Nalcor Energy – Lower Churchill Project

Master Spill Response Plan – All Components

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Inter-Departmental / Discipline Approval (where required)

Department	Department Manager Approval	Date
Project Manager - SOBI Marine Crossing	Greg Fleming	Jan 15/2015

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1 PURPOSE

This Master Spill Response Plan (MSRP) is a component of the Lower Churchill Project's (LCP) overall Emergency Response Plan (ERP) and compliments the environmental protection plans for the Project.

This MSRP provides expectations and guidance for contractors who are required to develop a Spill Response Plan (SRP) as a component of their Contract-Specific Environmental Protection Plans (C-SEPP). The MSRP also identifies responsibilities and communication procedures to follow in the event of a spill.

2 SCOPE

This MSRP is applicable to the activities associated with construction of the Lower Churchill Project, including:

- Muskrat Falls Generation Site, Labrador Transmission Assets (LTA),
- Labrador Island Transmission Link (LITL) [including the Marine Crossing in the Strait of Belle Isle (SOBI)].

3 DEFINITIONS

Contractor	Means any vendor/manufacturer that enters into a Contract (including a Purchase Order) with Owner for the supply of work or services.
Deleterious Substance	Generally means any substance that, if added to water, would degrade or alter the quality of the water so that it is rendered deleterious to fish or fish habitat.
Incident	Undesired event with potential to result in injury or harm to people, damage to equipment, property or the environment, or where there is a loss of process. For this procedure, an incident will also include any high potential, near miss situations.
On-Scene Commander	An employee of the Contractor with suitable training, experience and authority to direct the Contractor's spill response efforts.
Recordable Spill	Those incidents that do not meet the reporting requirements as outlined in the definition of "Reportable Spill" and therefore do not require reporting to regulatory agencies.

Reportable Spill	A spill or leak greater than 70 litres on land; a spill or leak on land, regardless of quantity, that has the potential to contaminate nearby property or enter a water body or sewer; or, a spill or leak in the water (ocean or freshwater), regardless of quantity.

4 ACRONYMS AND ABBREVIATIONS

C-SEPP	Contract-Specific Environmental Protection Plan
DOEC	Department of Environment and Conservation
DFO	Department of Fisheries and Oceans
ERP	Emergency Response Plan
EMP	Environmental Management Plan
ERC	Environment and Regulatory Compliance
HMSSR	Hazardous Materials Spill Status Report
MFEOC	Muskrat Falls Emergency Operations Centre
MSDS	Material Safety Data Sheet
MSRP	Master Spill Response Plan
OSEM	On-Site Environmental Monitor
PPE	Personal Protective Equipment
RCP	Regulatory Compliance Plan
SRP	Spill Response Plan
SOBI	Strait of Bell Isle
DOT	Department of Transportation
CCG	Canadian Coast Guard
HDD	Horizontal Directional Drilling
EPCM	Engineering Procurement Construction Management
HAZWOPER	Hazardous Waste Operations and Emergency Response

5 REFERENCES

Document Number	Title
LCP-PT-MD-0000-HS-PL-0004-01	LCP Project-Wide Emergency Response Plan
LCP-PT-MD-0000-EV-FR-0004-01	LCP Hazardous Material Spill Status Report (HMSSR) Form
LCP-PT-MD-0000-EV-PL-0010-01	LCP HVdc Overland Transmission and HVdc Specialties Environmental Protection Plan
LCP-PT-MD-0000-EV-PL-0021-01	LCP Integrated Regulatory Compliance Plan
LCP-PT-MD-0000-EV-PL-0002-01	LCP Integrated Environmental Management Plan
ILK-PT-MD-8110-EV-PL-0001-01	LCP Strait of Belle Isle Marine Crossing – Environmental Protection Plan
LCP-PT-MD-0000-EV-PL-0011-01	Muskrat Falls Generation and Labrador Transmission Assets – Environmental Protection Plan
LCP-PT-MD-0000-EV-PL-0028-01	Waste Management Plan

6 PROJECT DESCRIPTION

In general, the Project includes the following components, which are described in more detail throughout this section:

- Muskrat Falls Hydroelectric Generation;
- HVac Overland Transmission Lines - Muskrat Fall to Churchill Falls;
- Strait of Belle Isle Crossing Marine Crossing;
- Electrical Substations, Converters and HVdc Specialty Services;
- HVdc Overland Transmission Line Muskrat Falls to Soldiers Pond; and
- Construction related infrastructure.

6.1 MUSKRAT FALLS HYDROELECTRIC GENERATION

Muskrat Falls is one of two (2) hydroelectric developments being planned for the lower Churchill River. The remotely controlled nominal 824 MW Muskrat Falls Hydroelectric Development (Figure 6-1) will be composed of the following sub-components and associated ac connector lines to an ac switchyard:

- 16 km of permanent access roads, including upgrading of existing roads and new construction;
- Reservoir, approximately 60 km long and 101 km^2 in total area;
- Replacement of fish habitat;
- A north Roller Compacted Concrete (RCC) overflow dam;
- Gated spillway including:
  - approach and discharge channels; and
  - vertical lift gates
- A close coupled intake and powerhouse, including:
  - intakes with gates and trash racks;
  - concrete lined water passages;
  - turbine/generator units at approximately 206 MW each with associated ancillary electrical/mechanical control equipment;
  - power transformers (includes 1 spare), located on the draft tube deck of the powerhouse; and
  - Two (2) overhead cranes;
- A south dam;
- Component diversion works (i.e. cofferdam and spillway for diversion channel);
- Stabilized North Spur;
- Muskrat Falls Switchyard and Convertor Station; and
- Churchill Falls Switchyard extension

Figure 6-1: Muskrat Falls Generating Facility

6.2 HVAC OVERLAND TRANSMISSION LINE - MUSKRAT FALLS TO CHURCHILL FALLS

Two (2) HVac transmission lines from Muskrat Falls to Churchill Falls:

- Two (2) 250 km long 315 kV ac, Three (3) phase lines, double bundle conductor; and
- Single circuit galvanized lattice steel guyed suspension and rigid angle towers;

6.3 STRAIT OF BELLE ISLE MARINE CROSSING

The SOBI Marine Crossing comprises a 350 kV, 900 megawatt (MW) submarine cable system that extends from Forteau Point, Labrador to Shoal Cove, Newfoundland, across the SOBI (refer to the below Figure). This component of the Project includes:

Six (6) Horizontal Direct Drilling (HDD) bore holes, three (3) on each side of the SOBI, all lined with conduits that penetrate the seabed at 60 - 80 meters water depth;

- Three (3) submarine HVdc Mass Impregnated (MI) cables will be laid on the ocean floor and transition from sea to land through the lined HDD bore holes over a 34 km corridor;
- Cables laid on the ocean floor will be protected with rock berms; and

- Once on land, the HVdc MI cable will be trenched underground to the respective transition compounds located approximately 1 kilometer from the shoreline.

Note: The scope of work does not include any infrastructure or services associated with ECC upgrades, or the Holyrood conversions.

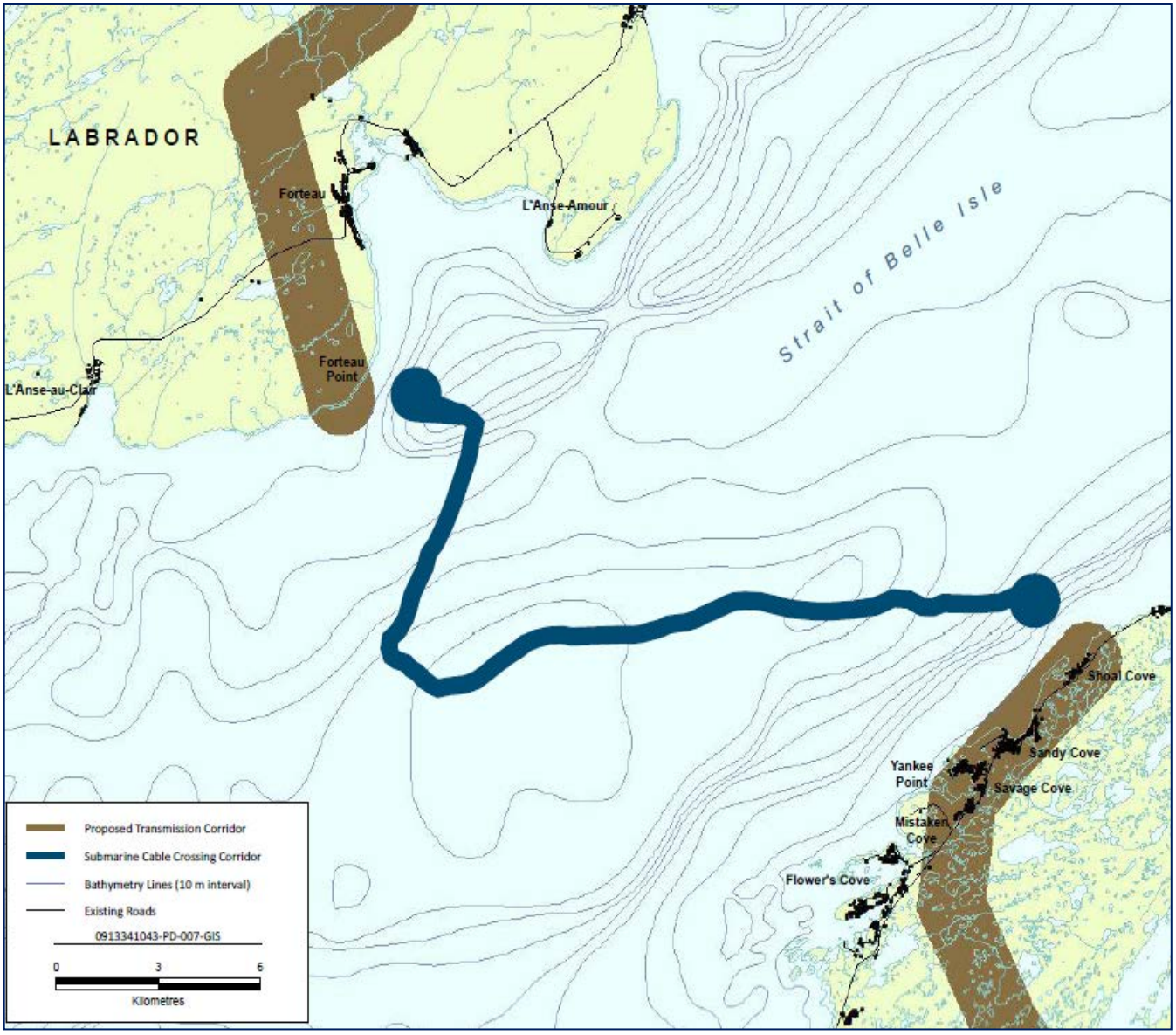


Figure 6-2: Strait of Belle Isle Submarine Cable Crossing

6.4 ELECTRICAL SUBSTATIONS, CONVERTERS, AND HVDC SPECIALTY SERVICES

Two (2) converter stations will be constructed at each end of the HVdc transmission, one at Muskrat Falls and one at Soldiers Ponds. The Muskrat Falls converter station will convert ac power to dc power. The Soldiers Pond converter station will change dc power back to ac power. The Soldiers Pond converter station will connect to the existing transmission lines in the area.

Specialty services include transition compounds and shoreline electrodes:

- At Forteau Point and at Shoal Cove, the overhead transmission line will go into a transition compound and a concrete building located approximately 1 kilometre from the shoreline. From this building, transmission will transition from overhead transmission lines to buried cables, which will connect to the submarine cables that cross SOBI.
- Electrodes, or ground systems, will be built at two (2) locations: one in the Strait of Belle Isle at L'Anse au Diable (Labrador) and one in Conception Bay at Dowden's Point (Newfoundland). The electrodes, which are made-up of rods placed in the ocean, are needed to help balance the voltage of the HVdc transmission system. The electrodes will be separated from the ocean by rock berms about 15 m high.

6.5 HVDC OVERLAND TRANSMISSION LINES MUSKRAT FALLS TO SOLDIERS POND

Transmission lines from Muskrat Falls to Soldiers Pond:

- Approximately 400 km of overhead HVdc transmission line will be built between Muskrat Falls and Forteau Point, and about 700 km will be built between Shoal Cove and Soldiers Pond;
- The on-land transmission line will have two (2) wires on steel towers between 35 m and 45 m tall;

6.6 CONSTRUCTION RELATED INFRASTRUCTURE

Construction related infrastructure will be established to support construction activity for the Project. Some of this infrastructure is temporary and shall be decommissioned before the end of the construction phase. It is anticipated that the following infrastructure will be required:

- A 1,500 person accommodations and administration complex at Muskrat Falls (for construction period);
- Access roads associated with construction of permanent facilities;

- Diversion facilities (i.e. upstream and downstream coffer dams, the latter of which is to be removed prior to tailrace flooding);
- Borrow pits and quarries;
- Concrete batch plants and rock crushers;
- Construction power and site communications infrastructure;
- Reservoir clearing camps and wood storage yards;
- Material storage and laydown areas including the potential use of port facilities;
- Fuelling and fuel storage facilities;
- Spoil areas;
- Muskrat Falls 25 kV construction power line and construction power terminal substation;
- ROW clearing camps and associated infrastructure;
- Transmission line construction camps and associated infrastructure.

7 RESPONSIBILITIES

7.1 CONTRACTOR

Contractors are required to implement a Spill Response Plan (SRP) and lead and coordinate any field response to environmental incidents related to their activities, including any necessary third party involvement (e.g. vacuum truck, environmental consultant, waste disposal). Site remediation, including any required professional consultant reports, is part of the Contractors clean up responsibilities. In the event of a spill, the responsible party (i.e. the contractor) will promptly notify the On-Site Environmental Monitor (OSEM) and report the spill to government agencies, as required.

The Contractor shall document all incidents (completion of Hazardous Material Spill Status Report Form, or suitable equivalent) and investigate as required or directed. Forms and reports are to be provided to the On Site Environmental Monitor and ERC Manager.

The Contractor is responsible to have appropriately trained personnel on site and provide training records upon request. Contractors must document a test of their SRPs at least annually.

7.2 ON-SITE ENVIRONMENTAL MONITOR (OWNERS REPRESENTATIVE)

The Owners Representative and/or OSEM will oversee the contractor's response and provide notification and documentation as follows:

- LITL – Construction Manager
- LTA – Construction Manager
- MF Site – HSE Manager/Construction Manager
- SOBI – Site Representative

8 CONSTRUCTION MANAGER / HSE MANAGER / SITE REPRESENTATIVE

When an incident within Labrador requires additional support, or where the situation presents an elevated risk, the Muskrat Falls Emergency Operations Centre (MFEOC) will be engaged as per the Project's Emergency Response Plan (LCP-PT-MD-0000-HS-PL-0004-01). The responsibility to engage the MFEOC rests with the Construction Manager / HSE Manager MF Site, who also assumes the role of Incident Commander.

When an incident within Newfoundland (including SOBI components) requires additional support, or where the situation presents an elevated risk, the Torbay Road Emergency Operations Center will be engaged as per the Project-Wide Emergency Response Plan (LCP-PT-MD-0000-HS-PL-0004-01). The responsibility to engage the Torbay Road EOC rests with the LITL Construction Manager or MCT Project Manager who also assume the role of Incident Commander.

8.1 ENVIRONMENTAL AND REGULATORY COMPLIANCE MANAGER

The Environmental and Regulatory Compliance (ERC) Manager is required to confirm when a SRP is required and to accept contractor SRPs prior to work commencement.

The ERC Manager is responsible for all communications and information sharing with government agencies, once the Contractor reports the incident. The ERC Manager reviews and updates the MSRP at least annually.

9 LCP EMERGENCY OPERATIONS CENTRE

All spills resultant from activities within Labrador, including transmission line work will be handled directly by the Emergency Operations Center in Muskrat Falls (MFEOC). All spills resultant from activities within Newfoundland, including the SOBI component and transmission line work on the island will handled by the Emergency Operations Center on Torbay Road. The Torbay Road EOC will provide assistance the MFEOC as required and when requested. The Corporate Emergency Response Center (COEC) will provide assistance to all components of the project when required as seen in Figure 9-1. The procedure and requirements to notify or engage higher level support are described in the ERP for various emergency situations.

The spill management support team which consists of personnel from key departments will assemble at the respective EOC(s) to provide support to the Incident Commander. A spill will be addressed at the field level by the On Scene Commander who will liaise with EOC Operations, OSEM(s), spill response teams and a representative from the responsible party as seen in Figure 9-2.

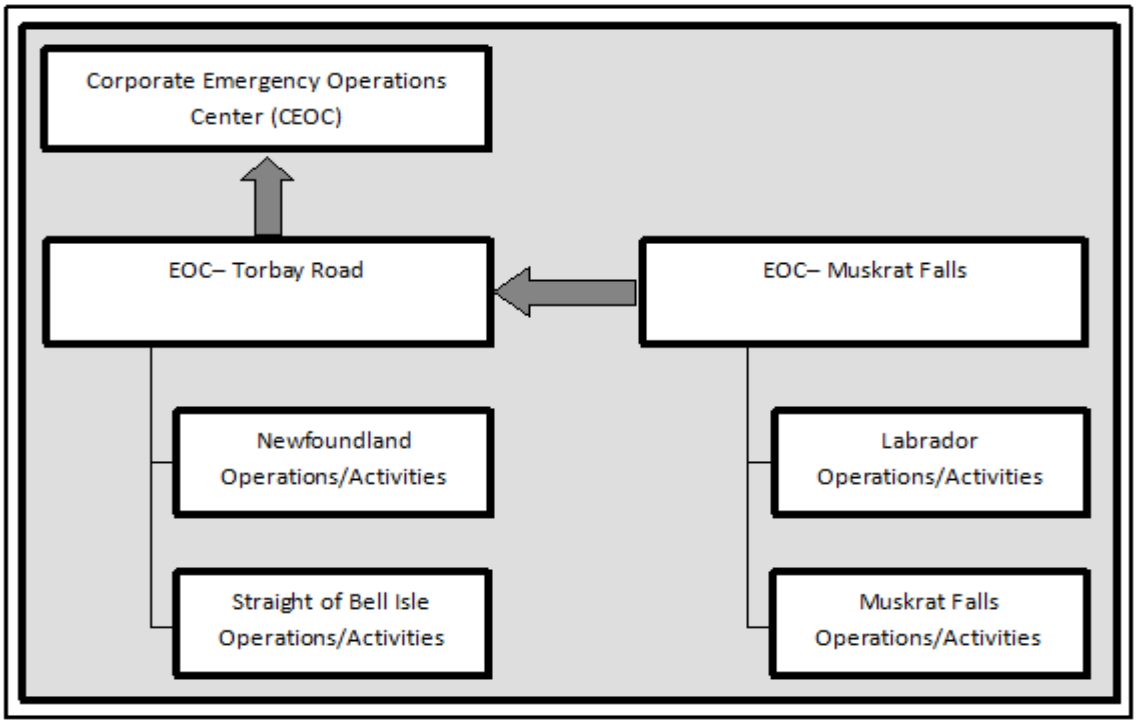


Figure 9-1: Spill Management Structure

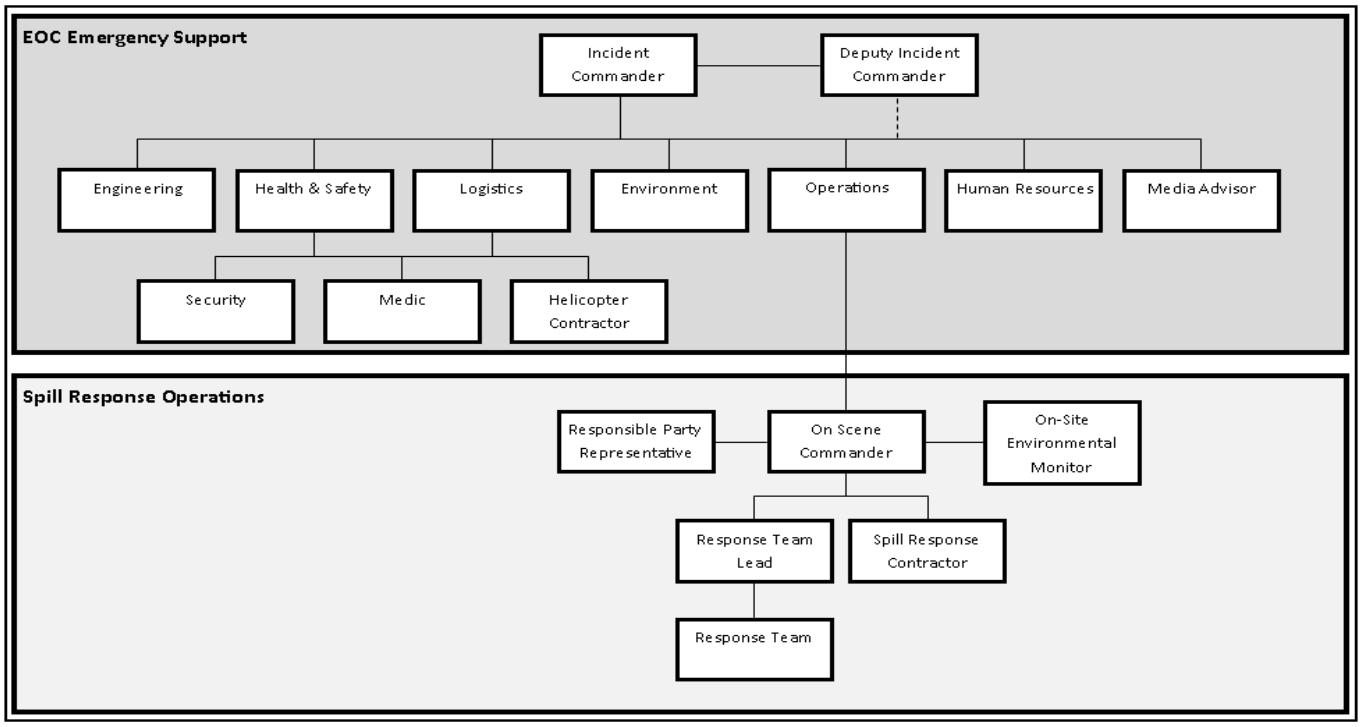


Figure 9-2: Spill Management Support

10 CONTRACTOR SPILL RESPONSE PLANS

Contractors will be required to have a Contract-Specific Environmental Protection Plan (C-SEPP). The C-SEPP will include a Spill Response Plan (SRP) that addresses the types of products (fuels and hazardous materials) being used, the activities that are being carried out and the nature of the work environment. At the discretion the ERC Manager, Contractors may be exempt from the requirement for a SRP.

All C-SEPPs (and SRPs) will be accepted by the ERC Manager prior to commencement of work. Contractor SRPs will conform to the requirements and responsibilities specified in this Master Spill Response Plan and contain similar spill response strategies.

11 LEGISLATION AND REPORTING

11.1 PROVINCIAL LEGISLATION

If a petroleum product is accidentally spilled onto soil or into a body of water, it is primarily within the jurisdiction of the Department of Environment and Conservation (DOEC). The provincial Environmental Protection Act, and its regulations, governs such incidents. Water courses frequented by fish and low tidal zones are overlapping Provincial/Federal jurisdictions and the federal aspect of these areas is outlined in Section, “Federal Legislation”.

In accordance with the Environmental Protection Act, the Minister of the DOEC has designated officials, with Service NL, authorized to perform and exercise those duties and powers conferred by the Act upon the Minister. Service NL officials are responsible for dealing with oil spills/leaks. Services NL official also provide response capability, expertise and support for environmental emergencies on a twenty-four (24) hour basis.

The Environmental Protection Act generally states that a person shall not release or permit the release of a substance into the environment in an amount, concentration or level, or at a rate of release that in the opinion of the Minister causes or may cause an adverse effect, unless authorized under the Act or an approval issued under the Act.

The Environmental Protection Act also states that the person responsible for the release (i.e. the owner or operator, or the person who has the care, management and control of the substance released) must report the release and notify any persons or property owners potentially affected by the release. A person responsible for the release must also take all reasonable measures to prevent, reduce and remedy the adverse effects of the

substance, remove or otherwise dispose of the substance in a manner that minimizes adverse effects, and rehabilitate the environment to the satisfaction of the Service NL/DOEC.

The Storage and Handling of Gasoline and Associated Products Regulations, defines a "Spill" as any loss of gasoline or associated products in excess of 70 litres from a storage tank system, pipeline, tank vessel, or vehicle onto or into soil or water. A "Leak" is defined as any discharge of gasoline or associated products from a storage tank system, pipeline, tank vessel, tank car or tank vehicle, other than through the usual function for which the storage tank system or pipeline was designed.

In the event of a spill or leak, the person responsible shall immediately notify Service NL/DOEC, and take such steps as are necessary to abate the discharge, clean the area affected and restore the environment to the satisfaction of Service NL/DOEC. However, it should be noted that an agreement is in place between the provincial and federal governments whereby all spills must be reported to the Canadian Coast Guard Emergency Response Spill Line (1-800-563-9089) as per Section, "Portable Spills and/or Leaks" of this plan.

Based on discussions with Service NL/DOEC it has been confirmed that the requirement for immediate reporting is to be applied to any spill or leak greater than 70 litres or a spill or leak, regardless of quantity, that has the potential to contaminate nearby property or enter a body of water or sewer system. All waste oil and contaminated materials resulting from a spill or leak must be handled and disposed of in accordance with the requirements of the Environmental Protection Act. Service NL/DOEC is responsible for the approval of appropriate disposal facilities and procedures.

11.2 FEDERAL LEGISLATION

Under the *Fisheries Act,* where there occurs a deposit of a deleterious substance in water frequented by fish, or a serious or imminent danger thereof, any person who owns the deleterious substance or causes the deposit shall report such occurrence. As well, any person responsible must as soon as possible, take all reasonable measures consistent with safety and with conservation of fish and fish habitat to prevent the deposit. A deleterious substance is given a broad definition and generally means any substance that, if added to water, would degrade or alter the quality of the water so that it is rendered deleterious to fish or fish habitat.

The *Canadian Environmental Protection Act* governs the reporting and remedial measures that must be implemented in the event of a release into the environment, or reasonable likelihood of a release into the environment, of a substance that is identified as a Toxic Substance.

The *Migratory Birds Convention Act* and its regulations make it an offence to deposit oil, oily waste or other substances harmful to migratory birds into water inhabited by migratory birds. This act is administered by the Canadian Wildlife Service of Environment Canada.

12 REPORTABLE SPILLS AND/OR LEAKS

Based on a review of relevant legislation, and in consultation with regulatory authorities, immediate reporting to government is required for:

- A spill or leak greater than 70 litres on land;
- A spill or leak on land, regardless of quantity, that has the potential to contaminate nearby property or enter a water body or sewer;
- A spill or leak in the water, regardless of quantity; or
- A spill or leak from a registered stationary storage stank as per the GAP regulations.

Unless otherwise agreed on-site, the person responsible for the spill (in most cases, the contractor) must report the spill to government as soon as practicable, preferably within 2 hours from the time of occurrence. Reporting must be made to regulatory authorities via the Environmental Emergency Report Line at **(709) 772-2083** (collect calls accepted) or **1-800-563-9089**.

When reporting the incident, the reporting party must provide any available spill information, such as that contained on their spill report form or hazardous materials spill status report (HMSSR). Reported information will then be relayed to all relevant regulatory agencies. PCBs are not planned for use on the project and PCB specific reporting requirements are not described.

13 RECORDABLE SPILLS AND/OR LEAKS

Spills not meeting the requirements for reporting to regulatory authorities, as outlined above, are considered recordable.

In the event of a recordable spill, the observer and/or the person responsible will ensure an effective response is carried out and that the incident is reported to their immediate supervisor as soon as possible. The supervisor will promptly report the incident to the EPCM Representative and ensure the incident is documented and investigated as required.

14 HAZARDOUS MATERIAL SPILL STATUS REPORT

The Hazardous Material Spill Status Report (HMSSR) is designed to ensure consistent documentation of information related to a spill event (reportable or recordable), including the response and remediation efforts. The HMSSR may be used to communicate and/or distribute information to interested personnel, both internally and to government agencies. Refer to the Hazardous Material Spill Status Report HMSSR) Form, Document Number LCP-PT-MD-0000-EV-FR-0004-01. Contractors may use their own spill report form, provided it conforms to this standard.

It is the responsibility of the Contractor's On Scene Commander to ensure that the HMSSR (or suitable spill report form) is completed and provided to the Owner Representative and/or On-Site Environmental Monitor, including any follow-up or final versions of the report.

Initial, follow-up and final reports will be provided to the Project Delivery Team (PTD) (i.e. the ERC Manager) as soon as they are available. The ERC Manager will ensure documentation and information is shared with the appropriate regulators, as required.

15 TRAINING

Contractor personnel will be trained in spill response, except those Contractors not requiring a SRP as determined by the ERC Manager. Workers should receive basic spill response training focused on safe work practices, response techniques and general awareness of the requirements of their SRP. Additionally, Contractors will, at all times, have personnel available that are capable of fulfilling the On Scene Commander role. On Scene Commanders generally require a higher level of training and emergency response experience.

Contractors will provide records of personnel training, and details of training programs completed, upon request. The forty (40) hour HAZWOPER training is recommended for personnel working around hazardous substances.

Construction Management and personnel will receive training as required depending on their roles and responsibilities. Training will be documented appropriately.

16 PLAN MAINTENANCE

16.1 PLAN TESTING

Contractors will test their Spill Response Plans (SRP) at least annually. Tests are to be completed in conjunction with an On-Site Environmental Monitor and may include desk-top exercises or operational exercises. Upon completion of a SRP test, a brief report outlining the type of exercise performed, and any deficiencies and/or areas for future improvement will be completed and provided to the On-Site Environmental Monitor.

16.2 REVIEWING AND UPDATING

This MSRP will be reviewed by the ERC Manager annually, or as required to incorporate changes to planned activities and scope of application. The occurrence of environmental incidents and emergency situations may also lead to plan review and updating.

17 SPILL RESPONSE – GENERAL

Spill response efforts, and contractor SRPs, will conform to the following basic strategy in the event of an oil or hazardous material spill or leak:

1. Determine the type of product;
2. Assess the situation and determine appropriate PPE and required safety measures;
3. Identify priorities while considering the threat to people, property and the environment;
4. Initiate the appropriate response actions;
    - Stop and/or contain the source of the spill;
    - Identify the product and estimate the quantity;

- Contact emergency personnel and request additional support if necessary;
- Initiate the containment and recovery of any free product and/or contaminated material;

5. Ensure required reporting and notification is carried out.
6. Dispose of all waste material in the appropriate manner;
7. Restore the site to the satisfaction of the project representative or governing regulatory body;
8. Document and investigate as required.

18 CONTROL, CONTAINMENT AND CLEAN-UP PROCEDURES

In spill response, time is of the essence – the actions taken in the first few hours, or even minutes, determine the extent of the impact. Even small spills can have disastrous results under the right circumstances. Safety will be the first consideration and the response will be planned accordingly. The following procedures shall be used for stable oil type spills only. Spills of hazardous materials may require different clean-up techniques.

18.1 SPILL CONTROL

Controlling the spill means stopping the cause or source of product, or slowing down the rate of its release. The following measures are intended to provide general guidance for effective spill control. In the event of a spill, the responsible party (i.e. the Contractor) will ensure that they:

- Immediately take control of the situation.
- Wear the proper Personal Protective Equipment (PPE). Some spill or leak situations could involve substances that require specific PPE.
- Evaluate and implement evacuation of the immediate area if required.
- Stop the source of the spill or leak if possible and safe to do so. This may be achieved by turning off a valve, or turning a container upright, etc.
- Assess the direction and rate of flow of the spilled product. Local topography and permeability of the soil may influence the products behaviour.
- Identify type of spilled material via placards or other forms of identification on receptacles or otherwise.

- Identify potential hazards and/or environmentally sensitive areas. Search for causes of ignition. Put out any flames or turn off any equipment that may be operating in the area. Sensitive areas should be protected if possible (i.e. drinking water sources, private property, streams etc.).
- Initiate communication and notification procedures as required by the SRP. The sooner relevant personnel are identified the sooner assistance can be provided.

18.2 SPILL CONTAINMENT

Containment of a spill limits the extent of the impacted area and minimizes the potential for environmental damage and impact to other properties. The following measures provide general guidance for the responsible party (i.e. the Contractor) for effective spill containment:

- Identify points, locations or techniques to efficiently contain as much of the spilled material as possible. This may involve the use of locally available materials (i.e. soil or snow) or traditional emergency response materials (i.e. absorbent pads, booms, sox).
- If the incident has occurred near any type of drainage system (i.e. floor drains, catch basins or ditches) take measures to prevent product from entering them.
- The occurrence of bedrock near the surface may allow the use of trenches, dug across the direction of flow, to quickly recover the spilled material.
- If the incident has occurred in a location with existing containment (e.g. a building or a dyked area), make sure all drains are closed and/or discharge systems are stopped.
- Surround the spill with absorbent booms or socks. Enclose the area of contamination. In many situations locally available materials (i.e. soil or snow) may also be used.

18.3 SPILL CLEAN-UP

Cleanup involves the removal of contaminated material (i.e. soil, water, snow, vegetation, etc.) and any free product from the affected area. The proper disposal of any waste materials is the final step in any clean-up. The following guidance is provided for the responsible party (i.e. the Contractor) for effective clean up:

- Place absorbent pads, pillows or rolls directly on the liquid. Scatter the absorbents in different areas to aid in the clean-up. Continue placing and replacing absorbents until the last drop of free product is absorbed.
- The recovery of free product may also be accomplished by using pumps or skimming devices, particularly if the volume of spilled product is large.
- As much free product as possible should be recovered from all absorbent materials prior to their final disposal.
- Any free product and contaminated material recovered may have to be temporarily stored on-site in drums, heavy duty bags, tanks or other appropriate containers.
- Additional equipment and/or personnel may have to be mobilized to site. Specialized spill response teams or consultants may be engaged, at the expense of the responsible party, to assist or collect samples for analysis.
- All waste material will be disposed of in accordance with Regulatory requirements (i.e. approved waste disposal sites and/or special waste handling companies).
- Prior to permanently backfilling an impacted site, the responsible party must demonstrate that the impacted area has been remediated to the appropriate standard. Confirmatory sampling may be required depending on the nature of the incident and direction received from the regulator and/or a Project representative.

Excavating equipment, haul trucks, tank trucks, drums, pumps, and hoses will be requisitioned as required for the situation by the responsible party. Such equipment may be available locally from other contractors or from nearby communities. The requirement for additional personnel and/or equipment will be coordinated by the contractor's On-Scene Commander. OSEM and/or MFEOC personnel may be able to assist in the event that significant resources and higher level response coordination are necessary.

In winter, oil and other hydrocarbons do not penetrate frozen ground as rapidly and may collect in a depression where it can be easily recovered. The collected product can be pumped or absorbed with absorbent material or snow and put into suitable drums or containers to await disposal. However, if there is a heavy snow cover, the direction of flow and full extent of contamination may be difficult to determine without some investigation. In

some cases, and only with approval of the ERC Manager, additional investigation and cleanup may be delayed until the area is free of snow.

19 DISPOSAL

All waste material will be disposed of in accordance with Regulatory requirements and the Project's Waste Management Plan. Similar to other types of wastes outlined in the WMP, reasonable effort shall be made to reducing and segregating the amount of waste generated during a spill, provided that clean up and control is not compromised. The Contractor is responsible for proper temporary storage and disposal but may receive guidance from the On-Site Environmental Monitor or other Project personnel. Where disposal requires special permission or negotiation with regulatory agencies, the LCP ERC Manager will liaise with government personnel and provide direction as required.

Any free product recovered will be disposed of via a special waste handing company approved by DOEC. Contaminated soil will be disposed of in consultation with DOEC/Service NL. In many areas of the province contaminated soil must be treated at a soil treatment facility prior to disposal.

Contaminated absorbent materials may be disposed of at a local landfill site, provided as much free product as possible is recovered from the absorbent materials prior to final disposal at the landfill site. The responsible party will be responsible for contacting the local landfill operator to confirm any additional requirements.

In situ burning is a response alternative that can be implemented with the approval and supervision of the DOEC/Service NL. Only the ERC Manager will determine if in situ burning is appropriate to pursue. The ERC Manager will liaise with government personnel and provide direction as required. In situ burning of spilled product is usually considered only when the spill has occurred in an isolated area where supplies and equipment are difficult to obtain.

20 OTHER PRODUCT CONSIDERATION

20.1 GLYCOL SPILLS AND LEAKS

Under current legislation, reporting of spills involving glycol to regulatory agencies is required. Glycol is considered a petroleum derivative and should therefore be treated as an "associated product" under the *Storage and Handling of Gasoline and Associated Products Regulations*. Reporting is required in the event of a

spill or leak greater than 70 litres, or a spill or leak, regardless of the quantity, that has the potential to contaminate nearby property or enter a water body.

When handling concentrated or dilute glycol, the Contractor should always refer to the MSDS for personal protection equipment to be used during clean-up.

The general control, containment and cleanup procedures described above are applicable. Note that glycol mixtures contain varying amounts of water and absorbent materials designed for hydrocarbons will not be effective, as they repel water. Universal absorbent materials (normally grey or yellow rather than white) and rags are most effective. Universal absorbent materials absorb both product and water.

20.2 BATTERY ACID SPILLS AND LEAKS

The main component of batteries is sulphuric acid. Sulphuric acid is considered a highly corrosive material. When responding to a spill of battery acid the Contractor shall ensure that personnel wear the appropriate personal protective equipment.

A spill or leak of sulphuric acid does not require reporting to regulatory agencies. The ERC Manager will determine if any correspondence with government agencies is required. In the event of a sulphuric acid spill or leak, the observer should address the situation and report the incident to the supervisor and EPCM Representative. The contractor will ensure the incident is documented (HMSSR can be used) and information distributed appropriately.

Small spills of battery acid should be diluted with an excess of water (a minimum of twice the amount of acid spilled) and the residual neutralized with alkali such as soda ash, lime or baking soda. Alkali should be added until all the water and acid is absorbed. For larger spills, physically contain the spill and neutralize it with alkali. The Contractor will dispose of diluted and neutralized waste at an approved waste disposal site. The remaining battery shell can be recycled at a local recycling depot.

21 SPILL RESPONSE – MARINE

Marine spill response efforts, and contractor SRPs, will also conform to the following basic strategy in the event of an oil or hazardous material spill or leak:

1. Determine the type of product;
2. Assess the situation and determine appropriate PPE and required safety measures;

3. Identify priorities while considering the threat to people, property and the environment;
4. Initiate the appropriate response actions;
    - Stop and/or contain the source of the spill;
    - Identify the product and estimate the quantity;
    - Contact emergency personnel and request additional support if necessary;
    - Initiate the containment and recovery of any free product and/or contaminated material;
5. Ensure required reporting and notification is carried out.
6. Dispose of all waste material in the appropriate manner;
7. Restore the site to the satisfaction of the Project representative or governing regulatory body;
8. Document and investigate as required.

All general details of control, containment, clean-up and disposal as mentioned in Section, “Spill Response – Marine” will also be adhered to for marine spill response.

21.1 CONTROL, CONTAINMENT AND CLEAN-UP PROCEDURES

Initial responses to clean up a spill in the marine environment are often based upon the use of dispersant chemicals or the containment and recovery of oil using booms and skimmers. While these techniques can be of use in the right circumstances, there are many difficulties associated with employing them effectively. Weather conditions and access to the spill location are major factors in the clean-up and recovery success.

While the source of the spill has been identified and gaining control, it is importance to ensure the spill is contained. This can be achieved by the use of marine booms, absorbent pads, socks and other materials. (See Attachment B for Containment/Recovery Techniques).

The type of oil and concerns over potential impacts of dispersed oil can preclude dispersant use. The application of dispersant to treat large quantities of spilled oil also requires specialised equipment and extensive logistical support. Containment and recovery is limited by sea conditions and the relatively small oil encounter rate, which the available systems can achieve.

Clean-up of marine spills may be conducted from both the shore as well as from the marine environment by boat. Absorbent materials should be spread inside the containment area to ensure full collection of spilled contaminant. Recovery of free product may also be accomplished using pumps and skimming devices. Free product and contaminated materials from the clean-up may be stored in on-site drums, heavy duty bags, tanks and other containers.

Disposal will occur in accordance with Regulatory requirements and the Project Waste Management Plan.

ATTACHMENT A

Certified Special/Hazardous Waste Transporters

****** UNCONTROLLED DOCUMENT - FOR INFORMATION PURPOSES ONLY *****

Source: Department of Environment and Conservation (as of March 2012)

Confirmation of a valid Certificate of Approval is recommended upon engaging the services of any Hazardous / Special Waste transport company.

Company	Address	Contact	Phone	C of A	Code(s)
Atlantic Industrial Services (A Division of Envirosystems Inc.) (Formerly Crosbies)	660 MacElmon Road, PO Box 185 Debert, Nova Scotia, BOM 1GO	Paul Sanford	902-662-3358 or 902-440-1553	WMS09-06-005	6
Clean Harbors Canada Inc.	640 MacElmon Road, PO Box 188 , Debert, NS, B0M 1G0	Jeffrey Johnson	902-662-3336 ext 223	WMS08-03-003	6
D.D. Transport Ltd.	5 Myer's Avenue, Clarenville, NL, A5A 1T5	Gay White	709-466-1381	WMS09-08-008	10
Eastern Equipment Limited	P.O. Box 82, Musgravetown, NL, A0C 1Z0	Bruce Greening		CL-WMS08-05008	4
Enviro Clean (NFLD) Ltd., o/a Power Vac Services	155 McNamara Drive, Paradise, NL,A1L OA3	Henry Power	709-781-3264	WMS07-06-014	9
Environmental Friends	PO Box 185, Labrador City, A2V 1K5	Vanessa Simon		LB-WMS06-02003E	4,5 & 6
Enviro Safe-Fuel Systems Limited	PO Box 272,STN B,HV-GB, AOP1EO	Ms. Dione Simms		LB-WMS06-12003B	4, 7
Exide Technologies Canada	222 Edinburg Drive, Moncton, NB E1E 4C7	Tim McGuey		WMS08-011-018	10
Harold Marcus Limited	Harold Marcus Limited, 15124 Longwoods Road Bothwell, ON , NOP 1CO	Ms. Marcus	519-695-3734	WMS07-02004 - renewal	6
Laidlaw Carriers Bulk GP Inc.	PO Box 1669, 1179 Ridgeway Road, Woodstock, Ont. N4S OA9	Bill Preece bpreece@contrans.ca	519-421-3300 ext. 244	WMS08-10-015	6

****** UNCONTROLLED DOCUMENT - FOR INFORMATION PURPOSES ONLY *****

Source: Department of Environment and Conservation (as of March 2012)

Confirmation of a valid Certificate of Approval is recommended upon engaging the services of any Hazardous / Special Waste transport company.

Company	Address	Contact	Phone	C of A	Code(s)
Midland Transport Limited	100 Midland Drive, Dieppe, NB, E1C 6X4	Jean St. Onge stonge.Jean@midlandtransport.com	506-852-2660	WMS09-05-004	10
NEWALTA Industrial Services Inc.	PO Box16004, Stn Foxtrap, Conception Bay South, NL, A1X 2E2	Bill Locke	902-720-2008	WMS06-09-015	1,2 & 6
Pardy's Waste Management & Industrial Services Ltd.	PO Box 285 Pasadena, NL	Derek Pardy	782-2003	WMS08-05-007	4 & 5
Safety Kleen Canada Inc.	300 Woolwich Street South, Breslau, On. Canada, NOB 1MO	Andre Morin	1-800-558-5000, ext 7429	WMS07-06-013	6
Seaboard Liquid Carriers	4 Vidito Drive, Dartmouth, Nova Scotia B3B 1P9	Dale MacKeigan	902-404-3007	WMS09-004-03	6
Services Sanitaires de Recyclage Expert Inc. (Former -Recyclex)	8381, place Marien, Montreal-East, PQ, H1B 5W6	Allan Desgroseilliers	514-355-4150/514-951-5386	WMS07-01-002	6
Stark Oil Purification Systems Ltd.	113 Archimedes Street New Glasgow, NS B2H 2T3	Karen Gillis	(902) 755-2545 Tele	WMS09-11-020	1
Stericycle Inc	20 Galloway Street, Moncton, NB, E1H 2J4	Jean-Pierre Pepin	819-246-4516	WMS10-10-019	2 (UN3373 or UN3291UN3249)
Transport Rollex Ltee	910 Boul,Lionel Boule Varennes, Qu, J3X 1P7	Louis LaFontaine	1-888-283-5539	WMS06-12-021 Renewal	6

****** UNCONTROLLED DOCUMENT - FOR INFORMATION PURPOSES ONLY *****

Source: Department of Environment and Conservation (as of March 2012)

Confirmation of a valid Certificate of Approval is recommended upon engaging the services of any Hazardous / Special Waste transport company.

Company	Address	Contact	Phone	C of A	Code(s)
Trans-Cycle Industries Inc., a subsidiary of Aevitas Inc	75 Wanless Court, Ayr, Ontario, N0B 1E0	Tom Maxwell	(519) 740 1333 ext. 23	WMS09-003-001	1
Transport TFI 4 S.E.C. (Kingsway Bulk)	570 President-Kennedy route Pintendre QC G6C 1M9	Edith Pelletier	Tel: 418-834-5454 ext:264	WMS07-05-006	6
Veolia Es Matieres Residuelles Inc.	Veolia ES Matieres Residuelles 3383, Boulevard de la Chaudiere Sainte-Foy (Quebec) G1X 4B8	Eric Paquin	417-872-8061	WMS08-10-016	6
Veolia ES Canada Industrial Services Inc	1705 3rd avenue Montreal, Quebec, H1B 5M9	Mr. David Flahaut	514-645-1045 ext 302	WMS10-12-021	6

Code(s): 1 - Polychlorinated biphenyls (PCB's); 2 - Biomedical Waste; 3 - Special / Hazardous Waste (excluding PCB's); 4 - Sewage - Liquid Waste; 5 - Waste Oil (may include other hydrocarbons); 6 - Hazardous Waste General (excluding biomedical and asbestos waste); 7 - Asbestos and Non-Hazardous Waste; 8 - Soils contaminated with heavy metals; 9 - Asbestos and Lead Waste Only.

ATTACHMENT B

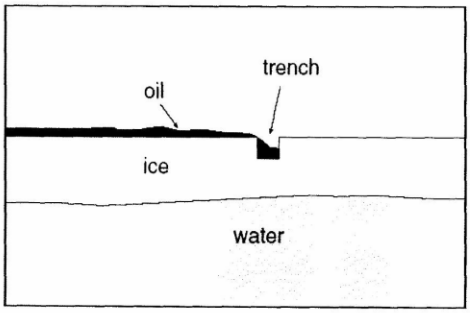
Containment/Recovery Techniques

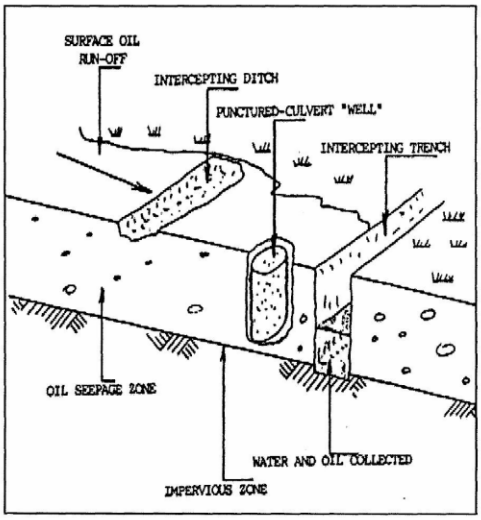
Sorbent Material

- Sorbent materials can be used to collect oil. Commercially available sorbents can be supplied as pads, rugs, blankets, rolls, sweeps, pillows or booms. Locally available materials may be appropriate on occasion, e.g., straw or peat, but usually such natural products are less effective and efficient than commercial sorbents.
- Certain types of sorbents can be cleaned and reused. This approach is not always feasible, depending on whether the sorbent supply is limited and whether the spill location is remote.

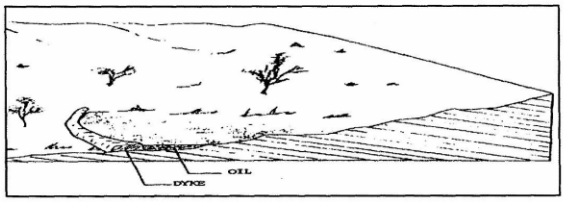
Trenches/Slots

- On land, trenches or pits can be excavated to intercept, contain and collect spilled oil. On solid ice, a trench can effectively intercept, divert or collect spilled oil.

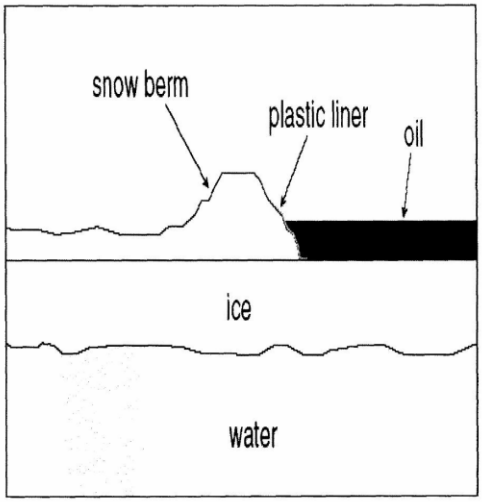




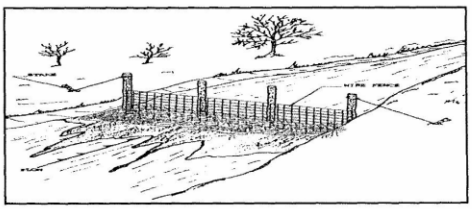
Berms



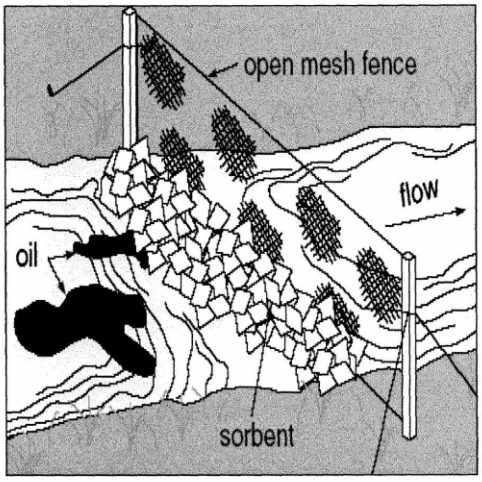
- On solid ice, surface roughness and snow act as natural barriers that limit the spread of spilled oil and may provide sufficient containment of the oil for recovery. When additional containment is required, snow can provide a quick and efficient berm construction material. For spills of diesel and light oil, a snow berm may be lined with plastic, to prevent the seepage of oil.
- Earth berms should be compacted and, if time permits, lined with plastic sheets to make them impermeable. The berm should be located sufficiently downslope of the release point to intercept the oil.



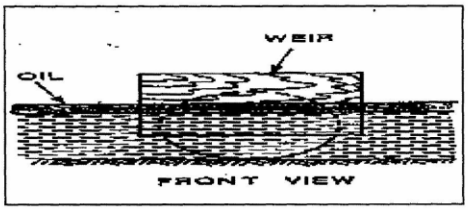
Filter Fence



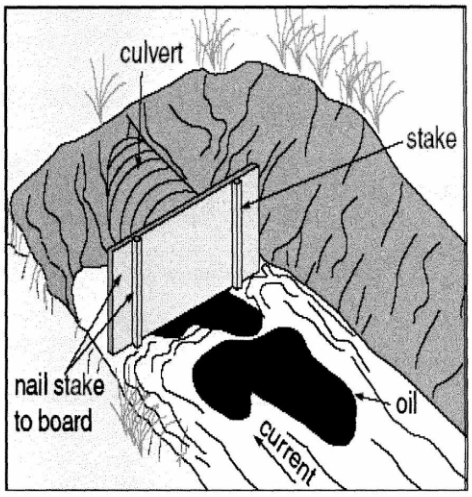
- In small, slowly-flowing rivers or streams, wire mesh or netting, anchored by stakes as a back-stop for sorbent, can control the movement of oil. A second mesh can be deployed slightly upstream of the first to act as a debris screen.
- Sorbent material can be placed between the two mesh screens. Double-fencing is particularly suitable in tidal channels where current directions reverse.



Culvert Block

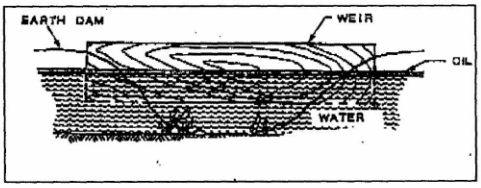


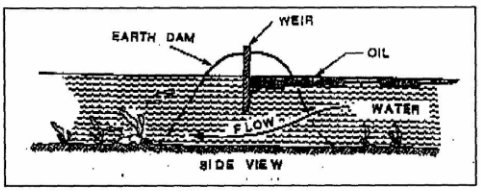
- Boards or other devices can be used to halt the flow of oil in drainage systems or culverts, where the water flow must be maintained.
- The culvert opening can be partially blocked with plywood that holds back the surface oil but permits water to pass below. The position of the plywood can be adjusted vertically to maintain the water at the desired level.
- When ice is present, both oil and ice pieces can jam at the barrier making the recovery of the oil difficult.

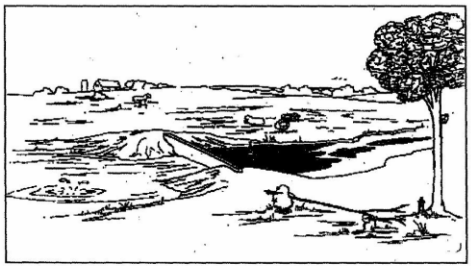


Weir

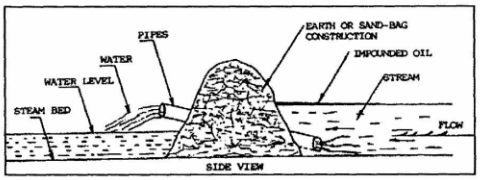
A simple weir holds back surface oil - and ice, if present - and allows water underflow. Several weirs can be quickly placed in a small stream or ditch as they are relatively easy to install using plywood or a board. The sides should be cut well into the banks, otherwise oil can escape around the ends.



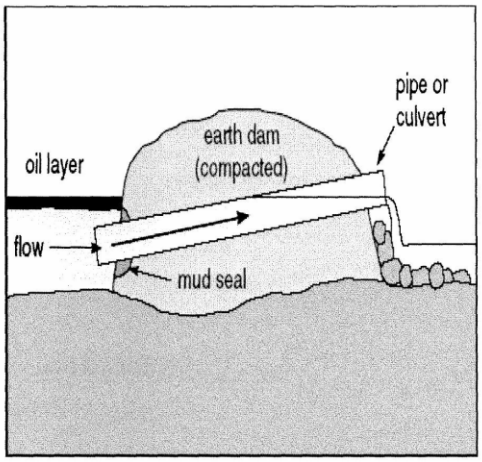




Inverted Weir

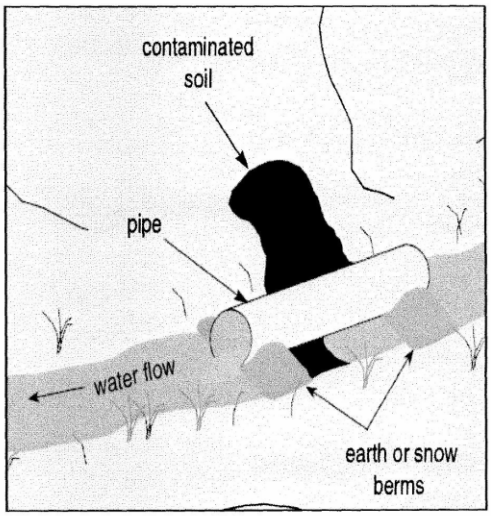


- Inverted weirs can be used to retain oil and allow the continuous flow of water in a small river or stream.
- One or more pipes are placed at an angle through a soil or sandbag dam, with the upstream end of the pipe being close to the bottom of the ditch or stream, and the downstream end at a level that permits water to drain away.
- Barriers can be constructed from snow, earth or boulders, although if large cobbles or boulders are used, plastic sheets or packed mud should be added to ensure that a good seal is made.



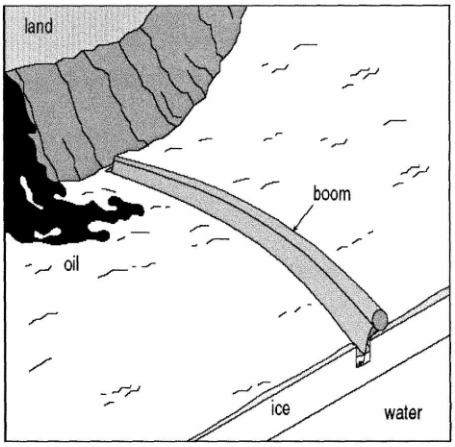
Flume

- When a slick or contaminated soil threatens a small river or creek, a flume can be built to contain the oil, while allowing the water flow to be maintained.
- Snow or earth berms should be positioned to allow a sufficiently-large containment area within the constraints of the pipe length used.
- The berms should be compacted to ensure a good seal is made with the pipe or culvert to avoid seepage. It is possible to protect a stream using a flume in broken ice conditions if water flow is maintained.



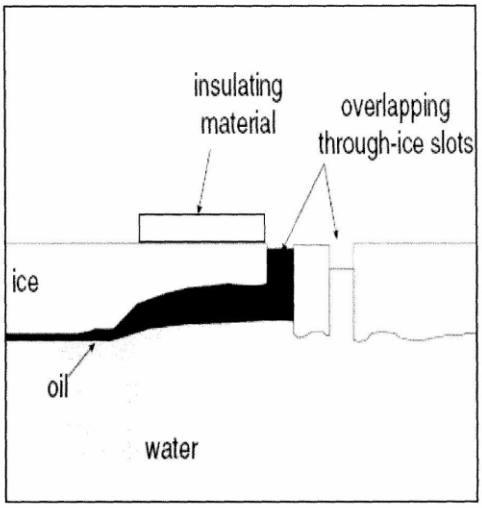
Boom/Ice Trench

- A containment or sorbent boom can be placed in a trench and frozen in place to create a barrier to divert or halt the spread of oil during winter conditions or spring melts.



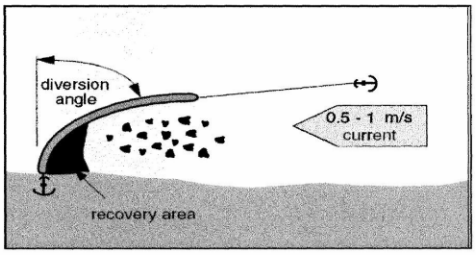
Ice Slots

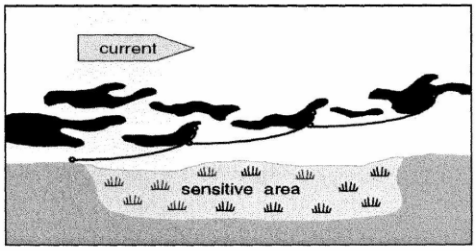
- Naturally-occurring subsurface depressions and pockets under the ice provide areas where oil can accumulate. Ice slots can also be cut in the ice using an ice auger or chain saw, allowing the oil to pool at the surface and be recovered or burned.
- The slots can be lined with oil-impermeable plastic when used for recovery. Placing an insulating material, such as snow or foam, on a growing ice sheet creates a pocket beneath the ice where oil can collect.



Diversion Booming

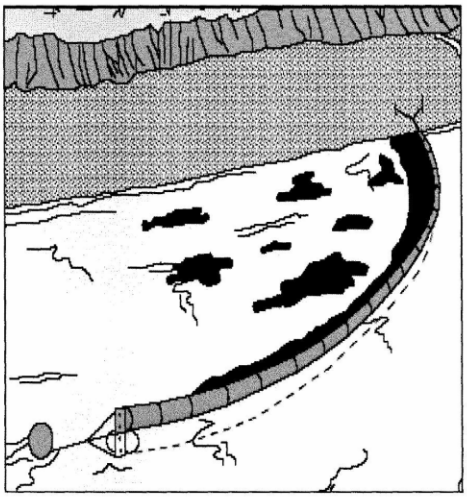
- When placed at an angle to the slick travel, containment or sorbent booms can be used to divert oil away from sensitive areas or toward sacrificial areas for collection and recovery. This method is useful in currents of up to approximately 1 m/s.
- Typically, in fast moving currents, or where the area requiring protection is extensive, a number of cascading booms are required to divert the oil.





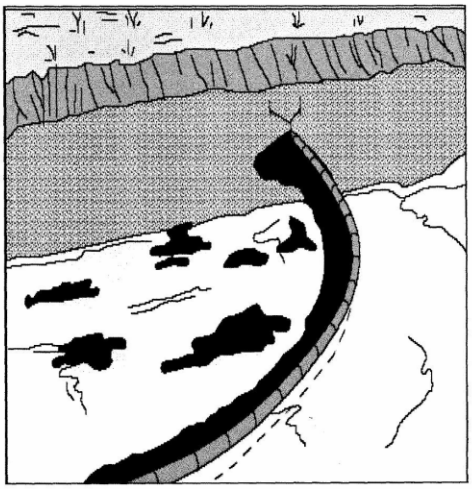
River Boom

- When current speeds exceed 0.4 m/s, it is necessary to angle a boom to reduce the current relative to the boom. Angling the boom also allows oil to be diverted to shore where it can be collected.
- In a large, coastal river with reversing tides, repositioning a boom can be difficult and time consuming.
- The deployment of booms in rivers when broken ice is present is also of questionable value, because debris or ice can damage the boom fabric.



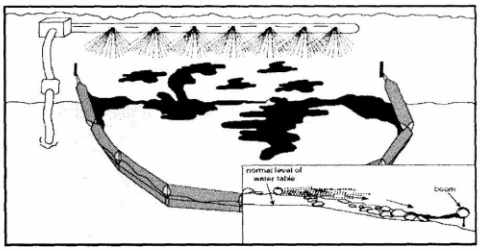
Booming in intertidal or river bank areas

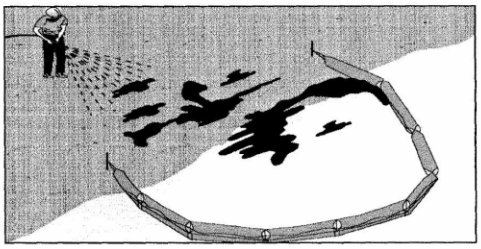
- In intertidal areas, or at river banks where water levels fluctuate during the period of deployment, the boom can be sealed at the shoreline to ensure that an effective seal is maintained at the waterline.
- Sites with boulders, sharp protrusions, rip-rap or other features that will result in oil leaking under the boom when the tide changes should be avoided.
- Shore-sealing booms require regular monitoring once deployed since currents, wind and waves can move and/or twist them.



Shorline Flushing

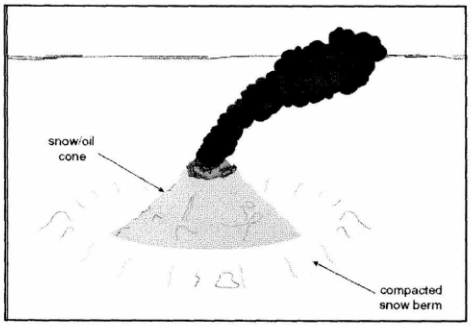
- The objective of flushing (or washing) is to remove oil from the shore using water and to recover the oil for disposal.
- Such a technique requires a number of separate operational steps that usually include washing, containment and recovery or collection of displaced oil for disposal.
- Oil may be flushed onto the adjacent water where it can be contained by booms and collected for recovery, or the oil can be diverted to a collection area, such as a lined sump or trench, where it can be recovered.

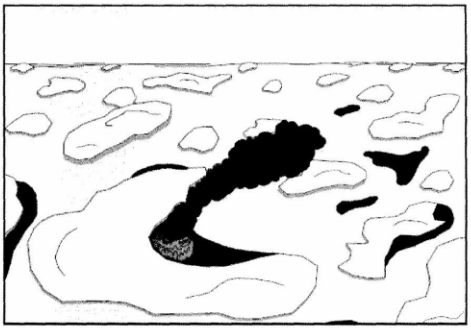




In Situ Burning

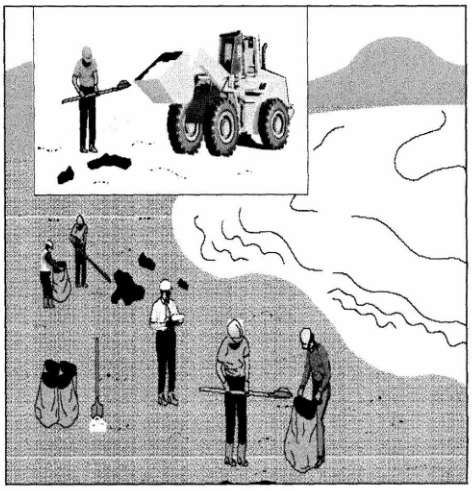
- In situ burning is possible response alternative which may be considered when the spill has occurred in an isolated area where supplies and equipment are difficult to obtain. It is relatively quick and inexpensive, but the actual amount of spilled product recovered is difficult to determine. Such a measure should only be implemented with the approval and supervision of Regulatory agencies.





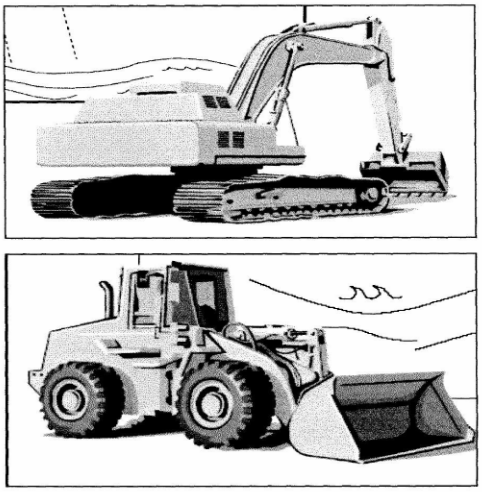
Manual Removal

- Manual removal involves personnel picking up oil, oiled sediments or oily debris with gloved hands, rakes, forks, trowels, shovels, sorbent materials or buckets.
- Oiled materials can be placed directly in plastic bags, drums or other containers for transfer. If the containers are to be carried to a temporary storage area, they should not weigh more than what can be carried by one person easily and safely. To avoid spillage, containers should not be overfilled.



Mechanical Removal

- Mechanical techniques essentially use equipment designed for earth-moving or construction projects, although a few commercial devices have been fabricated specifically for spill cleanup applications.
- Mechanical removal is more rapid than manual removal but generates larger quantities of waste.



Mechanical Removal

- Vacuum trucks are effective when access to pooled oil is possible, but they are large, heavy, expensive and typically limited to lifting fluids to heights of 10 m or less.
- Vacuum trucks pick up a high ratio of water to oil when used on thin slicks.
- They are commonly used to recover oil in ice but can sometimes lose suction when lines freeze and ice pieces clog the hose inlet.