacts of the project along with their significance and suggested mitigations are outlined in the following and are summarized in Table 5.

6.1 SOCIOECONOMIC IMPACTS

6.1.1 WATER SUPPLY, EAST HANTS

Although the site is located adjacent to Rocky Lake, and is in the watershed supplying Enfield, there is a low likelihood of hydrocarbon spills or asphalt-associated compounds (hydrocarbons, solvents) getting into surface waters or into groundwater at the site, and hence the chance of contaminating the East Hants

¹ Valued Environmental Components (VECs) are features or things in the environment, which are important either ecologically, socially, economically or culturally. The environmental assessment addresses potential impacts of the project on each VEC identified. To do so involves identifying all the activities or outcomes of the project which interact with each VEC, and then determining and rating the magnitude of the impact in a standard way, in this case in a manner guided by standard approaches which have been developed for assessments under CEAA.

water supply is low. Accidental spills of chemicals from the adjacent Alpha Chemicals transshipment facility, as through an accident involving railcars or vehicles at the site, also offers a remote, negligible, possibility of contaminating the water supply.

6.1.2 TOURISM

The area of the site already has an industrial appearance and character which will not be changed significantly by the project. Increased vehicle traffic and hold-ups for increased train movement could hinder tourist movement and therefore have a minor impact on tourism.

6.1.3 RECREATIONAL FISHING

The project is unlikely to lead to any contamination which will interfere with water quality in Rocky Lake and the associated watershed, which would interfere with fishing.

6.1.4 PARKS AND PROTECTED AREAS

Areas around the site are designated for possible Provincial Park expansion. The project would have a negligible footprint and not interfere significantly with future uses of adjacent lands for parks.

6.1.5 INDUSTRIAL USES

Additional rail or truck traffic may cause minor conflicts with the operation of the chemical transshipment facility on the property. The additional traffic would interfere with heavy volume of truck traffic entering the nearby quarries, and the cement operation and increase the risk of accidents. The road in the area is probably not near its capacity so this would be a negligible impact.

6.1.6 CULTURAL/HISTORICAL

The site has a small footprint on an already disturbed land surface and therefore would be unlikely to disturb cultural/archaeological artifacts. The facility would have a small footprint and would not greatly influence the character of the area.

6.1.7 INFRASTRUCTURE

Operations of the facility would place additional strain on the highway and rail network, which is presumably heavily loaded due to the commuter traffic through the area as well as industrial traffic of various kinds passing by the site.

6.1.8 RESIDENTIAL USE/HEALTH AND SAFETY

The project during construction and further in the operational phase will lead to increased truck traffic along Highway 2 in the area. Several areas of residential neighbourhoods and schools occur between Waverley and Bedford, which would be exposed to higher volumes of truck traffic, increasing potential for accidents. Control of vehicle traffic arising from the project to non-peak hours and daytime hours would reduce congestion and potential for collisions.

6.1.9 AESTHETICS/VIEWSCAPE

The project will result in negligible changes to the viewscape at the site.

6.2 BIOPHYSICAL IMPACTS—IMPACTS OF THE PROJECT ON THE ENVIRONMENT

6.2.1 TERRESTRIAL VEGETATION

Construction—Vegetation communities in the footprint of the project will be removed during the construction phase. Plant communities at the site are not unique or significant; however it is important to minimize damage to the site through design and construction practices, and if possible the function of the vegetation can be replaced by restoring portions of existing properties which are unlikely to be used in the near future.

Operation—In general, no effects on terrestrial vegetation are foreseen by the routine operation of the facilities. Weed species which grow around such sites will intrude into natural areas, so the plant composition will change. Vegetation control using herbicides potentially could lead to elevated concentrations of herbicide in the soil which would affect adjacent plant communities, and should be avoided.

6.2.2 WATERFOWL

Construction—Apart from the potential for accidental spills of fuel for vehicles and other heavy equipment to reach Rocky Lake, there are no potential impacts on waterfowl, such as common loon, which could nest along the shoreline of Rocky Lake, as well in upland areas near the ponds on the property yard.

Operation—In general, no effects on waterfowl are foreseen by the routine operation of the facilities. Accidental spills from trucks and rail cars into the nearby watershed, however, could potentially affect waterfowl.

6.2.3 TERRESTRIAL ECOSYSTEM

Construction—The existing terrestrial ecosystem (plants and animals) will be removed by construction of the facilities. While its loss is not likely to be significant in terms of unique habitat or species, it remains an important element of the local landscape and may provide an important visual buffer for the site. Efforts should be made at the design and construction stage to minimize damage to the terrestrial ecosystem and if possible to restore unused adjacent areas of the site.

Table 4. Potential interactions between project activities and operations and Valued Environmental Components (VECs) for Rocky Lake, Asphalt Storage and Transshipment Facility.

General Category of VEC	Biophysical						Socioeconomic									
	Terrestrial Plant Communities	Waterfowl	Terrestrial Birds	Fish Habitat-Rocky Lake	Terrestrial Ecosystem	Species at Risk	Tourism	Recreational Fishing	Parks and Protected Areas	Industrial Activity	Cultural/ Historical	Infrastructure – Highway and Rail Maintenance	Health and Safety – Traffic Levels	Aesthetics - Viewscape	East Hants Water Supply	Residential Use
Project Component (potential interactions shown by ✓)																
Construction																
- Site Preparation	✓		✓	✓	✓		✓						✓	✓	✓	
- Construct Support Facilities	✓		✓	✓	✓		✓			✓	✓	✓				
- Construct Tanks	✓		✓	✓	✓		✓			✓	✓	✓				
- Accidents (Oil/ Fuel Spills)	✓	✓	✓	✓	✓	✓		✓	✓	✓						
Operation																
- Routine Offloading/Loading Operations											✓	✓	✓	✓	✓	
- Truck and Rail Transport							✓			✓		✓	✓			✓
- Accidents (Oil/ Fuel Spills)	✓	✓	✓	✓	✓	✓		✓	✓	✓						

Operations — Once in place the facilities become a focus for activities and there is a likelihood that other activities such as equipment storage will take place adjacent, further damaging the existing terrestrial ecosystem. With good planning, areas within the property currently underutilized used for storage and other purposes could be designated, rather than using existing natural areas.

6.2.4 FISH HABITAT, ROCKY LAKE

Construction— Apart from the potential for accidental spills of fuel from vehicles and other heavy equipment to reach Rocky Lake or contaminate groundwater, there are no potential impacts of the construction phase on fish habitat in Rocky Lake.

Operations—Routine operation of the facility will not affect Rocky Lake fish habitat except for the potential for spills from the tank storage contaminating local groundwater, and of releases of hydrocarbons and asphalt during transport.

6.2.5 TERRESTRIAL BIRDS

Construction—Plant communities in the footprint of the project will be removed during construction and affect any nesting birds there. Noise from the operation of equipment, construction, and movement of materials etc., as well as lights used in night operations, could disturb breeding birds. Activities should be planned to take place outside the normal nesting seasons, before June and after July.

Operations—Operation of facilities is not expected to interfere with bird populations. Some birds (e.g. pigeons, gulls) may be attracted to the site.

6.2.6 SPECIES AT RISK

Construction—No species at risk are expected to be harmed in the construction phase, particularly if key nesting seasons of terrestrial birds are avoided. Rusty Blackbird, the only migratory bird likely to occur on land is unlikely to occur at the project site, but bird surveys can be carried out before any major construction event in the nesting season to confirm presence and distribution of the key species. Spills of fuel from vehicles on site could reach Rocky Lake where various waterfowl species, particularly the Common Loon, nest. No plant species at risk are likely to occur at the site and be potentially removed by the project.

Operations—Routine operations of the project can impact species at risk only through spills of hydrocarbons and asphalt during transport or asphalt after tank rupture and during transfer to carriers, or through contamination of groundwater and on site drainage leading to Rocky Lake. None of these options has a significant likelihood of occurring.

Table 5. Summary of impacts and mitigation on Valued Ecosystem Components, Rocky Lake asphalt storage and transshipment facility, construction and operation.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
BIOPHYSICAL COMPONENTS						
Terrestrial Vegetation	Construction	Removal of Existing Communities	Significant	Negative	If possible restore damaged and unused parts of the site	Not significant.
	Construction	Accidental hydrocarbon spills contaminate, cause die-offs and/or enrichment.	Significant	Negative	Provide pollution prevention and emergency measures & response capability.	Not significant.
Waterfowl	Construction & Operation	Accidental hydrocarbon spills cause thermal stress and sickness and death if ingested.	Significant	Negative	Provide pollution prevention and emergency measures. Oil spill booms and waterfowl emergency numbers.	Not significant.
Fish Habitat	Construction and Operation	Accidental hydrocarbon spills contaminate, cause die-offs	Significant	Negative	Provide pollution prevention and emergency measures.	Not significant.
Terrestrial Birds	Construction	Removal of nests; noise and activity from construction	Significant	Negative	Avoid breeding season; conduct work during daylight where possible.	Not significant
	Operation	Loss of habitat	Significant	Negative	If possible restore damaged and unused parts of the site	Not significant
Terrestrial Ecosystem	Construction	Damage to Land and Plant Communities adjacent to Project Site	Significant	Negative	Avoid damage to adjacent areas.	Not Significant
	Operation	Reduced habitat.	Significant	Negative	If possible restore damaged and unused parts of the site	Not Significant
Species at Risk – Rusty Blackbird	Construction	Damage nests/disturb nesting	Significant	Negative	Monitor for presence of species; avoid breeding season if present.	Not Significant
	Operation	Disturb nesting			Awareness program/Identify and avoid nesting areas.	Not Significant
Species at Risk – Atlantic Salmon and Striped Bass	Construction & Operation	Accidental Hydrocarbon and Chemical Spills	Not Significant	Negative	Control spills and accidental discharges.	Not applicable

Table 5. Summary of impacts and mitigation on Valued Ecosystem Components, Rocky Lake asphalt storage and transshipment facility, construction and operation.						
VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
SOCIOECONOMIC COMPONENTS						
Tourism	Operation	View of site and industrial character	Not Significant	Negative	Maintain and landscape the property	Not applicable
Recreational Fishing	Construction & Operation	Accidental hydrocarbon spills contaminate Rocky Lake and groundwater	Significant	Negative	Provide pollution prevention and emergency measures & response capability.	Not significant
Parks and Protected areas	Construction	View of site and industrial character	Not Significant	Negative	Maintain and landscape the property	Not significant.
Local Industry	Operation	Conflicts with traffic and activities	Not Significant	Negative	Collaborate in planning and carrying out activities.	Not significant
Cultural/Historical Features	Construction & Operation	Damage to Existing Features	Not Significant	Negative	Do not disturb adjacent lands unnecessarily	Not significant
Highway Maintenance	Operation	Increased wear and tear on highway	Not Significant	Negative	Not applicable	Not applicable
Health and Safety	Construction & Operation	May increase risk of accidents in nearby residential and industrial areas	Significant	Negative	Schedule activities to take place during off peak usage and daylight hours.	Not applicable
Aesthetics—Viewscape	Construction & Operation	Appearance of Tanks and Installations	Not Significant	Negative	Keep tanks maintained and painted.	Not significant.
Residential Use	Construction & Operation	Truck traffic leading to accidents in residential areas	Not Significant	Negative	Schedule activities to take place during off peak usage and daylight hours.	Not Applicable
Health and Safety - Traffic Levels	Operation	Increased use of Hwy 304 by tour buses	Significant	Negative	Use good directional signs, viewing pull-offs, posted speed limits.	Not significant
Health and Safety – Increased Tourists on Shore	Operation	Harm due to waves and accidents on slippery rocks/ seaweed etc.	Significant	Negative	Provide adequate signage and safe access points.	Not significant
Residential Use	Construction	Traffic of Construction vehicles/ equipment	Not Significant	Negative	Not applicable	Not applicable

7 IMPACTS OF THE ENVIRONMENT ON THE PROJECT

7.1 AIR TEMPERATURE, WIND, AND PRECIPITATION

The site could be exposed to extremes in temperature which should be taken into consideration in design of facilities. Allowances should be made for build-up of snow around tanks and associated facilities, and for areas to dispose of snow ploughed from access roads. Heavy rains can lead to erosion particularly on access roads to the storage tanks, and design should include measures to minimize erosion and control water movement and sedimentation.

8 CUMULATIVE IMPACTS

No significant cumulative impacts (impacts arising from the project in combination with ongoing or foreseen activities) are envisioned for the project. The project itself occupies a small footprint in an already disturbed area and the main potential impact is biological habitat removal. The land adjacent to the site is unlikely to be further developed for other uses. Traffic levels which are a result of the project will have potentially more socio-economic impact than on the biophysical environment.

9 MONITORING

No monitoring is proposed for the present project, because no significant negative effects of the project on the environment, are foreseen for the project.

10 PUBLIC CONSULTATION

No public meetings were held as they are not required for a screening-level assessment under provincial or federal legislation and the project is simple and unlikely to cause any public concern.

11 LIMITING CONDITIONS

The American Society for Testing and Materials Standards of Practice and the Canadian Standards Association state that no environmental assessment can wholly eliminate uncertainty regarding the recognition of potential environmental liabilities. The intent of the assessment is to reduce, but not eliminate, uncertainty regarding projects, giving reasonable limits of time and costs.

The conclusions of this report are based in part on the information provided by others, which is assumed to be correct. The potential exists that unexpected environmental conditions may be encountered at the site and with the project, not specifically investigated. Should this occur, the proponent and regulatory authorities must be notified so that we may decide if modifications to our conclusions are necessary.

The findings of this investigation are based on research and investigations carried out in October-November 2007 and the generally accepted assessment practices of our industry. No other warranty is made.

12 REFERENCES

Atlantic Canada Conservation Data Centre (ACCDC) 2009. Report on database search of species of conservation status for Rocky Lake. Report to Envirosphere Consultants Ltd, November 2009.

13 PERSONAL COMMUNICATIONS

Mr. Doug Archibald, Wildlife Biologist, NSDNR, Truro, NS.

Mr. Robert Ogilvie, Special Places Curator, Nova Scotia Museum of Natural History

APPENDIX A
NOVA SCOTIA MUSEUM SEARCH
HERITAGE AND BIOLOGICAL RESOURCES

November 17, 2009

Heather Levy
Envirosphere Consultants Ltd.
Box 2906, Unit 5-20 Morison Dr.
Windsor, NS B0N 2T0

Dear Ms. Levy:

**RE: Environment Screening 09-10-26
Rocky Lake
Envirosphere Consultants Limited**

Further to your request of October 26, 2009, staff of the Heritage Division have reviewed their files for reference to the presence of heritage resources in the study area. Please be aware that our information is not comprehensive, in that it is incomplete and of varying degrees of accuracy with respect to the precise location and condition of heritage resources.

It should be noted that the amount and degree of disturbance from previous developments could have a significant role in establishing the presence, absence or condition of heritage resources in this area.

Archaeological and Historical Sites and Remains

There are no archaeological sites on file for the project area, and low potential for historical archaeological resources for the project area as historic maps on file do not indicate settlement. We consider the site to have moderate potential for pre-contact archaeological resources. Though there are no sites currently on file for the project area, there are recorded sites to the northwest and northeast including pre-Contact sites of the Archaic tradition. Therefore, it is recommended that an archaeological assessment take place.

Natural Heritage

The staff of the Nova Scotia Museum Collections Unit (Natural History) have reviewed their records and make the following observations:

Zoology

We have no records of species of concern for the specific area, but note that receiving waters from drainage for the area outlined may contain species of concern, depending on the specific direction of drainage from the site.

If the area is draining into the North (Shubenacadie R), then the following species are noted as having conservation status:

- Atlantic Sturgeon *Acipenser oxyrinchus*,
- Striped Bass *Morone saxatilis*,
- Atlantic Salmon *Salmo salar* - Inner Bay of Fundy populations and
- Gaspereau *Alosa pseudoharengus*.

If the drainage is to the South including Sackville River, then the following species are noted:

- Wood Turtle *Glyptemys insculpta*,
- Eastern Pearl Mussel *Margaritifera margaritifera*,
- Gaspereau *Alosa pseudoharengus*.

The area reflects considerable disturbance due to both industrial and other anthropogenic activity. However, there are some older breeding bird records that may be of interest (we refer you to the contemporary breeding bird atlas project for information).

Botany

Staff have reviewed the museum records for the area provided and offer the following list of species-at-risk from the area in question or from adjacent areas. The presence/absence of these species should be noted during any field assessment report. It is recommended that onsite determination be done during the growing season when the plants can be identified with some certainty.

Those known from the precise footprint are marked with an asterisk *. The colour status is from the "General Status Ranks of Wild species in Nova Scotia" as provided by the Department of Natural Resources.

* <i>Arenaria (Minuartia) groenlandica</i> yellow	<i>Euthamia tenuifolia</i> Yellow
* <i>Aster undulatus (Symphotrichum undulatum)</i> Yellow	<i>Fraxinus nigra</i> Yellow
* <i>Bidens connata</i> Yellow	<i>Helianthemum canadense</i> Red
<i>Carex peckii</i> Red	<i>Hudsonia ericoides</i> Yellow
* <i>Eleocharis olivacea</i> Yellow	<i>Hypericum majus</i> Red
<i>Elymus wiegandii</i> Red (This species is unlikely but the precise locality cannot be verified)	<i>Juncus greenei</i> Yellow
<i>Empetrum eamsii</i> Yellow	<i>Listera australis</i> Red
	<i>Ophioglossum pusillum</i> Yellow
	<i>Polygala sanguinea</i> Yellow
	* <i>Vaccinium cespitosum</i> Yellow

Other VEC's

There are no designated within the study area, nor are there any important ecological sites as described by the International Biological Programme. Our vastly incomplete cemeteries database does not contain any records for this area, nor does our cave inventory.

Heather Levy
November 17, 2009
Page 3

I have attached an invoice for the staff time spent reviewing our records and compiling this response. If you have any questions, please contact me at 424-6475.

Sincerely,

Robert Ogilvie
Manager, Special Places

Enclosure

APPENDIX B
MARBICON INC.
BOTANICAL REPORT

Marbicon Inc.

Shipping: 4287 Brooklyn St., Somerset NS, B0P 1E0
Mailing: P.O. Box 280, Berwick, NS, B0P 1E0
CANADA

Tel. (902) 538-7101
marbicon@eastlink.ca
www.marbicon.ca

March 4, 2010

Patrick Stewart.
Envirosphere Consultants Ltd.
Windsor, Nova Scotia

Re: Rocky Lake Drive

Mr. Stewart,

I reviewed the botanical information in the Biophysical Assessment (completed in November 2009 by Envirosphere Consultants Ltd.) for a property located at 533 Rocky Lake Drive in Waverley, Nova Scotia. I have not been on site to confirm habitat types or species present, but the property is reported to include (or be near) rocky quartzite barrens. Lists of species of concern are presented in that report, which were obtained from the Nova Scotia Museum and from the Atlantic Canada Conservation Data Centre (ACCDC). The two lists were different, although there was considerable overlap. Merging the two lists we have 27 potential species of concern. Plants can be found in atypical habitats, but trends can usually be identified and therefore we can often predict the probability of finding species in a specific habitat. Looking at the report, it appears that the critical habitat is the rocky barren, although there are some ponds and otherwise wet areas. Species habitat information for this review was taken from Zinck (*Roland's Flora of Nova Scotia*, 1998).

The ACCDC lists species of concern based on location, not habitat. However, almost all of the species on the merged list could inhabit some part of this site. But the most unlikely species would be *Carex Peckii* (synonym *C. albicans*) or Peck's Sedge, which is reported only from a site in Antigonish County.

Listera australis (Southern Twayblade) inhabits sphagnum moss mats shaded by conifers, a habitat not reported on site.

Cypripedium parviflorum var. *pubescens* Large Yellow Lady's-Slipper inhabits calcareous soils (gypsum and limestone), not the acidic quartzite.

If we concentrate on the barrens, and not the ponds or pond margins, then a few more species can be discounted. *Sparganium fluctuans* Floating Bur-Reed is an aquatic plant, and would not be expected on site. Lakeshore plants include *Eleocharis olivacea* (synonym *E. flavescens*) (Capitate Spikerush) and the listed *Euthamia* species. *Euthamia galetorum* (Narrow-Leaf Fragrant Goldenrod) and *Euthamia tenuifolia* (Grass-Leaved Goldenrod) are now considered synonyms for *Euthamia caroliniana* (Grass-Leaved Goldenrod). Regardless of taxonomic treatment, these species tend to inhabit lakeshores, and sandy areas such as beaches. These species may occur by the ponds or across Highway 2 on Rocky Lake. Additional wetland plants include *Betula michauxii* (Michaux's Dwarf Birch), mostly restricted to bogs, and *Fraxinus nigra* (Black Ash). *Bidens connata* (Swamp Beggar Tick), and *Liparis loeselii* (Loesel's Twayblade).

Thuja occidentalis (Eastern White Cedar) might be found in similar habitats, but it is a distinct species and would stand out in November after the deciduous trees and shrubs have dropped their leaves. If not seen, it is not likely on site.

There is no reason to exclude the remaining species without additional field work. *Minuartia* (= *Arenaria*) *groenlandica* (Mountain Sandwort) has been reported within 3 km by ACCDC and therefore should be a target species, given that it prefers the exposed rocky granitic ledges found on site. Because the flowers make positive identification easier, the field work should take place in late June, when the plant should be flowering. Other species found in similar rocky ledge / barren habitats include *Empetrum eamesii* (Purple Crowberry), *Vaccinium cespitosum* (Dwarf bilberry), and *Carex adusta* (Crowded Sedge). These four species should be targeted for future field work.

A heath barren usually refers to a site dominated by ericoid shrubs, and this site does not seem to fit that category based on the 2009 biophysical report.

The remainder of the listed species of concern may inhabit sand or heath barrens or are more generalist in their habitats, and there is no reason to discount them based on the report, but there is also no reason to suspect their presence. These include *Ophioglossum pusillum* (Adder's Tongue), *Hypericum dissimulatum* (Disguised St. John's-Wort), *Hypericum majus* (Large St. Johns Wort), *Hudsonia ericoides* (Golden-Heather), *Helianthemum canadense* (Rockrose), *Polygala sanguinea* (Field Milkwort), *Solidago hispida* (Hairy Goldenrod), *Symphotrichum undulatum* (Wavy-leaf American-Aster), *Hieracium kalmii* var. *kalmii* (Kalm's Hawkweed), and *Juncus greenei* (Greene's Rush).

Respectfully submitted,



Jim Jotcham, March 4, 2010

APPENDIX E
PUBLIC CONSULTATION DOCUMENTATION

Class 1 Environmental Assessment
Asphalt Cement Storage Terminal
Waverley, Nova Scotia



GLC

GENERAL
LIQUIDS
CANADA

1233 Rocky Lake Drive, Waverley, NS B2R 1S1
Tel: 902-835-3381 Fax: 902-835-7300
Email: Questions@GeneralLiquidsCanada.ca

March 16, 2010

Chief and Council
Indian Brook First Nation
Indian Brook Post Office
522 Church St.
Indian Brook, NS
B0N 1W0

Dear Chief Sack and Council,

**Re: General Liquids Canada Ltd.
Environmental Assessment Registration
Asphalt Cement Storage Terminal**

We are writing to let you know about a project we are undertaking on our property at 1233 Rocky Lake Drive in Waverly, Nova Scotia. The project is the construction of an asphalt cement storage terminal (the "Project") and requires us to undertake a Class I Environmental Assessment. We plan to register the Environmental Assessment in the very near future.

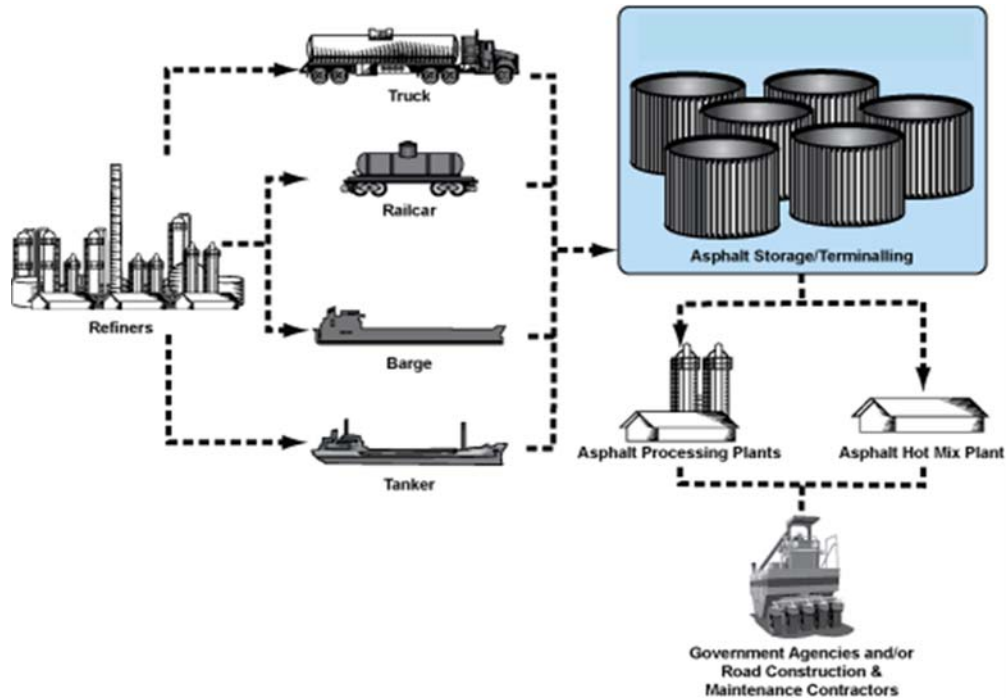
The Project is taking place on an area of land where quarrying activities have historically occurred and where a chemical transloading facility recently operated for a number of years. The construction site is on the same property as an active quarry operation. Therefore the land has been previously disturbed. We do not anticipate any impacts specifically affecting Aboriginal interests, but are contacting you so that you may become engaged in the Environmental Assessment process early should you or any members of the Mi'kmaq community have an interest in doing so. Please contact us if you would like further information about the Project than is being provided in this letter or if you have any questions, concerns or comments.

Our parent company, Municipal Enterprises Ltd., has been expanding its business in the road construction industry, and currently operates 12 hot mix asphalt (HMA) producing plants. Asphalt Cement (AC) is the binding ingredient in the production of HMA and is delivered to each plant by tanker trucks. Due to the complexity of supplying the number of asphalt plants in operation and the importance of delivering adequate asphalt cement in a "just in time" manner to these plants, an improved delivery and storage system is required. Also, asphalt related projects are requiring different types of applications creating a need to store different types of AC. The proposed asphalt cement storage/warehousing facility and operation will meet these challenges. This warehousing facility consists of a series of storage tanks, a hot oil heating unit (to keep the asphalt cement in liquid form), a steam boiler (to warm up rail cars for offloading) and loading racks to empty or load tanker trucks.



Storage and transfer of product is conducted through the use of tanks, pipes and pumps which does not allow for uncontrolled emission of gas, fumes or objectionable odour. The facility will also take advantage of the existing rail service on the site. This operation meets the requirements of the I-3 – Light Industrial – zone for the area.

Process: The following process diagram and description is for a typical AC warehousing terminal.



Refineries: Refineries located across North America are the main sources of AC. AC is transported from the refineries through the use of tanker trucks, rail cars, barge/ship. For our proposed operation, delivery of AC will be by truck and rail and predominantly from the refinery located in Dartmouth, NS.

Asphalt Cement (AC) Storage: An initial storage capacity of approximately 25 000 tonnes of AC will be established consisting of the following storage units:

- two 54 000 bbl
- one 26 000 bbl
- four 5000 bbl

bbl = barrels

There will also be provisions for future storage capacity beyond 50 000 tonnes. The AC is heated by hot oil flowing through coils and kept at a temperature range of 270 F to 320 F (130 C to 170 C). Different types of AC can be stored, including different grades. The smaller storage units are used to blend and store AC at a temperature that is necessary for delivery. Venting of the storage units are connected with a series of



pipes. The air emissions are then blown through an active carbon filter eliminating any sources of odours.

Hot Oil Heater: Hot oil is used to heat the AC pipe lines, AC, steam boiler and other components which must be kept hot. Liquid fuel is pumped to the burner from the fuel tank. The hot oil is heated with a burner that can use different types of fuels.

Steam System: Steam is used to liquefy the rail tankers prior to unloading the AC at the facility. Depending on the weather and the state of the AC in the rail cars, it can take from 6 to 24 hours to liquefy. Once liquefied, the AC is simply pumped into the storage units. A steam recovery system is used to collect the spent steam to be reused for other rail cars.

Controls: The plant operator controls the storage receiving and delivering process using various flow meters, level indicators and valves based on the AC demand of the asphalt plants. The control system also provides burner safety interlocks and controls to regulate temperature and volume of the AC. A weigh scale is used to weight the tanker trucks before and after product is either deposited or removed from the site to ensure compliance with road restrictions.

Impacts:

- Construction Activities
 - No burial or burning of any construction waste at the site
 - Strive to ensure that any construction waste is recycled and reused wherever possible, or disposed of at an appropriate waste disposal facility.
 - Will implement measures to minimize the release of particulate matter in the air or runoff during construction of the facility.
- Material Handling
 - We will ensure that whenever products are being transferred they 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.
 - Areas where products are stored, loaded, transferred or handled will be in contained areas.
- Storage
 - All storage vessels and spill containment systems are visually inspected for leakage on a regular basis.
 - All storage vessels meet the necessary standards
 - Fuel tanks will be double-walled to prevent the possibility of a leak
 - Asphalt Cement storage will be placed within an area that has a containment dike or berm.
- Water Emissions
 - The site will be appropriately graded to manage surface runoff and be diverted to the oil/water separator located near the loading rack.

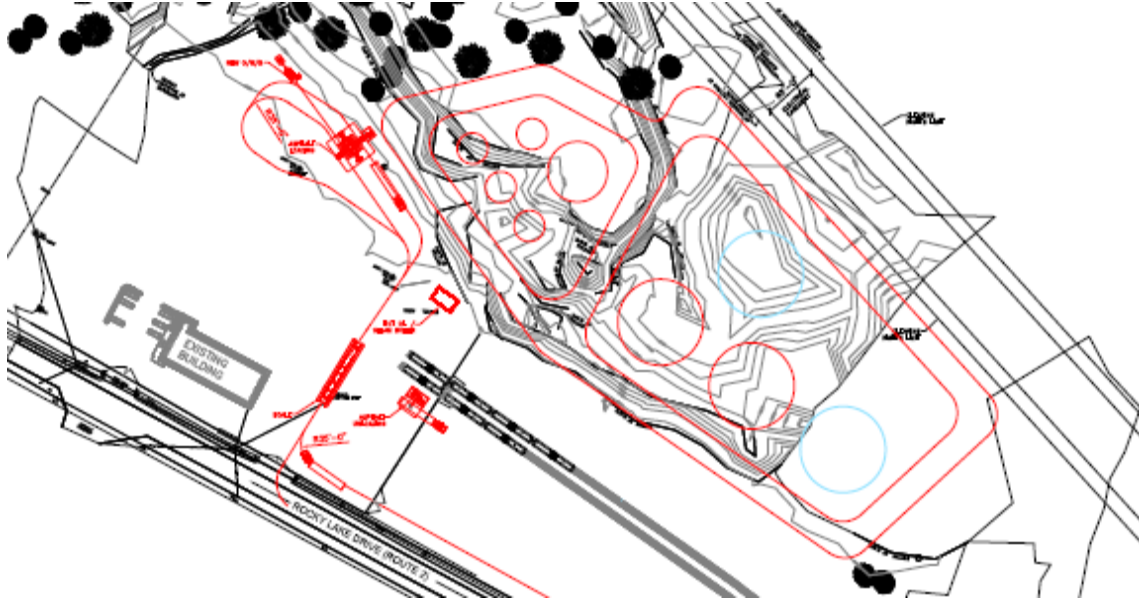


- All sanitary wastes will be diverted to a holding tank and will be hauled to an approved wastewater treatment facility. Looking into upgrading the waste facilities
- Spills
 - Liquid Asphalt Cement is a low risk substance since it does not penetrate the soil at any significant depth before it solidifies, forming a hard surface (similar to an asphalt road) and does not contaminate the soil, surface water or ground water.
 - If a spill were to occur, it will be contained on site.
 - The material will be reheated and recovered and placed back in a tank;
 - Contaminated water resulting from the extinguishing of any fire will be contained and disposed of in a regulatory approved facility.
 - Any spills will be reported as required under Nova Scotia Environmental Regulations - Sections 74, 136, and 171 of the Environment Act (contacting the environmental emergencies reporting centre by telephone at (902) 426-6030 or at 1-800-565-1633.)
- Monitoring & Emission Control Equipment
 - We will maintain and operate all emission control equipment to the specifications and recommendations of the manufacturer.
 - We will maintain a log of all maintenance activities of critical emission control devices.
 - 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;
- Air Emissions
 - Expected air emissions from the storage facilities, hot oil boiler and handling will meet the current environmental standards:
 - VOCs & PM
 - Emissions from the storage facility will be calculated based on similar operations described by the US Gov EPA's AP 42.
 - Use of carbon filters will be used for VOC control.
 - Nuisance Noise and Odours will not be created as a result of the construction, operation, or alteration of the Facility

This development is a positive addition to the municipality and area, creating technical employment opportunities and introducing advanced technological road construction capabilities to the region. We are excited about moving forward with this Project.



Below is a copy of the preliminary drawing of the proposed facility.



As mentioned above, we would be pleased to consult with you further about this Project should you have an interest in doing so. We plan to file our Environmental Assessment documentation in the near future. Once filed, this information will be available publicly and there will be an opportunity for you to input into the Project as part of the Environmental Assessment process.

Yours truly,

Andrew Inch
Manager Corporate Affairs
(902) 832-6375

Cc: Kwilmu'kw Maw-klusuaqn Negotiation Office
Native Council of NS
Office of Aboriginal Affairs
Department of Environment

Appendix -

Questions raised at the Waverley Ratepayers Association Meeting (January 14, 2010)

Q: Will blasting take place?

A: It is not expected that any blasting will be required. If blasting is required, all of the necessary permits will be obtained and the blasting will be minor compared to the blasting that takes place in the quarry.

Q: What companies will be supplied by the Terminal?

A: Municipal/Dexter companies and their subcontractors.

Q: Where will the heating plant (that supplies heat to the storage tanks) be located?

A: West of the storage tanks, between the Emulsion plant and the storage tanks.

Q: Will the Terminal generate noise?

A: Noise will be limited to rail car movements and truck traffic.

Q: How much of the tanks will be visible?

A: Approximately the top 3 to 4 metres depending on the view angle.

Q: Is liquid asphalt/bitumen like bunker 'C' oil?

A: No, bunker 'C' oil is much less viscous, and is flammable.

Q: What will the work hours be?

A: Mostly daylight hours and only during the construction season. There may be occurrences of nighttime deliveries or shipments. Rail car off-loading will take place throughout the year.

Q: Will truck traffic increase?

A: Truck traffic will increase due to customers coming to the Terminal, but will decrease because the trucks supplying the existing Municipal Enterprises asphalt plant with liquid asphalt will no longer have to bring it in from outside areas.

Q: Will truck traffic through the village of Waverly increase?

A: It is expected that almost all trucks will travel south on Rocky Lake Drive to Duke Street or Bedford. However, General Liquids Canada cannot force customers to travel a certain route.

Q: How many jobs will be created?

A: It is anticipated that 50 jobs will be created during construction and 12 jobs during operations (construction season).

Q: Will there be any visible emissions from the Terminal?

A: The only visible emissions will be occasional steam release from rail cars when they are being heated.

Q: What fuel will be used in the heating plant?

A: No. 2 fuel oil (furnace oil) and waste oil similar to what is currently used at the asphalt plant and emulsion production facility.

Q: How much exterior lighting will there be?

A: Exterior lighting will be limited to security lighting.

Q: Will heating of the tanks take place on a 24-hour basis?

A: Yes, but only during the construction season. Overnight, the Terminal will be monitored remotely.