



Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality

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December 14, 2001

CARY E. BECHTOLT
NIEMI OIL COMPANY
PO BOX 989
ASTORIA OR 97103

TED MCCALL
MCCALL OIL AND CHEMICAL CORPORATION
5480 NW FRONT AVENUE
PORTLAND OR 97201-1116

LARRY VANDERMAY PMB 440 1521 N JANTZEN PORTLAND, OR 97217	BRIAN HARRIS HARRIS ENTERPRISES 3077 NE ST HELENS ROAD PORTLAND OR 97210
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PETER GEARIN
PORT OF ASTORIA
ONE PORTWAY
ASTORIA OR 97103

KEN VALDER
QWEST CORPORATION
1600 7TH AVENUE, ROOM 2708
SEATTLE WA 98191

RICHARD L. DELPHIA
DELPHIA OIL COMPANY
65 PORTWAY
ASTORIA OR 97103

DAVE WICKLAND
CHEVRON-TEXACO PRODUCTS COMPANY
6001 BOLLINGER CANYON RD
BUILDING V, ROOM 1148
SAN RAMON CA 94583-0712

FRANK FOSSATI
SHELL OIL COMPANY
24551 RAYMOND WAY, SUITE 160
LAKE FOREST, CA 92630

RECEIVED
DEC 19 2001

**RE: Astoria Area-Wide Petroleum Contamination
DEQ ECSI #2277**

Dear Sirs/Madam:

The Department of Environmental Quality (DEQ) is transmitting the executed Unilateral Order (UO) for a Remedial Investigation/Feasibility Study (RI/FS) and interim removal action measures (IRAMs) of the Astoria Area-Wide Petroleum Contamination site in Astoria, Oregon. Potential Responsible Parties (PRPs) included are Niemi Oil Company, McCall Oil and Chemical Corporation, Van West/Harris Enterprises, Port of Astoria, Delphia Oil Inc., Shell Oil Company, Chevron-Texaco, and US West (Qwest). DEQ recommends that you explore formation of a PRP committee for the purposes of delineating responsibility and coordinating response to the requirements of the order.

Johnson Oil Company has not been included in the order because they are actively working on a cleanup with the DEQ UST Group. Also, the levels of groundwater contamination at their facility are minor and do not exceed DEQ's default risk-based cleanup levels for the remediation of petroleum contaminated sites.

In an October 31, 2001 letter, DEQ requested that the PRPs submit Statement of Work (SOW) proposals to be included in the UO SOW. DEQ has incorporated the site-specific SOW proposal received from Qwest.

Call me at (503) 229-5213 if you have questions.

Sincerely,



Anna Coates
SR Project Manager

Attachment

cc: Bruce Gilles, DEQ NWR-SR
Dave St Louis, DEQ NWR Manager SR
Rob Hood, DEQ NWR-UST/LUST Group
Norm King, DEQ
Mike Lilly, Attorney for Port of Astoria
Max Miller, Tonkon Torp
Chris Rich, Ryciewicz & Chenoweth
Rick Glick, Davis Wright Tremaine for Shell Oil Company
Jerry Hodson, Miller Nash
David Shannon, Law Office
Steve Gottesman, Johnson Oil Company
Donna Lacombe, Tetra Tech
Project File

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

In the Matter Of:)	DEQ No. ECSR-NWR-01-11
)	
PORT OF ASTORIA, MCCALL OIL)	
AND CHEMICAL CORPORATION,)	
VAN WEST/HARRIS ENTERPRISES)	
NIEMI OIL CO., CHEVRON-TEXACO,)	
SHELL OIL COMPANY, DELPHIA OIL)	
COMPANY, AND QWEST)	
)	
)	
)	
RESPONDENTS.)	ORDER REQUIRING
)	REMEDIAL INVESTIGATION,
)	FEASIBILITY STUDY, AND
)	INTERIM REMOVAL ACTION
)	MEASURES

Pursuant to ORS 465.260(4), the Director, Oregon Department of Environmental Quality (DEQ), issues this Order to Port of Astoria, McCall Oil and Chemical Company (McCall Oil), Van West/Harris Enterprises (now Flying Dutchman and Harris Enterprises), Niemi Oil Company (Niemi Oil), Chevron-Texaco, Shell Oil Company (Shell), Delphia Oil Company, and Qwest referred to together in this Order as "Respondents". This Order contains the following provisions:

1. Purpose

The purpose of this Order is to characterize the nature and extent of hazardous substances in soil, surface water, sediment, air, and groundwater and to develop and implement interim removal action measures at the Astoria Area Wide site located in Astoria Oregon, by requiring performance of a Remedial Investigation (RI), and a Feasibility Study (FS) in accordance with ORS 465.200 et seq. and regulations promulgated pursuant thereto.

2. Findings of Fact

DEQ makes the following findings:

- A. Location.** The site is located in Astoria, Oregon (see Figure 1). For purposes of this Order, the area is collectively referred to as the “Astoria Area Wide Petroleum Site (Astoria Area Wide)” unless otherwise noted.
- B. Boundaries.** The area of the investigation under this Order is generally shown on Figure 2 and includes:
- a) All of the property that is bounded by the Burlington Northern Railroad tracks to the southeast, Portway Street to the northeast, the Columbia River to the northwest, and Hamburg Street (including the McCall Oil Bulk Facility at 585 Hamburg Street) to the southwest. All of the property bounded by the Burlington Northern Railroad tracks to the northwest, Hamburg Avenue to the southwest, Marine Drive to the southeast and Port Street to the northeast.
 - b) The Columbia River boundary includes water and sediment along the shoreline and extending into the river as necessary to address impacted areas.
 - c) The investigation boundaries may be modified based upon results from further investigations. If investigations indicate that a plume of contamination above risk-based cleanup levels or ambient water quality criteria extends onto neighboring properties, then the area of investigation may be expanded to include the additional area(s) affected by the plume.

C. Ownership and Operations

a) Port of Astoria

Respondent Port of Astoria (Port) owns most of the impacted property between the river and the railroad tracks. Port operations have historically involved maritime

shipping activities from three piers located within the project area. Several bulk oil storage facilities owned and operated by third parties have been located on the property and were used in the shipping activities at the Port facility. The Port owned and operated two USTs, which were used for Port operations.

b) McCall Oil and Chemical

Respondent McCall Oil and Chemical (McCall) owns and previously operated a Bulk Oil storage facility located on the Port property. McCall also owns three underground pipelines that conveyed petroleum products, excluding gasoline, from the bulk plant to ship fueling stations located on Pier 2. The Port owns the property occupied by both the bulk plant and the pipelines. The bulk plant and transfer lines were installed in 1925. Chevron is one of the past owners of the McCall Bulk Oil Plant.

c) Van West/Harris Enterprises

Respondents Van West/Harris Enterprises (now Flying Dutchman and Harris Enterprises) operated an automobile service station located at 460 West Marine Drive. The service station included four gasoline underground storage tanks (USTs) and associated pump station(s). The service station was constructed in the early 1930s, and was closed in 1990 following the discovery of a major gasoline release. Shell was one of the previous owners of the facility.

d) Niemi Oil Company

Respondent Niemi Oil Company owns and operates a cardlock facility located at 455 Industry Street. Commercial fuel dispensing began in the 1920s, and is currently operating. Niemi Oil also owned and operated a bulk oil plant at 490

Industry Street located on the Port property. The bulk plant was constructed in 1927, and operated until some time in the 1990s, when the above ground tanks (ASTs) were removed.

e) Delphia Oil, Inc.

Respondent Delphia Oil Inc is the current owner of Val's Texaco (formerly Portway Texaco) at 452 West Marine Drive. Val's Texaco (now Chevron-Texaco) has been in operation since 1965. Delphia Bulk Oil facility at 65 Portway Street has been in operation since 1929, and is owned and operated by Delphia Oil Inc.

Texaco is a former owner/operator of the Delphia facility. Both facilities handle diesel and gasoline.

f) Chevron-Texaco

Respondent Chevron-Texaco is a former and current operator of Val's Texaco at 452 West Marine Drive, and Young's Bay Texaco at 490 West Marine Drive.

Youngs Bay Texaco was formerly a Chevron Station.

g) Shell Oil Company

Shell operated a Shell Bulk Oil facility on Portway from 1926 through 1973. The facility reportedly operated seven tanks, including both gasoline and diesel tanks and three pipelines. The tank farm has been decommissioned and the property redeveloped.

h) Q West

The Q West facility at 481 Industry Street was formerly US West – Astoria Garage.

Qwest is the former site of a 10,000 gallon gasoline UST and associated fuel transfer and pumping station used to fuel their fleet of vehicles. Fleet fueling

operations occurred from 1962 to 1997 when UST and associated lines and pumps were decommissioned.

D. Spills, Environmental Investigations and Cleanups

a) Port of Astoria

Port of Astoria operated underground gasoline and diesel tanks from the 1920s to 1993, when they were decommissioned. DEQ issued a no further action determination for the USTs in 1993.

b) McCall

One of McCall's diesel fuel transfer lines at the Port of Astoria was a source of a significant diesel release near the Port of Astoria's offices, which was discovered following the failure of a line tightness test in 1993. The DEQ Spill Program provided oversight during mitigation efforts, which included a free product recovery system and installation of oil sorbent booms in the Columbia River. Recovery efforts were largely ineffective, apparently due to system design limitations and complicating factors such as tidal influences on groundwater levels, and biofouling of the skimmer pumps. As part of the pipeline investigation, a network of eleven monitoring wells was installed to assess the extent of groundwater contamination. Groundwater monitoring identified up to 3.5 feet of free diesel product downgradient of the diesel release, and identified significant gasoline contamination from an upgradient source. Benzene, ethylbenzene, and xylene were detected at concentrations at least an order of magnitude above reference levels. Benzene, toluene, ethylbenzene and xylene (BTEX) concentrations in the plume detected in two rounds of groundwater sampling conducted from December 1994 to January 1996 are compared with reference concentrations in Table 2.

McCall Oil Bulk Fuel facility has operated since approximately 1925. In 1997 it had four bulk oil storage tanks ranging in size from 63,000 to 3.3 million gallons and two USTs (see Table 1). Chevron, the previous operator, disposed of tank bottoms into three on-site pits. McCall paid to have the tank bottoms removed in 1984-85 but did not conduct post-removal sampling. A 1996 investigation

showed metals, petroleum products, and PAHs remaining in soil and groundwater. DEQ placed the site on the Confirmed Release List, and recommended an Expanded Preliminary Assessment in 1997.

c) Van West/Harris Enterprises

The Van West/Harris Enterprises site was the source of a major gasoline release that was discovered in 1990. Approximately 10,000 cubic yards of petroleum impacted soil was removed and treated offsite. Van West/Harris Enterprises has not conducted off-site investigations to delineate the extent of off-site soil or groundwater contamination. Investigations on adjacent properties suggest that gasoline has migrated to the adjacent Niemi Oil Cardlock and Qwest facilities.

d) Niemi Oil

The Niemi Oil Cardlock facility has significant documented gasoline impacts. Possible sources are onsite migration from adjacent properties and two existing on-site USTs. In 1987, a spill of 50 to 100 gallons of diesel was reported at the facility. The spill impacted the combined storm water overflow.

DEQ records indicate that four USTs may have been abandoned at the Niemi Oil Bulk Plant location from 1987 to 1988. It appears that no decommissioning or site assessments were performed. The site was placed on the Confirmed Release List in 1997. DEQ Site Assessment has recommended that a RI be performed to determine the extent and magnitude of gasoline contamination resulting from on-site operations.

e) Delphia Oil Bulk Fuel Facility

The Delphia facility has been the subject of several third party complaints reported to DEQ. A November 16, 1973 letter from the Astoria Fire Marshall to Ashbury Transportation Company, a fuel delivery company, describes an on-site gasoline release due to improper fuel transfer connections: "In making his delivery the connection at the end of the hose where it joined the bulk plant line was leaking so much gas he had two buckets there to catch it. There was gasoline in the gutter, which was flowing into the storm drain, which empties into the Columbia River...." In a complaint dated August 24, 1994, it was stated that the "Bulk plant is leaking. [There is] no bottom to the retaining wall surrounding the tank. Sand has been

placed in the tank to stop the leak. Fuel from station is pumped into tank to cover up leakage loss”.

A spill complaint concerning the facility was received by the Department on September 22, 2001. The complainant alleged long term improper handling of petroleum products; including leaking hoses, dumping oil at the back of the facility, and discharging pressure washing soap and oil into the storm drain.

Given the long term diesel and gasoline storage at the site (1929 to present), including operation as a Texaco bulk fuel facility, it is likely that there have been significant petroleum releases at the site that have not been assessed.

f) Chevron-Texaco

Young's Bay Texaco at 490 West Marine Drive was formerly Chevron Station #95872. DEQ has a Leaking Underground Storage file for the site (LUST 04-91-0250).

Five USTs; three gasoline, one fuel oil, and one used oil; were decommissioned in June 1992. Approximately 480 cubic yards of soil was excavated. A pocket of gasoline contaminated soil (up to 10,000 ppm) was left in-place. Benzene, toluene, ethylbenzene and xylene (BTEX) were detected at levels up to 2.99 ppm, 2.18 ppm, 2.51 ppm, and 23.5 ppm, respectively. At 2.99 ppm, Benzene exceeds the soil exposure pathways for the occupational standards for vapor intrusion into buildings (0.1 ppm), and leaching to groundwater (0.5 ppm).

Benzene was detected in groundwater at concentrations of up to 1,200 ppb. Groundwater monitoring wells were installed and monitored between 1991 and 1993. Based on the data, it did not appear that this site is a major contributor of petroleum-contaminated groundwater. However, this site was not reviewed under risk-based guidance and the remaining soil contamination is likely leaching contaminants to groundwater.

In addition, samples were not analyzed for ethylene dibromide (EDB) ethylene dichloride (EDC), lead, methyl t-butyl ether (MTBE) as now required.

g) Shell Oil

DEQ has no records concerning the decommissioning of the Shell bulk fuel facility or the associated fuel pipelines. A Standard Operating Procedures manual from 1936 suggests that tank bottoms were routinely buried on-site. Given the long term (1926-1973) operation as a bulk fuel facility, it is likely that there have been significant petroleum releases at the site and along the pipelines that have not been assessed. The site is likely a source of gasoline, diesel, and other petroleum contamination.

h) Qwest

Qwest was formerly US West Garage. DEQ has a LUST file for the site (LUST 04-97-0735). One 10,000-gallon gasoline UST was decommissioned in-place in 1997. Gasoline and heavy oil petroleum hydrocarbons were detected. Soil samples collected from the facility contained gasoline contamination and benzene at levels up to 7,400 ppm, and 20 ppm, respectively. While some excavation of contaminated soil was performed, gasoline contamination of up to 3,100 ppm remains in place. In a sample with 660 ppm gasoline, benzene was detected at a concentration of 3.9 ppm. Concentrations at the site exceed risk based occupational standard soil exposure pathways for vapor intrusion into buildings (0.1 ppm) and leaching to groundwater (0.5 ppm).

One groundwater sample collected along the product lines contained 2.2 ppm benzene. The benzene concentrations exceed acceptable risk based exposure pathways for groundwater ingestion, vapor intrusion into buildings, and contact with groundwater in an excavation. Soil and groundwater data from soil and groundwater samples collected upgradient of the UST systems indicates some of the groundwater contamination may have migrated on site from the Chevron (Texaco) and/or the VanWest/Harris Enterprises sites.

E. Releases to the Columbia River

Releases of petroleum products to the Columbia River have been documented at Slip 1 at the Port since 1993. The Columbia River adjacent to the site is in the Lower Columbia

National Estuary Program (NEP), considered by DEQ to be an ecologically vulnerable area. This reach of the Columbia River is also a migratory route for steelhead and salmon, including several species listed as threatened or endangered by the National Marine Fisheries Service (NMFS).

F. Gasoline and Diesel Contaminant Plume

Based on the available analytical data it appears that a contiguous area-wide gasoline plume and two or more localized areas of significant diesel/heavy oil contamination exist at the site and continue to impact waters of the Columbia River (see Figure 2). The two areas of diesel/heavy oil contamination are commingled with the gasoline plume. The gasoline plume comprises an elongated north-south trending area extending from near West Marine Drive to the south, to the Columbia River on the north. Both the horizontal and vertical extent of the plume requires further delineation.

3. Conclusions of Law and Determinations

Based on the above Findings of Fact and the administrative record, DEQ determines that:

- A. The Property described in Subsections 2.A. and 2.B. of this Order is a “facility” under ORS 465.200(12).
- B. Each Respondent is a “person” under ORS 465.200(20).
- C. The substances described in Subsections 2.D., 2.E., and 2.F. of this Order are all or in part “hazardous substances” under ORS 465.200(15).
- D. The presence of hazardous substances at the site, including any areas to which hazardous substances may have migrated, or accumulated, including the Columbia River, constitutes a “release” into the environment under ORS 465.200(21) and OAR 340-122-30(2).
- E. Under ORS 465.255(1), as a current or former owner and/or operator of the facility, Respondents are liable for the conduct of any removal or remedial action necessary to protect public health, safety, and welfare and the environment.
- F. The activities required by this Order are necessary to protect public health, safety, and welfare and the environment and to ensure that Respondents’ remedial actions satisfy applicable state law and rules.

Based on the above Findings of Fact and Conclusions of Law and Determinations, DEQ

ORDERS:

4. Notice of Intent to Comply

Respondent shall provide written notice to DEQ, no later than ten (10) business days after issuance of this Order, of intent to comply with this Order.

5. Work to be Performed

A. Remedial Investigation/ Feasibility Study (RI/FS)

Respondents shall perform an RI/FS in accordance with the terms and schedule set forth in the Scope of Work, attached to and incorporated by reference into this Order as Attachment A, and as set forth in work plans reviewed and approved by DEQ pursuant to the SOW. The RI shall determine the extent of soil, surface water, sediment, air and groundwater contamination, and shall assess the risk of adverse effect to human health and the environment that might result from exposure to the contamination. The FS shall evaluate a range of options for remediation of any medium that poses an unacceptable risk to human health, safety or welfare, or the environment.

B. Interim Removal Measures

Respondent shall perform Interim Removal Measures (IRMs) in accordance with OAR 340-122-070 necessary to prevent, minimize or mitigate damage to public health, safety, or welfare or to the environment. Such IRMs shall be initiated with a work plan or proposal, and performed in accordance with the terms and schedules set forth in any work plan reviewed and approved by DEQ pursuant to this order.

6. General Provisions

A. Qualifications of Personnel

- (1) All work required by this Order shall be performed under the supervision of a qualified environmental professional experienced in hazardous substance investigation or remediation. Within fifteen (15) days of issuance of this Order, Respondents shall provide DEQ, in writing, the name, title, and qualifications of such supervising personnel and of contractors and subcontractors to be

used in performance of work. Qualifications of such personnel shall be subject to DEQ review and, at DEQ's election, DEQ approval or disapproval. If DEQ disapproves in writing the qualifications of any personnel, Respondents shall provide DEQ in writing the name, title, and qualifications of replacement personnel, subject to DEQ's review and approval as described above. If DEQ subsequently disapproves the replacement personnel, DEQ reserves its right under ORS 465.260 to perform the remedial work and to seek reimbursement of costs from Respondents.

- (2) If Respondents changes supervisory or key contractor personnel during the course of work under this Order, the qualifications of the personnel shall be subject to review and approval in accordance with paragraph (1) above.

B. DEQ Approvals

- (1) Respondents shall not proceed to implement any plan or activity required under this Order, and shall not proceed with any other investigative or remedial activity concerning hazardous substances at or from the Property, until DEQ review and approval for the activity is received. Any reports, plans, specifications, schedules, or other deliverables required by the Order, upon approval by DEQ, are incorporated into, and enforceable under, this Order. Any non-compliance with such DEQ-approved deliverables shall be considered a violation of this Order. For the purpose of this Order, "day" means working day unless specified otherwise.
- (2) After review of any plan, report, or other item required to be submitted for DEQ approval under this Order, DEQ shall either approve the deliverable in whole or in part, or disapprove the deliverable in whole or in part and notify Respondents of deficiencies and/or request modifications to cure the deficiencies.

- (3) In the event of DEQ's disapproval or request for modification of a deliverable, Respondents shall correct the deficiencies and resubmit the revised report or other item for approval within ten (10) days of receipt of the DEQ notice or other such time as specified in the notice.
- (4) In the event of two deficient submittals of the same deliverable, DEQ may modify the submission to cure the deficiencies.
- (5) In the event of approval or modification of a deliverable by DEQ, Respondents shall implement the action(s) as required by the plan, report, or other item, as so approved or modified.

C. DEQ Access and Oversight

- (1) Respondents shall allow DEQ to enter and move freely about all portions of the Property at all reasonable times for the purposes, among other things, of inspecting records relating to work under this Order; observing Respondents' progress in implementing this Order; conducting such tests and taking such samples as DEQ deems necessary; verifying data submitted to DEQ by Respondent; and, using camera, sound recording, or other recording equipment.
- (2) Respondent shall notify DEQ of any excavation, drilling, or sampling to be conducted under this Order at least five (5) working days before such activity. Upon DEQ's verbal request, Respondent shall make available to DEQ a split or duplicate of any sample taken in connection with this Order.

D. Project Managers

- (1) All reports, notices, and other communications required under or relating to this Order shall be directed to:

DEQ Project Manager

Anna Coates, Project Manager
Northwest Region Site Response
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987
Telephone (503)-229-5213

Email address: coates.anna@deq.state.or.us

- (2) Within five (5) days of notification of intent to comply under Section 4 of this Order, Respondents shall provide DEQ with written designation of a Project Manager(s) for purposes of this Order.

E. Quality Assurance

Respondents shall conduct all sampling, sample transport, and sample analysis in accordance with the quality assurance/quality control (QA/QC) provisions approved by DEQ as part of a work plan. Respondent shall ensure that each laboratory used by Respondents for analysis performs such analysis in accordance with approved QA/QC provisions.

Respondents shall also ensure that DEQ and its authorized representatives are allowed access at reasonable times to laboratories and personnel used by Respondents for sample analysis.

F. Records

- (1) In addition to those reports and documents specifically required under this Order, Respondents shall provide to DEQ within ten (10) days of DEQ's request copies of QA/QC memoranda and audits, raw data, draft and final plans, draft and final reports, task memoranda, field notes, and laboratory analytical reports that relate in any way to activities under this Order or to other investigative or remedial activities concerning releases of hazardous substances at or from the Property.
- (2) Respondents shall preserve all records and documents in possession or control of Respondents or that of its employees, agents, or contractors that relate in any way to activities under this Order for at least ten (10) years after termination under Section 7 of this Order. Upon DEQ's request, Respondents shall provide copies of such records to DEQ.

G. Progress Reports

During each month of this Order, Respondents shall deliver to DEQ on or before the 10th of each month three copies, one unbound and two bound, of a progress report containing:

- (1) Actions taken under this Order during the previous month;
- (2) Actions scheduled to be taken in the next two months;
- (3) Sampling, test results, and any other data generated or received during the previous month; and
- (4) A description of any problems experienced during the previous month and actions taken to resolve them.

H. Other Laws

Subject to ORS 465.315(3), all actions under this Order shall be performed in accordance with all applicable federal, state, and local laws and regulations.

7. **Satisfaction of Order**

Upon completion of work done under this Order, Respondents shall submit to DEQ a written notice of completion. This Order shall be deemed satisfied and terminated upon DEQ's issuance of a certification of completion of activities in accordance with this Order.

IT IS SO ORDERED:

By: Stephanie Hallock Date: 12-14-01
Stephanie Hallock, Director
Oregon Department of
Environmental Quality

NOTICE REGARDING FAILURE TO COMPLY:

- A. Upon Respondent's failure to comply with this Order, DEQ may seek any available remedy to enforce this Order, including but not limited to civil penalties and injunctive relief. ORS 465.260 and ORS 465.900

- B. Upon Respondent's failure to comply with this Order, Respondent may be liable for any costs incurred by the State of Oregon in conducting the work required under this Order and for punitive damages of up to three times the amount of the state's costs. ORS 465.260(8)
- C. Respondent may not seek an administrative appeal or judicial review of this Order. ORS 465.260(6)

NOTICE REGARDING OVERSIGHT COSTS:

- A. DEQ oversight costs are payable by Respondent as "Remedial Action Costs." ORS 465.330. DEQ oversight costs include both direct and indirect costs. Direct costs include site-specific expenses, DEQ contractor, and DEQ legal costs. Indirect costs include those general management and support costs of DEQ and of the Environmental Cleanup Division allocable to DEQ oversight of the Order and not charged as direct, site-specific costs.
- B. Within 30 days after receipt of a DEQ invoice, Respondent is required to pay the amount of costs billed by check made payable to the "State of Oregon, Hazardous Substance Remedial Action Fund". There is a 9% per annum interest charge on the unpaid balance of any oversight cost. Interest begins to accrue at the end of the 30-day payment period. An example invoice is shown in Attachment B.

Figure 1 General Location Map

Figure 2 Site Map

Table 1 Petroleum Handling Facilities (with figure)

Table 2 Contaminant Detections and Reference Compounds

Attachment A SOW

Attachment B Sample Invoice

TABLE 1
PORT OF ASTORIA FACILITIES
Astoria, Oregon

Map Number (Figure 2)	Site Address	Facility Name
1	433 Industry St. 455 Industry St.	Associated Oil Company Burns Johanson Oil Company Ed Niemi Cardlock Facility
2	460 Taylor Ave. 460 W. Marine Dr.	Astoria Auto Wrecking St. Louis Junk Company Ken's Shell Service Station Astoria Shell Service Station Til-O-Mac Oil Vanwest Oil Harris Enterprises Quaker State Q-Lube
3	Portway	McCall Oil Pipeline Release Area
4	585 Hamburg Ave.	Standard Oil Bulk Plant Columbia Oil Company Chevron Oil Bulk Plant McCall Oil Bulk Plant
5	481 Industry St.	Pacific Telephone and Telegraph Company Pacific Northwest Bell garage U.S. West Company garage
6	490 W. Marine Dr.	Simonsen's Chevron Service Station Astoria Chevron Service Station George's Chevron Service Station Young's Bay Texaco Food Mart
7	Portway 490 Industry St.	General Petroleum Corporation Pilot Oil Company Mobil Oil Company Burns Johanson/Ed Niemi Oil Company Ed Niemi Oil Company
8	Portway	Shell Oil Bulk Plant

TABLE 1 (continued)

9	Portway 411 Industry St. 65 Portway	Texas Oil Company (Texaco) H.T. Hacker Company, Inc. Oil & Lubricants Texaco, Inc./ H.T.Hacker Company Moore-Delphia/Texaco, Inc. Delphia Oil Company Delphia Oil, Inc.
10	469 Taylor Ave. 469 W. Marine Dr. 471 Taylor Ave. 471 W. Marine Dr.	Ida Johnson Gas & Oil West End Service Station Frank's Richfield Gas Station Johnson's Arco Gas Station Johnson's One-Stop Gas Station Johnson's Oil Company (Tesoro)
11	456 Taylor Ave. 452 W. Marine Dr.	Walt's Auto Wrecking Portway Texaco Val's Texaco
12	One Portway	Port Of Astoria
13	55 Portway	Coast Beverage
14	Portway	Port of Astoria West End Fuel Dock
15	400 West Marine Dr.	Wright Heating Oil Tank Release
16	350 West Marine Dr.	ODOT Office
17	590 Hamburg Ave.	Astoria Oil Company
18	Portway	Port of Astoria Piers and Slips

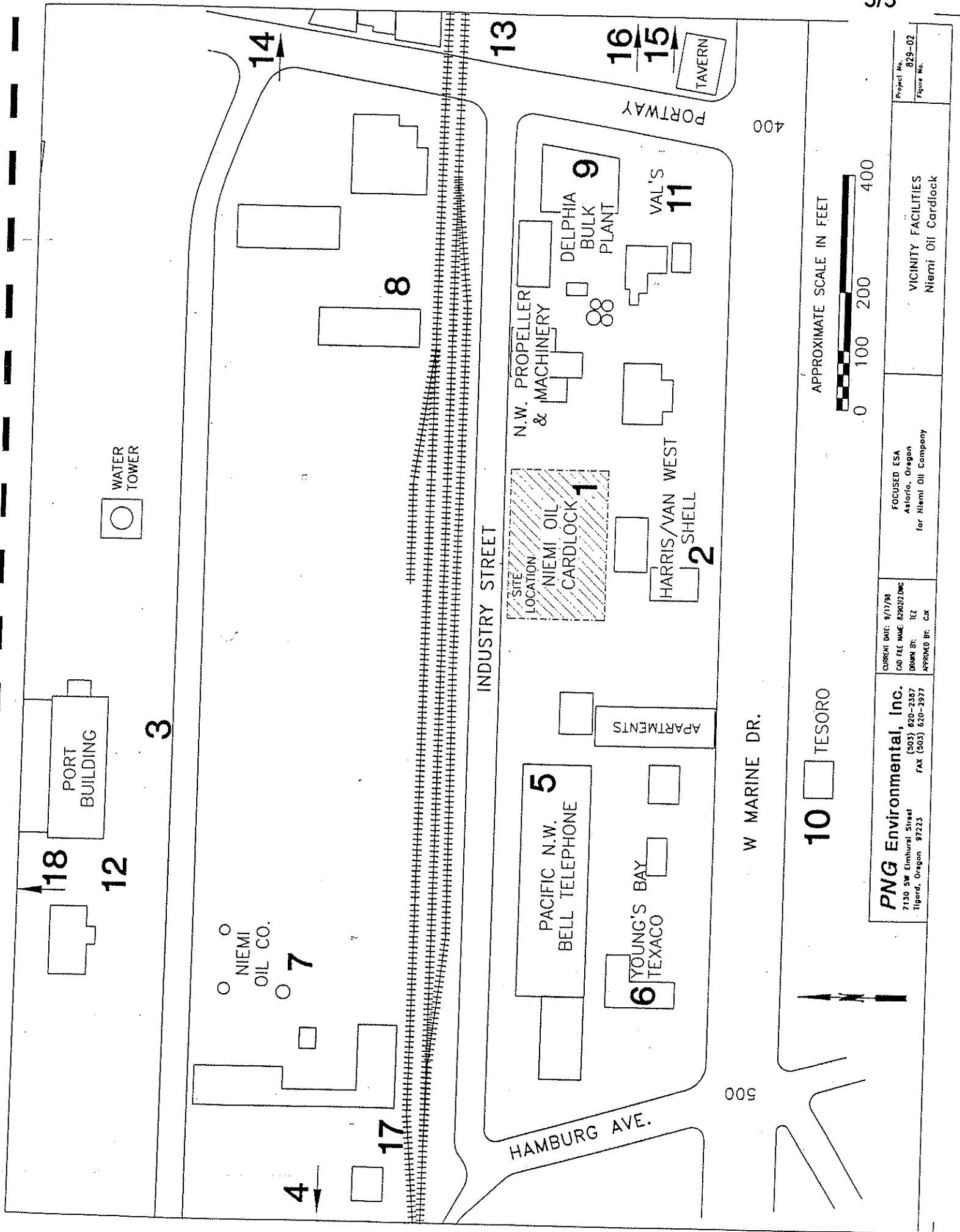
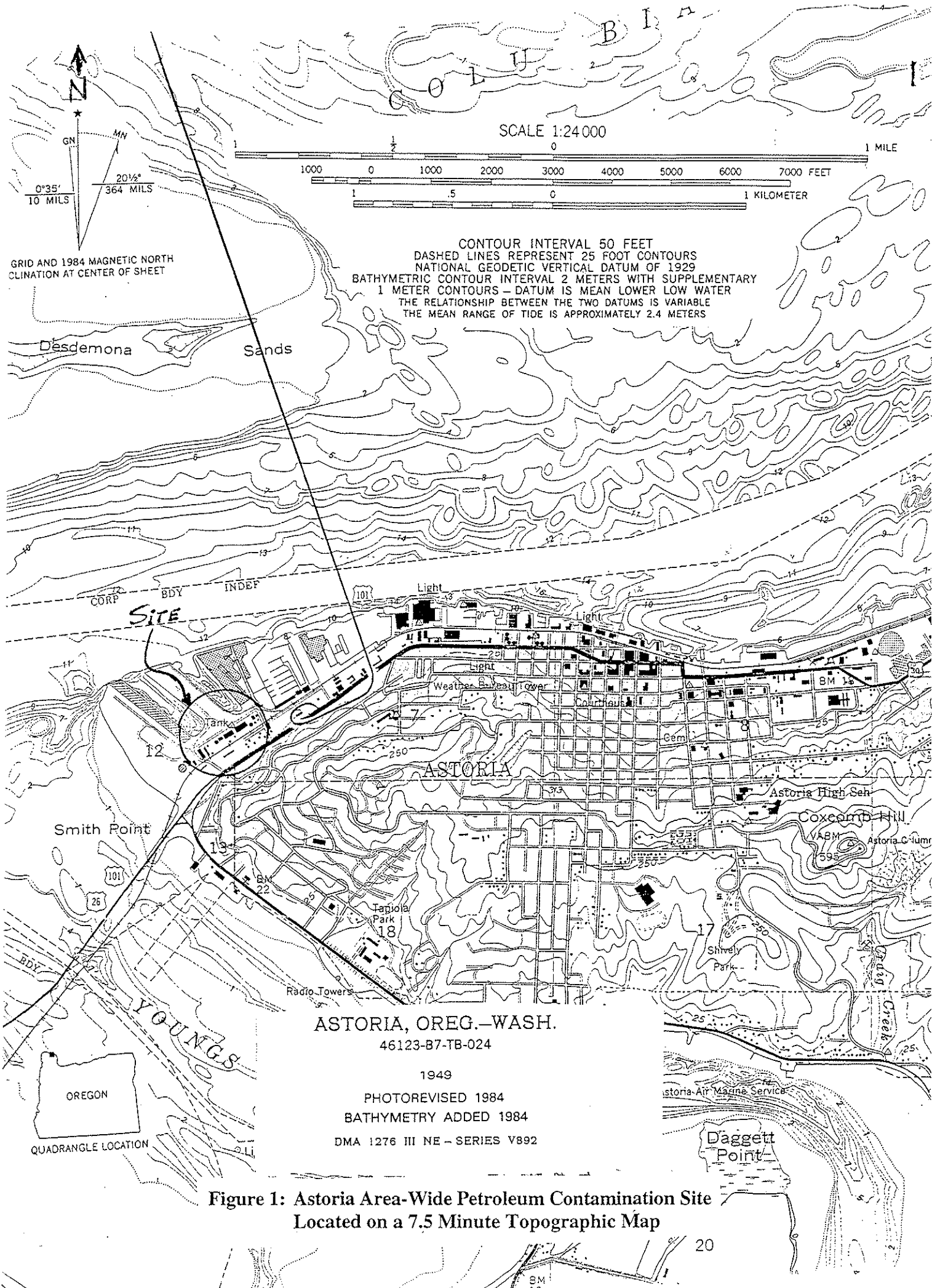


TABLE 2 - Summary of Analytical Results for Groundwater Sampling
McCall Oil and Chemical Corporation
Port of Astoria Facility
Astoria, Oregon

Monitoring Well	Sample Number	Sample Date	Analytical Results							mg/l (ppm)
			ug/l (ppb)							
			EPA Method 8020			EPA Method 8310				
			Benzene	Toluene	Ethylbenzene	Xylene	Total PAHs		TPH	
MW-1	3294-960111-002	11-Jan-96	2.6	ND>0.5	ND>0.5	ND>1.0	ND*		0.5	
MW-2	2849-941114-002	14-Nov-94	3,600	860	920	4,100	280		3.9	
	3294-960111-005	11-Jan-96	4,200	330	2,690	9,250	363		5.6	
MW-3	2849-941114-003	14-Nov-94	2,100	37	30	110	56		7.7	
MW-5	2849-941114-001	14-Nov-94	24	24	27	120	11		0.73	
	3294-960111-007	11-Jan-96	5,400	330	2,780	8,200	ND*		8.4	
MW-6	2849-941221-002	21-Dec-94	ND>0.50	ND>0.50	ND>0.50	ND>0.50	ND*		1.3	
	3294-960111-006	11-Jan-96	ND>0.5	ND>0.5	ND>0.5	ND>1.0	454		ND>0.5	
MW-7	2849-941221-001	21-Dec-94	0.9	ND>0.50	ND>0.50	ND>0.50	0.35		ND>0.05	
	3294-960111-008	11-Jan-96	2.2	1.5	0.2	1.8	ND*		ND>0.5	
MW-8	2849-941221-004	21-Dec-94	7,400	29	26	30	6.8		0.79	
	3294-960111-001	11-Jan-96	3,572	12.0	13.4	7.4	7.7		0.8	
MW-9	2849-941221-005	21-Dec-94	2,300	80	ND>25	300	168		58	
R-1	2948-950211-001	11-Feb-95	1,000	ND>5	5	8	ND*		ND>0.05	
MW-10	3294-960111-003	11-Jan-96	ND>0.5	ND>0.5	ND>0.5	ND>1.0	ND*		ND>0.5	
MW-11	3294-960111-004	11-Jan-96	1,610	130	620	490	584		5.4	
DEQ Level II Ecological Screening Benchmark Value (ppb) ¹			130	9.8	7.3	1.8				
EPA Ambient Water Quality Criteria (ppb)			700 ^{mc}	5,000 ^{mc}	430 ^{ma}					
DEQ Groundwater Reference Concentration (ppb)			3	1	0.7	7				
¹ For Aquatic Organisms in Fresh Water										
^{mc} Marine Chronic Criterion										
^{ma} Marine Acute Criterion										
----- No Established Ambient Water Quality Criterion										

Table 2: BTEX Concentrations in Monitoring Wells Compared to Reference Concentrations



ATTACHMENT A
REMEDIAL INVESTIGATION/FEASIBILITY STUDY AND IRAM DEVELOPMENT
SCOPE OF WORK

I. SCHEDULE

Respondents shall submit for DEQ review and approval work plans and reports which address all elements of this Scope of Work (SOW). Elements of the SOW may be addressed by alternative means or by using existing data or information to the extent that the data are applicable, meet the objectives of the remedial investigation and feasibility study (RI/FS), and are of acceptable quality assurance and quality control (QA/QC).

All work completed under this Order shall proceed in accordance with the schedule below:

Deliverable	Schedule
Phase 1 RI and IRAM Development Proposals	To DEQ by January 16, 2002.
Scoping Meeting with DEQ	January 23, 2002.
Draft RI and IRAM Development Work Plan	To DEQ within 30 days of Scoping Meeting.
Final RI and IRAM Development Work Plan	To DEQ within 15 days of receipt of DEQ Comments on Draft RI and IRAM Work Plans.
Implementation of Work Plan	Within 10 days of DEQ Approval.
Draft Phase 1 Report	Within 120 days of Implementation.
Final Phase 1	Within 10 days of receipt of DEQ Comments on Draft Phase 1 Report.
Meeting to Discuss Phase 1 Findings and Phase 2 SOW	With DEQ within 10 days of Receipt of Phase 1 Report.
Draft Phase 2 RI Work Plan	Within 15 days of Meeting.
Final Phase 2 RI Work Plan	Within 10 days of Receipt of DEQ's Comments on the Draft Work Plan.
Phase 2 Implementation	Within 10 days of DEQ Approval of the Final Work Plan.
Draft Phase 2 Report	Within 90 days of DEQ Approval of Phase 2 Work Plan.

Deliverable	Schedule
Final Phase 2 Report	Within 10 days of Receipt of DEQ Comments on Draft Phase 2 Report.
Meeting to Discuss Phase 2 Findings and Risk Assessment	With DEQ within 15 days of Receipt of Final Phase 2 Report.
Draft Risk Assessment Work Plan	Delivery date to be Specified in Project Management Section of RI/FS Work Plan.
Final Risk Assessment Work Plan	To DEQ within 15 days of Receipt of DEQ Comments on Draft Risk Assessment Work Plan.
Draft Risk Assessment Report	Within 120 days of DEQ Approval of Risk Assessment Workplan.
Final Risk Assessment Report	Within 10 days of Receipt of DEQ Comments on Draft Risk Assessment Report.
Meeting	As Needed.
Draft Feasibility Study Work Plan	Delivery Date to be Specified in Project Management Section of RI/FS Work Plan.
Final Feasibility Study Work Plan	To DEQ within 15 days of Receipt of DEQ Comments on Draft Feasibility Study Work Plan.
IRAM Reports	Within 180 days of Implementation of the IRAMs.
Draft RI/FS Report	Delivery Date to be Specified in Project Management Section of RI/FS Work Plan.
Meeting	As Needed.
Final RI/FS Report	To DEQ within 24 Months of Project Implementation.

DEQ shall endeavor to provide written comments on work plans and reports according to the above schedule. Respondents may amend work plans as necessary to reflect or incorporate newly discovered information and/or environmental conditions. Additional work plans and work plan amendments are subject to DEQ review and approval and shall be processed according to schedules negotiated between the parties at the time of each phase change or task addition. Respondents shall initiate and complete work according to the schedule specified in the applicable approved work plan or amendment.

II. GOALS AND OBJECTIVES

The goals for work performed pursuant to this Scope of Work shall be to complete development and implementation of IRAMs within 18 months of issuance of the Order, and complete the RI/FS within 24 months of issuance of the Order.

The overall objectives for the work performed under this SOW include the following:

1. Identify the hazardous substances released to the environment.
2. Determine the nature, extent and distribution of hazardous substances in affected media on and off-site.
3. Determine the direction and rate of migration of hazardous substances.
4. Identify migration pathways and receptors.
5. Determine the risks to human health and the environment.
6. Identify hot spots of contamination.
7. Develop the information necessary to evaluate remedial action alternatives and select a remedial action.
8. Generate or use data of sufficient quality for site characterization, risk assessment, and the selection of remedial alternatives.

Site specific objectives to be addressed under the work performed pursuant to this Scope of Work include the following:

1. Develop and implement an IRAM to limit discharge of contamination to the Columbia River during the RI/FS Phase 1 Workplan and Implementation process.
2. Develop and implement an IRAM to mitigate VOC vapor intrusion into buildings at levels exceeding DEQ Risk Based Concentrations.
3. Document and evaluate the current storm water system. Locate and evaluate all oil water separators, discharge points, dry wells, sumps, and other applicable features. Evaluate surface water quality data.
4. Locate underground utilities and evaluate their potential to act as pathways for contaminant migration.
5. Determine how tidal and seasonal influences are likely to effect interim or final remedial options for the facility.
6. Complete a beneficial land and water use survey.

7. Characterize affected media consistent with DEQ Risk-Based Decision Making for Petroleum-Contaminated Sites.

III. RI/FS PHASING AND IRAM DEVELOPMENT

The RI/FS may be developed in a phased approach including the following three RI Phases and additional sub-phases as necessary to satisfy the goals and objectives of the RI/FS described in Section II above.

Proposal

The RI Proposal is a conceptual plan that describes the RI/FS and IRAM development approach for the site. The proposal shall describe completing the RI/FS in three phases, criteria that will be used to develop and evaluate potential IRAMs; and the investigation methods and methods of data analysis.

Phase 1

Phase 1 of the RI/FS shall, at a minimum, involve facility-specific source area investigations and development of IRAMs for DEQ approval.

Phase 1 Source Area Investigation

Phase 1 consists of a background investigation; soil, groundwater, surface water and sediment quality characterization; determination of groundwater flow directions and gradients; and a screening-level risk assessment.

Background information to be included for each facility: 1) a site description, 2) ownership and operations history, 3) regulatory history, 4) waste management practices, 3) past sampling data (if available), and 4) potential exposure pathways. Include historic aerial photographs and the results of local, state, and federal environmental database searches. Based on the results of the background information, investigate all potential sources of contaminants, including those that have not been previously investigated.

Characterize soil and groundwater conditions. Develop and implement a temporary-boring program to characterize source areas and identify suitable locations for the placement of monitoring wells in the shallow aquifer. Both soil and groundwater samples must be collected from the borings to evaluate the presence of hazardous substances associated with spills and past practices.

A monitoring well network must be installed in the shallow aquifer to evaluate the extent of contamination in groundwater, and groundwater flow directions and gradients. Previously installed wells may be redeveloped and included as part of the network. Seasonal groundwater fluctuations and tidal influences must be characterized. Each facility-specific system must include at least one upgradient and two downgradient wells. At a minimum, monthly groundwater contour maps and four quarters of sampling will be required.

Evaluate soil and groundwater data against DEQ's Risk-Based Decision Making for Petroleum-Contaminated Sites.

Surface water sampling locations must be established and samples collected to evaluate the quality of surface water discharging to the river and/or recharging the shallow aquifer.

Sediment samples must be collected from the River to evaluate the extent of contamination in sediments.

In an October 31, 2001 letter, DEQ requested proposed Scopes of Work from each of the Potential Responsible Parties (PRPs). DEQ reviewed the submittals and existing data to identify specific tasks for inclusion in the RI/FS Phase 1 and IRAM Development Workplan.

1. Port of Astoria

Tasks specific to the Port are to:

- Collect surface and subsurface sediment samples from within Slips 1 and 2. Analyze the samples for petroleum-related contaminants and other hazardous substances associated with the Port's maritime activities. Work with McCall Oil to design an IRAM to stop discharge of petroleum impacted groundwater to the Columbia River.
- Collect soil and groundwater data sufficient to evaluate air quality in buildings potentially impacted by the contaminant plume. Evaluate findings in relation to the Port's Central Waterfront Development Plans.
- Investigate other potential sources of contaminants on Port Property that have not been previously investigated. Potential sources include the old Portway Machine Works (Columbia Iron and Steel Works) that occupied the area between the Shell Oil facility and the Niemi Bulk Oil facility from pre-1930s to the 1970s, and Astoria Oil Services, Inc. that operated at 590 Hamburg Street. The area-specific investigation needs to address other potential hazardous substances related to these facilities such as PCBs, metals or semi-volatile organic compounds.
- Provide a comprehensive figure of the stormwater and sewer systems. Show how adjacent properties tie into the systems. Include the reporting of four quarters of storm water outfall data as a Phase 1 task.

2. McCall Oil

Tasks specific to McCall are to:

- Inspect, repair, and redevelop the existing monitoring well network. Install additional wells as necessary to develop and evaluate IRAM system designs for the pipeline diesel release.
- With input from the Port of Astoria, design an IRAM to mitigate on-going releases of free product and petroleum impacted groundwater to the Columbia River.
- Perform a source area investigation of McCall's Bulk Plant and sludge disposal area.

3. Van West/Harris Enterprises

VanWest/Harris Enterprises must:

- Describe the on-site cleanup of contamination that resulted from the major gasoline released discovered in 1990.

- Determine the extent and magnitude of on-site residual soil and groundwater contamination around the perimeter and below the base of the previous excavation, if any.
- Characterize the extent of groundwater contamination off-site in coordination with Niemi Oil and Qwest.

4. Niemi Oil Cardlock Facility

Conduct on-site source area monitoring. Describe current stormwater management, and install surface water controls, if necessary.

5. Niemi Oil Former Bulk Fuel Facility (490 Industry Street)

In addition to the general Source Area Investigation tasks described above, develop a plan for removal of abandoned fuel lines and tanks.

6. Chevron-Texaco (formerly Young's Bay Texaco)

Chevron removed USTs, excavated soil, and monitored groundwater from 1991 to 1993. DEQ records indicate that a pocket of gasoline contaminated soil was left in place. In addition, there was a release of gasoline from an above ground vault. Describe the vault gas release and cleanup. Collect additional soil and groundwater samples as needed to complete an updated risk-based evaluation. Determine if the vault gas release has impacted soil and groundwater quality on the QWest Garage site and along utility trenches.

7. Shell Oil Company

DEQ files contain little information regarding the former Shell Bulk Oil Facility. Records indicate the site operated as a bulk fuel facility from 1926 to 1973. There were reportedly seven bulk tanks at the site that contained gasoline, diesel, stove oil, and other petroleum products. The status of the associated fuel lines is unknown.

In addition to the general Source Area Investigation tasks described above, develop a plan for removal of abandoned fuel pipelines, if present. Evaluate potential contamination associated with past operation of the fuel lines.

8. Delphia Oil Company

In addition to the general Source Area Investigation tasks described above:

- Summarize the 1973 gasoline release documented by the fire department. Describe how many gallons of gasoline were spilled and corrective actions taken to address the release.
- Describe the history of pavement at the site. Include approximate dates that various portions of the site were paved.
- Describe the on-site system of catch basins. Include approximate installation dates and the historic and current operations and maintenance of the catch basin system.

9. Val's Texaco (formerly Portway Texaco)

A decommissioning report was received by the department in 1996. Reportedly, six abandoned USTs were removed from the site. No contamination was detected beneath the tanks. The product lines, however, are not mentioned in the report and apparently were not decommissioned. No samples were collected beneath the lines. No groundwater samples were collected. Design a soil and groundwater sampling program to determine if there is residual soil or groundwater contamination at the site.

10. Qwest

Qwest has submitted a proposed work scope in response to DEQ's October 31 request. The scope of work proposed (Tetra Tech EM Inc. September 16, 2001) is a good basis for the Phase 1 Workplan development, but needs to include groundwater monitoring wells and quarterly monitoring.

Phase 2

Phase 2 of the RI/FS will include additional field investigations to address data gaps in the characterization of soil, groundwater, surface water, and air. It will include completion of the human health and ecological risk assessments and implementation of IRAMs.

Phase 3

Phase 3 will address any remaining data gaps identified from the Phase 2 investigation related to the development and evaluation of remedial alternatives and completion of the FS.

IV. RI/FS AND IRAM DEVELOPMENT WORK PLAN

The work plan shall be developed in accordance with applicable Oregon rules (OAR 340-122-010 through -115) and follow the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9355.3-01, 1988, as appropriate. Existing data may be used if it meets data quality objectives for the RI/FS (results from the Mattel investigation should meet these requirements). The submitted work plan shall include, but not be limited to the following items:

A. PROJECT MANAGEMENT PLAN

This section of the work plan shall include: a proposed schedule for submittals and implementation of all proposed activities and phases pertaining to this scope of work; a description of the personnel involved in the project, and their respective roles in the project; and a discussion of how variations from the approved work plan will be managed. The project management plan should also describe roles and responsibilities for each Respondent conducting elements of work required under the Order.

B. SITE DESCRIPTION

This section of the work plan shall provide a current understanding of the physical setting of the site and surrounding area; the site history; hazardous substance and waste management history; and current site conditions. The site description should also include a description of operable units (e.g. Columbia River sediments, McCall Pipeline area, McCall bulk fuel facility, Van West/Harris Enterprises site, Niemi Cardlock, Niemi former bulk fuel facility, Chevron-Texaco LUST/UST sites, Shell bulk fuel

facility and associated pipelines) to define respective areas of responsibility for each Respondent conducting work required under this Order.

C. COMMUNITY RELATIONS PLAN

This section of the work plan shall describe Respondents activities to address the Additional Measures and Community Outreach activities to be performed under the Order. Activities to be addressed in the plan include: providing documents to information repositories, providing data summaries and figures for posting on a DEQ Web page for the site.

D. INITIAL EVALUATION

The initial evaluation section of the work plan shall provide a framework for the RI/FS and Phase 1 field investigations. Elements of the initial evaluation will include a site hydrogeologic conceptual model, a conceptual site model illustrating known and potential exposure pathways to be evaluated as part of the RI, and a description of data gaps which must be addressed to satisfy the objectives specified in Section II of this Scope of Work. The initial evaluation must provide the supporting rationale for the scope of the Phase I RI field investigation and associated data quality objectives to be presented in the subsequent section of the work plan.

E. REMEDIAL INVESTIGATION TASKS

This section of the work plan shall provide a description of the Phase 1 RI field investigation scope and rationale, data evaluation (e.g. contaminant fate and transport modeling), identification of current and reasonably likely future land and water use, and human health and ecological risk assessments. Where appropriate, the work plan may propose work plan amendments, prepared consistent with DEQ guidance, which describe details for specific tasks which cannot be fully defined until sufficient site characterization is completed (e.g. aquifer tests, groundwater flow and transport modeling, and exposure scenarios for the baseline risk assessments). However, the work plan must provide sufficient overview of the requirements specified in OAR 340-122 to provide members of the public a general understanding of the scope of the RI (e.g. process to evaluate risks to human health or the environment).

Field investigation sub-tasks shall include, but not be limited to characterization of the hazardous substances, characterization of the facility, identification of potential receptors and the collection and evaluation of information relevant to the identification of hot spots of contamination. The field investigation shall supplement previous soil, groundwater and air sampling at the facility.

Field investigation activities shall address the following:

1. Soils

The plan shall address all areas which could potentially have received spills, leaks from tanks or piping, been used for waste treatment or disposal, or have been affected by contaminated surface water or storm water runoff, and other areas where soil contamination is known or suspected.

The plan shall be designed and conducted to determine the vertical and lateral extent of soil contamination, characterize the site geology, determine the physical and chemical soil characteristics relevant to the RI, evaluate the potential for contaminant migration and gather the information necessary to identify hot spots of contamination.

2. **Groundwater**

The plan shall be designed and conducted to determine the vertical and lateral extent of groundwater contamination, both on and, if applicable, off-site; characterize the site hydrogeology, determine the physical and chemical water bearing zone characteristics relevant to the RI; evaluate the potential for contaminant migration through groundwater; and gather the information necessary to identify hot spots of contamination.

Monitoring wells and other holes shall be installed in accordance with OAR Chapter 690, Division 240 and DEQ "Ground Water Monitoring Well, Drilling, Construction and Decommissioning" guidelines (DEQ 1992).

3. **Surface Water and Sediments**

At a minimum, the plan shall delineate past and present surface drainage patterns at the site and evaluate whether surface water and to what extent sediments have been impacted by the facilities, or may be impacted in the future via contaminated groundwater discharge to surface water. The plan shall be designed to delineate the nature and extent of contamination, characterize the site hydrology, determine the physical and chemical surface water and sediment characteristics relevant to the RI, evaluate the potential for contaminant migration and gather the information necessary to identify hot spots of contamination.

4. **Air**

The plan shall include the proposed methodology for evaluating air emissions from volatilization of hazardous substances from soil and groundwater. The plan should address the method for evaluating air emissions using appropriate emission calculations and/or a field sampling program. The plan shall be designed to delineate the nature and extent of contamination, characterize the site climatology, determine the physical and chemical air characteristics relevant to the RI, evaluate the potential for contaminant migration and gather the information necessary to identify hot spots of contamination.

5. **Identification of Current and Reasonably Likely Future Land and Water Use**

The plan shall be designed to identify current and reasonably likely future land and water uses for the purposes of identifying hot spots of contamination and conducting the baseline human health and ecological risk assessments based on OAR 340-122-080 and DEQ Guidance.

F. IRAM DEVELOPMENT

The workplan shall include a framework and criteria for development of IRAMs. IRAM development will include performance of tasks necessary to evaluate and design potential IRAMs. At a minimum, an IRAM will be developed to control on-going releases of petroleum products toward and into the Columbia River (e.g., interceptor trench or barrier wall). Other potential IRAMs include delineation of hot spots, site-specific source controls, removal of abandoned fuel pipelines and associated contamination, and upgrading of stormwater controls.

G. SAMPLING AND ANALYSIS PLAN (SAP)

The work plan shall include a sampling and analysis plan (SAP). The SAP shall include quality assurance and quality control (QA/QC) procedures for both field and lab procedures. The SAP shall be sufficiently detailed to function as a manual for field staff.

In preparation of the SAP, the following guidance documents shall be utilized: Data Quality Objectives for Remedial Response Activities, EPA/540/G-87/004 (OSWER Directive 9355.0-7B), March, 1987; Test Methods for Evaluating Solid Waste, SW-846; and A Compendium of Superfund Field Operations Methods, EPA/540/P-87/001 (OSWER Directive 9355.0-14), December, 1987. The SAP shall address all topics listed in Environmental Cleanup Division Policy #760.000, Quality Assurance Policy.

H. HEALTH AND SAFETY PLAN

The work plan shall include a Health and Safety Plan (HASP) which establishes policies and procedures to protect workers and the public from the potential hazards posed by a hazardous materials site. The HASP shall address requirements specified in 29 CFR 1910.120 and OAR Chapter 437, Division 2.

I. WASTE MANAGEMENT PLAN

The work plan shall include a waste management plan describing procedures for storage, characterization, treatment and/or disposal of wastes (e.g. soil, groundwater and decontamination fluids) generated during the investigation. The plan shall identify applicable regulations and waste management requirements satisfying the substantive requirements of the regulations.

J. MAPS AND FIGURES

The work plan shall include maps of the facility, which clearly show site topography, on-site structures, waste disposal areas and proposed sampling locations. Figures illustrating the preliminary conceptual site model and hydrogeologic model and stratigraphic cross sections, supply well locations, etc. will also be included to identify key aspects of the investigation.

V. RISK ASSESSMENT WORK PLAN (S) – RI/FS WORK PLAN AMENDMENT (S)

A. HUMAN HEALTH RISK ASSESSMENT PLAN

The human health risk assessment is an analysis of the potential adverse health effects caused by a threatened or actual hazardous substance release(s) from a site in the absence of any actions to control

or mitigate these releases (i.e., under an assumption of no action). The objective is to evaluate the collective demographic, geographic, physical, chemical, and biological factors at the site, for the purposes of characterizing current or reasonably likely future risks to public health as a result of a threatened or actual release(s) of a hazardous substance. It is used to document the magnitude of the potential risk at a site and to evaluate the cause(s) of that risk. It is also used to support risk management decisions, and to set remediation goals.

The human health risk assessment portion of the work plan shall be developed based on OAR 340-122-084, DEQ guidance, the Risk Assessment Guidance for Superfund - Human Health Evaluation Manual Part A, United States Environmental Protection Agency (EPA), Interim Final, July 1989, (RAGS-HHEM); Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors", EPA, March 1991, (HHE-SG); and the Exposure Factors Handbook, EPA, 1996. A suggested outline for the human health evaluation is given in Exhibit 9-1 of the RAGS-HHEM. The work plan should use this outline as a framework for discussing the methodologies and assumptions to be used in assessing the potential human health risks at the site.

The plan shall describe the different tasks involved in preparing the human health risk assessment. The human health risk assessment can be completed using either deterministic or probabilistic methodologies. If probabilistic methodologies are to be used, then Respondent shall discuss risk protocol with DEQ before the commencement of a probabilistic risk assessment. If deterministic methodologies are to be used, then the human health risk assessment shall include an estimate of the reasonable maximum exposure (RME) expected to occur under both current and future land use conditions. In general, RME exposures should be based on the 90th percentile exposure case. Additional guidance on quantifying the RME is given in Chapter 6 of the RAGS-HHEM, SRAGS, and HHE-SG. Quantifying the potential risks associated with the RME shall be the overall goal of the risk assessment.

B. ECOLOGICAL RISK ASSESSMENT PLAN

The ecological risk assessment provides an assessment of the current or reasonably likely future potential threat to ecological receptors in the absence of any remedial action. It can provide a basis for determining whether or not remedial action is necessary, and can also be used to support risk management decisions.

The ecological risk assessment work plan shall be developed based on OAR 340-122-084; DEQ guidance; Proposed Guidelines for Ecological Risk Assessment, EPA, September 1996; Framework for Ecological Risk Assessment, EPA, February 1992; and Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual, Interim Final, EPA, March 1989 (RAGS-EEM).

The plan shall describe the different tasks involved in preparing the ecological risk assessment. The ecological risk assessment can be completed using either deterministic or probabilistic methodologies. If probabilistic methodologies are to be used, then Respondent shall discuss risk protocol with DEQ before the commencement of a probabilistic risk assessment. If deterministic methodologies are to be used, then the ecological risk assessment shall include an estimate of the reasonable maximum exposure (RME) expected to occur. Estimating the potential risks associated with the RME shall be the overall goal of the risk assessment. Ecological risk assessments may include a level I scoping plan; a level II screening plan; and a level III or level IV plan for conducting an exposure analysis, an ecological response analysis, a risk characterization and an uncertainty analysis as appropriate.

VI. FEASIBILITY STUDY WORK PLAN – RI/FS WORK PLAN AMENDMENT

The Feasibility Study (FS) shall be developed in accordance with OAR 340-122-085 and 090, DEQ guidance, and Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9355.3-01, 1988. The FS shall develop and evaluate an appropriate range of alternatives, and incorporate the IRAM and focus on enhancements to the IRAM to improve the protectiveness, effectiveness and reliability, and specifically evaluate treatment of hot spots if the IRAM does not address this preference (e.g. source area soil treatment, etc.). The FS shall be developed upon completion of the RI and within 6 months of start-up operation and maintenance of the IRAM.

VII. PLANS AND REPORTS

A. MONTHLY REPORTS

Three copies of the Monthly Reports shall be submitted to DEQ by the 10th day of the month following the reporting period.

B. REMEDIAL INVESTIGATION REPORT

The Remedial Investigation report shall follow the outline in Table 3-13 (page 3-30 - 3-31) in the CERCLA RI/FS guidance. The human health risk assessment section of the RI Report should follow the outline suggested by the RAGS-HHEM (see Exhibit 9-1 of the RAGS-HHEM). The ecological risk assessment section should include the following subsections: 1) Problem Formulation; 2) Exposure analysis; 3) Ecological response analysis; 4) Risk characterization; and 5) Uncertainty analysis.

C. FEASIBILITY STUDY REPORT

The results of the Feasibility Study (FS) shall be submitted to DEQ in a report. The FS shall provide a workable number of options, acceptable to DEQ, which achieve the remedial action objectives and are protective of public health, safety and welfare, and the environment.

The results of the FS shall comply with OAR Chapter 340, Division 122, DEQ Guidance, and, as appropriate, Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA OSWER Directive 9355.3-01, 1988. The results of the feasibility study should follow the outline suggested in Table 6-5 (Page 6-15) of the CERCLA RI/FS guidance.

D. REPORT DISTRIBUTION

1. 3 bound and 1 unbound copy(s) of all plans and reports shall be submitted to DEQ.
2. 2 bound copies of all final plans and reports shall be sent to each information repository established by DEQ for the site.
3. DEQ requests that all copies be duplex printed on recycled paper.

Attachment B
State of Oregon
Department of Environmental Quality

1/2

Project Expenditures Line Descriptions:

Charges fall into two categories

- Direct Costs--costs incurred specifically in performing project work, and
- Indirect costs--this project's share of other costs DEQ incurs to support project work

Direct Costs of Project Work

Personal Services:	Charges for DEQ employee work on this project. Includes salaries and wages, employee benefits such as health care, and employer payroll taxes. Rates charged are based on compensation paid to each employee who works on the project. Hourly rates are not "loaded"; instead, all overhead costs are assessed through indirect rates.
Attorney General:	Charges made by Oregon's Department of Justice for legal services rendered in connection with the project.
Travel:	Travel to the site or other travel needed to complete the project. Payments are made in accordance with State travel rules and include items such as motor pool car usage and meals and lodging.
Services & Supplies:	Miscellaneous expenses such as photographic supplies and processing, postage and public notices.
Contract Payments:	Charges for work performed on a contractual basis, such as laboratory analysis.

Indirect Costs

Indirect costs are assessed as a percent of Personal Services charges. Typical charges, including all indirect assessments, range from \$85 to \$120 an hour, depending on the employee's compensation rate.

Agency Indirect Cost:	Cost of centralized DEQ services, such as accounting, information systems, budgeting and human resources. The rate is reviewed and approved annually by the Federal government.
WPM Indirect Cost:	Costs incurred by the Waste Prevention and Management programs (WPM) to support project work, such as: <ul style="list-style-type: none">▪ Office space, office supplies and equipment▪ Supplies and equipment used in site investigation and other field activities▪ Non-Site-specific activities of project personnel, such as training or administrative activities▪ Support functions, including clerical, computer network support, time accounting and invoicing system operation and maintenance and grant administration▪ Supervision and other management activities▪ Development of technical guidance and policies

The rate is re-evaluated annually to reflect current costs.

More information on WPM's Indirect Rate can be found in the DEQ publication "Recovering Our Costs." The fact sheet is available on DEQ's website (www.deq.state.or.us/wpm/cleanup/costcov.htm) or by calling one of the numbers listed below.

Cleanup Rule Rewrite:	A temporary charge assessed on some types of projects to pay for the change in administrative rules governing cleanups mandated by the 1995 Oregon Legislature. The charge (12% of personal services), will be discontinued when the costs have recouped, which is estimated to occur by the end of 2000.
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For billing questions, call: Hazardous Waste Program: (503) 229-6968
 Cleanup and all others: (503) 229-5812
 Or Toll Free: 1-800-452-4011 TTY: (503) 229-6993

Change of address:

Organization Name: _____

Contact Name: _____

Address: _____

City, State, Zip: _____

State of Oregon
Department of Environmental Quality

INVOICE

Site Name: ABC, Inc
Project No: 10000000
Authorization:

Invoice Number: HSRAF98-XXXX
Invoice Date: 12/31/1997

John Q. Public Corporation
Attn: John
123 S.W. Bedrock Avenue
Portland, OR 97200

Payment Due: 1/30/1998

Project Expenditures:

Billing Period
11/97

Personal Services	\$ 0.00
Attorney General	0.00
Travel	0.00
Services and Supplies	0.00
Contract Payments	0.00
Capital Outlay	0.00
Agency Indirect Cost	0.00
WMCD Indirect Cost	0.00
Cleanup Law Rewrite	0.00

Total Current Charges: \$ 0.00

Previous Balance	Billing Period Expenditures	Interest	Total Balance Due
0.00	0.00	0.00	0.00

----- Cut here and return this portion with payment -----

Remit and make checks payable to:

Check box if your address has changed and
complete back of invoice: ☐

Dept. of Environmental Quality
Attn.: Business Office
811 SW Sixth Avenue
Portland, OR 97204-1390

Site Name: ABC, Inc
Project No: 10000000

Invoice Number: HSRAF98-XXXX
Amount Enclosed:

Current	31-60 Days	61-90 Days	90+ Days	Total Due
0.00	0.00	0.00	0.00	0.00

