MACPHERSON OIL COMPANY

HERMOSA NEW PRODUCED CRUDE OIL SHIPPING PIPELINE

OIL SPILL CONTINGENCY AND EMERGENCY RESPONSE PLAN

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OIL SPILL CONTINGENCY AND EMERGENCY RESPONSE PLAN

Certificate of Financial Responsibility Number XXXXX-XX-XX

Operated by:
MACPHERSON OIL COMPANY
555 6th Street
Hermosa Beach, California

Mailing Address:
2716 Ocean Park Boulevard, Suite 3080
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Prepared with Technical Assistance from:

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2698 Junipero Avenue, Suite 201B
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3379 Somis Road, Suite G ■ P.O. Box 8
Somis, CA 93066

STATEMENT OF FEASIBILITY, EXECUTABILITY, AND IMPLEMENTATION

This is to certify that I have reviewed the Oil Spill Contingency Plan for the Hermosa Crude Oil Pipeline, and I have determined that it is feasible and executable in the event of a spill. By my signature below, I acknowledge that the Plan is adopted for use at the Hermosa Crude Oil Pipeline, and is hereby implemented in full (CCR 817.02(A)(1)(D)).

Macpherson Oil Company
Operator

_____
Signature

_____
Name (Print)

General Manager
Title

_____
Date

INFORMATION FOR CORRESPONDENCE AND SERVICE OF PROCESS

The name and contact information for the Macpherson Oil Company representative that is designated to receive service of process is listed below, under the regulations of the California Department of Fish and Game, Office of Oil Spill Prevention and Response (14 CCR 817.02(a)(3)). All correspondence regarding this Oil Spill Contingency Plan should also be addressed to the representative listed below.

Macpherson Oil Company

Bright and Brown, Attorneys at Law
550 North Brand Boulevard
Suite 2100
Glendale, California 91203

Telephone: **(818) 243-2121**
Facsimile: **(818) 243-3225**

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OSPR REFERENCE NUMBER AND DESCRIPTION	GLOBAL OIL REFERENCE
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1. The plan must include information regarding the expertise of the working group that develops the analysis.	Section 3.1.3
2. The plan must include information that demonstrates to the Administrator that the analysis is appropriate to the facility and adequate.	Section 3.1.2
3. An owner/operator may be found in violation of this section if the Risk and Hazard Analysis does not address the risks posed by the facility.	Acknowledged
4. The Administrator may require that an analysis be updated if there are significant changes made to the facility.	Acknowledged
5. Additional information regarding the analysis method used or the working group that conducted the analysis shall be made available to the Administrator upon request.	Acknowledged
(D) Each plan shall include a summary of the results of the risk and hazard analysis.	
(E) All supporting documentation used to develop the Risk and Hazard Analysis summary shall be made available to the Administrator upon request.	Acknowledged
(2) Off-Site Consequence Analysis. The facility shall conduct a trajectory analysis. The analysis, which shall be summarized in the plan, shall include at least the following:	Section 3.2
(A) A trajectory, or series of trajectories, to determine the potential direction, rate of flow, and time of travel of the reasonable worst case oil spill from the facility to marine waters and to the shorelines that may be impacted.	Section 3.2.1

OSPR REFERENCE NUMBER AND DESCRIPTION	GLOBAL OIL REFERENCE
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(3) Resources at risk from oil spills: Based on the trajectory of the spilled oil as determined in the Offsite Consequence Analysis, each plan shall identify the environmentally, economically, and culturally sensitive areas that may be impacted. Each plan shall identify and provide a map of the locations of the area.	Sections 3.3, 3.3.1 and 3.3.2
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(B) Map of the locations of economically and culturally sensitive areas.	Figure 3-
(B) Development of the Site Safety Plan required.	Appendix C-
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(1) Each plan shall include a list of contacts to call in the event of a drill, threatened discharge of oil, or discharge of oil.	Section 7.0
(A) Detail the procedures for reporting oil spills to all appropriate local, state, and federal agencies.	Sections 7.3 and 7.5
(B) Identify a central reporting office or individual who is responsible for initiating the notification process and is available on a 24-hour basis.	Section 7.5
(C) Establish a clear order of priority for notification.	Section 7.2
(2) Immediate Notification	Sectopm 7.3
(A) Each shall include a procedure that ensures that the owner/operator or his/her designee will contact the Qualified Individual, the California Office of Emergency Services and the National Response Center immediately upon discovery of a discharge of oil or threatened discharge of oil.	Section 7.5
(B) Each plan shall include a procedure for contacting the primary or initial response contractor within 30 minutes of the discovery of a discharge of oil or threatened discharge of oil.	Section 7.3

OSPR REFERENCE NUMBER AND DESCRIPTION	GLOBAL OIL REFERENCE
(C) All phone numbers necessary to complete the immediate notification procedures must be included.	Sections 7.3, 7.5 and 7.7
(3) Each plan shall identify a call-out procedure to acquire the resources necessary to address spills that cannot be addressed by the equipment that the owner/operator is required to have under contract.	Sections 7.5 and 7.7
(4) Each plan shall provide a checklist of the information to be reported in the notification procedures.	Section 7.4
(5) Reporting of a spill as required by Subsection 817.02(g)(2) shall not be delayed solely to gather all the information required by Subsection 817.02(g)(4).	Acknowledged
(h) Temporary Storage	
(1) Each plan shall identify sufficient temporary storage for all oily waste, or identify facilities that would be able to accept the oily waste for recycling or other means of waste management. Sufficient storage shall be no less than two times the required daily recovery rate as determined in Section 817.02(d)(3)(B).	Section 8.1
(2) Each plan shall identify the party that shall maintain responsibility for recovered oil and oily wastes generated during response and cleanup operations, including sites available within the facility.	Sections 8.1 and 8.2
(3) Each plan shall describe site criteria and methods used for temporary storage of recovered oil and oily wastes generated during response and cleanup operations, including sites available within the facility.	Sections 8.1 and 8.2
(4) Each plan shall identify all federal, state and local agencies responsible for issuing permits for transit, temporary storage and ultimate disposal of all hazardous waste products likely to result from an oil spill.	Section 8.2
(5) Each plan shall include information which could expedite the state approval process for the use of temporary waste storage sites.	Section 8.1
(i) Wildlife Rehabilitation Requirements	
Each plan shall discuss procedures that clearly outline how rehabilitation of oiled wildlife will be accomplished.	9.0

OSPR REFERENCE NUMBER AND DESCRIPTION	GLOBAL OIL REFERENCE
(j) Training and Drills	
(1) Each plan shall provide that all appropriate personnel employed by the facility shall receive training in the use and operation of oil spill response and cleanup equipment.	Acknowledged
(2) Each plan shall describe the type and frequency of personnel training on methods to reduce operational risks.	Section 10.1
(3) Each plan shall provide for safety training as required by state and federal health and safety laws for all personnel likely to be engaged in oil spill response, including a program for training non-permanent responders such as volunteers or temporary help.	Section 10.1
(4) A facility owner/operator shall conduct drills as necessary to ensure that the plan will function in an emergency. Each plan shall describe the facility's drill program.	Section 10.2
(5) Drills may be designed to exercise either individual components of the plan or the entire response plan. Such drills, individually or in combination, shall ensure that the entire plan is exercised at least once every three years.	Section 10.2
(6) The facility owner/operator shall ensure that records sufficient to document a drill are maintained for three years following completion of the drill.	Table 10-3
(7) The facility owner/operator shall invite the Administrator to participate in both the equipment deployment drills and the management team tabletop drills.	Section 10.0 Acknowledged
(8) The Administrator may call a drill to test all or part of a contingency plan. This drill may be announced or unannounced.	Acknowledged
(9) Substitution.	
(A) In substitution for the drills required by Subsection 817.02(j)(4)(B), (C) and (D), the Administrator may accept a drill conducted by the facility, and/or called by an agency other than the OSPR.	Table 10-1

OSPR REFERENCE NUMBER AND DESCRIPTION	GLOBAL OIL REFERENCE
(B) Contractor drills: A drill of the contractor's services will fulfill the equipment deployment drill requirement for any facility that utilizes the contract's plan to fulfill the response requirements of the facility's own plan.	Section 10.2
(C) Unannounced drills: Any unannounced drill may be used to satisfy the drill requirements of this section.	Section 10.2

1.1 INTRODUCTION

This Oil Spill Contingency and Emergency Response Plan is prepared for the Macpherson Oil Company (Macpherson) New Produced Crude Oil Shipping Line to meet the regulations of the California Department of Fish and Game, Office of Oil Spill Prevention and Response (OSPR) [14 CCR 817.02(a)(3)].

The new produced crude oil shipping pipeline consists of 2,500 feet of new 6-inch diameter wrapped pipeline which transports produced crude oil from the Macpherson facility at 555 6th Street, Hermosa Beach, California to an existing pipeline on Southern California Edison's property located west of Francesca Avenue and south of Herondo Street in the City of Redondo Beach, California.

The new produced crude oil shipping pipeline is part of a two-phase oil production development project by Macpherson Oil Company. Phase I of the program is to determine if there is sufficient oil to support production at a drilling site at 555 6th Street, Hermosa Beach, California. Oil recovered during Phase I of the project will be transported from the drilling site by truck. Phase II, if justified by the results determined in Phase I, will proceed with the drilling of production wells, the construction of an oil processing facility at the 6th Street site, and the construction of the new produced crude oil shipping pipeline.

The new shipping pipeline will be constructed to accommodate a maximum crude oil flow rate of 8,000 barrels per day. The location of the shipping pipeline is shown in Figure 1-1.

1.2 INFORMATION SUMMARY

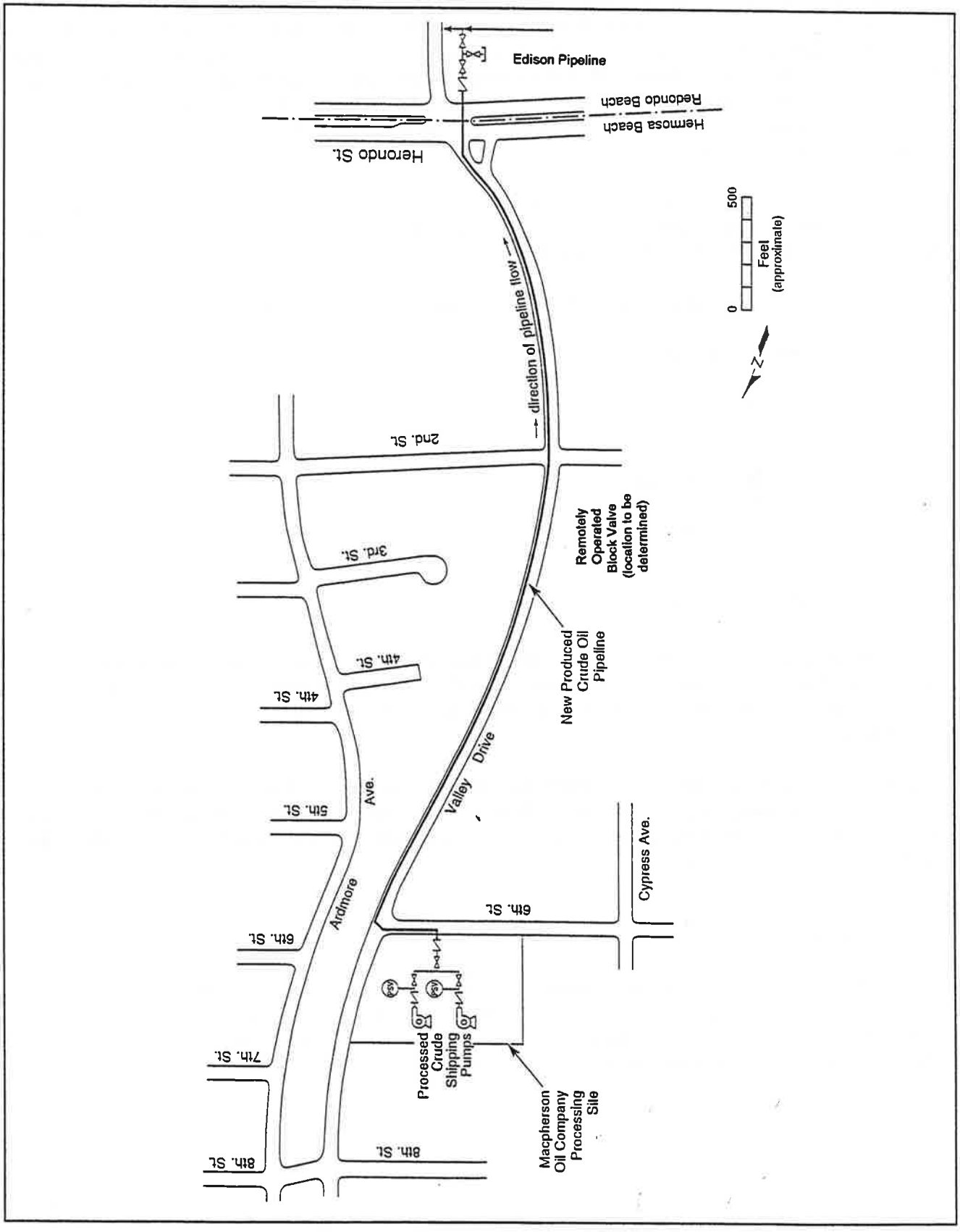
1.2.1 Name and Address of Owner and Operator

Macpherson Oil Company
2716 Ocean Park Boulevard, Suite 3080
Santa Monica, California 90405

Telephone: (310) 452-3880

Fax: (310) 452-0058

FIGURE 1-1
PIPELINE DESCRIPTION



1.2.2 Qualified Individual

OSPR regulations (14 CCR 817) require that Macpherson designate a "Qualified Individual" (QI) to implement the Plan on a 24-hour basis. The QI will act as liaison with the Federal On-Scene Coordinator (OSC) and the State Incident Commander. The QI also has the responsibility and authority to activate and execute contracts with spill removal organizations, and to commit the funds necessary to carry out oil spill response activities. The QI for the New Produced Crude Oil Shipping Pipeline is the Operations Manager, who assumes the role of Incident Commander in the event of any emergency incident including oil spills.

Contact telephone numbers for the QI are given below. In the event that the designated QI is unavailable, an alternate Macpherson employee with the authority to assume the responsibilities of the QI for implementing this Plan is also listed.

This information will be updated upon change of ownership of the pipeline.

- **Qualified Individual:**

  (to be supplied)

- **Alternate Qualified Individual:**

  (to be supplied)

1.3 PLAN OBJECTIVES

This Plan places primary emphasis on the safety and protection of human life and health for the public as well as Macpherson personnel and contract workers. Protection and preservation of facilities are given secondary consideration, relative to employee safety and the safety of the public and the environment.

It is the objective of this Plan to first prevent the escalation of an oil spill incident with effective response actions, thus reducing the potential impacts to sensitive environmental resources. The measures that follow these first actions focus on the cleanup and restoration of wildlife habitats and facilities affected by spills.

1.4 ORGANIZATION OF PLAN

This Oil Spill Contingency Plan is written in a form intended to parallel the format described in regulations for the California Office of Oil Spill Prevention and Response (CFR 14 Division 1, Subdivision 4, Chapter 2, Subchapter 3, Article 817.02). A cross-index between Article 817.02 and this Plan is presented immediately after the Table of Contents.

1.5 COMPANY POLICY

Macpherson's policy is to take every reasonable action to prevent oil spills, and to minimize the environmental consequences of spills when they occur. Macpherson will comply with all applicable laws and regulations for the protection and conservation of sensitive environmental resources.

Any oil spill occurring along the pipeline route will result in the immediate activation of the Plan. The procedures and response techniques described herein will be implemented in a safe manner as spill circumstances dictate, under the supervision of the QI acting as the Incident Commander.

Macpherson personnel will make every effort to cooperate with applicable agency officials. The QI will direct the company's response activities in a manner that enhances communications and understanding with civic groups, conservation organizations, and the general public in the event of an oil spill.

1.6 OIL SPILL RESPONSE ORGANIZATION

Macoherson Oil Company will contract with one or more oil spill response contractors to take the lead in responding to onshore releases and to onshore releases that reach the ocean. As required by California Coastal Commission Permit Condition M-13, one response contractor must be a federal- and California-approved offshore Oil Spill Response Organization (OSRO) such as Clean Coastal Waters, Inc.

2.1 OVERALL PIPELINE DESCRIPTION

Purpose of the Pipeline

The purpose of the new produced crude oil shipping pipeline is to transport produced crude oil from the Macpherson Oil Company oil production facility at 555 6th Street, Hermosa Beach to an existing pipeline on Southern California Edison's property located west of Francesca Avenue and south of Herondo Street in the City of Redondo Beach, California. The crude oil will be temporarily stored in a storage tank at the Southern California Edison Facility until it is shipped via a Southern California Edison owned pipeline to one of the Los Angeles Basin refineries.

Pipeline Description

The pipeline is 6-inches in diameter and is approximately 0.5 miles (2,500 feet) in length. The pipeline is designed for a maximum crude oil flow of 8,000 barrels per day. The maximum operating pressure of the pipeline is 350 psi. The pipeline is fabricated from schedule 80 steel pipe and is designed in accordance with the requirements of ANSI/ASME B31.4 specifications.

The location of the pipeline is shown in Figures 1-1 and 2-1. The pipeline leaves the Macpherson facility on 6th Street and follows 6th Street in a northeasterly direction to Valley Drive. At Valley Drive, the pipeline turns eastward on Valley Drive towards Herondo Street. At the intersection of Valley Drive and Herondo Street, the new pipeline crosses Herondo Street and enters the Southern California Edison facility.

Figure 2-1 describes the topographic conditions along the path of the pipeline. The pipeline passes thorough open areas and along streets in a developed urban setting. The pipeline is adjacent to commercial and residential areas. Figure 1-1 also shows locations of the pipeline valves.

Pipeline Elevation Profile

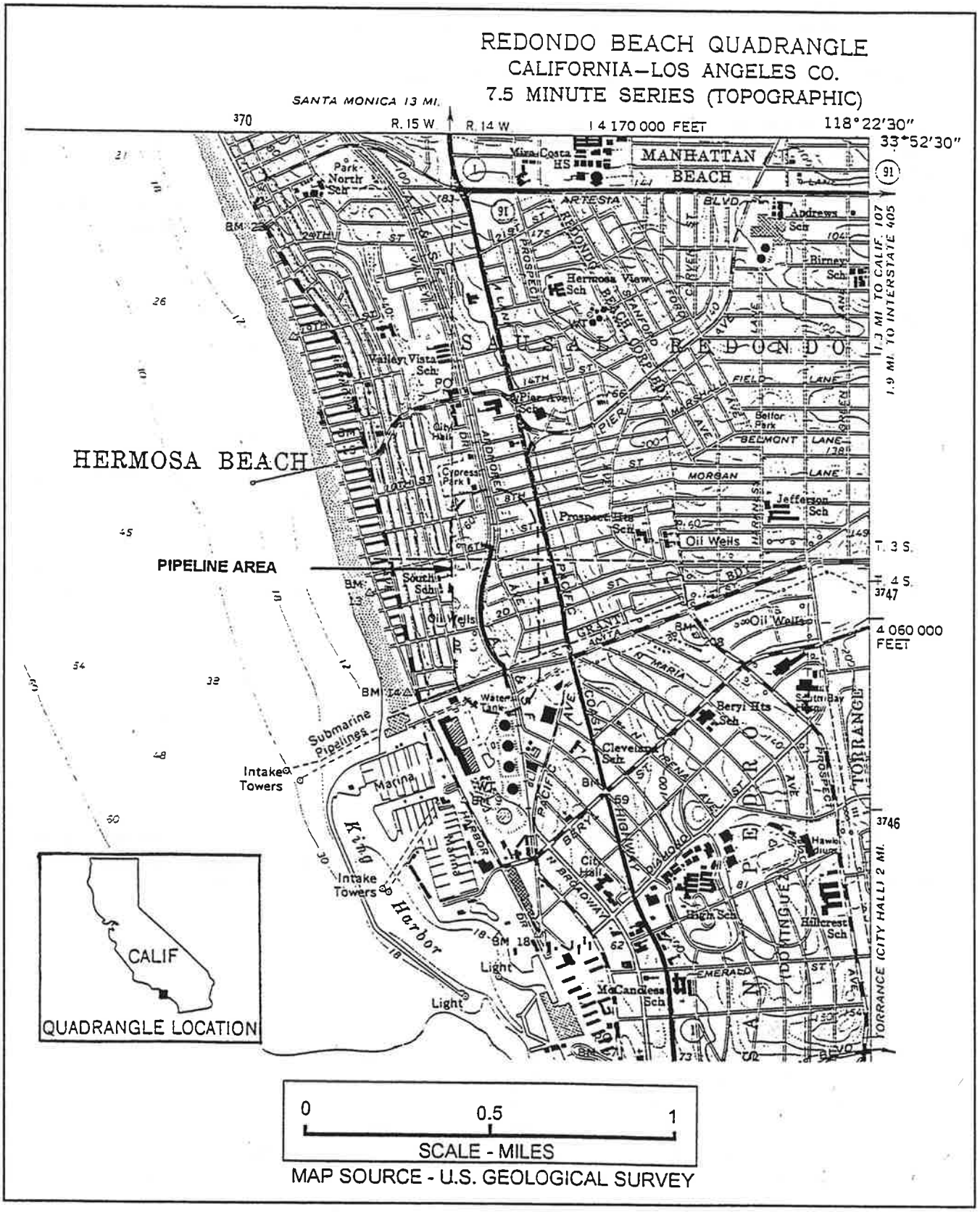
The design engineering has not been completed to a point sufficient to produce a final elevation profile drawing of the new shipping oil pipeline. Once completed, the elevation profile of the pipeline will be added to this plan. The pipeline will be buried4 feet below grade.

Pipeline Controls

Pumps and Valves

The crude oil transfer pumps which are located at the Macpherson facility on 6th street provide the power to transfer the crude oil through the new produced crude oil shipping pipeline. The pipeline is equipped with three remotely controlled block valves, one at ether end and one in the middle. In addition, the line will be equipped with check valves to prevent drainback from the Edison line and tank. The exact location of the block valve in the middle of the line is to be determined.

FIGURE 2-1
TOPOGRAPHICAL MAP FOR PIPELINE



Crude Oil Transfer Pump Pressure Switches

The crude oil transfer pumps located at the Macpherson facility are equipped with pressure switches at the transfer pump discharge lines which will monitor pipeline pressure and shutdown the transfer pumps in the event of higher than normal or lower than normal pump discharge pressures.

Supervisory Control and Data Acquisition (SCADA) System

Oil will be metered at the Macpherson processing facility as it is put into the pipeline and at the Edison facility as it is received. The meter pulses will be transmitted via a Remote Transmitter Unit (RTU) to the Macpherson Hermosa Beach Facility Control Center where the volume and flow rate of crude oil shipped will be compared with the flow rate and volume of crude oil received. Any discrepancy above a preset limit is considered an indication of a potential leak that will result in an alarm condition and shutdown of the shipping pumps and closure of appropriate block valves.

2.2 PIPELINE TRANSPORTED MATERIAL

Crude Oil

The pipeline will transport produced crude oil with a specific gravity of 17 to 21.

Human contact with crude oil can result in health hazards such as eye and skin irritation, symptoms of nervous system depression, and aggravation of pre-existing respiratory disorders. Components of crude oil, such as benzene, are carcinogens.

Crude oil released to the environment can be fatal to many animal species that come into contact with the material. Oil can be an acute hazard to shallow aquatic habitats. Crude oil is flammable, and presents a potential radiant heat hazard if a spill is ignited.

Material Safety Data Sheets

The Material Safety Data Sheet (MSDS) information describing the characteristics of the crude oil is contained in this section.

Corrosion Inhibitors

During production, pipeline corrosion inhibiting solutions may be added to the crude oil. However, the decision to use corrosion inhibiting solutions and the selection of any particular corrosion inhibitors has not been made. If corrosion inhibitors are used , the MSDS information for the specific corrosion inhibitor will be added to this plan.

2.3 TRANSFER PROCEDURES

Normal Operations

During normal operations the transport of crude oil in the new produced crude oil shipping pipeline is an automated and a continuous process. Produced crude oil from the Macpherson processing facility is accumulated in their sales oil tank. When the tank level rises to a predetermined level, a level switch closes an electric contact to start operation of the oil transfer pumps. The oil transfer pumps cause produced crude oil to be drawn from the sales oil tank and directed through the LACT meter (Lease Automated Custody Transfer meter) and into the new produced crude oil shipping pipeline. The oil is

pumped through the shipping pipeline to the Edison facility. Once the shipping tank oil level declines to a predetermined low level, a level switch causes the transfer pumps to stop operation.

Emergency Shutdown

The new produced crude oil shipping pipeline will be equipped with a SCADA system which will measure crude oil flow into the shipping pipeline and measure the crude oil flow received at the Edison facility. When an established error threshold is exceeded, the monitoring computer will issue a signal to automatically shut-in the pipeline using remotely operated pipeline valves. The pipeline can also be shut-in from the Macpherson facility or from the termination end at Edison using the remotely operated valves without the use of flow signals from the RTUs.

The crude oil transfer pumps can also be manually shutdown or shutdown by the pressure switches in the pump discharge lines. Shutdown by the pressure switches will occur under conditions of excessive high or low pump discharge pressure conditions.

Transfer Procedures - Start of Operations

Prior to the start of transfer operations following a prolonged shutdown, pipeline start-up coordination will be accomplished between Macpherson and Edison through telephone contact between operators of the respective control rooms.

Maintenance or repair work on the sales pipeline will use established tag and lockout procedures. If the transfer operations have been shutdown due to maintenance or repair work on the sales pipeline, the pipeline operator will investigate the disposition of tagged pipeline valves and complete required inspections prior to resumption of operations.

Macpherson Production Oil Diversion During Shutdown

The Macpherson production system will be equipped with tank level sensing devices which will cause produced crude oil to automatically be diverted to other tanks when the sales tank level reaches a pre-established maximum level. When total storage capacity is being approached, oil production will automatically cease by shutting down the oil well down-hole pumps. Macpherson has a storage capacity at the tank farm of 8,060 barrels. Under normal conditions, crude oil storage will be 5,330 barrels.

CRUDE OIL

Synonyms:	Petroleum, Crude
State at 15°C and 1 atm:	Liquid
Composition:	Produced crude oil can contain up to 5% Sulfur
Vapor (gas) irritant characteristics:	Hydrocarbon vapors are nonirritating to the eyes and throat. Hydrogen Sulfide vapors may be toxic.
Liquid irritant characteristics:	Minimum hazard. If spilled on clothing and allowed to remain, may cause irritation and reddening of the skin.
Odor threshold:	Data not available
Reactivity with common materials:	None
Flammability:	Combustible to flammable
Flash point:	May be as low as 74°F
Handling temperature:	May be as high as 200°F
Fire extinguishing agents:	Foam, dry chemical, or Carbon Dioxide (CO_2). Water may be ineffective.
Electrical hazard:	Not pertinent.
Boiling point at atm:	90°F to 750°F
Solubility in water:	Floats on water
Color:	Dark brown to black
Odor:	Acrid
Treatment for exposure"	**EYES** - Flush with water for at least 15 minutes. **SKIN** - Wipe off and wash with soap and water.

2.4 HOURS OF OPERATION

The Macpherson oil production operations and the pipeline transfer operations will be conducted 24-hours a day, 7-days a week. The Macpherson Hermosa facility office hours are 8:00 AM to 5:00 PM, normal working days.

2.5 FACILITY SITE AND SURROUNDING AREA

2.5.1 Maps

Pipeline Maps - A pipeline map is shown in Figure 1-1.

Topography - The topography of the area is undulating sand dunes which have been developed for residential and commercial use. A topographic map of the area is shown in Figure 2-1.

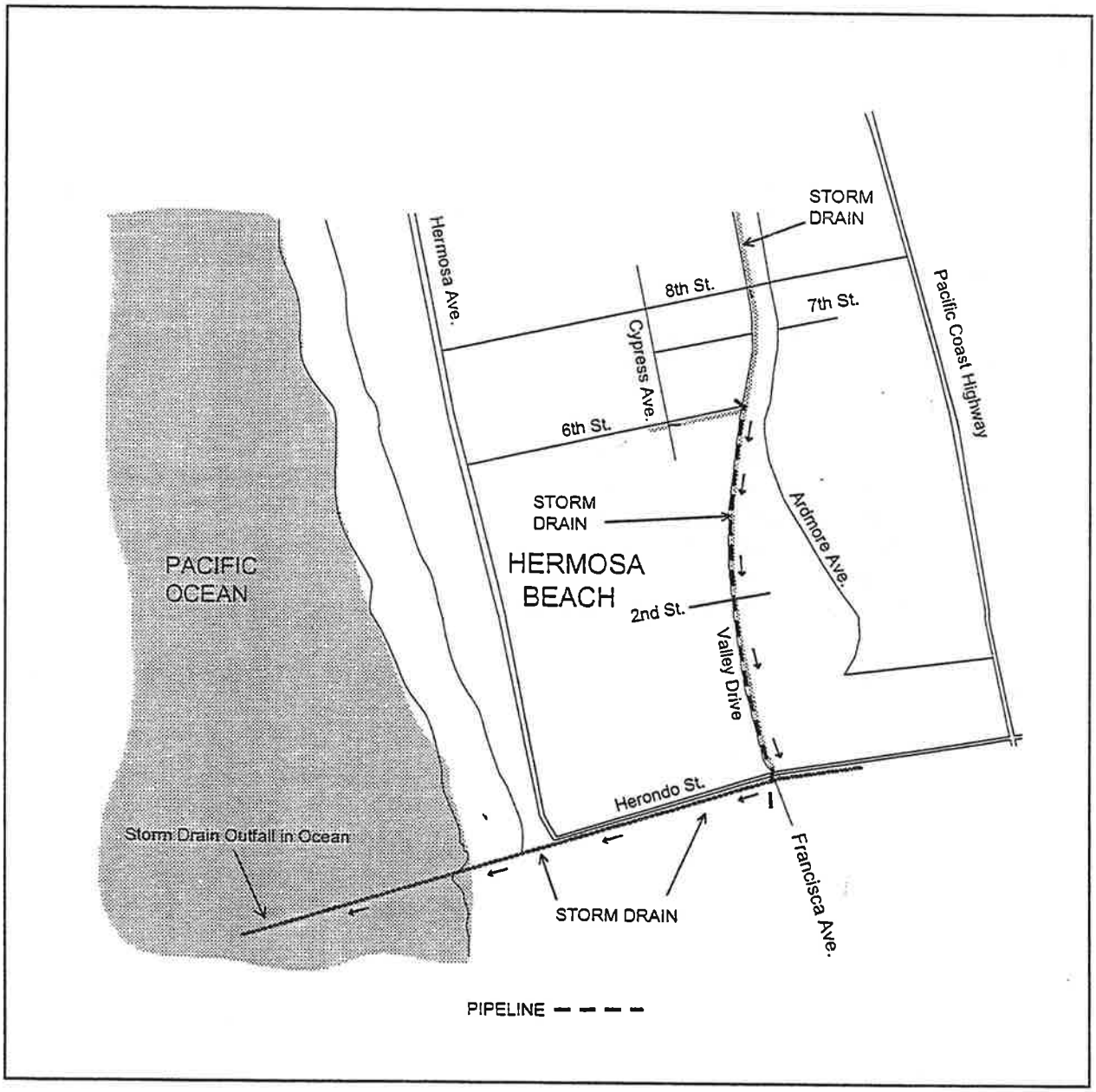
2.5.2 Drainage

Storm Drains - Drainage of storm water for the area is managed through a system of curb-side storm drains at various locations where side streets intersect with Valley Drive. These drains are located at the following locations:

- Ardmore Avenue and 8th Street
- Valley Drive and 8th Street
- 6th Street and Cypress Avenue
- 2nd Street and Valley Drive
- Valley Drive and Herondo Street
- Herondo Street and Francisca Avenue

The storm drains along Valley Drive connect with a storm drain on Herondo Street. Storm water in the Herondo Street storm drain is directed into the ocean through an outfall just past the shoreline and near the north side of the breakwater for King Harbor. The route of this storm drain system is shown in Figure 2-2.

FIGURE 2-2
STORM DRAIN SYSTEM



2.5.3 Vehicular Access

The pipeline route can be reached from the San Diego Freeway (Route 405) by proceeding west on Artesia Boulevard, south on Pacific Coast Highway (Route 1) to Herondo Street, then south on Herondo to Valley Drive.

2.5.4 Surrounding Vicinity

The general vicinity of the pipeline area is contained in Figure 2-1. The pipeline location is predominantly along the east side of Valley Drive roadway, adjacent to an open greenbelt parkway between Valley Drive and Ardmore Avenue. Along the west wide of Valley Drive are a mix of commercial areas, open areas, and multi-family dwellings.

2.6 HYDROGRAPHIC AND CLIMATIC CONDITIONS

Shoreline Conditions

The Hermosa Beach shoreline consists primarily of beach sand of mid-grain size.

Immediately south of Hermosa Beach is a breakwater for King Harbor, a pleasure craft harbor with up to 1400 boats. The King Harbor entrance depth is 27 to 30 feet, and basin depths from 6 to 8 feet. The harbor entrance is between 2 lights at the end of the breakwaters at the south end of the harbor. A radio beacon and fog signal are at the light on the east side of the entrance. A lighted buoy is 230 yards SSW of the south end of the west breakwater. The harbor office and harbor patrol monitor VHF-FM channel 16.

The Nautical Chart applicable to this area: Santa Monica Bay

Approximately 1.3 miles up the coast from King Harbor is a municipal fishing pier operated by the City of Hermosa Beach. The fishing pier extends 350 yards into the ocean from the shoreline.

Source: United States Coast Pilot 7, Pacific Coast, Thirtieth Edition, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service; Los Angeles/Long Beach Area Contingency Plan, U.S. Department of Transportation, United States Coast Guard, Office of Oil Spill Prevention and Response.

Climatic Conditions

Typical yearly climatic conditions are:

Temperature (Average daily)

Average	62°F
Maximum	70
Minimum	54

Average Rainfall: 12 inches (Predominantly December through March)

Prevailing Wind: 7.5 knots WSW

Marine air covers the coastal plain most of the year but air from the interior reaches the coast at times, especially during fall and winter. There is characteristically night and morning low cloudiness and sunny afternoons, particularly September through January. Nighttime temperatures are generally cool but minimum temperatures less than 40°F are rare.

Source: NOAA Local Climatological Data, Annual Summaries for 1986, Part IV - Western Region.

2.7 PHYSICAL GEOGRAPHY

2.7.1 Pipeline Site

The Macpherson new crude oil shipping pipeline is located in a developed area including commercial, open and residential areas. The community is established on sand dunes which have been graded, resulting in a mildly undulating topography (reference Figure 2-1). Open space consists primarily of recreation and greenbelt areas and the beach interface with the ocean at the surf line.

2.7.2 Ocean Area

Ocean depths - Figure 2-1 shows the ocean depths dropping to 12 feet near the shoreline and quickly progressing to depths in the area of 30 feet within 0.5 miles of the shoreline.

Sport fishing barges often anchor 1 or 2 miles offshore during summer. Caution is advised to avoid them.

Hermosa Beach and Manhattan Beach are between Redondo Beach and El Segundo; both have public fishing piers with fish havens covered 10 feet around their seaward ends. The pier at Hermosa Beach is about 1.3 miles north of Redondo Beach and extends 350 yards from shore; a private fog signal is at the outer end. The Manhattan Beach pier, 2.5 miles north of Redondo Beach, extends almost 300 yards from shore.

Source: United States Coast Pilot 7, Thirtieth Edition, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service

2.8 LOGISTICAL RESOURCES

Fire Protection

Municipal fire protection services are provided by the City of Hermosa Beach Fire Department. The Hermosa Beach municipal fire house is less than 0.5 miles from the Macpherson Pipeline 6th Street facility. The City of Hermosa Beach has mutual aid agreements for fire protection services with the nearby cities of Manhattan Beach, El Segundo, and Hawthorne should additional equipment be required in an emergency.

Marine Services

King Harbor in Redondo Beach is immediately south of Hermosa Beach, and has provisions for servicing and launching small craft, including:

Gasoline
Diesel Fuel
Boatyard facilities for boats up to 50 feet in length, and up to 60 tons.

Source: United States Coast Pilot 7, Pacific Coast, Thirtieth Edition, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service.

At King Harbor there is a boat hoist at the Redondo Beach Marina. The hoist capacity is 5 tons. The telephone number for the Redondo Beach Marina is (310) 374-3481.

There are no boat launching ramps at King Harbor for launching small craft from boat trailers directly to the water.

Emergency Housing

Hermosa Beach and Redondo Beach are located close to a large number of Southern California beach communities which have plentiful commercial lodgings. Additional lodgings are located adjacent to the nearby Los Angeles International Airport.

Outside Services for Oil Spill Response

A call list for outside services for assistance in responding to an oil spill are shown in Table 2.1. Macpherson will contract with one or more oil spill response contractors that are federal- and California-approved offshore OSROs.

Medical Services

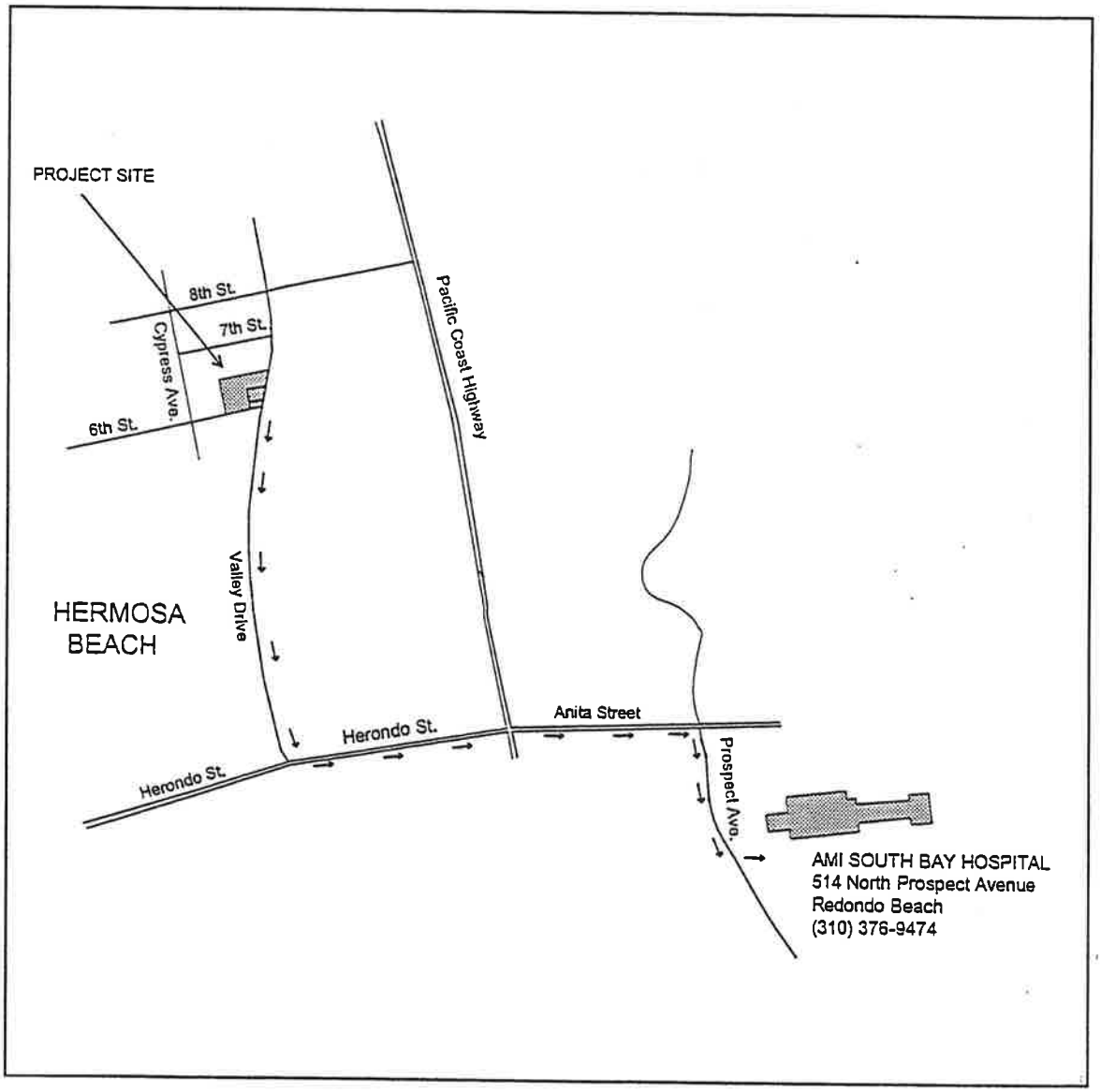
Paramedic services are available by dialing **9-1-1**.

Medical services are available at the AMI South Bay Medical Hospital approximately 2 miles from the Macpherson Hermosa Beach production facility. The location of the hospital is:

AMI South Bay Hospital
514 North Prospect Avenue
Redondo Beach, California

Telephone:(310) 376-9474

FIGURE 2-3
LOCATION OF AMI SOUTH BAY HOSPITAL



2.9 SHORELINE ACCESS

The best access to the Hermosa Beach shoreline is at 13th Street just north of the City of Hermosa Beach municipal fishing pier (reference Figure 2-4).

Source: Los Angeles/Long Beach Area Contingency Plan, U.S. Department of Transportation, United States Coast Guard, Office of Oil Spill Prevention and Response.

Shoreline access from the ocean may be accomplished from a nearby marina. At King Harbor, the Redondo Beach Marina has a boat hoist. The hoist capacity is 5 tons. The telephone number for the Redondo Beach Marina is (310) 374-3481.

There are no boat launching ramps at King Harbor for launching small craft from boat trailers directly to the water.

FIGURE 2-4
SHORELINE ACCESS

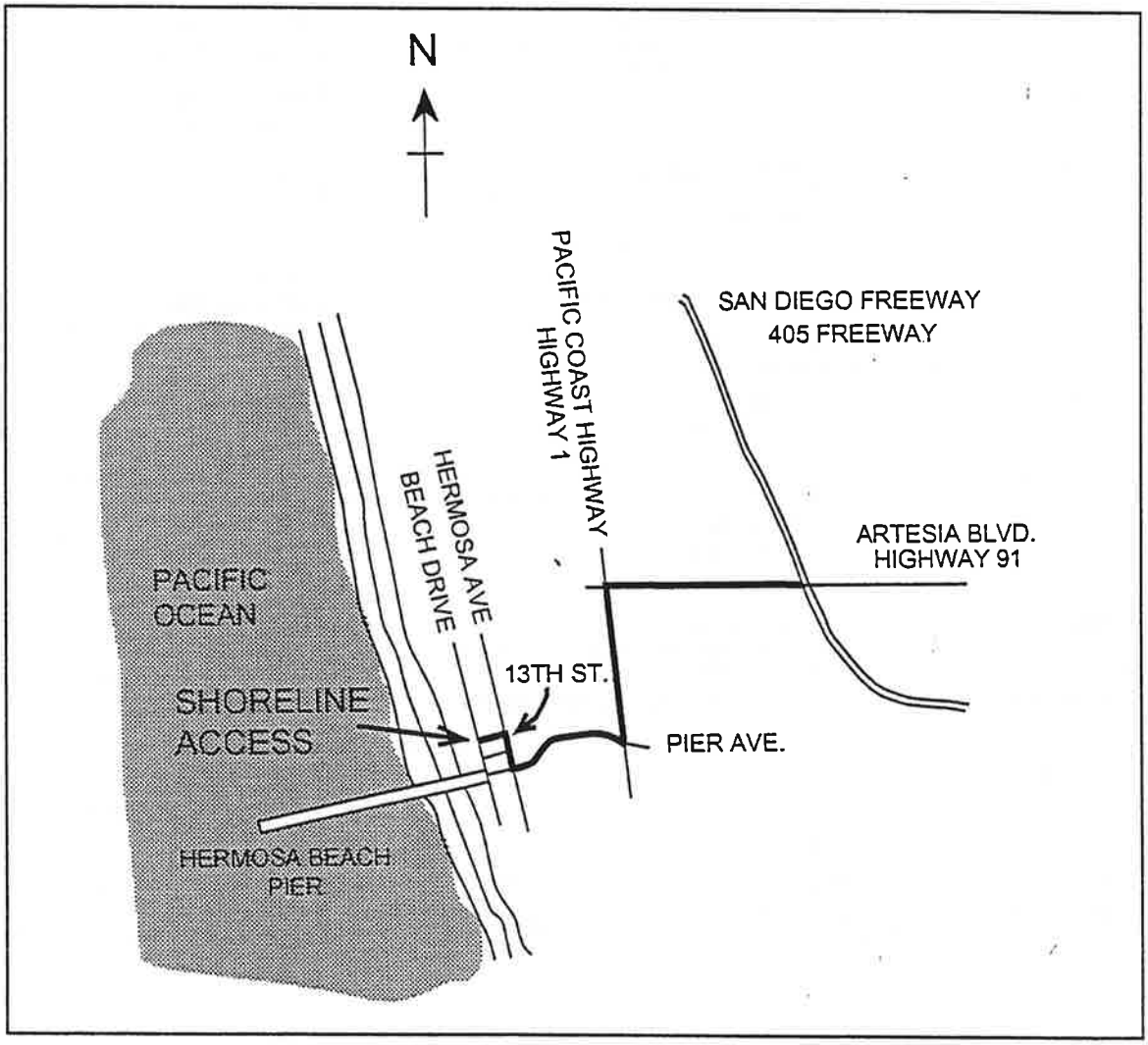


TABLE 2-1

SERVICE GROUP	RESOURCE NAME	TELEPHONE NUMBER
Vacuum Trucks	Oilfields Trucking Corsby & Overton IT Services	(213) 775-1295 (310) 432-5445 (310) 830-1720, or (310) 518-4700
Backhoe Service	Bowers Tractor (Dispatch) Chino Estrada (Company employee) Jeff Quam (Company employee) Reliable Tire Service (Repair of backhoe tires)	(714) 670-2177 (310)837-9753 (home) (714) 969-8298 (home) (310) 921-2782
Dump Trucks	Bowers Tractor (Dispatch)	(714) 670-2177
Blacktop	Sully-Miller	(310) 426-3918
Sand and Rock	Livingston-Graham	(213) 681-7101, or (310) 433-0111 (310) 358-3221 (nights and weekends)
Street Sweepers	A power Sweeping Service (Los Angeles) California Street Maintenance (Gardena)	(213) 269-5127 (800) 225-7316
Concrete Sawing	A.C. Peterson Penhall	(213) 733-5592 (714) 772-6450
Portable Lights	Total Equipment	(310) 595-6555
Pumps	Milo-Webb	(310) 595-8887
Barricades	Hi-Way Safety Flash-R-Lights Corp.	(714) 870-1750 (213) 664-1954, or (213) 258-8351 (after hours) (310) 352-4121 (home)
Cleanup	Ancon IT Services	(310) 548-8300 (310) 830-1720, or (310) 518-4700, or (213) 262-1900 (emergency)
Labor	Bill Phillips Leroy Early	(213) 806-2840 (24-Hour) (714) 527-0509, or (310) 304-6998 (car)
Welders	Les Young Gil Hernandez (company employee)	(213) 779-0117 Pending (home)
Crane Service	Canyon Crane, Inc. (John Dubois)	(714) 244-2782
Shoring	Trench Shoring Co. Trench, Jack & Equipment Rentals	(310) 327-5554, or (310) 737-3931 (home) (213) 636-7816
Spill Response and Cleanup	Advance Cleanup Technologies, Inc. (ACTI)	(310) 763-1423

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3.1 RISK AND HAZARD ANALYSIS

3.1.1 History of Significant Spills

The pipeline is new and thus has no history of spills.

3.1.2 Risk and Hazard Analysis Method Selected

Since the design of the pipeline system is not final at this time, only a preliminary risk and hazard analysis has been conducted. In accordance with California Coastal Commission Permit Condition M-6 and OSPR regulations, a final risk and hazard analysis will be conducted when the design of the pipeline system is complete.

The preliminary risk and hazard analysis was conducted using the "checklist" analysis technique. The final analysis will also use the "checklist" technique. This technique is described in the American Institute of Chemical Engineers' *Guidelines for the Hazard Evaluation Procedures.* A summary of the questions included in the checklist is provided in Table 3.1-1. The checklist form (worksheet) provided for three responses to each questions: yes, no, or not applicable. The worksheet also contained boxes for each question to record the following information: potential hazard, safeguards in place to prevent the potential hazard from occurring, any remaining hazards after considering the safeguards, recommendations to mitigate any remaining hazards, and remarks.

Table 3.1-1
"CHECKLIST" QUESTIONS USED IN
HAZARD AND RISK ANALYSIS

A. GENERAL QUESTIONS

1. Can release from node enter marine waters?
2. Does node have adequate containment?

B. DESIGN QUESTIONS

3. Is mechanical design (internal and thermal stresses) appropriate?
4. Is node adequately protected from corrosion?
5. Is node constructed of proper material?
6. Does node have a drain?
7. Where does drain discharge to?
8. Are drain discharge facilities adequate?
9. Is node properly protected against overpressure?
10. Can node be over pressurized by pumps?
11. Does node have a pressure safety valve (PSV)?
12. Where does PSV discharge to?
13. Are PSV discharge facilities adequate?
14. Is node protected from mechanical damage?
15. Are valves in node appropriately designed?
16. Does node have leak detection?
17. Is node properly designed for earthquakes?
18. Is node adequately protected from vandalism?
19. Can node handle increase in temperature of product?
20. Can node handle decrease in temperature of product?
21. Can node handle increase in flow of product?

C. OPERATIONS QUESTIONS

22. What happens if a valve is inadvertently left open?
23. What happens if a valve is inadvertently closed?
24. Is there adequate surveillance of the node?
25. Do personnel understand operation of the node?
26. Is there adequate protection from sending wrong product through the node?
27. Is there adequate protection from pumping reverse direction through node?

D. EXTERNAL IMPACT QUESTIONS

28. Is node properly designed for weather conditions?
29. What happens if node leaks/ruptures?
30. What happens if there is a power failure?
31. What happens if there is a hydraulics failure?
32. Is fire protection adequate?
33. Is node adequately protected from loss of communication/instrumentation?
34. What if pump fails?

3.1.3 Expertise of Analysts

The preliminary risk and hazard analysis was conducted by **Mr. Tim Chambers**, of Reese-Chambers Systems Consultants, Inc. Mr. Chambers has over 15 years of experience conducting risk and hazard analyses and has served as team leader for the conduct of over 15 OSPR risk and hazard analyses, and 8 hazard and operability studies (HAZOPs). Mr. Chambers' analysis was based on the preliminary pipeline design information provided by **George Dana**, the pipeline engineer for the project.

The final risk and hazard analysis will be conducted by a team of qualified analysts, including a team leader and pipeline engineer.

3.1.4 Appropriateness of Analysis Method

The "checklist" method is appropriate to address the proposed pipeline. The method was utilized to identify potential risks that could lead to a release of oil. The method is described in the American Institute of Chemical Engineers' *Guidelines for Hazard Evaluation Procedures* and is one of the methods listed in the OSPR regulations. The risk and hazard analysis will be revisited when the engineering is completed.

3.1.5 Method of Evaluation

The "checklist" methodology was utilized. The first step in the conduct of the risk and hazard analysis was to review the facility P&IDs and preliminary pipeline design information. The questions to ask during the analysis were then developed. These were based on preliminary design information and prior analyses. The checklist was then filled out based on preliminary design information.

3.1.6 Inventory of Hazards

Since the pipeline is being designed as a modern state-of-the-art system, no potential hazards requiring further mitigation were identified.

3.1.7 Analysis of Discharges

Potential Causes of Releases - There are numerous potential causes for pipeline releases that can result in anywhere from small to large releases. These causes are summarized below:

- corrosion (internal and external)
- third party damage
- seismic event
- landslide/ground movement
- material failure
- operation

The most likely spill sizes from the causes examined above were less than the maximum sizes presented in the worst case scenarios. It is noted here that it is impossible to completely eliminate the risk of a spill. The following section discusses the findings of the potential risk and hazard analysis for each of the potential hazards.

Corrosion

According to the California State Fire Marshal *Hazardous Liquid Pipeline Risk Assessment* (1993), external corrosion accounts for approximately 59 percent of pipeline releases and internal corrosion for approximately 3 percent. The data base for this study included all regulated California hazardous liquid pipelines including some without cathodic protection. The study found that unprotected pipelines had an external corrosion leak incident rate over five times higher than protected lines.

The proposed pipeline will be coated and equipped with impressed current cathodic protection. The cathodic protection system will be monitored at least annually and the rectifier at least semi-monthly during line patrol. The aboveground sections of the pipeline (only located within the pump stations) are painted. Corrosion inhibitors will be utilized if needed.

In addition to cathodic protection and chemical injection, the risk of a release due to corrosion is partially mitigated by performing hydrostatic tests of the pipeline when it is 10 years old, and then every 5 years thereafter.

The risk and hazard analysis concluded that the potential for a leak due to corrosion is adequately mitigated.

Third Party Damage

According to the State Fire Marshal's report, approximately 20 percent of pipeline incidents are caused by third party damage. These type accidents will be mitigated by patrolling the pipeline route at least weekly. Information on the pipeline alignment will be provided to Underground Service Alert (USA), which keeps track of all pipelines and provides pipeline locational information to anyone excavating in an area. In addition, a brightly colored plastic (or other suitable material) ribbon will be buried 12 to 18 inches above the entire length of the pipeline to alert any personnel digging in the area of the presence of the pipeline.

The risk and hazard analysis concluded that this potential risk is mitigated to the maximum extent feasible, but also recognizes that it is still possible for a third party to damage the pipeline. To rapidly detect leaks, the pipeline will be equipped with automated line integrity monitoring.

Seismic Event

The State Fire Marshal's report states that only three of the roughly 500 leak incidents on California's regulated hazardous pipelines were judged to be caused directly by earthquake effects. This is approximately 0.6 percent. The Macpherson facility is manned 24 hours per day, and the pumps will be immediately shut in in the event of a significant earthquake. The proposed pipeline does not cross any known active faults. Before re-starting the lines, the facilities and exposed pipelines will be inspected for damage, and the lines will be re-pressurized incrementally following the State Fire Marshal's recommendations.

The study concluded that the fact that the facility is continuously manned and that the pipeline is equipped with a SCADA system, adequately mitigate this event. However, it recognizes that a pipeline could be damaged with a resulting leak.

Landslide / Ground Movement

The State Fire Marshal's report did not identify incidents caused by landslide or ground movement except those as a result of an earthquake. Thus, it is assumed that this potential cause is remote. The proposed pipeline does not cross any known areas subject to landslide or ground movement.

Material Failure

The State Fire Marshal's report concluded that nine percent of pipeline incidents are caused by weld failures or equipment malfunction. The proposed pipeline system will be hydrostatically tested when installed, and will continue to be hydrostatically tested in accordance with regulations. In addition, the pipeline will have a "smart pig" run through it prior to initial use and then at subsequent intervals as recommended by the State Fire Marshal. Macpherson will maintain the line in accordance with their operations and maintenance procedures. Thus, the potential for material failure is adequately mitigated.

Operation

The State Fire Marshal's report concluded that 1.6 percent of pipeline incidents are caused by operator error. Releases due to operator error may be mitigated, or eliminated, with an accurate on-line monitoring system. The risk and hazard analysis reviewed the proposed method of operation and monitoring of the pipeline, including instrumentation and communication. The analysis concluded that the pipeline will be adequately monitored using computer-aided techniques which monitor flow rates, volumes, and pressures which are sent to a central control room. This control center monitors the pipeline system at all times.

Probability of a Pipeline Release - The Pacific Pipeline Project Final EIR estimated that the probabilities of a leak and rupture for modern, crude oil pipelines are 5.4×10^{-4} spills per pipeline-mile per year, and 2.7×10^{-4} ruptures per pipeline-mile per year, respectively. This equates to the following annual probabilities for the proposed pipeline.

- Annual probability of a leak - 2.7×10^{-4}
- Annual probability of a rupture - 1.3×10^{-4}

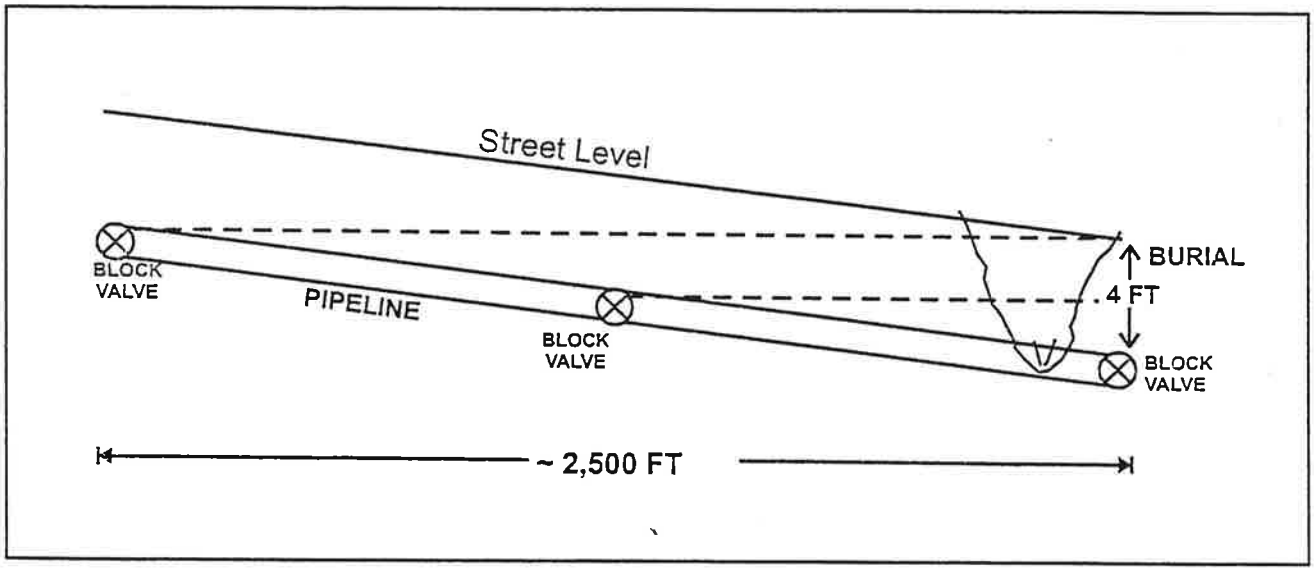
Potential Size of Pipeline Releases - The size of a release from the pipeline would be a function of many factors, including the size of the hole, location of the release point relative to the elevation profile of the pipeline, and time to detect the release and shut down the line. The size of the release could vary from a few drops to the worst case discharge of 141 bbls. (See worst case discharge calculations below.) Historical data shows that small releases are much more likely than large releases. The following summarizes spill size distribution data from the State Fire Marshal's report.

- 27% of the incidents resulted in spill volumes or one barrel of less.
- The median spill volume was five barrels.
- 61% of the incidents resulted in spill volumes of 10 barrels or less.
- 67% of the incidents resulted in spill volumes of 25 barrels of less.
- 82% of the incidents resulted in spill volumes of 100 barrels or less.

Worst Case Pipeline Release - A release from a pipeline is made up of pumping loss plus draindown. The pipeline is equipped with both a SCADA system and a pressure monitoring system. The SCADA system measures flow rate into and out of the line and would sound an alarm if the two rates differ by a preset amount. The pressure monitoring system will automatically shut down the pumps and close the appropriate block valves if a high or low pressure condition is detected. A pipeline rupture would result in a rapid decrease in pressure that would shut down the pipeline sytem very rapidly. It is conservatively estimated that this would be done within 2 minutes. Hence, a maximum of 11 bbls [8,000 bbls per day ÷ (24 hrs per day x 60 min per hr) x 2 min] could be lost due to pumping.

Because of the elevation profile of the pipeline, no oil should drain down. As shown in Figure 3.1-1, the top of the grade (i.e., street level) at the end of the line (the lowest point) is about even with the top of the pipeline at the facility (the high point). The top of the grade would be about two feet above the top of the pipe at the center block valve. Thus, it would not be possible for oil to drain out of the pipe into the street due to gravity. Hence, the worst case release would be 11 bbls, the pumping loss.

FIGURE 3.1-1
PIPELINE PROFILE



3.1.8 Recommended Mitigation Measures

Since no significant potential hazards leading to a release of oil were identified during the conduct of the preliminary risk and hazard analysis, no mitigation measures were recommended.

3.1.9 Remaining Risk

As stated previously, the potential for spills from the pipeline cannot be totally eliminated. Unforeseen circumstances can occur that can lead to spills. As shown in Section 3.1.7, the vast majority of pipeline spills are small. Because the pipeline runs through an urban area, the potential always exists for third party damage to the pipeline.

3.1.10 Documentation

The documentation and materials (P&IDs, diagrams, etc.) used in the preliminary risk and hazard analysis are maintained in the office of David E. Gautschy, Inc. The address and point of contact are:

David E. Gautschy
(562) 427-0419
2698 Junipero Avenue, Suite 202B
Signal Hill, California 90806

3.2 OFF-SITE CONSEQUENCE ANALYSIS

3.2.1 Trajectory Analysis

Release of oil from the project pipeline would most likely end up in the roadway and, depending on the amount of oil released, enter a storm drain. The storm drain leads directly to an ocean outfall as shown in Figure 3.2-1. The worst case pipeline release was determined to be 11 bbls (See Section 3.1.7).

A release of 11 bbls of oil from the outfall would be expected to travel up or down the coast approximately 4 nautical miles (nm) per day. Thus, the three day transport could be anywhere between Santa Monica to the north and Point Fermin to the South. The three-day oil spill trajectory is shown in Figure 3.2-2.

FIGURE 3.2-1
STORM DRAIN LOCATION ALONG THE PIPELINE

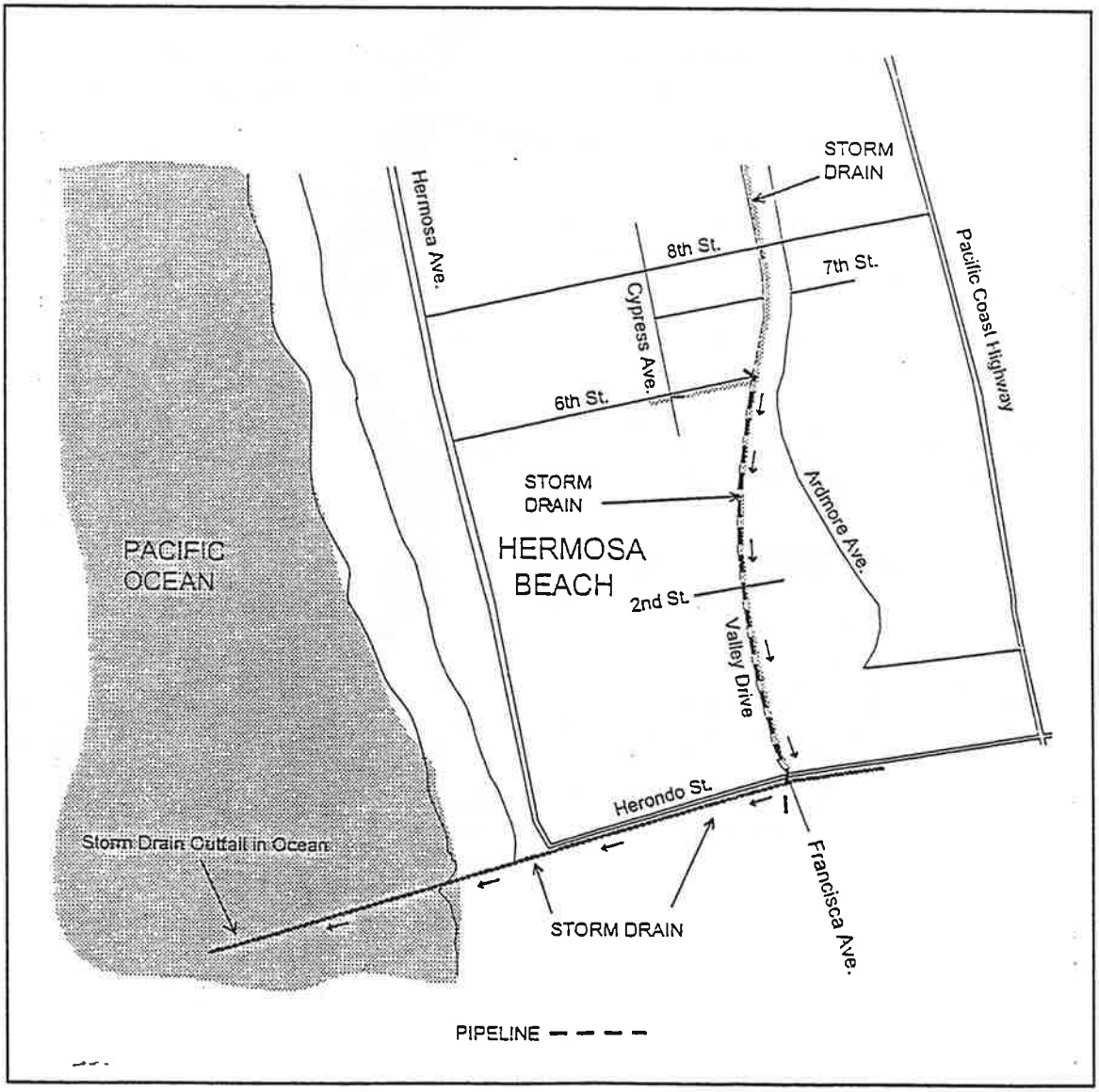
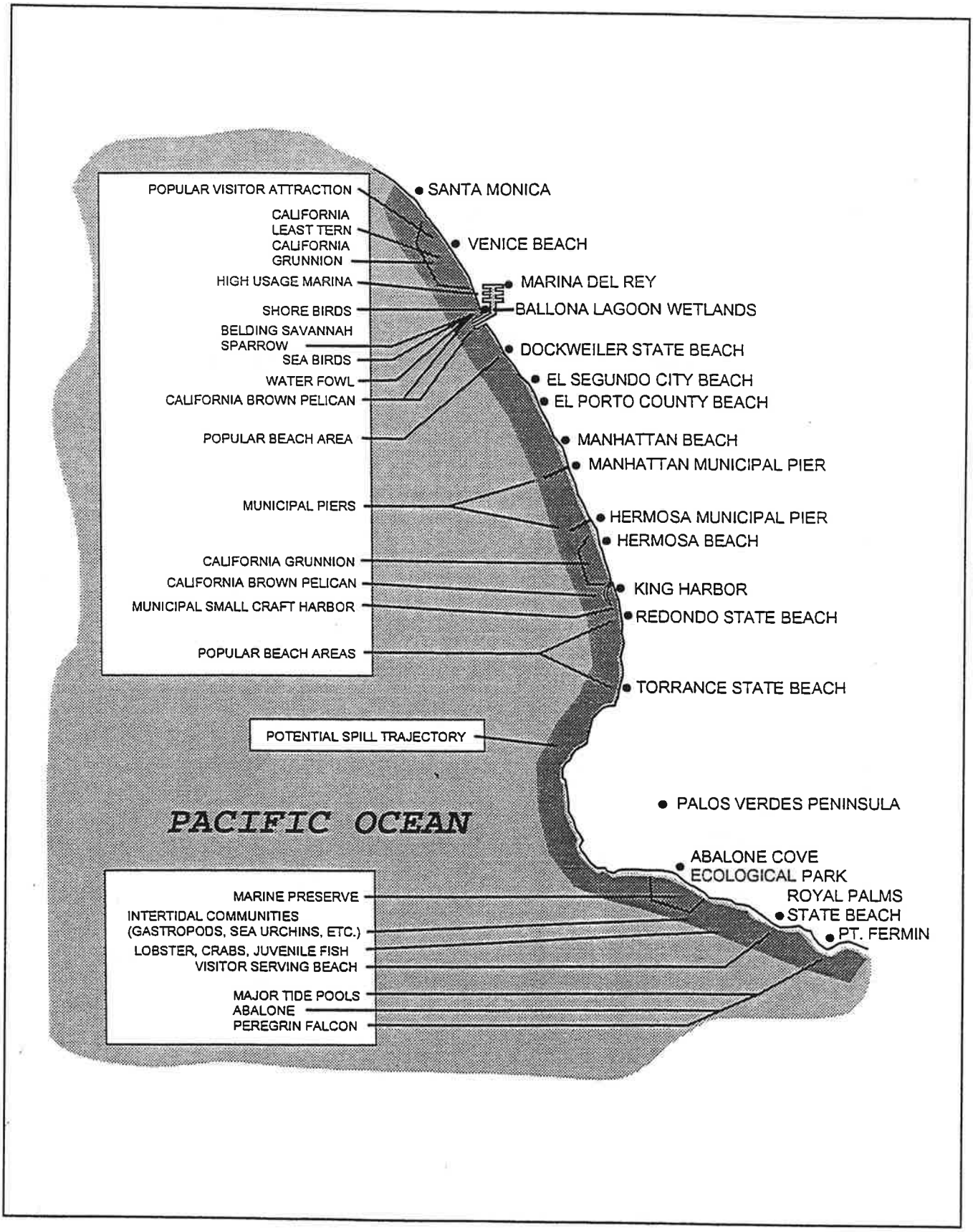


FIGURE 3.2-2
THREE-DAY OIL SPILL TRAJECTORY



3.2.2 Shoreline Impacts

In general, oil can be toxic to biological resources. Oil contamination of intertidal areas, waterfowl, and fur-bearing mammals can be severe.

Wildlife

Wildlife are susceptible to significant injury and mortality from contact with oil spills. In general, the degree of sensitivity to oil spills is based on habitat location and behavioral characteristics. For example, most water fowl and shorebirds, particularly diving birds, are very sensitive to oil spills due to their extensive use of the water, whereas terrestrial birds may nest near the water but have a low sensitivity to oil spills if they do not frequent shoreline areas. Similarly, animals that frequent coastal areas may be impacted by oil spills if they feed on vegetation or dead animals along the shoreline that could become oiled.

Wildlife impacts may result from the physical effects of the oil on their fur or feathers or through ingestion during preening or scavenging. Selected marine mammals (e.g., sea otters and fur seals) and birds (primarily waterfowl) rely on their fur or feathers for insulation and buoyancy, which can be adversely affected if they become oiled. Significantly oiled sea otters, fur seals, or birds can perish from hypothermia and exhaustion or may become sick from ingestion of the oil while preening. The effects of ingestion vary depending on the toxicity of the oil. In general, the lighter the crude oil or petroleum, the more toxic it is to wildlife.

Finfish and Shellfish

The sensitivity of various fish species to oil typically depends on their growth stage (juveniles are generally much more sensitive than adults), their feeding or migration habits, and the type of oil. Species that frequent shallow or near-surface water areas will often be exposed to higher concentrations of dissolved hydrocarbons than those that reside primarily in deeper waters. Lighter crude oils and refined petroleum products have a greater impact on fish than heavier oils due to their generally greater solubility and higher concentrations of toxic compounds.

Persistence

In general, the longer the oil is expected to persist on a shoreline, the higher the priority for protection. Long-term oil persistence can present chronic toxicity effects as well as affecting the natural sediment erosional and depositional processes. The potential persistence or residence time of stranded oil on a shoreline is primarily dependent on the:

- Degree of impact
- Type of shoreline
- Level of exposure to the elements

In general, higher degrees of impact, coarser, well sorted sediments, and lower levels of exposure to wind, waves, currents, and tidal flushing will increase the residence time of the oil on the shoreline. Coarser grain sediments usually permit the oil to penetrate deeper into the shoreline but can also allow for greater tidal flushing and natural degradation. Finer grained sediments typically inhibit penetration but if oil does become incorporated into the sediments, residence time will increase.

Lower levels of exposure, such as in protected inlets of bays, will increase the residence time due to the decreased natural abrasions caused by sediment movements and flushing action by wind, waves, and tide. Protected areas may also be shaded and calm which could inhibit evaporation and photo-oxidation.

Seasonal Effects

The primary season effect on biological resources is whether the specific resource is present at the time of the spill. This is especially true of birds and mammals. Plants may be affected differently depending on the timing of the spill relative to the plant's growing season. In general, oiling during the dormant winter season has the lowest impact, whereas oiling of vegetation during the summer growing season has longer effects.

3.3 RESOURCES AT RISK

3.3.1 Environmentally Sensitive Areas

Table 3.3-1 lists the environmentally sensitive areas that could be impacted by the worst case spill. These areas are between Santa Monica and Point Fermin and are identified in the Los Angeles / Long Beach Area Contingency Plan. The environmentally sensitive areas are shown in Figure 3.2-2.

3.3.2 Economically and Culturally Sensitive Areas

Table 3.3-2 lists the economically and culturally sensitive areas that could be impacted by the worst case spill. These areas are between Santa Monica and Point Fermin and taken from the Los Angeles / Long Beach Area Contingency Plan and other sources. The economically and culturally sensitive areas are shown on Figure 3.2-2.

TABLE 3.3-1
ENVIRONMENTALLY SENSITIVE AREAS

Location	Sensitive Resource
Venice Beach	California Least Tern California Grunion
Marina Del Rey Breakwater	California Brown Pelican
Ballona Lagoon Wetlands	California Least Tern California Brown Pelican Shorebirds Belding Savannah Sparrow Sea Birds Waterfowl
Hermosa Beach	California Grunion
King Harbor Breakwater	California Brown Pelican
Palos Verdes Peninsula	Intertidal Communities (gastropods, sea urchins, etc.) Lobsters Crabs Juvenile Fish
Point Fermin	Major Tidepool Abalone Peregrine Falcon Juvenile Fish

TABLE 3.3-2
ECONOMICALLY AND CULTURALLY SENSITIVE AREAS

Sensitive Area	Description
Santa Monica State Beach	Mid grain sized sand beach Popular visitor attraction
Venice City Beach	Mid grain sized sand beach Popular visitor attraction
Marina Del Rey	High usage marina
El Segundo City Beach	Popular beach area
El Porto County Beach	Popular beach area
Manhattan State Beach	Popular beach area
Manhattan Beach Municipal Pier	Municipal pier
Hermosa City Beach	Popular beach area
Hermosa Municipal Pier	Municipal pier
King Harbor	Municipal small craft harbor
Redondo State Beach	Popular beach area
Torrance County Beach	Popular beach area
Abalone Cove Ecological Preserve	Marine preserve
Palos Verde Shoreline Park	Visitor serving park
Royal Palms State Beach	Popular beach area

3.4 REQUIRED PREVENTION MEASURES

3.4.1 Testing, Maintaining, and Inspection

The pipeline is being designed to meet pipeline safety regulations as specified in 49 CFR Part 195. The following summarizes some of the key measures.

Line markers and signs - Line markers will be installed along the pipeline right-of-way. The markers and signs will be maintained in a readable condition and replaced when found missing or destroyed. a brightly colored strip will also be buried 12 to 18 inches above the pipeline.

Right-of-way - The pipeline right-of-way will be ridden at least once a week. The duties of the rider include the observation of right-of-way conditions, construction activity on or adjacent to the pipeline, encroachments, line marker condition, soil erosion, uncovered pipe, leaks, and any other condition which would place the pipeline or public in danger.

Corrosion control - Pipeline will be electrically surveyed at least once each year, but with intervals not exceeding 15 months. All rectifiers will be inspected at intervals not to exceed 2½ months, but at least 6 times each calendar year. The external protective coating will be inspected just prior to back filling. Each time the pipeline is exposed for any reason, the pipe will be inspected for coating deterioration and cathodic protection effectiveness.

Internal corrosion - Whenever a section of pipe is removed from a pipeline for any reason, the internal surface will be inspected for evidence of corrosion. If internal corrosion is found, the adjacent pipe will be investigated to determine the extent of the internal corrosion. The pipeline will be "smart pigged" prior to intial operation and then periodically as specified by the State Fire Marshal.

Valves - Mainline valves will be inspected at intervals not exceeding 7½ months, but at least twice each calendar year. Routine maintenance, such as the following, will also be conducted.

- Remove overgrown vegetation
- Pick up trash in area
- Perform recommended lubrication and cycle the valves as required
- Clean exterior surfaces

Overpressure safety devices - These devices (relief valves, pressure control equipment) will be inspected, calibrated, and tested, at intervals not exceeding 15 months, but at least each calendar year.

3.4.2 Methods to Reduce Spills During Transfer

The proposed pipeline will utilize several methods to reduce the potential for spills during transfer. These are described below.

Pressure switches - The pipeline pumps will be equipped with high and low pressure switches which will automatically shut down the pump in the event pressure if alls outside a preset range..

SCADA system - The pipeline will be equipped with a SCADA system that will measure and compare the flow rates and volumes of the oil as it leaves the production site and arrives at the Edison facility. Discrepancies exceeding a preset amount will alarm the pipeline controller and shut in the pipeline.

3.4.3 Communications Procedures During Transfer Operations

The SCADA system will monitor operation of the pipeline full time and will know when the pipeline is operating. No additional communication is necessary.

3.5 OTHER PREVENTION MEASURES

3.5.1 Risk Reduction Incentive Programs In Place

Macpherson will develop risk reduction incentive programs prior to submission of this plan to OSPR.

3.5.2 Leak Detection and Alarm Systems In Place

The pipeline will be equipped with a SCADA system that will monitor the operation of the pipeline and provide leak detection. In addition, transfer pumps will be equipped with pressure switches. The SCADA system and pressure switches are described in Section 2.1.

3.5.3 Automatic Controls

The SCADA system, transfer pump pressure switches, and tank level switches which start and stop the pumps are automatic controls that affect the operation of the pipeline system. The SCADA system will shut in the pipeline system if it detects a discrepancy in flow rates and/or volumes transported. The pressure switches will automatically shut down the pumps if a preset pressure is exceeded. The tank level switches automatically start and stop the transfer pumps based on the level of oil in the shipping tank.

3.5.4 Alcohol and Drug Testing Program

Information on the Macpherson alcohol and drug testing program will be added to this section prior to submission of this plan to OSPR.

3.5.5 Security and Surveillance

The Macpherson production facility, including pipeline transfer pumps, will be contained in a fenced area with restricted access. The pipeline route will be driven at least on a weekly basis.

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4.0 ON-WATER CONTAINMENT AND RECOVERY

4.1 REASONABLE WORST CASE RELEASE

The reasonable worst-case release was calculated to be 11 bbls of crude oil in Section 3.1.7. For analysis purposes, it has been assumed that this release enters a storm drain and is released into the ocean at the storm drain ocean outfall as shown in Figure 3.2-1.

4.2 PERSISTENCE AND EMULSION FACTORS

The produced oil is expected to be Group 3 which has a persistence factor of 0.5 and an emulsification factor of 2. Thus, the Response Planning Volume is 11 bbls x 0.5 (persistence factor) x 2 (emulsification factor) = 11 bbls.

4.3 RESPONSE CAPABILITY STANDARDS

Macpherson is required by the California Coastal Commission to become a member of Clean Coastal Waters, Inc. (CCW), or an equivalent federal- and California-approved offshore Oil Spill Response Organization (OSRO). The OSRO will be able to provide the necessary equipment to meet the shipping pipeline rate requirements of 11 bbls (response planning volume) within 6 hours.

4.4 NON-CASCADABLE EQUIPMENT

The Macpherson OSRO will have sufficient non-cascadable equipment to meet the 11 bbls response planning volume. This will be documented prior to submission of this plan to OSPR.

4.5 ON-WATER RESPONSE EQUIPMENT AND SERVICES

The Macpherson OSRO will be able to provide sufficient on-water response equipment and services to respond to the pipeline 11 bbl response planning volume. This will be documented prior to submission of this plan to OSPR.

4.6 ON-WATER RESPONSE AND RECOVERY STRATEGIES

The on-water response and recovery strategies that will be employed will be based on the size of the spill and the conditions present. Site strategy sheets for the identified trajectory area are contained in the Los Angeles/Long Beach Area Contingency Plan. Some general guidance for on-water response and recovery strategies follows:

Diversion Booming

One of the most critical considerations in the event of a substantial oil spill on water is to prevent the oil slick from impacting sensitive shoreline areas. One method of protecting a sensitive shoreline area from an oil slick is by diversion booming.

The response personnel need to reconnoiter the shoreline for accessibility up-current of the sensitive area that will provide for ingress and egress of equipment and materials. Once a site has been selected, one end of the boom must be anchored to the shoreline and, using a boat, the free end of the boom must be positioned at an angle to direct the flow of oil to shore (see Figure 4-1). If there is not a suitable area to collect the oil ahead of the sensitive area, the oil slick can be diverted away from the shoreline for containment and cleanup down-current of the sensitive area.

The optimum angle of boom deployment is dependent upon the type and length of boom used, the current velocity, and the shape and position of the approaching slick. Generally, the free end of the boom must be angled more sharply toward the shoreline as current velocity increases. To avoid boom failure in strong currents, the deployment angle decreases as boom length increases unless the boom is anchored at several places along its length. Refer to Figure 4-1 for optimum boom deployment angles as a function of current velocity.

Shallow Water Cleanup

A shallow water environment, generally water depths of six feet of less, presents unique problems to cleanup activities. Marine response vessels, even the smaller, fast response boats, are designed for service in deeper waters and may therefore not be able to access the area due to depth constraints. Response in shallow marine waters can be further complicated by wave and tidal activity as well as other factors such as kelp growth and sea floor conditions (i.e. rocks, reefs, etc.). Several response actions to shallow water cleanup are described below.

Absorbent Pads/Booms

If the spill is small, the use of absorbent pads or booms may be sufficient. If the use of absorbent pads or booms is not feasible, then sump and pump operations or skimmers used in conjunction with other barriers should be attempted.

Skimmers

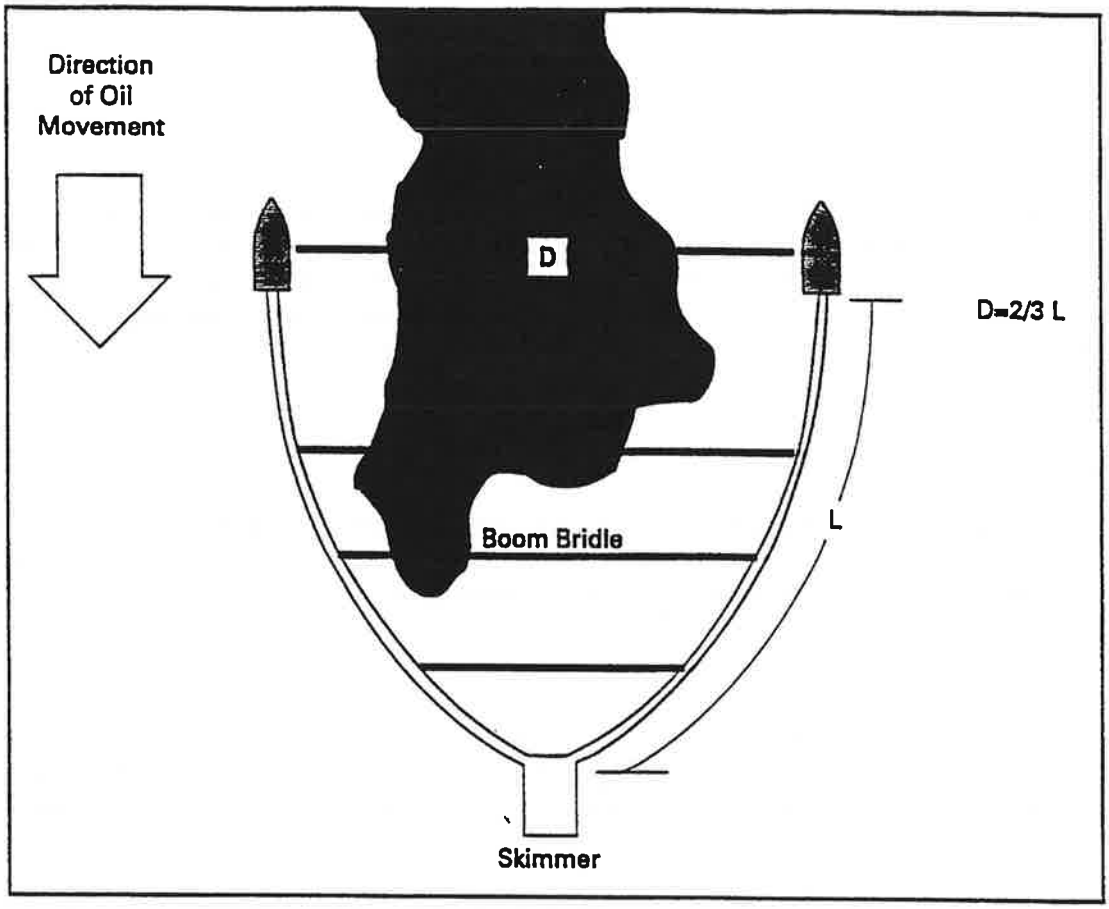
Several types of skimmers have been effective in a shallow water zone. In marine environments where the zone is free of kelp and other growth, belt skimmers have had some success. If the zone contains kelp beds a skimmer with screw pump or other type of shredding processor has reduced the frequency of interruptions of cleanup efforts due to equipment fouling.

Skimmers may be mounted on minimum draught motorized barges. These barges are also equipped with storage for removed product.

The barge operates within the contained area and does not leave the contained area until the area has been cleaned. If stored product must be removed or the barge re-fueled, the barge would proceed to the boom edge where transfer operations could take place.

Upon completion of service, the barge should be decontaminated within the containment area by hot water washing. The barge should then be removed from the contaminated area by crane for further decontamination or to another containment area for service.

If barge mounted skimmers cannot be put into service, then manually steered skimmers may be used. Manually steered skimmers are land based units. Pumping and removed product storage are maintained onshore.



Recovering large spills using two boats, boom bridles and skimmer.

Figure 4-1

Open Water Cleanup

The cleanup procedures to be utilized will depend upon the location of the incident and volume of oil spilled. The following section outlines procedures for the removal of oil from water. Actions to remove spilled oil from the water should begin immediately after containment actions have been initiated, assuming weather and sea conditions permit safe operations. In some cases, skimming barriers on board a support vessel will be deployed to recover the spilled oil. Other situations may dictate the use of a skimmer, working with containment booms, to remove the oil from the water surface. The collected oil and water will be transferred to an oil/water separator system on the response vessel, or taken to shore for handling.

Oil in water forms a slick and spreads into shapes dictated by the surface currents, winds, and physical boundaries. In the absence of physical boundaries, a circular, elliptical, or triangular slick will be formed. A circular slick is formed when no significant surface currents or winds exist. An elliptical shape forms with moderate surface currents and winds. High winds and currents will create a more triangular-shaped slick. The triangle will widen as the slick moves from the source. Wave actions, generally caused by winds, will distort these shapes, eventually forming windows of oil. The shape of the slick must be considered in deploying the boom and skimmer for efficient cleanup. Proper use of the skimmer depends on the boom deployment method. The use of skimmers with contained and uncontained spills is discussed below.

Contained Spills

A spill that is fully contained by booms is best cleaned up by a floating skimmer placed inside the boomed area. The oil will tend to concentrate against the boom in the direction of the wind and current. The skimmer should be placed in this area and continually moved to skim the thickest area. When skimming becomes inefficient – after most of the spill has been removed, or for small spills (less than one barrel) -- sorbent booms, pads, or rolls may be used. Loose sorbent materials should be avoided, however.

Uncontained Spills

Spills that are not contained form slicks which continue to spread and move freely according to the prevailing winds and currents. The primary method of recovering large, uncontained spills involves the use of skimming barriers. The barriers consist of sections of containment boom with weir-type skimming devices built into the center sections. A small raft fitted with pumps can be attached to the back of the barrier to transfer the recovered oil into an oil/water separator or storage tank. Typically, though, the response vessel's pumps are used to transfer the oil.

The skimming barriers are deployed in a "U" shape from both sides of the response vessel, with the outer ends of the barriers attached to outrigger booms. The booms are fixed to the rails of the vessel and secured by guy wires fore, aft, and vertically to a mast at the center of the vessel. Skimming speeds should not exceed 1 to 1.5 knots to avoid entrainment of oil under the barrier. Skimming should begin on the downwind side of the slick and move across the slick, staying on the downwind side.

Another method of recovering large spills involves the use of a skimmer working with booms and boats to concentrate the oil. This method is highly efficient, but difficult to implement in anything but calm sea conditions. Figure 4-1 shows the proper relationship of boats, booms, skimmer, and oil slick when it is possible to contain the entire advancing edge of the slick. Proper distance between the boats must

be carefully maintained to prevent oil from spilling from the "Vee", and to promote boom stability. This can be done by using boom bridles.

This distance is about two-thirds of the boom length. With a 500-foot boom length, the boats should remain about 300 feet apart. If the slick is too wide for the available boom, skimming should begin on the downwind side of the slick and move across the slick, staying on the downwind side with each pass. The velocity of the boats and skimmer should be about 1 knot while skimming. This type of operation should only be performed during calm sea conditions.

Spills that have not spread over a large area, or that have been driven into streamers by the wind and waves, do not require as much boom length. Small slicks can be successfully skimmed using 100 to 150 feet of boom on each leg, with the boats about 70 to 100 feet apart. Streamers should be skimmed using a similar configuration, beginning downwind and moving upwind along the streamer. The relative skimming velocity should not exceed 1.5 knots for these cases. Skimming equipment which can be used for open water skimming of uncontained spills, with booms, is available.

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5.1 SHORELINE RESPONSE PLANNING VOLUME

The produced oil is expected to be Group 3 which has a persistence factor of 0.5 and an emulsification factor of 2. Thus, the shoreline Response Planning Volume is:

11 bbls x 0.5 x 2 = 11 bbls

5.2 SHORELINE RESPONSE EQUIPMENT AND SERVICES

Macpherson will contract with a federal- and California-approved onshore response contractor prior to operation of the pipeline system. Prior to the start of operations of the pipeline, information regarding Macpherson's primary response contractor will be shown in this plan. This information will include a discussion of the contractor's shoreline response equipment and services. Macpherson also has access to other companies to provide equipment and services. A list of these can be found in Section 7.9.

Macpherson will store 500 sandbags dedicated exclusively to oil spill response within ½-mile of the production facility.

5.3 SHORELINE RESPONSE AND CLEANUP STRATEGIES

This section presents information on shoreline response and cleanup strategies that may be employed. It is emphasized here that shoreline response and cleanup techniques must be approved by the OSC prior to being implemented.

Personnel and Equipment Requirements for Shoreline Cleanup Operations

Tables 5-1 and 5-2 list information to be used when planning shoreline cleanup efforts.

Restoration

Restoration of Damaged Areas

The pipeline operator will revegetate and restore any contaminated areas to pre-spill conditions and restore damaged wildlife species to the extent feasible and practical. The following guidelines will be used to assess the damage resulting from the spill and cleanup operations:

- From observations during the cleanup operation, on-site reconnaissance and aerial photography evaluate the impacts of cleanup on sensitive habitats and develop recommendations for procedures to reduce cleanup impacts during any subsequent spill activity.

Table 9.4. Cleanup Techniques - Method 1.

CLEANUP TECHNIQUES			
Cleanup Technique	**Description**	**Primary Use of Cleanup Technique**	**Technique Requirements**
1. Mechanical Removal			
A) Motor Grader/ Elevating Scraper	Motor grader forms windrows for pickup by elevating scraper.	Used primarily on sand and gravel beaches where oil penetration is 0 to 1 inch and trafficability of beach is good. Can also be used on mudflats.	Good trafficability. Heavy equipment access.
B) Elevating Scraper	Elevating scraper picks up contaminated materials directly off beach.	Used on sand and gravel beaches where oil penetration is 0 to 1 inch. Can also be used on mudflats. Can be used to remove tar balls or flat patties from the surface of a beach.	Fair to good trafficability. Heavy equipment access.
C) Motor Grader/ Front-End Loader	Motor grader forms windrows for pickup by front-end loader.	Used on gravel and sand beaches where oil penetration is less than 0.5 to 1 inch. This method is slower than using a motor grader and elevating scraper but can be used when elevating scrapers are not available. Can be used on mudflats.	Good trafficability. Heavy equipment access.
D) Bulldozer/ Rubber-Tired Front-End Loador	Bulldozer pushes contaminated substrate into piles for pickump by front-end loader.	Used on coarse sand, gravel, or beaches where oil penetration is deep, oil contamination is extensive, and beach trafficability is poor. Can also be used to remove heavily oil-contaminated vegetation.	Heavy equipment access. Fair to good trafficability for front-end loader.
E) Backhoe	Operates from top of a bank or beach to remove contaminated sediments and loads debris into trucks.	Used to remove oil-contaminated sediment (primarily mud or silt) on steep banks.	Heavy equipment access. Stable substrate at top of bank.

Table 9.5. Cleanup Techniques - Methods: 1 and 2.

CLEANUP TECHNIQUES (CONTINUED)

Cleanup Technique	Description	Primary Use of Cleanup Technique	Technique Requirements
1. Mechanical Removal (Cont.)			
F) Front- End Loader: Rubber-Tired or Tracked	Front-end loader picks up material directly off beach & hauls it to unloading area.	Used on mud, sand, or gravel beaches when oil penetration is moderate and oil contamination is light to moderate. Rubber-tired front-end loaders are preferred because they are faster and minimize the disturbance to the surface. Front-end loaders are the preferred choice for removing cobble sediments. If rubber-tired loader cannot operate, tracked loaders are the next choice. Can also be used to remove extensively oil-contaminated vegetation.	Fair to good trafficability for rubber-tired loader. Heavy equipment access.
G) Dragline or Clamshell	Operates from top of contaminated area to remove oiled sediments.	Used on sand, gravel, or cobble beaches where trafficability is very poor (tracked equipment cannot operate) & oil contamination is extensive.	Heavy equipment access. Equipment reach covers contaminated areas.
H) Beach Cleaner	Picks up debris & small objects from surface of substrate.	Used to remove tar balls or flat patties from surface of beach. Can also remove small quantities of contaminated debris.	Light vehicular access. Fair to good trafficability.
2. Hydroblasting, Steam Cleaning, & Sand Blasting			
A) High Pressure Flushing (Hydroblasting)	High pressure water streams remove oil from substrate where it is channeled to the recovery area.	Used to remove oil coatings from boulders, rock, and human-made structures. Preferred method of removing oil from these surfaces.	Light vehicular access. Recovery equipment. Wildlife agency approval.
B) Steam Cleaning	Steam Removes oil from substrate where it is channeled to the recovery area.	Used to remove oil coatings from boulders, rock, and human-made structures.	Light vehicular access Recovery equipment. Fresh water supply. Wildlife agency approval.

Table 9.6. Cleanup Techniques - Methods: 2, 3, 4, 5, 6, and 7.

CLEANUP TECHNIQUES (CONTINUED)			
Cleanup Technique	**Description**	**Primary Use of Cleanup Technique**	**Technique Requirements**
2. Hydroblasting, Steam Cleaning, & Sand Blasting (Cont.)			
C). Sandblasting	Sand moving at high velocity removes oil from substrate.	Used to remove thin accumulations of oil residue from human-made structures.	Light vehicular access. Oil must be semi-solid. Need supply of clean sand.
3. Manual Removal	Oiled sediments & debris are removed by hand with shovels, rakes, wheelbarrows, etc.	Used on mud, sand, gravel, & cobble beaches when oil contamination is light or sporadic with slight oil penetration, or on beaches which are inaccessible to heavy equipment.	Foot or light vehicular access.
4. Low-Pressure Flushing	Low pressure water spray flushes oil from substrate where it is channeled to recovery points.	Used to flush light oils that are not sticky from lightly contaminated mud subtrates, cobbles, boulders rock, and human-made structures, & vegetation.	Light vehicular access Recovery equipment.
5. Sorbent Recovery	Sorbents manually to contaminated areas to soak up oil.	Used to remove pools of light, nonsticky oil from mud, boulders, rock, and human-made structures.	Foot or boat access. Disposal containers for sorbents.
6. Vegetation Cutting and Removal	Oiled vegetation is cut by hand, collected, & stuffed into bags or containers for disposal.	Used on oil contaminated vegetation.	Foot or boat access. Cutting tools. Disposal containers.
7. On-Site Burning	Upwind end of contaminated area is ignited & allowed to burn to the down-wind end.	Used on any substrate or vegetation where sufficient oil has collected to sustain ignition. Used only if oil is a type that supports ignition and air pollution regulations allow it.	Light vehicular or boat access. Fire control equipment. Approval of air pollution agency.

Table 9.7. Cleanup Techniques - Methods: 8, 9, and 10.

CLEANUP TECHNIQUES (CONTINUED)			
Cleanup Technique	**Description**	**Primary Use of Cleanup Technique**	**Technique Requirements**
8. Vacuum Trucks, Vacuum Pump, or Portable Skimmer	Oil collects in sump or behind booms as it moves down the beach & is removed by pump, vacuum truck, or portable skimmers.	Used on firm sand or mud beaches in the event of continuing oil contamination where sufficient longshore currents exist. Also used on streams & rivers in conjunction with diversion booming.	Heavy equipment access. Presence/absence of longshore current.
9. Oil Mop	Various size units to be used onshore or with boats in water with little or no currents.	Used to recover oil from natural or artificial containment.	Boat or light vehicle access. Little or no current.
10. Assisted Natural Recovery			
A) Push Contaminated Substrate into Surf	Bulldozer pushes contaminated substrate into surf zone to accelerate oil dispersion.	Used on contaminated cobble & lightly contaminated gravel beaches where removal of sediments may cause erosion of the beach or backshore area.	Heavy equipment access. High energy shoreline.
B) Disc into Substrate	Tractor pulls discing equipment along contaminated area.	Used on nonrecreational sand or gravel beaches that are lightly contaminated.	Heavy equipment access. Fair to good trafficability High energy environment.
C) Breaking up Pavement	Tractor fitted with a ripper is operated up and down the beach.	Used on 1) low amenity cobble, gravel, or sand beaches, 2) beaches where substrate removal will cause erosion, or 3) where thick layers of oil have created a pavement on the beach surface.	Heavy equipment access. High energy shoreline.

Table 9.8. Cleanup Techniques - Methods: 11 and 12.

CLEANUP TECHNIQUES (CONTINUED)			
Cleanup Technique	**Description**	**Primary Use of Cleanup Technique**	**Technique Requirements**
11. Substrate & Groundwater Contamination			
A) Removal by Excavation	Contaminated soil is excavated and replaced with clean soil.	Used on contaminated soils when drinking water wells are threatened & contamination does not exceed 20 to 30 feet.	Heavy excavation equipment access. Clean soil.
B) Recovery of Oil from Groundwater	Contaminated oil is pumped out.	Used on contaminated groundwater via recovery wells or by trenching.	Heavy equipment access.
C) In-Situ Treatment	Contaminated substrate is tilled into the ground or inorganic fertilizers are applied.	Used on contaminated soils where groundwater is not threatened or has been cleaned.	Heavy equipment access.
12. Natural Recovery	No action is taken. Oil is left to degrade naturally.	Used for oil contamination on high energy beaches (primarily cobble, boulder, & rock) where wave action will remove most oil contamination in a short period of time.	Exposed high energy environment.
13. Bioremediation	Nutrients and/or micro-organisms are applied to accelerate the degradation of the oil.	May be used on rocky or sandy beaches, in marshlands, or on pooled oils.	Formal application for use must be obtained.

- Using infrared aerial photography, ground reconnaissance, and other methods, map the extent of the visible damage from the spill and/or cleanup procedures. Determine acreage disturbance for each habitat and potential areas of secondary impact from erosion and other effects.

- Document the behavior of oil in each affected habitat type showing by photos or notes the specificity of the spill damage to specific areas or plant species in each area.

- Determine from affected habitat types the areas and species susceptible to prolonged damage from long-term oil residence times.

- Determine, through small cones, augers, etc., the depth of soil contamination.

- Develop an appropriate revegetation and rehabilitation plan based upon the assessment and habitat types affected.

- Develop a plan for monitoring areas for residual effects and/or monitoring movement or persistence of any oil left in place.

More specific procedures to determine the extent of injury to soils, surface water, and biological resources will be developed in consultation with the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and other agencies after a spill. These procedures will be tailored to the magnitude and location of the spill and the sensitivity of the resources affected. Based upon the results of the assessment and habitat type and species affected, the pipeline owner, in conjunction with appropriate federal, state, and local agency officials and others whose land has been affected, will develop a site-specific revegetation and rehabilitation plan for the affected area.

Presented below are guidelines to follow in developing a site-specific revegetation and rehabilitation plan. These guidelines may be modified slightly to reflect circumstances as they relate to a specific spill incident or affected plant species and habitat type. Revegetation and rehabilitation plans should include any or all of the following:

- The plan should detail all procedures for controlling water and wind erosion for an affected area and should include surface protection measures.

- Specific erosion control techniques and procedures will be developed in consultation with appropriate local, state, and federal government agency personnel and will be approved by them prior to implementation.

- Specific sediment control measures should be described and may include:

    - water spraying to prevent wind erosion;
    - the use of straw bales or silt fences to filter runoff;
    - mulching;
    - channel breaks;
    - level spreaders;
    - the use of jute netting.

- The plan should identify local sources and contractors to supply necessary quantities of compatible soil types in the event contaminated soils have to be replaced.

- Procedures to restore existing topography, substrate, or topsoil. This plan will detail methods for stream bank and bed restoration and for locating and replacing suitable topsoil in other areas.

- The plan should develop engineering designs to prevent further degradation of oil-damaged areas due to loss of vegetation.

- The plan shall detail all of the plant materials to be used for rehabilitation. This shall include all seeding mixtures including the species composition and seeding rate for each species. The use of any cuttings or seedlings should also be described, including any specific cultural practices necessary for propagation of these species and details of enclosures to protect these seedlings.

- Locally collected native plant materials shall be used whenever possible. The plan should provide a schedule providing for sufficient lead time to collect and propagate all materials to be used. The schedule should also detail all planting and seeding time. In the event that seeding cannot be performed for several months, interim mulching or seeding should be proposed.

- The plan should contain provisions for maintaining the restored areas. A schedule should be provided detailing all proposed maintenance. A monitoring program should be proposed that will detail the procedures for documenting the re-establishment of plant communities in oil-damaged areas.

Procedures contained in the revegetation plan will typically involve standard methods that are widely used in revegetating areas disturbed by construction activities which result in the crushing of vegetation or the removal of vegetation and soils. Special revegetation procedures may be required for areas affected by oil spills because of the potential toxic or inhibitory effects of spilled substances and/or chemical dispersants used to clean up the spill. These procedures include the following:

- Testing of all post-cleanup soils for fertility, pH, cation exchange capacity, micro-flora, micro-fauna, and residual level of contamination to ensure the soils used for revegetation are suitable.

- Application of special amendments or application of amendments in typical amounts in order to counteract any growth-inhibitory effect of residual soil contamination.

- Establishment of barriers around plantings to prevent contamination by runoff from affected areas during the initial growing stages and before decomposition of residual contaminants.

- Addition of amendments and/or micro-flora and micro-fauna to soils with residual contamination to increase rate of decomposition. Once response measures and rehabilitation and revegetation procedures have been completed, the pipeline owner will implement a rehabilitation monitoring program to assure that a suitable environment has been prepared for the re-establishment of native plant species and that the affected area has been returned to pre-spill conditions to the extent possible. The goals of the rehabilitation monitoring program will be directed toward:

    - Determining the actual impact of the spill on the environment;

    - Determining the short- and long-term success of the revegetation effort; and

- Monitoring areas where limited low-impact cleanup techniques were used to determine the need for any spot planting or seeding and/or protective measures to prevent erosion.

The rehabilitation monitoring program will be conducted in a manner reviewed and approved by agency officials and may include the hiring of a third party for the following:

- Establishment of long-term (3-5 years) observation and photo stations at the spill site to document changes in site condition during recovery;
- Establishment of permanent quantitative vegetation sampling sites in sensitive areas, including the use of random quadrants and/or line transects to collect vegetation data on the rate of growth;
- Collection of soil samples in the contaminated areas to conduct standard soil tests;
- Collection of surface water runoff and groundwater samples in any downstream areas to monitor levels of contaminants;
- Semi-quantitative census surveys of wildlife abundance and recolonization;
- Develop a contingency plan for use in the event that seed germination in some areas is unsuccessful.

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6.3 Action Checklists

This section contains the step-by-step responses necessary for emergencies which may arise from the pipeline system. Specific emergency responses are given according to the type of emergency, as follows:

6.3.1 Oil Spill and Fire

6.3.2 Oil Spill - No fire

6.3.3 Earthquake

6.3.4 Flood

6.3.5 Landslide

6.3.6 Wildland Fire

6.3.7 Demonstrations, Threats of Violence, or Civil Disorder - *including Bomb Threats*

6.3.8 Medical Emergency

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6.3.1 OIL SPILL AND FIRE

6.3.1.1 Control Center - if notified of a fire along the pipeline system

WARNING: Burning oil produces Sulfur Dioxide (SO_2), a toxic gas

PROTECT WORKERS AND PUBLIC FIRST!

TASK	PREDETERMINED ASSIGNMENTS	STATUS
Briefly assess situation, and obtain the name and phone number of the person reporting the fire; ascertain from the caller: - location of fire - extent of fire - extent of injuries - people or resources threatened	Senior Operator	___ Completed
Notify the Emergency Center for the affected City or County **(9-1-1)**	Senior Operator	___ Completed
Shut down the system; close block valves		
Notify Operations Manager on duty using current duty roster, and confirm that Operations Manager is in command and is notifying appropriate agencies - take command until confirmation is made, and notify agencies (refer to Incident Commander checklist) - maintain communications with Incident Commander once contact is established	Senior Operator Senior Operator	___ Completed ___ Completed

6.3.1.4 Incident Commander - upon notification of an oil spill and fire along the pipeline

WARNING: Burning oil produces Sulfur Dioxide (SO_2), a toxic gas

PROTECT WORKERS AND PUBLIC FIRST!

TASK	PREDETERMINED ASSIGNMENTS	STATUS
Take command - verify that the pipeline has been shut down (ESD), call to 9-1-1 and other appropriate actions have been taken	Incident Commander	___ Completed
Assess situation - dispatch personnel to confirm emergency	Incident Commander	___ Completed
Dispatch personnel to notify people at residences in the vicinity of a fire - assist people to move to a safe area (upwind)	Incident Commander	___ Completed
Call 9-1-1 to update the Emergency Center	Incident Commander	___ Completed
Shut in pipeline and all block valves - direct Chevron Control Center - direct field personnel to close valves, if necessary	Incident Commander	___ Completed
Activate the Oil Spill Contingency Plan		
Make all agency notifications	Incident Commander	___ Completed
Maintain communications with Chevron Control Center	Incident Commander	___ Completed
- confirm that agency notifications have been made, if necessary	Incident Commander	___ Completed

6.3.2 OIL SPILL - NO FIRE

6.3.2.1 Control Center - if notified of a spill along the pipeline system

WARNING: The flash point of crude oil may be below 100°F and it should be treated as a Class 3 Flammable Liquid - there is a possibility of fire if oil is exposed to an ignition source.

PROTECT WORKERS AND PUBLIC FIRST!

TASK	PREDETERMINED ASSIGNMENTS	STATUS
Briefly assess situation, and obtain the name and phone number of the person reporting the spill; ascertain from the caller: - location of spill - size of spill - resources threatened by spill - fire danger Inform caller of safety precautions to prevent ignition of the spill (no smoking)	Senior Operator	___ Completed
Notify the Emergency Center for the affected City or County **9-1-1**	Senior Operator	___ Completed
Shut down the system; close block valves		
Notify Operations Manager on duty using current duty roster, and confirm that System Foreman is in command and is notifying appropriate agencies - take command until confirmation is made, and notify agencies (refer to Incident Commander checklist) - maintain communications with Incident Commander once contact is established	Senior Operator Senior Operator	___ Completed ___ Completed

6.3.5 LANDSLIDE

IF A LANDSLIDE CAUSES AN OIL SPILL OR FIRE, REFER TO APPROPRIATE CHECKLIST

IF A LANDSLIDE CAUSES INJURIES REQUIRING MEDICAL ATTENTION, REFER TO APPROPRIATE CHECKLIST

PROTECT WORKERS AND PUBLIC FIRST!

TASK	PREDETERMINED ASSIGNMENTS	STATUS
Notify Operations Manager - if unavailable, take command until relieved by a senior employee	On-Site Employee	___ Completed
Assess the situation - dispatch personnel to pump stations and to the landslide area to monitor conditions that may pose a danger to normal pipeline operations	Incident Commander / On-Site Employee	___ Completed
Notify Chevron Control Center	Incident Commander	___ Completed
Shut down the pipeline system, if necessary - if necessary, dispatch crew to close valves at valve vaults, only after testing the vault atmosphere in accordance with confined space entry procedures	Incident Commander	___ Completed
Conduct thorough inspection of all piping and valves for damage - damage may be assumed if any release or leak is seen, or if cracks are noted in any foundation, flange, pipework, etc.	Incident Commander	___ Completed
Isolate and repair any damage detected	On-Site Employee	___ Completed
Perform a standup pressure test, if necessary	System Foreman	___ Completed
Restart system, if no damage is detected	System Foreman	___ Completed

6.3.6 WILDLAND OR ADJACENT PROPERTY FIRE

IF A WILDLAND FIRE CAUSES AN OIL SPILL OR FIRE,
REFER TO APPROPRIATE CHECKLIST

IF A WILDLAND FIRE CAUSES INJURIES REQUIRING MEDICAL ATTENTION,
REFER TO APPROPRIATE CHECKLIST

PROTECT WORKERS AND PUBLIC FIRST!

TASK	PREDETERMINED ASSIGNMENTS	STATUS
Call **9-1-1** to notify the local Emergency Center	On-Site Employee	___ Completed
Briefly assess the situation - location of fire - estimated size of fire - extent of injuries - general circumstances - potential danger to normal pipeline operations	On-Site Employee	___ Completed
Notify Chevron Control Center		
Notify Operations Manager - if unavailable, take command until relieved by a senior employee	On-Site Employee	___ Completed
Control any source of potential fuel for the fire that may be originating from the pipeline system - shut down the pipeline, if it is providing a source of fuel for the fire (otherwise, flow must be maintained to cool the steel pipe)	On-Site Employee Incident Commander	___ Completed ___ Completed
Assist Fire Department personnel, as requested	On-Site Employee	___ Completed

6.3.7 DEMONSTRATIONS, THREATS OF VIOLENCE, OR CIVIL DISORDER

INCLUDING BOMB THREAT

PROTECT WORKERS AND PUBLIC FIRST!

TASK	PREDETERMINED ASSIGNMENTS	STATUS
Assess situation - use procedures on following page - do not search for explosive devices	Employee	___ Completed
Call **9-1-1** to notify the local Emergency Center	Employee	___ Completed
Notify Operations Manager - if unavailable, take command until relieved by a senior employee	Employee	___ Completed
If it is safe to do so, photograph demonstrating crowds, threatening individuals, and damaged facilities	Incident Commander	___ Completed

Macpherson Procedures for Handling Demonstrations, Threats of Violence, or Civil Disorder

Each employee is directed to become familiar with the following procedures so that any occurrence of actual or threatened violence can be handled in an efficient and systematic manner. Injuries to personnel and damage to properties can be minimized if each employee is adequately instructed and prepared to handle a threatening situation calmly and decisively as outlined below.

Carefully study the guidelines below so that you will be able to put into practice the instructions that are given. These instructions outline procedures to be followed where emergency measures may be required and/or when civil authorities and new representatives are at the scene. Although circumstances may vary widely, the instructions should be studied and reviewed at company safety meetings and supervisory meetings.

Many times persons making a violent threat will deliver the message to the first person contacted, such as the telephone operator, a receptionist, or a secretary. If the caller asks to speak to someone with the company without naming a specific individual, the call should be directed to the designated representative or his alternate. All personnel should be aware of who the designated representative is for their locations.

The person receiving the call should try to determine the following information by listening carefully to the caller:

- Apparent age of caller (i.e. teenager)
- Accent, if any
- Apparent sex
- Emotional status of caller

In the case of a telephone threat of violence, experience of law enforcement officials indicates that if the person receiving the call ***calmly*** **asks for details about the threat**, the caller will frequently provide more information. For example, in the case of a bomb threat, if the caller seems willing to stay on the line, try to trace the call and attempt to ascertain the following:

- Exact location of the bomb
- When it is set to go off
- What kind and size of bomb
- Why it was placed there
- How did it get into the facility
- Information about the caller

If a threat is received or a demonstration of violence is suspected or is actually occurring, **DO *NOT* ATTEMPT TO HANDLE THE SITUATION ALONE.**

Primary responsibility for the coordination and direction of activities at the scene, including press relations, shall rest with the Operations Manager or the highest ranking supervisor present.

6.3.8 MEDICAL EMERGENCY

6.3.8.1 Control Center - if notified of a medical emergency along the pipeline system

PROTECT WORKERS AND PUBLIC FIRST!

TASK	PREDETERMINED ASSIGNMENTS	STATUS
Gather information of injury - type of injury - location of injured	Senior Operator	___ Completed
Call **9-1-1** and report above information	Senior Operator	___ Completed
Notify Operations Manager on duty using current duty roster. Dispatch personnel to location of injury.	Senior Operator	___ Completed
Refer to appropriate checklist if an oil spill, fire, or other incident cause medical emergency.	Senior Operator	___ Completed

6.3.8.2 Macpherson Employee - upon discovery of a medical emergency along the pipeline

PROTECT WORKERS AND PUBLIC FIRST!

TASK	PREDETERMINED ASSIGNMENTS	STATUS
Call **9-1-1** and report the above - location of injured - type of injury	Employee	___ Completed
Ensure that injured or medically impaired persons are given first aid and made as comfortable as possible while awaiting arrival of trained emergency medical personnel	Employee	___ Completed
Notify Chevron Control Center	Employee	___ Completed
Notify Operations Manager	Employee	___ Completed
Refer to appropriate checklist if an oil spill, fire, or other incident caused medical emergency	Employee	___ Completed

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6.4 IMMEDIATE RESPONSE EMERGENCY SERVICES

6.4.1 Control of Incidents

The Incident Commander will deploy such resources available to control the incident until arrival of response teams. These actions include:

(1) Assess actual and potential impact of the incident.

(2) Rescue.

(3) Exposure Protection.

(4) Direct the first aid team, establish an emergency location for personnel.

(5) Shut-off the product supply.

(6) Containment of a spill.

(7) Extinguish fires.

(8) Mobilization of off-duty personnel.

(9) Establish communications with internal and external functions.

(10) Access and effect evacuation if required.

(11) Assure appropriate protective gear and other emergency equipment is functional and available.

(12) Maintain safe emergency conditions for personnel.

(13) Assure appropriate shutdowns are completed.

(14) Control vehicular traffic at the area of the incident.

(15) Conduct monitoring of the operations for any unsafe conditions.

6.4.2 Medical Treatment

For any medical emergency, on-site personnel will respond immediately, to rescue if necessary and administer first aid treatment, for which they have been trained, to the injured. If injuries require more than first aid treatment, on-site personnel will promptly request medical assistance from the Fire Department by calling **9-1-1** services and stabilizing the injured until paramedics and/or rescue teams arrive on scene. On-site personnel will assist the Fire Department personnel when requested.

(1) In the case of medical emergency, and the Paramedics are necessary, assure that **9-1-1** has been called.

(2) Ensure that injured or medically imperiled persons are given basic first aid and made as comfortable as possible while awaiting arrival of trained emergency medical personnel.

(3) Notify the Operations Manager and the Field Supervisor.

6.5 RESPONSE EQUIPMENT AND PROCEDURES

6.5.1 General

Macpherson actively promotes safety awareness among its employees, contractors, and visitors. Shown in this section are oil spill mitigation measures to be used for the new produced crude oil shipping pipeline.

6.5.2 Material Safety Data Sheets

The following describes the potential hazard of crude oil:

CRUDE OIL CRUDE OIL CONTAINS SULFUR AND TRACES OF H_2S (<1 PPM). THE H_2S IS NOT IN HIGH ENOUGH CONCENTRATIONS TO PRESENT A DANGER. BURNING SULFUR PRODUCES SULFUR DIOXIDE (SO_2) WHICH IS TOXIC. CRUDE OIL HAS A FLASH POINT BELOW 100°F, AND SHOULD BE TREATED AS A CLASS 3 FLAMMABLE LIQUID. THE POSSIBILITY OF IGNITION OF AN OIL SPILL IS VERY HIGH.

6.5.3 Vapor Cloud Hazards

Petroleum hydrocarbon liquids vaporize to some extent when exposed to the atmosphere. The rate at which the liquid vaporizes varies for different types of liquids. Crude oil can contain a broad mixture of hydrocarbons, and the relatively small amount of "lighter" components of the mixture vaporize more easily than the heavier components. In contrast, gas is already vaporized.

A release of crude oil can result in flammable vapors. A hydrocarbon spill is an emergency incident involving a flammable hazardous material, and special precautions must be taken to avoid ignition of the liquid and the vapors that are present in the area of the spill. Response personnel should ensure that workers and the public do not smoke in the area of a spill, and that ignition sources such as automobile engines are not brought into contact with the flammable vapors.

Emergency response personnel should use gas analyzers and self-contained breathing apparatus when approaching a spill or release, to identify the danger of flammable vapors and to avoid being overcome by the fumes. The source of the spill should always be approached from an upwind location. If conditions appear to favor formation of a vapor cloud, response personnel should report the situation to the Incident Commander before taking any actions to close valves or contain a spill engulfed in the vapor cloud.

In the event of a spill or gas release, emergency response personnel must ensure that smoking is strictly prohibited in the area, and that all sources of ignition (such as automobile engines and workboat/vessel motors) are turned off or otherwise eliminated. Response personnel must also take special care when working to contain a spill or gas release, so that equipment that generates static electricity (such as moving machinery or water flowing from a fire hose) does not ignite the vapor.

6.5.4 Safety-Related Conditions

Every employee should be concerned about any potentially unsafe condition that threatens to cause a release of hazardous material, damage to facilities or property, or injury to workers or the public.

Personnel should be generally concerned about any of the following types of conditions:

(1) Unsafe conditions within a right-of-way on a paved street or highway

(2) Unsafe conditions within one-eighth of a mile (220 yards) of any building intended for human occupancy or outdoor assembly

(3) Unsafe conditions that could cause a release of or threaten the release of crude oil into a storm drain or marine environment

(4) The types of unsafe conditions that would require reporting including the items listed below.

(5) Corrosion that has reduced the wall thickness of the pipeline to the point where it threatens the integrity of the material

(6) Corrosion pitting that has advanced to a point where leakage might occur

(7) Unintended movement or abnormal loading of equipment by environmental causes, such as an earthquake, landslide, or flood

(8) A material defect or physical damage that impairs the serviceability of the pipeline

(9) A malfunction or abnormal operating condition that causes the pipeline pressure to rise significantly above its maximum operating pressure

(10) A safety-related condition that could lead to an imminent hazard and loss of liquids, requiring a significant reduction in operating pressure or shut down of the pipeline

(11) A leak in the pipeline that constitutes an emergency situation

(12) A safety-related condition that results in an accident

(13) A safety-related condition that has been corrected by repair or replacement of the suspect problem, in accordance with applicable safety standards

Pipeline supervision should be notified immediately by any employee discovering or receiving a report of an unsafe condition.

6.5.5 Safety and Health Plan

For emergencies involving hazardous materials, a Site Safety and Health Plan is completed by the Incident Commander (with assistance from the Safety Officer) prior to response activities, as required under Federal Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1910.120), and State of California OSHA regulations (8 CCR 45192). A copy of the Site Safety and Health Plan is contained in Appendix B.

6.5.6 Accident/Incident Investigation Report

In the event of an accident or emergency incident, an Accidental Occurrence Investigation form is used to document information for Company operations, safety, and loss prevention managers.

The Incident Notification Report form is used to report details of the following types of incidents:

(1) Fires and potential fires

(2) Environmental losses (leaks and spills)

(3) Contractor fatality

(4) Contractor injury or illness

(5) Comprehensive general liability (injury or property damage sustained by others)

(6) Property, product, and contamination losses

(7) Any other serious incident

The Production Foreman is responsible for collecting information and statements to complete the report. The Production Foreman is responsible for reviewing the report and submitting it to Company management.

The Incident Notification Report form is presented in Figure 6-2 for reference.

FIGURE 6-2
INCIDENT NOTIFICATION REPORT FORM

REPORT OF OIL/SUBSTANCES SPILL

Date	Incident Location		
Material Spilled			
Quantity Spilled As: Crude Gals. _____ Bbls. _____			
Quantity/Percent Recovered	Spill Date/Time ___ AM ___ PM	Receiving Medium: Water _____ Land _____	Paving _____ Deck _____
Spill Reported Yes ____ No ____	National Response Center (USCG)	EPA Regional Office	State Agency (Name) Local Agency (Name)
Other (Identify)			
Notice of Violation Yes ____ No ____	Penalty Assessed $ _____ Paid $ _____	Est. Cleanup Cost $ _____ Est Post Surveillance Required $ _____ Est. Damages $ _____ Costs Rebilled to Others $ _____	

Source of Spill:	Tank		Piping	
	Sump		Unknown	
	Pipeline		Other (Identify):	
	Equipment		( )	

Cause of Spill: (check)	Operator Error		Design Malfunction	
	Corrosion External		Act of God	
	Corrosion Internal		Non–Company	
	Faulty Procedure		Unknown	
	Mechanical Failure			

Describe How Spill Occurred and Any Effect It May Have Had On Other's Property.
Degree of Public, Press, or Regulartoy Attention.
Disposal Method of Recovered Material (if any).
Action Taken to Prevent Recurrence (if applicable).

Witnesses to Spill:	Name _____	
	Affiliation _____	
	Address _____	
Report Prepared By:		Report Approved By:

6.5.7 Access to Spill Site

Vehicular and pedestrian access to the spill site should be controlled to the extent possible prior to the arrival of law enforcement officers and other professionals trained to handle traffic control.

Until agencies respond to the scene and take control, vehicles can be used to block traffic flow on streets leading to the spill site, if it is safe to do so. Do not operate vehicles at the scene of a spill where a flammable vapor cloud may be present. If possible, enlist volunteers to keep vehicles and pedestrians from entering the spill area. Do not use road flares in the area of the spill or at a location where the spill or vapors could spread and ignite. When agency authorities arrive, brief them of the location and hazard of the spill, and provide assistance as directed.

Control of marine traffic should be attempted prior to the arrival of Coast Guard response vessels by alerting vessel operators of the spill hazard using marine radios, if possible. Marine channel 16 is typically monitored by vessels as a designated emergency and hailing frequency. Use channel 16 to gain contact with a vessel, then change to a mutually agreed-upon channel for communications. This keeps the emergency and hailing frequency clear for other users. The U.S. Coast Guard port offices and vessels continuously monitor channel 16, and can be contacted on this frequency.

6.5.8 Designation of Exclusion, Decontamination, and Safe Zones

Activities required during responses to emergency incidents involving hazardous substances may contribute to the movement of contaminants from the site to unaffected areas. Both response personnel and their equipment may become contaminated and, if their movement is not strictly controlled, could potentially result in contaminants being carried into clean areas. To minimize the transfer of hazardous substances from the site as a result of response activities, contamination control and decontamination procedures are needed.

Contamination Control

The **Incident Commander/Safety Officer** will establish control at a contaminated response site to reduce the possibility of exposure to any contaminants including their transport by personnel and/or equipment from the site. Various procedures include:

- Set up security and physical barriers to exclude unnecessary personnel and visitors from the contaminated area.
- Minimize the number of personnel and equipment onsite consistent with effective operations.
- Establish work zones within the site to reduce the migration of hazardous substances from contaminated areas to clean areas.
- Establish control points to regulate access to work zones.
- Conduct operations in a manner that reduces exposure of personnel and equipment and the potential for airborne dispersion.

Work Zones and Control Points

Work zones prevent or reduce the migration of contamination from a site where operations occur and access control points limit the movement of personnel and equipment between zones and onto the site itself. By these means, contamination is contained within relatively small areas and its potential for spread is minimized.

The **Incident Commander/Safety Officer** will establish three contiguous zones surrounding each separate contaminated area on the site where response operations are to take place. These zones will include:

- Zone 1: Exclusion Zone.
- Zone 2: Contamination Reduction Zone.
- Zone 3: Support Zone.

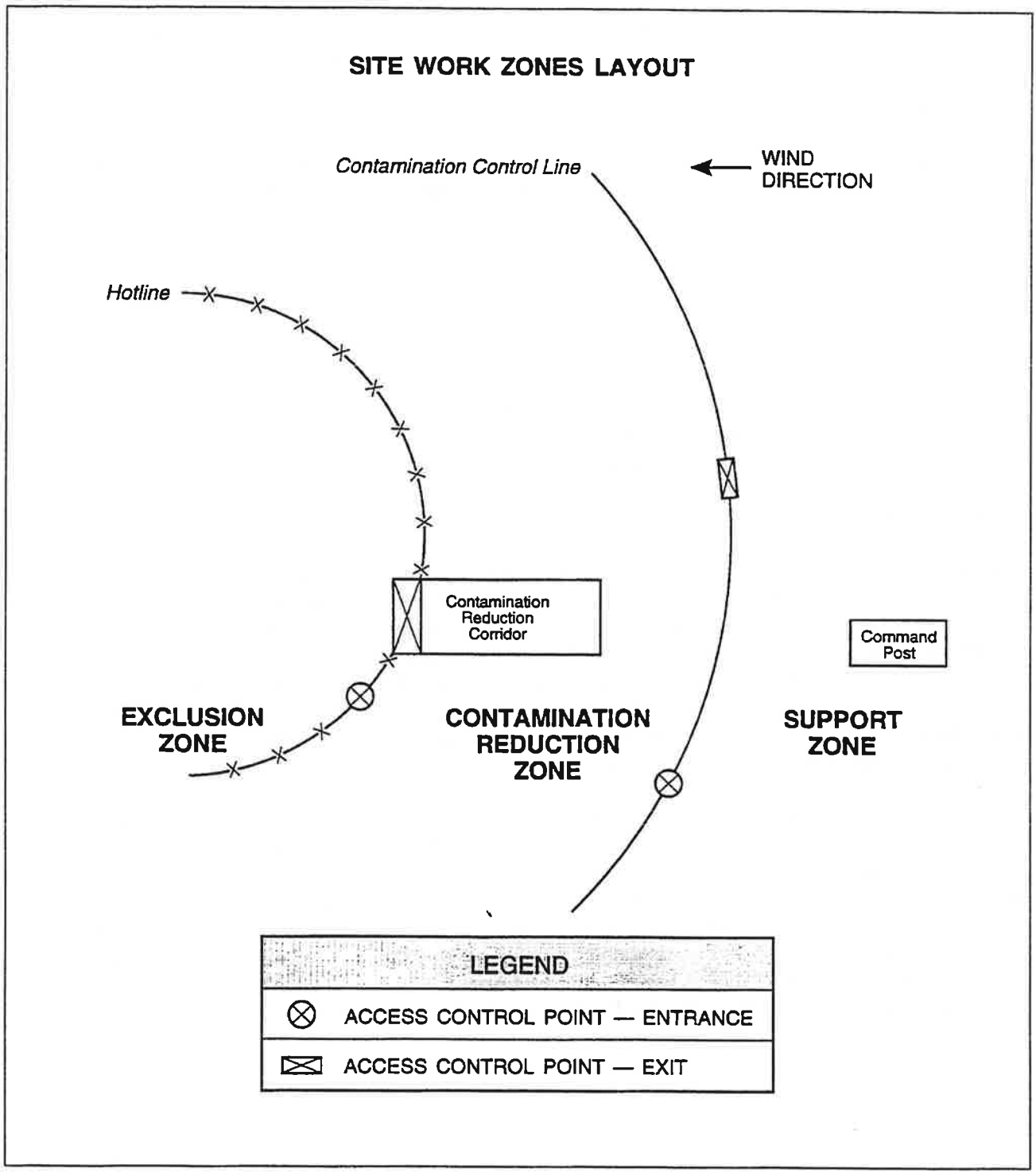
An example of a work zone plan is provided in the Figure 6-3. Movement of personnel and equipment into and out of the contaminated areas and between zones will be limited to access control points located upwind of the contaminated area.

Zone 1: Exclusion Zone

The Exclusion Zone (Zone 1), the innermost of the three contiguous zones, is the zone where contamination is known or suspected to occur based on the results of the preliminary site characterization. All personnel working in the Exclusion Zone will be required to wear the specified Levels of Protection. (Different Levels of Protection in the Exclusion Zone may be designated based on site-specific subarea conditions and job assignments.) An entry and exit access control point will be established to regulate the flow of personnel and equipment into and out of the zone and to verify that the procedures established to enter and exit are followed. The access control point will be located upwind of the contaminated areas along the outer boundary (i.e., the Hotline) of Zone 1.

The Hotline will be clearly marked for easy identification. The Hotline will initially be established by visually surveying the immediate area of the incident and determining the locations of the involved hazardous substance(s), leachate, and/or spilled material, and any drainage; and whether any discolorations are visible. Guidance in determining the boundary will also be provided from monitoring data obtained during the initial site survey. Additional factors that will be considered include the distances needed to prevent fire and/or an explosion from affecting personnel outside the zone, the physical area needed to conduct response operations, and the potential for contaminants to be blown from the area. The boundary may be modified and adjusted over time as more information becomes available.

FIGURE 6-3


SITE WORK ZONES LAYOUT
Contamination Control Line
WIND DIRECTION
Hotline
Contamination Reduction Corridor
Command Post
EXCLUSION ZONE
CONTAMINATION REDUCTION ZONE
SUPPORT ZONE
LEGEND
ACCESS CONTROL POINT — ENTRANCE
ACCESS CONTROL POINT — EXIT

Zone 2: Contamination Reduction Zone

The Contamination Reduction Zone (Zone 2) is located between the Exclusion and Support Zones. Initially, it will be a clean area designed to provide a transition between contaminated and clean areas. Zone 2 serves as a buffer to further reduce the probability of the clean zone from becoming contaminated or from being affected by other existing hazards. Decontamination of personal protective clothing and equipment will take place at a series of stations within the Contamination Reduction Corridor. This corridor extends from the Hotline of the Exclusion Zone through the Contamination Reduction Zone (refer to Figure 6-4).

The boundary between the Contamination Reduction Zone and the Support Zone (Zone 3) is the Contamination Control Line. Entry and exit between Zones 2 and 3 will be restricted to access control points upwind of Zone 1 on the Contamination Control Line. Personnel entering Zone 2 will be required to wear the prescribed personal protective equipment and those entering the Zone 3 will be required to remove any personal protective equipment worn in Zone 2.

Zone 3: Support Zone

The Support Zone (Zone 3), the outermost part of the site, is a clean area that may include a Field Command Post, transport vehicles, equipment, supplies, etc. Its location is dependent on accessibility, wind direction (ideally upwind from Zone 1; however, wind shifts may preclude this), and availability of resources, power, water, and shelter. Normal work clothes are appropriate for this zone. No contaminated clothing, equipment, samples will be permitted in this zone. Traffic will be restricted to authorized response personnel.

Decontamination

The **Incident Commander/Safety Officer** will develop specific decontamination procedures for personal protective equipment and field equipment. Separate but similar procedures will be established for both field and personal protective equipment to prevent the transfer of contaminants from the Exclusion Zone. All field equipment will be transferred from the Exclusion Zone through a separate corridor in the Contamination Reduction Corridor to a central pad in the Support Zone or to another location. (Decontamination of sampling equipment for quality assurance reasons is considered a separate issue from these procedures.) A separate access corridor for the transport of noncontaminated equipment and personnel will extend from the Support Zone directly into the Exclusion Zone. Examples of a Contamination Reduction Zone Layout (Figure 6-4) and a general Decontamination Area Layout (Figure 6-5) are shown on the following two pages.

Personal protective equipment decontamination will take place at a series of stations placed at three-foot intervals within the Contamination Reduction Corridor. The number of stations will depend on the amount and type of personal protective equipment. The maximum number of decontamination stations will be required for personnel wearing Level A personal protective equipment. Decontamination procedures for lower levels of protection will consist of fewer decontamination stages for the amount of equipment worn or involve the elimination of wash and rinse stages when disposable clothing is used. A summary of the decontamination stations associated with Level A protection generally required for most hazardous waste site work is shown in Figure 6-5.

The **Incident Commander/Safety Officer** will identify the amounts and types of decontamination equipment and supplies required for site operations. He will also develop specific procedures for decontamination of equipment. In developing these procedures, he will determine, using regulatory.

FIGURE 6-4

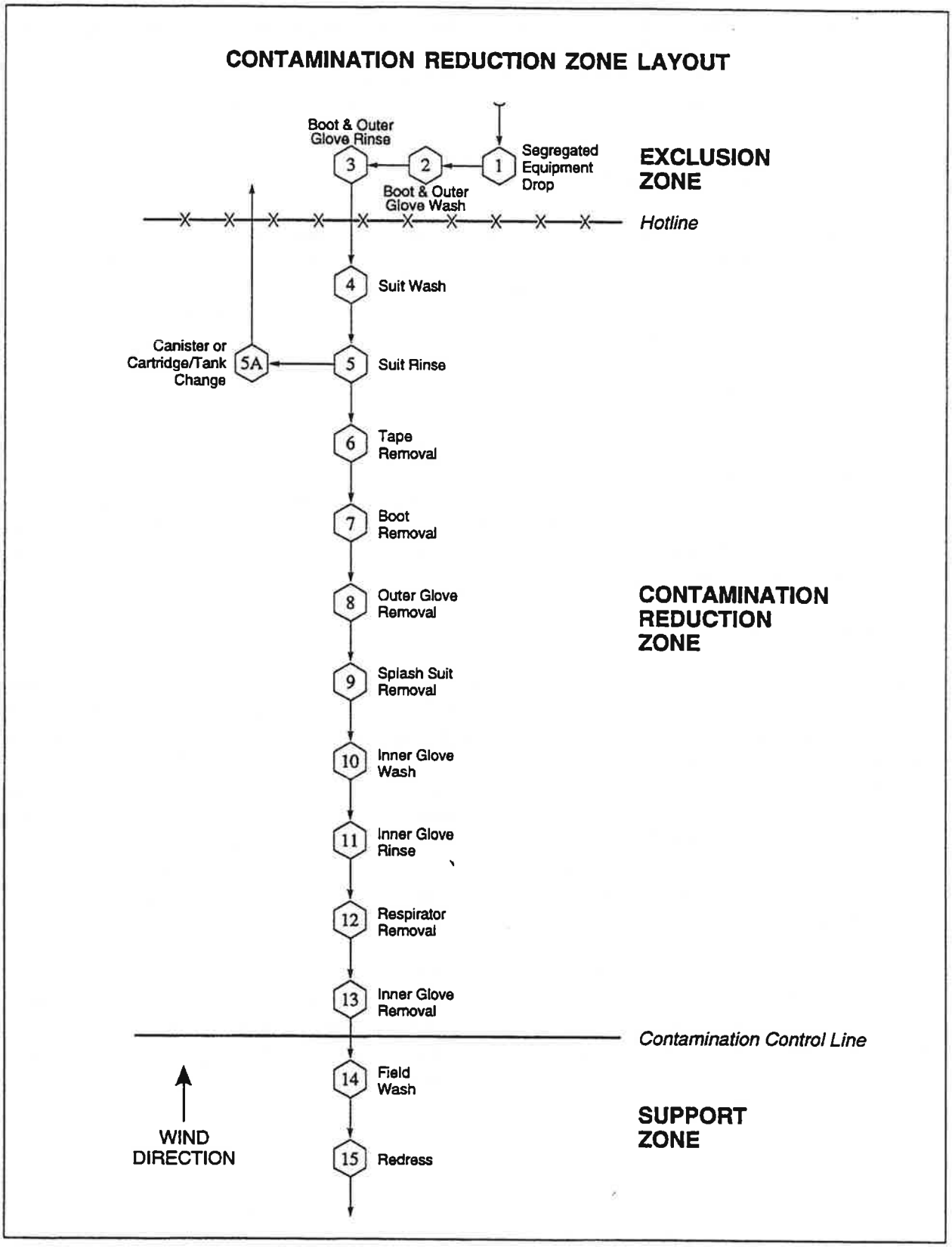
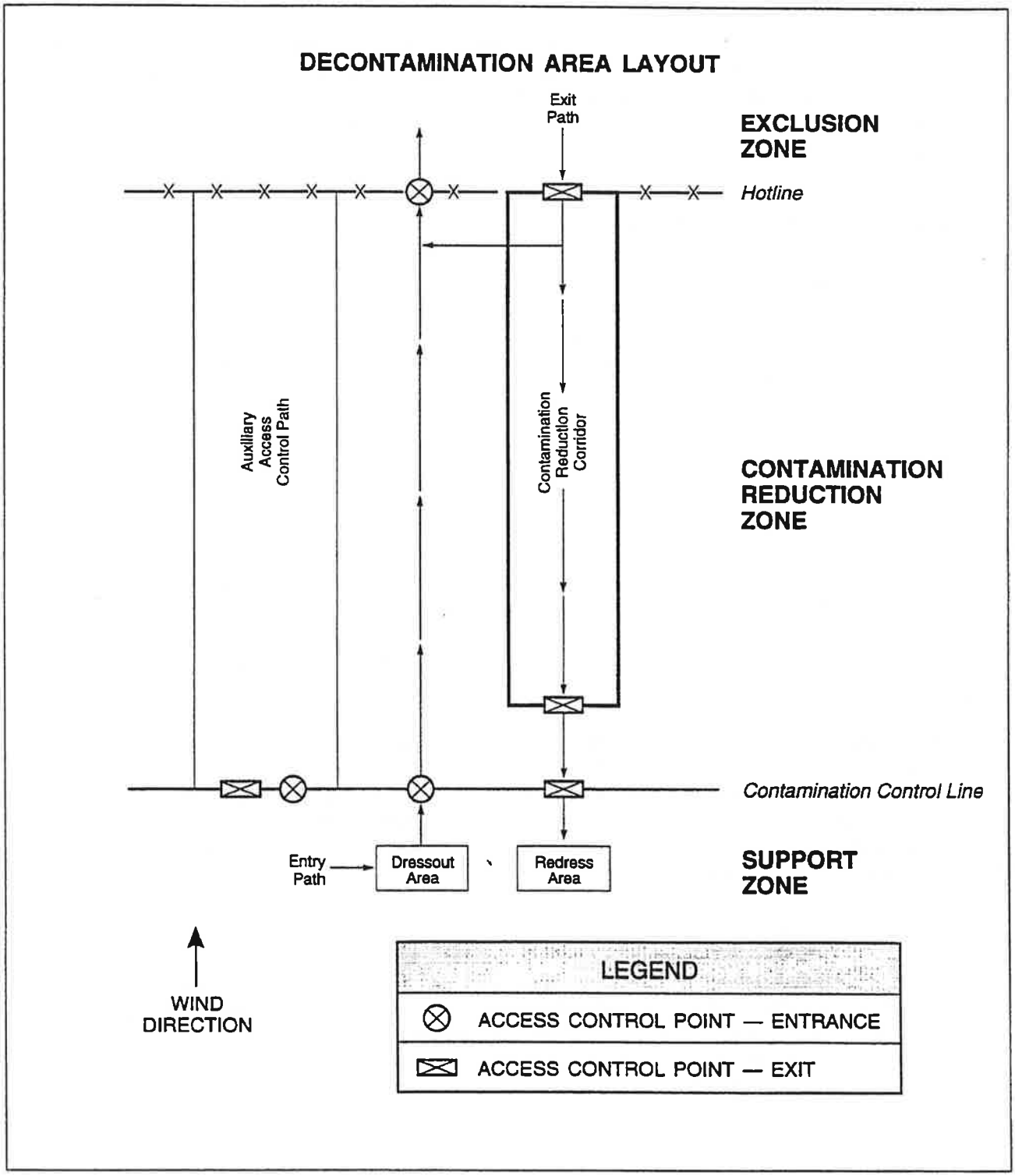

CONTAMINATION REDUCTION ZONE LAYOUT
Boot & Outer Glove Rinse
3
2
1
Segregated Equipment Drop
Boot & Outer Glove Wash
EXCLUSION ZONE
Hotline
4
Suit Wash
Canister or Cartridge/Tank Change
5A
5
Suit Rinse
6
Tape Removal
7
Boot Removal
8
Outer Glove Removal
CONTAMINATION REDUCTION ZONE
9
Splash Suit Removal
10
Inner Glove Wash
11
Inner Glove Rinse
12
Respirator Removal
13
Inner Glove Removal
Contamination Control Line
14
Field Wash
SUPPORT ZONE
WIND DIRECTION
15
Redress

FIGURE 6-5


DECONTAMINATION AREA LAYOUT
Exit Path
EXCLUSION ZONE
Hotline
Auxiliary Access Control Path
Contamination Reduction Corridor
CONTAMINATION REDUCTION ZONE
Contamination Control Line
Entry Path
Dressout Area
Redress Area
SUPPORT ZONE
WIND DIRECTION
LEGEND
ACCESS CONTROL POINT — ENTRANCE
ACCESS CONTROL POINT — EXIT

At the completion of operations, the decontamination area(s) will be decommissioned. The transport and disposal of all waste materials will be managed by the **Waste Disposal Supervisor** in accordance with all state and federal regulations and requirements.

All contaminated equipment will be scrubbed and rinsed and contaminated clothing and supplies will be placed in plastic lined garbage cans or similar containers. At the end of each day, the bags of contaminated clothing and materials will be transferred to a secure, central, temporary storage location. Spent wash and rinse solutions will also be transferred to drums or similar containers for temporary onsite storage.

6.5.9 Government Coordination During a Spill

On-Scene Coordinator (OSC)

In accordance with Section 311(d) of the Clean Water Act, the United States may coordinate and direct all public and private efforts to abate any substantial threat of a pollution hazard in or upon the navigable waters of the United States. For operations in offshore waters, the National Oil and Hazardous Substances Contingency Plan allows the U.S. Coast Guard to appoint an On-Scene Coordinator (OSC) to supervise responses to major spills. If the OSC considers federal involvement necessary, Macpherson's activities will be conducted in accordance with the OSC's directions.

The pipeline owner will notify the U.S. Coast Guard of any spill into navigable waters, along with the known circumstances (refer to Section 7). Communication with the OSC or designated alternate will be maintained throughout the response effort to provide information concerning spill size, weather and sea conditions, response procedures and effectiveness, and assistance required. The qualified individual will be responsible for the maintenance of communications with the OSC. The qualified individual will ensure that any information requested by the OSC is provided, and that any orders from the OSC concerning the response actions are obeyed.

The National Oil and Hazardous Substances Pollution Contingency Plan provides a framework for the management of oil spill response efforts under the direction of the OSC. The OSC will monitor all oil spill response efforts implemented by response personnel. At the request of Macpherson or if in the OSC's opinion the response effort can be improved, the OSC can request technical assistance from various specialized response personnel. Primary response sources available to the OSC and Macpherson are briefly described below.

Regional Response Team (RRT)

The Regional Response Team (RRT) can advise the OSC on the duration and extent of the federal response and can recommend courses of action for consideration by the OSC. The Regional Contingency Plan (under development) provides information on cleanup facilities and commercial, academic, and government resources available in the region. This Regional Plan is developed by the RRT (and the State) to promote coordinated response efforts for the Pacific Region.

Scientific Support Coordinator (SSC)

Another specialized spill response resource is the Scientific Support Coordinator (SSC). Through the SSC, the National Oceanic and Atmospheric Administration can support the RRT and OSC by reporting information on marine mammals, endangered species, oil spill trajectory, and

weather information which may be useful in developing further response strategies. The SSC can also coordinate contributions from the local and regional scientific communities to the spill response efforts.

Pacific Strike Team (PST) / National Strike Force

The pipeline owner can also request assistance from the Pacific Strike Team (PST), which is a unit of the National Strike Force, through the OSC. The PST can either serve the OSC in an advisory role or provide trained personnel with equipment to assist the cleanup efforts of response personnel. In addition, the OSC (at the request of the pipeline owner) can utilize the federal Regional and Local Contingency Plans (under development) to coordinate response efforts or requests for information from all state and local government agencies involved in the cleanup operations.

The qualified individual (or designated alternate) will maintain communications with other agencies involved in the spill response effort, including members of the National Response Team, Regional Response Team, other federal agencies, and state and local agencies. These communications will emphasize spill response coordination (not general information releases), and will at all times comply with the orders of the federal OSC, if present at the scene.

State and Local Agency Relations

State Interagency Oil Spill Committee (SIOSC)

A variety of state and local agencies available as resources can be accessed through the State Interagency Oil Spill Committee (SIOSC). The SIOSC is composed of representatives from numerous agencies which could contribute their specific expertise during a spill incident. The committee is currently chaired by the Office of Oil Spill Prevention and Response (OSPR), Department of Fish and Game (DF&G). Member agencies include the following:

Office of Oil Spill Prevention and Response, DF&G (Administrator)
State Lands Commission
California Coastal Commission
Office of Emergency Services
Water Resources Control Board
Department of Justice
California Highway Patrol
California National Guard
Division of Oil and Gas, Department of Conservation
Department of Health Services
Department of Transportation
Department of Parks and Recreation
Department of Water Resources
Department of Forestry and Fire Protection
State Fire Marshal
Regional Water Quality Control Board
California Resources Agency
State Office of Environmental Affairs
California Conservation Corps

In addition, volunteer activities such as cleaning affected wildlife could also be organized by this committee. The SIOSC Coordinator may be reached at:

California Department of Fish and Game
Wildlife Preservation Division
(916) 445-5431

Federal and State Contingency Plans

Contingency plans prepared by other agencies for California are listed below. Copies of these plans will be maintained by the pipeline owner.

- *National Oil and Hazardous Substances Pollution Contingency Plan*, issued by the U.S. EPA under direction of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) (as amended by SARA). Currently under revision.

- *Region IX Mainland Oil and Hazardous Substance Pollution Contingency Plan*, Region IX, in compliance with the *National Oil and Hazardous Substances Pollution Contingency Plan*.

- *State of California Oil Spill Contingency Plan*, issued by the Governor of California.

- *Los Angeles/Long Beach "Southern Sector" Area Contingency Plan*, issued by U.S. Coast Guard.

6.5.10 Interfacing With State Incident Command System

The pipeline owner Incident Commander / Qualified Individual is responsible for managing all operations, and briefing the Federal On-Scene Coordinator (OSC) and State Incident Commander upon their arrival at the scene of the incident.

The pipeline owner Incident Commander assigns personnel to positions in the Company response organization that will parallel the federal and state agency incident command organizations (refer to Section 6.1 Organization).

The pipeline owner Incident Commander will work with the State Incident Commander in Unified Command. The State Incident Commander will be invited to participate in frequent response assessment and planning meetings. The Company Incident Commander will keep the State Incident Commander informed of planning or strategy decisions, and will consult with the State Incident Commander on matters of agency involvement in the response effort.

Agencies having jurisdictional responsibility will assign personnel to positions in the State Incident Command System. Personnel assigned to Company Incident Command positions will communicate with their counterparts in the State Incident Command system. This interface between Company and agency representatives is used to develop mutually acceptable objectives and strategies for response, within their respective areas of training and expertise. The Unified Command of Company and State Incident Commanders will jointly contribute to determining overall objectives for control and mitigation of the incident, and selecting overall strategies to achieve the response objectives.

6.5.11 Post-Spill Review

Post-spill reviews are conducted to improve the Emergency Response Action Plan. To benefit from the knowledge and experience gained in actual incidents, the pipeline owner has developed a post-incident debriefing procedure. This procedure can also be used as an integral part of drill exercises.

All participants involved in an incident or a drill will be asked to participate in a debriefing interview. The interview is designed to solicit input on response procedures that could be changed to provide a more effective response plan.

The debriefing interview notes are reviewed by a committee appointed by Company management to evaluate the recommendations for improvement. The committee evaluates the suggestions and prepares a report which recommends the implementation of changes to improve the effectiveness of the response effort. The report also documents the suggestions that are not recommended, with the committee's views and reasons for their decision.

Estimates of implementation costs, or cost savings, will accompany the committee's recommendations in their report to management. Company management will take action to implement any recommendations that appear to provide an arguable benefit to future response planning and effectiveness.

6.5.12 Estimating Spill Volume on Water

Purpose

In the event of a sizeable spill, a rough estimate of the spill's total volume provides the Incident Commander (qualified individual) with preliminary data to plan and initiate the cleanup response. Generating this estimate early in the spill response is useful in determining: the equipment and personnel needed; the amount of oil that may reach shorelines and/or sensitive areas; and the requirements for temporary storage and disposal of recovered materials.

Estimating by Observation

When conditions permit, direct measurements of spill parameters are preferred over visual estimates.

A rough estimate of spill volume can be generated from observations of the oil slick's size and thickness. The following table relates the appearance, thickness, as well as the light conditions. For example, slick thicknesses greater than 0.08 inches cannot be determined by appearance alone.

Since oil slick spreading is influenced by the spill volume as well as by physical forces, stopping the spill at its source is critical in controlling the spread of a slick on water. The more conservative the first estimate of the spill volume, the better the chances that response forces will arrive at the spill site prepared with adequate and appropriate equipment. It is preferable to over-respond early to a spill rather than to under-respond and risk unpreparedness. To under-respond will impede the effectiveness of spill control and cleanup efforts. A slow or poorly prepared initial response can incur more operational costs and increase the risk of damage to marine and shoreline resources and environments. Therefore, properly planning the initial response is critical in a spill situation.

Estimating Spill Volume by Color and Coverage Area

Width x Length (feet)	Area (sq. ft.)	Thickness (feet)	Volume (cu. ft.)	Gal. per cu. ft.	Gallons Spilled
Silvery Sheen					
100 x 50	50,000	0.00000025	0.0125	7.48	0.1
100 x 1000	100,000	0.00000025	0.0250	7.48	0.2
100 x 2000	200,000	0.00000025	0.500	7.48	0.4
200 x 1000	200,000	0.00000025	0.500	7.48	0.4
500 x 1000	500,000	0.00000025	0.1250	7.48	0.9
200 x 2000	400,000	0.00000025	0.1000	7.48	0.7
200 x 5000	1,000,000	0.00000025	0.2500	7.48	1.9
500 x 5000	2,500,000	0.00000025	0.6250	7.48	4.7
500 x 10000	5,000,000	0.00000025	1.2500	7.48	9.4
Trace of Color (Yellow, Bronze, Violet)					
100 x 500	50,000	0.0000005	0.0250	7.48	0.2
100 x 1000	100,000	0.0000005	0.0500	7.48	0.4
100 x 2000	200,000	0.0000005	0.1000	7.48	0.7
200 x 1000	200,000	0.0000005	0.1000	7.48	0.7
500 x 1000	500,000	0.0000005	0.2500	7.48	1.9
200 x 2000	400,000	0.0000005	0.2000	7.48	1.5
200 x 5000	1,000,000	0.0000005	0.5000	7.48	3.7
500 x 5000	2,500,000	0.0000005	1.2500	7.48	9.4
500 x 10000	5,000,000	0.0000005	2.5000	7.48	18.7
Bright Bands of Color (Purple, Blue to Green)					
100 x 500	50,000	0.000001	0.0500	7.48	0.4
100 x 1000	100,000	0.000001	0.1000	7.48	0.7
100 x 2000	200,000	0.000001	0.2000	7.48	1.5
200 x 1000	200,000	0.000001	0.2000	7.48	1.5
500 x 1000	500,000	0.000001	0.5000	7.48	3.7
200 x 2000	400,000	0.000001	0.4000	7.48	3.0
200 x 5000	1,000,000	0.000001	1.0000	7.48	7.5
500 x 5000	2,500,000	0.000001	2.5000	7.48	18.7
500 x 10000	5,000,000	0.000001	5.0000	7.48	37.4
Colors Turning Dull (Brick Red, Turquoise, Pale Yellow)					
100 x 500	50,000	0.0000033	0.1650	7.48	1.2
100 x 1000	100,000	0.0000033	0.3300	7.48	2.5
100 x 2000	200,000	0.0000033	0.6600	7.48	4.9
200 x 1000	200,000	0.0000033	0.6600	7.48	4.9
500 x 1000	500,000	0.0000033	1.6500	7.48	12.3
200 x 2000	400,000	0.0000033	1.3200	7.48	9.9
200 x 5000	1,000,000	0.0000033	3.3000	7.48	24.7
500 x 5000	2,500,000	0.0000033	8.2500	7.48	61.7
500 x 10000	5,000,000	0.0000033	16.5000	7.48	123.4

The color that is reflected by oil on water is related to the thickness of the oil slick. By observing the color of the slick (and thus the thickness) and estimating the area covered by the oil, we get a fairly accurate estimate of the volume of oil that is spilled.

6.5.13 Estimating Spill Volume on Land

Oil spills on land are often as difficult to size as those offshore. A reasonably close estimate can be obtained by determining the area covered, average depth, and average penetration into the soil.

Classifying the Areas

The surface of spilled oil is usually so irregular that it is extremely difficult to estimate the area covered. The problem can be simplified if the spill area is first separately divided into two main types of areas:

- Flow Areas: Area coated by oil flow with little or no penetration.
- Pooling Areas: Area where oil has pooled after flowing, allowing penetration to occur (and possibly increase with time, depending on the soil type).

  Note: If the pool of oil has water underneath, the depth of oil should be reduced accordingly.

Converting Irregular Shapes (Simpson's Rule)

In order to estimate the area of an irregular shape, the shapes can be converted into a series of rectangles that approximate the area of the irregular shape, with about the same amount of spill area outside of the rectangle as there is dry area inside the rectangle. This can be done by stretching a steel tape along the ground outside the spill area. The area can then be quickly estimated by multiplying the length of the sides.

Area "A"	70' x 20'	=	1400 square feet
Area "B"	50' x 10'	=	1200 square feet
Area "C"	35' x 20'	=	700 square feet
			3300 square feet

The more rectangles you use, the more accurate your estimate becomes.

Estimating the Average Depth

The next task is to estimate the average depth of oil in each of the areas. The oil will vary from very shallow at the edge to whatever depth the terrain is at the lowest point. This can be determined by "gauging" with a stick if it is shallow or accessible. If the pool is wider, you can heave a large stone into the pool to confirm depth. An estimate can usually be made by observing the slope of the ground around the pool and assuming that the slope continues under the surface of the oil.

If you estimate that the deepest point in Area "A" is 20" and Area "A" has three boundaries of "shore", divide the depth figure by three to obtain an average depth of about 7". If it has two "shore" boundaries, like Area "B", divide the depth by two to obtain average area depth.

Converting to Gallons and Barrels

Each cubic foot is equivalent to 7.49 gallons (use 7.5)
840 cubic feet x 7.5 gallons/cubic foot = 6,300 gallons
Each U.S. barrel is 42 gallons:
6,300 gallons x 42 gallons/barrel = 150 barrels of oil

Considering Penetration

Determining how much additional oil has penetrated into the soil can be accurately measured by taking a core sample of the oil-covered soil; however, the following rule should suffice for estimating purposes: for penetration allowance in normal sand or soil, add 5% to the total volume for every foot of average depth.

In the case of Area "A", the average depth was 7 inches. We can say it is about half of a foot, so we add 2.5%:

150 barrels x 1.025 = 154 barrels
6,300 gallons x 1.025 = 6,450 gallons

Some rules of thumb:

- Do not add a penetration allowance to areas of slope that were contacted by oil on its way downhill at a moderate to high rate.
- Add an allowance for slow flowing areas.
- Reduce allowance by half, if the area is wet from rain.

Note: This is a method of estimate the *volume* of oil *in the penetration.* In the case above, the oil would penetrate 3" to 6" into the soil.

Precise Penetration Determination

If more precise determination is required, drive a clear plastic tube, about 2" or larger in diameter, 6" into the soil adjacent to the spill. Twist and remove with soil core. Seal the bottom of the tube with plastic and tape. Pour free oil into the top of the tube to the depth of the oil in the pool, mark the level, and let is set for one hour. Measure how much the oil level has dropped. Observe how deep the oil has penetrated. Retain the model to observe increased penetration with time.

Walk Around Method

If the pool is roughly circular, you can estimate its area by packing around the pool and counting your paces. Walk as closely to the pool edge as possible. Try to make your paces three feet, or one yard long. If you counted 700 paces, the circumference is 700 paces x 3 feet/pace, or 2,100 feet. The next step is to guess how much smaller the actual pool is, compared to the circle you walked. If you were pretty close, deduct 10%.

2,100 ft. x 0.90 = 1,890 ft. (adjusted circumference)

The area of a circle is related to the circumference by the familiar formulas:

The area of a circle is related to the circumference by the familiar formulas:

Area (A) = πr^2
Circumference © = $2\pi r = \pi d$

Obtaining the Free Oil Volume

The irregular-shaped area with unseen bottom has now been reduced to familiar shapes. The volume of free oil in Area "A" is:

Area "A": 70' x 20' = 1,400 square feet
Average depth = 20" / 3 = 7"
7" / (12" per foot) = 0.6 feet
Area "A" Volume = 1,400 square feet x 0.6 feet = 840 cubic feet
The total volume would be the sum of Areas "A", "B", and "C".

If the circumference of our circle is 1,890 ft., then:

The diameter is d = $1,890/\pi$ = 1,890 / 3.14 = 602'
The radius is ½ d = 602' / 2 = 301'
The area is A = $\pi (301')^2$ = 3.14 x 301' x 301' = 284,487 sq. ft.

Now you can estimate the average depth by guessing the maximum depth. If we guess the depth from the exposed slope to be 12" at the deepest part, we can divide by four (four sloping sides) to estimate an average depth of 3", or 0.25 feet.

V = 284,487 sq. ft. x 0.25 feet = 71,122 cubic feet.

As before, we know each cubic foot contains about 7.5 gallons, so

V = 71,122 cu. ft. / 7.5 gallons/cu. ft. = 9,483 gallons.

To convert to barrels,

V = 9,483 gallons / 42 gallons/barrel = 226 barrels.

Our average depth was 3" so we can add about one percent for penetration,

V = 226 x 1.01 = 228 barrels (corrected for penetration).

Average Diameters

You can also estimate the area of an oblong circle by pacing off (3' per step) the width of the "short diameter" and the "long diameter" and averaging them. First pace off the "short diameter", but stop short to allow for the irregular shape. Repeat the procedure for the "long diameter". Add them together and divide by two to get the "average diameter".

In this example, the "short diameter" was 75 paces, or 75 x 3 = 225 feet. The "long diameter" was 120 paces, or 360 feet.

The Average Diameter = D avg. = 225 + 360/2 = 292 feet.

The radius is ½ the diameter = 292 / 2 = 146 feet.
$A = \pi r^2$ = (3.15) (146) (146) = 66,932 sq. ft.
The average depth is 3" or 0.25 feet.
The volume is: V = 66,932 sq. ft. x 0.25 ft. = 16,733 cu. ft.
For the volume in gallons: V = 16,733 / 7.5 = 2,231 gallons.
For the volume in barrels: V = 2,231 / 42 = 53 barrels.

Comparison Methods

Sometimes you can estimate area by comparing it to familiar areas, with adjustment for irregular shape. The following table gives the square footage of several familiar areas:

Football Field	120 yds	x	50 yds	=	6,000 sq yds
Basketball Court	74 ft	x	50 ft	=	3,700 sq ft
Tennis Court	8 ft	x	36 ft	=	288 sq ft
Baseball Diamond	90 ft	x	90 ft	=	810 sq ft
Parking Space	20 ft	x	10 ft	=	200 sq ft
Office	10 ft	x	10 ft	=	100 sq ft
Service Station	700 ft	x	250 ft	=	175,000 sq ft
4-Lane Intersection	55 ft	x	55 ft	=	3,025 sq ft
McDonald's	1,000 ft	x	250 ft	=	250,000 sq ft

Inaccuracies in Estimates

All methods presented offer quick methods of estimating for gross volumes, and are generally accurate within 20%, if your assumptions and measuring was accurate within 20%. These accuracies should be sufficient for initial reporting and determining resource requirements. Drills have indicated that all of the estimates generally are within 10% of the others.

6.5.14 NOAA Weather Service

The National Weather Service (NWS) is responsible for providing up-to-date weather information in response to oil spills. NWS can provide such information as wind direction and speed, air and sea temperatures, and direction and height of sea and swell. The NWS can also provide weather forecasts, which are updated daily, and can range anywhere from two to five days.

In a spill response, weather information will be provided by the NWS via the NOAA Scientific Support Coordinator (SSC). An agreement between NOAA's Hazardous Materials Response and Assessment Division and NWS establishes the SSC as the point of contact in order to streamline the flow of information and to provide specialized weather needs without affecting the normal operating procedures of the forecast office. Furthermore, the agreement provides for a dedicated Meteorologist to assist NOAA in obtaining the most accurate and current information for operational planning and trajectory analysis.

The NOAA Scientific Support Coordinator can be contacted at:

NOAA/HMRAD
Suite 5110
501 West Ocean Blvd.
Long Beach, California 90802
(310) 980-4107
(800) SKY-PAGE (Pager - PIN #579-8818)

6.5.15 Containment/Diversion

Urban Spill

If a release of any type of oil occurs in an urban area, there is a high probability that the oil can enter a municipal storm drain system. If the oil is found to be entering the storm drain system from a curb drain inlet or street drain inlet, block the inlets as shown in Figure 6-6.

Construct sand bag dams in the street as shown in the diagrams, to restrict the oil from spreading and to reduce the area that will be required to clean up.

If the oil has already entered the storm drain, remove the closest storm drain manhole cover and determine the flow direction of the system. If the released oil is flowing in the storm drain, continue reconnaissance of the manholes down stream of the release until there is not a show of oil. At this point, dam the storm drain on the down stream side with absorbent material to stop further migration, and begin removal of the oil with a vacuum truck as shown in the diagrams. Flush the drain with water beginning at the point the oil entered the system. Continue to flush the drain and recover the oily water until there is no longer a sheen of oil on the water. As disposal of oily material creates additional problems, flush the drain with the minimum amount of water needed to ensure recovery.

Sensitive Habitat Protection

Bird Warning Systems

Bird warning systems are primarily used on coastal shorelines or inland areas with high bird concentrations. They are used to deter birds from entering the spill area and becoming contaminated. Bird warning systems include electronic sound devices, pyrotechnics (shotguns, firecrackers), propane cannons, and aircraft. A typical propane cannon is shown in Figure 6-7. To be effective, some type of warning device should be positioned about every 300 feet (100 paces).

Some limitations of the warning systems are the accessibility to the areas for proper deployment and the acclimation of birds to warning systems.
Bird warning devices should be placed in the areas most frequented by birds. Human activity during cleanup will repel most birds; therefore, the devices should be placed in unattended areas. Low-flying aircraft may also be periodically used to repel birds.

Someone must observe the effectiveness of the devices and reposition them periodically to avoid acclimation by the birds. Check electronic and propane devices periodically for adequate fuel or battery power.

FIGURE 6-6

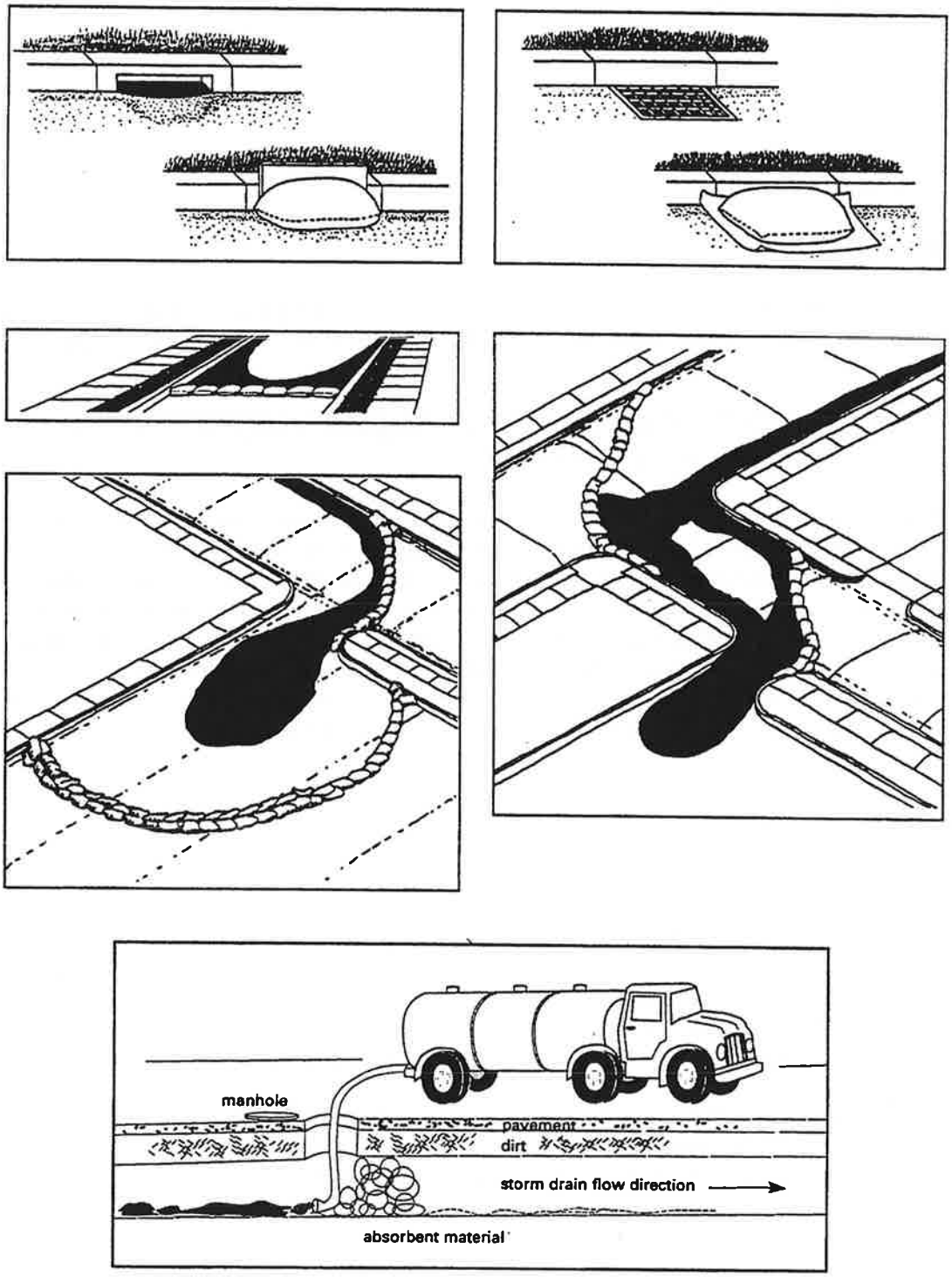
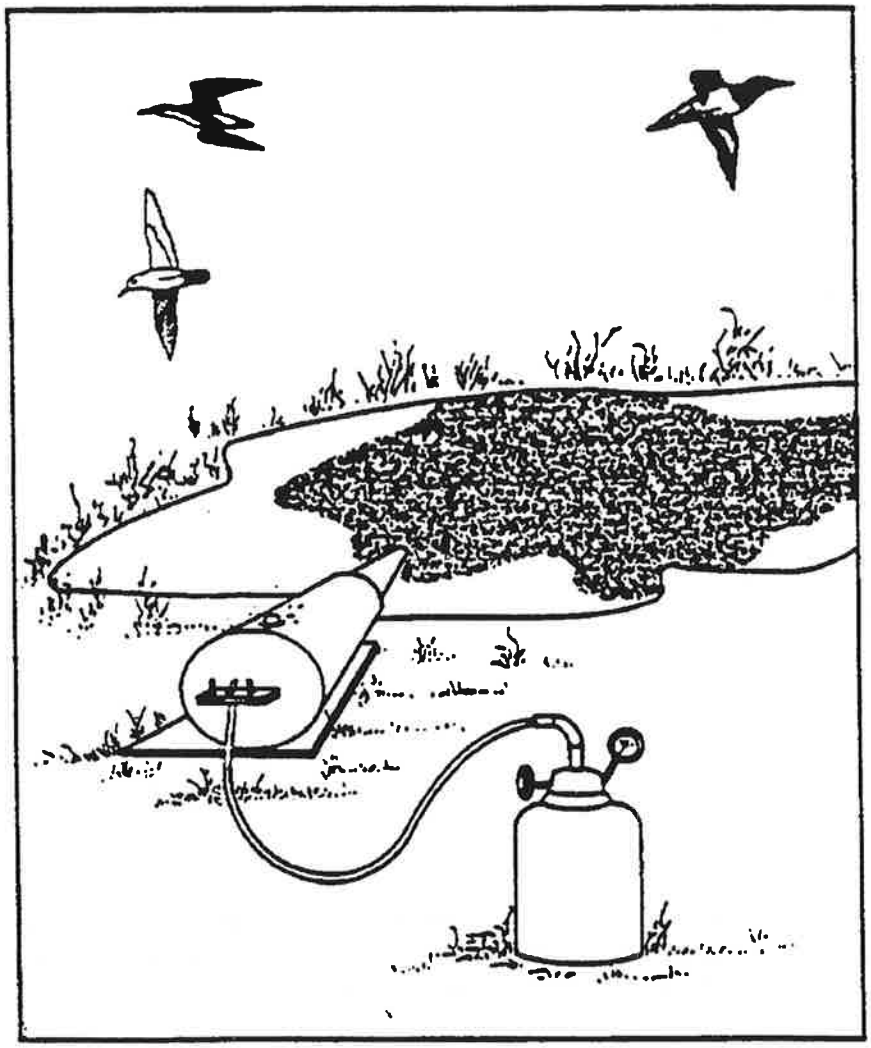

manhole
pavement
dirt
storm drain flow direction
absorbent material

FIGURE 6-7



Propane Cannon Bird Warning Device

Self-activating devices may be placed on small boats in protected waters or on rafts in the middle of the slick and allowed to drift in the slick.

6.6 COMMUNICATIONS

6.6.1 General

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

Several communications systems will be available and used in a response effort. The primary systems are:

(1) Public telephone systems.

(2) Cellular telephone system.

(3) Facsimile via public telephone system or cellular system.

(4) Contractor UHF and/or VHF two-way radio systems.

These systems may be augmented by Marine VHF radio systems.

The emergency response effort will use any or all of the available communications systems to implement emergency response. Use of each of these communications modes is described in this section.

Cellular Telephones

Recent developments in the cellular telephone system permit unprecedented flexibility and access to the public telephone system from remote and mobile locations. The cellular systems are so widespread that there are few areas in Southern California that cannot be reliably served by these networks. Units can be mounted in vehicles or hand carried to provide for the receipt or initiation of telephone calls.

This extensive system provides a semi-private mode of telephone use that is a valuable tool for emergency response. It permits immediate telephone service at non-connected locations such as in an Emergency Response Command Center or at remote strategic deployment areas.

In the event of a sustained response effort, additional vehicular mobile and hand-held cellular telephones can be purchased, installed, and activated to establish a more secure network of communications between the Command Center and remote work locations, and to provide direct access to the commercial telephone system. The Logistics Supervisor will coordinate all requests for additional cellular telephones and other communications gear.

*NOTICE: Cellular telephone conversations can be intercepted and monitored by outsiders equipped with scanning receivers. Due to complicated switching and multiple frequency paths, deliberate monitoring of any specific parties is extremely difficult and is **unlikely** to occur. However, such monitoring is **possible**. Cellular telephones should be used with the understanding that privacy is **not** absolute.*

INSTRUCTIONS FOR CELLULAR TELEPHONE USE

Making a Call:

- Be sure the unit is turned on.
- Input the desired telephone number.
- Depress the CALL or SEND button.
- Wait for ringing sound and answer.
- Use like a regular telephone.
- When call is complete, depress STOP or END button to disconnect.

Receiving a Call:

- Unit will ring.
- Pick up handset and depress the CALL or SEND button.
- Use like a regular telephone.
- When call is complete, depress STOP or END button to disconnect.

Operator Assisted Calls:

- Dial 0. Note: You may have to dial **1** and the **Area Code** if the phone is numbered from another area - even for local calls.

NOTE: In the event of a widespread event affecting local power distribution and telephone service, cellular telephones may not continue to operate if the cellular repeater power source was affected. Some repeater sites are provided with backup systems. It is likely, but not assured, that cellular telephones will be in service and usable on some occasions when local telephone service has been disrupted.

Regular Telephone Service

There will be commercial telephone lines available at the Macpherson facility and Command Center, for communications. The commercial telephone numbers for the control of the pipeline are listed in Section 7.8 of the Plan.

Telephone service should be requested immediately upon the decision to move the Command Center during a response effort.

Facsimile

Communication of documents, maps, diagrams, reports, correspondence, and other material can be accomplished quickly and accurately via facsimile over commercial telephone lines from stationary and mobile cellular phones.

A facsimile machine will be available in the Operations Manager's office, capable of automatic mode selection, and operate at 9600 baud. It should be capable of transmitting normal text operated in "fine" mode to enhance graphic images. Detailed instructions for the use of the machine will be located in the Command Center.

If a facsimile machine must be operated over a cellular telephone, a device known as an acoustical coupler is needed. If this is required, the request should be made to the Logistics Supervisor.

5) Assessing the situation, notify as appropriate the local fire department (**9-1-1**)

6) The **Qualified Individual** or Alternate Qualified Individual will notify the **California Office of Emergency Services** (DF&G / OSPR)

Telephone: (800) 852-7550

7) The **Qualified Individual** or Alternate Qualified Individual will notify the **National Response Center** (EPA, USCG, DOT)

Telephone: (800) 424-8802

8) Notify the **Primary Spill Response Contractor** of the spill.

Telephone: (XXX) XXX-XXXX

9) Notify any other agency as defined by the nature of the emergency, shown in Section 2.5.

Breakdowns

1) Notify the Production Foreman and/or Supervisor.

2) Notify the Operations Manager.

Fires

1) Assure the safety of company personnel and the public.

2) Notify the local **Fire Department (9-1-1)**

3) Notify the Production Foreman (Table 7-1)

4) Notify the Operations Manager (Table 7-1)

5) Notify any other agency as defined by the nature of the emergency, shown in Table 2-3.

Electrical or Mechanical Malfunction

1) Contact the Production Foreman and/or Supervisor

2) Contact the Operations Manager

TABLE 7-1
MACPHERSON NOTIFICATION LIST

(Detail telephone numbers to be supplied prior to the start of production)

Name	Title	Home	Office	Mobile	Pager
	General Manager				
	Production Foreman				
	Operator				
	Operator				
	Operator				
	Operator				
	Operator				

NOTE: Information for the above emergency telephone list will be supplied before pipeline operation starts

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10.1 TRAINING

All individuals responsible for responding to an oil spill must meet the health and safety training requirements mandated in regulations by both State and Federal Occupational Health and Safety Administrations (OSHA). The amount of training required for individuals to respond to oil spills depends on the kind of tasks performed, the degree of exposure encountered, and the time involved (initial emergency response versus post-incident cleanup) for each individual.

The training program for the facility is designed to instruct each employee regarding general safety procedures as well as hazards and safety procedures specific to each employee's work assignment. Upon hiring, all new employees receive the following training:

1. Read the Accident Prevention Policy and sign an employee agreement certifying that this has been done;

2. Complete Employee Safety Checklist;

3. Emergency Response Plan Training;

4. Oil Spill Prevention, Control, and Countermeasure Plan Training.

All employees also receive on the job training that is conducted and documented by a supervisor using the New/Transfer Employee Safety Checklist. Such training is provided under each of the following circumstances:

1. Whenever an employee is given a new job assignment for which training has not already been provided. Each employee is trained in the specifics of the new assignment based on safe work procedures in accordance with the New/Transfer Employee Safety Checklist. Each employee is required to demonstrate to his/her supervisor that he/she is able to perform the assigned tasks;

2. Whenever new substances, processes, procedures, or equipment which represent a new hazard are introduced into the workplace;

3. Whenever pipeline management is made aware of a new or previously unrecognized hazard;

4. Whenever management, the Environmental/Safety Compliance Officer, or the Operations Manager believes that additional training is necessary.

All training will have attendance sheets which the employee will sign at the time of training. This sheet will be maintained with a description of the training in the General Manager's office for three years.

If necessary, oil spill cleanup operations would be performed by a qualified primary response contractor that can supply HAZWOPER trained personnel.

10.2 DRILLS AND EXERCISES

Drills must be conducted periodically to ensure that this contingency plan will function in an emergency. These drills and the frequency for conducting them are summarized in Table 10-1 and discussed below.

EQUIPMENT DEPLOYMENT DRILLS

Macpherson will rely on the Primary Response Contractor to provide the majority of spill response equipment. Macpherson does not keep extensive, company-owned oil spill equipment at the Hermosa Beach site associated with the pipeline operation.

UNANNOUNCED DRILLS

Macpherson will plan and prepare for unannounced drills. The spill management team will be activated during these drills. The Primary Response Contractor will also participate in the unannounced drill. All personnel involved in oil-handling activities will also participate.

Unannounced drill scenarios typically involve a major incident and will require the mobilization of the response team and the transport of equipment and materials to staging areas. The drill may involve several unanticipated problems to solve and will be structured to test and exercise Macpherson's ability to respond to an incident. Macpherson will conduct an internal unannounced drill annually. This will be one of the required drills (Table 10-1) other than the Qualified Individual notification drill. In every three-year period, one of the unannounced drills will include equipment deployment drill.

Participant briefing forms, participating agency personnel comments, and documentation of the drill will be collected and summarized in a written report. The report will be presented at a later meeting to all the participants, where the drill will be analyzed in detail. Any unannounced drill called by appropriate State agencies can be credited toward other agency requirements provided it meets each agency's guidelines.

ANNUAL SPILL MANAGEMENT TEAM TABLETOP DRILLS

The key components of Spill Management Team Tabletop Drills is summarized in Table 10-3. A tabletop drill is an activity in which the spill management team is gathered informally, to discuss actions to be taken during an oil or hazardous substance spill, based upon the contingency plan and standard operating procedures. The primary characteristic is a verbal "walk through" of a response. The tabletop drill is designed to elicit constructive discussion by the participants, usually without time constraints, as they examine and resolve problems based on the contingency plan. A tabletop drill has participants practice problem-solving and resolve questions of coordination and assignment of responsibilities in a non-threatening format, under minimum stress. Once a year Macpherson will conduct a tabletop drill of the spill management team in a simulated incident. A detailed scenario with a realistic set of "existing conditions" will be prepared before the drill and delivered to the participants at the start of the drill. At least once in every three-year period, the tabletop drill must involve a worst-case discharge as scenario as described in Section 4. The scenario may involve any part of the pipeline and will be structured to test both the team and the plan. The drill will last up to one day but may simulate a longer period of time. The following activities will be carried out during the drill:

1. During the drill, each member of the team will carry out the responsibilities of his/her assigned position. The OSPR Administrator will be invited to attend.

2. A command center/post will be established and OSPR notified of its location.

3. The management team's incident commander will brief every member of the team concerning the spill scenario prior to the member assuming the assigned role.

4. An initial action plan will be developed by the Incident Command(s) within the first half hour of the drill or within a time agreed to by OSPR in accordance with this spill drill. This initial action plan will then be given to a planning unit which will develop additional action plans with more specific details, as appropriate, for the spill.

5. A site safety plan will be developed by the safety office and approved by the Incident Commander within the first hour of the drill or within specified time lines approved for the drill. It will characterize the spill site and specify safety procedures.

6. At least one command staff meeting and one joint press briefing concerning the progress of the drill will take place during the drill. At this meeting, the conduct of the drill/response and the cooperative links between the participants will be discussed. Minutes of this meeting will be made available to appropriate agencies upon request.

7. The management team will demonstrate the capability to bring additional equipment and personnel to the scene of the spill, consistent with the contingency plan and the drill/spill scenario.

Participants will prepare debriefing reports and will include their evaluation of the drill and recommendations for response/plan improvements.

TRIENNIAL DRILL CYCLE

Individual drills may exercise parts of the plan or the entire plan. Drills designed to implement components of the plan, for example, emphasize an onshore or offshore spill response involving only the immediate response team, the sustained response team, or both. Once every three years, Macpherson will conduct a drill, or series of drills, that exercises the entire plan.

Table 10-1

QI NOTIFICATION DRILLS

Characteristic	Explanation
Applicability	Pipeline
Frequency	Quarterly, or routine communication if it occurs on at least a quarterly basis.
Initiating Authority	Macpherson company policy
Participating Elements	Pipeline personnel, Qualified Individual
Scope	Exercise communications between pipeline personnel and Qualified Individual
Objectives	Contact must be made with a Qualified Individual or designee, as designated in the plan
Certification	Self-certification
Verification	Verification to be conducted by the appropriate agency during site visits
Records: Retention (OSPR) Location	 3 years Records to be kept at the facility
Evaluation	Self-evaluation
Credit	Macpherson may take credit for this exercise in the course of conducting routine business or other drills, provided that the objectives of the drill are met and the drill is properly recorded. Similarly, credit may be received for an actual spill response when these objectives are met and a proper record generated.

Table 10-2

RESPONSE DRILL MINIMUM REQUIREMENTS SUMMARY

FREQUENCY	DRILLS
Quarterly	Pipeline and Qualified Individual notification drills.
Semi-Annual	Pipeline-owned equipment deployment drills *(the unannounced annual drill may be credited for one of these.)*
Annual	Spill management team tabletop drills *(not required if the oil spill removal organization has been drilled during the period noted).*
	Unannounced internal drills requiring the activation of the spill management team, and deployment of pipeline and OSRO equipment. Actions taken, both predicted and unanticipated, by the response team should be noted and problems resolved as soon as possible. *(Any other unannounced drill called by another Federal or State agency that meets this requirements can be substituted for the internal drill.)*
Not Specified	Unannounced drills conducted by the cognizant COTP *(not required if owner/operator has participated in any Federal or State unannounced drill within the past 24 months or if the oil spill removal has been drilled during the period noted).*

NOTE: Drills may be designated by Macpherson to exercise either components of the plan or the entire plan. At least once every three years, a drill or drills must be conducted that exercises the entire plan.

Table 10-3

SPILL MANAGEMENT TEAM TABLETOP DRILL

Characteristic	Explanation
Applicability	Macpherson Pipeline Spill Management Team
Frequency	Annually
Initiating Authority	Macpherson company policy
Participating Elements	Spill Management Team as established in contingency plan
Scope	Exercise the Spill Management Team's organization, communication and decision making in managing a spill response
Objectives	- At least one Spill Management Team Tabletop Drill in a triennial cycle will involve simulation of a worst case discharge scenario. - Exercise the Spill Management Team in a review of: - Knowledge of the response plan - Proper notifications - Communications - Ability to access OSRO - Coordination of organization/agency personnel with responsibility for spill response - Ability to effectively coordinate spill response activity with National Response System infrastructure - Ability to access information in Area Contingency Plan for location of sensitive area, resources available with the Area, unique conditions of Area, etc.
Certification	Self-certification
Verification	Verification to be conducted by responsible oversight agency
Records: Retention (OSPR) Location	3 years Records to be kept in General Manager's office.
Evaluation	Self-evaluation
Credit	Macpherson may take credit for this exercise when conducted in conjunction with other drills as long as all objectives are met and a proper record generated. Likewise, credit may be taken for an actual spill response when these objectives are met and a proper record generated.

EDUCATION AND TRAINING

EMPLOYEE EMERGENCY RESPONSE ORIENTATION CHECKLIST

a. EMPLOYEE NAME

_____ _____
Last First M.I. Date of Hire

b. MANAGER DOING THE ORIENTATION

_____ _____
Last First M.I. Date of Hire

c. ORIENTATION:

Date Began: _____ Date Completed: _____

The following information is to be discussed with the new employee within the first week of employment. As the information is discussed, both the new employee and the instructor should initial the section on the lines provided. This checklist must be returned to the General Manager's Office, where it will become a part of the employee's permanent file.

	INITIALS	
	Employee	**Instructor**
d. EMERGENCY NOTIFICATION		
1. Emergency Procedures		
2. Notification Requirements		
3. Governmental Notification and Emergency Response Services		
4. Contractors and Miscellaneous Numbers		
5. Emergency Telephone Numbers, Local Authorities and Government al Agencies		
6. Emergency Telephone Numbers, Company Employees		
7. Public and Press Relations		
e. FACILITY RESPONSE PLAN		
1. Pipeline Description		

	INITIALS	
	Employee	**Instructor**
2. Major Emergency Responses (a) Fire along the Pipeline		
(b) Flammable/combustible Gas & Liquid Releases		
© H_2S Release		
(d) Hazardous Material Release		
(e) Evacuation along the Pipeline		
(f) Major Earthquake		
(g) Off-Site Fires		
(h) Civil Disturbance		
(I) State of War		
(j) Bomb Threat		
3. Education and Training		
4. Accident Investigation		
5. Pre-Emergency Planning		
f. MAPS		
1. Area Map		
2. Drill Site and Facilities Site Plan		

EDUCATION AND TRAINING

EMPLOYEE ORIENTATION SIGNATURE SHEET

To: Employees of Macpherson Oil Company

As you read through this manual with your instructor, you should discuss any items that you do not understand. Upon completion of your orientation, you are to sign this receipt and it is to be returned to the General Manager's Office, where it will become part of your personnel record.

_____

Date

_____

Division

I have received and read Macpherson Oil Company's Emergency Response Manual.

I agree to follow all precautionary and response actions set out in the Emergency Response Plan Manual. I recognize that failure to follow these rules and guidelines may result in potential harm or injury to myself and my co-workers and may also result in disciplinary action.

_____

Employee's Name (Print or Type)

_____

Employee's Signature

Appendix A

P & ID DRAWINGS

APPENDIX A
PIPING AND INSTRUMENTATION DRAWINGS

Engineering of the new produced crude oil shipping pipeline has not progressed to the point at which detailed pipeline drawings have been completed. When the detail drawings have been completed, copies will be incorporated into Appendix A of the Plan.

The preliminary configuration of the pipeline can be seen in Figure 2-1 of the Plan.

Appendix B

SITE SAFETY and HEALTH PLAN

B.1 COMPANY POLICY

Macpherson's policy is to manage the pipeline operations (i.e., both routine and emergency) in a manner that protects the environment and the health and safety of employees, customers, contractors, and the public. To accomplish this, Macpherson will:

- Advise each manager, supervisor, and employee of safety, health, and environmental requirements and hold them accountable for their performance.
- Design and manage operations to minimize environmental and health impacts and provide work places free of recognized safety hazards.
- Comply with all laws and regulations governing safety, health, and environmental protection.
- Recognize the importance of safety, health, and environmental factors where there is competition with economic factors.
- Provide professional staff to support safety, health, and environmental protection.
- Monitor, evaluate, and report performance in safety, health and environmental protection.
- Provide training needed to protect human, environmental, and physical resources.
- Monitor, evaluate, and report performance in safety, health and environmental protection.
- Provide training needed to protect human, environmental, and physical resources.
- Participate in programs designed to enhance knowledge and improve technology, laws and regulations.

B.2 APPLICABLE REGULATORY REQUIREMENTS

The Occupational Safety and Health Administration (OSHA) has promulgated two sets of regulations that are applicable to oil spill response operations: They are:

- Hazard communications regulations require that workers be informed of any hazards associated with the materials that they may come into contact with during the conduct of response operations.
- Hazardous waste operations and emergency response regulations require the preparation of a site-specific safety and health plan, and specify that workers be properly trained to carry out response operations in a safe and healthful fashion.

B.3 EXISTING PLANS AND PROGRAMS

Macpherson will develop safety-and-health-related plans, programs, and policies for its operations, including:

- Injury Prevention Program
- Safety and Health Program
- Required Training
- Hazard Communications Program
- Respiratory Protection Policy
- Hearing Conservation Program
- Emergency Response Plan
- Business Plan
- Industrial Hygiene Management Program

B.4 OBJECTIVES

The safety and health objectives to be pursued during response operations are:

- Maximize personnel protection during all phases of response operations by implementing a comprehensive safety and health program.
- Comply with applicable laws, rules and regulations, standards, and government agency directives.
- Ensure that personnel are thoroughly briefed on workplace chemical and physical hazards and on Macpherson's policies, practices, and procedures to eliminate the hazards or reduce them to an acceptable level.
- Minimize personnel exposure to workplace hazards.
- Minimize job injuries and illnesses.
- Establish a positive working relationship with federal and state safety and health agencies.
- Maximize the safety and health of the public.

B.5 CHAIN OF COMMAND

Overall responsibility for safety and health issues during response operations rests with Macpherson's Incident Commander. In a minor spill or the initial stages of a sustained response, the Operations Manager or, in the case of a sustained response, the Safety Officer is responsible for safety and health matters. These safety-and-health-related activities are:

- Ensure that all response personnel have received the necessary level of training required under the HAZWOPER regulations.
- Ensure that all company safety policies, procedures, and practices are known and strictly adhered to during the conduct of response operations.
- Assist in personnel exposure monitoring.
- Ensure that there is an adequate supply of protective clothing and equipment for all personnel involved in response operations, and that personal protective equipment is properly utilized throughout operations.
- Ensure that all personnel are aware of, and take all appropriate actions to protect themselves from all situations that pose a threat to their safety and health.
- Suspend any activity that poses a threat to personnel safety and health that cannot be avoided or mitigated through the use of protective clothing for the adoption of a safety operating procedure.
- Determine where first aid stations will be located, arranging for qualified staffing at these stations, see that adequate first aid supplies are available, and assure that the locations of first aid stations are clearly posted.
- Maintain regular communications with emergency medical teams and first aid stations.
- If necessary, establish a safety and health awareness training program for contract personnel involved in response operations.
- Issue Safety and Health Bulletins, as appropriate.
- Maintain a record of all job-related injuries, including their cause, nature, and any corrective actions taken.
- Serve as the principal point of contact for OSHA representatives assigned to monitor response operations.
- Ensure that decontamination stations are established and that all personnel are decontaminated before leaving their work stations during breaks and at the end of each shift.

B.5.1 Supervisor Responsibilities

The supervisor is responsible for giving safety and loss prevention primary consideration with other factors that affect daily decisions. He/she is responsible for actively supporting safety and lost prevention performance by the following actions:

- Communicate safe rules and standards to Macpherson and contractor employees.
- Create an atmosphere in which safety issues can be proactively discussed and resolved.
- Set examples.
- Provide the tools necessary for a safe working environment.
- Strictly enforce safety rules and standards.
- Report and investigate incidents, injuries, and serious potential incidents.
- Conduct routine safety inspections.
- Promptly correct unsafe conditions.
- Hold and document regular safety meetings.

B.5.2 Employee Responsibilities

Each employee must have a positive attitude toward injury prevention and safety. The employee should believe that all injuries can be prevented and act accordingly. The employee is responsible for the following actions:

- Perform the job safely, for personal safety, safety of fellow workers, and protection of facilities. This includes the proper use of safety equipment and devices, as well as safe work practices.
- Report every injury, as well as unsafe conditions or practices (including contractors), to his/her supervisor.
- Participate in safety meetings.
- Assist in reporting and investigating incidents, injuries, and serious potential incidents.
- Review and become familiar with the contents of safety manuals, handbooks, and publications.

B.5.3 Contractor Responsibilities

Contractors shall take all necessary precautions for the safety of all persons on the worksite. Contractors shall comply with Macpherson safety rules and regulations and applicable federal, state, and local safety laws, rules, and regulations necessary to prevent injury to persons or damage to property. In addition, contractors shall:

- Perform all work in a safe workmanlike manner.
- Provide necessary safety equipment for their employees.
- Report injuries and incidents, no matter how slight, (including property damage) immediately to the Macpherson supervisor or designated alternate.
- Not operate valves or equipment without the Macpherson supervisor's or designated alternate's approval, except in a life threatening emergency situation.
- Hold a pre-job safety meeting and other safety meetings as needed during the execution of the job.

B.6 COORDINATION WITH GOVERNMENT AGENCIES

During the conduct of response operations, the Macpherson Incident Commander will meet, on a regular basis, with the federal On-Scene Coordinator and the State On-Scene Coordinator. Safety and health considerations will be one of the issues addressed at these meetings, particularly with regard to matters relating to the incident-specific application of relevant safety and health laws, rules, and regulations, policies, practices, and procedures.

The Safety Officer will coordinate company activities with federal and state government safety and health personnel. These activities may include:

- Identify and characterize physical and chemical hazards at each work site.
- Determine appropriate levels of personal protection equipment based on the results of air monitoring and the continuous assessment of physical and chemical hazards.
- Review of site safety plans.
- Evaluate the effectiveness of safety and health policies, practices, and procedures.
- Comply with agency directives.
- Evaluate the ongoing training needs of response personnel.
- Review incident-specific HAZWOPER training programs.
- Investigate safety and health incidents.
- Allocate safety and health resources.

B.7 DEVELOPMENT OF SITE-SPECIFIC SAFETY AND HEALTH PLAN(S)

The Safety Officer will prepare a Site-Specific Safety and Health Plan(s) that will be kept on site and address the safety and health hazards of each phase of site operations and include requirements and procedures for worker protection. All site personnel will be required to read the plan and acknowledge they are aware of and fully understand its contents in accordance with 29 CFR 190.120. The format to be followed is provided in Attachment B-1 at the end of this appendix.