PORTLAND HARBOR SEDIMENT MANAGEMENT PLAN

APPENDIX E

DESCRIPTION OF SITES CURRENTLY UNDER CLEANUP AGREEMENTS

Prepared by
Oregon Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390

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Current Status of Investigation/Cleanup in the Portland Harbor

1.0 INTRODUCTION

This appendix provides a summary of the current status of investigation and cleanup activities that were initiated in the Portland Harbor, prior to the 1997/98 DEQ/EPA Portland Harbor Sediment Investigation.

1.1 Status of Investigations Initiated Prior to Portland Harbor Sediment Investigation

Before the DEQ/EPA Portland Harbor sediment investigation was planned, DEQ was providing oversight of response activities at 14 sites within Portland Harbor and had identified 3 additional sites through the site assessment process. A brief summary of these sites and their current status in the environmental evaluation process is provided in the following sections. The majority of these sites (10 of the 17) are completing environmental investigation and cleanup under the oversight of DEQ at the initiative of their site owner/operator through the Voluntary Cleanup Program (VCP). Of the remaining 7 sites, 3 are recently identified sites that have not yet begun remedial investigations and 4 are subject to enforcement orders (two of these are Superfund sites).

The following sections provide some background on the 17 sites that had been identified prior to the initiation of the Portland Harbor project, environmental issues at the site, and steps taken to ensure that future contamination is prevented. Sites are presented in order of their status in the response process with sites in the early phase of evaluation described first and sites with implemented remedies described last. A schedule highlighting the activities conducted at specific sites is included in Appendix H.

1.1.1 GATX Terminal

GATX is a bulk oil storage facility situated along the southwest bank of the Willamette River near River Mile 4.5. The 13.9 acre site was first developed in 1905. GATX has owned and operated the facility since 1976. The GATX facility consists of a truck loading area, a vapor recovery system, a fuel transfer pier, 35 storage tanks of varying sizes, four warehouse structures, a boiler and pump house, two railroad spurs with an associated loading rack, an oil-water separator, and a pipeline transfer station.

The site became subject to investigation as a result of the discovery of benzene and xylene in groundwater. In March 1990, these contaminants were detected in a groundwater monitoring well located on the adjacent Linnton Planing Mill site, 30 feet north of the GATX property. This well was installed as part of a leaking underground storage tank (LUST) investigation conducted on the Linnton Planing Mill site. DEQ recommended further sampling to determine if GATX was the source of contamination in the monitoring well. Continued sampling of the monitoring

well indicated a dramatic decline in contaminant levels, coinciding with the removal of the leaking underground storage tanks on the Linnton Planing property. However, it is not clear if the contamination was a result of the tanks.

In 1994, a leak was detected in a subsurface diesel pipeline. Limited soil removal and product recovery was implemented under the DEQ Spill Program. Booms were deployed to address the sheen in the river. A strategy recommendation is currently being prepared by the Site Assessment Program.

1.1.2 Willamette Cove

Willamette Cove is situated on the northeast bank of the Willamette River near river mile 7. The site had active industry from the 1930s until the 1960s, (lumber mill, plywood mill, barrel manufacturer, and a ship building/repair facility), but ownership data is not clear prior to the 1980s. Grayco Resources sold the property to the Portland Development Commission (PDC) in the late 1980s or early 1990s; PDC then sold the property to the Trust for Public Land (TPL) in March 1994. Metro purchased the site from TPL in February 1996, and plans to preserve it as undeveloped greenspace.

Past industrial uses of the site may have resulted in the contamination detected in the soil, groundwater, and sediment in the Willamette River with a variety of compounds. Metals, including tributyltin, are the contaminants of greatest concern since they can cause significant adverse effects to aquatic receptors. PAHs, pentachlorophenol (PCP), and certain metals from the adjacent McCormick and Baxter site currently being cleaned up under Superfund, have migrated in sediment (and possibly groundwater) onto the southern portion of Willamette Cove. The specific manner and time of releases are not known, although contamination occurred between the 1930s and the 1960s.

The Record of Decision (ROD) for McCormick & Baxter addresses contaminated sediments that have migrated from the site. Therefore, any remedial action that may eventually be needed at Willamette Cove would address only contamination that originated from past site activities. Further evaluation of PAHs, PCP, metals, and tributyltin in near-shore sediment is needed.

1.1.3 U.S. Government Moorings

The U.S. Government Moorings facility is located on the southwest bank of the Willamette River, near river mile 6.25. Use of the facility was initiated in 1903. Operation of the facility began after construction was completed in the following year. Total land area of the site is 13 acres. The facility has been serving as a maintenance port for Corps of Engineers vessels.

Contamination of Willamette River sediments has occurred partly as a result of site activities such as vessel maintenance (sandblasting, scaling, repair and painting), and spills from vessels in dock and from refueling operations. Some of the sediment contamination may have resulted from migration from upstream sources. Willamette River sediment sampling between 1988 and 1994, has shown elevated levels of PAHs, pesticides, and metals, including tributyltin. Sediment

contamination at the upstream end of the site was significant enough that the Corps of Engineers abandoned plans to dredge this area. In October 1997, minor releases to surface waters were reported at the U.S. Government Moorings site. The most likely cause for the release was determined to be a recent DEQ sediment sampling survey and the prop wash from an Army Corps of Engineers vessel that pulled in. In July 1997, the Site Assessment Program notified the Corps of Engineers of DEQ's proposal to add this facility to the Confirmed Release List and Inventory. In June 1998, the Corps requested to work with DEQ through the VCP. A Project Manager has been assigned and is completing the initial file review.

1.1.4 Riedel (North Portland Yard)

The North Portland Yard is located at 5828 N. Van Houten Place. The property comprises approximately 35 acres of Willamette River industrial waterfront with approximately 2,250 lineal feet of river frontage on the northeast river bank. Triangle Park, L.L.C. (Triangle) purchased the property in 1997 from the bankruptcy trustee of the former owner, Willamette-Western Corporation (successor to Riedel Inc.). Triangle signed a Prospective Purchaser Agreement (PPA) with DEQ in May 1997.

The North Portland Yard is bordered on the northwest by the former McCormick & Baxter Creosoting Company, site of a former wood treatment facility that has, for several years, been undergoing extensive investigation and cleanup by DEQ.

The North Portland Yard has been used for industrial purposes since the early-1900s. Currently the property is vacant and approximately 20 structures remain. Historical site operations include: ship building/repair, dry dock operations, lumber operations, electrical power generation, manufacturing, storage, ironworks, electrical equipment repair, concrete batching operations, asphalt storage, and environmental services.

The PPA requires Triangle to:

- Perform a Remedial Investigation/Feasibility Study (RI/FS) for soils;
- Perform any remedial action for soil contamination selected or approved by DEQ based on the results of the RI/FS;
- Conduct a baseline assessment of river sediment adjacent to the property;
- Triangle shall commit, but not be obligated to spend more than $750,000 on the three PPA obligations. The PPA limited Triangle's environmental liability to soils only.

DEQ is currently reviewing Triangle's draft RI work plan. The purpose of the RI work is to:

- Evaluate the nature, extent, magnitude, and sources of contamination at the site;
- Identify and evaluate potential risk to human and ecological receptors; and
- Support identification and selection of a remedial action for the site, if necessary.

Triangle plans to redevelop the site using a portion for the Zidell barge building operations and the remainder for a mix of industrial, commercial and possibly recreational use. Triangle

completed the baseline assessment of sediments in November 1997. DEQ and Oregon Division of State Lands (DSL) finalized an inter-governmental agreement in March 1999 in which DSL will provide funding to DEQ to conduct further sediment investigation and cleanup at the former Riedel site. DEQ plans to use and supplement Triangle's baseline sediment assessment and complete a human health and environment risk assessment. DEQ will complete an FS if appropriate.

1.1.5 Port of Portland Terminal 4

The Port of Portland Terminal 4 facility encompasses about 260 acres along the northeast bank of the Willamette River, near river mile 5. The Commission of Public Docks (now the Port of Portland) acquired the site from Union Pacific Railroad (UPRR) in 1917. There are two primary sources of contamination at the site: leaks in the upland area from a petroleum pipeline operated by UPRR, and spillage within the Slip 3 dock area during ship loading activities.

The 10-inch UPRR petroleum pipeline was used to transfer diesel and/or fuel oil from marine vessels to bulk storage tanks located east of the Terminal 4 upland area. Rail cars were loaded from bulk storage tanks at UPRR loading facility located along the east boundary of Terminal 4. Petroleum seepage to Slip 3 from UPRR pipeline releases was first observed in 1970. Pipeline replacement and product containment was conducted by UPRR in 1974. The Port of Portland began investigations of a different oil seep into Slip 3 in 1992. Subsequent investigations of upland areas included the Quaker State tank farm onsite, and underground storage tanks (USTs) at the Gearlocker facility. Removal of approximately 1,200 feet of the 10-inch UPRR pipeline by the Port of Portland in June 1998. Prior to the pipeline removal, about 2,000 gallons of diesel product was pumped from the pipeline that was removed and a pipeline spur that extended from the main pipeline to former Berth 412.

Ship berthing areas at Slip 3 within Terminal 4 have been used for bulk cargo loading and unloading operations. Products handled at the Slip 3 berths include pencil pitch, petroleum products, soda ash, talc, sulfur, zinc and copper ores, bentonite clay, coal, coke and iron briquettes. Currently, only soda ash is handled in Slip 3. Dredging of Slip 3 sediments has been conducted by the Port for maintenance of berthing areas and to address pencil pitch-contaminated sediments. The Port conducted a removal action in 1994 under a U.S. Environmental Protection Agency (EPA) federal consent order which eliminated approximately 30,000 cubic yards of contaminated sediment from Slip 3. Following a spill of pencil pitch in 1997, Hall Buck Marine completed two additional dredgings to remove contaminated material.

DEQ's Site Assessment Program completed a site summary and strategy recommendation for Terminal 4 in June 1998, and the VCP began oversight of investigation activities in July 1998. In August and September 1998, the Port of Portland completed work plans for remedial investigations of the upland area and Slip 3 sediments, and for an interim action to address the discharge of petroleum product to surface water and sediments of Slip 3. Sorbent boom is currently in place at the east end of Slip 3 in order to retain petroleum seeping into the slip. A combination of groundwater extraction and vapor extraction (bio-slurping) has been proposed for

wells near the southwest bank of Slip 3 as an interim action to collect petroleum product and help prevent discharges to the slip. The interim action will be implemented in March 1999.

Field work for the upland and sediment site investigations was conducted between October and November 1998. Additional soil and groundwater samples were collected in 1998 from geoprobe explorations to help define the lateral and vertical extent of impacted soil and groundwater. The investigation work at the site has included soil sampling, installation and sampling of groundwater monitoring wells, and sediment sampling for chemical analysis and biossays. The current schedule calls for completion of the RI/FS study for the site by December 1999.

1.1.6 GASCO

The former GASCO facility is located at 7900 NW St. Helens Road. The site occupies approximately 35 acres along the southwest bank of the Willamette River. The site is owned by Northwest Natural Gas Company (NWNG) which operates a liquefied natural gas LNG storage facility on the property. From 1913, until 1956, NWNG, then known as the Portland Gas and Coke Company (GASCO) operated an oil gasification plant on the property. By-products from the oil gasification process were often disposed of on-site or, in the early years of operation, discharged directly to the Willamette River.

In December 1993, NWNG entered the VCP. In August 1994, NWNG entered into an agreement with DEQ to conduct a RI/FS at the site. The Phase I RI was completed in March 1996. A summary of the data collected to date was submitted to DEQ in July 1996. DEQ review of the data report indicated the need for additional characterization. DEQ and NWNG are working together to determine what additional characterization is required. Conceptual site models for the human health and ecological risk assessments were submitted in the fall of 1996. A land and water use report and a series of technical memorandums were submitted during the summer of 1997. Interim actions conducted to date include regular riverbank inspections and the posting of signs along the river. A data analysis report was submitted in October 1998. The Phase II RI began with a series of deep monitoring wells installed along the Willamette River. Additional Phase II RI work is expected to be completed in 1999.

1.1.7 Gunderson

Gunderson manufactures and refurbishes rail cars and manufactures barges. The property consists of 67 acres along the southwest bank of the Willamette River. Four separate companies have used the property for similar operations and salvage work since the 1940s.

A considerable number of soil and groundwater investigations was completed at the site before Gunderson joined the VCP in 1992. These investigation documented elevated levels of metals and PCBs in the southern portion of the site formerly used for dismantling ships and as an automobile salvage yard. TCA was detected in shallow groundwater in the vicinity of a TCA degreasing tank (north end of site) and decommissioning issues were identified for two underground storage tanks (USTs). One inactive tank, which contained solvents and waste oil, is

located beneath a paint storage room. Leaks from the other tank resulted in xylene, ethylbenzene and toluene contamination of soil.

Gunderson and DEQ entered into a voluntary agreement on April 15, 1994, to complete a RI/FS. The agreement limited the RI/FS to the TCA problem area and two tank areas (north half of site). Gunderson elected to defer follow up on the remainder of the site pending completion of the RI/FS for these three areas. A vapor extraction system was constructed in May 1998, to remediate soil contamination associated with the solvent UST and is currently operating. Cleanup issues associated with the other USTs have been resolved and a no further action letter was issued by DEQ in February 1998.

The above ground TCA tank has been decommissioned, and the RI of the TCA releases to groundwater is on-going. TCA concentrations in the area of the former tank are high, up to 170 milligrams per liter, and extend into the Columbia River Basalt Aquifer approximately 40 feet below ground surface. Investigation of the shallow alluvial aquifer on-site has determined that the TCA migration is preferentially controlled by geologic structure and less by groundwater gradient, consequently vertical and lateral movement cannot be predicted by simply looking at groundwater gradients.

Gunderson constructed seven additional monitoring wells in July 1998. Data from these wells indicates that the TCA containment plume in the alluvial aquifer has migrated off the Gunderson site to the north onto the Lakeside Industries site and may be discharging to the Willamette River. Additional groundwater investigation, including off-site work, is proceeding. DEQ began negotiating expansion of the agreement to address issues other than the TCA contamination in March 1999.

1.1.8 Elf Atochem

The Elf Atochem North America, Inc. Portland Plant is located at 6400 N.W. Front Ave. The insecticide dichlorodiphenyltrichloroethane (DDT) was manufactured at the plant from approximately 1947 to 1954. The Pennwalt Corporation operated the facility at this time. Chemical base stocks used in the DDT manufacturing process included: chloral, chlorobenzene and sulfuric acid. Elf Atochem North America, Inc. purchased the site from the Pennwalt Corporation in 1990.

Remedial investigation of the DDT manufacturing area has been ongoing since 1994. Elf Atochem requested a DEQ review of its investigation and planned remediation of the former DDT manufacturing area in 1995. DEQ and Elf Atochem entered into a voluntary letter agreement in February 1996. In August 1998, Elf Atochem entered into a voluntary agreement with DEQ to perform a RI/FS of the former DDT manufacturing area.

With the exception of areas where liquid manufacturing process wastes were managed, DDT in soil (concentrations ranging up to 12,000 ppm) is generally limited to a depth of 6 to 8 feet. DDT concentrations are higher in the waste management areas (concentrations ranging up to 150,000 ppm), with DDT extending to the shallow groundwater. Sediment sampling off of the

Elf Atochem facility in 1997 by EPA and DEQ detected elevated concentrations of DDT (up to 22 mg/kg).

Groundwater beneath the DDT manufacturing area, which discharges to the Willamette River, contains chlorobenzene and DDT. Field tests indicate the presence of a residual dense nonaqueous phase liquid (DNAPL) containing chlorobenzene and DDT in soils in the waste management areas and in down gradient borings.

Upcoming project steps include:

- Assessment of soil, groundwater, stormwater and sediment data collected between September 1998 to February 1999.
- Evaluation of interim remedial options. The focus of these will be to limit or control the migration of contaminants to the Willamette River.
- Additional sediment and groundwater characterization.

1.1.9 Portland Shipyard

The Portland Ship Repair Yard (PSY) is located on Swan Island, approximately 2.5 miles downstream of the Broadway Bridge (between Willamette River Mile 8 and 9). The PSY occupies most of the north, west, and south perimeter of Swan Island, covering approximately 94-acres. The PSY property also includes 106-acres of submerged lands. The Port of Portland (Port) purchased Swan Island in 1922 and constructed Portland's first municipal airport between 1926 and 1931. The airport operated until 1941 when it was moved to the current location of the Portland International Airport. Between 1942 and 1952, a portion of the property was leased to the U.S. Maritime Commission for ship construction. In 1949, the Port purchased improvements made to the property from the War Assets Administration (the successor to the Maritime Commission), and in 1950 the Port began ship repair operations at the PSY. Ship repair operations continued at the PSY from 1950 to the present.

Over the last several year, the Port and Cascade General, Inc. (the current PSY operator) have implemented a number of best management practices (BMPs) and pollution controls to limit releases from current sources. As a result, principal and secondary sources of contamination at the PSY are largely historic. Specific known or suspected principal sources include:

- Past ship hull washing, abrasive blasting, and painting in dry docks
- Past ship hull abrasive blasting and outfitting at working berths
- Past ship parts surface preparation and painting at several upland locations
- Historic abrasive blasting material storage in several upland locations
- Past Ballast Water Treatment Plant (BWTP) operations

Specific known or suspected secondary sources include:

- Petroleum storage in underground storage tanks (USTs) and aboveground storage tanks (ASTs)

- Former electrical equipment that contained polychlorinated biphenyls (PCBs)
- Storage of equipment and materials
- Potential contamination in materials dredged from the site and placed at or near the site (e.g. Swan Island Lagoon).

Starting in 1989, a number of upland investigations were conducted at the PSY. Many of these investigations were associated with USTs and ASTs at the PSY, as well as the BWTP and former industrial activities conducted by parties who leased space and facilities at the PSY. These investigations lead to a series of soil removal actions to reduce total petroleum hydrocarbon, PCB, and metals concentrations in soil. Between 1989 and 1996, over 1,000 cubic yards of soil were removed as part of these actions.

A series of sediment investigations have also been conducted at or near the PSY, starting in 1992. These investigations included sediment sampling in the early 1990s proceeding and following the dredging of dry dock basins and recent (i.e., 1998), more comprehensive investigations conducted by the Port and Cascade General. Over 160 surface grab samples and over 60 sediment cores have been collected and analyzed for a broad array of constituents (including metals, tributyl tin, polynuclear aromatic hydrocarbons, PCBs, pesticides, and volatile organic compounds) at or near the PSY. Although no formal sediment cleanup actions have been conducted, maintenance dredging has been performed at the PSY dry docks and berths. More than 250,000 cubic yards of sediment have been removed from the river through maintenance dredging.

DEQ completed its strategy recommendation for the PSY in 1998, and is currently in the process of preparing its file review memorandum. The Port is planning to prepare a RI/FS study work plan once DEQ completes its file review memorandum. The current schedule calls for the completion of the work plan during the second quarter of 1999 and implementation of the RI during the third and fourth quarters of 1999.

1.1.10 Time Oil

Time Oil Co. has owned and operated a petroleum products storage terminal at this 52 acre site since the 1940s. The site is located in the Rivergate industrial area along the northeast bank of the Willamette River. Koppers Co. leased tanks on the site for PCP product formulation from 1967 to 1982. Crosby and Overton leased tanks for waste oil storage in the 1980s.

A federal preliminary assessment in 1985 identified soil contamination in the PCP mixing area and the waste oil tank area. Sampling conducted by Time Oil Co. indicated elevated levels of PCP in the soil and groundwater. Time Oil Co. removed 290 cubic yards of PCP-contaminated soil for off-site disposal in 1985. An on-site slurry bioreactor was built in 1988 to treat soil. An additional 3,000 cubic yards of soil were excavated and stockpiled on-site in 1989. The system was not able to reach the target treatment level and treatment was terminated. The soil stockpile remains on-site in a covered and lined area with a leachate collection system.

Time Oil Co. entered the VCP in 1991. The project was referred to the Resource Conservation and Recovery Act (RCRA) program to resolve issues related to storage of the PCP-containing soil stockpile (F027 waste). The project was reactivated in voluntary cleanup in 1995.

Time Oil Co. finalized a work plan for a RI/FS in August 1996. Areas of concern include the soil stockpile, former PCP mixing area, former waste oil tank area, active tank farm area, drum disposal area in the eastern portion of the facility, and groundwater. The initial phases of the RI were implemented in late 1996. Time Oil Co. has developed a soil pile management plan, and is planning to conduct treatability studies on the stockpiled soil following completion of the Phase I and Phase II human health and ecological risk assessments. Work on reconfiguring and upgrading the soil stockpile area was conducted in late 1996.

A removal of nearly 100 abandoned and crushed drums and a small soil stockpile from the eastern portion of the facility was conducted in late 1996. Concentrated PCP materials were collected and placed in drums for disposal. A second phase of removal was conducted in the fall of 1997. Drummed soil and debris waste (112 drums) were incinerated off-site as F027 hazardous waste. Drilling of soil borings and installation of monitoring wells for the initial phases of the site investigation were completed in March 1997. An additional phase of groundwater investigation downgradient of the PCP mixing area at the southwest corner of the site commenced in January 1998 and is ongoing. Results of soil and groundwater sampling are being evaluated to determine the need for additional investigation. Quarterly groundwater sampling is being conducted.

1.1.11 Willbridge Bulk Fuel Area

The Willbridge Bulk Fuels Area project includes three bulk fuel facilities in the northwest Portland industrial area. The three facilities are Chevron, Tosco, and GATX.

The Chevron USA Products Company (Chevron) Willbridge facility is located at 5531 N.W. Doane Avenue. The Chevron facility is an active bulk fuels distribution facility that has been in operation since 1911. The facility occupies an area of approximately 31 acres. Plant operations include receiving bulk products by barge, truck, ship, or rail, storage on the site in aboveground tanks, and blending and/or distribution of these products after packaging.

The Tosco Willbridge facility is located at 5528 N.W. Doane Avenue. The Tosco facility is an active bulk fuels distribution facility and occupies approximately 26 acres. From 1908 to 1997, the facility was owned and operated by Union Oil Company of California (Unocal). The facility receives, stores, blends, packages, and distributes petroleum products, fuel oils, and lubricants. Historically, asphalt production occurred at the facility.

The GATX Willbridge facility is an active bulk fuels distribution facility located at 5880 N.W. St. Helens Road. It occupies approximately 44 acres. The facility was previously owned and operated by Shell Oil Company from 1914, until December 1994. Shell operations at this facility included receiving, storing, blending, packaging, and distribution of petroleum products, fuel oils, and lubricants. Asphalt production activities also occurred at the site until 1985.

These operations have resulted in releases of petroleum hydrocarbons into the environment from spills, leaks, and tank or equipment failures at all three facilities. Efforts to address these releases, including groundwater monitoring and remedial activities, have been ongoing at the facilities since the 1970's.

Preliminary Assessments (PA) were completed in 1993 for the three facilities with recommendations that further investigations be conducted as a part of a regional area-wide groundwater contamination study.

Chevron, Shell, and Unocal signed a consent order with DEQ's Site Response Program on March 30, 1994, to conduct of a RI/FS and perform interim remedial actions at their facilities.

An extensive network of wells has provided groundwater quality data on all three facilities. There is free product and dissolved-phase contamination from petroleum products in groundwater beneath all three facilities. Free product has been measured in various monitoring wells located throughout the site, in thickness ranging up to 5 feet. The composition of the free product varies by location and includes diesel, gasoline, fuel oil, and light, medium, and heavy hydrocarbons, and combinations of these.

Seepage of petroleum hydrocarbon product into the Willamette River was noted in 1974 and at various times since that time. The seepage has been observed at various locations along the riverbank in the vicinity of the Chevron and Unocal marine docks. Both an abandoned and an existing storm sewer line have created preferential pathways for migration of the hydrocarbons to the River. Significant remediation efforts, including engineering controls and active product recovery via groundwater extraction, had been conducted prior to DEQ oversight. These measures had limited effectiveness in controlling hydrocarbon seepage into the River.

Major efforts conducted under the consent order have focused on free product recovery from the groundwater and eliminating seepage of hydrocarbons into the Willamette River. Both active and passive free product recovery methods have been implemented. An engineered cutoff wall was installed in February 1998, on the Tosco waterfront property across the storm sewer backfill material to prevent migration of free product to the River. These recent efforts have significantly reduced the seepage of hydrocarbons into the River.

Quarterly groundwater monitoring has been conducted since issuance of the consent order and provides extensive data on groundwater quality at the site. The RI was initiated in September 1998, and will include characterizing the nature and extent of contamination in soils, surface water, and river sediments. Utility corridors will also be investigated as possible contaminant migration pathways. Sediment sampling was completed in the Fall 1998.

The contamination at the Willbridge facilities resulted primarily from leaks and spills from the product storage tanks. Spill prevention plans and tank integrity testing programs are now in place. Vertical containment walls were installed around the tanks to prevent lateral spread of fuels in the event of a release; however, the containment areas do not have liners or other

impermeable barriers to prevent vertical migration. Additional leak prevention activities will be considered as part of the feasibility study for the site.

1.1.12 ARCO Bulk Terminal

The ARCO facility is located at 9930 N.W. St. Helens Road, Burlington, Oregon. The facility, which has been in operation since 1963, has 26 above ground tanks containing gasoline, diesel, lube oil, and additives. During historical operations, periodic releases of product occurred from underground pipelines, tanks, and during product transfer. This resulted in an accumulation of petroleum products to a thickness greater than 10 feet in onsite monitoring wells.

The facility is in the RI/FS Phase. An interim corrective action consisting of an 800-foot concrete retaining wall along the Willamette River, interceptor wells along the base of the sea wall, and extraction wells in the interior of the property are currently operating. A consent order between ARCO and the DEQ, covering additional RI/FS, is anticipated by the end of 1999.

1.1.13 Rhone Poulenc

The Rhone Poulenc AG Company is located at 6200 N.W. St. Helens Road in the Doane Lake area of Portland. The industrial area was created a century ago on land reclaimed from Doane Lake. Remnants of Doane Lake border the Rhone Poulenc property to the north, east, and west.

Rhone Poulenc operated at the site from 1943 to 1990, producing a wide variety of pesticides. Process wastewater was discharged directly to Doane Lake until 1966, and to the nearby Willamette River from 1966 to 1975. Spills, leaks, and other releases also occurred at the site.

Rhone Poulenc began investigating contamination at the site in the early 1980s under DEQ oversight. Contamination was found in soil at the site, shallow groundwater beneath the site, and in the waters and sediments of East Doane Lake. Rhone Poulenc began pumping and treating contaminated groundwater at the site in October 1983.

Doane Lake was a shallow lake situated on the southwest bank of the Willamette River at river mile 7 in Portland. Beginning in the 1880s, the area around the Lake was industrialized, and large portions of the Lake were filled in. Doane Lake now exists as three remnants: East Doane Lake, North Doane Lake, and West Doane Lake. The waters and sediments of East Doane Lake have been contaminated with hazardous substances. Most of the contamination is believed to have come from the Gould/NL and Rhone Poulenc sites.

In December 1989, Rhone Poulenc entered into a consent order with DEQ to conduct a RI/FS at the site. Rhone Poulenc's progress on the investigation was extremely slow. Eight years after the consent order was signed, Rhone Poulenc had not completed either the RI/FS or an associated risk assessment.

In December 1997, DEQ directed Rhone Poulenc to conduct a removal of contaminated sediments from East Doane Lake. Rhone Poulenc did not comply. In February 1998, DEQ

terminated the consent order due to Rhone Poulenc's lack of compliance and apparent unwillingness to complete necessary investigation and cleanup activities at the site. DEQ declared the site to be an orphan project one month later.

DEQ is currently preparing a consent order for the completion of the remedial investigation at the Rhone-Poulenc site. Consent order negotiations are in progress and signing is expected in April 1999.

1.1.14 Mobil Oil

The facility has been used for bulk storage and dispensing of fuel oils and gasoline since 1928. Prior to 1970, sludges from above-ground storage tanks were discharged onto the ground during periodic tank cleanings. In the late 1960s, petroleum sheens began to appear on the Willamette River adjacent to the site. Mobil has controlled the release to the river by constructing recovery wells and a slurry wall along the river bank. In March 1985, approximately 46,000 gallons of petroleum were spilled at the site. All but 11,000 gallons were recovered.

Mobil Oil Corporation entered the VCP in January 1992. After the completion of a RI/FS, a selected remedy was approved in June 1997. Highlights of the ROD include:

- Recovery of free petroleum product from the shallow aquifer;
- Installation of soil vapor extraction and sparging wells to reduce contaminant mass in soil and groundwater;
- Operation of the existing cutoff wall system to maintain hydraulic containment of the groundwater contaminant plume; and
- Construction of the remedial soil vapor extraction and sparging wells began in February 1999.

1.1.15 Gould, Inc.

A secondary lead smelting facility began operations at this site in 1949, under the ownership of Morris P. Kirk and Sons. Facility operations consisted of lead-acid battery recycling, lead smelting and smelting and refining, zinc alloying and casting, cable sweating and lead oxide production. Discarded battery and other process wastes were disposed on-site and on adjacent properties. NL industries purchased the property in 1971, and sold it to Gould, Inc. in 1979. The facility was closed in 1981, and most of the structures, facilities, and equipment were removed in 1982.

Contamination at this site resulted primarily from waste management practices during the 1950's, 1960's, and 1970's. The facility was closed in 1981 so these practices occurred prior to the establishment of strict waste management requirements under RCRA. If this facility was still in operation as a secondary lead smelter/battery recycler, it would be subject to fairly stringent RCRA, Clean Water Act, and Clean Air Act regulations. With these regulations in place there would not be the extensive environmental contamination that occurred due to waste mismanagement.

In 1983, the site was listed on the NPL because of documented lead contamination. The site encompasses approximately 20 to 30 acres and includes properties owned by Gould Electronics, Rhone Poulenc AG Company, Schnitzer Investment Corporation, and others. A RI/FS was conducted from 1985 to 1988, under the oversight of EPA as lead agency and DEQ as support agency. Results of the RI showed extensive buried battery castings and matte, and lead contaminated soils, surface water and sediments.

EPA issued a ROD for the soils operable unit at the site in March 1988, requiring the excavation of all buried battery castings and matte, treatment of contaminated soils, sediment, and matte to reduce the mobility of lead. EPA issued unilateral administrative orders to seven potentially responsible parties (PRPs) in January 1992, requiring implementation of the remedial action as specified in the ROD.

After conducting a focused FS, the PRPs submitted a proposed alternative cleanup plan to EPA in October 1995. EPA prepared a proposed ROD amendment for public comment that described EPA's preferred alternative for completing the cleanup of the soils operable unit. The amended ROD was issued on June 3, 1997.

Major components of the amended ROD include construction of an 8.5 acre on-site containment facility (OCF) to RCRA (40CFR 264, Subpart N) standards, excavation of remaining battery casings on the Gould site, excavation of contaminated sediment in East Doane Lake, stabilization of lead fines, consolidation of approximately 60,000 cubic yards of excavated and previously stockpiled material in the OCF, filling of East Doane Lake, wetlands mitigation measures institutional controls, and groundwater monitoring.

Remedial actions were initiated at the site in June 1993. An estimated 24,000 tons of battery castings were excavated and processed through the separation/treatment plant, with 244 tons of plastic and 88 tons of lead recycled. Contaminated soils and matte were stabilized, producing 20,000 one-cubic yard blocks which are currently stored on the site.

Several problems were encountered during the first year of operation of the battery/separation/treatment process. Although several modifications were made to the process, it was determined that the process was no longer efficient or cost-effective and that only limited quantities of processed materials were recyclable. Additionally, the volumes of battery casings to be excavated and processed were overestimated in the ROD. In May 1994, EPA allowed the PRPs to suspend operations and evaluate alternative remedial actions.

Remedial design activities related to OCF construction are currently underway. The 30% remedial design has been completed and a 90% design document is expected in early 1999.

1.1.16 Linnton Oil Fire Training Grounds

The Linnton Oil Fire Training Grounds (LOFTG) site is located near the intersection of N.W. Marina Way and St. Helens Road approximately one half mile north of the Linnton District of

Portland. The property is owned by the Bonneville Power Administration (BPA) and serves as a right-of-way for high tension power lines. Beginning in 1951, the City of Portland leased the property from BPA for fire training purposes.

Fire training operations consisted of pumping petroleum products to various props that were ignited, partially burned and extinguished. Unburned products and extinguishing agents were left to evaporate from site holding ponds and ditches or to infiltrate into underlying site soils, resulting in impacts to soil and groundwater. Fire training operation ceased in 1988. The property is currently vacant but continues to function as a BPA right-of-way for access to high tension power lines.

Operations at the site resulted in the release of petroleum hydrocarbons and chlorinated solvents. A RI/FS was completed in November 1995 for the site. In May 1996, DEQ signed a ROD for the remediation of the site. Key elements of the remedy include: treatment of petroleum contaminated soil through thermal desorption; pretreatment of chlorinated solvent contaminated soil through biodegradation; on-site disposal of treated soils; and institutional controls to prevent exposure to residual contamination.

In August 1996, an intergovernmental agreement covering remedial design/remedial action (RD/RA) was signed by DEQ and the City of Portland. Remedial design activities continued through 1997. In September 1997, a decision to postpone the remedial action to 1998 was made. The remedial action was implemented in 1998. Approximately 5,000 cubic yards of petroleum contaminated soils were treated on site. An inspection, maintenance, and monitoring plan (IMMP) will be prepared in 1999, to scope future activities required for completion of the site remedy.

1.1.17 McCormick & Baxter

The McCormick & Baxter site is located on the north shore of the Willamette River at 6900 N. Edgewater Street. The site includes about 43 acres of land and about 15 acres of sediments beneath the Willamette River.

McCormick & Baxter Creosoting Company operated between 1944 and 1991, treating wood products with creosote, pentachlorophenol, and inorganic (arsenic, copper, chromium, and zinc) preservative solutions. Historically, process wastewaters were discharged directly to the Willamette River, and process solid wastes were disposed of in several areas of the site. Significant concentrations of wood-treating chemicals are found in soil, groundwater, and river sediments.

DEQ conducted investigations at the site between September 1990 and September 1992, and issued a proposed cleanup plan in January 1993. However, a final ROD was not issued at that time, due to the pending listing of the site on the federal Superfund list. The site was placed on the NPL on June 1, 1994. In the interim, DEQ implemented a number of removal measures, including plant demolition, sludge and soil removals, and extraction of creosote from the groundwater aquifers.

DEQ issued a revised FS report in September 1995, and DEQ and EPA issued a proposed cleanup plan in October 1995. A ROD was signed by EPA on March 29, and by DEQ on April 4, 1996.

DEQ is the lead agency for implementation of the selected remedy. The groundwater remedy is underway, with on-going creosote extraction and operation of two pilot-scale groundwater treatment systems. Further investigations, to allow full implementation of the groundwater remedy, were conducted in August 1998.

DEQ and EPA amended the ROD in March 1998, to change the soil remedy from on-site treatment to off-site treatment and/or disposal of the most highly contaminated soil. Soil removal began in March 1999.

Within two years, the site will be capped with two feet of clean soil, as originally planned in the 1996 ROD, and the groundwater remedy will be fully implemented. The final phase of the remedy, capping of contaminated river sediments, will be implemented once the seepage of free products to river sediments has been minimized.

There were three primary release mechanisms at this site: on-site disposal, drippage from treated wood, and spills/leaks. Under current RCRA wood-treater rules, on-site disposal would be prohibited and impervious drip pads would be required. Consequently, releases would be much less likely under today's rules.