

## **Appendix C**

### **Draft Spill Prevention, Control, and Countermeasure Plan**

### **Responsive Portions from the Existing Keystone Oil Pipeline Emergency Response Plan**



**Keystone XL Pipeline Project**  
**Spill Prevention, Control and Countermeasure Plan**

**DRAFT**

Subject to Change

*Note: This document is a template for the Project's Spill Prevention, Control and Countermeasure Plans and will be finalized by each contractor based on all required site-specific information.*

DRAFT

# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Scope .....	1
<b>2</b>	<b>Contractor Supplied Site-Specific Information.....</b>	<b>1</b>
<b>3</b>	<b>Prevention.....</b>	<b>2</b>
3.1	Training .....	2
3.2	Site Security .....	3
3.3	Equipment Inspection and Maintenance.....	3
3.4	Materials Storage and Handling.....	4
3.4.1	Tanks .....	4
3.4.2	Containers.....	5
3.4.3	Concrete Coating.....	6
3.4.4	Disposal of Solid and Hazardous Wastes.....	6
3.4.5	Equipment Refueling and Servicing.....	6
3.4.6	Spill Response Equipment.....	7
3.4.7	Activities in Environmentally Sensitive Areas .....	8
<b>4</b>	<b>Spill Control and Countermeasures .....</b>	<b>8</b>
<b>5</b>	<b>Documentation and Reporting .....</b>	<b>8</b>
<b>6</b>	<b>Inspection and Record Keeping.....</b>	<b>9</b>
<b>7</b>	<b>Applicable State Requirements.....</b>	<b>9</b>
<b>8</b>	<b>Certification of Non-Substantial Harm.....</b>	<b>10</b>

- Attachment A SPCC Cross Reference Table**
- Attachment B Contractor Yard or Fueling Station Facility Diagram**
- Attachment C Hazardous Materials Inventory and Reportable Quantities**
- Attachment D Contractor’s Training Program**
- Attachment E Emergency Response Contacts**
- Attachment F Contractor’s Emergency Response Procedures**
- Attachment G Contractor’s Commitments**
- Attachment H Professional Engineer’s Certification**
- Attachment I State Requirements**
- Attachment J Contractor’s Material Safety Data Sheets (MSDS)**
- Attachment K Typical Layouts; Fuel Transfer Stations**
- Attachment L Spill Report Form**
- Attachment M Certification of the Applicability of the Substantial Harm Criteria**

DRAFT

# 1 Introduction

The purpose of this Spill Prevention, Control and Countermeasure (SPCC) Plan is to establish procedures to prevent the discharge of hazardous or regulated materials during construction of the Keystone XL Pipeline Project (Project), particularly into or upon Waters of the U.S. The SPCC Plan is designed to reduce the likelihood of a spill, provide for prompt identification and proper removal of contaminated materials if a spill does occur, comply with applicable state and federal laws (e.g., Title 40 Code of Federal Regulations [CFR] Parts 112 and 122) and Project permits, and to protect human health and the environment. The SPCC Plan is designed to complement existing laws, regulations, rules, standards, policies and procedures pertaining to safety standards and pollution rules, in order to minimize the potential for unauthorized releases of hazardous materials, fuels and lubricants.

TransCanada Keystone Pipeline, L.P. (Keystone) anticipates that the Project Pipeline construction contractor (Contractor) will store or handle more than the threshold quantities of oil products and will therefore be subject to federal SPCC preparation requirements. In conformance with federal regulations, a cross-reference table is provided in **Attachment A** that lists the relevant sections in Title 40 CFR 112.7 and the equivalent sections in this SPCC Plan.

Amendments to the SPCC Plan will be made as necessary during construction to account for increases in the volumes of materials stored or other changes associated with the handling or storage of hazardous materials.

## 1.1 Scope

This SPCC Plan applies to all construction and reclamation activities on the Project, but does not cover pipeline or pump station operations or maintenance. The Keystone XL Project Emergency Response Plan will contain the SPCC requirements for operation and maintenance of the pipeline and pump stations.

This plan outlines the procedures for prevention, containment, and control of potential spills during Project construction and reclamation. The SPCC Plan applies to the use of hazardous materials on the right-of-way and all ancillary facilities. This includes the refueling or servicing of all equipment with diesel fuel, gasoline, lubricating oils, grease, hydraulic and other fluids during normal upland work and for special applications located within 100 feet of streams and wetlands. In addition, site-specific information to be provided by the Contractor is identified and will be attached to the document.

This document is not a complete summary of all requirements. The Contractor is responsible for thoroughly researching, understanding, and complying with all applicable federal, state, and local requirements related to all aspects of work on the Project, including polluting, toxic, and hazardous materials handling, storage, transportation, spill prevention, clean-up and disposal, documentation, notification, hazardous waste, and training.

## 2 Contractor Supplied Site-Specific Information

This document is a template for the Project's SPCC Plans and will be finalized by each contractor based on all required site-specific information.

The following information must be supplied by the Contractor for review and approval by Keystone at least 30 days prior to construction activities.

- Contractor yard or fueling station facility diagram (**Attachment B**) showing at a minimum the following:
  - storage tanks, including content and capacity;

- mobile portable containers that store 55 gallons or more (including contents and capacity);
  - oil-filled equipment, electrical transformers, circuit breakers, etc. that store 55 gallons or more;
  - any other oil-filled equipment (including content and capacity);
  - oil/fuel transfer area;
  - secondary containment structures;
  - storm drain inlets and surface waters that could be affected by a discharge;
  - direction of flow in the event of a discharge (topography) and potential receiving waters;
  - legend that indicates scale and identifies symbols used in the diagram;
  - location of response kits and firefighting equipment;
  - location of valves or drainage system control that could be used in the event of a discharge to contain materials on the site; and
  - compass direction.
- A complete inventory of all hazardous materials that will be used or stored on site, including reportable quantities in compliance with state and federal law (**Attachment C**);
  - Contractor's training program for fuel truck drivers and mechanics (See **Attachment D** and Section 3,1 Training section below for details);
  - Designation of the Contractor's Spill Response Coordinator (to be included in **Attachment E** Emergency Response Contacts);
  - Emergency response procedures (**Attachment F**), as described in the Construction Mitigation and Reclamation Plan. In addition, the Contractor will include a prediction of the direction, rate of flow, and total quantity of oil/fuel which has the reasonable potential to be discharged, based on experience. A form has been provided in **Attachment F**;
  - Contractor's Commitment to providing the necessary emergency response support for the Project (**Attachment G**);
  - Certification by a registered Professional Engineer (**Attachment H**);
  - A complete discussion of applicable state-specific requirements regarding oil product and hazardous materials handling that are stricter than the federal requirements (to be included in **Attachment I** State Requirements), if any. If none, then the Contractor will clearly state that in the discussion;
  - Material Safety Data Sheets (MSDS) as supplied by the Contractor (**Attachment J**); and
  - Any mutual aid agreements between the Contractor and other emergency response personnel.

The Contractor is encouraged to use the Environmental Protection Agency's (EPA) guidance document for preparing facility diagrams provided at the following website:

[www.epa.gov/oilspill/pdfs/guidance/6\\_FacilityDiagrams.pdf](http://www.epa.gov/oilspill/pdfs/guidance/6_FacilityDiagrams.pdf).

Amendments to the Contractor-Supplied SPCC Plan will be made as necessary during construction to account for increases in the volumes of materials stored or other changes associated with the handling or storage of hazardous materials.

### 3 Prevention

Keystone's goal is to prevent spills or exposure to hazardous or dangerous substances during construction of the Project. The Contractor is required to follow the prevention measures outlined below and implement other measures as necessary and required to promote spill prevention.

#### 3.1 Training

Personnel accountable for carrying out the procedures specified in this plan will be designated before construction and informed of their specific duties and responsibilities with respect to environmental compliance and hazardous materials. The Contractor will be required to provide

additional spill prevention, response and hazardous materials handling training to all of their staff who handle hazardous materials, fuels and lubricants on a regular basis. The Contractor will provide the details of this training to Keystone prior to the start of work (**Attachment D**). At a minimum, training will include:

- A review of this SPCC Plan;
- An overview of all regulatory requirements;
- Waste minimization practices;
- Proper storage and handling methods for hazardous materials, fuels, lubricants, gases, etc.;
- Spill prevention, clean-up, and reporting requirements;
- Proper disposal techniques for hazardous materials, fuels, lubricants, etc.;
- Proper procedures for transferring fuels and containing fluids while doing maintenance on vehicles;
- Special requirements for refueling within 100 feet of wetlands and waterbodies;
- The location of the MSDSs and the SPCC Plan;
- The proper use of personal protective equipment;
- Emergency and spill response material locations, proper use, and maintenance;
- Emergency contact information and notification procedures; and
- Procedures for documenting spills and standard spill information to be provided to Keystone for agency notification.

All personnel working on the Project, including all Contractor personnel, are required to attend a Project-sponsored training session prior to starting work. Keystone will conduct training to ensure all responsible Contractor employees know of and comply with all project-specific environmental and TransCanada environmental policy requirements. The environmental training program will address refueling restrictions, hazardous materials handling, spill prevention and cleanup requirements, as well as other Project environmental and safety topics.

### **3.2 Site Security**

The Contractor's site-specific plan and documentation for the construction yard will address site security procedures. Bulk fuel storage areas (including valves and switches), fuel trucks, lubricants and hazardous materials will be secured to minimize tampering and accidental releases by unauthorized personnel. Site security will include the following, in compliance with 40 CFR 112.7(g):

- The oil/fuel storage site will be fully fenced with a locked or guarded entrance gate when facility is unattended;
- Container master flow and drain valves will be secured so that they will remain in the closed position when not in use;
- Fuel pump starter controls will be locked in the "off" position where only authorized personnel can access them when not in use; and
- Facility lighting at night that will assist leak detection and vandalism prevention.

If the above procedures will not be followed, the Contractor will provide a detailed explanation of why the site cannot be secured as described above and the equivalent method the Contractor will use to secure the site.

All storage containers will be closed when not in use and the storage areas will be secured (gated, locked and/or guarded) at night and/or during non-construction periods.

### **3.3 Equipment Inspection and Maintenance**

The Contractor will ensure that all equipment is free of leaks prior to use on the Project, and prior to entering or working in or near waterbodies or wetlands. Throughout construction, the

Contractor will conduct regular maintenance and inspections of the equipment to reduce the potential for spills or leaks.

Contractor mechanics will assess the general condition of equipment valves, lines and hoses and all deteriorated parts will be promptly repaired or replaced. Vehicles and equipment that develop leaks during construction activities will cease work, move to a location at least 100 feet from streams or wetlands, and buckets or absorbent materials will be placed under the equipment until the leak can be repaired. Soils contaminated by the leaking material will be collected and removed from the right-of-way for proper disposal. Equipment that requires extensive repairs will be removed from the right-of-way until the repairs are completed or a protection plan will be developed by the Keystone Environmental Inspector if the equipment can not be moved.

All equipment maintenance and repairs will be performed in upland locations at least 100 feet from waterbodies and wetlands. Mechanics will take precautionary measures when performing equipment maintenance or repair activities by placing absorbent pads (or equivalent materials) on the ground beneath the equipment when changing crankcase oil, repairing hydraulic lines, or adding coolant to construction equipment and when appropriate for other repair activities.

All equipment parked overnight shall be at least 100 feet from a watercourse or wetland, if possible. Equipment shall not be washed in streams or wetlands.

### **3.4 Materials Storage and Handling**

The Contractor shall ensure that all oil products, fuels, gases, hazardous and potentially hazardous materials are transported, stored and handled in accordance with all applicable legislation.

Staging areas (including contractor yards and pipe yards) will be set up for each construction spread. Contractors conducting work in each of these areas will establish bulk fuel storage tanks within the staging area, or they will fill their fuel trucks at existing bulk fuel dealerships. In addition, a variety of lubricants and materials will be stockpiled at the staging area for use during construction of the Project. Bulk fuel storage tanks, fuel trucks and stockpiles of lubricants or hazardous materials will be stored only in the designated staging areas and equipment storage yards, and at least 100 feet from all streams and wetlands. No hazardous materials will be stored in areas subject to flooding or inundation.

Spent oils, lubricants, filters, etc. shall be collected and disposed of or recycled at an approved location in accordance with state and federal regulations.

Keystone contractors will not keep on site or operate the following:

- Completely or partially buried storage tanks
- Buried piping
- Internal steam heat coils
- Large, field-erected storage tanks

The following sections detail Project requirements associated with storage of bulk fuels and lubricants, as well as temporary storage of hazardous materials at staging areas.

#### **3.4.1 Tanks**

Keystone contractors will maintain commonly used fuels such as gasoline and diesel in bulk storage tanks in the pipeline contractor yards. All storage tanks or trailers, rigid steel piping, valves and fittings and fuel transfer or dispensing pumps will be contained within a secondary containment structure providing 110 percent containment volume of the largest storage tank or trailer within the containment structure. This containment structure will consist of sandbag or earth berms lined with a chemical resistant membrane liner or a concrete structure. The

Contractor will remove any collected precipitation from the containment structure to maintain 110 percent capacity. The Contractor will inspect accumulated precipitation first for evidence of oil or contamination and then collect the material for proper disposal off-site.

The attached drawings are typical layouts for diesel and gasoline fuel transfer stations. Self-supporting tanks will be constructed of carbon steel or other materials compatible with contents of each tank, and all tanks will be elevated above grade and inspected weekly and when the tank is refilled. To prevent overfill, all tanks will have visual level gauges and actual tank levels will be checked against the gauge reading during inspections. Inspection records shall be maintained by the Contractor.

For receiving and offloading fuels from a fuel distributor into the bulk storage tanks, the distributor will connect a petroleum rated hose from the delivery tanker to the fuel transfer stations fill line at the fill truck connection. The fill truck connection and fill line will consist of a cam-loc connection followed by a block valve, rigid steel piping, tank block valve(s) and check valve(s) just upstream of the connection to the tank. Off-loading of fuel is normally accomplished by a transfer pump powered by the delivery vehicle's power take off. Proper grounding of equipment shall be undertaken during fuel transfer operations. Fuel trucks from fuel distributors will be inspected closely prior to leaving the contractor yard to ensure that all valves are tightly closed and no leaks occur during transit.

For transfer of fuels from the bulk storage tanks in the contractor yards to fuel distribution trucks, the truck will connect a petroleum rated hose between the truck's tank and the bulk storage tank's withdrawal connection. The withdrawal truck connection and withdrawal line will consist of rigid steel piping from the tank, through a block valve(s) to an electric explosion-proof fuel transfer pump. Downstream of the fuel transfer pump will be a cam-loc connection. The fuel transfer pump will be equipped with an emergency shut-off at the pump and a secondary emergency shut-off at least 100 feet away. Proper grounding of equipment shall be undertaken during fuel transfer operations. Fuel truck drivers will inspect the truck after each re-filling from the bulk fuel tanks in the contractor yard to ensure that all valves are tightly closed and no leaks occur during transport.

For dispensing gasoline and on-road diesel to equipment or vehicles, the transfer pump will be a dispensing pump with petroleum rated hoses with automatic shut-off nozzles. Refueling operations will be attended closely at all times by personnel familiar with the operation of the refueling equipment. Warning signs requiring drivers to set brakes and chock wheels shall be displayed at all fixed refueling points. Proper grounding of equipment shall be undertaken during fuel transfer operations.

#### **3.4.2 Containers**

All containers 55 gallons or greater shall be stored on pallets within a secondary temporary containment structure. Secondary containment structures may consist of temporary earthen berms with a chemical resistant liner or a portable containment system constructed of steel, PVC, or other suitable material. The secondary containment structure will be capable of containing 110 percent of the volume of material stored in these areas. The Contractor will inspect all container storage areas for leaks and deterioration at least weekly, and leaking or deteriorated containers will be replaced as soon as the condition is first detected. In the event of a leak or deterioration of the container or liner, cleanup measures would be implemented to remediate all contamination.

No incompatible materials will be stored in the same containment area and the containers must be suitable and compatible with the wastes or materials in them. If a container leaks or sustains damage, its contents must be transferred to a container in good condition. Waste and hazardous materials will be kept in separate containers for proper disposal.

Containers holding hazardous substances will be closed during transport and storage, except as necessary to add or remove the substance.

#### *3.4.2.1 Container Labeling Requirements*

The Contractor will comply with labeling requirements for any on-site containers, including tanks that store fuels, lubricants, accumulated hazardous wastes and other materials. Hazardous waste containers will be labeled, as required in Title 40 CFR Part 262, and will display at least the following:

- Chemical name (e.g., oil, diesel, etc.);
- When the container reaches 55 gallons in volume, the accumulation start date and/or the start date of the 90-day storage period; and
- The words “Hazardous Waste” and warning words specifying the relevant hazards, such as “flammable”, “corrosive”, or “reactive”.

#### **3.4.3 Concrete Coating**

Concrete coating and any washout necessary will be conducted at least 100 feet from wetlands or waterbodies boundaries whenever possible. In some circumstances, it may not be possible to maintain this buffer due to topography or the extent of the resource. If it is necessary to apply concrete coating less than 100 feet from a wetland or waterbody boundary, then sufficient containment (such as plastic sheeting and berms, etc.) will be provided by the Contractor to prevent any uncured concrete or concrete washout from reaching the ground. Excess concrete shall not be disposed of in wetlands or waterbodies. Concrete washout shall be contained within the work area and will not be allowed to enter wetlands, waterbodies, or storm drains.

#### **3.4.4 Disposal of Solid and Hazardous Wastes**

The Contractor will be responsible for ensuring that the regular collection and disposal of all solid and hazardous wastes generated during its operations is in compliance with all applicable laws. If state laws pertaining to waste disposal are more stringent than federal laws, state laws will take precedence. The Contractor will determine the details on the proper handling and disposal of hazardous waste, and will assign responsibility to specific individuals before construction.

All hazardous wastes being transported off-site shall be manifested. The manifest shall conform to requirements of the appropriate state agency. The transporter shall be licensed and certified to handle hazardous wastes on the public highways. The vehicles as well as the drivers must conform to all applicable vehicle codes for transporting hazardous wastes. The manifest shall conform to regulations of the Department of Transportation Title 49 CFR 172.101, 172.202, and 172.203.

Hazardous wastes will typically include contaminated soils, spent batteries, and other items. The Contractor will make every effort to minimize hazardous waste production during the Project, including, but not limited to:

- Minimizing the amount of hazardous materials needed for the Project;
- Using alternative non-hazardous substances when available; and
- Recycling usable materials, such as batteries, to the extent possible.

#### **3.4.5 Equipment Refueling and Servicing**

All equipment refueling will be performed in upland areas at least 100 feet from all wetlands and waterbodies, and at least 150 feet from private and public water wells, respectively. If site-specific constraints require refueling/servicing the equipment closer than 100 feet from the wetland or waterbody, special precautions may be implemented with the Environmental Inspector’s approval – as described below.

At all refueling locations along the right-of-way, the Contractor will ensure that absorbent materials are on hand at all times. Each refueling vehicle shall have a sufficient number of

shovels, brooms, 10-mil polyethylene sheeting, and fire protection equipment to contain a moderate spill.

During refueling, the Contractor will take appropriate measures to reduce the risk of a spill, including not overfilling fuel tanks and placing an absorbent pad under the fuel nozzle while fueling equipment. Contractor personnel will observe and control refueling at all times to prevent overfilling. Drivers of tank trucks are responsible for safety and spill prevention. Procedures for loading and unloading tank trucks shall meet the minimum requirements established by the Department of Transportation.

#### **3.4.6 Spill Response Equipment**

The Contractor will be required to have emergency response equipment available at all areas where hazardous materials are handled or stored. This equipment shall be readily available to respond to a hazardous material emergency. The Contractor is required to have the appropriate spill response materials on site to address spills of materials stored or handled at the location. Such equipment shall include, but not be limited to, the following:

- First aid kits and supplies, sized to meet the needs of the numbers of personnel anticipated;
- Telephone or communications radio;
- Personal protective equipment (Tyvek® or equivalent suits, gloves, goggles, hard hat, and other personal protective equipment appropriate to the materials to be handled);
- Fire extinguishers;
- Absorbent materials;
- Storage containers;
- Non-sparking bung wrench; and
- Shovels.

Hazardous material emergency containment and clean-up materials and equipment shall be carried in all fuel trucks, mechanic and supervisor (foremen) vehicles. This equipment shall include, at a minimum:

- 2 shovels;
- First aid kit and supplies;
- Telephone or communications radio;
- Phone numbers for emergency contacts;
- 2 sets of protective clothing (Tyvek® or equivalent suit, gloves, goggles, boots);
- 6 heavy duty plastic garbage bags (30 gallon);
- 5 absorbent socks;
- 10 spill pads;
- 20 lb. fire extinguisher;
- Barrier tape;
- 2 orange reflector cones; and
- 200 square feet 10-mil plastic sheeting.

Fuel and service trucks shall also carry a minimum of 20 pounds of suitable commercial sorbent material and a catch-pan for fluids.

Each construction crew, including clean-up crews shall have on hand sufficient tools and materials to stop leaks and supplies of absorbent and barrier materials to allow rapid containment and recovery of spilled materials.

The Contractor shall inspect emergency equipment weekly, and service and maintain equipment regularly, replenishing supplies as necessary. Records shall be kept of all inspections and service.

### **3.4.7 Activities in Environmentally Sensitive Areas**

The Contractor will obtain approval from the Keystone Environmental Inspector prior to refueling or performing equipment repair (involving lubricants, fuels, oil products, or hazardous materials) within 100 feet of a wetland or waterbody boundary. The Contractor shall monitor the refueling and equipment operation at all times. The Contractor will take precautions to prevent spillage by not overfilling fuel tanks, placing an absorbent pad under the fuel nozzle while fueling, and wiping the nozzle when fueling is complete.

Stationary equipment will be placed within a secondary containment if it will be operated or require refueling within 100 feet of a wetland or waterbody boundary.

In order to respond quickly to a potential spill in a major waterbody, the Contractor shall have on hand during all river crossings at least 400 feet of sorbent boom/sock and provide in **Attachment F** a method for deployment and collection.

## **4 Spill Control and Countermeasures**

It is Keystone's goal to promptly stop spills, however the safety and health of Project personnel and the public is the foremost priority. Personnel should only respond to a spill if they have adequate training to do so safely.

All spills and leaks of hazardous materials and petroleum products will be cleaned up. Upon discovery of a spill, the Contractor will immediately:

1. Assess the area for safety: identify the material spilled, the cause, and any potential hazards. If it is an emergency threatening human health, dial 911. If telephone service is not available or 911 does not work in the area, immediately contact the spread office so emergency responders can be notified. Implement appropriate safety procedures, based on the nature of the hazard.
2. Extinguish or remove ignition sources, if the spilled material is flammable.
3. Shut off leaking equipment, if safe to do so.
4. Stop leaks, if possible.
5. Contain the spill using spill response materials and by creating a berm or dike, if necessary. Block culverts, storm sewers, and other points, if necessary to limit spill travel.
6. Notify supervisor of the spill, including material, quantity, time, and location. Supervisors are responsible for notifying Keystone of spills (see section below).

Personnel entry and travel on contaminated soils shall be minimized. The Contractor will commence spill clean-up immediately, if it is safe to do so. The Contractor is responsible for removing and disposing of contaminated material in accordance with applicable federal, state, and local laws. It is anticipated that most spills will be small and easily removed with a shovel, with contaminated soil deposited in plastic bags or similar containers for transport to the Contractor's yard. Larger spills may require the use of equipment or special services.

All efforts will be made to prevent a release to water resources; however, if the spilled material reaches water, sorbent booms, socks, and/or pads will be deployed to contain and remove the spilled material.

## **5 Documentation and Reporting**

The Contractor shall notify Keystone immediately of any spill of a potentially hazardous substance that meets government reporting criteria as well as any existing soil contamination

discovered during construction. If pre-existing contamination is suspected, the Contractor shall stop work in the area and not resume work until authorized to do so by Keystone.

In the event of a spill that meets government reporting criteria, the Contractor shall notify the Keystone representative immediately, who, in turn, shall notify the appropriate regulatory agencies. Any material released into water that creates a sheen must be reported immediately to Keystone. The Contractor is required to notify Keystone immediately if there is any spill of oil, oil products, or hazardous materials that reaches a wetland or waterbody. Incidents on public highways shall be reported to Keystone and the appropriate agencies. A sample spill report form is provided in **Attachment L**.

The Contractor is responsible for documenting spills as required by federal, state, and local regulations.

As described on the EPA's website, facilities that spill more than 1,000 gallons of oil into navigable waters or onto adjoining shorelines in a single incident, or have two reportable oil spills of more than 42 gallons within any 12-month period, must submit a report to the appropriate EPA Regional Administrator within 60 days from the time the spill occurs. More details can be found at the EPA website. EPA will review the report and may require the facility owner or operator to amend the SPCC Plan if it does not meet the regulations or if an amendment is necessary to prevent and contain oil spills from the facility.

## 6 Inspection and Record Keeping

The Contractor will regularly inspect all storage facilities (not less than weekly) and record the condition of the facility in a weekly log. In addition to inspection items discussed in previous sections, inspections will include the outside of all containers for signs of deterioration, discharges, or accumulation of oil inside containment structures or dikes. Inspections will also include all aboveground valves, piping appurtenances and the general condition of items such as flange joints, expansion joints, valve glands and bodies, pipe supports, and metal surfaces.

In addition to the weekly log, the Contractor will maintain records for hazardous materials and hazardous wastes, as required by all applicable federal, state, and local regulations and permit conditions. Record-keeping requirements include, at a minimum:

- Hazardous materials/Waste inspection log,
- Transportation documents,
- Bills of lading,
- Manifests,
- Shipping papers,
- Training records,
- Release report forms, and
- Spill history and documentation of clean-up/handling.

The Environmental Inspector will monitor, inspect, document and report on the Contractor's compliance with hazardous materials and hazardous waste management practices. Inspection records will be kept with the SPCC Plan for at least three years.

## 7 Applicable State Requirements

The Contractor is required to include in submittals to Keystone a complete discussion of applicable state-specific requirements regarding oil product and hazardous materials handling that are stricter than the federal requirements, if any, to be included in **Attachment I**. If none, then the Contractor will clearly state that in the discussion.

## 8 Certification of Non-Substantial Harm

Keystone does not anticipate that this Project will satisfy the “substantial harm” criteria set forth in 40 CFR 112.20(e). The EPA requires that facilities that do not meet the criteria maintain a certification form to that affect with the SPCC Plan. This certification form is included in **Attachment M**.

DRAFT

**Attachment A**  
**SPCC Cross Reference Table**

DRAFT

DRAFT

<b>SPCC Rule</b>	<b>Description of Section</b>	<b>Page/Section</b>
§ 112.7	General requirements for SPCC Plans for all facilities and all oil types.	1/1
§ 112.7(a)(1)	General requirements; discussion of facility's conformance with rule requirements.	1/1; throughout SPCC Plan
§ 112.7(a)(2)	Deviations from Plan requirements.	3/3.2; 4 & 5/ 3.4.1
§ 112.7(a)(3)	Facility characteristics that must be described in the Plan and the Facility Diagram.	1 & 2/2
§ 112.7(a)(3)(i)	Types of oil and container storage capacity.	Attachment C
§ 112.7(a)(3)(ii)	Discharge prevention measures.	2 through 8/3
§ 112.7(a)(3)(iii)	Discharge or drainage controls.	3 through 7/3.2; 3.3; 3.4
§ 112.7(a)(3)(iv)	Countermeasures for discharge, discovery, response, and cleanup	8/4
§ 112.7(a)(3)(v)	Methods of disposal of recovered or waste materials	4 through 6/3.3; 3.4; 3.4.3; 3.4.4
§ 112.7(a)(3)(vi)	Contact list and phone numbers.	Attachment E
§ 112.7(a)(4)	Spill reporting information in the Plan.	8/5; Attachment I
§ 112.7(a)(5)	Emergency procedures.	2/2; 9/4; Attachment F
§ 112.7(b)	Fault analysis. Equipment failure information.	2/2; Attachment F
§ 112.7(c)	Secondary containment.	4/3.4.1; 5/3.4.2; 7/3.4.7
§ 112.7(d)	Contingency planning, alternative means, integrity testing.	4/3.4.1; 5/3.4.2; 8/4; Attachment F
§ 112.7(e)	Inspections, tests, and records.	4/3.4.1; 5/3.4.2; 9/6
§ 112.7(f)	Employee training and discharge prevention procedures.	2 & 3/3.1
§ 112.7(g)(1)	Security (excluding oil production facilities).	3/3.2
§ 112.7(g)(2)	Flow valves secured.	3/3.2
§ 112.7(g)(3)	Oil pumps controls locked.	3/3.2
§ 112.7(g)(4)	Secure loading/unloading connections on oil piping.	Not Applicable
§ 112.7(g)(5)	Provide facility lighting.	3/3.2
§ 112.7(h)(1)	Loading/unloading (excluding offshore facilities): provide containment system for loading and unloading area.	Not Applicable
§ 112.7(h)(2)	Loading/unloading: systems to prevent vehicles from departing before complete disconnection.	5/3.4.1
§ 112.7(h)(3)	Loading/unloading: inspect vehicle to prevent liquid discharge while in transit.	4/3.4.1
§ 112.7(i)	Brittle fracture evaluation requirements.	Not applicable
§ 112.7(j)	Discuss conformance with more stringent State rule, regulations, and guidelines.	7/9
§ 112.8 / § 112.12	Requirements for onshore facilities (excluding production facilities).	-
§ 112.8(a) / § 112.12(a)	General and specific requirements	See above and below
§ 112.8(b) / § 112.12(b)	Facility drainage.	4/3.4.1
§ 112.8(c) / § 112.12(c)	Bulk storage containers.	4/3.4.1; 5/3.4.2
§ 112.8(d) / § 112.12(d)	Facility transfer operations, pumping, and facility process.	4/3.4.1; 5/3.4.2
§ 112.9 / § 112.13	Requirements for onshore production facilities	Not applicable

<b>SPCC Rule</b>	<b>Description of Section</b>	<b>Page/Section</b>
§ 112.9(a) / § 112.13(a)	General and specific requirements	Not applicable
§ 112.9(c) / § 112.13(c)	Oil production facility bulk storage containers.	Not applicable
§ 112.9(d) / § 112.13(d)	Facility transfer operations, oil production facility.	Not applicable
§ 112.10 / § 112.14	Requirements for onshore oil drilling and workover facilities.	Not applicable
§ 112.10(a) / § 112.14(a)	General and specific requirements.	Not applicable
§ 112.10(b) / § 112.14(b)	Mobile facilities.	Not applicable
§ 112.10(c) / § 112.14(c)	Secondary containment - catchment basins or diversion structures.	Not applicable
§ 112.10(d) / § 112.14(d)	Blowout prevention.	Not applicable
§ 112.11 / § 112.15	Requirements for offshore oil drilling, production, or workover facilities.	Not applicable
§ 112.11(a) / § 112.15(a)	General and specific requirements.	Not applicable
§ 112.11(b) / § 112.15(b)	Facility drainage.	Not applicable
§ 112.11(c) / § 112.15(c)	Sump systems.	Not applicable
§ 112.11(d) / § 112.15(d)	Discharge prevention systems for separators and treaters.	Not applicable
§ 112.11(e) / § 112.15(e)	Atmospheric storage or surge containers; alarms.	Not applicable
§ 112.11(f) / § 112.15(f)	Pressure containers; alarm systems.	Not applicable
§ 112.11(g) / § 112.15(g)	Corrosion protection.	Not applicable
§ 112.11(h) / § 112.15(h)	Pollution prevention system procedures.	Not applicable
§ 112.11(i) / § 112.15(i)	Pollution prevention systems; testing and inspection.	Not applicable
§ 112.11(j) / § 112.15(j)	Surface and subsurface well shut-in valves and devices.	Not applicable

**Attachment B**  
**Contractor Yard or Fueling Station Facility Diagram**

DRAFT

DRAFT

**Attachment C**

**Hazardous Materials Inventory and Reportable Quantities**

DRAFT

DRAFT

**Attachment D**  
**Contractor's Training Program**

DRAFT

DRAFT

**Attachment E**  
**Emergency Response Contacts**

DRAFT

DRAFT

# Emergency Response Contacts

## DIAL 911 IN CASE OF EMERGENCY

The Contractor is to fill out the applicable information required below. Contractor will attach additional sheets as necessary.

Contractor: \_\_\_\_\_ Spread/Station: \_\_\_\_\_

Contractor Spill Response Coordinator: \_\_\_\_\_  
NAME TELEPHONE NUMBER

Keystone Representative: \_\_\_\_\_  
NAME TELEPHONE NUMBER

Sheriffs' Telephone Numbers, by County	County	Telephone Number
--	--------	------------------

Highway Patrol: \_\_\_\_\_

U.S. Poison Control Center: 800-222-1222

Hospitals Near Work Areas	Address	Telephone Number	County
---------------------------	---------	------------------	--------

Spill Response and Cleanup Contractor: \_\_\_\_\_  
NAME TELEPHONE NUMBER

Spill Response and Cleanup Contractor: \_\_\_\_\_  
NAME TELEPHONE NUMBER

Spill Response and Cleanup Contractor: \_\_\_\_\_  
NAME TELEPHONE NUMBER

**Keystone is the designated contact for all agency notifications.**

Agency	Telephone Number	Home Page Website	Online Spill Report Form Webpage
<b>Federal</b>			
National Response Center	800-424-8802	<a href="http://www.nrc.uscg.mil/nrchp.html">http://www.nrc.uscg.mil/nrchp.html</a>	<a href="http://www.nrc.uscg.mil/report.html">http://www.nrc.uscg.mil/report.html</a>
<b>Montana</b>			
Montana Department of Environmental Quality	800-424-8802	<a href="http://www.deq.mt.gov/enf/spillpol.asp">http://www.deq.mt.gov/enf/spillpol.asp</a>	<a href="http://www.deq.mt.gov/enf/spill.asp">http://www.deq.mt.gov/enf/spill.asp</a>
<b>South Dakota</b>			
South Dakota Department of Environment & Natural Resources	605-773-3296 and 605-773-3231 after hours	<a href="http://www.state.sd.us/denr/DES/ground/Spills/SpillReporting.htm">http://www.state.sd.us/denr/DES/ground/Spills/SpillReporting.htm</a>	<a href="http://www.state.sd.us/denr/DES/ground/Spills/SpillsFollowUp.asp">http://www.state.sd.us/denr/DES/ground/Spills/SpillsFollowUp.asp</a>
<b>Nebraska</b>			
Department of Environmental Quality	402-471-2186 or 877-253-2603 and Nebraska State Patrol at 402-471-4545 after hours	<a href="http://www.deq.state.ne.us/">http://www.deq.state.ne.us/</a>	Not applicable
<b>Kansas</b>			
Kansas Emergency Management	800-275-0297 or 785-296-8013	<a href="http://www.kansas.gov/kdem/hazards/hmenrg.shtml">http://www.kansas.gov/kdem/hazards/hmenrg.shtml</a>	<a href="http://www.kansas.gov/kdem/pdf/hazards/082102_formA.pdf">http://www.kansas.gov/kdem/pdf/hazards/082102_formA.pdf</a>
<b>Oklahoma</b>			
Oklahoma Corporation Commission	918-367-3396 and 405-521-2240 after hours	<a href="http://www.occ.state.ok.us/Divisions/OG/spill(c).htm">http://www.occ.state.ok.us/Divisions/OG/spill(c).htm</a>	Not applicable
<b>Texas</b>			
Texas Commission on Environmental Quality (TCEQ)	800-832-8224	<a href="http://www.tceq.state.tx.us/response/spills.html">http://www.tceq.state.tx.us/response/spills.html</a>	Not applicable

**Attachment F**  
**Contractor's Emergency Response Procedures**

DRAFT

DRAFT

## Equipment Failure and Potential Spill Source Prediction<sup>1</sup>

Source	Type of Failure	Total Quantity (gallons)	Rate of Flow (gpm) <sup>2</sup>	Direction of Flow	Containment

<sup>1</sup> Title 40 CFR 112 states: "where experience indicates a reasonable potential for equipment failure (such as loading or unloading equipment, tank overflow, rupture, or leakage, or any other equipment known to be a source of a discharge), include in your Plan a prediction of the direction, rate of flow, and total quantity of oil which could be discharged from the facility as a result of each type of major equipment failure."

<sup>2</sup> GPM = gallons per minute

DRAFT

**Attachment G**  
**Contractor's Commitments**

DRAFT

DRAFT

## Contractor's Commitments

I hereby certify that I am at a level of management within \_\_\_\_\_, with the authority to, and do hereby commit the necessary manpower, equipment, and materials to implement this SPCC Plan (40 CFR Part 112) in accordance with the provisions set forth therein.

Name: \_\_\_\_\_

Name: \_\_\_\_\_ (Signature)

Title/Company: \_\_\_\_\_

Date: \_\_\_\_\_

DRAFT

DRAFT

**Attachment H**  
**Professional Engineer's Certification**

DRAFT

DRAFT

# Registered Professional Engineer Certification

By means of this certification, I attest that:

- I have reviewed this Spill Prevention, Control and Countermeasure Plan (SPCC);
- I am familiar with the requirements of Title 40 Code of Federal Regulations (CFR) Part 112;
- I or my agent has visited and examined the facility;
- This SPCC Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of Title 40 CFR Part 112;
- Procedures for required inspections and testing have been established; and
- This SPCC Plan is adequate for the facility.

\_\_\_\_\_  
Signature of Registered Professional Engineer

\_\_\_\_\_  
Name (Printed)

\_\_\_\_\_  
Date

DRAFT

**Attachment I**  
**State Requirements**

DRAFT

DRAFT

**Attachment J**  
**Contractor's Material Safety Data Sheets (MSDS)**

DRAFT

DRAFT

**Attachment K**  
**Typical Layouts; Fuel Transfer Stations**

DRAFT

DRAFT

**Attachment L**  
**Spill Report Form**

DRAFT

DRAFT

# SPILL REPORT FORM

## LOCATION AND DATE DETAILS

Facility

Telephone Number:

Form Completed by: \_\_\_\_\_ Date: \_\_\_\_\_

Date of spill: \_\_\_\_\_ Time of spill: \_\_\_\_\_

Date of spill discovery: \_\_\_\_\_ Time of spill recovery: \_\_\_\_\_

Location: \_\_\_\_\_ County: \_\_\_\_\_

Short legal description: T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_ Weather Conditions: \_\_\_\_\_

Directions from nearest community: \_\_\_\_\_

Name and Title of Discoverer: \_\_\_\_\_

NAME

TITLE

## SPILL AND MATERIAL DETAILS

Type of material spilled and product name: \_\_\_\_\_

Manufacturer's name: \_\_\_\_\_

Estimated volume spilled: \_\_\_\_\_ Estimated volume recovered: \_\_\_\_\_

Topography and surface condition of spill site: \_\_\_\_\_

Spill medium:  Pavement  Soil  Water  Other: \_\_\_\_\_ (Check all that apply)

Responsible party (Name, Phone Number): \_\_\_\_\_

NAME

TELEPHONE NUMBER

Describe the causes and circumstances resulting in the spill: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## WATER RESOURCES AFFECTED

Did the spill reach a waterbody?  Yes  No If "Yes", was a sheen present?  Yes  No

Proximity of spill to surface waters or wetlands: \_\_\_\_\_ Feet

Estimated quantity of material that entered surface waters or wetland: \_\_\_\_\_

Direction and time of travel (if in stream): \_\_\_\_\_

\_\_\_\_\_

# SPILL REPORT FORM CONTINUED

## DESCRIPTION OF SPILL/ HARMFUL EFFECTS

Describe extent of observed contamination, both horizontal and vertical: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Resources and installations that may be affected: \_\_\_\_\_  
\_\_\_\_\_

Describe any injuries or potential impact on human health caused by the spill: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## COURSE OF ACTION

Describe immediate spill control and/or cleanup methods used and implementation schedule: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evacuation necessary?  Yes  No Describe: \_\_\_\_\_  
\_\_\_\_\_

Current status of cleanup actions: \_\_\_\_\_  
\_\_\_\_\_

Future follow-up required, if any: \_\_\_\_\_  
\_\_\_\_\_

## NAME/COMPANY/TELEPHONE NUMBER FOR THE FOLLOWING

Contractor Superintendent:	_____	_____	_____
	NAME	COMPANY	TELEPHONE NUMBER
Contractor's Environmental Coordinator:	_____	_____	_____
	NAME	COMPANY	TELEPHONE NUMBER
Lead Environmental Inspector:	_____	_____	_____
	NAME	COMPANY	TELEPHONE NUMBER
Other:	_____	_____	_____
	NAME	COMPANY	TELEPHONE NUMBER

Contractor must complete this form for any spill that meets state or federal reportable quantities, and for petroleum spills that enter waterbodies or wetlands, affect human health, or exceed 42 gallons, and submit the form to the Lead Environmental Inspector immediately.

**Attachment M**

**Certification of the Applicability of the Substantial Harm Criteria**

DRAFT

DRAFT

# Certification of the Applicability of the Substantial Harm Criteria

Facility Name: **Keystone Pipeline Project**  
Facility Address: **Various locations along the pipeline route in Montana, South Dakota, Nebraska, Kansas, Oklahoma, and Texas. Mailing address:**

**Keystone XL Pipeline Project  
7509 Tiffany Springs Parkway  
Northpointe Circle II, Suite 200  
Kansas City, Missouri 64153**

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

Yes  No

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?

Yes  No

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this appendix or a comparable formula<sup>3</sup>) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (see Appendix E to this part, section 13, for availability) and the applicable Area Contingency Plan.

Yes  No

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this appendix or a comparable formula<sup>1</sup>) such that a discharge from the facility would shut down a public drinking water intake<sup>4</sup>?

Yes  No

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil discharge in an amount greater than or equal to 10,000 gallons within the last 5 years?

Yes  No

## Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name (please type or print)

\_\_\_\_\_  
Title

<sup>3</sup> If a comparable formula is used, documentation of the reliability and analytical soundness of the comparable formula must be attached to this form.

<sup>4</sup> For the purposes of 40 CFR part 112, public drinking water intakes are analogous to public water systems as described at 40 CFR 143.2(c).

DRAFT

---

**United States Department of State 5.6.5**

---

**Reference:** Keystone XL Project Environmental Report  
Oil Risk Assessment and Environmental Consequences Analysis

**Request:**

We understand that under current regulations, Keystone will not be required to submit an Emergency Response Plan (ERP) until 6 months prior to Project operation. However, DOS has determined that it is appropriate to include a draft ERP in the EIS to provide the public with basic information on the likely procedures that would be followed in the event of an accidental release from Project facilities. As a result, Keystone should provide a draft ERP that reasonably describes the key procedures, coordination activities, anticipated contacts, equipment to be used, possible cleanup activities, and other information needed to understand how Keystone would respond to an accidental release of crude oil during operation of the Project. This draft could be developed using previously approved ERP's, such as the ERP for the Keystone Pipeline Project.

**Response:**

Attached are responsive portions of the Keystone Pipeline Emergency Response Plan. This plan will be updated to include Keystone XL-specific emergency preparedness and emergency response information prior to Keystone XL project commencing operations.

# SECTION 1

---

## NOTIFICATION PROCEDURES

This Section is a guide for notification procedures that should be implemented immediately after discovering a discharge incident and, if possible, securing the source. Internal and external notifications are described separately for clarification purposes only. All notifications are of extreme importance and must be completed in a timely manner.

## 1.1 INTERNAL NOTIFICATION

The following internal notifications will be made for each emergency event (reference is provided in Figure 1.2). Internal notification protocols are developed and implemented to ensure effective communications between all internal parties and support provided by pre-determined on call corporate and business units. The notification protocol includes those responding to an emergency as well as notification to all senior management up to the Chief Executive Officer of the company.

### Employee Discovering Discharge

- Immediately notify the Oil Control Center (contact information is listed in Figure 1.2).
- Notify the local fire department, police department, and rescue, as needed.

### Oil Control Center

- Verify emergency.
- Immediately notify the Oil Control Center Manager.
- Notify Regional On-Call Manager.
- Notify Corporate Emergency Operations Manager.

### Regional Manager On-Call

- Initiates the field response
  - Contacts employees to staff the Incident Command Post
  - Contacts employees to staff the Regional EOC

### Regional EOC

- Completes local notifications
- Establishes an emergency communication line (conference line) for use between the Corporate and Regional EOC and the Incident Commander Post for information sharing and support

### Corporate Emergency Operations Center Manager

- Contact Oil control Center and review emergency particulars
- Activate Corporate / Business support departments
  - Thirteen pre-determined departments on call 24/7 to provide tactical and strategic support
  - Departments implement their notification protocols advising their line management of the event
- Corporate Security is a Support Department

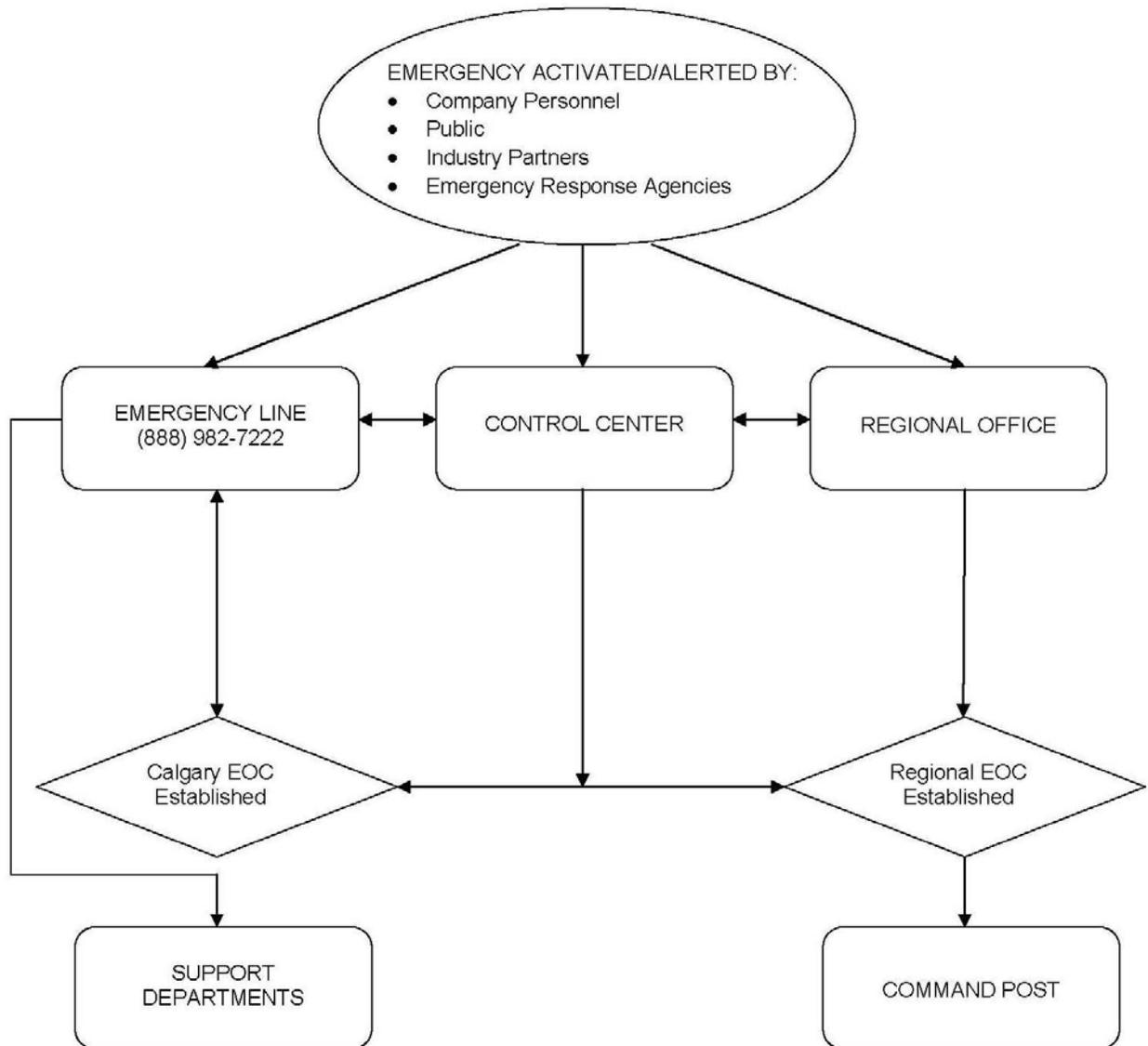
**Corporate Security**

- Determine if incident meets the criteria of a crisis
- If criteria met – Notify the Chairman of the Crisis Management Team

**Chairman of Crisis Management Team**

- Notify members of the Crisis Management Team

**FIGURE 1.1  
INTERNAL NOTIFICATION SEQUENCE**



**FIGURE 1.2  
INTERNAL NOTIFICATION REFERENCES**

<b>CORPORATE RESPONSE PERSONNEL / OTHER COMPANY CONTACTS INTERNAL NOTIFICATIONS</b>					
<b>POSITION/TITLE</b>	<b>NAME</b>	<b>OFFICE</b>	<b>HOME</b>	<b>CELL</b>	<b>PAGER</b>
	Keystone Oil Control Center	(403) 920-8080			

There are no Field Personnel currently working on this proposed Pipeline.

## 1.2 EXTERNAL NOTIFICATIONS

**External notifications are those made to entities outside of the Company including Federal, Province/State and local regulatory agencies, railroad and utility companies and contractors. These notifications include both verbal and written requirements.**

### **Employee Discovering the Discharge**

- Notify local emergency services immediately.

### **Oil Control Center**

- Notify the emergency response contractor if this has not been completed by the Regional Manager On-Call.

### **Regional Manager On-Call**

- Notify the contracted Spill Management Team, the O'Brien's Group, and the Spill Response Contractor, National Response Corporation.

### **TransCanada Personnel**

- Notify the U.S. National Response Center, the Cdn Transportation Safety Board, the National Response Corporation, Cdn National Energy Board, appropriate Federal agencies, County Emergency management, Province/State Environmental Agencies, and the Utilities One Call, as needed (notification requirements and contact information are listed in Figure 1.5).

### **Verbal Notification Requirements**

Immediate internal notification is to be made in accordance with the Internal Notification Procedures found in Section 1.1 when a system operational failure or other type of incident occurs. This will allow immediate evaluation and classification of incidents and prompt immediate telephonic notification as detailed in Figure 1.4 and 1.5 to the Transportation Safety Board, National Response Center (NRC), Province/State agencies, local agencies, and other Federal agencies as required. The information found on the Notification Data Sheet, Figure 1.3, should be used to disseminate incident information to the appropriate agencies.

For the purpose of this procedure, immediate reporting means reporting the instant a person has knowledge of an actual or suspected leak, uncontrolled release of product, any unplanned spill or other pipeline system failure. Information that causes any employee to reasonably suspect a leak or uncontrolled release of product must be immediately reported, even when the actual existence or location of a leak or release cannot yet be confirmed.

### Written Notification Requirements

In addition to the verbal notification requirements, written notifications are required in both Canada and the United States. In the United States, a written report is to be filed as soon as practical, but not later than 30 days after discovery of the incident to the Information Resources Manager, Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, US Department of Transportation. Information concerning the event shall be reported on Pipeline and Hazardous Materials Safety Administration Form 7000-1 on-line on the Pipeline and Hazardous Materials Safety Administration website via log-in. Paper reports are not required. This report is to be filed for all incidents reported telephonically and other incidents required to be reported in accordance with the criteria listed below.

The information required for completing the 30-day written report will be furnished by the Area Offices to the Department of Transportation Regulatory Compliance Department for submission to the Department of Transportation. Any subsequent or additional information that was not reported on the initial written report must be reported to the Department of Transportation Regulatory Compliance Department by the Area Office. This information will be utilized in filing a supplemental written report to the Department of Transportation as soon as possible, but no later than 30 days after its discovery.

In Canada, a detailed written incident report is required as soon as practicable to the Transportation Safety Board (TSB) and National Energy Board (NEB).

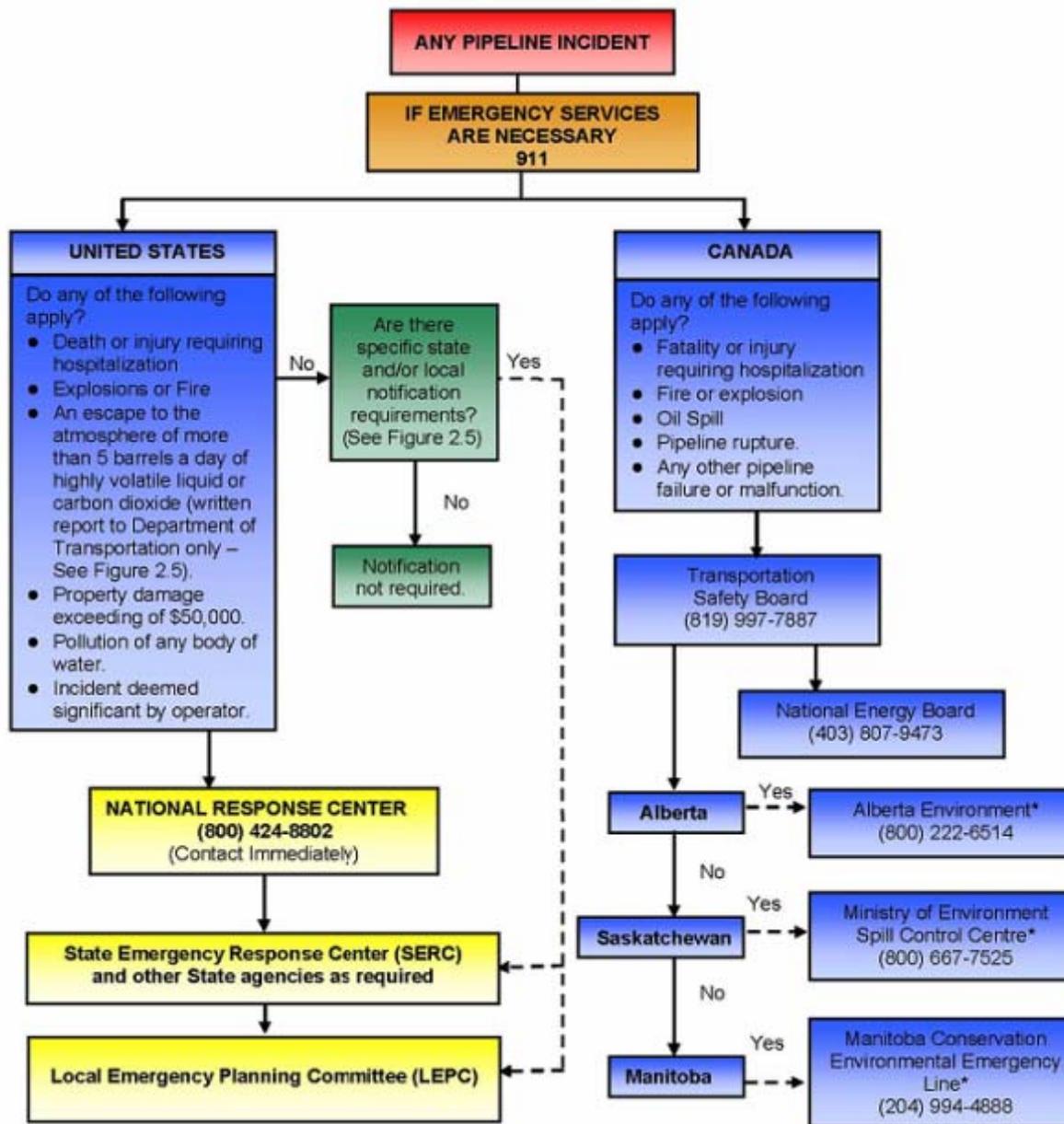
<b>Transportation Safety Board of Canada Pipeline Occurrence Reporting</b>	
<b>Citation</b>	<b>Description</b>
Extracts from Transportation Safety Board Regulations Sections 5(1) and 5(5)	When a reportable pipeline accident or incident takes place, the operator and any employee of the operator having direct knowledge of the accident or incident shall report to the Board as soon as possible and by the quickest means available. Where any person mentioned above makes a report, no other person referred to is required to make such a report.
Transportation Safety Board Regulations Section 2(1)	A "reportable pipeline accident" is an accident resulting directly from the operation of a pipeline, where <ul style="list-style-type: none"> <li>(a) a person sustains a serious injury or is killed as a result of being exposed to               <ul style="list-style-type: none"> <li>i. a fire, ignition or explosion, or</li> <li>ii. a commodity released from the pipeline, or</li> </ul> </li> <li>(b) the pipeline               <ul style="list-style-type: none"> <li>i. sustains damage affecting the safe operation of the pipeline as a result of being contacted by another object or as a result of a disturbance of its supporting environment,</li> <li>ii. causes or sustains an explosion, or a fire or ignition that is not associated with normal operating circumstances, or</li> <li>iii. sustains damage resulting in the release of any commodity.</li> </ul> </li> </ul>
Transportation Safety Board Regulations Section 2(1)	A "reportable pipeline incident" means an incident resulting directly from the operation of a pipeline where <ul style="list-style-type: none"> <li>(a) an uncontained and uncontrolled release of a commodity occurs,</li> <li>(b) the pipeline is operated beyond design limits,</li> <li>(c) the pipeline causes an obstruction to a ship or to a surface vehicle owing to a disturbance of its supporting environment,</li> <li>(d) any abnormality reduces the structural integrity of the pipeline below design limits,</li> <li>(e) any activity in the immediate vicinity of the pipeline poses a threat to the structural integrity of the pipeline, or</li> <li>(f) the pipeline, or a portion thereof, sustains a precautionary or emergency shut-down for reasons that relate to or create a hazard to the safe transportation of a commodity.</li> </ul>

NOTE: Refer to Figure 1.5 for any additional Province/State written reporting requirements.

FIGURE 1.3

<b>NOTIFICATION DATA SHEET</b>		
<i>Date:</i> _____	<i>Time:</i> _____	
<b>INCIDENT DESCRIPTION</b>		
<i>Reporter's Full Name:</i> _____	<i>Position:</i> _____	
<i>Day Phone Number:</i> _____	<i>Evening Phone Number:</i> _____	
<i>Company:</i> _____	<i>Organization Type:</i> _____	
<i>Facility Address:</i> _____	<i>Owner's Address:</i> _____	
_____	_____	
<i>Facility Latitude:</i> _____	<i>Facility Longitude:</i> _____	
<i>Spill Location:</i> _____		
<i>(if not at Facility)</i> _____		
<i>Responsible Party's Name:</i> _____	<i>Phone Number:</i> _____	
<i>Responsible Party's Address:</i> _____		
<i>Source and/or cause of discharge:</i> _____		
_____		
<i>Nearest City:</i> _____		
<i>County:</i> _____	<i>State:</i> _____	<i>Zip Code:</i> _____
<i>Section:</i> _____	<i>Township:</i> _____	<i>Range:</i> _____
<i>Distance from City:</i> _____	<i>Direction from City:</i> _____	
<i>Container Type:</i> _____	<i>Container Storage Capacity:</i> _____	
<i>Facility Oil Storage Capacity:</i> _____		
<i>Material:</i> _____		
<b>Total Quantity Released</b>	<b>Water Impact (YES or NO)</b>	<b>Quantity into Water</b>
_____	_____	_____
<b>RESPONSE ACTION(S)</b>		
<i>Action(s) taken to Correct, Control, or Mitigate Incident:</i> _____		
_____		
<i>Number of Injuries:</i> _____	<i>Number of Deaths:</i> _____	
<i>Evacuation(s):</i> _____	<i>Number Evacuated:</i> _____	
<i>Damage Estimate:</i> _____		
<i>More information about impacted medium:</i> _____		
_____		
<i>Possible hazards to human health or the environment outside of the Facility:</i> _____		
_____		
<b>CALLER NOTIFICATIONS</b>		
<i>National Response Center (NRC): 1-800-424-8802</i>		<i>Transportation Safety Board: 819-997-7887</i>
<i>Additional Notifications (Circle all applicable):</i> <b>USCG</b> <b>NEP</b> <b>EPA</b> <b>Province</b> <b>State</b> <b>Other</b>		
<i>National Response Center</i>		
<i>Incident Assigned No.</i> _____		
<b>ADDITIONAL INFORMATION</b>		
<i>Any information about the incident not recorded elsewhere in this report including estimated quantity and disposition of recovered material:</i> _____		
_____		
<b>NOTE: DO NOT DELAY NOTIFICATION PENDING COLLECTION OF ALL INFORMATION.</b>		

**FIGURE 1.4  
EXTERNAL NOTIFICATION FLOWCHART**



**FIGURE 1.5**  
**EXTERNAL NOTIFICATION REFERENCES**

**U.S. Federal Notification Requirements**

National Response Center (NRC) c/o United States Coast Guard (CG-3RPF-2), 2100 2nd Street Southwest - Room 2111-B Washington, District Of Columbia 20593-0001	(800) 424-8802 (202) 267-2180 (800) 337-7455
<p><b>REPORTING REQUIREMENTS</b>            TYPE: Any discharge or sighting of oil on navigable waters.            VERBAL: Immediate notification required (within 2 hours).            WRITTEN: If an RQ limit is reached, refer to state requirements for written report requirements.            NOTE: A call to the NRC must also be made for spills or releases of hazardous substances that meet or exceed their RQ &gt;5 Gal.</p>	
Office of Pipeline Safety and Hazardous Materials U.S. Department of Transportation 1200 New Jersey Avenue SE-E-22-321 Washington, District Of Columbia 20590	(202) 366-4000
<p><b>REPORTING REQUIREMENTS</b>            TYPE: In addition to the reporting of accidents to the NRC as noted below, a written accident report PHMSA Form 7000-1.            VERBAL: Call to the NRC meets the required verbal notification under DOT reporting requirement.            WRITTEN: Reported on PHMSA Form 7000-1 no later than 30 days, submit a report resulting from explosion/ fire/hospitalization, death, property damage greater than \$50,000, or above reportable quantity.            NOTE:</p>	
U.S. Environmental Protection Agency, Region 8 999 18th Street Suite 500 Denver, Colorado 80202-246	(303) 312-6312
<p><b>REPORTING REQUIREMENTS</b>            TYPE: Immediately for spills that impact or threaten navigable water or adjoining shoreline.            VERBAL: Notification to the EPA is typically accomplished by the call to the NRC.            WRITTEN: In accordance with the applicable SPCC regulations, within 60 days for a spill in excess of 1,000 gallons (24 bbls.) in a single event or two spill events within a twelve month period into or upon nav. water            NOTE:</p>	

U.S. Environmental Protection Agency, Region 5 77 W. Jackson Blvd., 5th Floor Chicago, Illinois 60604	(312) 353-2318 (312) 353-2000
<b>REPORTING REQUIREMENTS</b> TYPE: Any oil discharge that has impacted or threatens to impact navigable waters or release of hazardous substances in an amount equal or greater than the reportable quantity. VERBAL: Notification to the EPA is typically accomplished by the call to the NRC. WRITTEN: For oil discharge within 60 days, in accordance with applicable SPCC RQ. NOTE:	

U.S. Environmental Protection Agency, Region 6 1445 Ross Avenue, Suite 1200 Dallas, Texas 75202	(214) 665-6595 (214) 665-2222 (866) 372-7745
<b>REPORTING REQUIREMENTS</b> TYPE: Immediately for all spills that impact or threaten navigable water or adjoining shoreline. VERBAL: Notification to the EPA is typically accomplished by the call to the NRC. WRITTEN: As the agency may request depending on circumstances. NOTE:	

### Canadian Federal Notification Requirements

Transportation Safety Board (TSB) of Canada 200 Promenade du Portage, Place du Centre, 4th Floor Gatineau, Quebec K1G	(819) 997-7887 (800) 387-3557
<b>REPORTING REQUIREMENTS</b> TYPE: All pipeline accidents with fatality or serious injury, fire or explosion, oil spill, pipeline rupture or any other pipeline failure or malfunction. VERBAL: Immediately. WRITTEN: Within 30 days. NOTE:	

Canadian National Energy Board (CA NEB) 444 Seventh Avenue SW Calgary, Alberta T2P 0X8	(403) 807-9473 (800) 899-1265
<b>REPORTING REQUIREMENTS</b> TYPE: All spills or discharges. VERBAL: Immediately. WRITTEN: As requested by the Agency. NOTE:	

### U.S. State Notification Requirements

South Dakota Department of Environment and Natural PMB 2020 Joe Foss Building, 523 East Capitol Pierre, South Dakota 57501-3182	(605) 773-3151
<b>REPORTING REQUIREMENTS</b> TYPE: All spills or discharges VERBAL: Immediately. WRITTEN: As requested by the Agency. NOTE:	

Game, Fish and Parks South Dakota	(605) 345-3381
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	

South Dakota DENR, Div of Environmental Services 523 East Capitol Ave. Pierre, South Dakota 57501-3182	(605) 773-3296 (605) 773-3231
<b>REPORTING REQUIREMENTS</b> TYPE: Any Spill or discharge greater than reportable quantity. VERBAL: Immediately. WRITTEN: Within 30 days. NOTE:	

South Dakota DENR, Division of Oil and Gas South Dakota	(605) 394-2229
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	

South Dakota Department of Environment and Natural South Dakota	(605) 773-6035
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	

South Dakota Department of Transportation, RR	(605) 773-3046 (605) 773-3921
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	

South Dakota Department of Transportation, ROW South Dakota	(605) 773-3710 (605) 773-4249
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	

South Dakota Division of Emergency Management South Dakota	(605) 773-3231
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	

South Dakota Public Utilities Commission South Dakota	(605) 773-3201
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	

Department of Environmental Quality 1200 N Street Suite 400 / PO Box 98922 Lincoln, Nebraska 68509-8922	(402) 471-2186 (402) 471-4545
<b>REPORTING REQUIREMENTS</b> TYPE: Any Discharge that leaves the Facility or threatens to impact navigable waters. VERBAL: Immediately, but not longer than 30 minutes. WRITTEN: As Requested by the Agency NOTE:	

Nebraska Emergency Management Agency Lincoln, Nebraska	(402) 471-7176
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	

Nebraska Game & Parks Commission Lincoln, Nebraska	(402) 471-5423 (402) 271-5440
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	
Department of Natural Resources Nebraska	(402) 494-2363
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	
Oklahoma Department of Environmental Quality 707 N Robinson Oklahoma City, Oklahoma 73102	(405) 702-1000
<b>REPORTING REQUIREMENTS</b> TYPE: VERBAL: Courtesy Reporting WRITTEN: NOTE:	
Texas Rail Road Commission / Oil and Gas Division 1701 N. Congress / P.O. Box 12967 Austin, Texas 78711-2967	(512) 463-6788 (915) 684-5581
<b>REPORTING REQUIREMENTS</b> TYPE: (16 TAC Section 3.20 (a)-(b)) In the case of a fire, spill or break causing loss of over (5) barrels. For Pipeline incidents reportable to the NRC, notify the TRRC Pipeline Safety Section's District VERBAL: Immediate notification to District Office WRITTEN: File Form H-8 in duplicate when appropriate measure have been taken, within 30 days following the date of the incident. NOTE:	

Texas Commission on Environmental Quality 2800 S IH 35, Suite 100 Austin, Texas, 78704	(512) 463-7727 (713) 767-3500 (713) 767-3563
<b>REPORTING REQUIREMENTS</b>	
TYPE: All spills of oil or petroleum products into water and/or discharges onto land that meet or exceed 5 barrels	
VERBAL: As soon as possible, within 24 hours of discovery.	
WRITTEN: As the agency may request, depending on circumstances.	
NOTE:	

Montana Department of Environmental Quality	(406) 444-1420 (406) 841-3911
<b>REPORTING REQUIREMENTS</b>	
TYPE: Releases must be reported to the DEQ within 24 hours of being detected as required by ARM 17.56.501.	
VERBAL: Within 24 hours. Call the Leak Line at 1-800-457-0568, or after hours at (406) 841-3911..	
WRITTEN:	
NOTE:	

State of Montana Department of Natural Resources	(406) 586-3136
<b>REPORTING REQUIREMENTS</b>	
TYPE:	
VERBAL: Courtesy Reporting	
WRITTEN:	
NOTE:	

### Canadian Provincial Notification Requirements

Alberta Environment 9915 -108 Street 10th Floor, Petroleum Plaza South Tower Edmonton, Alberta T5K 2G8	(800) 222-6514
<b>REPORTING REQUIREMENTS</b>	
TYPE: All spills to water or exceeds a reportable quantity or emission level.	
VERBAL: Immediately.	
WRITTEN: Within 7 days.	
NOTE:	

Saskatchewan Environment and Resource Management Box 3003, 800 Central Avenue. Prince Albert, Saskatchewan S5V 6G1	(800) 667-7525
<b>REPORTING REQUIREMENTS</b>	
TYPE: Any oil spill to water or oil spill greater than or equal to 50 L. to land.	
VERBAL: Immediately	
WRITTEN: Within 7 days.	
NOTE:	

### LOCAL EMERGENCY AGENCIES

<b>Montana</b>	
Phillips County LEPC	(406)-654-2350
Valley County LEPC	(406) 228-6224
McCone County LEPC	(406)-485-2347
Dawson County LEPC	(406)-377-2361
Prairie County LEPC	(406)-635-5738
Fallon County LEPC	(406) 778-3223
Carter County LEPC	(406)-975-6416
<b>South Dakota</b>	
Harding County LEPC	(605) 375-3414
Butte County LEPC	(605) 892-4205
Perkins County LEPC	(605) 244-5243
Meade County LEPC	(605) 347-4222
Pennington County LEPC	(605) 394-2185
Haakon County LEPC	No number listed
Jones County LEPC	(605) 669-2362
Lyman County LEPC	(605) 869-2200
Tripp County LEPC	(605) 842-2306
<b>Nebraska</b>	
Keya Paha County LEPC	(402)- 376-2420
Holt County LEPC	(402)-336-4126
Garfield County LEPC	No number listed
Wheeler County LEPC	No number listed
Greeley County LEPC	No number listed
Boone County LEPC	(402)-395-6525
Nance County LEPC	(308)-536-2452

Merrick County LEPC	(308)-946-2345
Hamilton County LEPC	(402)-694-5155
York County LEPC	(402)-363-2675
Fillmore County LEPC	(402)-759-4914
Saline County LEPC	(402)-821-3010
Jefferson County LEPC	(402)-656-3615

<b>Oklahoma</b>	
Lincoln County LEPC	(405)-258-1285
Creek County LEPC	(918)-367-9489
Okfuskee County LEPC	(918)-623-1122
Seminole County LEPC	(405)-382-2499
Hughes County LEPC	(405)-379-2203
Coal County LEPC	(580)-927-2121
Atoka County LEPC	(580)-889-2221
Bryan County LEPC	(580)-924-3737
<b>Texas</b>	
Fannin County LEPC	(903)-583-2143
Lamar County LEPC	(903)-737-2400
Delta County LEPC	(903)-395-2146
Hopkins County LEPC	(903)-438-4040
Franklin County LEPC	(903)-537-4539
Wood County LEPC	(903)-763-5461
Upshur County LEPC	(903)-843-2541
Smith County LEPC	(903)-590-2653
Cherokee County LEPC	(903)-683-5947
Rusk County LEPC	(903)-657-3581
Nacogdoches County LEPC	(409)-560-7793
Angelina County LEPC	(936)-634-3331
Polk County LEPC	(936)-327-6810
Liberty County LEPC	(936)-336-4525
Hardin County LEPC	(409)-246-5100
Jefferson County LEPC	(409)-835-8411
Orange County LEPC	(409)-883-2612

<b>ADDITIONAL RESPONSE RESOURCES</b>		
<b>Planning and Incident Support</b>		
<b>COMPANY</b>	<b>LOCATION</b>	<b>TELEPHONE</b>
National Response Corporation	3500 Sunrise Hwy Ste. T103 Great River, New York 11739	(800) 899-4672
O'Brien's Response Management Inc.	Slidell, Louisiana	(985) 781-0804
ENSR Corporation	Fort Collins, Colorado	(800) 722-2440
Western Canadian Spill Services Co-op	Calgary, Alberta	(403) 250-9606
Saskatchewan Co-op Area 1 Chairman	Saskatchewan	(780) 573-7350
Saskatchewan Co-op Area 1 Alt. Chairman	Saskatchewan	(306) 387-6449
Saskatchewan Co-op Area 2 Chairman	Box 1132 Kindersley, Saskatchewan S0L 1S0	(306) 968-2503
Saskatchewan Co-op Area 2 Co-Chairman	Box 5 Coleville, Saskatchewan S0L 0K0	(306) 965-2731
Saskatchewan Co-op Area 2 Custodian	Saskatchewan	(306) 834-7898
Saskatchewan Co-op Area 3 Chairperson	Saskatchewan	(306) 773-0234
Saskatchewan Co-op Area 3 Secretary	Saskatchewan	(306) 773-9381
Saskatchewan Co-op Area 3 Custodian	Saskatchewan	(306) 672-3723
Saskatchewan Co-op Area 4&5 Chair	Saskatchewan	(306) 842-1818
Saskatchewan Co-op Area 4&5 Vice-Chair	Saskatchewan	(306) 842-3088
Saskatchewan Co-op Area 6 Call-out	Saskatchewan	(306) 791-5058
Albert Coop Area 1S Regional Custodian	Lethbridge, Alberta	(403) 329-0427
Alberta Coop Area 1S Equip. Custodian	Brooks, Alberta	(403) 362-6551
Alberta Coop Area 2U Custodian	Hardisty, Alberta	(780) 888-3845
Euroway Industrial Svc Co. Ltd	Winnipeg, Manitoba	(204) 661-0500

## SECTION 2

---

### RESPONSE ACTIONS

## 2.1 INITIAL RESPONSE ACTIONS

Initial response actions are those taken by local personnel immediately upon becoming aware of a discharge or emergency incident, before the Initial Response Team (described in Section 3.0) is formed and functioning. Timely implementation of these initial steps is of the utmost importance because they can greatly affect the overall response operation.

The pages that follow discuss initial response actions for a variety of emergencies that have the possibility of occurring. These emergencies are discussed in the order listed below:

- Initial Response
- Line Break or Leak
- Fire
- Severe Thunderstorm/Flash Flooding/Landslide
- Tornadoes
- Earthquake
- Winter Storm
- Volcanic Eruptions
- Bomb Threat
- Release to Groundwater
- Abnormal Operations

It is important to note that these actions are intended only as guidelines. The appropriate response to a particular incident may vary depending on the nature and severity of the incident and on other factors that are not readily addressed. Note that without exception, employees and public safety is first priority.

The first Company person on scene will function as the Incident Commander (IC) until relieved by an authorized supervisor who will assume the IC position. Transfer of command will take place as more senior management respond to the incident. The role of IC will typically be assumed and retained by area management.

The person functioning as Incident Commander during the initial response period has the authority to take the steps necessary to control the situation and must not be constrained by these general guidelines.

<b>INITIAL RESPONSE ACTIONS -SUMMARY PERSONNEL AND PUBLIC SAFETY IS FIRST PRIORITY</b>			
<b>RESPONSE TIMES*</b>			
<b>US DOT Tier</b>	<b>1</b>	<b>2</b>	<b>3</b>
High Volume Area	6 HR	30 HR	54 HR
All Other Areas	12 HR	36 HR	60 HR
<b>CONTROL</b> <ul style="list-style-type: none"> <li>• Eliminate sources of ignition</li> <li>• Isolate the source of the discharge, minimize further flow</li> </ul> <b>NOTIFY</b> <ul style="list-style-type: none"> <li>• Make internal and external notifications</li> <li>• Activate local Company personnel as necessary</li> <li>• Activate response contractors and other external resources as necessary</li> </ul> <b>CONTAIN</b> <ul style="list-style-type: none"> <li>• Begin spill mitigation and response activities</li> <li>• Monitor and control the containment and clean-up effort</li> <li>• Protect the public and environmental sensitive areas</li> </ul>			
* Response resources and personnel available to respond within time specified after discovery of a worst case discharge per US DOT 49 CFR Part 194.115			

In addition to the potential emergency events outlined in this Section, the Company has identified several "abnormal operations" that could be expected in the pipeline facilities. The Company has defined the events and established procedures to identify, eliminate or mitigate the threat of a worst case discharge due to these events. In compliance with 49 CFR 195.402(d), these procedures are defined in the Company's Operations Manual.

**FIRST COMPANY PERSON NOTIFIED / ON SCENE**

- Verify emergency exists.
- Follow the appropriate "Specific Incident Response Checklist" in Figure 2.2 and "Product Specific Response Considerations" in Figure 2.3.
- Notify the Oil Control Center of the incident.
- Contact / Utilize local emergency services as necessary (police, fire, medical).

**REGIONAL EMERGENCY OPERATION CENTER**

- Ensure local emergency agencies have been contacted (police, fire, medical).
- Assign personnel immediately to the discharge site to assist with emergency response (QI) and spill containment.
- Activate additional company and response contractors to site as situation demands.
- Confirm safety aspects at site, including need for personal protective equipment, sources of ignition, and potential need for evacuation.
- Evaluate the severity, potential impact, safety concerns and response requirements based on the initial data provided by the first person on scene. Refer to the spill response evaluation Flowchart in this section.
- Perform notifications using Figure 1.1 as appropriate.

**AREA MANAGEMENT -EMERGENCY SITE MANAGEMENT**

- Proceed to spill site and coordinate response and clean-up operations.
- Assume the role of Incident Commander.
- Coordinate/perform activation of additional spill response contractors, as the situation demands (telephone reference is provided in Figure 1.5).
- Direct containment, dispersion, and/or clean-up operations in accordance with the "Product Specific Response Considerations" provided in Figure 2.3.
- Complete the "Product Release Report".

**LOCAL COMPANY PERSONNEL**

- Assigned personnel will immediately respond to a discharge from the Pipeline or Facility, as the situation demands.
- Assist as directed at the spill site.

## FIGURE 2.1 SPILL CLASSIFICATION

### Spills/Releases to Environment:

#### Minor

- A spill/release, onsite, that poses no adverse affect to the environment nor impact neither to a water body nor to groundwater. The spill may or may not be reportable to a regulatory agency.

#### Serious

- A spill/release, onsite or off-site/off-right-of-way, that poses an adverse affect to the environment but no impact to a water body nor to groundwater.

#### Major

- A spill/release, onsite or off-site/off ROW, that poses an adverse affect to the environment including an impact to a water body or to groundwater.

#### Critical

- Emergency response for containment or clean up is required. A spill/release, onsite or off-site/off ROW, that poses an adverse affect to the environment including an impact to a water body or to groundwater.

### Complaints -Health & Safety:

#### Minor

- Unverified community complaint from a Landowner, Police, Fire, Municipality, or a Ministry. Verified employee complaint where an investigation is required to obtain resolution.

#### Serious

- Verified community complaint likely to cause danger/risk to the public, employees or TransCanada facilities.

#### Major

- Employee work refusal based on belief of unhealthy or unsafe work conditions.

#### Critical

- Regulatory body notified of employee complaint (by employee) and investigates employee work refusal.

**FIGURE 2.2  
SPECIFIC INCIDENT RESPONSE CHECKLIST**

**INITIAL RESPONSE**

- Take appropriate personal protective measures.
- Secure site.
- Call for medical assistance if an injury has occurred.
- Notify the Oil Control Center and area management of the incident.
- Eliminate possible sources of ignition in the near vicinity of the spill.
- Take necessary fire response actions.
- Advise personnel or public in the area of any potential threat and/or initiate evacuation procedures.
- Identify/isolate the source and minimize the loss of product.
- Restrict access to the spill site and adjacent area as the situation demands. Take additional steps necessary to minimize any threat to health and safety.
- Verify the type of product and quantity released. (Material Safety Data Sheet(s) are available).

**All personnel are reminded that outsiders other than emergency services will not be allowed in the area during the time of an emergency and that statements issued to the media or other interested parties should be given by designated Company Management. Be courteous with media representatives and direct them to the designated spokesperson.**

**LINE BREAK OR LEAK, SPECIFIC RESPONSE (Including Piping Rupture/ Leak Valve Rupture/Leak and Manifold Failure)**

- Shut down Pipeline.
- Close upstream and downstream block valves.
- Mitigate spreading of the product, as the situation demands. See Release to Groundwater, Specific Response for more detailed information. Potential containment land-based strategies include:
  - Earthen dike/berm
  - Ditching
  - Spreading sorbent material over the spill
- Prevent the spill from entering the waterways, sewer, etc. to the greatest extent possible.
- Determine the direction and expected duration of spill movement. Refer to the maps in this plan.
- Review the location of socio-economic and environmentally sensitive areas identified in this plan and the Area Contingency Plan (ACP). Determine which of these may be threatened by the spill and direct the response operation to these locations. Initiate protection and recovery actions.
- Response contractor under TransCanada direction utilizes Combustible Gas Indicator, Oxygen meter, proper colorimetric indicator tubes and/or other air sampling measurements to assure that areas are safe to enter for continued response operations. Refer to Vapor Cloud Specific Response, later in this Figure, if flammable vapors are detected.
- Drain the line section, as the situation demands.
- Inform local operators of utilities such as the power company, telephone company, railway.
- Clean up spilled product to eliminate any possible environmental problems. Be alert for underground cables.
- Make all necessary repairs.
- Return the line to service when repairs are complete, if or when approved.
- Complete follow-up and written reporting, as the situation demands.

**FIRES (MINOR, MAJOR, EXPLOSION) SPECIFIC RESPONSE**

Be aware of Fire Weather conditions.

- Watch -Critical fire weather conditions are forecast to occur.
- Red Flag Warning -Critical Fire weather conditions are either occurring or will shortly.

**INDIVIDUAL DISCOVERING THE FIRE - (All Employees)**

Call the Local Emergency Response Agency (911).

**Note: Pipeline right-of-ways are used by Firefighters as a fire break (barrier) to isolate fires and prevent them from growing in size. Right-of-ways are commonly used to access to fire areas. Many times Firefighters will need to increase the size of the cleared space over the Pipeline right-of-way to prevent the fire from leaping from tree top to tree top. To do this, heavy equipment may be used to quickly increase the amount of cleared space between the fire area and unignited forest. The following are steps to consider when working with the local authority on creating these fire breaks.**

- Use your best judgment to ensure the safety of staff, fire ground workers and the public when determining if this activity is safe to perform;
- Call and confirm with Asset Reliability if this activity is safe and implement any instructions provided by Asset Reliability. Asset Reliability's role is to provide directions to protect the health and safety of those involved as well as pipeline integrity;
- Be physically on site to coordinate the activities related to any pipeline crossings;
- Stake the pipeline to identify the location of the pipe(s) in the right-of-way.
- First preference is to use already existing pipeline crossing areas;
- Gather the appropriate information to complete a formal pipeline crossing agreement. In Canada, send required information to the Land Department in Calgary.
- Notify the Oil Control Center and area management.
- Shut off pumps.
- Coordinate with the Oil Control Center to close appropriate valves to isolate fire, if necessary.
- Isolate Pump Station from Mainline.
- Evacuate site as safety considerations dictates.
- Notify the Oil Control Center of evacuation route and final destination.
- Notify the Oil Control Center of safe arrival.
- Inspect pump station, equipment and controls after the fire is extinguished and safe to return.
- Evaluate pipeline, monitoring or control systems for evidence of heat damage.
- Notify engineering to conduct further investigation if damage is found.
- Make appropriate repairs and return Pipeline to service.

**SEVERE THUNDERSTORM (Flash Flooding/Landslide) SPECIFIC RESPONSE**

Thunderstorms are a year round occurrence with lightning a major threat. The potential of flash flooding is also possible when one area is affected for an extended period.

- Be aware of changing weather conditions.
  - Severe Thunderstorm Watch -Conditions are favorable to the development of thunderstorms.
  - Severe Thunderstorm Warning -A severe thunderstorm has been observed or is imminent.
  - Flash Flood Watch-Flash flooding is possible within 6 hours after heavy rains have ended.
  - Flash Flood Warning -Flash flooding is occurring or imminent.
- Terminate outdoor work when lightning is occurring and move to shelter.
- Avoid areas subject to sudden flooding until the thunderstorm passes.
- Evaluate the situation after weather event.
  - Does standing water prevent visual inspection?
  - Have flood waters damaged the Pipeline?
  - Have flood waters exposed buried piping?
  - Has soil shifted that could lead to a landslide?
- Initiate appropriate pipeline patrol by the most expedient means possible to determine extent of damage.
- Make all necessary repairs.

**TORNADO/STRAIGHT LINE WINDS SPECIFIC RESPONSE**

Although many disasters cannot be prevented or predicted, preparation can significantly reduce losses. In the event of a severe weather condition or a natural disaster, the Area Manager or assigned designee will be the Emergency Coordinator.

- **Be Aware of Changing Weather Conditions**
  - Tornado watch -Conditions are right for the formation of a tornado.
  - Tornado warning -A tornado has been sighted but is not in the area at this time.
  - Tornado alert -A tornado has been sighted in the immediate area, take cover immediately.
- **If Severe Weather Conditions Threaten**
  - Carry a battery operated portable radio and monitor conditions.
  - If a tornado is observed and time permits, evacuate the area.
  - If the tornado is approaching a pump station, notify the Oil Control Center to remotely isolate the station.
  - In vehicle, drive away from tornado at right angle. Get out of car and seek shelter if tornado cannot be avoided.
  - If outdoors, shelter in ditch, excavation or other low spot and lie flat, face down.
  - Make certain that all personnel are aware of the condition.
  - Stay in shelter until conditions are safe.
- **Immediately After the Storm**
  - Account for all personnel.
  - Survey for damages.
  - Initiate team for any repairs.
  - Refer to this Plan for additional response guidance regarding fires, spills, etc., as needed.

**EARTHQUAKE SPECIFIC RESPONSE**

The actual movement of the ground in an earthquake is rarely the direct cause of death or injury. Most casualties result from falling objects and debris because the shocks can shake, damage or demolish buildings and other structures.

- **Stay calm. Don't panic.**
- If you are indoors, stay there. Do not run outside.
- If you are in a building, take cover under a heavy furniture or stand in an inside doorway away from windows. (A door frame or the inner core of a building is its strongest point and least likely to collapse.)
- Exit building as situation determines.
- If you are outside, stay there. Move away from buildings to avoid falling debris. Avoid damaged utility lines.
- If you are driving, stop quickly and stay in your car. If possible, do not stop on a bridge, overpass or where buildings can fall on you. Your car can provide protection from falling debris.
- Do not reenter damaged buildings. Walls may collapse after the original shaking has ceased.
- Evaluate the situation and initiate appropriate pipeline patrol by the most expedient means possible to determine extent of damage.
- Make all necessary repairs as resources and conditions allow.

**SEVERE WINTER STORM SPECIFIC RESPONSE**

- Be aware of Changing Weather Conditions
  - Winter Storm Watch -Conditions are expected but not imminent.
  - Winter Storm Warning -A significant winter storm is occurring, imminent, or likely.
  - Blizzard Warning -Winds at least 35 mph, blowing snow frequently reducing visibility to 0.25 miles or less, and dangerous wind chills are expected.
- Listen to local radio stations for weather advisory and road condition reports, carry a survival kit, and start the trip with a full tank of gasoline.
- Inspect pump station, equipment, and controls after storm for damage.
- Make any repairs as necessary.

**VOLCANIC ERUPTIONS SPECIFIC RESPONSE**

If a volcanic eruption ejects a large ash plume and the wind carries the ash to the pipeline facilities, this may cause a disruption of operations by making travel difficult or impossible due to reduced visibility.

- Begin gathering information from news media, field personnel, etc. to assess any ash cloud size, location, heading and speed as soon as news of an eruption breaks.
- Consider recalling crews prior to the expected arrival of the ash cloud while it is still clear to travel. If a crew is at a station when an ash fall begins, they should probably stay there for the duration and not travel until it is determined to be safe after the event.
- Advise contract aerial patrol service of the situation if contacted for the beginning of a pipeline patrol or if an aerial patrol is in progress.
- Inspect pump station, equipment and controls after eruption for damage.
- Make any repairs as necessary.

**BOMB THREATS SPECIFIC RESPONSE**

The following pages provide guidelines for actions to be taken in the event a bomb threat is received. A bomb threat to the pipeline system or personnel may present itself in any of several ways:

- Phone
- E-mail
- Fax
- Radio
- Mail
- Word-of-mouth
- Increase in the Homeland Defense Status

Other threats to pipeline system or personnel are often treated in the same manner as bomb threats. These may include:

- Terrorist threats
- Workplace violence threats
- General threat to an industry
- Civil disturbances

The following steps should be used as guidance when responding to the above situations. Actions during a real event will vary based on differences in circumstances, response activities, good judgment, etc.

***PHONE / WRITTEN (Fax, Letter, Telegram) THREATS*****Person Receiving the Call**

- Immediately open the Bomb Threat form, (this should be kept next to the phone), so you can use it during the conversation with the individual making the bomb threat call. If possible, complete the form during the call.
- Remain calm and be engaging when talking to the caller.
- Keep the caller on the line as long as possible in order to obtain as much information as possible. Ask him/her to repeat the message. Try to write down every word spoken by the person. If you have a small hand-held tape recorder available, try to tape the conversation.
- If the caller does not indicate the location of the bomb or the time of detonation/attack, ask for this information.
- Inform the caller that the incident could result in death or serious injury to innocent people.
- Pay particular attention to background noises, such as motors, music, and any other noise that may give a clue as to the location of the caller.
- Listen closely to the voice (male, female), voice quality (calm, excited), accents, and speech impediments.

**AFTER THE CALLER HANGS UP AND WRITTEN THREATS**

- Immediately report the threat call to the Oil Control Center or the Company person designated by management to receive such information.

**Pipelines and Pump Stations -Additional Guidance**

- If the caller does not indicate the location of the bomb / substance or the time of possible detonation/attack, ask him / her for this information. Try to determine the Province / State, pipeline system, and specific location involved if possible.
- For offices and control center, inform the caller that the building/facility is occupied and the incident could result in death or serious injury to innocent people.
- For pipeline and pump stations, inform the caller that an incident could result in death of the innocent general public or significant environmental impact.

**Area Manager/Designee**

- Based upon discussion with Corporate Security, determine if the threat is credible. Then decide what actions to take, which can include:
  - Do Nothing
  - Attempt to determine which facility(s) are at risk
  - Stay and Search
  - Partial Evacuation or Internal Evacuation (offices or control center)
  - External Evacuation to an offsite Command Post (offices or control center)
- If a full or partial facility evacuation is necessary, activate Building Evacuation Plan immediately. When in doubt, evacuate. Encourage personnel to be vigilant for suspicious or out-of-place objects as they evacuate and leave their workstations.
- Initiate operations "shut down" procedures, as necessary.
- Secure the location and limit access to essential personnel only.
- Call the appropriate local and/or government agencies (fire, police, etc.) listed in Figure 1.5 and inform them of the threat and your Command Post location.
- Set up a Command Post at a pre-determined offsite location. Ensure you have:
  - Emergency Response Plan
  - Facility maps
  - Access keys
  - Cell Phones, Pagers & Radios
- Direct all members of the press to the designated spokesperson.

**PIPELINES AND PUMP STATIONS SEARCH GUIDELINES**

- Additional actions to consider taking upon credible threats against pipelines and pump stations:
  - Which if any system(s) should be shutdown
  - When any system(s) should be shutdown
- Survey from a distance with the aid of binoculars:
  - valves
  - station piping
- Due to the expanse of Pipeline facilities, aircraft should be considered to aid in the surveying pipeline ROW.
- Notify the appropriate local and/or government agencies listed in Figure 1.5 upon discovery of suspicious or out-of-place object(s).

**SUSPICIOUS MAIL / DELIVERED PACKAGES**

- Frequently seen explosive devices have been incorporated, hidden, or camouflaged in letters, soft cover pocketbooks, hard cover books, manila envelopes, and cardboard boxes. While many are delivered by Canadian or U.S. mail, they may arrive by private courier or express service. Be alert to recognize suspicious-looking or unexpected items especially those that have:
  - Special handling marks (special delivery, air mail, registered, certified)
  - Restrictive markings (personal, confidential, addressee only)
  - Excessive postage
  - Handwritten or poorly typed address
  - Incorrect title, or title but no names
  - Misspelling of common words
  - Oily stains, discolorations, or odor
  - No return address
  - Excessive weight
  - Lopsided, uneven, or ridged envelope
  - Protruding wires or tin foil
  - Excessive securing material (tape, string, etc.)
  - Any evidence that the envelope has been opened and re-glued
  - Mail item from a new or strange source

- If you receive or find a suspicious-looking letter or package:
  - DO NOT TRY TO OPEN IT.
  - Isolate the area around the letter or package to the degree possible, and make emergency notifications as previously outlined, and evacuate personnel to a safe distance, as directed.
  - DO NOT MOVE NOR HANDLE unless absolutely necessary.
  - If opened, preserve, BUT DO NOT TOUCH FURTHER all original envelopes, twine, shipping documents, or packaging materials for evidence and release to the police as requested.
  - Report the call to the Regional Manager or their designee.

**RELEASE TO GROUNDWATER SPECIFIC RESPONSE**

- Evaluate the topography and evidence of surface contamination.
- Establish containment, accounting for public safety, spill volume, terrain, and presence of surface water.
- Notify landowner and appropriate public agencies of potential groundwater contamination.
- Immediately retain an independent consultant with expertise in this area to evaluate impacts and remediation options.
- Consult with appropriate agencies regarding remediation, including water and soil cleanup levels, and need for groundwater monitoring.
- Notify and procure additional response equipment and personnel as necessary to address site-specific conditions.
- Dig intercept trench downgradient of release point.
- Line trench and stage vacuum truck to remove contaminated oil/water mixture.
- Excavate surface catchment upgradient of the intercept trench and near leading edge of visible contamination.
- Excavate until contaminated soil is completely removed and clean soil is encountered or conditions prohibit continued digging.
- Line the catchment to limit or prohibit further groundwater contamination.
- Move vacuum truck from intercept trench to catchment to recover oil and/or oily water.
- Line drop down area to stage contaminated soil as excavated.
- Segregate waste streams to minimize later disposal.
- Based on anticipated release, stage temporary storage and additional vacuum trucks to ensure recovery efforts continue without interruption.

Options for Long term Remediation:

- Air sparging
- Vacuum extraction
- Conventional pump and treat
- Bioslurping
- Excavation
- Enhanced biodegradation/bioremediation
- Chemical addition/oxidation
- Natural Attenuation
- Enlist additional experts, as appropriate, for continuing remediation and coordination with appropriate agencies.

**ABNORMAL OPERATIONS SPECIFIC RESPONSE**

- If operating design limits have been exceeded (increase or decrease pressure or flow) and no emergency condition exists, stop operations and immediately investigate the pipeline.
- Verify whether a true safety problem, equipment malfunction, or operator error is present. Note: In all cases, safety to operations, the general public, and property will govern actions taken.
- Make appropriate repairs before continuing operations. Note: Corrective action will only be done by qualified personnel to perform the type of work involved.
- Monitor affected systems until normal operations are resumed.
- Complete follow-up and written reporting, as the situation demands.

**Note: It is the responsibility of the pipeline operator to carry out the response procedures for abnormal pipeline operations as outlined in their respective O&M Manual.**

## 2.2 DOCUMENTATION OF INITIAL RESPONSE ACTIONS

It is difficult, particularly during the first few minutes of an initial response operation, to think about the importance of documentation. A log should be maintained which documents the history of the events and communications that occur during the response. When recording this information, it is important to remember that the log may become instrumental in legal proceedings, therefore:

- Record only facts, do not speculate.
- Do not criticize the efforts and/or methods of other people/operations.
- Do not speculate on the cause of the spill.
- Do not skip lines between entries or make erasures. If an error is made, draw a line through it, add the correct entry above or below it, and initial the change.
- Record the recommendations, instructions, and actions taken by government/regulatory officials.
- Document conversations (telephone or in person) with government/regulatory officials.
- **Request that government/regulatory officials document and sign their recommendations or orders (especially if company personnel do not agree with the suggestions, instructions, or actions).**

## 2.3 OIL CONTAINMENT, RECOVERY AND DISPOSAL/WASTE MANAGEMENT

After initial response has been taken to stop further spillage and notifications made to the required agencies, the Company will begin spill containment, recovery, and disposal operations.

The Incident Commander will assess the size and hazards of the spill (see Figure 2.3). The type of product, the location of the spill, and the predicted movement of the spill will be considered.

Based on this assessment, additional clean-up personnel and equipment will be dispatched to the site and deployed to control and contain the spill. Boom may be deployed in waterways to contain the spill and to protect socio-economic and environmentally sensitive areas. Booms may also be used in waterways to deflect or guide the spill to locations where it can more effectively be cleaned up using skimmers, vacuum trucks, or sorbent material. Clean-up equipment and material will be used in the manner most effective for rapid and complete clean-up of all spilled product.

Response and clean-up will continue until all recoverable product is removed, the environment is returned to its pre-spill state, and the Unified Command of the Company Incident Commander and the Federal and/or State On-Scene Coordinators determine that further response and cleanup is no longer necessary.

FIGURE 2.3

<b>FLAMMABLE LIQUIDS (Non-Polar/Water-Immiscible)</b>	
The following information is intended to provide initial responder(s) with data that may be useful in making quick decisions and executing prompt response actions. The information is intended for guideline purposes only.	
<b>PRODUCTS: Crude Oil</b>	
<b>HAZARD IDENTIFICATION / RECOGNITION</b>	
<b>GUIDE NO. 128</b>	<p><b>DANGERS</b></p> <ol style="list-style-type: none"> <li>1. <b>HIGHLY FLAMMABLE:</b> Will be easily ignited by heat, sparks or flames.</li> <li>2. Vapors may form explosive mixtures with air.</li> <li>3. Vapors may travel to source of ignition and flash back.</li> <li>4. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).</li> <li>5. Vapor explosion hazard indoors, outdoors or in sewers.</li> <li>6. Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.</li> <li>7. Runoff to sewer may create fire or explosion hazard.</li> <li>8. Containers may explode when heated.</li> <li>9. Many liquids are lighter than water.</li> <li>10. Substance may be transported hot.</li> <li>11. If molten aluminum is involved, refer to Emergency Response Guide No. 169.</li> </ol>
<b>HEALTH</b>	
<ol style="list-style-type: none"> <li>1. Move victim to fresh air. Call 911 or emergency medical service.</li> <li>2. Apply artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.</li> <li>3. Remove and isolate contaminated clothing and shoes.</li> <li>4. In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.</li> <li>5. Wash skin with soap and water.</li> <li>6. Keep victim warm and quiet.</li> <li>7. Ensure that medical personnel are aware of the material(s) involved, and take precautions.</li> </ol>	
<b>PUBLIC SAFETY</b>	
<ol style="list-style-type: none"> <li>1. Isolate spill or leak area immediately for at least 50 meters (150 feet) in all directions.</li> <li>2. Keep unauthorized personnel away.</li> <li>3. Stay upwind.</li> <li>4. Keep out of low areas.</li> <li>5. Ventilate closed spaces before entering.</li> </ol>	
<b>EVACUATION</b>	<p><b>Large Spill 1. Consider initial downwind evacuation for at least 300 meters (1,000 feet). Fire 1. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.</b></p>
Information provided by the Emergency Response Guidebook 2008.	

## 2.4 STORAGE/DISPOSAL

Strict rules designed to ensure safe and secure handling of waste materials govern the Company waste disposal activities. To ensure proper disposal of recovered oil and associated debris, the following guidelines should be considered:

- In the event of a product spill, Facilities have limited capacity to store recovered product and water. Separated product is pumped to frac tanks or to trucks to be carried to the Facility for processing.
- Oily debris will be segregated on site and containerized for temporary storage prior to disposal in accordance with hazardous waste regulations.
- Transportation of waste material will be performed in accordance with all applicable Federal and State Regulations.
- Waste associated with the spill will be disposed at sites that have the necessary permits to accept the type of waste to be discharged.

The Company's Community, Safety and Health Administration Dept. will coordinate activities and secure the permits to ensure proper disposal or recycling of recovered product and debris.

## 2.5 SAMPLING AND WASTE ANALYSIS PROCEDURE

The Company's sampling and waste analysis practices are governed by the regulations for the applicable Province/State and Federal agency. These regulations outline methods and procedures for determining the chemical and physical characteristics of wastes generated by the Facility, including waste associated with spills, so that they may be properly stored, treated, or disposed.

## 2.6 SAFETY AWARENESS

It is the corporate policy of the Company to provide a safe workplace for all workers. All employees and contractors are responsible for maintaining the safety and health of all workers on the pipeline and the response operations.

Prior to engaging in any spill response activity:

- All employees/contractors must have received orientation from the Company Safety Plan.
- All U.S. contractor response personnel must be in compliance with Occupational Safety and Health Administration training requirements.
- All other personnel will have completed appropriate training for their position as outlined in Section 3.0.
- No employee/contractor shall engage in activities which place them at risk without the appropriate protective equipment and training.

### Response Safety

All Company and contractor personnel are expected to comply with the Site Safety Plan for each spill incident.

- Any concern regarding health or safety issues should be immediately addressed.
- The First Responder must consider the spill site as dangerous and the local atmosphere explosive until air monitoring procedures prove that the area is safe.
- The First Responder must exit the area against or across the wind, if possible, and must also evacuate others who are working in the area.
- All injuries, no matter how minor, must be reported to the Incident Commander in a timely manner.
- Prior to entering a spill area, a qualified person must perform an initial safety and health evaluation of the site.

### Air Monitoring

A Safety Monitor shall be designated who is trained in the operation of air monitoring equipment. The Incident Commander must ensure that Safety Monitors are trained and that their equipment is maintained and ready for use.

- The air monitoring equipment shall be activated and checked at the location in which it is stored.
- Calibration of instruments should be performed before use.
- Air monitoring measurements which are to be made prior to entry into the spill area include:
  - Oxygen content
  - Lower Explosive Limit (LEL)
  - Benzene level
- Lower Explosive Limit readings above 10% require immediate evacuation of the area and elimination of ignition sources.
- Oxygen readings below 19.5% require the use of air supplied respiratory protection.
- After assuring that there are no hazards relating to explosion or oxygen depletion, sampling for benzene or total petroleum hydrocarbons shall dictate the appropriate respiratory devices to be used by persons entering the area.
- Benzene levels must be below .5 ppm to work without respiratory protection. At a level of greater than .5 but less than 10 ppm a half face respirator may be used. When the level is between 50 and 100ppm a full face respirator must be used. Anything higher than 50 ppm, a supplied air or SCBA must be used.
- Hydrogen Sulfide is an extremely hazardous toxic compound that is present in most crude oils that are transported through the pipeline.

- Passive air monitoring for Hydrogen Sulfide will be done by all personnel working on or near the pipeline and during any cleanup operation.
  - Hydrogen Sulfide is characterized by a rotten egg smell.
  - The gas causes rapid temporary paralysis of the olfactory system leading to the loss of the sense of smell.
  - Permissible exposure limits in many countries is 10 ppm.
- Symptoms of exposure to Hydrogen Sulfide are:
  - 0-10 ppm causes Irritation of the eyes, nose and throat
  - 10-50 ppm can cause headache, dizziness, nausea, vomiting and breathing difficulty
  - 50-100 ppm can cause severe respiratory irritation, shock, convulsions, coma and even death.
- The Incident Commander is responsible for industrial hygiene monitoring in the post discovery period.

### Decontamination

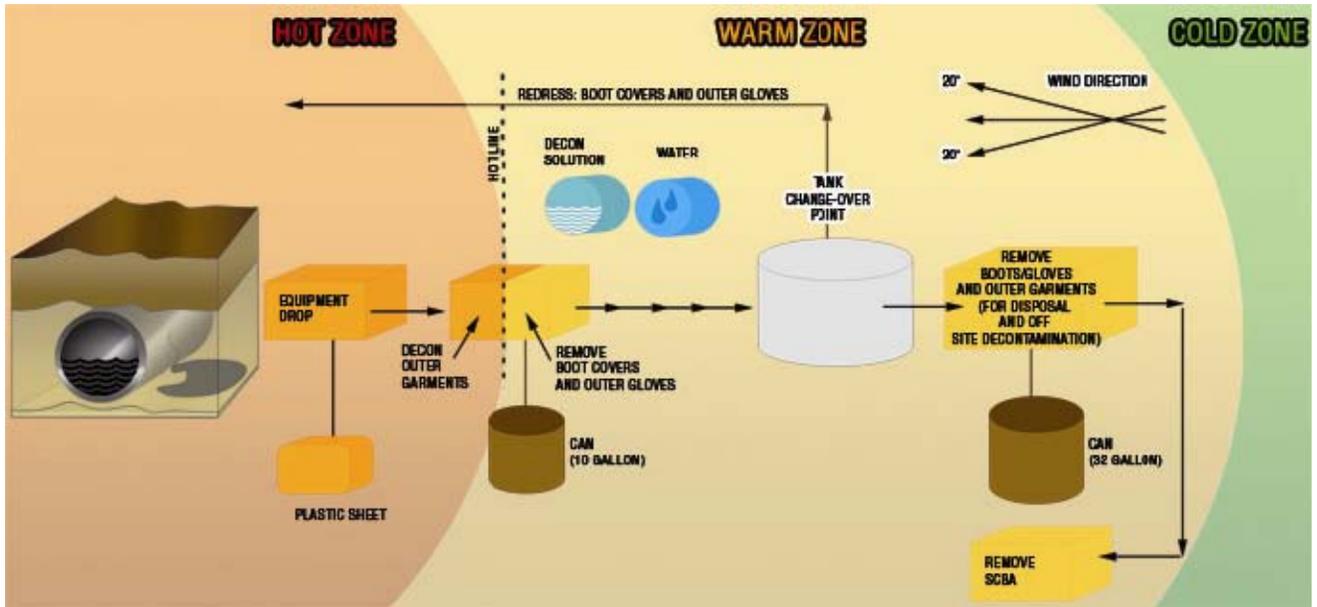
Through training programs, Facility personnel know and understand the importance of the removal of hazardous substances from their person if they are contaminated. Eyewash stations and safety showers provide a means to quickly remove gross contamination of harmful agents, including gasoline. Personnel must immediately shower and remove any clothing which is wet or otherwise contaminated. Showers in the change room are to be used for thorough cleansing. Persons should inspect themselves thoroughly before donning a fresh change of clothing.

Contaminated clothing should be properly disposed. Contaminated personal protective equipment must be washed and sanitized before re-using. The washing of contaminated equipment is performed in a "contained area" to assure that the disposal of the wash water can be handled properly.

Establishing "Exclusion -Hot", "Decontamination - Decon", and "Support -Safe" Zones are required to prevent the removal of contaminants from the contaminated area as well as unauthorized entry into contaminated areas.

- Regardless of the decontamination facilities available, all efforts to minimize personnel exposure should be taken.
- Decontamination facilities should be positioned prior to employee/ contractor entrance to areas where the potential for exposure to contamination exists. The appropriate Material Safety Data Sheets (MSDS) are available to aid health professionals treating the injured parties. Material Safety Data Sheets are located in Appendix G.
- Decontamination facilities should be designed to prevent further contamination of the environment and should have a temporary storage area for items that will be reused in the contaminated area.
- Particular attention should be paid to personal hygiene prior to eating, drinking, or smoking.

### MINIMUM DECONTAMINATION LAYOUT LEVELS A & B PROTECTION



### Personal Protective Equipment (PPE)

The following represents OSHA/USEPA designated PPE levels for responding to emergencies, post emergency cleanup sites, and/or Temporary Storage and Disposal (TSD) sites. The responder's PPE should be chosen based on his/her level of training and assigned job duties.

Personal Protective Equipment (PPE)	
<p><b>LEVEL A</b></p> <ul style="list-style-type: none"> <li>● Self Contained Breathing Apparatus (SCBA) (worn inside suit)</li> <li>● Encapsulated Chemical Protective Suit</li> <li>● Chemical Protective Gloves</li> <li>● Chemical Protective Boots</li> <li>● Hard Hat</li> <li>● Safety Toe Footwear</li> <li>● Safety Glasses</li> </ul>	To be selected when the greatest level of skin, respiratory, and eye protection is required.
<p><b>LEVEL B</b></p> <ul style="list-style-type: none"> <li>● SCBA (worn outside suit)</li> <li>● Chemical Protective Suit w/Hood</li> <li>● Chemical Protective Boots</li> <li>● Chemical Protective Gloves</li> <li>● Hard Hat</li> <li>● Safety Toe Footwear</li> <li>● Safety Glasses</li> </ul>	To be selected when the highest level of respiratory protection is necessary but a lesser level of skin is needed.
<p><b>LEVEL C</b></p> <ul style="list-style-type: none"> <li>● Air Purifying Respirator (APR)</li> <li>● APR a<sup>1</sup>/<sub>2</sub> Face / Full Face</li> <li>● Hard Hat</li> <li>● Glasses (worn with a<sup>1</sup>/<sub>2</sub> face APR)</li> <li>● Chemical Protective Boots</li> <li>● Chemical Protective Gloves</li> <li>● Chemical Protective Suit/Tyvek</li> <li>● Safety Toe Footwear</li> <li>● Safety Glasses</li> </ul>	To be selected when the concentration and type of airborne substances is known and the criteria for using air purifying respirators are met.
<p><b>MODIFIED LEVEL C</b> Same as Level C, except no APR requirements.</p>	To be selected when the concentration and type of airborne substances is known and the criteria for using air purifying respirators are met.
<p><b>LEVEL D</b></p> <ul style="list-style-type: none"> <li>● Hard Hat</li> <li>● Safety Glasses</li> <li>● Work Uniform / Clothes</li> <li>● Leather Gloves</li> <li>● Safety Boots</li> <li>● Nomex (if required by the Company)</li> </ul>	The atmosphere contains no known hazard and work functions preclude the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

## 2.7 EMERGENCY MEDICAL TREATMENT AND FIRST AID

Call 911 immediately. On-site emergency medical response requires the same rapid assessment of the patient as any other situation, but requires the responders to be aware of other considerations that may affect the way they handle the patient. These considerations include the following:

- The potential for contamination of the patient, responders, and equipment should be addressed. Responders should arrange to treat all patients AFTER the injured party has been decontaminated according to the Site Safety Plan.
- Site personnel should make the initial assessment of the patient and determine the severity of the injury/illness.
- If the treatment needed is critical care or "life saving" treatment, rapid decontamination of the injured/ill party should be started. Refer to the Site Safety Plan for steps to be taken in an "abbreviated" decontamination for medical treatment.
- The need for full decontamination should be carefully weighed against the need for prompt medical treatment.
- The ambulance responding to medical emergencies shall be contacted as soon as possible and instructed exactly where to respond when needed and the nature of the contaminant. Telephone reference is provided in Annexes.
- Material Safety Data Sheet information will be available from the Incident Commander and should be provided to medical personnel to alert them of decontamination requirements.
- Report all injuries, incidents or close calls.
- If emergency medical treatment is needed, the Incident Commander, or his designated representatives, will request assistance from trained medical personnel.

## SECTION 3

---

### RESPONSE TEAMS

### 3.1 INTRODUCTION

This Section describes organizational features and duties of the local responders, the Regional Emergency Preparedness Team (EPT), and the broader Emergency Management Team (EMT) as defined in TransCanada's Incident Management System (IMS). The Incident Management System integrates Incident Management, Emergency Management and Crisis Management and is maintained separately.

The key to an effective emergency response is a rapid, coordinated, tiered response by the affected Facility, the Regional Emergency Operations Center, and the Corporate Emergency Operations Center, consistent with the magnitude of an incident.

First response to an incident at the Facility will be provided by the local responders. The Regional EOC will respond, to the degree necessary, to incidents exceeding local capability.

Our response teams will use the National Incident Management System (NIMS) Incident Command System (ICS) to manage the emergency response activities. Because Incident Commander System is a management tool that is readily adaptable to incidents of varying magnitude, it will typically be used for all emergency incidents. Staffing levels will be adjusted to meet specific response team needs based on incident size, severity, and type of emergency.

An explanation of Incident Commander System and the roles and responsibilities for primary members of the response teams are provided in Section 3.7 per CAN/CSA-2731-03. The USCG Incident Management Handbook (IMH) contains an in-depth description of all Incident Commander System positions, Incident Commander System development, response objectives and strategies, command responsibilities, Incident Commander System specific glossary/acronyms, resource typing, the Incident Action Plan process, and meetings. The IMH can be located on the USCG's Homeport Website.

### 3.2 QUALIFIED INDIVIDUAL

It is the responsibility of the Qualified Individual (QI) or his/her designee to coordinate with the Federal On-Scene Coordinator (FOSC) and State On-Scene Coordinator (SOSC) throughout the response, if applicable.

Vital duties of the Qualified Individual (QI) include:

- Notify all response personnel, as needed.
- Identify the character, exact source, amount, and extent of the release, as well as the other items needed for notification.
- Assess the interaction of the spilled substance with water and/or other substances stored at the Facility and notify response personnel at the scene of that assessment.

- Assess the possible hazards to human health and the environment due to the release. This assessment must consider both the direct and indirect effects of the release (i.e., the effects of any toxic, irritating, or asphyxiating gases that may be generated or the effects of any hazardous surface water runoffs from water or chemical agents used to control fire and heat-induced explosion).
- Assess and implement prompt removal actions to contain and remove the substance released.
- Coordinate rescue and response actions as previously arranged with all response personnel.
- Activate and engage in contracting with oil spill removal organizations.
- Use authority to immediately access Company funding to initiate cleanup activities.
- Direct cleanup activities until properly relieved of this responsibility.
- Arrangements will be made to ensure that the Qualified Individual (QI) or the Alternate Qualified Individual (AQI) is available on a 24-hour basis and is able to arrive at the Facility in a reasonable time.
- The AQI shall replace the QI in the event of his/her absence and have the same responsibilities and authority.

### 3.3 INITIAL RESPONSE TEAM (IRT)

The first Company person on scene will function as the Incident Commander and person-in-charge until relieved by an authorized supervisor who will then assume the position of Incident Commander (IC). Transfer of command will take place as more senior management contract support respond to the incident. For response operations within the control of the Initial Response Team, the role of IC will typically be assumed and retained by the Qualified Individual.

The number of positions/personnel required to staff the Initial Response Team will depend on the size and complexity of the incident. The duties of each position may be performed by the IC directly or delegated as the situation demands. The IC is always responsible for directing the response activities and will assume the duties of all the primary positions until the duties can be delegated to other qualified personnel.

A complete functional ICS organization is shown in Figure 3.1. The Initial Response Team should try to fill the necessary positions and request additional support from the Crisis Response Team to fill/back up all the positions as the incident may dictate. Detailed job descriptions of the primary response team positions are provided in Section 3.7.

### 3.4 REGIONAL EMERGENCY PREPAREDNESS TEAM (EPT)

The Emergency Preparedness Team (EPT) supports the Initial Response Team. The number of positions/personnel required to staff the EPT will depend on the size and complexity of the incident.

The Regional Emergency Preparedness Team is staffed by personnel from various Regional locations. The EPT provides necessary information to the appropriate Federal, State/Province, and Local authorities with designated response roles, including the National Response Center (NRC), the Canadian National Energy Board (NEB), if necessary, State Emergency Response Commission (SERC) Provincial Ministry, and local response agencies.

### 3.5 INCIDENT COMMAND SYSTEM (ICS)

The Incident Command System is intended to be used as an emergency management tool to aid in mitigating all types of emergency incidents. This system is readily adaptable to very small emergency incidents as well as more significant or complex emergencies. The Incident Command System utilizes the following criteria as key operational factors:

- Assigns overall authority to one individual
- Provides structured authority, roles and responsibilities during emergencies
- The system is simple and familiar, and is used routinely at a variety of incidents
- Communications are structured
- There is a structured system for response and assignment of resources
- The system provides for expansion, escalation, and transfer/transition of roles and responsibilities
- The system allows for "Unified Command" where agency involvement at the command level is required

Effective establishment and utilization of the Incident Command System during response to all types of emergencies can:

- Provide for increased safety
- Shorten emergency mitigation time by providing more effective and organized mitigation
- Cause increased confidence and support from local, State, Federal, and public sector emergency response personnel
- Provide a solid cornerstone for emergency planning efforts

Section 3.7 provides a comprehensive list of every response team member's duty assignment.

### 3.6 UNIFIED COMMAND

As a component of an Incident Commander System, the Unified Command (UC) is a structure that brings together the Incident Commanders of all major organizations involved in the incident to coordinate an effective response while still meeting their own responsibilities. The Unified Command links the organizations responding to the incident and provides a forum for the Responsible Party and responding agencies to make consensus decisions. Under the Unified Command, the various jurisdictions and/or agencies and responders may blend together throughout the organization to create an integrated response team. The Incident Commander System process requires the Unified Command to set clear objectives to guide the on-scene response resources.

Multiple jurisdictions may be involved in a response effort utilizing Unified Command. These jurisdictions could be represented by any combination of:

- Geographic boundaries
- Government levels
- Functional responsibilities
- Statutory responsibilities

The participants of Unified Command for a specific incident will be determined taking into account the specifics of the incident and existing response plans and/or decisions reached during the initial meeting of the Unified Command. The Unified Command may change as an incident progresses, in order to account for changes in the situation.

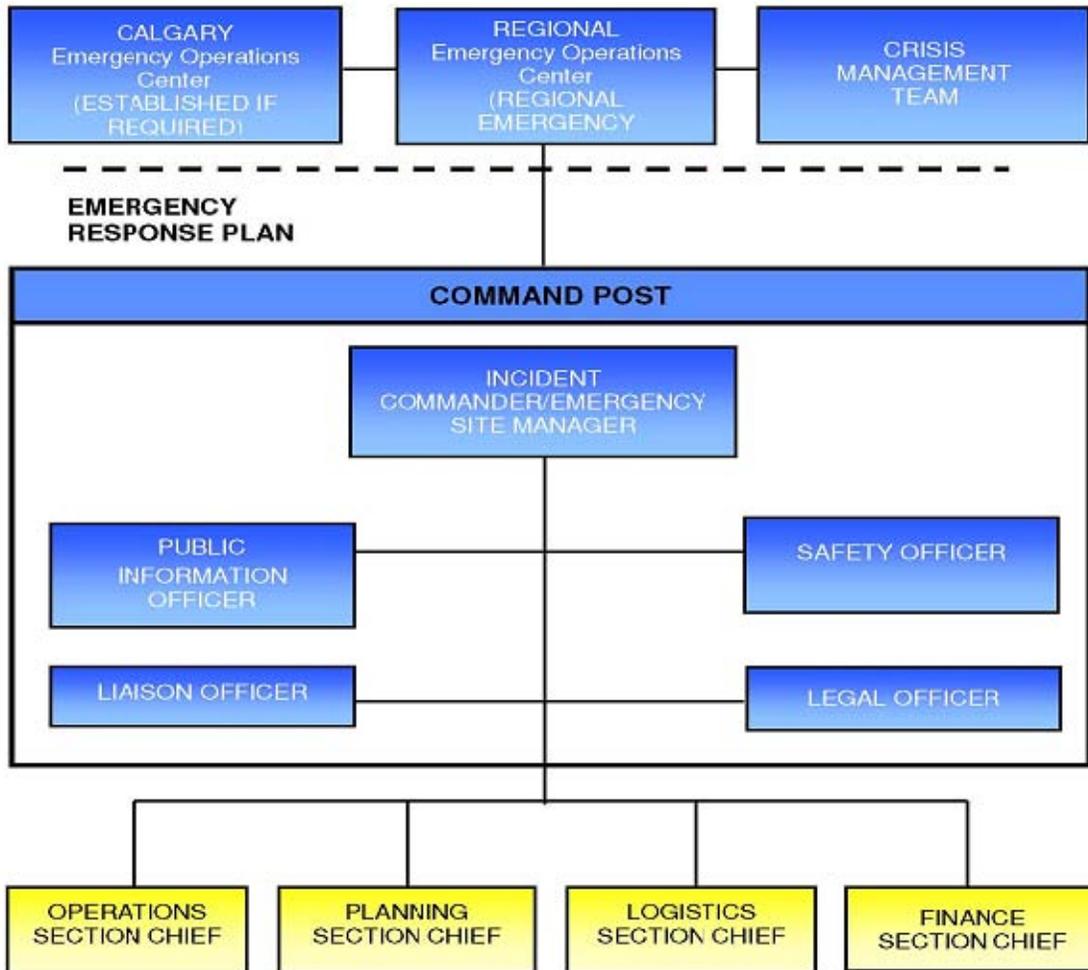
The Unified Command is responsible for overall management of an incident. The Unified Command directs incident activities and approves and releases resources. The Unified Command structure is a vehicle for coordination, cooperation and communication which is essential to an effective response.

Unified Command representatives must be able to:

- Agree on common incident objectives and priorities
- Have the capability to sustain a 24-hour-7-day-per-week commitment to the incident
- Have the authority to commit agency or Company resources to the incident
- Have the authority to spend agency or Company funds
- Agree on an incident response organization
- Agree on the appropriate Command and General Staff assignments
- Commit to speak with "one voice" through the Public Information Officer or Joint Information Center
- Agree on logistical support procedures
- Agree on cost-sharing procedures

**FIGURE 3.1  
INCIDENT COMMAND SYSTEM**

**INCIDENT MANAGEMENT SYSTEM**



### 3.7 ICS ROLES AND RESPONSIBILITIES

#### COMMON RESPONSIBILITIES

The following is a checklist applicable to all personnel in an Incident Commander System organization:

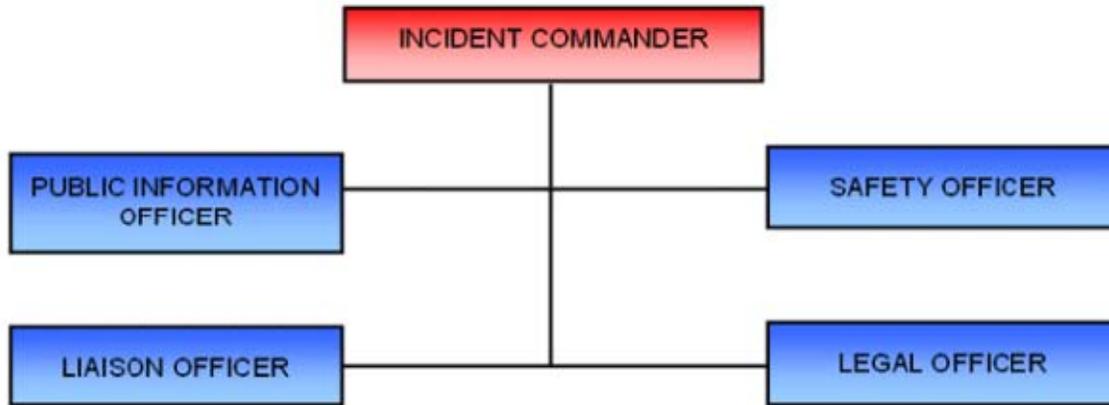
- Receive assignment, including:
  - Job assignment
  - Resource order number and request number
  - Reporting location
  - Reporting time
  - Travel instructions
  - Special communications instructions
- Upon arrival, check-in at designated check-in location.
- Receive briefing from immediate supervisor.
- Acquire work materials.
- Supervisors maintain accountability for assigned personnel.
- Organize and brief subordinates.
- Know your assigned radio frequency(s) and ensure communications equipment is operating properly.
- Use clear text and Incident Commander System terminology (no codes) in all communications.  
Complete forms and reports required of the assigned position and send to Documentation Unit.
- Maintain unit records, including Unit Log (ICS Form 214).
- Respond to demobilization orders and brief subordinates regarding demobilization.

#### UNIT LEADER RESPONSIBILITIES

In Incident Commander System, a Unit Leader's responsibilities are common to all units in all parts of the organization. Common responsibilities of Unit Leaders are listed below.

- Review common responsibilities.
- Receive briefing from Incident Commander, Section Chief or Branch Director, as appropriate.
- Participate in incident planning meetings, as required.
- Determine current status of unit activities.
- Order additional unit staff, as appropriate.
- Determine resource needs.
- Confirm dispatch and estimated time of arrival of staff and supplies.
- Assign specific duties to staff; supervise staff.
- Develop and implement accountability, safety and security measures for personnel and resources.  
Supervise demobilization of unit, including storage of supplies.
- Provide Supply Unit Leader with a list of supplies to be replenished.
- Maintain unit records, including Unit Log (ICS Form 214).

**COMMAND**



## INCIDENT COMMANDER

- Assess the situation and/or obtain a briefing from the prior Incident Commander.
- Determine Incident Objectives and strategy.
- Establish the immediate priorities.
- Establish an Incident Command Post.
- Brief Command Staff and Section Chiefs.
- Review meetings and briefings.
- Establish an appropriate organization.
- Ensure planning meetings are scheduled as required. (Refer to Figure 3.2, The Operational Planning “P” for assistance).
- Approve and authorize the implementation of an Incident Action Plan.
- Ensure that adequate safety measures are in place.
- Coordinate activity for all Command and General Staff.
- Coordinate with key people and officials.
- Approve requests for additional resources or for the release of resources.
- Keep agency administrator informed of incident status.
- Approve the use of trainees, volunteers, and auxiliary personnel.
- Authorize release of information to the news media.
- Ensure incident Status Summary (ICS Form 209-CG) is completed and forwarded to appropriate higher authority.
- Order the demobilization of the incident when appropriate.
- Assign any of the Incident Commander roles and responsibilities to a Deputy Incident Commander as needed.

## PUBLIC INFORMATION OFFICER

- Determine from the Incident Commander if there are any limits on information release.
- Develop material for use in media briefings.
- Obtain Incident Commander approval of media releases.
- Inform media and conduct media briefings.
- Arrange for tours and other interviews or briefings that may be required.
- Obtain media information that may be useful to incident planning.
- Maintain current information summaries and/or displays on the incident and provide information on the status of the incident to assigned personnel.

**LIAISON OFFICER**

- Be a contact point for Agency Representatives.
- Maintain a list of assisting and cooperating agencies and Agency Representatives. Monitor check-in sheets daily to ensure that all Agency Representatives are identified.
- Assist in establishing and coordinating interagency contacts.
- Keep agencies supporting the incident aware of incident status.
- Monitor incident operations to identify current or potential inter-organizational problems.
- Participate in planning meetings, providing current resource status, including limitations and capability of assisting agency resources.
- Coordinate response resource needs for Natural Resource Damage Assessment and Restoration (NRDAR) activities with the Operations during oil and HAZMAT responses.
- Coordinate response resource needs for incident investigation activities with the Operations.
- Ensure that all required agency forms, reports and documents are completed prior to demobilization.
- Coordinate activities of visiting dignitaries.

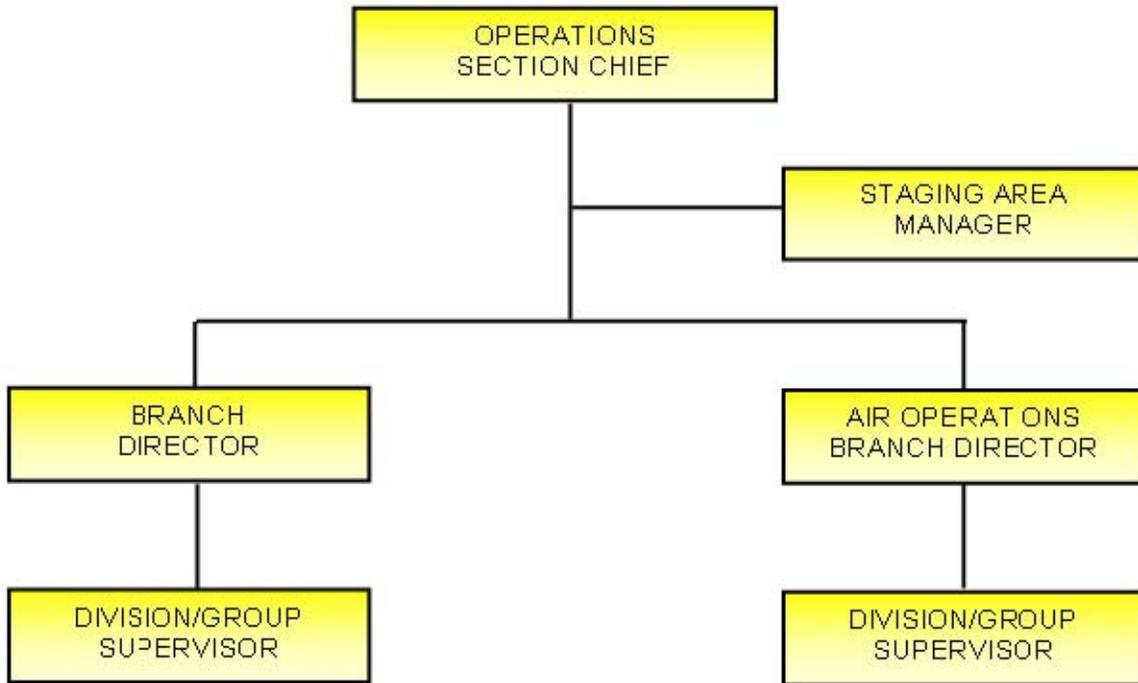
**SAFETY OFFICER**

- Participate in planning meetings.
- Identify hazardous situations associated with the incident.
- Review the Incident Action Plan for safety implications.
- Exercise emergency authority to stop and prevent unsafe acts.
- Investigate accidents that have occurred within the incident area.
- Review and approve the medical plan.
- Develop the Site Safety Plan and publish Site Safety Plan summary (ICS Form 208) as required.

**LEGAL OFFICER**

- Participate in planning meetings, if requested.
- Advise on legal issues relating to in-situ burning, use of dispersants, and other alternative response technologies.
- Advise on legal issues relating to differences between Natural Resource Damage Assessment Restoration (NRDAR) and response activities.
- Advise on legal issues relating to investigations.
- Advise on legal issues relating to finance and claims.
- Advise on legal issues relating to response.

### OPERATIONS



**OPERATIONS SECTION GENERAL FUNCTIONS**

- Responsible for managing tactical operations at the incident site directed toward reducing the immediate hazard, saving lives and property, establishing situational control, and restoring normal operations.
- Directs and coordinates all incident tactical operations.
- Executes the Incident Action Plan.

**OPERATIONS SECTION CHIEF**

- Develop operations portion of Incident Action Plan.
- Brief and assign Operations Section personnel in accordance with the Incident Action Plan.
- Supervise Operations Section.
- Determine need and request additional resources.
- Review suggested list of resources to be released and initiate recommendation for release of resources.
- Assemble and disassemble strike teams assigned to the Operations Section.
- Report information about special activities, events, and occurrences to the Incident Commander.
- Respond to resource requests in support of National Resource Damage Assessment and Restoration activities.

**BRANCH DIRECTOR**

- Develop with subordinates alternatives for Branch control operations.
- Attend planning meetings at the request of the Operations.
- Review Assignment List (ICS Form 204-CG) for Divisions/Groups within the Branch. Modify lists based on effectiveness of current operations.
- Assign specific work tasks to Division/Group Supervisors.
- Supervise Branch operations.
- Resolve logistic problems reported by subordinates.
- Report to Operations when: the Incident Action Plan is to be modified; additional resources are needed; surplus resources are available; or hazardous situations or significant events occur.
- Approve accident and medical reports originating within the Branch.

**DIVISION/GROUP SUPERVISOR**

- Implement Incident Action Plan for Division/Group.
- Provide the Incident Action Plan to Strike Team Leaders, when available.
- Identify increments assigned to the Division/Group.
- Review Division/Group assignments and incident activities with subordinates and assign tasks.
- Ensure that the Incident Commander and/or Resources Unit is advised of all changes in the status of resources assigned to the Division/Group.
- Coordinate activities with adjacent Division/Group.
- Determine need for assistance on assigned tasks.
- Submit situation and resources status information to the Branch Director or the Operations.
- Report hazardous situations, special occurrences, or significant events (e.g., accidents, sickness, discovery of unanticipated sensitive resources) to the immediate supervisor.
- Ensure that assigned personnel and equipment get to and from assignments in a timely and orderly manner.
- Resolve logistics problems within the Division/Group.
- Participate in the development of Branch plans for the next operational period.

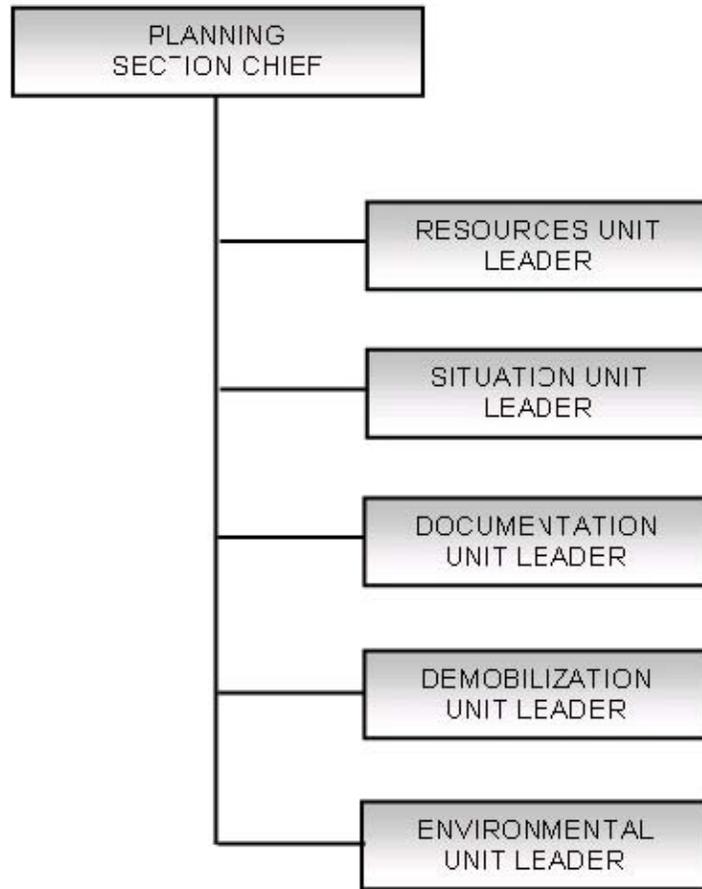
**STAGING AREA MANAGER**

- Establish Staging Area layout.
- Determine any support needs for equipment, feeding, sanitation and security.
- Establish check-in function as appropriate.
- Post areas for identification and traffic control.
- Request maintenance service for equipment at Staging Area as appropriate.
- Respond to request for resource assignments.
- Obtain and issue receipts for radio equipment and other supplies distributed and received at Staging Area.
- Determine required resource levels from the Operations.
- Advise the Operations when reserve levels reach minimums.
- Maintain and provide status to Resource Unit of all resources in Staging Area.
- Demobilize Staging Area in accordance with the Incident Demobilization Plan.

**AIR OPERATIONS BRANCH DIRECTOR**

- Organize preliminary air operations.
- Request declaration (or cancellation) of restricted air space
- Participate in preparation of the Incident Action Plan through the Operations. Insure that the air operations portion of the Incident Action Plan takes into consideration the Air Traffic Control requirements of assigned aircraft.
- Perform operational planning for air operations.
- Prepare and provide Air Operations Summary (ICS Form 220) to the Air Support Group and Fixed-Wing Bases.
- Determine coordination procedures for use by air organization with ground Branches, Divisions, or Groups.
- Coordinate with appropriate Operations Section personnel.
- Supervise all air operations activities associated with the incident.
- Evaluate helibase locations.
- Establish procedures for emergency reassignment of aircraft.
- Schedule approved flights of non-incident aircraft in the restricted air space area.
- Coordinate with the Operations Coordination Center (OCC) through normal channels on incident air operations activities.
- Inform the Air Tactical Group Supervisor of the air traffic situation external to the incident.
- Consider requests for non-tactical use of incident aircraft.
- Resolve conflicts concerning non-incident aircraft.
- Coordinate with Federal Aviation Administration.
- Update air operations plans.
- Report to the Operations on air operations activities.
- Report special incidents/accidents.
- Arrange for an accident investigation team when warranted.

**PLANNING**



**PLANNING SECTION GENERAL FUNCTIONS**

- Responsible for gathering, evaluating, and disseminating tactical information and intelligence critical to the incident.
- Maintaining incident documentation and providing documentation services.
- Preparing and documenting Incident Action Plans.
- Conducting long-range and/or contingency planning.
- Developing alternative strategies.
- Tracking resources assigned to the incident.
- Developing plans for waste disposal.
- Developing plans for demobilization.

**PLANNING SECTION CHIEF**

- Collect and process situation information about the incident.
- Supervise preparation of the Incident Action Plan.
- Provide input to the Incident Commander and the Operations in preparing the Incident Action Plan.
- Chair planning meetings and participate in other meetings as required. (Refer to Figure 3.2, The Operational Planning “P” for assistance).
- Reassign out-of-service personnel already on-site to Incident Commander System organizational positions as appropriate.
- Establish information requirements and reporting schedules for Planning Section Units (e.g., Resources, Situation Units).
- Determine the need for any specialized resources in support of the incident.
- If requested, assemble and disassemble Strike Teams and Task Forces not assigned to Operations.
- Establish special information collection activities as necessary (e.g., weather, environmental, toxics, etc.).
- Assemble information on alternative strategies.
- Provide periodic predictions on incident potential.
- Report any significant changes in incident status.
- Compile and display incident status information.
- Oversee preparation and implementation of the Incident Demobilization Plan.
- Incorporate plans (e.g., Traffic, Medical, Communications, Site Safety) into the Incident Action Plan.

**RESOURCES UNIT LEADER**

- Establish the check-in function at incident locations.
- Prepare Organization Assignment List (ICS Form 203-CG) and Incident Organization (ICS Form 207-CG).
- Prepare appropriate parts of Assignment List (ICS Form 204).
- Prepare and maintain the Incident Command Post display (to include organization chart and resource allocation and deployment).
- Maintain and post the current status and location of all resources.
- Maintain master roster of all resources checked in at the incident.

**SITUATION UNIT LEADER**

- Begin collection and analysis of incident data as soon as possible.
- Prepare, post, or disseminate resource and situation status information as required, including special requests.
- Prepare periodic predictions or as requested by the Planning Section Chief.
- Prepare the Incident Status Summary (ICS Form 209-CG).
- Provide photographic services and maps if required.

**DOCUMENTATION UNIT LEADER**

- Set up work area; begin organization of incident files.
- Establish duplication service; respond to requests.
- File all official forms and reports.
- Review records for accuracy and completeness; inform appropriate units of errors or omissions.
- Provide incident documentation as requested.
- Store files for post-incident use.

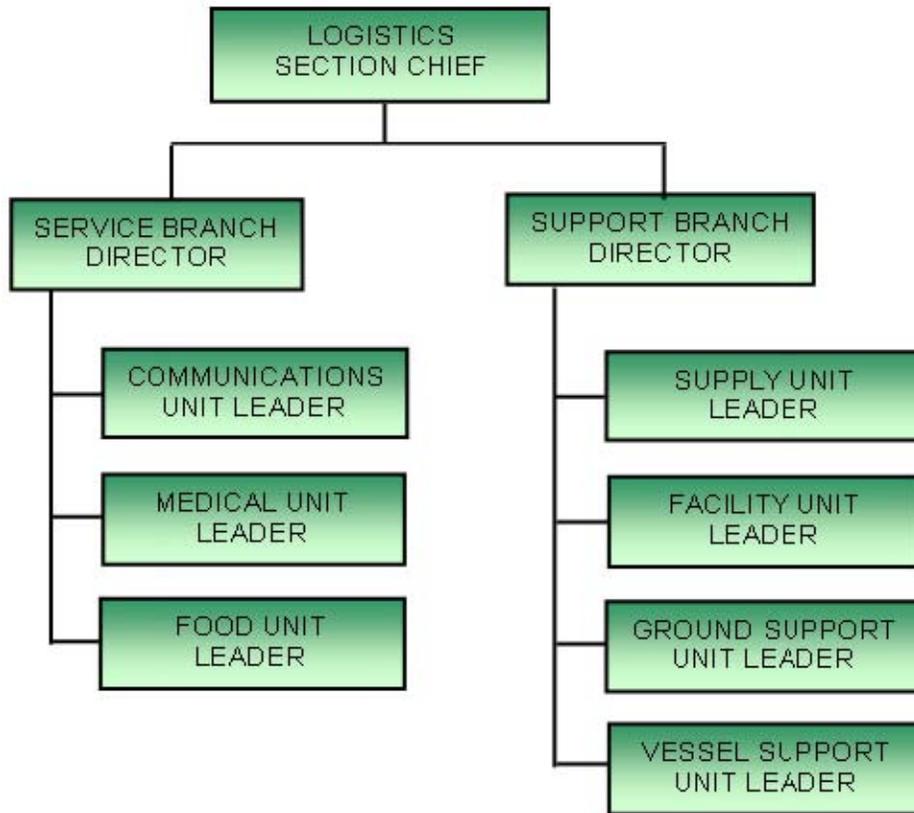
**DEMOBILIZATION UNIT LEADER**

- Participate in planning meetings as required.
- Review incident resource records to determine the likely size and extent of demobilization effort.
- Based on the above analysis, add additional personnel, workspace, and supplies as needed.
- Coordinate demobilization with Agency Representatives.
- Monitor the on-going Operations Section resource needs.
- Identify surplus resources and probable release time.
- Develop incident check-out function for all units.
- Evaluate logistics and transportation capabilities to support demobilization.
- Establish communications with off-incident facilities, as necessary.
- Develop an Incident Demobilization Plan detailing specific responsibilities and release priorities and procedures.
- Prepare appropriate directories (e.g., maps, instructions, etc.) for inclusion in the demobilization plan.
- Distribute demobilization plan (on and off-site).
- Provide status reports to appropriate requestors.
- Ensure that all Sections/Units understand their specific demobilization responsibilities.
- Supervise execution of the Incident Demobilization Plan.
- Brief the Planning Section Chief on demobilization progress.

**ENVIRONMENTAL UNIT LEADER**

- Participate in Planning Section meetings.
- Identify sensitive areas and recommend response priorities.
- Following consultation with natural resource trustees, provide input on wildlife protection strategies (e.g., removing oiled carcasses, pre-emptive capture, hazing, and/or capture and treatment).
- Determine the extent, fate and effects of contamination.
- Acquire, distribute and provide analysis of weather forecasts.
- Monitor the environmental consequences of cleanup actions.
- Develop shoreline cleanup and assessment plans. Identify the need for, and prepare any special advisories or orders.
- Identify the need for, and obtain, permits, consultations, and other authorizations including Endangered Species Act (ESA) provisions.
- Following consultation with the Federal On-Scene Commander's Historical/Cultural Resources Technical Specialist identify and develop plans for protection of affected historical/cultural resources.
- Evaluate the opportunities to use various response technologies.
- Develop disposal plans.
- Develop a plan for collecting, transporting, and analyzing samples.

### LOGISTICS



### LOGISTICS SECTION GENERAL FUNCTIONS

- Responsible for all support requirements needed to facilitate effective and efficient incident management, including ordering resources from off-incident locations.
- Ordering, obtaining, maintaining, and accounting for essential personnel, equipment, and supplies.
- Providing communication planning and resources.
- Setting up food services.
- Setting up and maintaining incident facilities.
- Providing support transportation.
- Providing medical services to incident personnel.

### LOGISTICS SECTION CHIEF

- Plan the organization of the Logistics Section.
- Assign work locations and preliminary work tasks to Section personnel.
- Notify the Resources Unit of the Logistics Section units activated including names and locations of assigned personnel.
- Assemble and brief Branch Directors and Unit Leaders.
- Participate in preparation of the Incident Action Plan.
- Identify service and support requirements for planned and expected operations.
- Provide input to and review the Communications Plan, Medical Plan and Traffic Plan.
- Coordinate and process requests for additional resources.
- Review the Incident Action Plan and estimate Section needs for the next operational period.
- Advise on current service and support capabilities.
- Prepare service and support elements of the Incident Action Plan.
- Estimate future service and support requirements.
- Receive Incident Demobilization Plan from Planning Section.
- Recommend release of Unit resources in conformity with Incident Demobilization Plan.
- Ensure the general welfare and safety of Logistics Section personnel.

### SERVICE BRANCH DIRECTOR

- Determine the level of service required to support operations.
- Confirm dispatch of Branch personnel.
- Participate in planning meetings of Logistics Section personnel.
- Review the Incident Action Plan.
- Organize and prepare assignments for Service Branch personnel.
- Coordinate activities of Branch Units.
- Inform the Logistic Section Chief of Branch activities.
- Resolve Service Branch problems.

**COMMUNICATIONS UNIT LEADER**

- Prepare and implement the Incident Radio Communications Plan (ICS Form 205-CG).
- Ensure the Incident Communications Center and the Message Center is established.
- Establish appropriate communications distribution/maintenance locations within the Base/Camp(s).
- Ensure communications systems are installed and tested.
- Ensure an equipment accountability system is established.
- Ensure personal portable radio equipment from cache is distributed per Incident Radio Communications Plan.
- Provide technical information as required on:
  - Adequacy of communications systems currently in operation.
  - Geographic limitation on communications systems.
  - Equipment capabilities/limitations.
  - Amount and types of equipment available.
  - Anticipated problems in the use of communications equipment.
- Supervise Communications Unit activities.
- Maintain records on all communications equipment as appropriate.
- Ensure equipment is tested and repaired.
- Recover equipment from Units being demobilized.

**MEDICAL UNIT LEADER**

- Participate in Logistics Section/Service Branch planning activities.
- Prepare the Medical Plan (ICS Form 206-CG).
- Prepare procedures for major medical emergency.
- Declare major emergency as appropriate.
- Respond to requests for medical aid, medical transportation, and medical supplies.
- Prepare and submit necessary documentation.

**FOOD UNIT LEADER**

- Determine food and water requirements.
- Determine the method of feeding to best fit each facility or situation.
- Obtain necessary equipment and supplies and establish cooking facilities.
- Ensure that well-balanced menus are provided.
- Order sufficient food and potable water from the Supply Unit.
- Maintain an inventory of food and water.
- Maintain food service areas, ensuring that all appropriate health and safety measures are being followed.
- Supervise caterers, cooks, and other Food Unit personnel as appropriate.

**SUPPORT BRANCH DIRECTOR**

- Determine initial support operations in coordination with the Logistic Section Chief and Service Branch Director.
- Prepare initial organization and assignments for support operations.
- Assemble and brief Support Branch personnel.
- Determine if assigned Branch resources are sufficient.
- Maintain surveillance of assigned units work progress and inform the Logistic Section Chief of their activities.
- Resolve problems associated with requests from the Operations Section.

**SUPPLY UNIT LEADER**

- Participate in Logistics Section/Support Branch planning activities.
- Determine the type and amount of supplies en route.
- Review the Incident Action Plan for information on operations of the Supply Unit.
- Develop and implement safety and security requirements.
- Order, receive, distribute, and store supplies and equipment.
- Receive and respond to requests for personnel, supplies, and equipment.
- Maintain an inventory of supplies and equipment.
- Service reusable equipment.
- Submit reports to the Support Branch Director.

**FACILITY UNIT LEADER**

- Review the Incident Action Plan.
- Participate in Logistics Section/Support Branch planning activities.
- Determine requirements for each facility, including the Incident Command Post.
- Prepare layouts of incident facilities.
- Notify Unit Leaders of facility layout.
- Activate incident facilities.
- Provide Base and Camp Managers and personnel to operate facilities.
- Provide sleeping facilities.
- Provide security services.
- Provide facility maintenance services (e.g., sanitation, lighting, clean up).
- Demobilize Base and Camp facilities.
- Maintain facility records.

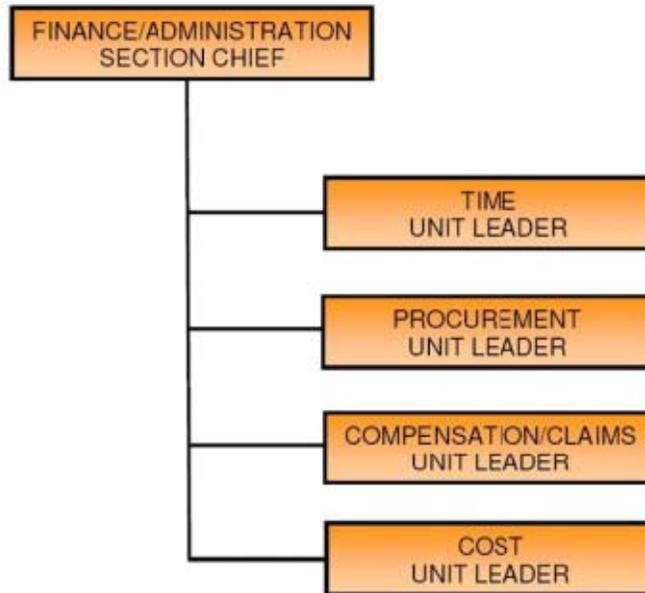
**GROUND SUPPORT UNIT LEADER**

- Participate in Support Branch/Logistics Section planning activities.
- Develop and implement the Traffic Plan.
- Support out-of-service resources.
- Notify the Resources Unit of all status changes on support and transportation vehicles.
- Arrange for and activate fueling, maintenance, and repair of ground resources.
- Maintain Support Vehicle Inventory and transportation vehicles (ICS Form 218).
- Provide transportation services, In accordance with requests from the Logistic Section Chief or Support Branch Director.
- Collect information on rented equipment.
- Requisition maintenance and repair supplies (e.g., fuel, spare parts).
- Maintain incident roads.
- Submit reports to Support Branch Director as directed.

**VESSEL SUPPORT UNIT LEADER**

- Participate in Support Branch/Logistics Section planning activities.
- Coordinate development of the Vessel Routing Plan.
- Coordinate vessel transportation assignments with the Protection and Recovery Branch or other sources of vessel transportation.
- Coordinate water-to-land transportation with the Ground Support Unit, as necessary.
- Maintain a prioritized list of transportation requirements that need to be scheduled with the transportation source.
- Support out-of-service vessel resources, as requested.
- Arrange for fueling, dockage, maintenance and repair of vessel resources, as requested.
- Maintain inventory of support and transportation vessels.

**FINANCE/ADMINISTRATION**



**FINANCE/ADMINISTRATION SECTION GENERAL FUNCTIONS**

- Responsible for all financial and cost analysis aspects of an incident. (Note: Not all incidents will require a separate Finance/Administration Section. In cases that require only one specific function (e.g., cost analysis), this service may be provided by a member of the Planning Section.)
- Administering any contract negotiation.
- Providing cost analysis as it pertains to the Incident Action Plan.
- Maintaining cost associated with the incident.
- Tracking personnel and equipment time.
- Addressing compensation for injury or damage to property issues.

**FINANCE/ADMINISTRATION SECTION CHIEF**

- Attend planning meetings as required.
- Manage all financial aspects of an incident.
- Provide financial and cost analysis information as requested.
- Gather pertinent information from briefings with responsible agencies.
- Develop an operating plan for the Finance/Administration Section; fill supply and support needs.
- Determine the need to set up and operate an incident commissary.
- Meet with assisting and cooperating agency representatives, as needed.
- Maintain daily contact with agency(s) administrative headquarters on Finance/ Administration matters.
- Ensure that all personnel time records are accurately completed and transmitted, according to policy.
- Provide financial input to demobilization planning.
- Ensure that all obligation documents initiated at the incident are properly prepared and completed.
- Brief administrative personnel on all incident-related financial issues needing attention or follow-up prior to leaving incident.

**TIME UNIT LEADER**

- Determine incident requirements for time recording function.
- Determine resource needs.
- Contact appropriate agency personnel/representatives.
- Ensure that daily personnel time recording documents are prepared and in compliance with policy.
- Establish time unit objectives.
- Maintain separate logs for overtime hours.
- Establish commissary operation on larger or long-term incidents as needed.
- Submit cost estimate data forms to the Cost Unit, as required.
- Maintain records security.
- Ensure that all records are current and complete prior to demobilization.
- Release time reports from assisting agency personnel to the respective Agency Representatives prior to demobilization.
- Brief the Finance/Administration Section Chief on current problems and recommendations, outstanding issues, and follow-up requirements.

**PROCUREMENT UNIT LEADER**

- Review incident needs and any special procedures with Unit Leaders, as needed.
- Coordinate with local jurisdiction on plans and supply sources.
- Obtain the Incident Procurement Plan.
- Prepare and authorize contracts and land-use agreements.
- Draft memoranda of understanding as necessary.
- Establish contracts and agreements with supply vendors.
- Provide for coordination between the Ordering Manager, agency dispatch, and all other procurement organizations supporting the incident.
- Ensure that a system is in place that meets agency property management requirements. Ensure proper accounting for all new property.
- Interpret contracts and agreements; resolve disputes within delegated authority.
- Coordinate with the Compensation/Claims Unit for processing claims.
- Coordinate use of impress funds, as required.
- Complete final processing of contracts and send documents for payment.
- Coordinate cost data in contracts with the Cost Unit Leader.
- Brief the Finance/Administration Section Chief on current problems and recommendations, outstanding issues, and follow-up requirements.

**COMPENSATION/CLAIMS UNIT LEADER**

- Establish contact with the incident Security Officer and Liaison Officer (or Agency Representatives if no Liaison Officer is assigned).
- Determine the need for Compensation for Injury and Claims Specialists and order personnel as needed.
- Establish a Compensation for Injury work area within or as close as possible to the Medical Unit.
- Review Medical Plan (ICS Form 206-CG).
- Ensure that Compensation/Claims Specialists have adequate workspace and supplies.
- Review and coordinate procedures for handling claims with the Procurement Unit.
- Brief the Compensation/Claims Specialists on incident activity.
- Periodically review logs and forms produced by the Compensation/Claims Specialists to ensure that they are complete, entries are timely and accurate and that they are in compliance with agency requirements and policies.
- Ensure that all Compensation for Injury and Claims logs and forms are complete and routed appropriately for post-incident processing prior to demobilization.
- Keep the Finance/Administration Section Chief briefed on Unit status and activity.
- Demobilize unit in accordance with the Incident Demobilization Plan.

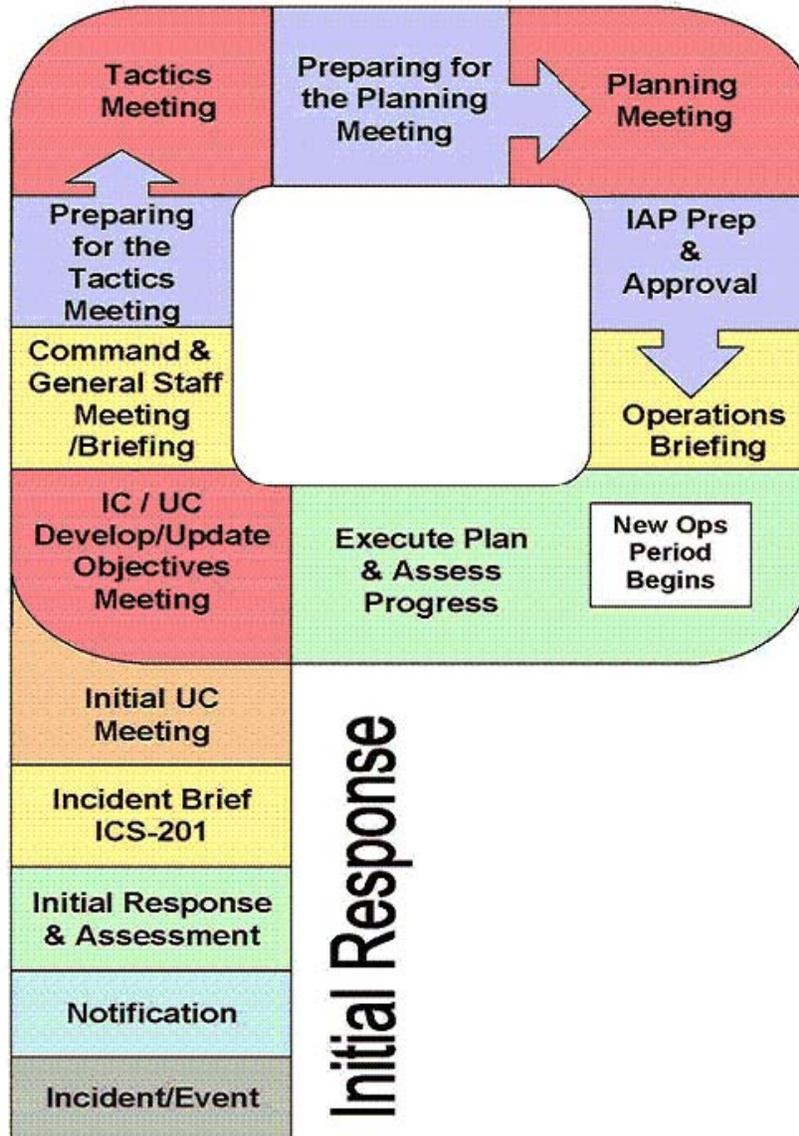
**COST UNIT LEADER**

- Coordinate cost reporting procedures.
- Collect and record all cost data.
- Develop incident cost summaries.
- Prepare resources-use cost estimates for the Planning Section.
- Make cost-saving recommendations to the Finance/Administration Section Chief.
- Ensure all cost documents are accurately prepared.
- Maintain cumulative incident cost records.
- Complete all records prior to demobilization.
- Provide reports to the Finance/Administration Section Chief.

FIGURE 3.2

*UNITED STATES COAST GUARD*  
**Operations Period Planning**

## The Operational Planning "P"



## SECTION 4

---

### Spill Impact Considerations

#### 4.1 CRITICAL AREAS TO PROTECT

The critical areas to protect are classified as high, moderate, and low sensitivity to oil for non-coastal/inland environments. The Federal, Province/State, and Local authorities will further clarify these categories at the time of the response. The categories are defined as follows:

<b>HIGH SENSITIVITY</b>
<ul style="list-style-type: none"> <li>• Areas which are high in productivity, abundant in many species, extremely sensitive, difficult to rehabilitate, or inhabited by threatened/endangered species.</li> <li>• Areas which consist of forested areas, brush/grassy areas, wooded lake areas, freshwater marshes, wildlife sanctuaries/refuges, and vegetated river/stream banks.</li> </ul>
<b>MODERATE SENSITIVITY</b>
<ul style="list-style-type: none"> <li>• Areas of moderate productivity, somewhat resistant to the effects of oiling.</li> <li>• Areas which consist of degraded marsh habitat, clay/silt banks with vegetated margins, and gravel/cobble beaches.</li> </ul>
<b>LOW SENSITIVITY</b>
<ul style="list-style-type: none"> <li>• Areas of low productivity, man-made structures, and/or high energy.</li> <li>• Areas which consist of gravel, sand, or clay material, barren/rocky riverbanks and lake edges, man-made structures, and concrete/compacted earthen drainage ditches.</li> </ul>

#### 4.2 ENVIRONMENTAL/SOCIO-ECONOMIC SENSITIVITIES

Environmental/Socio-economic sensitivities are of extreme importance when planning a response effort. The health and safety of the public and the environment, as well as the protection of the various socio-economic sensitivities, must be promptly addressed in order to mitigate the extent of damage and minimize the cost of the clean-up effort.

It is important to protect archeological sites and heritage resources (e.g. National Parks, National Marine Conservation Areas, and National Historic Sites). Impacted archeological sites or heritage resources of an area need to be identified and the likely impacts that result from the activities should be addressed. Specific consideration should be given to access to, and general use and disturbance of areas. The assessment should consider both direct and indirect impacts, cultural protocols and strategies for minimizing impacts. Consultation with local indigenous communities should occur as part of the planning process.

The Company will explore, where appropriate, equivalent environmental protection systems, methods, devices, or technologies that maintain or may be less damaging to the character of heritage resources or archeological sites. If a release from the pipeline impacts a heritage resource, the Company will respond as outlined in Section 3.0, report to the appropriate authority prescribed by law, cleanup and restore the area as required by regulation, and conduct such sampling, analyses, or associated monitoring during and after restoration.

All environmental/socio-economic sensitivities are worthy of protection, but must be prioritized during a response effort. When making decisions on which areas to designate as collection areas and which to protect, the following sources may be consulted:

- Canadian Wildlife Services, U.S. Fish and Wildlife Service and related province/state agencies
- Applicable Area Contingency Plans
- Other industry and private experts

The environmental and socio-economic sensitivities in the vicinity of the Pipeline have been broken down into specific categories and identified in this Section. To further clarify the location of the sensitive areas of concern, references to published Area Contingency Plans and Environmental Sensitivity Maps are also provided in this section.

### **4.3 FISHERIES AND WILDLIFE PROTECTION**

The Company will work with Federal, Province/State, and local agency personnel to provide labor and transportation to retrieve, clean, and rehabilitate birds and wildlife affected by an oil spill, as necessary. Oversight of the Company's wildlife preservation activities and coordination with Federal, Province/State, and Local agencies during an oil spill is the responsibility of the Incident Commander.

Protecting fish habitat (e.g. spawning and rearing grounds) is important to both consumers and commercial fisheries. Beyond typical response strategies, other options could include moving floating facilities, temporarily sinking facilities using cages designed for this purpose, temporary suspension of water intakes, or closing sluice gates to isolate the facilities from contamination.

Special consideration should be given to the protection and rehabilitation of endangered species and other wildlife and their habitat in the event of an oil spill and subsequent response. Jurisdictional authorities should be notified and worked with closely on all response/clean-up actions related to wildlife protection and rehabilitation. Laws with significant penalties are in place to ensure appropriate protection of these species.

### Wildlife Rescue

The Company will work with Federal, Province/State, and Local agency personnel to provide labor and transportation to retrieve, clean, and rehabilitate wildlife affected by an oil spill, as the situation demands.

The following are items which should be considered for wildlife rescue and rehabilitation during a spill response:

Bird relocation can be accomplished using a variety of deterrents, encouraging birds to avoid areas of spilled oil. Bird relocation can be accomplished by utilizing deterrent methods including:

- Use of visual stimuli, such as inflatable bodies, owls, stationary figures, or helium balloons, etc.
- Use of auditory stimuli, such as propane cannons, recorded sounds, or shell crackers.
- Use of herding with aircraft, boats, vehicles, or people (as appropriate). Use of capture and relocation.

### Search and Rescue -Points to consider

- **The Company's involvement should be limited to offering assistance as needed or requested by the agencies.**
- Prior to initiating any organized search and rescue plan, authorization must be obtained from the appropriate Federal/State agency.
- Initial search and rescue efforts, if needed, should be left up to the appropriate agencies.
- They have the personnel, equipment, and training to immediately begin capturing contaminated wildlife.
- With or without authorization, it must be anticipated that volunteer citizens will aid distressed/contaminated wildlife on their own. It is important to communicate that it may be illegal to handle wildlife without express authority from appropriate agencies. Provisions should be made to support an appropriate rehabilitator; however, **no support should be given to any unauthorized volunteer rescue efforts.**
- The regulatory agencies and response personnel should be provided the name and location of a qualified rehabilitator in the event contaminated wildlife is captured.

#### 4.4 STAGING AREAS

When establishing personnel and equipment staging areas for a response to a Pipeline discharge, the following criteria should be evaluated:

- Access to waterborne equipment launching facilities and/or land equipment.
- Access to open space for staging/deployment of heavy equipment and personnel.
- Access to public services utilities (electricity, potable water, public phone, restroom and washroom facilities, etc.).
- Access to the environmental and socio-economically sensitive areas which are projected for impact.

#### 4.5 CONTAINMENT AND RECOVERY OF SPILLED PRODUCT

General descriptions of various specific response techniques that may be applied during a response effort are discussed below. Company responders are free to use all or any combination of these methods as incident conditions require, provided they meet the appropriate safety standards and other requirements relative to the situation encountered. Data was obtained from reports, manuals and pamphlets prepared by the American Petroleum Institute, Environmental Protection Agency, and the United States Coast Guard. The most effective cleanup of a product spill will result from an integrated combination of clean-up methods. Each operation should complement and assist related operations and not merely transfer spillage problems to areas where they could be more difficult to handle.

The spill should be assessed as soon as possible to determine the source, extent and location of travel. Terrain and other physical conditions downgradient of the spill site will determine the methods of control at a point in advance of the moving product. Often, the bulk of a spill can be contained at a single location or a few key locations in the immediate vicinity of the source point. When possible, the execution of this type of initial containment strategy helps confine a spill to a relatively limited area.

##### **Spill on Land (Soil Surfaces)**

##### **Containment Methods**

Product can be trapped in ditches and gullies by earth dams. Where excavating machinery is available, dams can be bulldozed to contain lakes of product. Dams, small and large, should be effectively employed to protect priority areas such as inlets to drains, sewers, ducts and watercourses. These can be constructed of earth, sandbags, absorbents, planks or any other effective method. If time does not permit a large dam, many small ones can be made, each one holding a portion of the spill as it advances. The terrain will dictate the placement of the dams. If the spill is minor, natural dams or earth absorption will usually stop the product before it advances a significant distance. Cleanup is the main concern in such situations.

In situations where vapors from a spill present a clear and present danger to property or life (possible ignition because of passing automobiles, nearby houses, or work vehicles approaching the area), spraying the surface of the spill with dispersant will greatly reduce the release of additional vapors from the product. This method is especially adapted to gasoline spills on soil surfaces.

### **Removal Methods**

The recovery and removal of free product from soil surfaces is a difficult job. The best approaches at present seem to be:

- Removal with suction equipment to tank truck if concentrated in volumes large enough to be picked up. Channels can be formed to drain pools of product into storage pits. The suction equipment can then be used.
- Small pockets may have to be dipped up by hand.
- If practicable after removal of the bulk of the spill, controlled burning presents the possibility of a fast, simple, and inexpensive method of destruction of the remainder of the product. If all other options have been executed and the site is still unsafe for further activity because explosive vapors persist, the vapors may need to be intentionally ignited to prevent an accumulation sufficient to become an explosive mixture, provided the other requirements of these guidelines for controlled burning are met.

Intentional ignition to remove released product should be utilized only if all of the following conditions are met:

- Other steps and procedures have been executed and a determination has been made that this is the safest remaining method of control.
- Intentional burning will not unduly damage pipelines, adjacent property, or the environment.
- Controlled burning is permitted by government authorities. Local government authorities to be contacted may include city council, county board of commissioners, city or county fire chiefs, the county forestry commission or fire tower, and the local environmental protection agency. In seeking permission from these authorities, be prepared to convince them that adequate safety precautions have been and will be taken during the operation.
- Controlled burning is conducted with the consent of local land owners.
- Safety must always be a prime consideration when considering controlled burning of product. Sparks and heat radiation from large fires can start secondary fires and strong winds make fire control difficult. There must be no danger of the fire spreading beyond control limits. All persons must be at a safe distance from the edge of the inflammable area. Remember that all burning must be controlled burning.

### **Spill on Lake or Pond (Calm or Slow-Moving Water)**

#### **Containment Methods**

A lake or pond offers the best conditions for removal of product from water. Although the removal is no easy task, the lake or pond presents the favorable conditions of low or no current and low or no waves.

The movement of product on a lake or pond is influenced mainly by wind. The product will tend to concentrate on one shore, bank or inlet. Booms should be set up immediately to hold the product in the confined area in the event of a change in wind direction.

If the spill does not concentrate itself on or near a shore (no wind effect), then a sweeping action using boats and floating booms will be necessary.

The essential requirement for this operation is that it be done very slowly. The booms should be moved at not more than 40 feet per minute. Once the slick is moved to a more convenient location (near shore), the normal operations of removal should begin.

If the slick is small and thin (rainbow effect) and not near the shoreline, an absorbent boom instead of a regular boom should be used to sweep the area very slowly and absorb the slick. The product may not have to be moved to the shoreline. See Figure 4.1 for on-water recovery decision tree.

#### **Removal Methods**

If the Containment slick is thick enough, regular suction equipment may be used first; however, in most instances, a floating skimmer should be used.

If the floating skimmer starts picking up excess water (slick becomes thin), drawing the boom closer to the bank as product is removed will also keep film of product thicker.

However, when the slick becomes too thin, the skimmer should be stopped and an absorbent applied (with a boat if necessary) to remove the final amounts. The floating skimmer (if speed is a must) or hand skimmers (if water is shallow enough) or both can be used to pick up the product-soaked absorbent. Before pumping the product-soaked absorbent with a floating skimmer, ensure that the absorbent in question can be pumped and will not harm the pump. Several types are nonabrasive to pump internals. If the floating skimmer is used first, the product-soaked absorbent/water mixture should be pumped into a tank truck.

A better method of retrieving the product-soaked absorbent is to draw it in as close to the shore as possible with the booms used to confine the product initially. The absorbent can then be hand skimmed from the water surface and placed in drums, on plastic sheets or in lined roll-off boxes. It should then be disposed of by acceptable means.

The final rainbow on the surface can be removed with additions of more absorbent.

### Spill on Small to Medium Size Streams (Fast-Flowing Creeks)

#### Containment Methods

The techniques used for product containment on fast-flowing shallow streams are quite different from the ones used on lakes, ponds, or other still bodies of water. The containment and removal processes require a calm stretch of water to allow the product to separate onto the surface of the water. If a calm stretch of water does not exist naturally, a deep slow-moving area should be created by damming. The dam can be constructed by using sandbags, planks or earth. If a dam is required, it should be situated at an accessible point where the stream has high enough banks. The dam should be constructed soundly and reinforced to support the product and water pressure.

- Underflow dam -The underflow dam is one method that can be used, especially on small creeks. The water is released at the bottom, of the dam using a pipe or pipes which are laid during construction of the dam. The flow rate through the pipe must be sufficient to keep the dam from overflowing. One method is to lay the pipe at an angle through the dam (while dam is being constructed) so that the height of the downstream end of the pipe will determine the height the water will rise behind the dam.
- Overflow dam -Another method of containment is the overflow type dam. The dam is constructed so that water flows over the dam, but a deep pool is created which slows the surface velocity of the water. Therefore, the condition of a calm stretch of water is met. The overflow dam may be used where larger flow rates (medium size creeks) of water are involved

With this type dam, a separate barrier (floating or stationary boom) must be placed across the pool created by the dam. The separate barrier arrests the surface layer of product. At the same time, the water is flowing under the barrier and over the top of the dam. The barrier should be placed at an angle of 45 % across the pool to decrease the effective water velocity beneath it. Also, it helps to concentrate the product at the bank and not all along the barrier. A second barrier should be placed approximately 10 to 15 feet downstream of the first one as a secondary back-up.

The stationary boom type barrier should be made of wood planks or other suitable material. The stationary boom should be soundly constructed and sealed against the bank. The ends of the planks can be buried in the banks of the stream and timber stakes driven into the stream bed for support as needed. The necessary length of the boom will be approximately 1-1/2 times the width of the waterway.

The plank boom should extend six to eight inches deep into the water and about two inches or higher above the water level. If the increase in velocity under the stationary boom is causing release of trapped product, it should be moved upward slightly. At no time should barrier be immersed more than 20% of the depth of the pool at the barrier location; that is, if the pool created by damming is three feet deep, do not exceed an immersion depth of seven inches with the barrier at the position the barrier is installed.

Another method used with the underflow dam is having the pipe or pipes sized to carry only a portion of the flow needed. The pipe would be placed at the bottom of the dam and level with the creek bed. The remaining flow of the creek could be siphoned or preferably pumped around the dam from a point away from the dam and from the deepest portion of the pool. The pumping or siphoning can be controlled to maintain the desired water level at the dam. The key is the removal of water through or around the dam at the lowest point in the basin. This prevents the oil from escaping with the released water.

A floating boom can be used in place of the stationary type if the created pool's size (bank to bank) and depth will permit. Since changing the depth and/or length of a standard floating boom in a small stream is difficult, the use of the separation of product and water. The advantages of using a floating boom are the speed of deployment and the fact that there is no need for additional support as with the stationary boom.

- Multiple Impoundments -Since emergency built dams (either underflow or overflow) are seldom perfect, a series of dams is usually required. The first one or two will trap the bulk and the ones that are downstream will trap the last traces of product. Precautions should be taken to ensure that the foundations of emergency dams are not washed away by the released water. If earth is used to construct an overflow dam, a layer of earth-filled bags should be placed on top of the dam so erosion will not take place. See Figure 4.1 for on-water recovery decision tree.

### Removal Methods

Once the containment dams are constructed, the problem of removal of the product from the water surface should be the prime consideration. The removal must be continuous or else build-up of product behind the dams or booms might lead to product escaping the traps.

The type of removal procedures used depends largely on the amount of product being trapped in a given span of time, if the amount of product moving down the stream is of sufficient quantity, the first dam or fixed boom would quite possibly trap enough for the floating skimmer to work efficiently. The skimmer will pump the product and possibly some water to a tank truck or other holding tank. Separated water may be released from the bottom of the tank truck if it becomes necessary. The absorbents could then be used at downstream dams or booms. It is inadvisable to place an absorbent in the stream prior to or at the first dam in anticipation of the arriving product. Let the product accumulate at the first dam and use the floating skimmer to recover the product.

Disposal of gross amount of product-soaked absorbent would not then be a problem. Follow directions on use of each absorbent. Some are designed to be placed on water before product arrives; others are intended only to be placed on the product after it accumulates on the water. Plastic sheets should be used to place the product-soaked absorbent on as it is hand skimmed from the water. Alternatively, the material may be placed in drums or lined roll-off boxes.

The containment and removal of spilled product on small to medium fast-flowing streams might require a combination of underflow or overflow dams, fixed booms, skimmers, and absorbents, to ensure a complete cleanup.

### **Spill on Large Streams and Rivers**

#### **Containment Methods**

The containment techniques differ considerably on large streams and rivers versus small streams. First, the smooth calm area of water necessary for product-water separation must be found along the stream or river rather than making one as with small streams. Floating booms (rather than fixed booms or dams) must be used to trap the surfaced product.

Local conditions of current and wind must be considered when selecting the site for the boom. A point with a low water velocity near the bank, sufficient depth to operate the product removal equipment, and good access are required. The fact that wind may tend to concentrate the product against one bank must be considered. A smooth, undisturbed area of water is required immediately upstream of the boom to ensure that the product has opportunity to separate out onto the surface. The boom should be positioned where the current is at a minimum. It is more effective to boom at a wide, slow position than on a narrow, fast stretch of water.

If the boom are positioned straight across a river or stream, at right angles to the flow, surface water tends to dive beneath the barrier (boom) when current velocities exceed about ½ knot (0.8 ft./sec.). However, if the current of the entire river is ½ knot or less, then a boom can be positioned straight across the river or large stream, but angled slightly in relation of the banks. By placing the boom at an angle to the banks, product on the surface is diverted along the boom to the side of the river.

The current velocity is usually much slower near the river bank than in the center and the product will move along the boom toward the bank for removal. A water-tight seal between the bank and the boom is essential. A secondary boom should be set up immediately downstream of the first one to capture the amounts that escape the upstream boom. A boom can be employed parallel to the river flow at the bank to form the seal with the booms used to trap the product.

Where the current velocity of the chosen site exceeds ½ knot, the boom should be positioned in two smooth curves from a point of maximum velocity (usually the center of the river) to both banks. However, this double-boom required product to be removed from both sides of the river. To determine the appropriate angle of boom placement and support (mooring) needed to hold the booms in position, the current velocity should be measured by timing a floating object which is 80% submerged over a distance of 100 feet. A time of 60 seconds over this distance indicates a water current of approximately 1 knot.

For currents from 1 to 2.5 knots (1.7 to 4.2 ft./sec.), the more the boom will have to be angled acute to the bank. The length of the boom will have to be such to reach the center of the river. For currents between ½ and 1 knot (0.8 and 1.7 ft./sec.), the angle of employment can be enlarged.

The major load on the boom is taken by the terminal moorings, particularly the one in the center of the river. However, intermediate moorings are also required both to maintain the smooth curve of the boom to prevent breaking of the boom and to assist with preventing skirt deflection. The intermediate moorings are preferably positioned every 25 feet and must be adjusted to avoid the formation of indentations in the boom profile. These trap product in pockets, prevent its deflection to the bank, and also encourage diving currents. The mooring ropes should be five times the water depth.

In certain situations, it might be advantageous to position booms to deflect the approaching spilled product to a slower moving area. Naturally, additional booms would have to be positioned around this slower moving area prior to deflecting the product to the area. This approach has been used along river which has lagoons, etc., with a very low current action. The recovery would take place in the lagoons and not along the river bank. See Figure 4.1 for on-water recovery decision tree.

### **Removal Methods**

The product collected upstream of the floating booms in a large stream or river should be removed from the water surface as it accumulates. Regular suction equipment, a floating skimmer, and/or absorbents (including absorbent booms) should be used to remove the product as appropriate to the quantity being trapped in a given span of time. If the amount moving down the stream is of sufficient quantity, the primary floating boom would possibly trap enough for the floating skimmer to work efficiently. The skimmer will pump the product and some water to a tank truck or other holding tank.

The absorbents would then be used upstream of the secondary boom to absorb the underflow from the primary boom. An absorbent boom can also be placed between the primary and secondary booms to help the other absorbents control the underflow from the primary boom.

It is best to hand skim the saturated absorbents and place on plastic sheets. However, if the absorbent used can be pumped after product absorption and speed of removal is a necessity, the floating skimmer can be used to remove the product-soaked absorbent.

The disadvantage of pumping the product-soaked absorbent to a truck is the volume that will accumulate (skimmer will pump excess water) and the disposal problems associated with the large water/product-soaked absorbent mixture.

### **Spill on Stream which Flows into Lake or Pond**

In certain locations where streams (small and large ones) flow into lakes or ponds at relatively short distances, it is conceivable that a spill could reach the lake before containment and recovery operations are set up. If time permits for containment operations to be set up on the stream in question, it then would be handled as described above depending upon the stream size involved.

However, if product in the stream is near the lake site or if product is flowing into the lake with a significant amount yet to arrive, a different containment should be employed.

### **Containment Methods**

Product on a stream flowing into a lake should be boomed as close to the entrance as possible. The boom should be positioned on the lake at an angle to the residential stream current so as to direct the surface water to a slower moving area. The area where the product is being deflected should be enclosed by booms to contain it. An additional boom for sweeping the product to the bank will be required. This area of containment should not have a current velocity of more than 1/2 knot (0.8 ft./sec.), preferably less. See Figure 4.1 for on-water recovery decision tree.

### **Removal Methods**

The removal of product from the lake or pond's surface would be handled as described earlier.

For sizable releases, collected product will usually be pumped into tank trucks and transported to a storage facility. Tank trucks are available at several locations throughout.

### **Spill in Urban Areas**

Oil spills in urban areas can greatly impact recreational use, human health, wildlife habitat(s), and potential beach or park closures. Manmade structures along waterways require unique protection strategies. Manmade structures could include vertical shore protection structures such as seawalls, piers, and bulkheads, as well as riprap revetments and groins, breakwaters, and jetties. Vertical structures can be constructed of concrete, wood, and corrugated metal. They usually extend below the water surface, although seawalls can have beaches or riprap in front of them. These structures are very common along developed shores, particularly in harbors, marinas, and residential areas. The range in degree of exposure to waves and currents varies widely, from very low in dead-end canals, to very high on offshore breakwaters. Boat wakes can generate wave energy in otherwise sheltered areas. Maintaining shipping or other kinds of vessel traffic through navigation channels or waterways during a spill response is a difficult consideration because there is usually economic and political pressure to re-establish normal operations as soon as possible. This consideration extends to vehicular traffic through urban areas. Deploying booms and skimmers or constructing recovery sites can conflict with such traffic for several days. Also, passage of deep-draft vessels through the waterway can suddenly change water level and flow or create wakes, causing booms to fail. For these reasons, recovery efforts must be coordinated through the Unified Command to ensure the cooperation of all parties involved.

**Containment Methods**

Containment techniques in an urban area depend greatly on the ability to deploy equipment due to obstacles presented by the urban area. Most booming and containment techniques will work with slight modifications such as direct anchoring instead of the use of booming buoys. Often, debris and other obstacles cause gaps in containment or clog up the flow of oil in diversion booming. Vessel traffic can also cause containment to fail, due to splash over from vessel wakes.

**Removal Methods**

Normal recovery techniques work when recovering oil in an urban area. However, recovery can be hampered by several situations. Floating debris clogging skimming equipment is the main cause for low recovery rates. Another problem for recovery in an urban area is lack of storage space. Often traffic problems or lack of access prevent storage equipment such as frac tanks and vacuum trucks from approaching the recovery zone.

## Spill Under Ice

### **Containment Methods**

The traditional strategy for dealing with oil under the ice in a river or lake is to cut a slot to aid in recovery. Ice slots can be cut using chain saws, handsaws, ice augers or some form of trencher. Another effective variation of this technique is the diversionary plywood barrier method which is also discussed below. See Figure 4.1 for on-water decision tree.

### **Removal Methods**

Ice slotting is a very basic technique used to gain access to oil trapped beneath the ice. In ice slotting, a J shaped outline is sketched into the ice at a 30 degree angle to the current. The slight J hook or curve is necessary at the upstream side to provide flow towards the recovery area. In general, the slot width should be 1.5 times the thickness of the ice. Remember, a block of ice is heavy and the width of the slot must be taken into consideration so it can be safely removed or pushed under if the water beneath the ice is sufficiently deep. The length of the slot will be determined by the width of the river and strategy.

This technique is a successful strategy to implement. However, there are a few pit falls to be aware of. First, responders will fatigue rapidly if required to cut the slot or slots by hand using a chain saw or hand held saw. This can present a problem if there are not a sufficient number of Hazmat technicians available. Secondly, when cutting with chain saws, large volumes of water are kicked up by the moving chain onto the responder. This is a safety problem when the responders get wet in extreme cold weather conditions. Wearing rain gear however can reduce this problem.

A second technique is to slot the ice and use plywood to help divert oil beneath the ice to a recovery area. This technique is called the diversionary plywood barrier method. In this technique, a narrow slot is made through the ice and 4' x 8' sheets of plywood or equivalent are dropped into the slot to create a barrier and force the oil to follow along it to the collection area. This is the same principal employed when using floating boom.

The slot can be cut or drilled depending on the equipment available at the time of the response. If drilling is required, a gas powered ice auger can be used. In this scenario a series of 8" or 10" holes are drilled next to each other in the J pattern.

A chain saw can be used to connect the holes if an ice bridge exists between two auger holes. After the ice auguring is complete, plywood can be dropped into the augured slot.

Again, river ice is dirty and chipper blades on the augers may only last long enough to complete a single auger hole. This technique requires a large inventory of chipper blades. Extra auger flights can be used, which reduces down time to change blades. A real plus to slotting the ice with an ice auger is the limited exposure of responders to water. The water is generally restricted to the area around the responder's feet.

If an ice auger is not available, a chain saw can be used to cut a narrow slot. After the slot has been cut and ice removed, plywood can be inserted. When using a chainsaw that makes a 3/8" cut, a 1/8"-1/4" plywood or outdoor siding can be inserted into the slot and effectively be used to create the barrier. Again, the down side when using a large chain saws is fatigue and splash from water being kicked up by the chain. However, this problem is not as bad as cutting large slots as described above. Since only a single slot is made, the number of responders can be reduced and extra personal protective equipment in the form of rain gear can be used to minimize the water splash.

### **Spill on Ice**

When managing an oil spill on ice special consideration must be given to several safety factors. Thickness of the ice and general accessibility of equipment must be considered when planning for on-ice recovery. Ice that is too thin to safely traverse or broken ice may prevent active recovery.

### **Containment Methods**

For ice-covered on-land or on-water spills, snow or earthen berms may be constructed to contain oil around the leak, if terrain permits. Dikes filled with sorbent materials may be used on spills in smaller streams to create a manmade dam to prevent the further migration of the oil.

Oil may become encapsulated due to melting and refreezing of the ice. Oil may then be more difficult to access and remove. See Figure 4.1 for on-water recovery decision tree.

### **Removal Methods**

Generally, on-ice recovery consists of the manual removal of the product from the spill site. If conditions permit, vacuum trucks or suction pumps may be used to remove pools of oil that may have collected. Often, product removal will be done by hand using brooms, shovels and rakes. Manually moving the oil/snow mixture into piles for collection where it is either vacuum or manually collected into storage containers.

### **Spill in Wetland Areas**

Wetlands, which include upland and inland marshes, swamps and bogs, are highly sensitive to spills because they collect run-off from surrounding environments, and because they are home to many commercially and ecologically important species. Wetlands are very susceptible to damage and are a high priority to protect. Precautions should be taken so that the recovery effort does not cause more damage than that cause by the release.

### **Containment Methods**

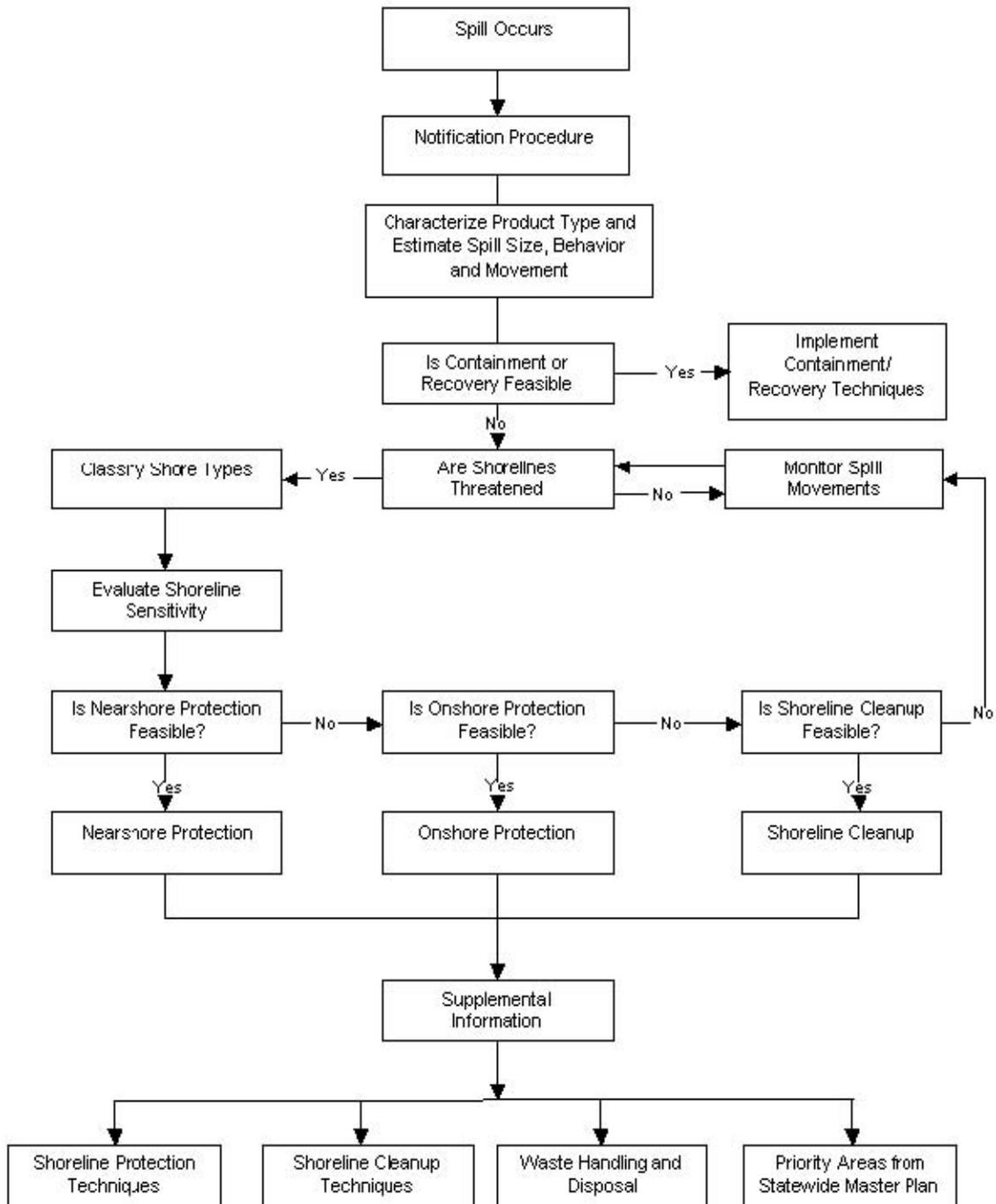
Containment booms can be strategically deployed to contain or divert the product into recovery areas where skimmers and vacuums can be used to remove the product. Berms can also be built to contain or divert the product. Consideration must be given to the damage that can be caused by holding the product in the wetland areas. Often, allowing the product to flow to natural collection areas and possibly assisting the flow by the use of high volume low pressure water pumps may be the best course of action.

### Removal Methods

Skimmers and vacuums can be deployed to recover contained oil. Other acceptable response techniques might include bioremediation, sorbents and in-situ burning. The use of heavy equipment is often not practical because of the damage it can cause to plant and animal life. During recovery, specially designed flat bottom shallow draft vessels and the use of plywood or boards may be used to reduce the damage caused by recovery personnel. If the water table is high and the oil will not permeate the soil, shallow trenches may be dug to collect oil for removal.

The Unified Command must balance the need to remove the product with the damage caused by active removal. Considerations for long term passive recovery should be considered.

**FIGURE 4.1  
ON WATER RESPONSE FLOWCHART**



## 4.6 VULNERABILITY ANALYSIS

A thorough examination of published Area Contingency Plans (ACPs) was conducted to identify sensitive areas in all the response zones.

The Environmental Sensitivity Maps will be created using this data.

## 4.7 ALTERNATIVE RESPONSE STRATEGIES

There are no pre-approved response options for inland spills within the United States. Any plans to use dispersants or in situ burn by the Company will be submitted to the Federal On-Scene Coordinator for Regional Response Team approval prior to such action being taken.

### IN SITU BURNING

When considering the use of in situ burning the following considerations should be evaluated. In most cases, an agency application with further considerations will need to be completed before burning will be approved by the agency.

#### Size, Nature, and Product Spilled

- Flammability of the product. (Will the product burn?)
- Location of spill. (Distance and direction to nearest human use areas.)
- Volume of product released.
- Estimate of the surface area covered by the spill.
- How long has oil been exposed?
- Will burning cause more hazardous by-products?

#### Weather and Forecast

- Current weather conditions. (Rain / Heat)
- Wind speed and direction.
- 24 hour forecast.
- 48 hour forecast.

#### Evaluate the Response Operations

- Is there time enough to conduct burning?
- Is safety equipment available?
- Is adequate personnel available for monitoring / emergency response?
- Is mechanical recovery more intrusive than burning?

#### Habitats Impacted and Resources at Risk

- Have local agency / Officials been contacted.
  - Public Health
  - Land Owner / Manager
  - Local Fire Management (Fire Marshall)
  - Historic Property Specialist
  - Province / State Resource Agency
  - Aboriginal / Native American interests
- What is / will be the impact to surface water intakes and wells.
- Are endangered habitats / endangered species present?
- Is area used by Migratory Animals?
- What wildlife is present?

#### Burn Plan

- How much of the oil is expected to burn?
- How long will it be expected to burn?
- How will burn be ignited?
- How will burn be extinguished?
- How will burned oil residue be collected?
- What are the monitoring protocols?

#### **DISPERSANT USE**

Dispersants are not commonly used on inland spills. Working closely with Federal, Province / State and local agencies will be necessary for gaining approval to use dispersants. Since dispersants do not eliminate the oil, only break up and spread the oil throughout the water column, it is important to look at the total effect the oil will have on the environment while considering the use of dispersants.

# APPENDIX A

---

## RESPONSE EQUIPMENT/RESOURCES

## A.1 COMPANY OWNED RESPONSE EQUIPMENT

The Company owns and operates oil spill response equipment contained within response trailers staged throughout the pipeline system. This equipment is maintained according to manufacturer's recommendations by Company and/or contracted personnel. An equipment summary detailing locations, type and amount stored in the response trailers is listed in Figure A.1. The Company also has contracts in place with Oil Spill Removal Organizations and other clean-up contractors that are capable of responding to all discharges along the Pipeline. Figure A.2 lists the contracted Oil Spill Removal Organizations.

20' boom trailers are located at the Hardisty Pump Station (Alberta), Regina Pump Station (Saskatchewan), in Valley City (North Dakota) at an external contractor site, and in Brookings (South Dakota) at a TransCanada office location.

The Qualified Individual has the authority to activate other private contractors, experts, and consultants as the situation demands.

All Pipeline personnel who might be involved in an oil spill have been informed that detergents or other surfactants are prohibited from being used on an oil spill in the water and that dispersants can only be used with the approval of the Canadian Regional Environmental Emergency Team (REET) or US Regional Response Team, the interagency group composed of Federal and State agency representatives that coordinates oil spill response.

## A.2 OTHER COMPANY RESOURCES

Additional Company spill response equipment and manpower resources are not available to supplement the response operation; however, third party contractors will be activated on an as needed basis.

## A.3 CONTRACT RESOURCES

The resources will be secured from a Company approved contractor. Management will typically handle notification/implementation of these resources. Figure A.2 provides a quick reference to the Oil Spill Removal Organizations and details their response capability and estimated response times. Telephone reference is provided in Figure 1.5. (Note: The *Company will ensure that each OSRO has a comprehensive maintenance program and applicable training / drills programs in place at contract renewal.*)

## A.4 COOPERATIVE/MUTUAL AID RESOURCES

The Company is a member of the following Oil Spill Cooperatives or mutual aid groups:

- Western Canadian Spill Services Ltd.
- Alberta -Area U and S Oil Spill Cooperatives
- Saskatchewan -Area 3, 6, and 4 & 5 Oil Spill Cooperatives

## A.5 VOLUNTEERS

Volunteers will not be utilized by the Company for the response operations. In the U.S., all volunteers will be referred to the Federal Regional Response Team.

## A.6 COMMUNICATIONS

Effective and efficient communications systems are essential for emergency response at every level. The communications system will be utilized to gather information and current status reports as well as to provide coordination and direction to widely separated work groups involved in search, containment/diversion, repair, traffic control, public control or evacuation, and restoration.

The Company's overall Emergency Notification Chart (Figure 1.2) indicates individuals within the Company and governmental agencies (Figure 1.5) who must be contacted in the event of an emergency.

Notification information for the Qualified Individuals, Alternate Qualified Individuals, emergency response contractors, and governmental agencies is located in Section 1.0 and the Response Zone Annexes.

Lines of communication between the Incident Commander, local personnel, and contractors are demonstrated in the organization charts provided in Figures 3.1 and 3.2. Communication of the overall spill response operation between the Company and the responsible government agencies will occur between the Incident Commander and the Federal On-Scene Coordinator.

### ***Central Communications System***

Prearranged communication channels are of the utmost importance in dealing with Company emergencies. The notification procedures and telephone contacts documented in Section 1.0 will be reviewed in accordance with the earlier documented updating procedures. The predetermined communications channels include the following:

- A list of emergency telephone numbers for internal management and emergency response personnel (Figures 1.2 and 1.5).
- A list of emergency telephone numbers for various external resources such as the Fire Departments, Public Officials and local agencies is provided in the Annexes.
- A list of emergency telephone numbers for contract response resources (Figure 1.5).

### ***Communications Equipment***

Field communications during a spill response will be handled via radios, telephones, cellular phones, fax machines, and computers and will be maintained by Company personnel. In the event of a Worst Case Discharge, field communications will be enhanced with contract resources as the situation demands.

**Communications Type**

Voice communications may be conducted over the public telephone system or Company provided two-way radio equipment.

**Radios** - Hand-held and vehicle-mounted radio sets are the most effective means of communication for the field response operation. The units are battery operated, multi-channelled, and have a typical range that will cover the area of the response operation. Additional radio sets and battery packs/charges will be necessary in the event of a prolonged response operation.

**Telephone (Conventional)** - Conventional land line telephones are the most effective means of communication for regulatory and advisory notifications during a spill response operation. Additional telephone lines can be installed in the event of a prolonged response operation. All major facilities have access to standard telephone service.

**Cellular** - Cellular telephones are useful during spill events giving the user the ability to travel while using the communication system.

**FAX Machines** - FAX machines allow for a rapid transfer of information/documentation such as status reports/updates, written notifications, and purchase orders. All administrative offices have facsimile machines.

**Computers** - Computers are commonly used in networks which allow access to various other locations and company personnel. Computers also speed the consolidation of information and preparation of a written report.

**FIGURE A.1  
COMPANY OWNED SPILL RESPONSE EQUIPMENT**

<b>COMPANY OWNED RESPONSE EQUIPMENT</b>	
<b>5 SPILL RESPONSE TRAILERS (ONE PER RESPONSE ZONE)</b>	
<b>Description</b>	<b>Quantity</b>
Response boat 18.5 foot work boat with a 60 HP outboard	1
Jon boat 14 foot Safety boat with a 9.9 hp	1
34 ft Equipment trailer with 6 ft office includes equipment shelving, heat lights, power awning, rear ramp door and 1 side door. Roof rack for storage of the 14' boat and 500ft boom.	1
River Boom 6" x 6'	500 ft
Portable dam 50 ft	1
Diesel /hydraulic Skimming System with diesel power transfer pump and hoses	1
Sorbent pads	5 bales
Sorbent boom	5 bales
500 gallon portable tank	1
2,000 gallon portable tank	1
10,000 gallon portable bladder	1
Winter equipment(e.g. Chain saws, chains, pry bars, ropes, ice, augers)	varies
Bird Hazing Kit	1
20' boom Trailer	1

**FIGURE A.2**  
**RESPONSE RESOURCES**  
 Zone : Not determined

Area : Not determined						
OSRO Name	Contract Number	Environment Type	Facility Classification Level			
			MM	W1	W2	W3
National Response Corporation	TBD	River/Canal	X	X	X	X
		Inland	X	X	X	X
		Open Ocean	X	X	X	X
		OffShore	X	X	X	X
		Near Shore	X	X	X	X
		Great Lakes				

### FIGURE A.3 USCG OSRO CLASSIFICATIONS

The USCG has classified OSROs according to their response capabilities, within each Captain of the Port (COTP) zone, for vessels and for facilities in four types of environments. Response capabilities are rated MM, W1, W2, or W3 as described below:

<b>MINIMUM EQUIPMENT REQUIREMENTS FOR OSRO CLASSIFICATION</b>			
<b>Classification</b>	<b>Resource Quantity Guidelines</b>	<b>Maximum Facility Response Times</b>	<b>Maximum Vessel Response Times</b>
<b>Rivers/Canals</b>			
<b>MM</b>	Protective Boom: 4,000*ft EDRC:; 1,200 bbls TSC: 2,400 bbls	High Volume Ports: 6 hours Other Ports: 12 hours	High Volume Ports:12 hours Other Ports: 24 hours
<b>W1</b>	Protective Boom: 25,000*ft EDRC:; 1,875 bbls TSC: 3,750 bbls	High Volume Ports: 12 hours Other Ports: 24 hours	High Volume Ports:12 hours Other Ports: 24 hours
<b>W2</b>	Protective Boom: 25,000*ft EDRC:; 3,750 bbls TSC: 7,500 bbls	High Volume Ports: 30 hours Other Ports: 36 hours	High Volume Ports:36 hours Other Ports: 48 hours
<b>W3</b>	Protective Boom:25,000*ft EDRC:; 7,500 bbls TSC: 15,000 bbls	High Volume Ports: 54 hours Other Ports: 60 hours	High Volume Ports:60 hours Other Ports: 72 hours
<b>Great Lakes</b>			
<b>MM</b>	Protective Boom: 6,000*ft EDRC:; 1,250 bbls TSC: 2,500 bbls	All Ports: 6 hours	All Ports: 12 hours
<b>W1</b>	Protective Boom:30,000*ft EDRC:; 6,250 bbls TSC: 12,500 bbls	High Volume Ports: 12 hours Other Ports: 24 hours	High Volume Ports:12 hours Other Ports: 24 hours
<b>W2</b>	Protective Boom:30,000*ft EDRC:; 12,500 bbls TSC: 25,000 bbls	All Ports: 36 hours	All Ports: 42 hours
<b>W3</b>	Protective Boom:30,000*ft EDRC:; 25,000 bbls TSC: 50,000 bbls	All Ports: 60 hours	All Ports: 66 hours

<b>MINIMUM EQUIPMENT REQUIREMENTS FOR OSRO CLASSIFICATION</b>			
<b>Classification</b>	<b>Resource Quantity Guidelines</b>	<b>Maximum Facility Response Times</b>	<b>Maximum Vessel Response Times</b>
<b>Inland</b>			
<b>MM</b>	Protective Boom: 6,000*ft EDRC:; 1,200 bbls TSC: 2,400 bbls	High Volume Ports: 6 hours Other Ports: 12 hours	High Volume Ports: 12 hours Other Ports: 24 hours
<b>W1</b>	Protective Boom: 30,000*ft EDRC:; 12,500 bbls TSC: 25,500 bbls	High Volume Ports: 12 hours Other Ports: 24 hours	High Volume Ports: 12 hours Other Ports: 24 hours
<b>W2</b>	Protective Boom: 25,000*ft EDRC:; 12,500 bbls TSC: 25,500 bbls	High Volume Ports: 30 hours Other Ports: 36 hours	High Volume Ports: 36 hours Other Ports: 48 hours
<b>W3</b>	Protective Boom: 25,000*ft EDRC:; 50,500 bbls TSC: 100,500 bbls	High Volume Ports: 54 hours Other Ports: 60 hours	High Volume Ports: 60 hours Other Ports: 72 hours
<b>Great Lakes</b>			
<b>MM</b>	Protective Boom: 8,000*ft EDRC:; 1,200 bbls TSC: 2,400 bbls	High Volume Ports: 6 hours Other Location: 24 hours	High Volume Ports: 12 hours Other Ports: 24 hours
<b>W1</b>	Protective Boom: 30,000*ft EDRC:; 12,500 bbls TSC: 25,500 bbls	High Volume Ports: 12 hours Other Ports: 24 hours	High Volume Ports: 12 hours Other Ports: 24 hours
<b>W2</b>	Protective Boom: 30,000*ft EDRC:; 25,500 bbls TSC: 50,500 bbls	High Volume Ports: 30 hours Other Ports: 36 hours	High Volume Ports: 36 hours Other Ports: 48 hours
<b>W3</b>	Protective Boom: 30,000*ft EDRC:; 50,000 bbls TSC: 100,000 bbls	(for open ocean, plus travel time from shore) High Volume Ports: 54 hours Other Location: 60 hours	(for open ocean, plus travel time from shore) High Volume Ports: 60 hours Other Location: 72 hours

<b>MINIMUM EQUIPMENT REQUIREMENTS FOR OSRO CLASSIFICATION</b>			
<b>Classification</b>	<b>Resource Quantity Guidelines</b>	<b>Maximum Facility Response Times</b>	<b>Maximum Vessel Response Times</b>
<b>Offshore</b>			
<b>MM</b>	Protective Boom:6,000*ft EDRC:; 1,200 bbls TSC: 2,400 bbls	High Volume Ports:6 hours Other Ports: 12 hours	High Volume Ports: 12 hours Other Ports: 24 hours
<b>W1</b>	Protective Boom: 15,000*ft EDRC: 12,500 bbls TSC: 25,500 bbls	High Volume Ports:24hours Other Ports: 48hours	High Volume Ports: 24 hours Other Ports: 48 hours
<b>W2</b>	Protective Boom: 15,000*ft EDRC: 25,000 bbls TSC: 50,000 bbls	High Volume Ports:30hours Other Ports: 36hours	High Volume Ports: 36hours Other Ports: 48hours
<b>W3</b>	Protective Boom: 15,000*ft EDRC: 50,000 bbls TSC: 100,000 bbls	High Volume Ports:54hours Other Ports: 60hours	High Volume Ports: 60hours Other Ports: 72hours
<b>Open Ocean</b>			
<b>MM</b>	Protective Boom: 0*ft EDRC: 1,200 bbls TSC: 2,400 bbls	High Volume Ports:6hours Other Ports: 12hours	High Volume Ports: 12hours Other Ports: 24hours
<b>W1</b>	Protective Boom: 0*ft EDRC: 12,500 bbls TSC: 25,000 bbls	High Volume Ports:6hours Other Ports: 12hours	High Volume Ports: 12hours Other Ports: 24hours
<b>W2</b>	Protective Boom: 0*ft EDRC: 25,000 bbls TSC: 50,000 bbls	High Volume Ports:30hours Other Ports: 36hours	High Volume Ports: 36hours Other Ports: 48hours
<b>W3</b>	Protective Boom: 0*ft EDRC: 50,000 bbls TSC: 100,000 bbls	High Volume Ports:54hours Other Ports: 60hours	High Volume Ports: 60hours Other Ports: 72hours
<ol style="list-style-type: none"> <li>1. Rivers/canals include bodies of water, including the Intracoastal Waterway and other bodies artificially created for navigation, confined within an inland area and having a project depth of 12 feet (3.66 meters).</li> <li>2. EDRC stands for "effective daily recovery capacity," or the calculated recovery capacity of oil recovery devices determined by using a formula that takes into account limiting factors such as daylight, weather, sea state, and emulsified oil in the recovered material.</li> <li>3. TSC stands for "temporary storage capacity," meaning sufficient storage capacity equal to twice the EDRC of an OSRO. Temporary storage may include inflatable bladders, rubber barges, certified barge capacity, or other temporary storage that can be utilized on scene at a spill response and which is designed and intended for the storage of flammable or combustible liquids. It does not include vessels or barges of opportunity for which no pre-arrangements have been made. Fixed shore-based storage capacity, ensured available by contract or other means, will be acceptable.</li> </ol> <p>* In addition, 1,000 feet of containment boom plus 300 feet per skimming system.</p>			

**FIGURE A.4  
AGREEMENTS/CONTRACTS**

**NRC Packet**

**Decision Summary (DS-244)**



<b>To:</b> Richard Prior	<b>Date:</b> October 14, 2008
<b>From:</b> John Hayes	<b>Location:</b> Calgary, Alberta
<b>Subject:</b> NRC OSRO Resource Retainer	

**Decision Proposed (\$125,000 per Annum(U.S. Currency) for 3 years)**

Your approval is requested for funds related to emergency response planning and preparedness. As a matter of risk mitigation and regulatory compliance, it is proposed to enter into a contractual retainer to address a number of emergency response functions during operations. This amount falls within the existing capital expenditures for emergency response for 2009.

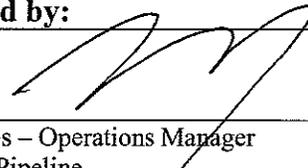
**Background**

National Response Corporation (NRC) will provide Keystone with Oil Spill Response Organization (OSRO) resources. Specifically, NRC will be the overall coordinating company that has the ability to safely respond to spill related incidents along the pipeline. NRC ensures spill readiness which included supplier subcontracts, training, workshops and overall spill site coordination. NRC has the proven ability to handle spills of all sizes and is approved by the United States Coastguard.

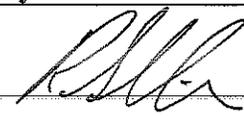
NRC has its own equipment, spill managers and a network of related industries to ensure Keystone is prepared to respond efficiently and effectively. The retention of a contractor is mandatory for Keystone to meet regulatory requirements. Having a retainer guarantees Keystone the resources when most needed.

The contract should start on January 1, 2009 and will form part of the existing Emergency Response Plan for 2009. This type of contract was not contemplated in the original Emergency Response budget of 3MM, but is part of the overall plan. The first year will be absorbed by the existing budget and for future years, these costs should be part of a field operations budget.

**Requested by:**

 John Hayes – Operations Manager Keystone Pipeline	14 October 2008 Date
---	-------------------------

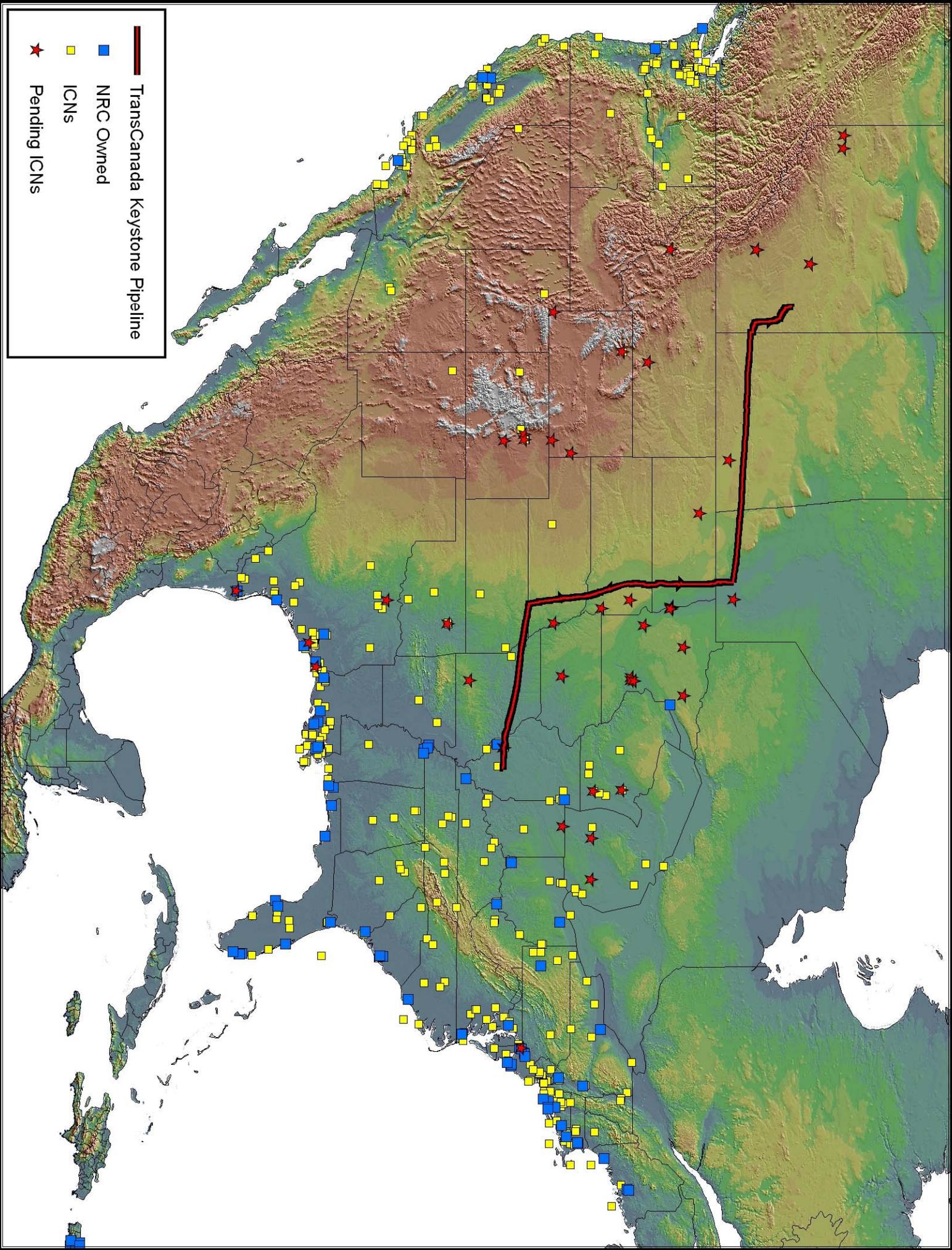
**Approved by:**

 Rob Sillner Integration Manager, Keystone Pipeline	14 October 2008 Date
--	-------------------------

## National Response Corporation, Inc.

National Response Corporation, Inc. is an Oil Spill Response Organization contracted to conduct oil recovery for TransCanada Keystone Limited Partnership and TC Oil Pipeline Operations, Inc. National Response Corporation uses a network of associated cleanup contractors throughout North America and the world. National Response Corporation has been certified by the United States Coast Guard, as described in the Emergency Response Manual, to respond to releases along the length of the Pipeline.

For further information about National Response Corporation and a list of response equipment you can visit their website at <http://www.nrcc.com>.



# APPENDIX B

---

## DISPOSAL PLAN

## B.1 OVERVIEW

A major oil spill response would generate significant quantities of waste materials ranging from oily debris and sorbent materials to sanitation water and used batteries. All these wastes need to be classified and segregated (i.e., oily, liquid, etc.), transported from the site, and treated and/or disposed at approved disposal sites. Each of these activities demands that certain health and safety precautions be taken, which are strictly controlled by Federal and State Laws and Regulations. This Section provides an overview of the applicable State Regulations governing waste disposal, and a discussion of various waste classification, handling, transfer, storage, and disposal techniques. It is the responsibility of the Environmental Unit to manage waste disposal needs during an oil spill cleanup.

## B.2 WASTE CLASSIFICATION

### Oily-Liquid Wastes

Oily liquid wastes (i.e., oily water and emulsions) that would be handled, stored, and disposed during response operations are very similar to those handled during routine storage and transfer operations. The largest volume of oily liquid wastes would be produced by recovery operations (e.g., through the use of vacuum devices or skimmers). In addition, oily water and emulsions would be generated by vehicle operations (e.g., spent motor oils, lubricants, etc.), and equipment cleaning operations.

### Non-Oily -Liquid Wastes

Response operations would also produce considerable quantities of non-oily liquid wastes. Water and other non-oily liquid wastes would be generated by the storage area and stormwater collection systems, equipment cleaning (i.e., water contaminated with cleaning agents), and office and field operations (i.e., sewage, construction activities).

### Solid Wastes

A solid waste is defined as any discarded material provided that it is not specifically excluded under the regulations. These exclusions cover materials such as domestic sewage and mixtures of sewage discharged through a sewer system or industrial wastewater point source discharges.

A discarded material is any material which is abandoned (disposed, burned or incinerated) or accumulated, stored or treated prior to being abandoned. A discarded material is also any material recycled or any material considered inherently wastelike. Recycled material is considered solid waste when used in a manner constituting disposal, placed on land or burned for energy recovery.

A solid waste may be considered a hazardous waste. A solid waste, as defined above, may be a hazardous waste if it is not excluded from regulation and is either a listed hazardous waste or exhibits the characteristics of a hazardous waste. A solid waste exhibits the characteristics of a hazardous waste if it exceeds the thresholds established in determining the following:

1. Ignitability
2. Corrosivity
3. Reactivity
4. Toxicity

A solid waste may also become a hazardous waste if it is mixed with a listed hazardous waste or, in the case of any other waste (including mixtures), when the waste exhibits any of the characteristics identified above.

#### **Oily -Solid / Semi-Solid Wastes**

Oily solid/semi-solid wastes that would be generated by containment and recovery operations include damaged or worn-out booms, disposable/soiled equipment, used sorbent materials, saturated soils, contaminated beach sediments, driftwood, and other debris.

#### **Non-Oily -Solid / Semi-Solid Wastes**

Non-oily solid/semi-solid wastes would be generated by emergency construction operations (e.g., scrap, wood, pipe, and wiring) and office and field operations (i.e., refuse). Vessel, vehicle, and aircraft operations also produce solid wastes.

### **B.3 WASTE HANDLING**

A primary concern in the handling of recovered oil and oily debris is contaminating unaffected areas or recontaminating already cleaned areas. Oily wastes generated during the response operations would need to be separated by type and transferred to temporary storage areas and/or transported to incineration or disposal sites. Proper handling of oil and oily wastes is imperative to ensure personnel health and safety.

#### ***Safety Considerations***

Care shall be taken to avoid or minimize direct contact with oily wastes. All personnel handling or coming into contact with oily wastes shall wear protective clothing. A barrier cream can be applied prior to putting on gloves to further reduce the possibility of oily waste absorption. Safety goggles shall be worn by personnel involved in waste handling activities where splashing might occur. Any portion of the skin exposed to oily waste should be washed with soap and water as soon as possible. Decontamination zones should be set up during response operations to ensure personnel are treated for oil exposure.

### **Wastes Transfer**

During response operations, it may be necessary to transfer recovered oil and oily debris from one point to another several times before the oil and oily debris are ultimately recycled, incinerated or disposed at an appropriate disposal site. Depending on the location of response operations, any or all of the following transfer operations may occur:

- From portable or vessel-mounted skimmers into flexible bladder tanks, storage tanks of the skimming vessel itself, or a barge.
- Directly into the storage tank of a vacuum device.
- From a skimming vessel or flexible bladder to a barge.
- From a vacuum device storage tank to a barge.
- From a barge to a tank truck.
- From a tank truck to a processing system (e.g., oil/water separator).
- From a processing system to a recovery system and/or incinerator.
- Directly into impermeable bags that, in turn, are placed in impermeable containers.
- From containers to trucks.

There are four general classes of transfer systems that may be employed to affect oily waste transfer operations:

- **Pumps:** Rotary pumps, such as centrifugal pumps, may be used when transferring large volumes of oil, but they may not be appropriate for pumping mixtures of oil and water. The extreme shearing action of centrifugal pumps tends to emulsify oil and water, thereby increasing the viscosity of the mixture and causing low, inefficient transfer rates. The resultant emulsion would also be more difficult to separate into oil and water fractions. Lobe or "positive displacement" pumps work well on heavy, viscous oils, and do not emulsify the oil/water mixture. Double-acting piston and double acting diaphragm pumps are reciprocating pumps that may also be used to pump oily wastes.
- **Vacuum Systems:** A vacuum truck may be used to transfer viscous oils but they usually pick up a very high water/oil ratio.
- **Belt/Screw Conveyors:** Conveyors may be used to transfer oily wastes containing a large amount of debris. These systems can transfer weathered debris laden oil either horizontally or vertically for short distances (i.e., 10 feet) but are bulky and difficult to set up and operate.
- **Wheeled Vehicles:** Wheeled vehicles may be used to transfer liquid wastes or oily debris to storage or disposal sites. These vehicles have a limited transfer volume (i.e., 100 barrels) and require good site access.

## B.4 WASTE STORAGE

Interim storage of recovered oil, oily and non-oily waste would be considered to be an available means of holding the wastes until a final management method is selected. In addition, the segregation of wastes according to type would facilitate the appropriate method of disposal. The storage method used would depend upon:

- The type and volume of material to be stored.
- The duration of storage.
- Access.

During an oil spill incident, the volume of oil that can be recovered and dealt with effectively depends upon the available storage capacity. Typical short-term storage options are summarized in Figure B.1. The majority of these options can be used either onshore or offshore.

If storage containers such as bags or drums are used, the container must be clearly marked with the proper Canadian Transport Dangerous Goods/United States Department of Transportation marking to indicate the type of material/waste contained and/or the ultimate disposal option.

Fuel barges may be the best option for temporary storage of oil recovered in open waters and frac tanks for inland spills. Depending on size, these vessels may be able to hold up to 6,000 barrels of oil and water and frac tanks may hold up to 500-550 barrels. The barge deck can be used as a platform for operating oil spill clean-up equipment and storing containment boom.

Steel or rubber tanks can be used to store oil recovered near the shoreline. To facilitate offloading, demulsifiers may be used to break emulsions prior to placing the recovered substance into the barges or storage tanks.

Use of any site for storage is dependent on the approval of the local authorities. The following elements affect the choice of a potential storage site:

- Geology
- Ground water
- Soil
- Flooding
- Surface water
- Slope
- Covered material
- Capacity
- Climatic factors
- Land use
- Toxic air emissions
- Security
- Access
- Public contact

## B.5 WASTE DISPOSAL

### *Techniques for Disposal of Recovered Oil*

Recovery, reuse, and recycling are the best choices for remediation of a spill, thereby reducing the amount of oily debris to be bermed onsite or disposed of at a solid waste landfill. Treatment is the next best alternative, but incineration and burning for energy recovery have more options within the state. There are some limitations and considerations in incinerating for disposal. Environmental quality of incineration varies with the type and age of the facility. Therefore, when incineration becomes an option during an event, local air quality authorities would be contacted for advice about efficiency and emissions of facilities within their authority. Approval of the local air authorities is a requirement for any incineration option. Landfilling is the last option. Final disposal at a solid or dangerous waste landfill is the least environmentally sound method of dealing with a waste problem such as oily debris.

**Note: Prior to the disposal of ANY waste products, the Incident Commander or his designee must contact the Keystone / TransCanada Community, Safety and Environmental Department to receive direction and guidance on the proper disposal methods and procedures.**

During an oil spill incident, the Company would consult with the proper regulating agency to identify the acceptable disposal methods and sites appropriately authorized to receive such wastes. The Company maintains a list of approved disposal sites that satisfy local, Province/State, and Federal

Regulations and Company requirements: This identification of suitable waste treatment and disposal sites would be prepared by the Environmental Unit in the form of an Incident Disposal Plan which must be authorized by the U.S. Coast Guard and/or the Environmental Protection Agency or National Energy Board.

An Incident Disposal Plan would include predesignated interim storage sites, segregation strategies, methods of treatment and disposal for various types of debris, and the locations/contacts of all treatment and disposal site selections. Onsite treatment/disposal is preferred.

In order to obtain the best overall Incident Disposal Plan, a combination of methods should be used. There is no template or combination of methods that can be used in every spill situation. Each incident should be reviewed carefully to ensure that an appropriate combination of disposal methods is employed.

The different types of wastes generated during response operations would require different disposal methods. To facilitate the disposal of wastes, they should be separated by type for temporary storage, transport and disposal. Figure B.2 lists some of the options that would be available to segregate oily wastes. The figure also depicts methods that may be employed to separate free and/or emulsified water from the oily liquid waste.

The following is a brief discussion of some disposal techniques available for recovered oil and oily debris.

### ***Recycling***

This technique entails removing water from the oil and blending the oil with uncontaminated oil. Recovered oil can be shipped to refineries provided that it is exempt from hazardous waste regulations. There it can be treated to remove water and debris, and then blended and sold as a commercial product.

The Company's designated Disposal Specialist is responsible for ensuring that all waste materials be disposed at an internally approved disposal site.

### ***Incineration***

This technique entails the complete destruction of the recovered oil by high temperature thermal oxidation reactions. There are licensed incineration facilities as well as portable incinerators that may be brought to a spill site. Incineration may require the approval of the local Air Pollution Control Authority. Factors to consider when selecting an appropriate site for onsite incineration would include:

- Proximity to recovery locations.
- Access to recovery locations.
- Adequate fire control.
- Approval of the local air pollution control authorities.

### ***In Situ Burning / Open Burning***

Burning techniques entail igniting oil or oiled debris and allowing it to burn under ambient conditions. These disposal techniques are subject to restrictions and permit requirements established by federal, province/state and local laws. They would not be used to burn Polychlorinated biphenyls, waste oil containing more than 1,000 parts per million of halogenated solvents, or other substances regulated by the Environmental Protection Agency or Environment Canada. Permission for in situ burning may be difficult to obtain when the burn takes place near populated areas.

As a general rule, in situ burning would be appropriate only when atmospheric conditions will allow the smoke to rise several hundred feet and rapidly dissipate. Smoke from burning oil will normally rise until its temperature drops to equal the ambient temperature. Afterwards, it will travel in a horizontal direction under the influence of prevailing winds.

### ***Landfill Disposal***

This technique entails burying the recovered oil in an approved landfill in accordance with regulatory procedures. Landfill disposal of free liquids is prohibited by Federal Law in the United States.

With local health department approval, non-burnable debris which consists of oiled plastics, gravel and oiled seaweed, kelp, and other organic material may be transported to a licensed, lined, approved municipal or private landfill and disposed of in accordance with the landfill guidelines and regulations. Landfill designation would be planned only for those wastes that have been found to be unacceptable by each of the other disposal options (e.g., waste reduction, recycling, energy recovery). Wastes would be disposed only at Company-approved disposal facilities. The Disposal Specialist is responsible for ensuring that all waste materials are disposed at a Company internally approved disposal site. Disposal at a non-approved facility would require approval by the Disposal Specialist prior to sending any waste to such a facility.

**FIGURE B.1  
TEMPORARY STORAGE METHODS**

CONTAINER	ONSHORE	OFFSHORE	SOLIDS	LIQUIDS	NOTES
Barrels	x	x	x	x	May require handling devices. Covered and clearly marked.
Tank Trucks	x	x		x	Consider road access. Barge-mounted offshore.
Dump/Flat Bed Trucks-Roll-offs	x		x		May require impermeable liner and cover. Consider flammability of vapors at mufflers.
Barges		x	x	x	Liquids only in tanks. Consider venting of tanks.
Oil Storage Tanks	x	x		x	Consider problems of large volumes of water in oil.
Bladders	x	x		x	May require special hoses or pumps for oil transfer.
Frac Tanks	x			x	Consider road access.

**FIGURE B.2  
OILY WASTE SEPARATION AND DISPOSAL METHODS**

TYPE OF MATERIAL	SEPARATION METHODS	DISPOSAL METHODS
<b>LIQUIDS</b>		
Non-emulsified oils	Gravity separation of free water	Incineration Use of recovered oil as refinery/production facility feedstock
Emulsified oils	Emulsion broken to release water by: <ul style="list-style-type: none"> <li>• heat treatment</li> <li>• emulsion breaking chemicals</li> <li>• mixing with sand</li> <li>• centrifuge</li> <li>• filter/belt press</li> </ul>	Use of recovered oil as refinery/production facility feedstock
<b>SOLIDS</b>		
Oil mixed with sand and soil	Collection of liquid oil leaching from sand during temporary storage Extraction of oil from sand by washing with water or solvent Removal of solid oils by sieving	Incineration Use of recovered oil as refinery/production facility feedstock Direct disposal Stabilization with inorganic material Degradation through land farming or composting
Oil mixed with cobbles or pebbles	Screening Collection of liquid oil leaching from materials during temporary storage Extraction of oil from materials by washing with water or solvent	Incineration Direct Disposal Use of recovered oil as refinery/production facility feedstock
Oil mixed with wood and sorbents	Screening Collection of liquid oil leaching from debris during temporary storage Flushing of oil from debris with water	Incineration Direct disposal Degradation through land farming or composting for oil mixed with seaweed or natural sorbents

# APPENDIX C

---

## BASICS OF OIL SPILL RESPONSE

## C.1 DIKES, BERMS AND DAMS

Dikes, berms, and dams are land-based tactics, with the objective of containing spilled oil and limiting spreading of oil slicks, thus minimizing impacts to the environment. Dikes, berms and dams are embankment structures built-up from the existing terrain, placed to contain and accumulate oil for recovery. These barriers can serve to:

- Contain and stabilize a contaminated area.
- Contain or divert oil on water or oil that has potential to migrate.
- Create cells for recovery.
- Use natural depressions to act as containment areas for recovery.

The tactic may be deployed in association with a recovery tactic, such as Shoreline Recovery or On-land Recovery. Dikes, berms, and dams are most effective when placed before oil arrives. Dikes, berms, and dams can also be used to exclude oil from a sensitive area, which is covered in the Beach Berms and Exclusion Dams tactic. The tactic can also be used in conjunction with an excavation tactic to enhance containment volumes (see Pits, Trenches, and Slots). The general strategy is to:

1. Identify the location and trajectory of the spill or potential spill.
2. Plan a deployment configuration that best supports the operating environment and available resources.
3. Mobilize to the location and deploy response resources.
4. Construct the containment structure and ensure it does not leak.
5. Consider the need to remove any water-bottom that may collect beneath the oil inside the structure.
6. Monitor the containment structure on an appropriate basis.
7. If oil collects in the structure, utilize an appropriate recovery system for removal.

### ***Tactic Description***

This tactic involves building an embankment perpendicular to the flow of the oil slick or around a contaminated area. Dike, berm, and dam structures can be constructed with a wide variety of materials including: soil, gravel, snow, sand bags, oil boom, timbers and logs. Selection of the construction material depends on the operating environment, location, available materials, and whether the structure is to be temporary or permanent. The containment area should be lined with an impermeable membrane, such as plastic sheeting, to keep oil and oily water from leaking or migrating into the soil. The structure may include a method to regulate flow, such as a weir or spill way. Dikes, berms, and dams can be built by manual labor or with earth-moving equipment depending on the location and available resources.

### ***Deployment Configurations***

#### **BERMS**

A containment berm can be constructed of available materials such as earth, gravel, or snow. Use earth-moving equipment or manual labor to construct the berm. Form the materials into a horseshoe shape ahead of the flow of oil. Use plastic sheeting to line the walls of a soil berm to prevent oil penetration. Sandbags filled with sand or other heavy material also make excellent containment barriers.

#### **DAMS**

An underflow dam can be used when there is too much water flow to allow for a complete blockage of a drainage channel. The dam is built of earth, gravel, or other barriers such as sandbags or plywood sheets. Wherever possible, line the upstream side of the dam with plastic sheeting to prevent erosion and penetration of oil into the dam material. Underflow dams use inclined culverts or pipes to move water downstream while leaving the spill contained behind the dam. The capacity of the pipe(s) should exceed the stream flow rate. It may be necessary to use pumps to remove water behind a dike. Valves or culvert plugs can also be used to control flow rate. Pipes must be placed on the upstream side of the dam, with the elevated end on the downstream side. Make sure that the upstream end of the pipe is submerged and below the oil/water interface. The height of the elevated downstream end of the pipe will determine the water level behind the dam.

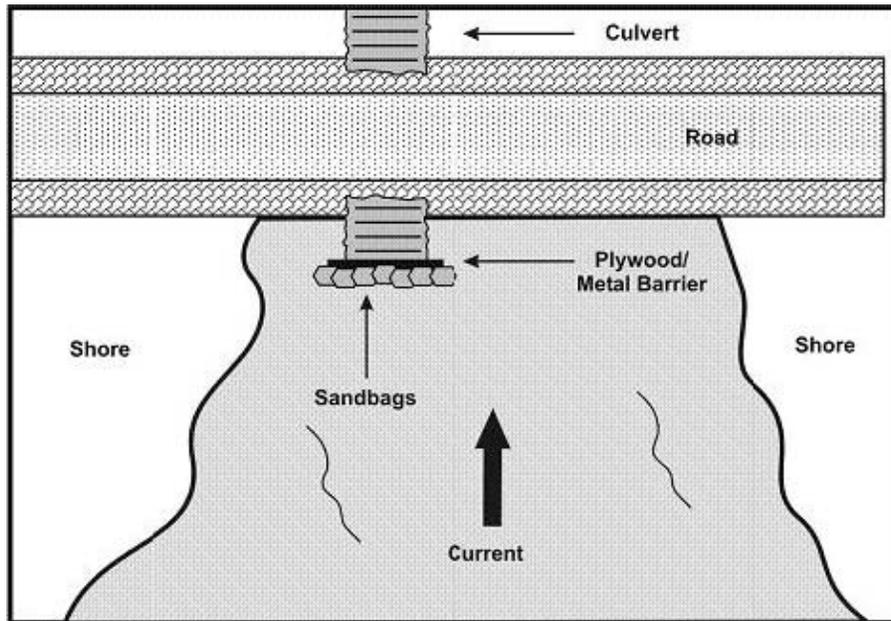
#### **EXISTING ROADS**

Roadways that are built up above the terrain can be used as dikes. However, road construction usually allows for natural drainage through culverts or bridges. These drainage structures must be controlled to turn the road into a barrier.

#### **CULVERT BLOCKING**

A culvert can be blocked using sheet metal, plywood barriers, or inflatable culvert plugs. Use a full block only when the culvert will be blocked for the entire cleanup operation, if the oil floating on the water will not contaminate additional soil or tundra, and if blocking the water flow will not threaten the road. Otherwise, an adjustable weir or culvert plug should be used. Plywood and/or sandbags can also be used as culvert blocks, but are more labor-intensive and pose a higher potential for injury. A wood block may require a headwall with kickers oriented to support the boards or plywood. Place the blocking materials over the upstream end of the culvert. Plastic sheeting over the outside of the block will prevent oil penetration.

**FIGURE C.1**  
Culvert Blocking



#### EARTH MOVING EQUIPMENT

A bulldozer, road grader, or front-end loader drives around the spill with its blade angled towards the spill, pushing earth or snow into a berm. Once the perimeter has been covered with an initial berm, shore-up areas as necessary.

#### SNOW

Because of the absorbent quality of snow, it makes an excellent berm for both containment and recovery. A snow berm can be strengthened by spraying it with a fine water mist that forms an ice layer on top of the snow. A snow berm is built around the areas of heaviest oiling to contain oil or diesel spilled to tundra and/or ice in winter.

#### MESH FENCE

Plastic mesh fencing may be used to quickly construct an underflow dam system. The mesh fencing is placed across the drainage and held in place with stakes. Absorbent boom, oil boom, plywood, or even dry dead grass can be placed on the upstream side of the fencing. Running water will find its way under the barrier fence, but oil floating on top of the water will be trapped. The advantages of this system are that it is lightweight and mobile.

## C.2 DEFLECTION BOOM

### *Objective & Strategy*

The objective is to direct spilled oil away from a location to be protected or simply to change the course of the slick. “Deflection” is used to describe the tactic where oil is redirected away from an area but not recovered.

### *Tactic Description*

The boom is placed at an optimum angle to the oil trajectory, using the movement of the current to carry oil along the boom and then releasing it into the current again with a new trajectory. The angle is chosen to prevent oil from entraining beneath the boom skirt. Boom may be held in place by anchors, vessels, or a boom control device.

Deflection Boom may be used to temporarily avoid impacts to a sensitive area, but there is no recovery associated with the tactic, thus no oil is removed from the environment.

The general strategy is to:

1. Identify the location and trajectory of the spill or potential spill.
2. Identify, prioritize, and select sensitive areas to be protected from impact.
3. Select a deployment configuration that best supports the operating environment and available resources.
4. Mobilize to the location and deploy the tactic.
5. Place boom using secured anchor systems, mooring points, vessels, boom control devices, etc.
6. Monitor and adjust the boom on an appropriate basis.

### BOOM ANGLE

Select the appropriate boom angle to keep oil from entraining under the boom. Where currents exceed 3 knots the boom must be almost parallel to the current to prevent entrainment. In currents exceeding 3 knots, a cascade of boom arrays may be used; the first boom array will slow the velocity of the slick allowing subsequent arrays to deflect the oil.

### ANCHOR SYSTEMS

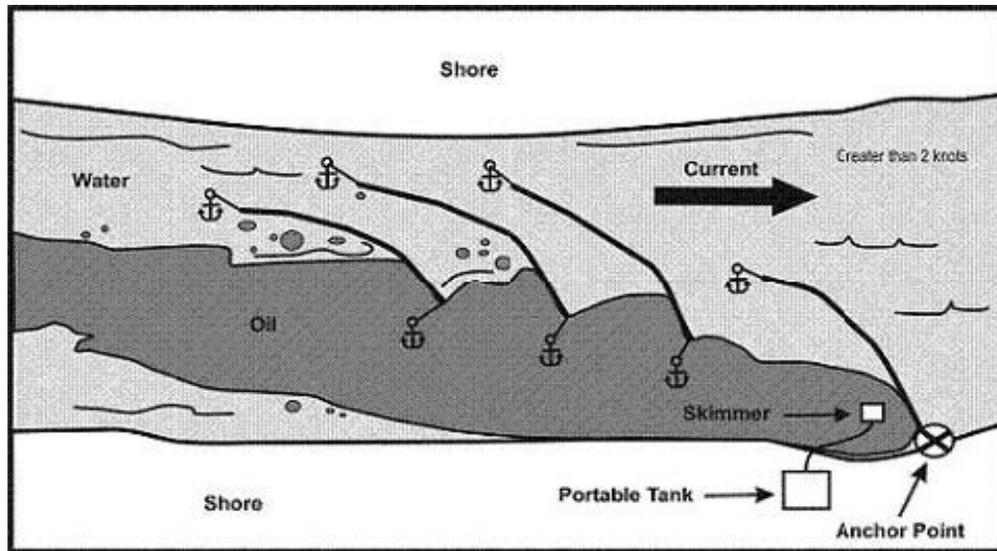
Boom is secured in place using standard anchoring systems. Anchor sizes vary depending on the boom type and the operating equipment.

DEPLOYMENT CONFIGURATIONS

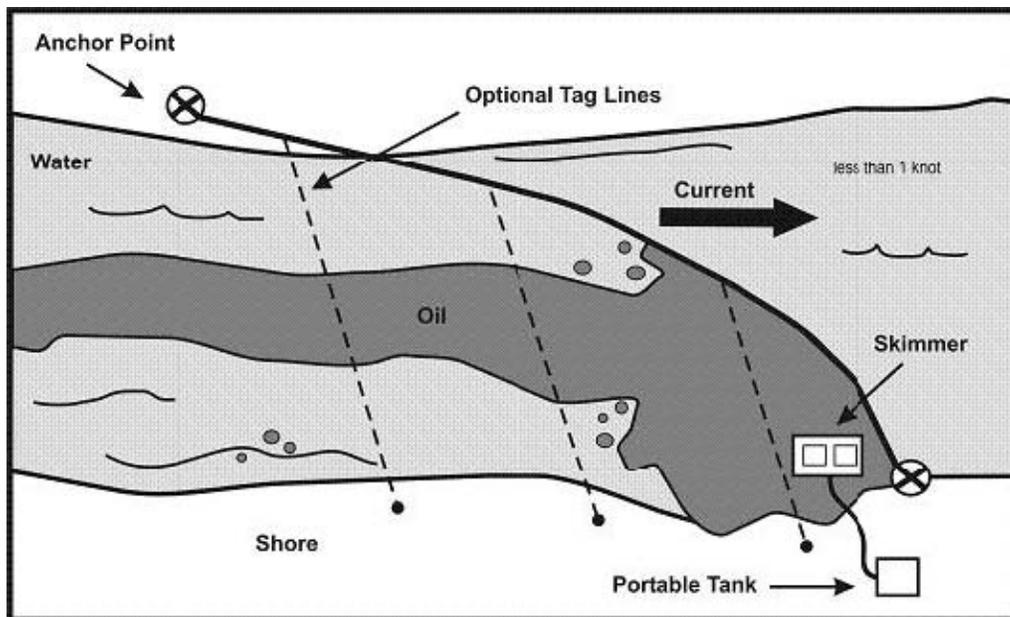
**Single Boom**

Boom is deployed from a site at an optimum angle to the current and anchored to deflect the oil away from a location. Figures C.2 and C.3 illustrate two single boom deflection techniques.

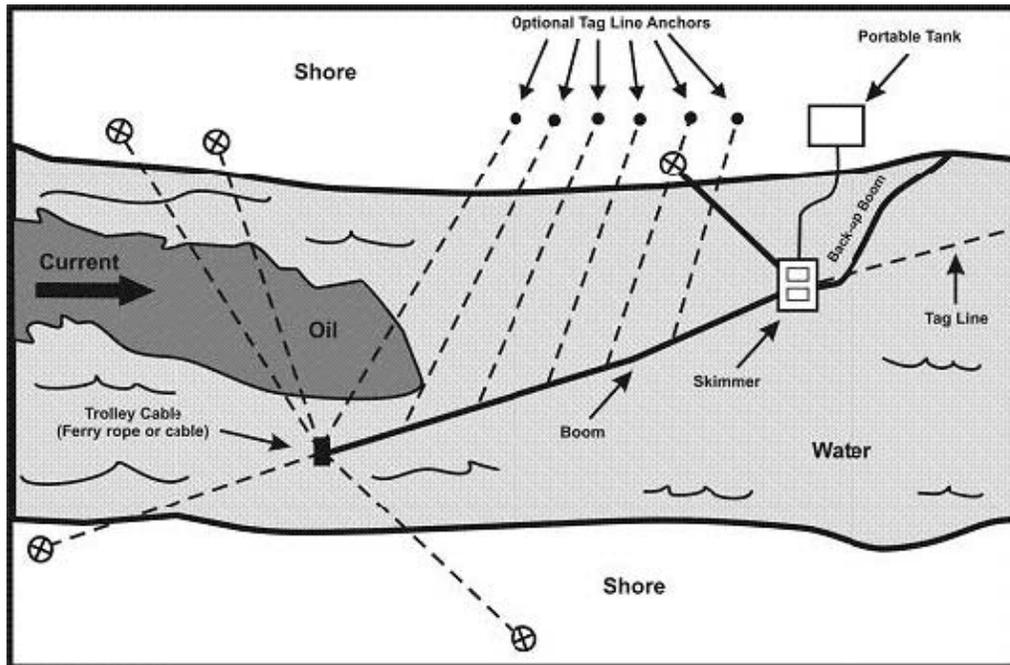
**FIGURE C.2**  
Deflective Booming Technique (Single Boom Method)



**FIGURE C.3**  
Deflective Booming Technique (Single Boom Method)



**FIGURE C.4**  
Deflective Booming Technique (Cascade Method)



### **Cascade**

Several booms are deployed in a cascade configuration when a single boom cannot be used because of fast current or because it is necessary to leave openings in the boom for vessel traffic, etc. This configuration can be used in strong currents where it may be impossible to effectively deploy one continuous section of boom. Shorter sections of boom used in a cascade deployment are easier to handle in faster water, thereby increasing efficiency. Additional equipment may be required to set and maintain this system as compared to the single boom configuration.

### C.3 CONTAINMENT BOOM

#### *Objective & Strategy*

Containment booming is a fixed-boom tactic. The objective is to corral spilled oil on the water, usually near the source, thus minimizing spreading and impacts to the environment. It is usually deployed with Shoreline Recovery.

This tactic can be deployed for oil spill migrating downstream or downhill to water or through water.

The general strategy is to:

1. Identify the location and trajectory of the spill or potential spill.
2. Select a deployment configuration that best supports the operating environment and available resources.
3. Mobilize to the location and deploy the tactic.
4. Place boom, using secure anchor system or mooring points.
5. Monitor the boom on an appropriate basis.
6. If oil collects in the boom, utilize an appropriate recovery tactic to remove it.

#### *Tactic Description*

Containment boom systems are comprised of the appropriate oil boom for containment and concentration, and anchoring systems to hold the boom in place.

Containment boom systems are not recommended for the fast water environment because of the high probability of fixed-boom failure and the difficulty of anchoring in this environment.

Containment boom systems are not recommended for the broken ice environment, because of the high probability of fixed-boom failure and loss due to ice encounters.

Anchoring systems are often deployed first and then the boom is set from one anchor to the adjacent anchor. Boom can be placed from shoreline to shoreline.

A second layer of containment boom, outside the primary boom, has two advantages:

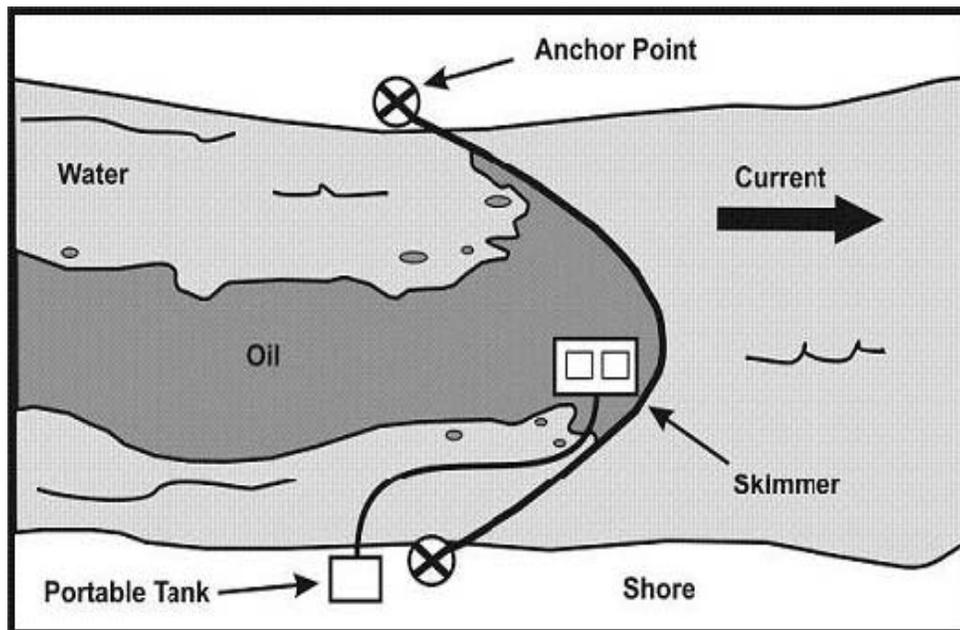
1. It breaks the sea chop and reduces its impact on the primary boom,
2. It may capture oil that has escaped if the primary boom fails.

Figure C.5 illustrates a simple containment booming technique.

### Deployment Considerations

- It is often advisable to “line” the containment boom with sorbent materials (passive recovery) to recover the sheen and reduce decontamination costs.
- If the oil slick is moving, due to wind or current, consider containment at the source and ahead of the leading edge.
- If spill is moving in excess of 1 knot consider the Diversion Boom Tactic.
- Anchor systems must be selected based on the maximum stress that might be expected to occur on the boom array, considering stronger currents and winds than when the anchor is set.
- Site conditions will influence deployment configuration options.
- Combinations of Containment Boom and Diversion Boom tactics are often used together to optimize success.

**FIGURE C.5**  
Containment Booming Technique (Catenary Method)



## C.4 DIVERSION BOOM

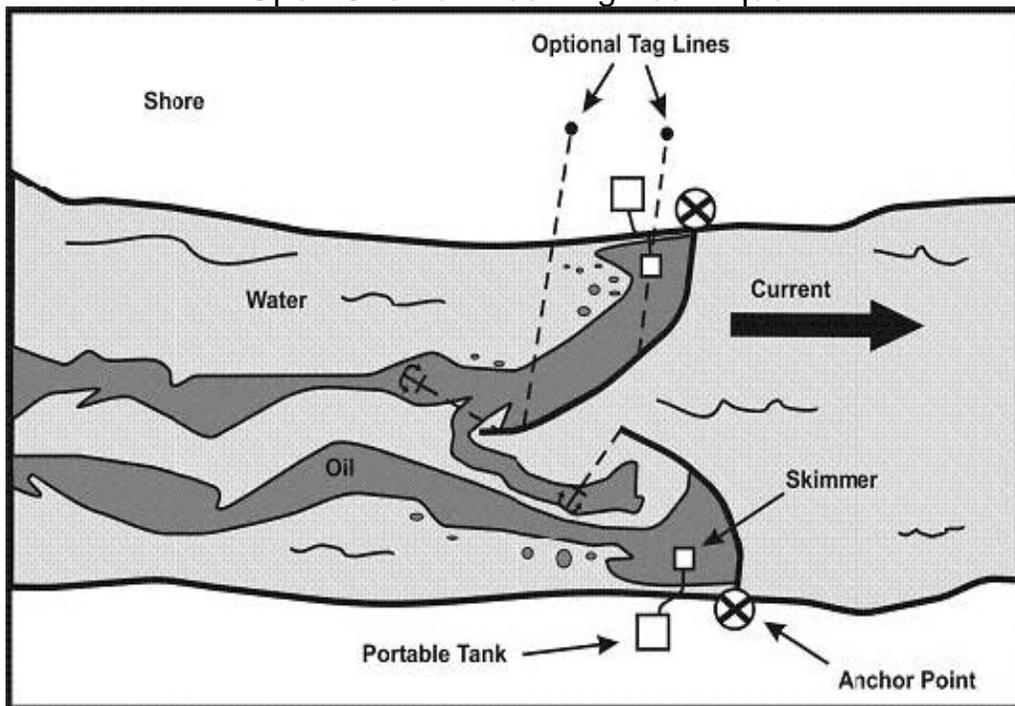
### *Objective & Strategy*

The objective is to redirect the spilled oil from one location or direction of travel to a specific site for recovery. For the purposes of maintaining consistent and clear terms, diversion is always associated with oil recovery, in contrast with the term deflection, which is used to describe the tactic where oil is redirected away from an area but not recovered.

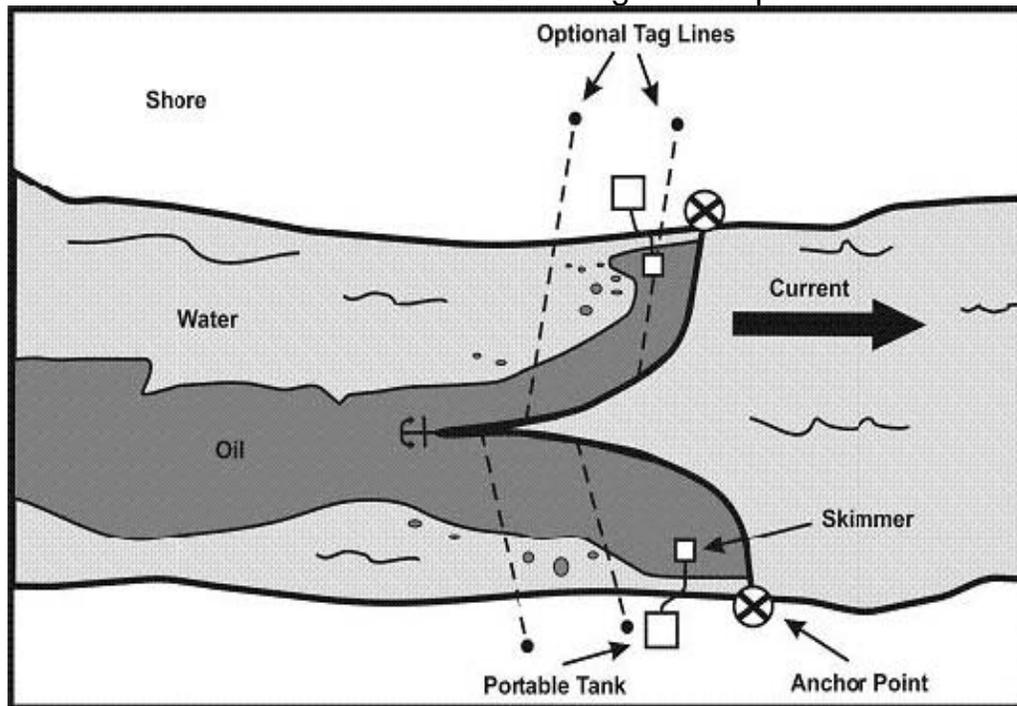
### *Tactic Description*

The Diversion Boom tactic is for water-borne spills where there is some current, usually from 0.5 to 3.0 knots. The boom is placed at an optimum angle to the oil trajectory, using the movement of the current to carry oil along the boom to a recovery location. The angle is chosen to prevent oil from entraining beneath the boom skirt. Oil can be diverted to a shoreline or away from a shoreline or shoal waters. This tactic is always associated with a Shoreline Recovery. Figures C.6 and C.7 illustrate two diversionary booming techniques. These techniques are the Open Chevron and the Closed Chevron technique respectively.

**FIGURE C.6**  
Open Chevron Booming Technique



**FIGURE C.7**  
Closed Chevron Booming Technique



#### ANCHOR SYSTEMS

Boom is secured in place using standard anchoring systems. Anchor sizes vary depending on the boom type and the operating environment.

#### **Boom Angle**

Select the appropriate boom angle to keep oil from entraining under the boom. Note that the angle relative to the current decreases rapidly as the current increases. Where currents exceed 3 knots the boom must be almost parallel to the current to prevent entrainment. In currents exceeding 3 knots, a cascade of boom arrays may be used; the first boom array will slow the velocity of the slick allowing subsequent arrays to deflect the oil.

#### **Single Boom**

A basic diversion technique is to divert oil from a current to a recovery site along a shoreline. The recovery site is chosen where there is minimal current and a suitable recovery system can be deployed. The boom is then anchored at the site and deployed at an optimum angle to the current and secured/anchored to divert the oil to the shoreline for recovery.

## C.5 SHORELINE RECOVERY

### *Objective & Strategy*

The objective is to remove spilled oil that has been diverted to a designated recovery site accessible from the shore.

Shoreline Recovery is usually deployed as part of another tactic, such as Diversion Boom strategy. When deployed in conjunction with another tactic, fewer personnel may be required.

The general strategy is to:

1. Identify the primary recovery site.
2. Assess site conditions and access routes.
3. Determine the appropriate recovery and storage systems based on oil type, access, and deployment restrictions.
4. Mobilize and deploy equipment to recover and temporarily store the oil from the recovery site.
5. Take precautions to minimize contamination of the shoreline at the collection site.
6. Man and monitor the system as appropriate.
7. Store and transfer recovered oil and oily water according to an approved waste management plan.

### *Tactic Description*

Shoreline recovery systems can be deployed from land access routes (beaches, all-terrain vehicles), or water access. Access to the recovery site and the oil type will influence/dictate the options of equipment to be used.

## SKIMMING SYSTEMS

Shoreline recovery requires at least one portable skimming system to remove spilled oil. The typical portable skimming system includes:

- Skimmer with pump and power pack
- Hose (suction and discharge with fittings)
- Oil transfer and decanting pump(s)
- Repair kit (tools and extra parts)

There are many models of skimmers to choose from, but they all fall into three types:

- **Weir skimmers** draw liquid from the surface by creating a sump in the water into which oil and water pour. The captured liquid is pumped from the sump to storage. Weir skimmers can recover oil at high rates, but they can also recover more water than oil, especially when the oil is in thin layers on the surface of the water. This creates the need to separate the water from the oil and decant it back into the environment. Otherwise, the recovered water takes available storage volume. Weir skimmers are best employed where oil has been concentrated into thick pools or where there are very large volumes of oil and recovered liquid storage capacity.
- **Oleophilic skimmers** pick up oil that adheres to a collection surface, leaving most of the water behind. The oil is then scraped from the collection surface and pumped to a storage device. Oleophilic skimmers do not recover oil as fast as weir skimmers, but they have the advantage of recovering very little water. Oleophilic skimmers may be used where oil is very thin on the surface. Oleophilic skimmers are a good choice where liquid storage capacity is limited.
- **Suction skimmers** use a vacuum to lift oil from the surface of the water. These skimmers require a vacuum pump or air conveyor system. Like weir skimmers, suction skimmers may also collect large amounts of water if not properly operated. Most suction skimmers are truck mounted and work best at sites with road access.

### ***Primary Oil Storage Devices***

Primary oil storage devices for shoreline recovery can be portable tanks, bladders, or truck-mounted tanks on the shoreline. If access is not restricted, larger systems can be used and deployed by heavy lifting equipment. If the site is accessible by road, vacuum trucks may be used for oil recovery, storage, and transport.

***Recovery Location***

Selection of a shoreline recovery location is critical to the success of this tactic. A recovery site should be in calm water with minimal currents. The site must have enough level ground to set up and operate a power pack and portable tanks. Sites with road access are preferred, but if not available, the site must have some other suitable access. Shelter, food and water for the response crew must also be considered in selecting a site.

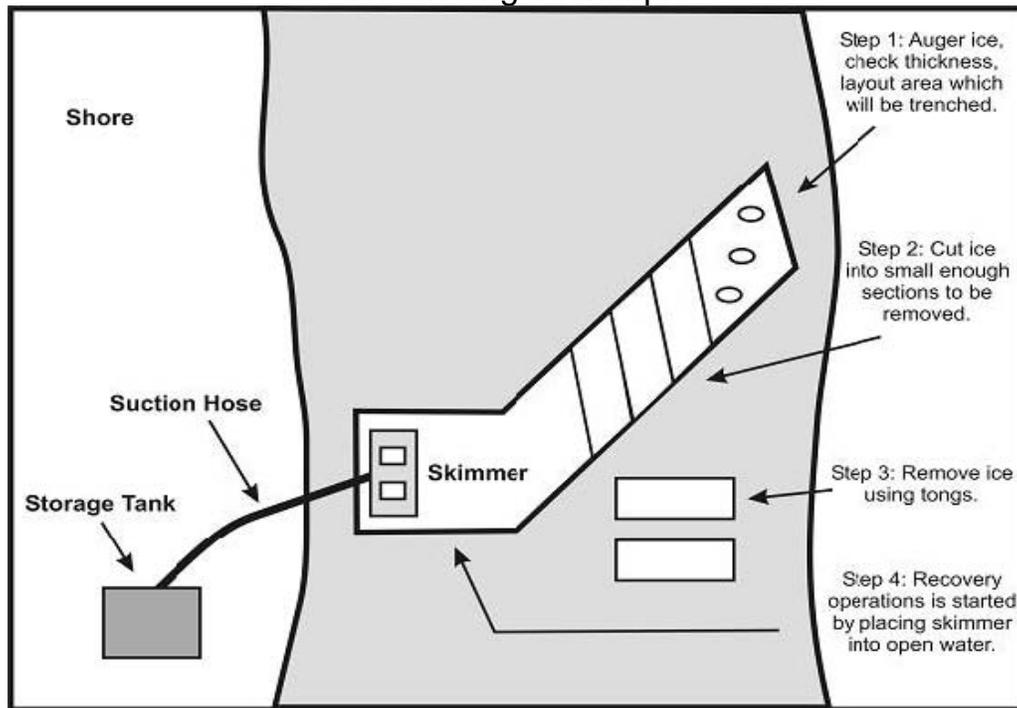
**C.6 ICE OPERATIONS*****Objective & Strategy***

Much like that of diversion booming, the objective is to redirect the spilled oil from one location or direction of travel to a specific site for recovery. With a layer of ice preventing the use of booming equipment, other response strategies must be employed.

***Tactic Description*****ICE SLOTTING**

Ice slotting (Figure C.8) may be used in cases where the ice is thick enough to support the response equipment and personnel. Consideration for the weakening and cracking of the ice must be taken when conducting ice slotting operations. Slotting Angle The slot should be angled at approximately 30 degrees to the river's edge. The slotting needs to be wide enough to place a skimming system into the water to recover the oil. The lead end of the slot should have a slight curve which parallels the river current to allow the current to push the oil towards the recovery area.

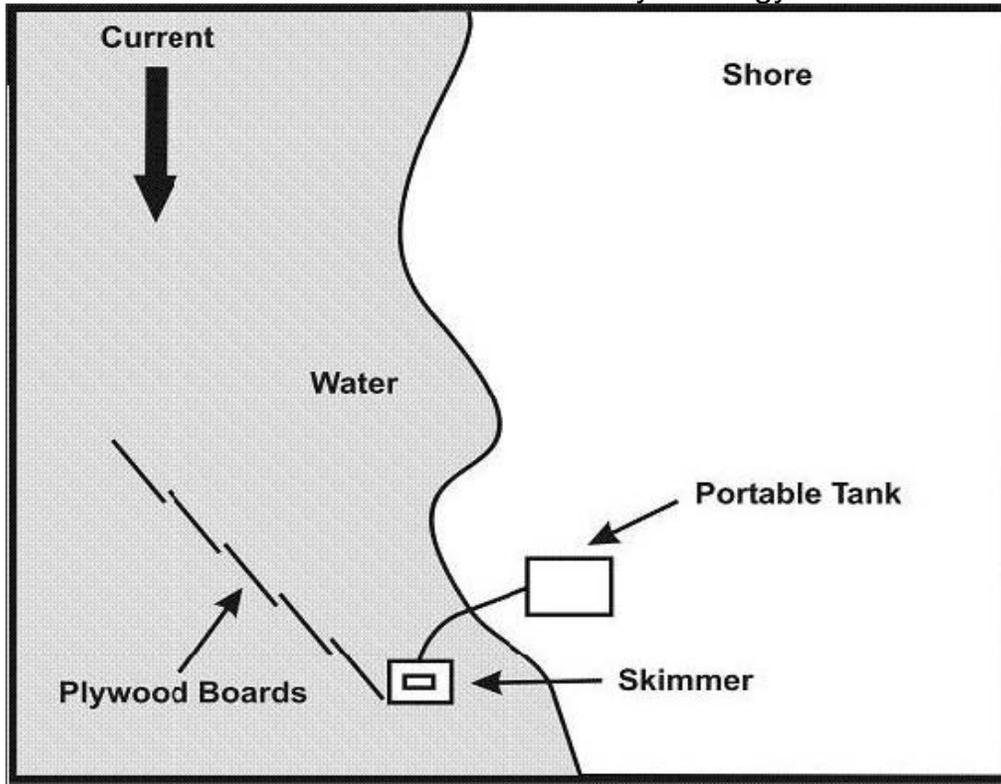
**FIGURE C.8**  
Ice Slotting Technique



### DEFLECTION BOARDS

In place of using booming equipment it may be possible to use flat boards, such as plywood, to divert the oil under the ice into a recovery area, which has been cut out. To use this form of diversion, the depth of the water under the ice and the speed of the current ice must be considered. The angle in which the boards are placed is derived much like that of deflection booming. In any current above 3 knots, a series of cascading boards should be considered. Also, the depth of the water must be considered. The stronger the current the deeper the boards must be placed to prevent entrainment. If the water is not deep enough to place the boards to prevent entrainment, ice slotting methods may be required. Figure C.9 illustrates the overall method of using deflective boards. Figure C.10 illustrates a close up of the deflective board response method.

**FIGURE C.9**  
Deflective Boards Recovery Strategy



**FIGURE C.10**  
Close up view of the Deflective Board Strategy

