



# **ENVIRONMENTAL MANAGEMENT SYSTEMS**

**Version 2008**

# **ENVIRONMENTAL MANAGEMENT SYSTEMS**

## **PART 1**

### **ENVIRONMENTAL CONCERNS**

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**Environmental Management System**  
**Part 1 - Environmental Concerns**

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**INTRODUCTION**

Caltex Energy Inc. (Caltex) is committed to safe, compliant and environmentally conscious operations for the benefit of employees, Contractors, shareholders and the communities in which Caltex works in. This Environment Manual is designed to provide both employees and contractors with practical guidance in Environmental issues.

The standards and rules as set forth in this manual are to be followed by all employees and contractors. Wherever possible and applicable, legislative requirements have been incorporated from Alberta.

As evidence of commitment, Caltex will provide employees with training, equipment and procedures to be able to work in a safe, compliant and environmentally responsible manner.

Any requirements for change or modification of this documentation shall be reported to the V.P., Operations. Caltex welcomes any suggestions for the ultimate improvement of this manual and its contents.

This manual is intended specifically for all operations personnel. All operations personnel are expected to become familiar with this manual's contents and to review it during safety meetings and training sessions. Personnel are also expected to refer to it before conducting any critical task.

It is realized that the construction, operation and eventual abandonment of Oil and Gas facilities have the potential to impact elements of the surrounding environment.

These could include:

- air
- groundwater
- surface water
- soil
- vegetation
- wildlife
- fish
- livestock
- landowners and land issues

Environmental impact can result from spills, releases, fires, improper storage, improper soil management, emissions and other similar activities.

These can result in liability issues for the company and health concerns for the public.

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**1.0 ENVIRONMENTAL CONCERNS**

In the various stages of building an Oil and Gas operation, there are a number of potential environmental issues that must be considered. These are addressed in this manual in detail. Some of the more important issues are shown on the Table 1 below.

**Table 1**  
**Environmental Concerns: Oil and Gas Production Activities**

Activity	Environmental Concerns
Planning and Site Selection	<ul style="list-style-type: none"> <li>• Proximity to water bodies and sensitive areas.</li> <li>• Disturbance of wildlife, fisheries, habitat and livestock.</li> <li>• Changes to soil characteristics.</li> <li>• Disturbance to historical resources.</li> <li>• Disturbance to sensitive areas.</li> <li>• Hydrological conditions.</li> <li>• Terrain stability and drainage.</li> </ul>
Drilling and Completions	<ul style="list-style-type: none"> <li>• Disturbance of wildlife, fisheries, habitat and livestock.</li> <li>• Soil disturbance and erosion.</li> <li>• Off-lease contamination from rig run-off.</li> <li>• Disturbance to sensitive areas.</li> <li>• Noise concerns.</li> </ul>
Clearing and Construction	<ul style="list-style-type: none"> <li>• Access to areas that should be limited or denied.</li> <li>• Soil disturbance and erosion.</li> <li>• Disturbance of wildlife, fisheries, habitat and livestock.</li> <li>• Disturbance of sensitive terrain and plants.</li> <li>• Disturbance of drainage patterns and terrain stability.</li> </ul>
Facility Design and Layout	<ul style="list-style-type: none"> <li>• Pollution prevention.</li> <li>• Off-lease contamination from facility run-off.</li> <li>• Fires, spills, and leaks from poor design.</li> <li>• Inadequate emission control.</li> <li>• Inadequate spill prevention and containment.</li> <li>• Extensive surface disturbance.</li> </ul>

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Activity	Environmental Concerns
Operations and Maintenance	<ul style="list-style-type: none"><li>• Spills and releases.</li><li>• Waste management problems.</li><li>• Air emissions.</li><li>• Noise concerns.</li><li>• Environmental monitoring and reporting.</li><li>• Alterations to local water hydrogeology.</li><li>• Abandonment.</li></ul>
Decommissioning	<ul style="list-style-type: none"><li>• Future land use concerns.</li><li>• Residual soil.</li><li>• Surface water control.</li><li>• Groundwater contamination.</li></ul>

### **1.1 Regulatory Considerations**

The two primary regulators for the Oil and Gas Industry are the Alberta Energy Resources Conservation Board (ERCB) and Alberta Environment (AENV). There are other regulatory agencies that need to be considered as well, such as the Department of Fisheries and Oceans (DFO) for pipeline water crossings and Navigable Waters for any activity in a river. However, the ERCB and AENV are the primary regulators that must be considered in order to operate wells, facilities and pipelines in Alberta. The ERCB regulates the applications and, construction, and as well as the operations of all wells, facilities and pipelines.

AENV is concerned with water, soil, and air emissions that are a result of Oil and Gas operations.

The counties and municipalities may also have requirements that would impact the operations as well. They may require development and building permits prior to the construction of a facility.

There are a number of Federal agencies that may be involved depending on the location or type of operations that are being considered. Awareness of these requirements is up to the company. Every effort must be made to ensure compliance to all the regulations that may impact an operation.

## **2.0 PREPARING A WORK PLAN**

### **2.0.1 Introduction**

A complete, concise and well organized work plan will help identify and control environmental liabilities. This will also help minimize environmental impacts. Some of the important benefits that Caltex is attempting to achieve are:

- Time and financial savings.
- Smoother approval process.
- Clarity of responsibilities.
- Opportunities to demonstrate due diligence.
- Improved environmental performance.

### **2.0.2 Potential Issues**

There are a number of serious issues that can be avoided by having a well constructed work plan that addresses environmental issues. Some of these issues are:

- Delays in the approval process.
- Objections from landowners.
- Concerns by other stakeholders.
- Increase in time required to begin construction and production.

### **2.0.3 Responses**

The procedures required to properly plan an activity are as follows:

- Modify the internal approvals section or personnel as required to ensure that all required regulatory agencies are addressed.
- Indicate what approvals are required and the dates of submission, as well as the expected date for approvals to be received.
- Groundproof the work area to determine any potential environmental impacts that may be present such as water bodies, historical sites, sensitive areas etc.
- Determine the location of all landowners by pulling land titles.
- Determine the location of residents within the ERCB notification as found in ERCB *Directive 56*.
- Residents may not be shown on land titles as renters and secondary residences are not listed. It is your responsibility to know who and where they are for notification purposes.
- Review the work plan to determine any issues that need to be addressed in more detail or those that will be completed at a later date. Place these later dates for completion in the file so they are not overlooked.

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- Monitor and record implementation of all aspects of environmental issues as the project progresses.
- Review the issues shown in the work plan as part of the Environmental Audits that are conducted in order to ensure that all issues are addressed and completed as per commitment and requirements.

## **2.1 Scheduling**

### **2.1.1 Introduction**

Effective scheduling will ensure the following:

- Conduct route and site locations more effectively.
- Identify and avoid conflicts between environmental and landowner priorities through public involvement.
- Prevent environmental impacts.
- Organize resources to allow both effective environmental protection and efficient operations.

### **2.1.2 Potential Issues**

Scheduling that ignores environmental factors can result in adverse negative impacts and conflicts. Improper scheduling may also lead to penalties and the shutdown of a project by regulators. Caltex will avoid these issues by doing the following:

- Ensure proper soil handling to avoid compaction, erosion and loss of top soil.
- If working in streams and rivers, Caltex will avoid sedimentation, blockage and blockage of passage to prevent interference with spawning of fish. Caltex will also avoid harmful alteration, change or destruction of fish habitat.
- Caltex will avoid negative impacts to wildlife resources such as migration, wintering areas, breeding and calving seasons.
- Caltex will be aware and schedule activities so they do not impact landowners during planting and crop removal seasons.

### **2.1.3 Responses**

Caltex will schedule construction and other activities that can be disruptive to the environment or surrounding communities to proceed quickly and be completed as soon as possible. This will lessen the impacts as well as shorten the time of impact.

- Seasonal considerations will be taken into account when conducting construction and operations.
- If working in wetlands, these activities will be conducted in the winter season. This will minimize the impact.

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- Spring break-up will be considered when conducting operations. During this season, there is a greater impact to soil, surface water, aquatic, and agricultural land. Every effort will be made to avoid these impacts during this season.
- Caltex will separate top soil as well as B and C horizon soils to avoid the mixing of different soils. All top soil will be stripped, piled and seeded on location. This will preserve the top soil for reclamation use in the future. Seeding the top soil will prevent soil erosion.
- Fire hazards in the green areas of the province will be addressed for each individual project. The Forestry Service will be made aware of Caltex's activities and any requirements they may have will be adhered to. In addition, Caltex will provide them with a list of wells, facilities and pipelines that are in their areas so this information can be included in their fire planning program for the area.
- All activities near watercourses will be conducted in accordance with the AENV and DFO schedule, allowing access to these areas.
- Caltex will schedule operations to avoid interfering with seeding and harvesting operations on agricultural land.
- Open cutting of roads will be avoided if it is possible to bore under a road for utilities and pipelines.
- When working near identified recreation areas, all care will be taken to minimize any impacts that Caltex's operations will have.
- When working near these areas or residential areas, every attempt will be made to limit the hours of work between 7:00 a.m.-8:00 p.m. This will reduce impacts as much as possible.
- Caltex will also attempt to minimize impacts on hunting during the hunting season.

#### **2.1.4 Legislation and References**

The following regulations should be referenced prior to beginning construction. Applications and approvals may be required from any or all of these agencies:

- Alberta Energy and Natural Resources, Fish and Wildlife Division. - *Fisheries Habitat Guidelines No. 6, Timing Constraints in and around Watercourses*
- ERCB - *IL 94-22, Operating Guidelines for activity in Caribou Range-North West Alberta*
- DFO - *Fisheries Act, RSC-1985c. F-14, s, 36*
- DFO - *Forestry and Prairies Protection Act, RSA 1980 F-14*
- Department of Transportation - *Navigable Waters Act, SC 1997c. N-22*

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## **2.2 Public Involvement**

### **2.2.1 Introduction**

Caltex will involve residents, landowners and other stakeholders in the planning, application and operational stages. Caltex will make every attempt to not only inform them of plans and the issues associated with them, but also commit to working with them in an attempt to best resolve any of their concerns from these individuals and groups.

Caltex respects the needs of all parties that may be affected by their Operations. Caltex will attempt to address all the issues that are brought forward.

### **2.2.2 Potential Issues**

There are a number of issues that can arise when an Oil and Gas project is being considered. Caltex will attempt to address these during the consultation period and also when they arise during normal operations.

- Increased difficulty in gaining approval from the ERCB for a project. (Resident consultation is a requirement under *Directive 56*).
- Escalation of issues which may increase costs and time.
- Delays and perhaps costly and time consuming public hearings.
- Bad publicity.
- Obstruction by stakeholders and potential blockages for future expansion.
- Damaged reputation and lack of trust.
- Devalued standing with shareholders and customers.

### **2.2.3 Responses**

An effective public involvement program is in place and the following Potential Issues have been adopted and followed. (*Excerpts have been taken from the Canadian Association of Petroleum Producers [CAPP] Guide for effective public involvement, 1999*)

- Identify what Public Interest Groups exist: landowners, residents, community associations, interested environmental organizations, other companies, wilderness groups, First Nations and various other stakeholders may make up the public who may be interested in the project. All of these will be notified and solicited for support or at the least, non-objection to the project.
- Caltex will integrate the public into the decision making process. Public involvement will be integrated into the decision making process based on validity of comments and recommendations.

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Caltex will put together a plan for the development of the public involvement program. This plan will be as follows:

- Identify issues that may be raised by a person or group.
- Determine the groups or public that may be interested in reviewing and commenting on the preliminary plans. Caltex must also identify those that may object or have concerns in order to help resolve any issues that may arise.
- Caltex will make initial community contacts so that any of the public that was not previously aware of the project can be made aware. This is done to ensure that everyone who wants to know is informed and that there will not be any latecomers to hold up the project.
- These additional groups may help Caltex to become aware of issues that were not anticipated.
- Through this process, Caltex will become aware and be able to react to the sensitivity and significance of the public issues in respect to the plans.
- Caltex will develop a detailed plan from the initial contacts list that will allow them to clearly think through strategies regarding the public perceptions.
- Caltex will implement the plan based on all of the above strategies. Caltex will monitor, evaluate and follow through with the detailed plan. This will ensure that the public trust is kept and that Caltex will create a lasting relationship with the public in the area.

By doing the above, Caltex will be able to allocate the resources, time frames and documentation to ensure that the public involvement plan is satisfactory.

#### **2.2.4 Legislation and References**

- All applications must go to the ERCB. The ERCB *Directive 56* must be followed.
- ERCB - *Directive 71, Emergency Response Planning*
- CAPP - *Guide for Public Involvement (1998)*
- CSA - *Guide Z764-96 – A Guide to Public Involvement*
- AENV - *Environmental Protection and Enhancement Act – SA 1992 c E-13.3*

### **2.3 Selecting and Accessing Sites**

#### **2.3.1 Introduction**

All issues such as land, water, forest, farmland, and wetlands etc., will be considered when selecting both a site for construction and access roads. It is Caltex's intent to minimize any damage to these areas as well as to the environment surrounding these sites.

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**2.3.2 Potential Issues**

Improper selection of sites and access roads can lead to both immediate and future problems. It is Caltex's intent to avoid these issues. Some potential problems that need to be addressed are as follows:

- Increased soil erosion and terrain instability because of improper site selection.
- Alteration of natural drainage patterns through improper soil management.
- Damage to aquatics due to river or creek bank erosion and disturbance.
- Damage to wildlife and bird habitat because of indiscriminate removal of trees and underbrush.
- Disturbance of native grasses.
- Loss of timber resources due to improper timber removal.
- Increased reclamation costs because of improper soil handling.
- Land use conflicts.
- Disruption of agricultural operations.

**2.3.3 Responses**

- Caltex will use experienced land management personnel and discuss with land management agencies (*Government*) to determine if any land use issues are in effect.
- Caltex will use existing maps, aerial photos, and public documents to determine potential sites and route locations.
- Caltex will consult with landowners for land use agreements if on private land.
- Caltex will do pre-development investigations to determine any potential environmental concerns such as water courses, gravel, and any other unique land characteristics.
- Caltex will establish a soil handling plan based on industry best Potential Issues.
- The public involvement plan will be put into motion as described prior to the application stage.
- Caltex will always attempt to use the smallest surface area possible.
- Well patterns will be developed to maximize pipeline and utility corridors in order to minimize impacts.
- Sub-surface soils will be tested to determine construction suitability.
- Natural drainage patterns will be considered in all construction.
- Multi-well sumps, remote sumps or aboveground sumps will be used if possible.
- Multi-well pads will be considered if feasible.
- A site and access route will be chosen that has the least impact on the natural surrounding environment.
- Existing roads will be used if possible to reduce ground disturbance.
- Key wildlife habitat areas will be considered and avoided if possible.

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**2.3.4 Legislation and References**

- Alberta Energy and Natural Resources – *Fisheries Habitat Protection Guidelines No. 2*
- Alberta Energy and Natural Resources – *Fisheries Habitat Protection Guidelines No. 3*
- Alberta Energy and Natural Resources – *Fisheries Habitat Protection Guidelines No. 4*
- Alberta Energy and Natural Resources – *Fisheries Habitat Protection Guidelines No. 7*
- Alberta Energy and Natural Resources – *Forest Service Resource Road Planning Guidelines for the Green Areas of Alberta (1985)*
- Alberta Energy and Natural Resources – *Resource Evaluation and Planning Division – Planning Projects Directory; Integrated Resource Plans (1978)*
- ERCB - *Directive 56, IL 2002-01, ID 97-06.*
- ERCB - *Directive 71 Emergency Response Planning*
- AENV - *Environmental Protection and Enhancement Act*
- Indian Oil and Gas Canada
- CAPP – *Habitat Enhancement and the Petroleum Industry (1984)*

**2.4 Protecting Historical Resources**

**2.4.1 Introduction**

If construction and development of a new project uncovers or disturbs a valuable, historical or cultural resource, Caltex is committed to conducting a historical resource impact assessment in order to determine what must be done.

**2.4.2 Potential Issues**

A valuable historical resource may be lost if a thorough assessment is not done where required by the Alberta Community Development Department. These records must be checked.

**2.4.3 Responses**

All required records will be checked if Caltex conducts any activities in an area that has been designated to potentially contain *Historical Habitat Resources*. Caltex is committed to following the requirements as stated in legislation. If a *Historical Resource Impact Assessment* were to be required, Caltex would conduct such an assessment and submit it to Alberta Culture for approval.

#### **2.4.4 Legislation and References**

- ERCB - *Directive 56, IL 82-11*
- *Historical Resources Act (1980)*
- *Alberta Community Development (1996), (1993)*

### **2.5 Protecting Wildlife, Fisheries And Habitat**

#### **2.5.1 Introduction**

Caltex will identify wildlife and fish species in the area of interest prior to starting development activities. Caltex will minimize any impacts to fish and wildlife and will also endeavour to protect the habitat and movement corridors if required. Caltex will ensure the viability and stability of wildlife and fish populations if impacted as a result of development.

#### **2.5.2 Potential Issues**

The major issue is starting development in an area without ensuring that the natural habitats are protected.

#### **2.5.3 Responses**

- Caltex will study AENV and DFO maps to determine the location of the habitats in the area of development.
- Caltex will also endeavour to collect this information from the local population in the area.
- This information will be recorded in the planning maps prior to beginning development.
- Caltex will comply with the DFO *Windows of Opportunity* to work in streams and rivers in order to minimize impacts to fish.
- All applicable government agencies will be contacted in order to gather information regarding the local fish and wildlife habitat if Caltex is planning to develop in these areas.
- Caltex will respect any restrictions in an area regarding spawning, mating, molting, or migration of fish or wildlife if development is in one of these areas.
- Caltex will document all of these requirements in the planning stages and carry them out in the development stage.

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#### **2.5.4 Legislation and References**

- Alberta Energy and Natural Resources – *Fish and Wildlife Division, Fisheries Habitat Protection Guidelines*
- AENV – *Operating Guidelines for Operating in Caribou Ranges in West Central Alberta (1996)*
- AENV – *The Resource Handbook – Operational Guidelines for Industry (1984)*
- ERCB – *IL 2002-01*
- Department of Transportation – *Navigable Waters Protection Act (1994), (1997) (1985 N-2)*
- Water Act SA 1999 c W-3.5, Code of Practice (2000)
- Fisheries Act – 1985 (F-14, s 35-40. 1997 c F-12.2)

#### **2.6 Controlling Gaseous Emissions**

##### **2.6.1 Introduction**

Production facilities have the potential to produce a variety of gaseous emissions including:

- Volatile Organic Compounds (VOC)
- Carbon Monoxide, Carbon Dioxide
- SO<sub>2</sub>
- Methane
- NO, (Oxides of Nitrogen)
- Smoke
- Benzene from Glycol Dehydrators
- Hydrocarbon Vapours
- H<sub>2</sub>S
- Odour Complaints from the Public

Control of these emissions is best implemented during the planning stages. Caltex will use the best technology to ensure that these substances are not emitted in an amount that exceeds the *Alberta Ambient Air Quality Guidelines* or in a manner that will impact the public.

##### **2.6.2 Potential Issues**

Some of the obvious issues regarding this are the negative impacts on air, soil, water, vegetation, and the public living near Caltex operations. Another issue is the non-compliance to regulations and the negative impact that this would have on the company. Non-compliance can impact any future approvals in the area. Public complaints are also a concern and will be avoided at all costs.

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**2.6.3 Responses**

Benzene emissions from glycol reboilers are a concern to the company and will be addressed by annually sampling these emissions and having a third party lab prepares the calculations to determine the annual emissions from each reboiler. This amount must be less than 3 tonnes per year. Caltex will report this on a voluntary basis to CAPP. CAPP is managing this program and reports to the ERCB. Caltex will remain in compliance to this requirement at all times. Caltex will also use the available technology to ensure that they remain in compliance to the regulations.

- Caltex will sweeten sour gas if required to do so in order to sell sales gas. Caltex will ship sour gas to another central processing facility to eliminate sour gas emissions. By shipping the sour gas, Caltex will also reduce the levels of SO<sub>2</sub> that is created as a result of flaring this gas. Every attempt will be made to reduce or eliminate flare stacks if it is possible.
- All aspects of the ERCB *Directive 60* will be adhered to in order to evaluate every flare with the intent of eliminating it. The ERCB *Economical Decision Tree* process will be used to evaluate every flare and vent on an annual basis.
- Sour gas injection into a deep well or into a sour gas pipeline will be given all consideration if feasible.
- In order to reduce NO<sub>2</sub> emissions from boilers, heaters, treaters and line heaters, Caltex will endeavour to use efficient equipment when constructing new sites. Also, if it is possible at a site, Caltex will endeavour to use sales gas for fuel gas rather than hydrocarbon rich solution gas.
- If possible, Caltex will choose burner sizes that are more efficient in order to reduce emissions.
- Caltex will conform to all the requirements for compressors as set out in the Oil and Gas Conservation Regulations.
- Caltex will compile all the required information and report all VOC's to Environment Canada annually as part of the Environment Canada National Pollutants Release Inventory (NPRI) reporting requirements.
- Caltex will attempt to use equipment such as electric engines (depending on economics and electricity availability) in order to reduce Greenhouse Gas Emissions.
- Caltex will also attempt to find other solutions to flaring if it is feasible, as per the ERCB *Economic Decision Tree* process.
- Caltex will ensure there is a tight seal on all tanks in order to eliminate odours or fugitive emissions. These will be inspected on a monthly basis.
- Caltex will attempt to reduce tank vapours and venting as per the requirements of ERCB *Directive 60*. Every attempt will be made to either gather the vapours for a flare or pipeline or well injection. This will be decided on an economical and availability scale.
- If there are sufficient volumes of gas in the storage tanks, a vapour recovery system will be evaluated and if feasible, it will be installed in order to prevent gas from venting to the atmosphere.

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- If a flare stack is required, it will meet the ERCB *Directive 60* requirements for burning efficiency as well as the heating value at ground level. However, every attempt will be made to eliminate the use of flare stacks.
- At a sour facility, a flare stack is required for emergency flaring in case of an upset. This is done to protect the public from a sour gas release. A pilot light must remain burning at all times at a sour facility.
- Regular inspections and proper operating procedures will eliminate routine gas leaks from packing, valves, seals and other sources. Caltex will attempt to eliminate all fugitive emissions at the company worksites by using proper equipment and proper operating procedures.

#### **2.6.4 Legislation and References**

- ERCB - *ID 2001-03* (Sulphur Recovery Guidelines for the Province of Alberta)
- ERCB – *Directive 39* (Emissions from Glycol Dehys)
- AENV - *Air Monitoring Guide* (1989)
- AENV - *Code of Practice for Compressor and Pumping Stations and Sweet Gas Processing* (1996)
- CAPP – *Best Potential Issues for the Control of Benzene Emissions from Glycol Dehys* (1997)
- CAPP – *Global Climate Change – Voluntary Challenge Guide*
- Environmental Protection and Enhancement Act - *Ambient Air Quality Guidelines*
- Environmental Protection and Enhancement Act - *Release Reporting Regulations*
- Environmental Protection and Enhancement Act - *Substance Release Regulation*

#### **2.7 Controlling Liquid Effluents**

##### **2.7.1 Introduction**

When considering the potential sources of liquid emissions, Caltex will attempt to incorporate the appropriate controls at the design stage in order to reduce the potential to have spills caused by poor design. In turn, this reduces costly waste management and spill clean up requirements. Caltex will reduce environmental impacts and reduce product loss by proper design and management.

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### **2.7.2 Potential Issues**

By incorporating proper design and sound operational practices, Caltex can avoid the following potential environmental issues:

- Contamination of soil.
- Contamination of both surface and groundwater.
- Public scrutiny.
- Operation non-compliance from the ERCB and fines from AENV.

### **2.7.3 Responses**

- Caltex will install permanent drains and drip-catch devices whenever possible.
- Caltex will install containment devices at all loading arms at the tanks.
- All tanks will be double walled or have secondary containment under them over 1 m<sup>3</sup> in volume.
- All drum storage will have secondary containment if there are more than five drums on-site.
- All storage areas will be inspected monthly and documented.
- Caltex will attempt to install only aboveground tanks if possible.
- If underground tanks must be installed, they will be double walled.
- Caltex will be members of the local Spill Co-op for equipment availability.
- All tanks over 5 m<sup>3</sup> will have a berm or drip tray installed under them.

### **2.7.4 Legislation and References**

- ERCB – *Directive 55*
- ERCB – *IL 94-6-Discharge of Produced Liquids to Earthen Structures.*
- OH&S – *WHMIS requirements*
- *Environmental Protection and Enhancement Act – Section E-13.3*

## **2.8 Controlling Noise**

### **2.8.1 Introduction**

Noise is generated at sites from a variety of operations. Caltex will endeavour to control the noise levels emitted. It is almost impossible to eliminate noise, but there are many ways noise can be controlled. Barriers, mufflers, use of buildings and other proper design procedures can be implemented to control noise from a site.

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**2.8.2 Potential Issues**

- Noise issues must be addressed and controls put in place during the planning and design phase of a site.
- Noise can have a negative impact on the public living near a facility.
- Noise can have negative impact on wildlife.
- Excessive noise can lead to public complaints, which impacts Caltex's relationship with neighbours.
- Caltex wishes to avoid costly re-engineering of a site after construction is complete.

**2.8.3 Responses**

As required by ERCB legislation, ERCB *ID 99-08* (Noise Control Directive), Caltex will conduct a noise impact assessment on the following types of facilities:

- Compressor stations.
- Gas processing facilities.
- Pumping stations.
- Batteries with compressors.
- Caltex will identify other noise sources within a 3 km radius to determine ambient noise in the area.
- Caltex will identify residents and other sensitive areas within the 1.5 km radius to determine who will be impacted.
- Caltex will attempt to use trees as a noise barrier if possible.
- Caltex will use proper or upgraded muffler systems to reduce noise.
- Caltex will ensure all doors are closed at a compressor between the hours of 8:00 p.m.-8:00 a.m., if weather permits.
- If noise is to be a concern, Caltex will attempt to place a barrier around the compressor or other loud sources of noise.

**2.8.4 Legislation and References**

- ERCB – *ID 94-4 – Noise Control Directive*

**2.9 Emergency Response Planning**

Caltex has an extensive Emergency Response Plan (ERP) for its sites. Therefore, this issue will not be discussed in this manual.

### **3.0 CONSTRUCTING ACCESS ROADS**

#### **3.0.1 Introduction**

Caltex uses careful planning and design when determining where access roads are to be placed. Existing roads are used whenever possible. This will minimize environmental impacts. Placing roads in previously traveled areas is preferred whenever possible. Removal of trees should be avoided if possible.

#### **3.0.2 Potential Issues**

If road locations are poorly planned or inadequate, they can cause some serious issues. Some of these issues that Caltex addresses are:

- Degradation of natural resources.
- Loss of wildlife habitat.
- Soil erosion.
- Increased public access into resource rich areas not previously available.
- Alterations to natural drainage.
- Increased construction and reclamation costs.
- Additional road maintenance costs.

#### **3.0.3 Responses**

There are a number of considerations that are addressed when constructing roads:

- Caltex ensures that the proper approvals are received from either the various government agencies such as DFO for green areas, Department of Transportation and Utilities on public lands, or landowner consent for private land.
- Caltex obtains ground disturbance permits as required.
- Municipalities need to be included in the approval and permit process as well.
- Caltex will ensure proper road use agreements are in place with other companies.
- If using existing roads, determine if the roads will need to be upgraded.
- If existing roads cannot be used, Caltex will endeavour to use a route that will have the least amount of impact.
- If streams or small rivers must be crossed, Caltex must talk to the proper regulatory body to ensure approvals for bridges or other structures.
- If operating in a known wildlife habitat area, Caltex will attempt to leave a buffer zone of trees to protect this habitat.
- Adequate drainage will be addressed on a Site-Specific basis.
- Brushing and clearing activities will be co-ordinated with the DFO, municipalities and landowners.

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- Soils will be handled as per top soils, and B and C horizon separation requirements.
- Winter roads if required will be placed in accordance to regulatory requirements.
- Roads will be maintained by grading and proper snow clearing.

### **3.0.4 Legislation and References**

- Alberta Energy and Natural Resources – *Forest Service for Resource Road Planning Guidelines for Green Areas (1985)*
- ERCB – *IL 2001-05, Construction for a Well Site Prior to the Issuance of a Well Licence.*
- ERCB – *IL 94-22, Operating Guideline for Activity in Caribou Range NW Alberta*
- ERCB – *IL 2002-01, Principles for Minimizing Surface Disturbance in Native Prairie and Parkland Areas*
- AENV – *The Resource Handbook (1984)*
- *Environmental Protection and Enhancement Act (1992)*
- *Forest Act – (1980)*
- *Forest and Prairie Protection Act – Crown Timber (1980)*
- *Public Lands Act – Parts 1 and 2 (1980)*

## **3.1 Constructing Camps and Staging Areas**

### **3.1.1 Introduction**

If a camp is used to house construction workers or prepare a site for storage of equipment, Caltex will set up in a manner that will minimize the environmental impacts.

### **3.1.2 Potential Issues**

- Caltex will minimize the size of the area used for this purpose so that clean-up will be minimal.
- Caltex will minimize and salvage any timber cut down for this purpose.
- Caltex will be aware of wildlife habitats and avoid affecting them as much as possible.
- The time of year and the duration of using this area will have the potential of impacting the environment.

### **3.1.3 Responses**

- Caltex will use new camp or staging sites, only if there are no existing sites.
- Caltex will acquire a disposition from the appropriate regulator or landowner for the construction and occupancy of these sites.

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- All Occupational Health & Safety (OH&S) Regulations for camps will be followed and adhered to.
- Caltex will remain at least 30 m away from standing or cleared timber as a fire safety issue.
- Caltex will remain at least 100 m away from any known watercourse.
- Caltex will be above the known flood level if possible.
- If a Helipad or airstrip is required, these will only be placed in areas which meet the safety requirements for landing and take off.
- Caltex will bring in drinking water and use potable water only for washing and bathrooms. A permit will be obtained for this from AENV.
- All sewage at a camp will be collected in a holding tank and will be disposed of properly. There will not be any effect on the environment from sewage.
- When a camp is no longer required, the site will be cleaned up and reclaimed as per Forestry and Public Land requirements

### **3.1.4 Legislation and References**

- ERCB - *ID 96-03, Oilfield Waste Management Requirements for the Upstream Petroleum Industry and Guide 58*
- ERCB - *IL 94-22, Caribou Range, Operating Guidelines*
- AENV – *Sanitary Sewage Management Guidelines (1995)*
- *Forest and Prairie Protection Act Part II*
- Health and Welfare Canada – *Guidelines for Drinking Water Quality (1993)*
- *Public Health Act – Work Camps Regulations (1985)*
- *Public Lands – Parts 1 and 2*
- *Water Act – (1996)*

## **3.2 Cutting, Clearing, Timber Salvage and Debris Disposal**

### **3.2.1 Introduction**

Timber and vegetative cover must be cut and cleared in order to provide a safe access and working area for equipment and men. Timber will be salvaged and debris disposed of to minimize:

- Loss of merchantable timber.
- Disturbance of adjacent forest cover.
- Loss of soil.
- Potential fuel sources for forest fires.

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**3.2.2 Potential Issues**

- Clearing activity may disturb wildlife during nesting and breeding seasons.
- It may displace wildlife from its natural habitat.
- It may improve public access to areas not previously open to the public.
- It may increase the potential for erosion.
- It may increase silting in a water body if completed close to a stream or creek.
- Improper debris disposal may increase the fire hazard or compromise future use of the site.
- It may block natural drainage patterns.
- It may disturb nesting sites.

**3.2.3 Responses**

- Caltex will use the proper clearing and cutting equipment to ensure the work has minimal environmental impacts. Caltex will also make sure the safety of workers is paramount.
- If working on private lands, Caltex will adhere to the landowner's requirements for clearing, salvaging and disposal of debris.
- Caltex will attempt to clear in areas where merchantable timber can be avoided.
- Caltex will remove snags or leaning trees as a safety issue.
- Caltex salvages both coniferous and deciduous timber.
- Caltex will adhere to the Clearing Public Land Act for direction of proper techniques and approvals.
- All approvals will be obtained prior to beginning any clearing work.
- Timber salvage operations will be planned for storage, stacking location, and removal.
- Timber will be stacked in alternating windrows for fire protection purposes.
- AENV or Public Lands approvals and procedures will be followed for debris disposal from clearing sites.
- The land and forest departments will be contacted when the debris disposal is complete.
- Burn piles and smoke will be controlled as much as possible.
- "Danger Smoke" signs will be placed on roads if the public or traffic will be impacted.

**3.2.4 Legislation and References**

- Alberta Energy and Natural Resources – *Forest Service for Resource Road Planning Guidelines for Green Areas (1985)*
- ERCB – *IL 2001-05, Construction of a Well Site Prior to the Issuance of a Well Licence.*
- ERCB – *IL 94-22, Operating Guideline for Activity in Caribou Range NW Alberta*

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- ERCB – *IL 2002-01, Principles for Minimizing Surface Disturbance in Native Prairie and Parkland Areas.*
- AENV – *The Resource Handbook (1984)*
- *Environmental Protection and Enhancement Act (1992)*
- *Forest Act – (1980)*
- *Forest and Prairie Protection Act – Crown Timber (1980)*
- *Public Lands Act – Parts I and II, (1980)*
- *Indian Oil and Gas Canada – for work on Native Lands*
- *Migratory Birds Convention Act – M-7.01*

### **3.3 Soil Handling**

#### **3.3.1 Introduction**

Proper soil handling minimizes erosion, maintains soil quality and contributes greatly to successful land reclamation. Proper soil handling methods are required to return a site to its equivalent land capability following a disturbance. The Potential Issues described here are used in construction and reclamation activities. Site-Specific Potential Issues will be used based on soil types, location and technologies available at the time of reclamation.

#### **3.3.2 Potential Issues**

If soils are not handled properly, the following negative effects can result:

- soil loss
- increased reclamation costs
- increased erosion
- compaction
- loss of soil fertility and quality

#### **3.3.3 Responses**

- Site-Specific soil handling plans will be developed prior to construction.
- All approvals will be in place prior to construction.
- Caltex will attempt to do everything possible to minimize soil erosion, clearing surface disturbance and landscape instability.
- Adverse weather conditions may impact soils. In this case, operations will be suspended if there is a danger of impacting the environment.
- Sub-surface soils will be used to re-contour a site and top soil will only be used for growth enhancement of vegetation.
- Compaction will be minimized by limiting the use of heavy equipment and not working on wet soils.

### **3.3.4 Legislation and References**

- *Environmental Protection and Enhancement Act (1992)*
- *Public Lands Act – Parts I and II, (1980)*
- *Environmental Protection and Enhancement Act (1992) Conservation and Reclamation Regulation*

## **3.4 Site Drainage**

### **3.4.1 Introduction**

Surface run-off waters are directed away from a site in order to control flooding and access problems. Surface run-on water is diverted around the site to minimize on-site water. These solutions may cause problems if not constructed properly.

### **3.4.2 Potential Issues**

If poor planning or construction does not address drainage properly, it can cause problems with the surrounding terrain such as:

- Soil degradation.
- Soil erosion.
- Vegetation stress, sedimentation of creeks, and harming fish habitats.

### **3.4.3 Responses**

- Ensure that a site is contoured properly.
- Planning will determine that there is no watercourse near the site that will allow run-off water to enter a creek or stream.
- Caltex will ensure that any culverts used are large enough that they will not become blocked by debris.
- Caltex will ensure that run-off water is fed into a vegetated area so that the vegetation will act as a filter and will also slow the rate of discharge.
- Any water run-off from a process area and inside hydrocarbon dykes will be sampled prior to release. If the release criteria is not met, it will be deep well disposed at a licensed disposal facility.
- Every attempt will be used to prevent run-on to the site by proper grading and use of elevations.
- Any water that is captured will be tested prior to release. The release criteria that must be met is as follows:
  - pH – 6.0-9.5
  - oil – no visible sheen
  - chlorides – < 500 ppm

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- chemicals – no visible sheen
- volumes and date must be recorded

#### **3.4.4 Legislation and References**

- ERCB – *Directive 55 Storage Guidelines*
- AENV – *Surface Water Quality Objectives (1997)*
- AENV – *Code of Practice for Compressor and Pumping Stations (1996)*

### **3.5 Watercrossings**

#### **3.5.1 Introduction**

Any equipment, pipelines or roads that cross creeks, streams, rivers or other water bodies, must be carefully planned in order to avoid creating a negative environmental impact.

#### **3.5.2 Potential Issues**

If watercrossings are done improperly, they may result in the following problems:

- Destruction of fish and aquatic habitat.
- Increased stream sedimentation.
- Bank erosion.
- Constraints to fish passage.
- Introduction of deleterious substances into the water.

#### **3.5.3 Responses**

Caltex will ensure that all provincial approvals from AENV are in place prior to crossing a Watercourse. Caltex will abide by the *Code of Practice for Watercourse (1999)*.

- Caltex will ensure all approvals from the DFO, and Navigable Waters agencies are in place and followed prior to beginning any construction.
- Planning will include Potential Issues that prevent or minimize erosion at the point of crossing and within the flood plains.
- Backfilling will be with natural stream material whenever possible.
- Caltex will avoid placing equipment or vehicles in the water whenever possible.
- Bridge abutments will use only granular fill if required.
- Any abutments used would be placed in a stream so that the restriction of flow is minimized.
- Ice bridges will only be constructed when the required approvals are received by DFO or Public Lands. They will be constructed in the approved manner.

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- Temporary bridges will be used when approval is received. These will be put in place only during the window provided by the DFO.
- Every effort will be made to protect the fish resources in a creek or stream.
- All provincial and federal regulations will be adhered to.
- If culverts are used, they will be kept clear of any debris to avoid overflows into creeks and streams.
- All debris that is gathered will be placed well away from the water body to prevent the debris from re-entering the stream.

### **3.5.4 Legislation and References**

- AENV – *Fish and Wildlife, Fisheries Habitat Protection Guidelines*
- Alberta Forestry and Wildlife – *Stream Crossing Guidelines*
- Department of Transportation – *Navigable Waters Act*
- *Fisheries Act*
- *Water Act*
- *Code of Practice for Watercrossings*

## **3.6 Using Surface Materials**

### **3.6.1 Introduction**

Surface materials are used in the construction of roads, stream crossings and permanent facilities. They are also used as fill material, pit liners and berm construction. These materials include:

- gravel
- sand
- topsoil
- peat
- clay and mixtures of above materials.

### **3.6.2 Potential Issues**

Improper handling of surface materials can lead to soil mixing and erosion which can adversely affect the reclamation of the land.

### **3.6.3 Responses**

- Caltex will develop a project plan for removing surface materials prior to starting construction work.
- Caltex will solicit input from regulatory agencies and landowners prior to beginning construction.

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- On private land, approvals are required from the landowner and AENV.
- Caltex will follow all tenets of the approval.
- For public lands, AENV and Municipality approvals are required.
- Top soil will be stripped and stored for use in the future. Top soil will not be used as construction material.
- Caltex will use fill material for re-contouring work and top soil for final seeding.
- All sites will be reclaimed when production has been depleted.

**3.6.4 Legislation and References**

- AENV – *Guide for Pits*
- AENV – *Waste Water Guidelines for Alberta Sand and Gravel Operations*
- *Alberta Environmental Protection and Enhancement Act – (1992) c E-13.3*

## **4.0 CONTROLLING ACCESS**

### **4.0.1 Introduction**

Controlling access is important to all operating facilities. There are many hazards at these sites and it is important to prevent access to work sites in order to protect equipment, the public, private lands, wildlife, and landowner livestock.

### **4.0.2 Potential Issues**

- Creating new access into areas not previously accessible may create hunting and fishing concerns in the area.
- Vehicle or animal accidents may occur in areas not normally open to vehicles.
- Uncontrolled vehicle use on leases may damage vegetation and equipment.
- Multiple user access may cause concerns to the environment.

### **4.0.3 Responses**

- Every attempt will be made to use existing access rather than creating new ones.
- Common corridors will be the first choice for access roads.
- Communication with First Nations and the public will be done to inform them of any access restrictions such as gates, barriers and closure restrictions in the area.
- Caltex will post signs and if necessary, erect fences to restrict access where necessary.
- Remote monitoring may be an option at some sites.
- Critical wildlife areas that have seasonal restrictions such as Caribou Migration areas will be observed.
- Road maintenance will be performed where required.

### **4.0.4 Legislation and References**

- ERCB – *IL 93-9, Oil and Gas Development on Eastern Slopes*
- ERCB – *IL 94-22 Operating Guidelines Caribou Range in North West Alberta*
- AENV – *1996/97 Operating Guidelines for Industrial Activity in Caribou Ranges in West Central Alberta*

## **4.1 Maintenance**

### **4.1.1 Introduction**

Regular maintenance not only prolongs the life of equipment but it also helps prevent equipment failure that could result in spills, releases, and damage to the environment.

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Caltex will endeavour to provide a service schedule to prevent this type of equipment failure.

**4.1.2 Potential Issues**

Spills and releases can be the result of equipment failure from improperly maintained equipment. Small leaks can cause long term problems if they are not discovered quickly.

**4.1.3 Responses**

- A maintenance schedule is set up to ensure that equipment is serviced on a regular basis.
- This will also ensure that all conditions of the operation are satisfied from a regulatory standpoint.
- This will help to anticipate environmental impacts as a result of product information and replacement of equipment that could fail.
- Maintenance operations also help to inspect equipment on a regular basis, and will be a preventative measure for failure.
- A schedule also helps to ensure that proper maintenance is carried out as required.

**4.1.4 Legislation and References**

- ERCB – *Directive 55 Storage Guidelines*
- *National Fire Code*
- *OH&S Safety Codes (2004)*

## **5.0 GROUNDWATER MONITORING**

### **5.0.1 Introduction**

Early detection of groundwater contamination is the only way to prevent a potential negative environmental impact from facility operations. Measures must be in place to protect and monitor for this.

### **5.0.2 Potential Issues**

- Improper monitoring can lead to invalid results.
- Not all facilities require monitoring wells.

### **5.0.3 Responses**

- By having secondary containment that is checked monthly for leaks, Caltex can determine if the groundwater is impacted.
- By placing drop trays under all small tanks and loading facilities, Caltex will prevent small leaks from leaching and entering into the groundwater.
- By employing proper drilling techniques and surface casing over water aquifers, Caltex is able to prevent the groundwater from being impacted.
- Sound operating "Potential Issues" can and will prevent groundwater contamination.

### **5.0.4. Legislations and References**

- *Clean Water Act*
- *AENV – Ground Water Protection Act*
- *ERCB – Directive 55 Storage Guidelines*
- *ERCB – Directive 37 Drilling Inspection Manual*

## **6.0 FACILITY DISMANTLING**

### **6.0.1 Introduction**

Facility dismantling is the first major step towards abandonment. The sequence used is:

- suspension
- abandonment
- decontamination and land reclamation

### **6.0.2 Potential Issues**

Improper handling of the dismantling process can have major environmental impacts from:

- tank bottoms
- sludge
- sulphur
- hazardous construction material (asbestos, PCB, etc.)
- residual chemicals and solvents

### **6.0.3 Responses**

Caltex will:

- Ensure the site is left in a safe manner during this phase.
- Store any fluids in a contained place to prevent spills and leaks.
- Empty and purge all vessels and piping.
- Ensure that the facility is secure to protect the public and wildlife.
- Conduct regular inspections of the site when it has been left alone for a period of time.
- Dispose of all sludge, liquids and wastes as per Caltex's *Waste Management Guidelines*.
- Isolate all equipment that may cause injury and shut down power to all equipment as well.
- Contact landowners and let them know of the operation.
- Take care not to impact vegetation, watercourses or other parts of the environment if possible.
- Ensure all wastes will be properly manifested and all TDG Regulations will be met.

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**6.0.4 Legislation and References**

- ERCB - *Directive 58 Waste Management Guide*
- ERCB – *GB 2004-02 Streamlining ERCB Documents on Regulatory Requirements.*
- ERCB - *IL 98-02, Suspension, Abandonment, Decontamination, and Surface Land Reclamation of Upstream Oil and Gas Facilities.*

**6.1 Site Remediation**

**6.1.1 Introduction**

Site remediation is the removal of contaminants from the site, either on the surface or in the soil prior to beginning the reclamation stage.

**6.1.2 Potential Issues**

- Soil contamination.
- Ground and surfacewater contamination.
- Air emissions.
- Off-site contamination.
- Heavy equipment operations.
- Open excavation.
- Potential health and safety issues.

**6.1.3 Responses**

- A site inspection will be conducted.
- A review of operations will be conducted.
- Groundwater conditions will be investigated.
- Drainage courses will be investigated.
- Environmental receptors.
- A Phase 1 Environmental Assessment will be completed.
- A Phase 2 Investigation may be done if it is shown this is required from the Phase 1 results.
- A Site-Specific Remediation Plan will need to be developed as a result of the findings of all of the above.

**6.1.4 Legislation and References**

- ERCB - *Directive 58, Waste Guidelines*
- ERCB - *IL 98-02, Suspension, Abandonment, Decontamination, and Surface Land Reclamation of Upstream Oil and Gas Facilities.*

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- Environment Canada – Canadian Council of Ministers of the Environment (CCME) - *Soil Standards*
- AENV - *Guideline for Monitoring and Management of Soil Contamination*
- ERCB - *Directive 55 Storage Guidelines*

## **6.2 Clean-Up And Reclamation**

### **6.2.1 Introduction**

Site clean-up is intended to clean up contamination at a site and to prevent any contamination from leaving a site and having a negative impact on the environment. Clean-up will be required for compressors, tank storage areas, processing area, roads, flare pits and stacks and at both above and underground tanks.

### **6.2.2 Potential Issues**

Improper clean-up could result in the following:

- On-site and off-site impacts to soil and water.
- Soil instability.
- Increased erosion.
- Below average crop yields or vegetative cover.
- Potential health and safety risks.
- Financial liability.

### **6.2.3 Responses**

- A site inspection will be conducted.
- A review of operations will be conducted.
- Groundwater conditions will be investigated.
- Drainage courses will be investigated.
- Environmental receptors.
- A Phase 1 Environmental Assessment will be completed.
- A Phase 2 Investigation may be done if it is shown this is required from the Phase 1 results.
- A Site-Specific remediation plan will need to be developed as a result of the findings of all of the above.
- All contamination will be removed from the site. Sampling may be done if required.
- Drainage patterns will be re-established.
- Site contouring will be done when clean up is complete.
- Top soil will be added and native grasses will be seeded when this is completed.

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- Amendments will be added as soil testing indicates.

#### **6.2.4 Legislation and References**

- ERCB - *Directive 58, Waste Guidelines*
- ERCB - *IL 98-02, Suspension, Abandonment, Decontamination, and Surface Land Reclamation of Upstream Oil and Gas Facilities.*
- CCME - *Soil Standards*
- AENV - *Guideline for Monitoring and Management of Soil Contamination*
- ERCB - *Directive 55 Storage Guidelines*
- *Environmental Protection and Enhancement Act - Reclamation and Conservation Regulations*

### **6.3 Re-Vegetation**

#### **6.3.1 Introduction**

Re-vegetating disturbed lands can help to provide stabilization, prevent soil erosion and provide habitat for wildlife.

#### **6.3.2 Potential Issues**

Improper or neglected re-vegetation causes:

- Potential for erosion.
- Spread of unwanted weeds.
- Degrades soil quality and stability.
- Reduces wildlife habitat.
- Soil compaction.

#### **6.3.3 Responses**

- Caltex will develop a re-vegetation plan that is based on all of the parameters found in the previous three sections.
- Soil characteristics will be analyzed to determine which seeds are the best.
- Discussions will be held with forest officers and agronomists to determine the native vegetation that is best suited for the area.
- A qualified and competent company will be used to complete this project.
- Landowners will be consulted and used for this part of the project.

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**6.3.4 Legislation and References**

- CAPP - *Decommissioning Guidelines* for Oil and Gas Sites
- Industrial Vegetation Management Association
- *Public Lands Act*
- *Weed Control Act*
- *Reclamation and Conservation Act* as part of the *Environmental Protection and Enhancement Act*.

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## **7.0 SPILL PREVENTION**

### **7.0.1 Introduction**

Caltex's spill prevention program is an important part of the Company's Operational Plan. It protects the environment, workers and company property. It also prevents costly clean up and reclamation costs.

### **7.0.2 Potential Issues**

- Costly spill clean up costs.
- Costly reclamation costs.
- Non-compliance issues with the regulators.
- Danger to the public.
- Danger to the environment.

### **7.0.3 Responses**

- The company maintenance program is designed to find defective equipment and small leaks from piping and valves and to eliminate them.
- The tank inspection and integrity program is designed to find tank concerns, and have them rectified.
- Caltex will place all tanks (post-1996) on secondary containment.
- Any changes to pre-1996 tanks must meet *Directive 55* requirements.
- Caltex will have berms around tanks.
- All underground tanks are double walled.
- Caltex will have spill catches at all loading arms.
- Caltex will have spill kits at the facilities.

### **7.0.4 Legislation and References**

- ERCB – *Directive 55 Storage Guidelines*
- ERCB – *Directive 71 Emergency Response*

## **7.1 Spill Response**

### **7.1.1 Introduction**

The purpose of spill response; is to provide training on spill handling equipment, so that any spill can be handled safely, and minimize the impact to the environment.

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**7.1.2 Potential Issues**

- Spills can enter into soils, surface water and groundwater.
- Reclamation and clean up costs are expensive.
- Spills cause extensive damage to the environment.
- Spills can impact fisheries and wildlife as well as livestock.
- Hydrocarbon spills can be dangerous to the public as they are very flammable.

**7.1.3 Responses**

- We, at Caltex, are members of the Local Spill Co-op, and this gives us access to spill response equipment and trained personnel.
- We have a spill response kit at the facilities.
- Our Operators participate in annual spill response training.
- Our Caltex sites are constructed in a manner that will help prevent spill material from leaving the lease.
- Liners and double wall tanks prevent spill material from entering into the soil, surface and groundwater.

**7.1.4 Legislation and References**

- ERCB – *Directive 55 Storage Guidelines*
- ERCB – *Directive 71 Emergency Response Planning*

**7.2 Spill Reporting**

**7.2.1 Introduction**

Our Caltex Spill Reporting Program is an important part of our operational plan. The procedures ensure that all spills and releases are properly reported to all applicable regulatory agencies and also outline which types of spills are reportable by product and quantity.

**7.2.2 Potential Issues**

Non compliance with regulatory agencies because of the following:

- Not reporting a reportable spill or release.
- Improperly reporting a spill or release.
- Not reporting the spill or release to all applicable agencies.

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### **7.2.3 Responses**

#### ***Alberta Spill Response and Reporting***

All spills, leaks and releases of potentially harmful substances should be reported immediately to a company Field Superintendent. The Field Superintendent is to notify the head office (V.P, Operations / V.P, of Land and Environment) when advised of the spill, leak, break, etc. by means of a written report submitted to the V.P. Operations and the V.P. of Land and Environment within 24 hours of the event.

#### ***ERCB Reportable Spills – Unrefined Product***

The following guidelines identify the information requirements needed if a spill occurs with an unrefined product (crude oil or produced water):

- Forward an incident report to the Field Supervisor if the volume is less than 2 m<sup>3</sup> and is contained on lease.
- Contact the local ERCB Field Office if:
  - The volume of spill material is > 2 m<sup>3</sup> on-lease.
  - Any spill material escapes off-lease.

When drilling, the on-site Drilling Supervisor is responsible for reporting spills or leaks of hazardous or dangerous goods to head office where the spill is of a volume greater than 2 m<sup>3</sup> on lease

- Enters into any natural waterway.
- Escapes from the lease site.

Head Office will submit reports to the local ERCB Field Office immediately when advised of a spill. If required by the ERCB, submit a written report that may include the following information:

- The name, address, etc. of the Drilling Company and Operator Caltex.
- The location of the spill.
- The source and cause of the spill.
- The type and volume of product spills.
- The final distribution of recovered and un-recovered product.
- Other details as required.

#### ***Alberta Environmental – Refined Product***

Use the following guidelines if a spill occurs with a refined product (Diesel, Varsol, Chemical, Lube Oil, Glycol, etc.):

- Report spills of controlled substances greater than the thresholds specified in the Transportation of Dangerous Goods (TDG) Regulations to the Director of Pollution Control, AENV through Industrial incident reporting or anyone directly

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affected by the spill (for example, other yard sites, municipality, private landowners, etc.).

The report to the Director should include:

- The location and time of the release.
- A description of circumstances leading up to the spill.
- Details of any action taken or planned at the release site.
- The final distribution of recovered and un-recovered product.
- Reclamation plans if required.
- Submit a written report to the Director's office within seven days of the initial report which must contain the following information:
  - Date and time of the spill.
  - Location of the spill.
  - Duration of the release and its release rate.
  - Composition of the release(s) showing concentration, the total weight, and quantity or amount for each substance.
  - A detailed description of the circumstances leading up to the release.
  - Steps taken to minimize, control or stop the release.
  - Any other information as required by the Director.

Submit written report to:

**Alberta Environment**

Pollution Control Division  
11th Floor, 9820 - 106 Street  
Edmonton, Alberta  
T5K 2J6

Spills or leaks may not be detected for days or even weeks after the incident occurred. However, report any release that occurs and implement active clean-up measures as soon as possible.

**Contacts**

Requests for further information may be directed to either:

**Alberta Environment**

Pollution Control Division  
Edmonton, Alberta  
Phone: (780) 427-6225  
Fax: (780) 427-3178

or

**Alberta Energy Resources Conservation Board**

Facilities Division  
Calgary, Alberta  
Phone: (403) 297-8132  
Fax: (403) 297-8114

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**ERCB Field Surveillance - Field Centres**

**Calgary Head Office:**

640 - 5 Avenue S.W.  
Calgary, Alberta  
T2P 3G4  
Phone: (403) 297-8132  
Fax: (403) 297-8114

**Field Surveillance - Calgary Main**

Group Leader	297-3730	Surface Impacts Leader	297-8132
Operations Leader - North	297-3824	Program Liaison Leader	297-3194
Operations Leader - South	340-5136	Systems and Support Leader	297-8185
Facility Performance Leader	297-8186		

**Field Centres**

Bonnyville	P.O. Box 5169, 4903 – 51 A Street Bonnyville, Alberta T9N 2G4	(780) 826-5352 (24 hrs) (780) 826-236 Fax
Calgary South	640 - 5 Avenue S.W., Calgary, Alberta T2P 3G4	(403) 297-8303 (24 hrs) (403) 297-5283 Fax
Drayton Valley	Box 7048, 5136 - 51 Avenue, Drayton Valley, Alberta T7A 1S3	(780) 542-5182 (24 hrs) (780) 542-2540 Fax
St. Albert	30 Sir Winston Churchill Avenue, St. Albert, Alberta T8N 3A3	(780) 460-3800 (24 hrs) (780) 460-3802 Fax
Grande Prairie	#200, 11209 - 98 Avenue, Grande Prairie, Alberta T8V 5A5	(780) 538-5138 (24 hrs) (780) 538-5582 Fax
High Level <i>(Sub-office thru Grande Prairie)</i>	205, 9808-9814 100 Avenue High Level, Alberta T0H 1Z0	(780) 926-5399 (24 hrs) (780) 926-4721 Fax
Medicine Hat	#302, 346 - 3 Street S.E., Medicine Hat, Alberta T1A 0G7	(403) 529-3626 (24 hrs) (403) 529-3103 Fax
Midnapore	#320, 295 Midpark Way S.E., Calgary, Alberta T2X 2A8	(403) 297-8303 (24 hrs) (403) 297-5283 Fax
Red Deer	#210, 4920 - 51 Street, Red Deer, Alberta T4N 6K8	(403) 340-5454 (24 hrs) (403) 340-5136 Fax
Wainwright	801 - 2 Avenue, Wainwright, Alberta T9W 1C4	(780) 842-7570 (24 hrs) (780) 842-7536 Fax

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***Alberta Environment***

Pollution Control Division (780) 427-6225  
(780) 427-3178 Fax

Environmental Regulatory Service (780) 427-3496

Alberta Environment 310-0000  
(Government of Alberta toll free Call Centre)  
(780) 422-4086 Fax

For more information regarding the Release Reporting Guideline, contact:

**Alberta Environment**

Pollution Control Division  
11th Floor, 9820 - 106 Street  
Edmonton, Alberta T5K 2J6  
Phone: (800) 222-6514

For additional copies of the Release Reporting Guideline, contact:

**Alberta Environment**

Regulatory Approvals Centre  
Main Floor, 9820 - 106 Street  
Edmonton, Alberta T5K 2J6  
Phone: (780) 427-6311

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***Industry Notification Requirements***

**Table 2  
Joint AENV / ERCB Approved Facility or Pipeline**

Event	Primary Contact	Phone Numbers
<b>Spills / Releases / Cumulative Releases</b>		
Unrefined product spill (e.g. liquid hydrocarbon or produced water)	ERCB	Local Field Centre
Refined product spill	AENV	(780) 422-4505
Contravention of AENV approvals	AENV	(780) 422-4505
Unplanned or planned releases in accordance with ERCB approvals	ERCB	Local Field Centre
<b>Unscheduled / Emergency Flaring</b>		
For flaring resulting in one or more of the following contact the most appropriate organization and request referral		
Exceed AENV approval conditions	AENV	(780) 422-4505
Exceed ERCB approved volume or greater than 24 hours in duration	ERCB	Local Field Centre
Black smoke or potential adverse conditions (e.g. public complaints)	AENV	(780) 422-4505
<b>Odours / Fugitive Emissions</b>		
From unrefined products	ERCB	Local Field Centre
From refined products	AENV	(780) 422-4505
Sulphur dust / fires	AENV	(780) 422-4505
<b>Emergency Response</b>		
Blowouts / line failures	ERCB	Local Field Centre

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**Table 3  
ERCB Only Approved Facility or Pipeline**

Event	Primary Contact	Phone Numbers
<b>Spills / Releases / Cumulative Releases</b>		
Unrefined product spill (e.g. liquid hydrocarbon or produced water)	ERCB	Local Field Centre
Unplanned or planned releases in accordance with ERCB approvals	ERCB	Local Field Centre
Refined product spill	AENV	(780) 422-4505
<b>Unscheduled / Emergency Flaring</b>		
Exceed ERCB approved volume or greater than 24 hours in duration	ERCB	Local Field Centre
Black smoke or potential adverse conditions (e.g. public complaints)	AENV	(780) 422-4505
<b>Odours / Fugitive Emissions</b>		
From refined / unrefined products	ERCB	Local Field Centre
Sulphur dust / fires	AENV	(780) 422-4505
<b>Emergency Response</b>		
Blowouts / line failures	ERCB	Local Field Centre

*Note: contact AENV at either (780) 422-4505 or (800) 222-6514.*

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**Table 4**  
**ERCB Reporting Procedures**

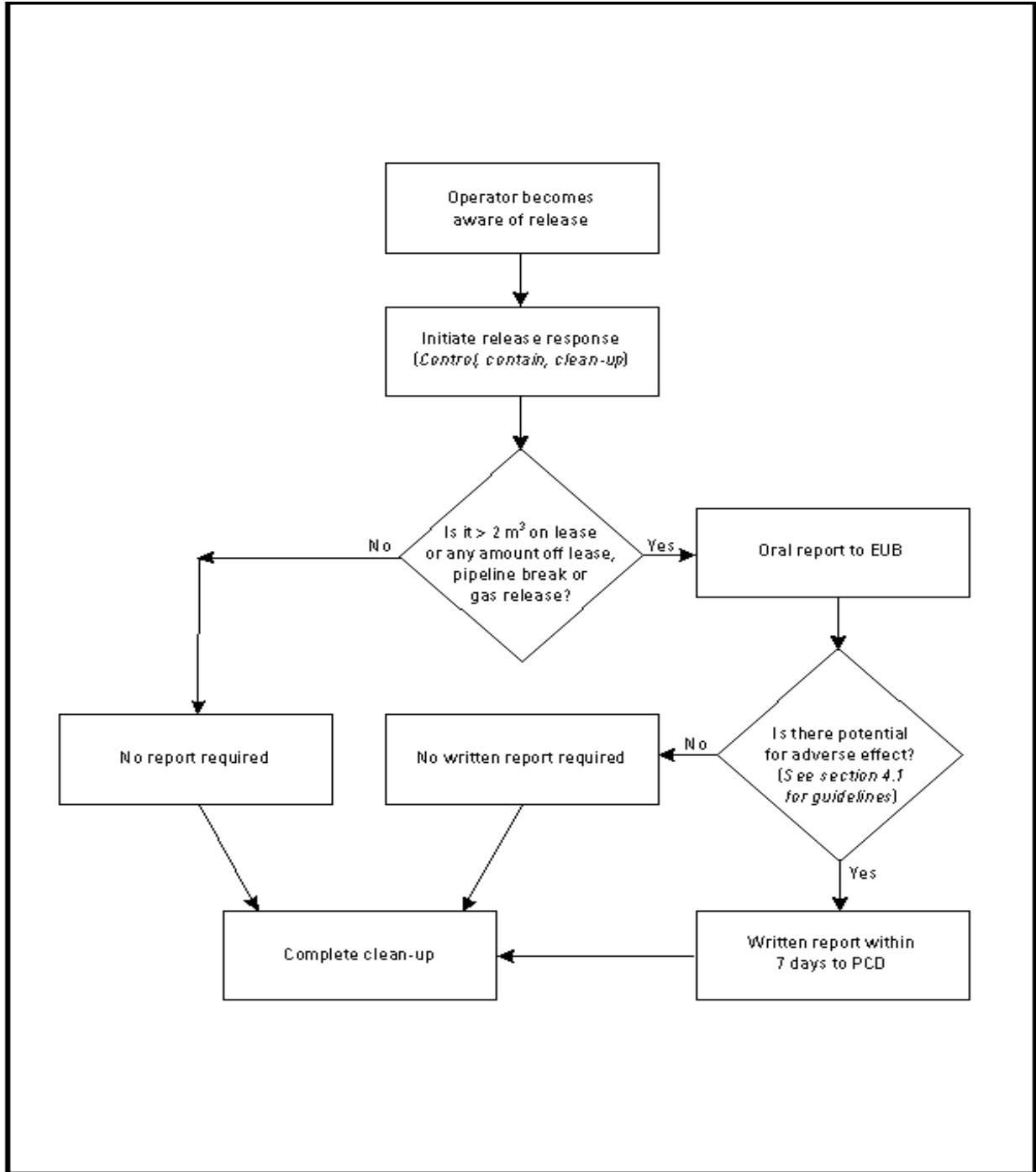


Figure 1: Release Reporting Requirements for Unrefined Products

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**Table 5**  
**AENV Reporting Procedures**

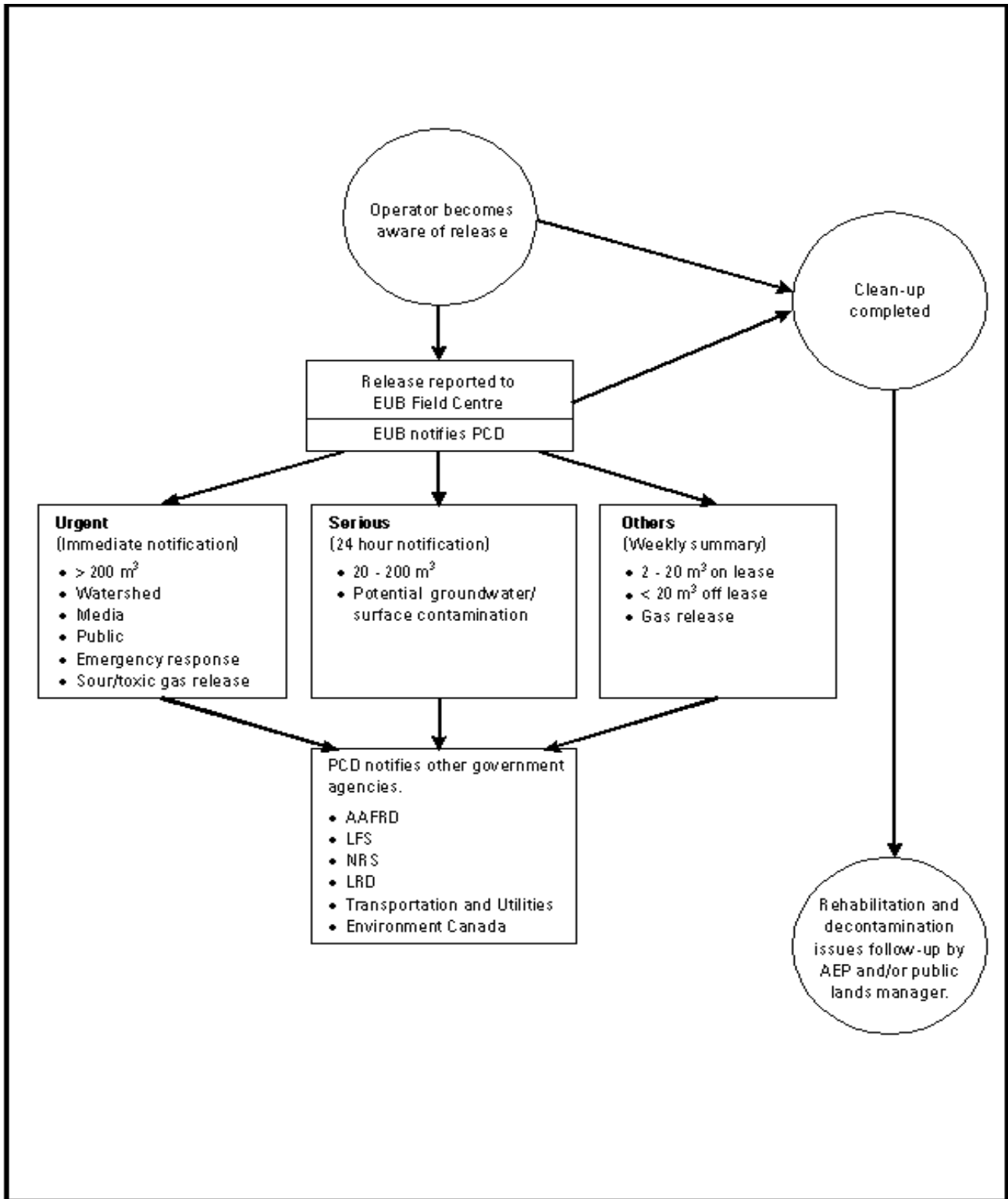


Figure 2: EUB Field Centre Reporting Interface with Pollution Control Division of AEP

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**Table 6**  
**Environmental Protection Requirements for Release Reporting**

Incident Type	Not Reportable	Immediate Report
A) Releases that are fully contained within a containment device / facility or confined to an acceptable barrier and do not have odour or vapours released that cause or may cause an adverse effect.	<b>X</b>	
B) Releases not contained by a containment device or acceptable barrier, which cause or may cause an adverse effect, (i.e. odour, contamination of groundwater or soil).		<b>X</b>
C) Airborne discharges that are not detectable beyond the plant site and do not have an adverse effect.	<b>X</b>	
D) Unauthorized airborne discharges that have the potential or are creating an adverse effect beyond the plant site, (i.e. odours, excessive ambient air quality readings).		<b>X</b>
E) Particulate or smoke emissions from a stack or vent that may exceed visible emissions, as detected by an observer, (> 40%) for a period extending beyond six minutes.		<b>X</b>
F) Flaring incidents that may cause an adverse effect by the type and quantity of product being flared, the presence of visible emissions, the duration of the event, or the proximity of the event to the public.		<b>X</b>
G) Non-compliance with Approval emission and effluent limits* if it results in adverse effect.		<b>X</b>
H) Ambient air quality readings, which are in excess of Alberta Ambient Air Quality Guidelines.		<b>**</b>

\* All other non-compliance with approval limits, or conditions are to be reported according to the requirements of the specific facility approval.

\*\* The discharge that caused the excessive ambient reading is reportable immediately as an unauthorized airborne discharge under D); the ambient air quality reading is reportable according to the requirements of the specific facility approval

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**Table 7  
Summary of TDG Regulations Classes and Reportable Quantities**

<b>Class &amp; Division</b>	<b>Product</b>	<b>Reportable Quantities</b>
2.1	Compressed Gas (flammable)	at or in excess of 100 L **
2.2	Compressed Gas (non-flammable, non-toxic)	at or in excess of 100 L **
2.3	Poisonous Gas	all
2.4	Corrosive Gas	all
3.0	Flammable Liquids	at or in excess of 200 L
4.0	Flammable Solids	at or in excess of 25 kg
5.1	Oxidizer	at or in excess of 50 kg or 50 L
5.2	Organic Peroxide	at or in excess of 1 kg or 1 L
6.1	Poisonous Substance	at or in excess of 5 kg or 5 L
6.2	Infectious Substance	all
8.0	Corrosive Substance	at or in excess of 5 kg or 5 L
9.1	Substance having sufficient hazard to regulate	at or in excess of 50 kg
9.2	Environmental Hazard	at or in excess of 1 kg
9.3	Dangerous Waste	at or in excess of 5 kg or 5 L

*Note: Information located in TDG (Table 1 in Part IX)*

*\*\* Container capacity (liquid volume prior to release)*

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**Table 8**  
**Special Substances Referenced In Section 5 of the Release Reporting Regulation**

Substance	Reporting Conditions to be Followed
Ammonia (NH <sub>3</sub> )	Report releases which have or may have an adverse effect
Benzene	Report releases which have or may have an adverse effect, and are at or exceed 1 kg TDG Regulations. <i>Note: for gasoline releases, see "Gasoline"</i>
Containers and Scrap Metal	Report releases into a watercourse that have or may have an adverse effect
Diesel	Report releases that have or may have an adverse effect and are at or exceed 200 L TDG Regulations.
Gasoline	Report releases that have or may have an adverse effect and are at or exceed 200 L TDG Regulations.
Glycols	Not regulated under TDG Regulations.; report spills that have or may have an adverse effect
Hydraulic Oil	Not regulated under TDG Regulations.; report spills that have or may have an adverse effect.
Hydrogen Sulphide (H <sub>2</sub> S)	Report releases that have or may have an adverse effect
Mixture of Substances	Report releases which have or may have an adverse effect and are at or exceed quantities or levels of specific substances referenced in TDG Regulations.
Natural Gas	Report Natural Gas releases that have or may have an adverse effect (i.e. odours, noise, or safety to the public); reporting does not apply to planned releases related to routine maintenance and servicing
Ozone-Depleting Substances	Report all releases that are at or exceed 10 kg ( <i>refer to the Alberta Ozone-Depleting Substances Regulation [125/93] for schedule of substances</i> )
Persistent plastics and other synthetic materials	Report releases into a watercourse that have or may have an adverse effect
Polychlorinated biphenyl (PCB)	Report all releases containing concentrations of PCB's > 50 ppm

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Substance	Reporting Conditions to be Followed
Refined products in the Oil & Gas Industry (eg. diesel, gasoline, sulphur, sweeteners, inhibitors, treating chemicals)	Report refined product and chemical releases in the Oil & Gas Industry to PCD as per <i>IL 98-01</i> . Requirements as follows: <ul style="list-style-type: none"> <li>Any releases (on or off-lease) that have or may have an adverse effect and that are at or exceed quantities or levels referenced in TDG Regulations.</li> </ul>
TDG Class 2 Compressed Gasses	Report releases that have or may have an adverse effect.
Unrefined product in the Oil & Gas Industry * (eg. conventional crude oil, LPG, diluents, condensate synthetic crude, produced water)	Report unrefined product releases in the Oil & Gas Industry to the ERCB as per <i>IL 94-5</i> . Requirements as follows: <ul style="list-style-type: none"> <li>Any release greater than 2 m<sup>3</sup> on-lease</li> <li>Any release off-lease as per the Alberta Oil &amp; Gas Conservation Regulations</li> <li>Any release that has entered or has potential to enter surface water.</li> </ul>
Unregulated TDG Substances	Report releases that have or may have an adverse effect.
Used Oil (spent lubricating oil and undrained lube oil filters)	Report releases that have or may have an adverse effect and are at or exceed 5 kg or 5 L TDG Regulations.

\* Oil & Gas Industry refers to oil, in-situ oil sands, sweet gas and sour gas production facilities and pipelines in Alberta.

**7.2.4 Legislation and References**

The regulations pertaining to Spill and Release reporting are contained in ERCB *IL 98-1*.