Harbor Oil Superfund Site
Portland, Oregon

Record of Decision

EPA ID: ORD071803985

June 28, 2013

PART 1

DECLARATION OF THE RECORD OF DECISION

SITE NAME AND LOCATION

The Harbor Oil Superfund Site (Site) is located at 11535 North Force Avenue, on approximately four acres adjacent to Force Lake, in an industrial area of northeast Portland, Oregon. The Site Facility began cleaning tanker trucks in the 1950s and began oil recycling in 1961. In collaboration with the Oregon Department of Environmental Quality (DEQ) the U.S. Environmental Protection Agency (EPA) placed the Harbor Oil Facility on the National Priorities List (NPL) in 2003.

The EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Site Identification Number is ORD071803985.

STATEMENT OF BASIS AND PURPOSE

This decision document, entitled Record of Decision (ROD), presents the basis for the determination that no remedial action is necessary for the Harbor Oil Site. EPA is the lead agency at this Site, and DEQ is the support agency. This ROD has been developed in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, 42 U.S. Code (USC) §9601 *et. seq.* as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the Administrative Record for the Harbor Oil Site.

EPA Region 10, based upon the CERCLA risk management process, has selected the no-action remedy. DEQ does not concur with this decision. DEQ has been involved with the Harbor Oil Site for many years, reviewing planning documents and technical reports, conducting inspections, and assuring consistency with Oregon regulatory programs. DEQ concurs that the no-action decision is consistent with the NCP and follows the CERCLA risk-based decision process. However, the CERCLA risk decision process does not require compliance with potential ARARs, such as the individual and cumulative acceptable risk levels as defined by the Oregon Administrative Rule (OAR 340-122-115), when the need for action under CERCLA is not warranted. Based upon these regulatory differences, DEQ disagrees with EPA's conclusion that chemicals present at the Site do not pose an unacceptable risk because concentrations of some

individual chemicals are above Oregon's regulatory standards for acceptable risk. At this time, DEQ does not consider contamination at the Harbor Oil Site to be of the same magnitude as other NPL sites in the region, but DEQ believes that further study is needed to better support remedy selection. EPA's decision that remedial action under CERCLA is not warranted at the Site does not prevent DEQ from taking action pursuant to State law.

No action under CERCLA is warranted for the Harbor Oil Superfund Site. EPA has determined that no action is necessary to protect public health, welfare, or the environment. This decision is based on the Administrative Record for the Site; the background and the basis for this decision are documented in this ROD. Further CERCLA response action is not warranted because investigations have shown that past chemical releases at the Site did not result in significant levels or areas of contamination, and there are no significant environmental impacts to Force Lake or the surrounding wetlands as a result of releases from the Site. The risk assessment shows that the health risks for industrial workers and recreational users of Force Lake, based on reasonable maximum exposure for the current and reasonably anticipated future land use, are within the CERCLA acceptable risk range.

Only if this Site were developed with homes could it pose an unacceptable health risk for people. However, Harbor Oil is an industrial operation on property reserved for industrial land use by the City of Portland's Comprehensive Plan. The area is designated as Industrial Sanctuary by the City of Portland, Oregon. Anticipated future land use for this Site is industrial; future residential use is unlikely. In addition, the land surrounding the Harbor Oil Site is protected wetlands and open space.

STATUTORY DETERMINATIONS

This no-action decision is protective of human health and the environment at this Site based on existing information and conditions for the current and reasonably anticipated future land use as industrial and open space. The no-action alternative is consistent with the NCP and EPA's CERCLA decision process.

AUTHORIZING SIGNATURE

This Record of Decision documents the selected remedial action to address the contamination at the Harbor Oil Site.

The following authorized official at EPA Region 10 approves the no-action alternative as described in this ROD.

Cami Grandinetti 6/20/13

Cami Grandinetti, Date

Program Manager
Remedial Cleanup Program

CONTENTS

PART 1
THE DECLARATION OF THE RECORD OF DECISION i
LIST OF FIGURES v
LIST OF TABLES v
LIST OF ACRONYMS vi

PART 2
DECISION SUMMARY
SECTION 1 ..... **9**
SECTION 2 ..... **14**
2.1 HISTORICAL LAND USE 14
2.2 ENFORCEMENT/COMPLIANCE HISTORY 20
2.3 INVESTIGATION HISTORY 21
SECTION 3 ..... **23**
SECTION 4 ..... **24**
SECTION 5 ..... **25**
5.1 CONCEPTUAL SITE MODEL 25
5.2 PHYSICAL CHARACTERISTICS OF THE SITE 26
5.3 DATA SELECTION AND QUALITY CONTROL 28
5.4 CHEMICALS AND CHEMICAL GROUPS 28
5.5 SUMMARY OF REMEDIAL INVESTIGATION 29
5.6 NATURE AND EXTENT OF CONTAMINATION 40
SECTION 6 ..... **43**
6.1 CURRENT LAND USES 43
6.2 FUTURE LAND USES 43
6.3 SUMMARY 44
SECTION 7 ..... **45**
7.1 BASELINE RISK ASSESSMENTS 45
7.2 HUMAN HEALTH RISK ASSESSMENT 45
7.3 ECOLOGICAL RISK ASSESSMENT 48
SECTION 8 ..... **54**

8.1 GUIDANCE 54
8.2 HARBOR OIL SITE-SPECIFIC FACTORS 55
8.3 DEQ DOES NOT CONCUR 56
8.4 TRIBAL INPUT 56
8.5 COMMUNITY INPUT 57

SECTION 9 58

REFERENCES 70

PART 3
RESPONSIVENESS SUMMARY 59

FIGURES

1-1 Location Map……..10
1-2 Harbor Oil Study Area……....12
1-3 Current Facility Features……13
5-1 RI Soil and Lake Sediment Sampling Locations……32
5-2 RI Groundwater Sampling, Surface Water Sampling, and Extraction Well Locations…… 33
7-1 Interpolations of Total DDTs in Soil Relative to Risks to Shrew……...53

TABLES

5-1 Summary of Chemical Concentrations in Soils and Sediments……..37
5-2 Summary of Chemical Concentrations in Groundwater and Surface Water...39
7-1 Summary of Total Excess Cancer Risks and Noncancer Health Hazard (Hazard Index) under Reasonable Maximum Exposure……47
7-2 Hazard Quotients……49

ACRONYMS

AOC	agreement and order on consent
ARARs	applicable or relevant and appropriate requirements
ATSDR	Agency for Toxic Substances and Disease Registry
BAF	bioaccumulation factors
bgs	below ground surface
BSAF	biota-sediment accumulation factors
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
cm/sec	centimeters per second
COPC	Contaminant of potential concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSM	conceptual site model
DDD	dichlorodiphenyldichloroethane
DDE	**dichlorodiphenyldichloroethylene**
DDT	**dichlorodiphenyltrichloroethane**
DEQ	Oregon Department of Environmental Quality
DQO	Data Quality Objective
EMRI	**Energy and Material Recovery Incorporated**
EPA	U.S. Environmental Protection Agency
ERA	ecological risk assessment
°F	degree Fahrenheit
FS	feasibility study
HHRA	human health risk assessment

HI	hazard index
HOCAG	Harbor Oil Community Advisory Group
HPAH	high molecular weight polycyclic aromatic hydrocarbons
HQ	hazard quotient
LNAPL	light non aqueous phase liquid
LOAEL	lowest observed adverse effect level
MAO	Mutual Agreement and Order
MCL	maximum contaminant level
mg/kg	milligram per kilogram
mg/L	milligram per liter
NCP	National Oil and Hazardous Substances Contingency Plan
NOAEL	no-observed-adverse-effect level
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OAR	Oregon Administrative Rule
PA	preliminary assessment
PAH	polycyclic aromatic hydrocarbon
PCBs	polychlorinated biphenyls
PCE	perchloroethylene
RAO	remedial action objectives
RCRA	Resource Conservation and Recovery Act
RFO	refined fuel oil
RI/FS	remedial investigation/feasibility study
RME	reasonable maximum exposure
ROC	Receptors of concern
ROD	record of decision
RSL	risk-based screening level
SARA	Superfund Amendments and Reauthorization Act of 1986

SI	site investigation
SVOC	semi-volatile organic compound
TCE	trichloroethylene
TEQ	toxic equivalent
TOC	Total Organic Carbon
TPH	total petroleum hydrocarbon
TRV	Toxicity reference value
UCL	upper confidence limit
ug/kg	microgram per kilogram
ug/L	microgram per liter
VG	Harbor Oil Volunteer Group
VOC	volatile organic compound

PART 2
DECISION SUMMARY

SECTION 1

SITE NAME, LOCATION, AND DESCRIPTION

The Harbor Oil Site is located in an industrial area of northeast Portland, Oregon (Figure 1-1). The Site encompasses the Harbor Oil facility (Facility), an approximately 4.2-acre parcel of property located at 11535 North Force Avenue, as well as the adjacent wetlands to the south and west of the Facility and Force Lake. The Study Area, as defined in the remedial investigation (RI, Windward et al 2012), refers to the areas sampled during the RI that include the areas that make up the Site, as well as a portion of North Lake. Figure 1-2 shows the approximately 19-acre Study Area, where soil, groundwater, sediment, and surface water samples were collected during the RI.

The surrounding area was once a World War II neighborhood called Vanport City that was destroyed in a 1948 flood. The Facility began cleaning tanker trucks in the 1950s and began oil recycling in 1961. A 1979 fire destroyed the Facility and released pollutants into the wetlands and Force Lake. After the fire, the Facility was reconstructed and expanded. The reconstruction added a soil berm along the south and northwestern facility boundary to prevent the flow of stormwater or other pollution into the wetlands.

Activities at the Facility that may have released pollutants to the environment include cattle truck and tanker truck cleaning operations, road oiling for dust suppression, oil treatment and processing activities, the 1979 Facility fire, pesticide usage at the stockyards and city of Vanport, and stormwater drainage patterns.

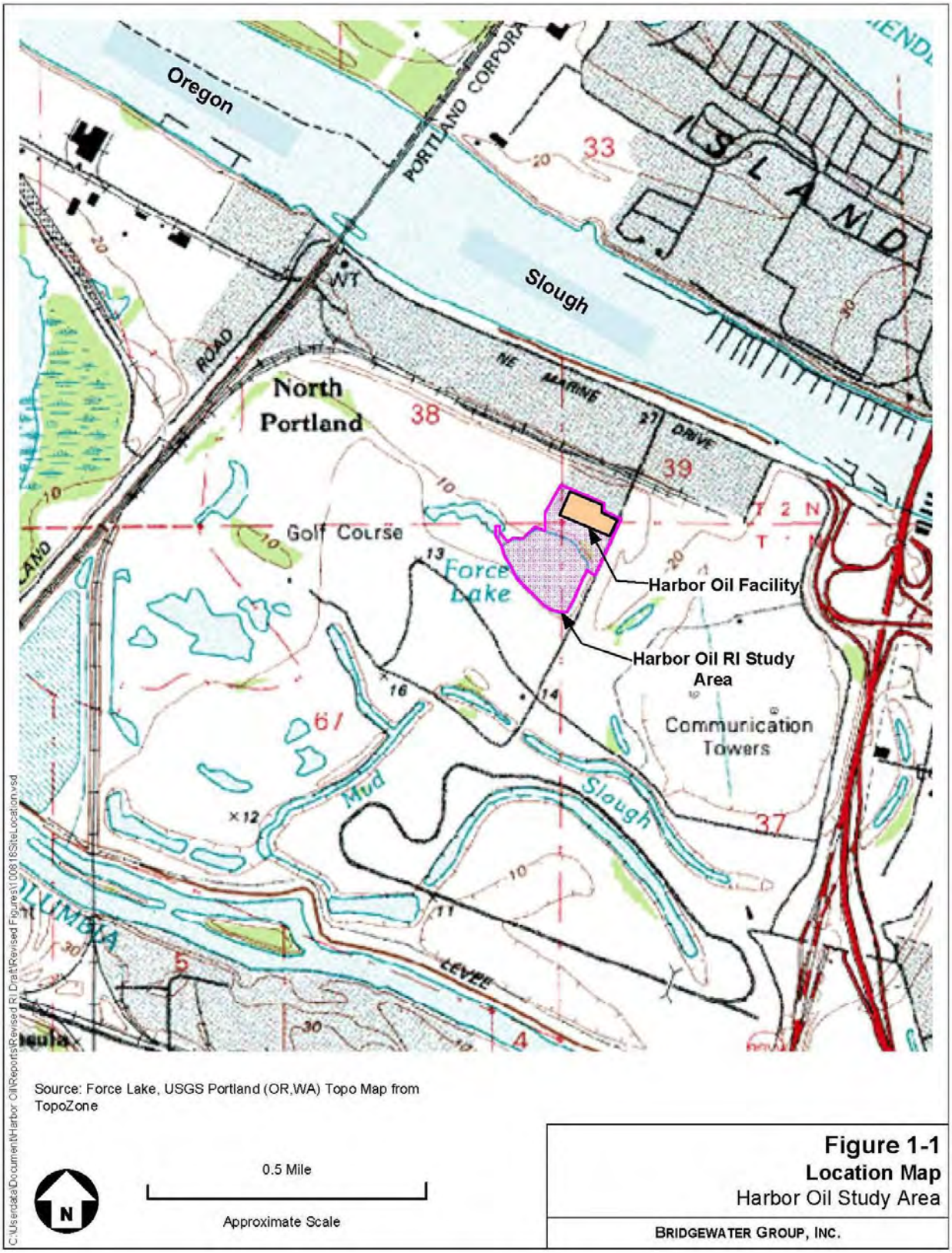

Figure 1-1
Location Map
Harbor Oil Study Area

BRIDGEWATER GROUP, INC.

Historical and current processes conducted at the Facility involve mixing, blending, and refining various types of oil, off-specification fuels, and oily waters to produce refined fuel oil (RFO). During 2011 and 2012, Facility operations also included treatment and processing of used oil, oily water, and other water for separation and blending. Harbor Oil, Inc. ceased doing business on the property in 1999. Energy & Materials Recovery, Inc. (EMRI) operated the Facility until 2011. Currently, the Facility treats and processes used oil, fuels, and oily water and is is operated by American Recyclers LLC.

Figure 1-3 shows the Facility features as of 2009. At that time and historically, a majority of the property was covered in gravel. In the fall of 2011, the Facility was paved with asphalt except for the westernmost portion. The Facility office/shop/warehouse building is located on the southeast side of the Facility, near the main entrance along North Force Avenue. The locations of known underground utilities at the Facility, including underground electric, stormwater, sanitary, and fuel lines, are shown on Figure 1-3.

A tank farm and used oil processing area is located along the northeast side of the Facility. To the northwest of the tank farm and processing area was a large steel tank referred to as Tank 23. Tank 23 contained oily water and sludge. The contents of Tank 23 were removed from the Facility in 2008.

Stormwater from the Facility is collected and treated on-Site near the southwest Facility boundary. Treated stormwater is discharged to the wetlands at a point southwest of the Facility under a National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater Discharge Permit. The stormwater treatment system includes an oil-water separator. Catch basins are used to collect stormwater and convey it to the stormwater treatment system. Figure 1-3 illustrates the location of underground piping from the catch basins to the stormwater treatment system. The open area to the northwest of the new base-oil refining plant and stormwater treatment system is used for storage of vehicles, equipment, and materials.

Figure 1-2. Harbor Oil Study Area

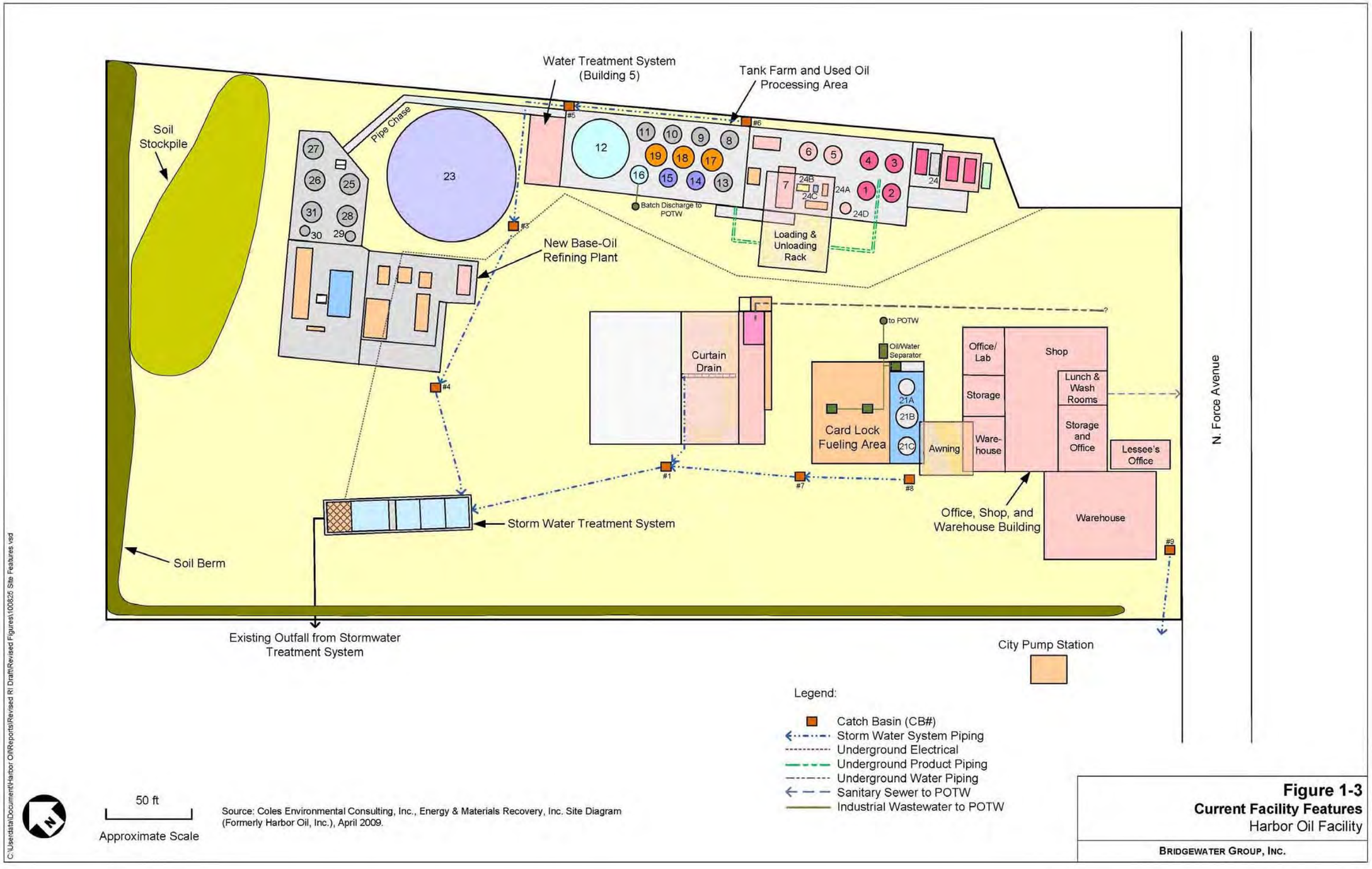

Figure 1-3
Current Facility Features
Harbor Oil Facility

BRIDGEWATER GROUP, INC.

SECTION 2

SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 HISTORICAL LAND USE

The Harbor Oil Facility is located at 11535 North Force Ave, on 4.2 acres adjacent to Force Lake, in an industrial area of northeast Portland. The following sections describe the various activities on the Site throughout history. Specific figures and references can be found in the RI report.

1940s

Based on a 1948 aerial photograph taken after the May 1948 Vanport flood, the area that is now the location of the Facility was essentially undeveloped in the late 1940s. Flood waters covered most of the western and southern parts of the property. Piles of unknown materials were present at the Facility along with a railroad spur that was part of the Peninsula Terminal Railroad switching yard.

The 1948 flood destroyed Vanport City, Oregon, that was located to the southwest of Force Lake. Vanport City was originally constructed in 1942 to house workers at shipyards located in Portland and in Vancouver, Washington. By the end of 1943, nearly 40,000 people lived in Vanport City. After World War II, it provided housing for returning service men and their families. Records from the period indicate that dichlorodiphenyltrichloroethane (DDT) was applied to apartments in Vanport City by the county to control bedbugs and cockroaches.

A 1948 aerial photograph depicted vegetated areas to the south and southwest of the current Facility boundary that were above Force Lake at the 1948 flood stage, providing an overall indication of topographic highs and lows in the area. Low areas identified in the 1948 photograph were subsequently filled in several stages and brought to grade with the remainder of the Facility. According to past studies, the property was incrementally filled in a general east to west direction as operations expanded.

1950s

A 1956 aerial photograph indicates that the railroad spur was no longer present in the 1950s. A portion of the current office/shop/warehouse building was present, and there appeared to be tanker trucks and a concrete slab located in the area where a tanker

truck cleaning operation was later located. This concrete slab may have been the "cement washing basin" observed in 1973 where cattle and tanker trucks were cleaned.

Past studies also indicated the presence of a C-shaped area of apparent fill material that was located in the area where the new base-oil refining plant and current stormwater treatment system are located.

Records indicate that a road dust suppression business was located at the Facility. Its operation used asphalt blended with lignite (waste paper mill liquor). Used oil was apparently added to thin the mixture.

The portion of the Facility that was filled to current grade (and developed with structures) appears to have been limited to the eastern portion of the Facility. The C-shaped material was placed on the lower, as of yet unfilled, portion of the property.

1960s

Oil-recycling activities at the Facility started in 1961. Harbor Distributing (type of business unknown) and Industrial Cleaning Systems (truck cleaning) also operated at the Facility at this time. There was also documentation of a pond with oil-stained soil that was filled sometime before 1964. The location of the pond was not identified.

Aerial photographs from 1964 and 1966 show that development during this period was restricted to the southeastern half of the Facility. The office/shop/warehouse building and concrete slab were present during these years. It appears that the C-shaped area identified previously was also present during these years, with no apparent additional filling, although the 1966 aerial photograph is of poor quality, making interpretation difficult.

1970s

Aerial photographs from the 1970s shows that key Facility features (tank farms, offices, truck washing stand) were consistent with current features. The Site drainage patterns were different in that there was a drainage ditch on the north side of the Site that ran along the northern perimeter and then south along the western perimeter of the Site where it discharged in the southwest corner of the Site into wetlands. The Site was still being filled from east to west during this time. There were numerous complaints of oil being discharged to the wetlands and Force Lake in the 1970s. DEQ investigated the Facility numerous times and ordered it to control stormwater runoff and install an oil water separator. The separator was installed in 1975, and the Facility received an NPDES permit for the discharge from the oil-water separator.

The Facility operated a truck cleaning operation during this time that utilized trichloroethylene (TCE) for oil tanker cleaning. The TCE was in a "closed" system that reused the TCE via distillation. Approximately ten percent of the business was cleaning oil tankers, the rest was cleaning cattle trucks. Based on site history, it is likely that some of the DDT present at the Site originated from the cattle truck cleaning operations.

In October 1979, a major fire destroyed the Facility. The heat of the fire reportedly destroyed at least five 20,000-gallon storage tanks, resulting in the release of used oils and lesser volumes of waste paints. These materials flowed to the west and south across the Facility and into the wetlands and Force Lake. The quantity of material released is unknown.

1980s

A 1980 aerial photograph that was taken after the 1979 fire shows the office/shop/warehouse building had been expanded, the tank farm and used oil processing area had been rebuilt, and Tank 23 had been constructed. In addition, a new structure had been constructed in the area where the concrete pad was located. This structure housed the tanker truck cleaning operation.

The Facility was re-graded and covered with gravel when the Facility was rebuilt. Filling and regrading work continued and brought the Facility to its present topographic expression. An unlined holding pond was constructed in the southwest corner of the Facility to serve as an oil-water separator. The far northwestern portion of the Facility remained undeveloped. An earthen berm was constructed around the northwest and southwest sides of the Facility.

Records indicate that Facility operation remained substantially the same. The Facility processed used oils and shipped off solvents and thinners. Surface runoff was directed to the unlined holding pond. When the pond filled up, the water under the surface of floating oil was pumped off the Facility to a "swamp on the exposition center property." It is likely that the swamp refers to the wetlands adjacent to the Facility or across Force Avenue where an exposition center was built.

The operator of the Facility, which had been called Chempro, changed its name to Harbor Oil, Inc., on September 23, 1983, and merged with Harbor Oil, Inc. (a Washington corporation) on October 31, 1985.

By 1984, Harbor Oil had installed a new oil-water separator that initially discharged into the drainage ditch near the west corner of the Facility.

EPA conducted a preliminary assessment (PA) of the Facility in June 1984, followed by a Site investigation (SI) in 1985. As part of the SI, water in the stormwater treatment system was sampled and found to contain TCE. EPA did not propose to list the Site based on the 1984 PA/SI.

1990s

In August 1990, Harbor Oil installed a wastewater treatment system to comply with City of Portland sanitary sewer discharge requirements. Stormwater discharges were altered to discharge on the southern boundary of the Site into adjacent wetlands. No significant change in operations occurred.

In June of 1995, DEQ notified owners and operators of the Facility of the agency's proposal to place the property on its "Confirmed Release List" and "Inventory List."

EMRI took over the operation on October 1, 1999 after Harbor Oil ceased doing business on the property. That same year, DEQ issued NPDES Industrial Stormwater Discharge Permit 1200-COLS to EMRI for the stormwater treatment system.

2000 to 2010

The only major change to the Facility during this period was the construction of a new base-oil refining plant in the northwestern portion of the Facility in 2003. The construction of the new plant required that soils be excavated for construction of the new plant. These soils are currently stockpiled northwest of the base-oil refining plant, near the northern corner of the property. Evidence of oil impacts was apparent during the excavation and stockpiling of soil during construction of the base-oil plant. As the soil was being excavated, zones of "clean" soil (with minor or no visual indication of impact), were observed interspersed with layers or lenses of soil that had dark staining and a petroleum odor or that appeared to be saturated with oil. These layers or lenses were typically approximately one inch thick by several feet in length and were not continuous over the area of excavation but instead were patchy and were interspersed with soils with no or less substantial evidence of impact. In addition, field notes related to soil sampling conducted as part of the construction noted the presence of an oily sawdust layer, as well as the presence of coal fragments and miscellaneous debris.

Wells EW-1, EW-2, and EW-3 were installed within the granular backfilled foundation of the new base-oil refining plant. These wells were reportedly installed within the existing construction-related pits for light non-aqueous phase liquid (LNAPL) collection. The presence of more than trace levels of LNAPL has never been identified in wells EW-1 through EW-3, and for that reason, they have never been used.

The Facility continued to receive and process up to a maximum of 7.2 million gallons of used oil per year used oil during this period.

EPA completed a second Site Investigation on July 27, 2001. The Harbor Oil Site was placed on the National Priorities List on September 29, 2003, primarily because wetland soils and sediments had elevated PCB concentrations.

In 2004, the Agency for Toxic Substances and Disease Registry (ATSDR 2004) issued a public health assessment for the Facility. The assessment made the following findings:

- Exposure to chemicals found in the drainage area and wetlands adjacent to Force Lake represented a complete exposure pathway. Exposure to this area was not anticipated to result in adverse health effects. However, the existing data for this area were limited in sample number and geographic location.
- The level of contamination in fish tissue and information regarding populations that may consume fish from Force Lake was unknown, which limited the ability to completely characterize the risks to human health.
- Soils, groundwater, ambient air, soil vapor, and surface water pathways from the Facility were considered potential exposure pathways because of the lack of data for these pathways.
- Based on the existing environmental data, the Superfund Health Investigation and Education program considered the Study Area not to be an apparent public health hazard.

In May 2007, EPA entered into an Administrative Order on Consent (AOC) with some of the potentially responsible parties to conduct a remedial investigation/feasibility study (RI/FS) at the Site. The potentially responsible parties, known as the Harbor Oil Voluntary Group (VG), had previous or ongoing business affiliations with the Facility. The active participants of the VG are Avista Corp., Bonneville Power Administration, Chevron USA Inc., North Western Corp., Portland General Electric Co., Texaco Downstream Properties Inc., Texaco Downstream LLC, The Montana Power Co., Union Oil Co. of California, and Waste Management Disposal Services of Oregon Inc.

In mid-2007, EMRI agreed to characterize the contents of Tank 23 under a separate AOC with EPA. On August 16, 2007, EMRI collected samples from four locations in Tank 23. The samples indicated that the Tank did not contain any hazardous wastes as defined by RCRA.

In 2008, EMRI removed oil, water, and sludge from Tank 23 and transported the tank contents to another facility for treatment. Some of the sludge material was taken to

Coffin Buttes Landfill located near Corvallis, Oregon. EMRI then cleaned the tank. EPA issued a notice of completion for the work on November 13, 2008.

On July 24, 2009, a fire occurred at the Facility. No structural damage to the tanks was reported, and there was no evidence of a release of oil or oily water to areas beyond the secondary containment of the tank farm.

2010 to Present

On October 15, 2010, the Facility operations were transferred to American Recyclers Inc. American Recyclers Inc. paved all the operation areas. The stormwater system for the Facility was updated and improved to include a higher capacity of water filtration and a two-foot concrete containment wall was built around the perimeter of the main basins to prevent incidental access by wildlife in the area. Along with the concrete containment, an all-weather cover was installed over the stormwater system to prevent incidental contamination by any foreign debris from the trees overhanging the storm basins. The remaining shell of Tank 23 was removed. Concrete curbing was also installed in the areas of refinery operations to prevent any storm runoff from potentially contaminating the stormwater system.

Historical Summary:

The following historical land uses and events detail environmental impacts related to the Facility that could have resulted in releases of hazardous substances in various areas of the Site:

Cattle truck and tanker truck cleaning operations: Truck cleaning operations began in the 1950s and continued until 1994. Some of the DDT detected at the Site and adjacent wetlands are presumed to come from the cattle truck cleaning operations.

Road oiling for dust suppression: There is evidence to suggest that the Facility road was oiled in the early 1970s and mid-1980s. This may have contributed petroleum, metals, and PCBs to the surrounding soils.

Oil treatment and processing activities: Oil-recycling activities began at the Facility in 1961. The Facility currently treats and processes used oil, oily water, and other water at the Facility. Random spills may have resulted in releases of petroleum, metals, and PCBs to the surrounding soils.

1979 Facility fire: A fire destroyed the Facility in 1979 and reportedly resulted in releases of petroleum, metals and PCBs to the adjacent wetlands and Force Lake.

Stormwater drainage patterns: During early operations at the Facility, stormwater and

industrial wastewater likely drained to sumps and holding ponds located along the southwest and western Facility boundaries. Overflows from these areas drained into the adjacent wetlands. In the 1970s, a drainage ditch that discharged Facility stormwater to the wetlands was constructed along the northeast Facility boundary. The ditch directed stormwater to the western wetlands. The ditch remained operational until 2002 when it was filled. The current stormwater treatment system collects and treats all Facility stormwater prior to discharge into the wetlands southwest of the Facility via an NPDES permit.

2.2 ENFORCEMENT/COMPLIANCE HISTORY

EPA is the lead agency for this Site; DEQ is the support agency. The Site was placed on the Superfund National Priorities List on September 29, 2003, with EPA identification number ORD071803985.

The following summarizes the known enforcement actions taken at the Facility by EPA or DEQ:

In August 1988, DEQ proposed to revoke Harbor Oil's stormwater discharge permit because pollutants from the tanker truck cleaning operation were entering the stormwater treatment system, which was not designed to treat them.

In June 1992, a DEQ Resource Conservation and Recovery Act (RCRA) inspection resulted in DEQ citing Harbor Oil for storage of hazardous waste without a permit, failure to make hazardous waste determinations, and failure to retain Land Disposal Restriction forms. DEQ assessed a civil penalty of $10,777 for these violations, which Harbor Oil paid in May 1993.

In 1995, DEQ received periodic complaints of strong, acrid odors (fugitive emissions) from the Facility. The odors were documented by DEQ on December 11, 1995, and February 14, 1996. In 1996, Harbor Oil and DEQ entered into Mutual Agreement and Order (MAO) No. AQP-NWR-96-206, and Harbor Oil proposed to install an off-gas/steam condensation system to reduce volatile organic and halogenated organic emissions produced from waste oil reprocessing operations.

On November 19, 1996, DEQ sent Harbor Oil a notice of noncompliance for violations of Oregon's hazardous waste and used oil management regulations. By December 1996, Harbor Oil had taken actions to correct the violations.

In October 2000, DEQ issued a notice of non-compliance to the Facility for: 1) storage of drums outside the containment pad, and 2) a gap between the wall and pad along part

of the south side of the used oil processing area.

On August 20, 2001, the City of Portland notified EMRI that it was in violation of its stormwater permit because it failed to collect a sufficient number of samples for the year July 1, 2000 through June 30, 2001.

On May 31, 2007, EPA and the VG entered into an Administrative Settlement Agreement and Order on Consent for RI/FS (Docket No. CERCLA-10-2007-0106). The VG agreed to conduct the RI/FS for the Site with oversight provided by EPA Region 10. The EPA and VG collaborated on completing the investigations, risk assessments, and evaluations leading to the decision.

On August 10, 2007, an Administrative Settlement Agreement and Order on Consent for Tank Characterization (Docket No. CERCLA-10-2007-0181) was entered into by the EPA and EMRI. EMRI completed the characterization of Tank 23 in 2008, and EPA issued a notice of completion for the work on November 13, 2008.

On June 12, 2012, the Facility received NPDES 1200 COLS Industrial Stormwater Discharge Permit from the City of Portland Department of Environmental Services. The permit will expire after 5 years.

2.3 INVESTIGATION HISTORY

Before the Superfund investigation at the Harbor Oil Site, there were eight previous investigations by federal, state, and private entities. EPA allowed data from only one of the earlier studies to be incorporated into the RI/FS because of data quality concerns. Data from the other seven studies were not used in the RI/FS, but they did assist in guiding the RI data quality objectives (DQOs) and multi-media sampling strategy.

Between 1990 and 2007, when the Voluntary Group entered into the AOC, the following investigations had been conducted in the vicinity of the Study Area:

- Heron Lakes Golf Club water quality sampling conducted by the City of Portland 2006 (Goodling 2007)
- Soil analysis results for the 2003 excavations required for the construction of the EMRI base-oil refining plant (Coles Environmental Consulting 2007)
- Harbor Oil PA/SI (Ecology and Environment 2001)
- Preliminary risk assessment problem formulation (Coles Environmental Consulting 2002)
- Peninsula Drainage District Number 1 Natural Resources Management Plan (PEN 1 NRMP) (City of Portland 1997)

- Portland Stockyards SI and preliminary remediation plan (Golder Associates 1990)
- Black & Veatch and RZA stockyards site assessment (RZA 1990, as cited in Golder Associates 1990)
- Sweet-Edwards/EMCON environmental audit, field investigation, and remedial alternatives assessment (Sweet-Edwards/EMCON 1988, as cited in Golder Associates 1990)

2008 Remedial Investigation

With EPA's oversight, the VG conducted the field investigation for the RI during 2008 and 2009. The RI encompassed a 19-acre Study Area that includes the Harbor Oil Facility, Force Lake, North Lake, and wetlands west and south of the Facility that drain to Force Lake. Soil at the Facility, including the soil stockpile and soil berm, was sampled at 70 locations, wetland and ditch soil at 52 locations, Force Lake sediments at 11 locations, surface water at 3 locations, and groundwater in 16 monitoring wells. The collected soil, sediment, groundwater, and surface water samples were analyzed under a comprehensive analytical protocol to identify chemicals present at the Site, and ultimately the nature and extent of contamination. EPA also surveyed Force Lake in 2009 to characterize the population, diversity, and relative sizes of the resident fish. Section 5 discusses the results of the Remedial Investigation.

SECTION 3

COMMUNITY PARTICIPATION

EPA has worked with DEQ, the Nez Perce Tribe, the Yakama Nation, City of Portland Environmental Services, and the Harbor Oil Community Advisory Group (HOCAG) to complete the RI, the risk assessment, and evaluations leading to the no-action alternative decision. The agencies, Native American tribal representatives, and the citizens group are referred to collectively as "Stakeholders."

Interested community members formed the HOCAG, and EPA awarded a technical assistance grant to the HOCAG to fund technical advisors to review technical site documents. The grant began in June 2007. The group has scheduled monthly meetings, is an active participant in the RI/FS process, has learned about the release of chemicals at the Site, and has shared its concerns. The HOCAG met with representatives from the City of Portland, DEQ, State Health Authority, and representatives of two Native American Indian Tribes. Meetings occurred monthly during field sampling and the preparation of the RI report. Subsequent meetings occurred on an as-needed basis, as determined by the HOCAG. EPA participated in at least a half dozen meetings by sharing data, providing EPA experts for discussion, and responding to concerns raised by the HOCAG.

The Harbor Oil Community Engagement and Public Participation Plan was updated in November 2012 and included specific information for reviewing final documents at the centrally located community information repository.

Kenton Firehouse 503-823-0215

North Portland Neighborhood Services

8105 N. Brandon Street

Portland, Oregon

SECTION 4

SCOPE AND ROLE OF RESPONSE ACTION

The Harbor Oil NPL Site is addressed by this ROD, which documents the basis for the determination that no CERCLA action is necessary at this Site to protect human health or the environment. Based on existing information and conditions, this site does not pose an unacceptable risk to human health and ecological receptors based on reasonable maximum future exposure scenario. Therefore, as shown in the following sections of this document, action pursuant to CERCLA is not warranted at the Harbor Oil Site.

SECTION 5

SUMMARY OF SITE CHARACTERISTICS

This section summarizes information obtained through Site investigations. It includes a description of the conceptual site model (CSM) on which the RI, risk assessment, and the no-action decision are based. The major characteristics of the Harbor Oil Site and the nature and extent of contamination are summarized below. Information that is more detailed is available in the RI and the Administrative Record for the Site.

5.1 CONCEPTUAL SITE MODEL

This section discusses the CSM for the Study Area. It is a schematic representation of the potential contaminant sources, contaminant release/transport mechanisms, potential exposure media, potential exposure route, and potential receptors that affect the distribution of chemicals at the Study Area. A summary of the key components of the CSM is provided below:

- Known or suspected **sources of chemicals** at the Facility and in the adjacent wetlands that appear to be associated with historical industrial operations at the Facility.
- Known or suspected **mechanisms for the release of chemicals** to Facility soils,. These include discharges from the former truck cleaning operations, spillage of petroleum products stored or handled at the Facility, application of used oils at the Facility roadway for dust suppression, release of oils and other materials present at the Facility during the 1979 Facility fire, and the overflow or discharge of oily rinsate/stormwater from sumps or an unlined pond formerly located in the southwestern portion of the Facility.

The primary migration pathway for chemicals appears to be historical direct discharge and transport via stormwater runoff. Chemicals were likely bound to soil particles and transported in surface water runoff from the areas of spillage or discharge to low-lying areas historically located to the south and west. The historic low-lying areas included existing wetlands and Force Lake to the south of the Facility, as well as areas of the existing Facility that were lower in elevation at the time but subsequently filled to

match the existing grade. This fill history resulted in impacts to deeper soils in certain areas, relative to other portions of the Facility.

Facility physical and operational modifications such as the termination of truck cleaning operations, installation of a stormwater collection and treatment system, and the placement of a hard-packed gravel and pavement cover throughout the Facility have mitigated the primary migration pathway (direct discharge and stormwater runoff). Other potential pathways (future erosion of soils, groundwater migration, sediment transport, and volatilization to air) were not found to be pathways of significance.

Future land uses in the Study Area are not anticipated to change from those currently established. Consequently, there was no need to adapt the CSM for for potential changes in migration or exposure pathways.

5.2 PHYSICAL CHARACTERISTICS OF THE SITE

The physical characteristics of the Study Area, including surface features, meteorology, surface water hydrology, geology, hydrogeology, demography, and land use, and ecology are summarized below and can be found in greater detail in the RI report:

- **Surface features:** The land surface of the Facility is relatively flat with a slight slope from northeast to southwest toward the wetlands and Force Lake. A soil berm extends along the northwest and southwest sides of the Harbor Oil Facility to prevent untreated runoff from entering the adjacent wetlands.
- **Meteorology:** The Study Area is in a temperate marine climate characterized by wet winters and dry summers. The average annual amount of precipitation (primarily as rain) is 37 inches and the average annual temperature is 54 degrees Fahrenheit (°F).
- **Surface water hydrology:** The Study Area is located within the Columbia River floodplain, an area with numerous wetlands and small lakes. Force Lake, the main water body in the Study Area, is approximately 12 acres in size with an average depth of 2.5 feet. Inflows and outflows from Force Lake are limited, and thus Force Lake acts as a settling basin. No natural watercourses flow into Force Lake. Suspended solids that enter the lake tend to settle to the bottom, rather than being transported downstream. The area surrounding the Facility, shown in City documents as Peninsula Drainage District No. 1, is designed to artificially control groundwater and surface waters to prevent flooding. Water

levels within the Drainage District are maintained by pumping excess water to the Columbia Slough.

- **Geology:** One non-native (i.e., fill) lithologic layer and several native lithologic layers are present beneath the Facility, as observed in borings. The native lithologic layers are consistent with a fluvial depositional environment of predominantly low energy (e.g., sediments deposited in swamps or marshes). This is indicated by the high percentage of silts and clays in most of the soil samples, with occasional changes to a fluvial depositional environment of moderate energy (e.g., sediment deposited from river or stream flooding) as indicated by the fine- to medium-grained sand layers detected in some of the soil samples.
- **Hydrogeology:** Beneath the Facility, local hydrogeology is defined by three distinct groundwater zones (each separated by saturated silt deposits). Depth to uppermost groundwater beneath the Facility (shallow saturated zone) ranges from less than one foot to approximately six feet below ground surface (bgs), depending on location and the time of year. An intermediate depth saturated zone (37 to 48 feet bgs), and a deep saturated zone (greater than 90 ft bgs) are present beneath the Facility. Based on water level measurements collected during the RI sampling events, groundwater flow is to the southwest in the shallow zone, with flow towards and discharge to Force Lake. Groundwater flow is to the west or southwest within the intermediate zone and alternates between the northwest and southwest in the deep zone. Studies have also demonstrated correlation between fluctuations in Columbia River stage and the fluctuation in intermediate and deep groundwater zones, with such fluctuations likely the result of tidal as well as seasonal influences. Vertical gradients in the upgradient and central portions of the Facility are largely downward; vertical gradients in the southern portion of the Facility trend upward during the dry season and alternate between upward and downward during the wet season.
- **Demography and land use:** The zoning and comprehensive plan designations for the Study Area indicate that the current and likely future land use designation at the Facility is industrial, particularly given the area's designation as an Industrial Sanctuary. The current and likely future land use of the wetlands and Force Lake is as open space, indicating that these areas will continue to be used for recreation and as habitat for ecological receptors. Current human uses at the Study Area include the daily activities of workers at the Facility, as well as

recreational activities in the wetlands and Force Lake (e.g., golf ball retrieval, fishing). Fishing occurs at Force Lake, but it is relatively infrequent compared with other locations throughout the area.

- **Ecology:** The Study Area is located within one of the natural resource areas developed by the City of Portland to mitigate the cumulative effects of development within a large ecosystem. The Study Area provides habitat for numerous birds and several species of mammals.

5.3 DATA SELECTION AND QUALITY CONTROL

Historical data sets were screened against data quality objectives (DQOs); following screening, only one historical data set was deemed suitable for use in the RI evaluations. Data reduction and computational methods used to aggregate data for the RI are discussed in detail in the RI report.

The majority of data available for use in the RI were collected in 2008 and 2009 as part of two phases of RI sampling. The sampling plan for these data was designed to collect representative data for use in the human health risk assessment (HHRA) and the ecological risk assessment (ERA) based on the human health scenarios and ecological receptors to be assessed. In addition, the sampling plan was designed to characterize the nature and extent of chemical concentrations within the Study Area. Methods for analyzing the samples collected during the two phases of the RI sampling effort were approved by EPA in advance of sampling.

Data generated from the sampling was validated and any data deemed unusable during the validation process was not used in the RI. Based on a review of these data, no issues were identified that would have adversely affected the usability of the data for risk assessment or site characterization purposes.

5.4 CHEMICALS AND CHEMICAL GROUPS

Chemicals and/or chemical groups occurring at the Site at measured concentrations that approached or exceeded EPA's screening values (specific to both media and exposure type as defined in the risk assessment) were identified in the RI report. Chemicals were grouped based on the similarity of chemical properties and potential release sources. The chemicals or chemical groups summarized here are those that have the most significant role in the risk-based remedial decision process and are further discussed in Section 7:

- **TPHs, PAHs, and associated VOCs:** TPHs, PAHs, and associated VOCs are of

interest at the Study Area based on historical and current industrial activities, including oil treatment and processing and tanker-cleaning operations.

- **PCBs:** PCBs are of interest at the Study Area based on their known presence in used oils, fuels, or other petroleum hydrocarbons processed and refined at the Facility.
- **Metals:** Metals are of interest at the Study Area based on their presence in used oils or fuels processed and refined at the Facility, their use in various industrial applications, and their potential presence as a result of truck cleaning at the Facility.
- **DDT:** Historical records of industrial activities at the Facility did not include any information documenting the use or handling of DDT at the Facility. However, the RI sampling results showed that DDT was detected in samples collected from the Study Area, with distribution patterns that suggest that DDT may have been released from historical livestock trailer washing operations in a portion of the Facility. DDT found across the larger Study Area may have been released as a result of typical pest control applications in the area.
- **Chlorinated solvents:** Though only limited detections occurred, historical tanker cleaning operations at the Facility used TCE.

In addition to the chemicals or chemical groups listed above, the RI report discusses all other chemicals detected in samples collected from the Study Area as part of the RI. Dioxins/furans were not analyzed or evaluated in the RI because EPA's initial site inspection documented that they were not associated with activities conducted at the Facility.

5.5 SUMMARY OF REMEDIAL INVESTIGATION

The Superfund RI studied the type and amount of contamination at the Study Area and the possible risks to human health or the environment. The following compound classes were analyzed for the Harbor Oil Site:

- TPHs
- PAHs
- cPAHs
- SVOCs

- VOCs
- PCBs
- Pesticides
- Metals

All investigation activities were conducted in accordance with the EPA-approved *Remedial Investigation/Feasibility Study Work Plan for the Harbor Oil Site (Bridgewater et al 2008)*, referred to as the RI/FS Work Plan. Sample locations are shown on Figures 5-1 (soil and sediment) and 5-2 (groundwater and surface water). Table 5-1 shows the chemical concentrations in soil and sediment samples. Table 5-2 shows the chemical concentrations in groundwater and surface water samples. The RI was conducted in two phases. Phase 1 sampling was conducted in April and May 2008, and Phase 2 was completed in March and April 2009. Sampling results are summarized below. Additional sampling details and related figures can be found in the RI report.

5.5.1 SOIL

Surface or subsurface soil samples were collected at 61 locations on the Facility, including 9 soil berm and 3 soil stockpile locations, as shown on Figure 5-1, for a total of 139 soil samples collected within the Facility boundary beneath the gravel surface that was paved in the summer of 2011. The soil sampling results are shown in Table 5-1. Five metals (arsenic, chromium, copper, mercury, and zinc) exceeded DEQ's state background concentrations. These metals also exceeded screening values that were specific to both media and exposure type as defined in the risk assessment in the RI. The screening level for each metal was the lowest value of the following sources: EPA ecological soil screening levels (Eco-SSLs; EPA 2007) protective of soil invertebrates, Oak Ridge National Laboratory soil data for invertebrates (Efroymson et al. 1997), or DEQ soil screening level values protective of terrestrial invertebrates (DEQ 2001).

The concentrations of most metals were highest in the soils just below the gravel. Arsenic, chromium, and copper were found at higher concentrations in intermediate soils, 5 to 7 ft bgs, in areas that were sumps or ponds that were later filled in. PCB concentrations were highest in the driveway area of the Facility, possibly related to historical application of oil for dust suppression. Only three of the Facility soil samples had PCB concentrations above screening levels; these samples were all in the Facility driveway. The maximum PCB concentration in Facility soils was 32 mg/kg. The highest concentrations of total DDTs (14 - 78 J mg/kg) were along the southern

boundary of the Facility. With the exception of one location, there were no exceedances of VOC screening values in Facility soils. The one location was SL-10, with a TCE value of 2.4 mg/kg and cis-1,2-Dichloroethene of 130 mg/kg.

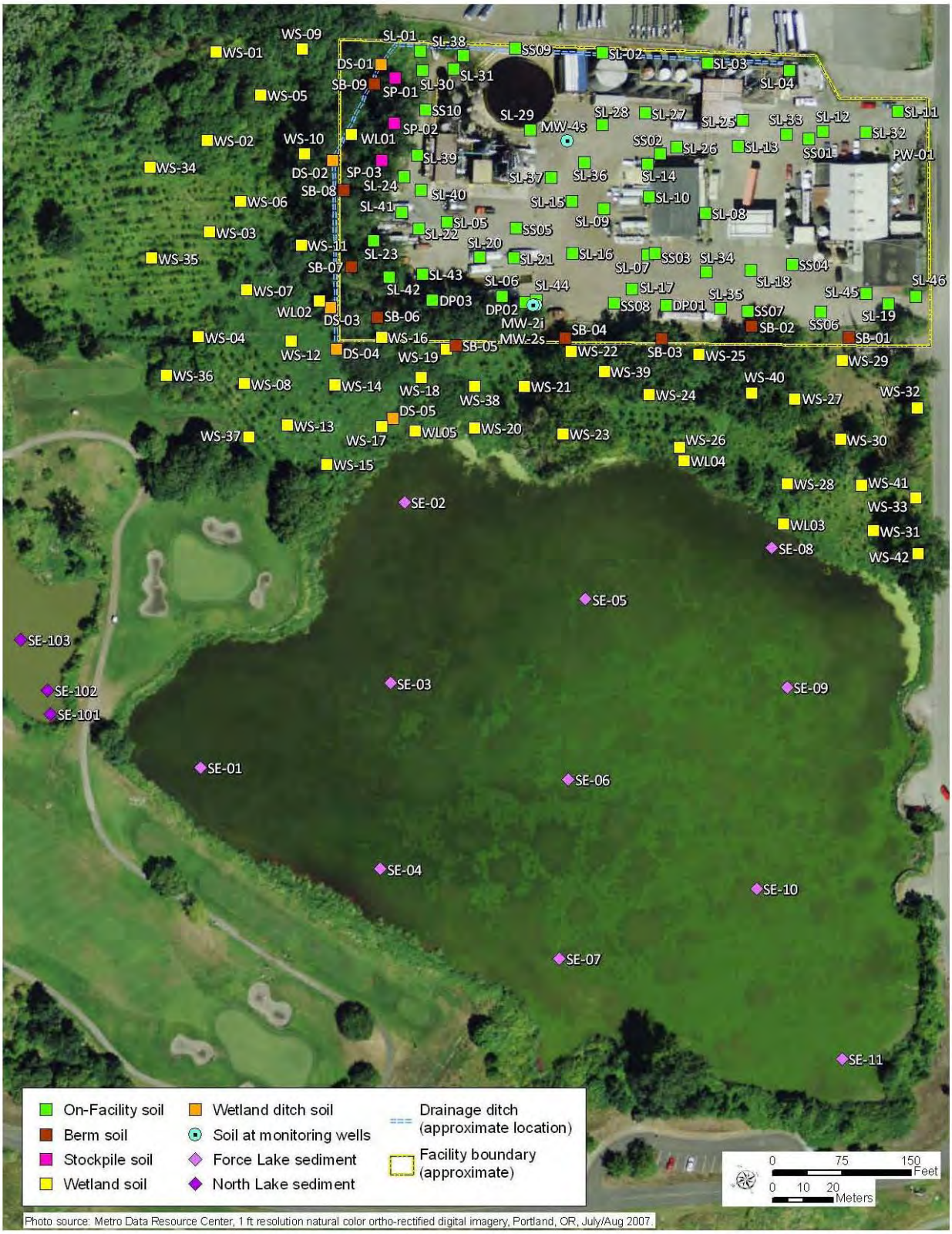

Figure 5-1. RI Soil and Lake Sediment Sampling Locations

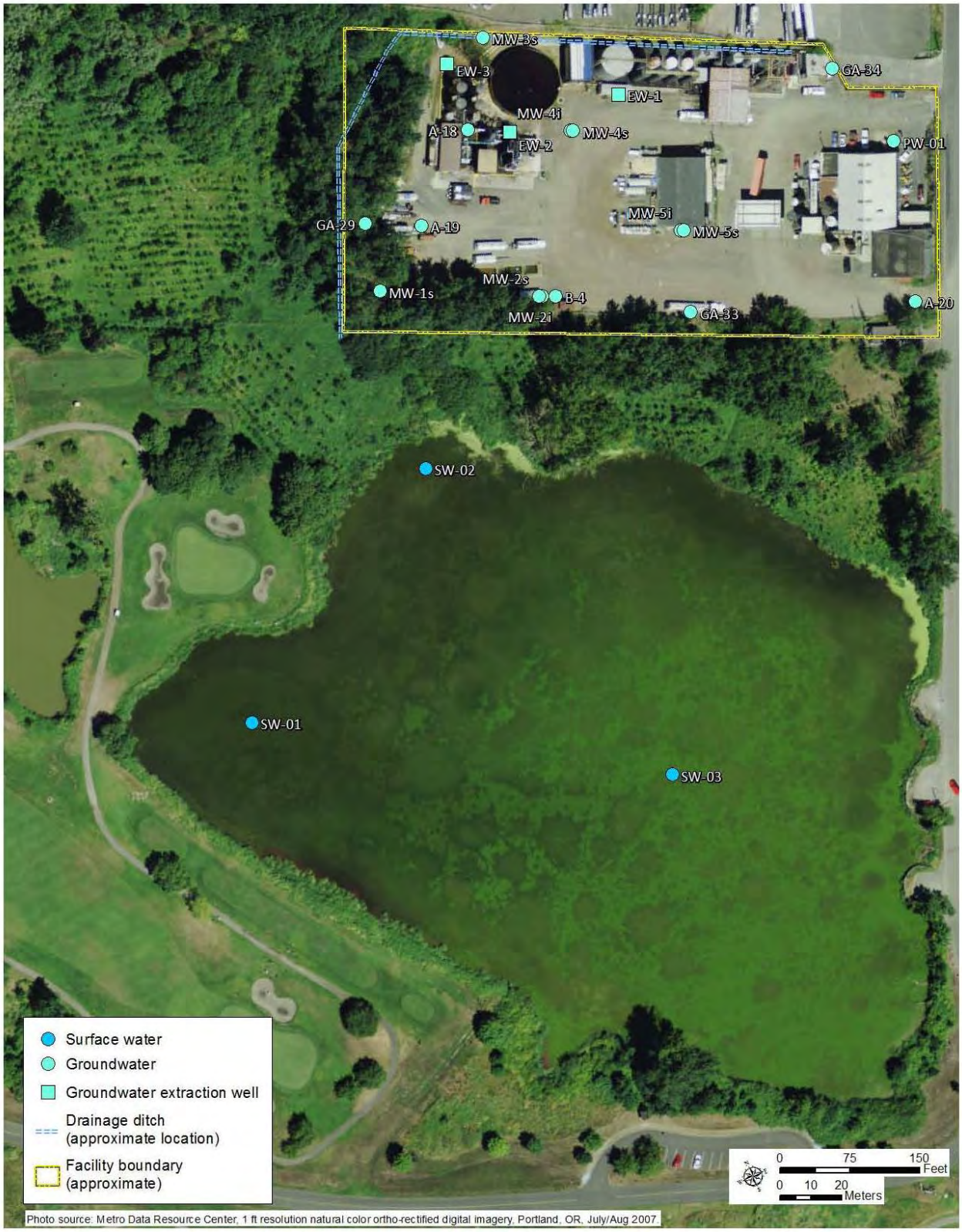

Figure 5-2. RI Groundwater Sampling, Surface Water Sampling, and Extraction Well Locations

Wetland and ditch soil samples were taken at 52 surface and 10 subsurface locations, for a total of 72 soil samples collected. The maximum PCB concentration in wetland soils was 4.2 mg/kg. The maximum concentration of total DDTs was 46 mg/kg. Only eight of 72 samples had concentrations of total DDTs greater than 2 mg/kg. Maximum concentrations of metals were as follows: arsenic 53 mg/kg, chromium 149 mg/kg, copper 162 mg/kg, mercury 0.4 mg/kg, and zinc 748 mg/kg. These wetland and ditch samples were collected from soils in the top 6 inches of the surface, south of the Facility boundary in a copse of trees and along the ditch on the western and southern boundary of the Facility, in the historical stormwater discharge area. Overall, the soil areas that have higher chemical concentrations do not cover a large area and are scattered. Chromium concentrations were higher throughout the ditch area. The maximum chromium concentration in the top 6 inches was 149 mg/kg. PCBs, SVOCs, and chlorinated VOCs were not detected at concentrations that exceeded ecological screening levels. Maximum PCB concentration in the top 6 inches of wetland soils was 4.2 mg/kg. The maximum concentration of a chlorinated solvent in the top 6 inches was PCE at 30 mg/kg. PCE was only detected twice out of 43 samples in wetland soils.

Total petroleum hydrocarbons were detected throughout the Site. The maximum concentration in soils was 25,000 mg/kg. Petroleum hydrocarbons were detected in a LNAPL sample up to 480,000 mg/kg. The LNAPL is located in the western side of the Site and is very limited in extent and thickness. In 2008 it was measured at 0.1 ft thick. Subsequent sampling in 2009 showed the thickness as only 0.01 ft or less.

5.5.2 SEDIMENT

Force Lake sediment samples were taken at the surface at 11 locations and at subsurface at three locations, as shown on Figure 5-1. Surface sediment samples were also taken at three locations in North Lake. This resulted in a total of 14 sediment samples.

The sediment sampling results are shown in Table 5-1. Maximum concentrations present in Force Lake samples were: PCBs 131 µg/kg, TPH 2,300 mg/kg, total PAHs 1,060 mg/kg, arsenic 7 mg/kg, chromium 34 mg/kg, copper 72 mg/kg, mercury 0.3mg/kg , zinc 229 mg/kg, and total DDTs 250 µg/kg. PCBs were detected in 7 of the 11 sediment samples and total DDTs were detected in all 11 sediment samples in Force Lake. Samples from North Lake were all less than those detected in Force Lake. Concentrations detected were either lower or similar to copper and arsenic concentrations in Force Lake, and the concentrations were within background ranges and EPA's screening values that were specific to both media and exposure pathway used in the risk assessment in the RI report.

5.5.3 SURFACE WATER

Surface water samples were taken at three locations in Force Lake as shown on Figure 5-2, and the results are shown in Table 5-2. Only arsenic and copper were detected. Arsenic at a maximum of 1 µg/L was detected in all three samples, but the concentrations were below the federal water quality standard. Copper was detected at a maximum of 4 µg/L in only one sample, which is above the federal water quality standard.

Monthly groundwater and lake elevations were taken between May 2008 and April 2009. Lake elevations generally fluctuated with the seasonal groundwater levels as described in Section 5.2.

A survey to assess the population of fish present in Force Lake was completed in April 2009. The survey results indicated that there is a small population of carp in Force Lake and a stunted pumpkinseed fishery.

5.5.4 GROUNDWATER

Eight new groundwater monitoring wells were installed and sampled as shown on Figure 5-2. In addition, seven existing monitoring wells and the plant well were also sampled. The wells were installed in three zones; shallow (12.5 to 15 ft bgs), intermediate (48 to 49.5 ft bgs), and deep (94 to 97 ft bgs). A total of 34 groundwater samples were collected within the Facility boundary during two phases over two years (2008 and 2009). Groundwater samples were analyzed for TPH, PAHs, VOCs, SVOCs, metals, organochlorine pesticides, and PCBs as Aroclors. The groundwater sampling results are shown in Table 5-2.

Analyte concentrations were generally low and infrequently detected. TPH, PAHs, benzene, metals, TCE, and total DDTs were detected at levels above screening values, MCLs, or background that are specific to the media and exposure pathways used in the risk assessment in the RI. Arsenic was detected at concentrations greater than the MCL of 10 µg/L in six wells. The maximum arsenic concentration was 32.2 µg/L. The average arsenic concentration was 10 µg/L in shallow groundwater. Intermediate and deep groundwater concentrations were all below the MCL. These results are very similar to arsenic concentrations that may be expected for naturally occurring conditions in the Willamette Basin, as described in a U.S. Geological Survey entitled *Arsenic in Groundwater of the Willamette Basin* (Hinkle and Polette 1999) and in the *Mollala-Pudding Subbasin Total Maximum Daily Load and Water Quality Management Plan* (DEQ 2008). Maximum concentrations in these studies were 2000 µg/L and 22 µg/L

respectively. These studies support the conclusion that the concentrations of arsenic at the Site are not atypical and are unrelated to releases at the Facility, as discussed in the RI report.

Lead was detected at a maximum concentration of 19.6 µg/L , which is above the federal drinking water standard, in one sample in 2001. Lead was not detected in samples collected from the same well in 2008 or 2009, or any other well on Site. All other metals were below their respective MCLs. Total DDTs were detected in four groundwater wells at a maximum estimated concentration of 0.24 µg/L. The estimated maximum concentration of total DDTs was slightly above the human health screening level of 0.20 µg/L for 4,4'-DDT. There is no MCL for DDT.

In 2000, TCE was detected at 6.1 µg/L, which is above the federal drinking water standard of 5 µg/L, in a deep (97 ft bgs) well located in the northeastern corner of the Facility. However, since no TCE was detected in shallow or intermediate monitoring wells or in the same well in 2008 or 2009, it was concluded that the TCE is not related to the Site. A 1990 investigation of the Portland Stockyards on regional chlorinated impacts to groundwater showed that TCE was present at up to 20 µg/L in deep groundwater in the surrounding area. This study and the lack of TCE present in shallow or intermediate groundwater at the Site demonstrate that the TCE in deep groundwater is not a result of releases from Harbor Oil.

In 2008, benzene was detected in one well at a concentration of 140 µg/L, which is above the federal drinking water standard of 5 µg/L. However, in 2009 the benzene concentration was again below the standard in the same well. Benzene was not detected in any other well above the drinking water standard.

During the 2008 sampling, a thin layer (about 1-inch thick) of floating petroleum product was found in one well. After more sampling and water level measurements, the floating product was less than one-quarter inch thick. Floating petroleum product was not identified in any other monitoring wells, or in any of the soil borings, indicating the single detection is very isolated. Based on water quality results, this isolated floating petroleum product is not impacting groundwater.

Aquifer slug testing was conducted in nine monitoring well locations. From the 2008 slug test results, hydraulic conductivities ranged from 3.18 x 10-5 centimeter per second (cm/sec) to 1.34 x 10-3 cm/sec within the Study Area and additional analyses of the results yielded an average hydraulic conductivity of approximately 4.37 x 10-4 cm/sec (1.24 ft/day) for the shallow groundwater. For the intermediate groundwater zone,

hydraulic conductivities of 4.55 x 10-5 cm/sec and 3.30 x10-3 cm/sec were calculated for the Study Area yielding an average hydraulic conductivity of approximately 1.57 x 10-3 cm/sec (4.44 ft/day). The deep zone yielded a hydraulic conductivity of 4.87 x 10-5 cm/sec (0.138 ft/day).

Table 5-1. Summary of chemical concentrations in soils and sediments

Chemical	Unit	Concentration or TEQ Range (Mean Concentration or TEQ)			Area(s) with Highest Detected Concentrations
		Facility Soil	Wetland Soil	Force Lake Sediment	
TPH – gasoline range	mg/kg	5.6 U – 3,800 (260) DF = 62%	9.4 U – 58 U (nc) DF = 4%	7.7 U – 80 U (nc) DF = 9%	central part of facility near former tanker truck cleaning
TPH – diesel range	mg/kg	8.0 – 13,000 (1,700) DF = 100%	7.4 U – 4,000 (400) DF = 90%	16 – 270 (98) DF = 100%	central part of Facility near former tanker truck cleaning and along nearby southwest Facility boundary
TPH – motor oil range	mg/kg	38 – 12,000 (2,200) DF = 100%	15 U – 6,600 (1,200) DF = 94%	130 – 2,000 (760) DF = 100%	
Total TPH	mg/kg	46 – 25,000 (4,100) DF = 100%	15 U – 9,300 (1,500) DF = 94%	150 – 2,300 (840) DF = 100%	
cPAH TEQ	µg/kg	14.0 – 4,900 (565) DF = 93%	38.0 – 5,200 (438) DF = 96%	11.6 – 118 (61.9) DF = 100%	central part of Facility near tanker truck cleaning and tank farm, and in one sample collected from soil berm in the west corner of Facility
Total PAHs	µg/kg	36 J – 360,000 (13,000) DF = 98%	200 J – 28,190 J (3,000) DF = 98%	104 – 1,060 (560) DF = 100%	
Benzene	µg/kg	1.0 U – 6,400 (140) DF = 38%	1.6 U – 56 (6) DF = 51%	1.1 U – 8.2 U (nc) DF = 0%	central part of Facility near tank farm
Total PCBs	µg/kg	4.9 J – 32,000 (2,000) DF = 80%	32 U – 4,200 (400) DF = 62%	32 U – 131 (80) DF = 64%	east corner of Facility near entrance, central part of Facility near tanker truck cleaning, along U-shaped roadway extends from Facility entrance around truck cleaning area
Arsenic	mg/kg	0.7 – 20.6 J (3) DF = 100%	1.5 – 53.1 (9) DF = 100%	2.6 – 7 (6) DF = 100%	west corner of Facility, area of former unlined holding pond/C-shaped area, and former drainage ditch to west of Facility
Chromium	mg/kg	4.0 – 63 (20) DF = 100%	6.6 – 149 (30) DF = 100%	7.7 – 34 (30) DF = 100%	west corner of Facility and former drainage ditch to west of Facility
Copper	mg/kg	9.23 – 1,070 (100) DF = 100%	10.3 – 162 (60) DF = 100%	16.2 – 72 (53) DF = 100%	west corner of Facility and area of former unlined holding pond/C-shaped area
Mercury	mg/kg	0.03 – 6.69 (0.2) DF = 45%	0.06 – 0.4 (0.2) DF = 90%	0.06 U – 0.3 U (nc) DF = 9%	area of former unlined holding pond/C-shaped area

Table 5-1. Summary of chemical concentrations in soils and sediments					
		Concentration or TEQ Range (Mean Concentration or TEQ)			Area(s) with Highest Detected Concentrations
Chemical	**Unit**	**Facility Soil**	**Wetland Soil**	**Force Lake Sediment**	
Zinc	mg/kg	35 – 718 J (200) DF = 100%	37 – 748 (230) DF = 100%	80 – 229 (200) DF = 100%	west corner of Facility, area of former unlined holding pond/C-shaped area, former drainage ditch west of Facility, and area near current and former stormwater treatment system discharge points near southwest corner of Facility
Total DDTs[1]	µg/kg	0.6 U – 78,000 J (8,000) DF = 95%	2.7 J – 46,000 (3,000) DF = 98%	22 J – 250 (160) DF = 100%	central part of Facility near former truck cleaning, in the C-shaped area west of the former truck cleaning, along southwest Facility boundary
TCE	µg/kg	1.0 U – 2,400 (66) DF = 11%	1.5 U – 15 U (nc) DF = 5%	1.1 U – 8.2 U (nc) DF = 0%	central part of Facility near former truck cleaning

DF: detection frequency, J: estimated concentration, U: not detected (concentration shown is reporting limit), nc: not calculated, mg/kg: milligram per kilogram (parts per million), µg/kg: micrograms per kilogram (parts per billion (µg), TEQ: Toxic Equivalent

[1] Total DDTs are the sum of all DDT related compounds (*p,p'*-DDT, *o,p'*-DDT, DDE, and DDD) in a sample

Table 5-2. Summary of chemical concentrations in groundwater and surface water

Chemical	Unit	Water Concentration or TEQ Range (Mean Concentration or TEQ)				Area(s) with Highest Detected Concentrations
		Groundwater (Shallow)	Groundwater (Intermediate and Deep)	Force Lake Surface Water	MCL	
TPH – gasoline range	mg/L	0.25 U – 0.81 (0.22) DF = 23%	0.25 U (nc) DF = 0%	not analyzed	NA	near tank farm and former C-shaped area
TPH – diesel range	mg/L	0.25 U – 0.26 J (nc) DF = 0%	0.25 U (nc) DF = 0%	0.25 U (nc) DF = 0%	NA	detected in only one groundwater sample from well A-18 near former C-shaped area
TPH – motor oil range	mg/L	0.5 U (nc) DF = 0%	0.50 U (nc) DF = 0%	0.50 U (nc) DF = 0%	NA	not detected
Total TPH	mg/L	0.27 – 1.07 J (0.33) DF = 23%	0.50 U (nc) DF = 0%	0.50 U (nc) DF = 0%	NA	near tank farm and former C-shaped area
cPAH TEQ	µg/L	0.0910 U – 1.50 U (nc) DF = 0%	0.0910 U – 1.40 U (nc) DF = 0%	0.0910 U (nc) DF = 0%	NA	not detected
Total PAHs	µg/L	0.10 – 6.3 (1) DF = 43%	0.10 U – 3.8 U (nc) DF = 0%	0.10 U (nc) DF = 0%	NA	near Facility exit and in area of base oil refining plant
Benzene	µg/L	0.20 U – 140 (6) DF = 29%	1.0 U (nc) DF = 0%	1.0 U (nc) DF = 0%	5	near tank farm, only one sample was above the MCL
Total PCBs	µg/L	0.10 U – 0.96 U (nc) DF = 0%	0.10 U – 0.92 U (nc) DF = 0%	0.10 U (nc) DF = 0%	NA	not detected
Arsenic	µg/L	0.8 – 32.2 (10) DF = 100%	0.2 U – 6.3 (3.4) DF = 80%	0.9 – 1.0 (1) DF = 100%	10	near tank farm
Chromium	µg/L	5 U (nc) DF = 0%	5 U (nc) DF = 0%	5 U (nc) DF = 0%	100	not detected
Copper	µg/L	2 U – 5 (nc) DF = 0%	2 U (nc) DF = 0%	2 U – 4 (nc) DF = 33%	1300	low variability in concentrations
Mercury	µg/L	0.1 U (nc) DF = 9%	0.1 U (nc) DF = 0%	0.1 U (nc) DF = 0%	2	not detected
Zinc	µg/L	10 U – 80 (nc) DF = 9%	10 U – 9,870 (nc) DF = 20%	10 U (nc) DF = 0%	NA	plant well (PW-01), located in east corner of Facility
Total DDTs[1]	µg/L	0.0071 J – 0.24 J (0.030) DF = 43%	0.01 U – 0.048 (0.015) DF = 50%	0.010 U (nc) DF = 0%	NA	detected in shallow groundwater samples in some areas where concentrations of total DDTs in soil samples were highest (exit driveway, along southwest boundary of Facility)
TCE	µg/L	0.20 U – 1.0 U (nc) DF = 0%	1.0 U – 6.1 (nc) DF = 17%	1.0 U (nc) DF = 0%	5	detected only in plant well (PW-01) in east corner of Facility

DF: detection frequency, J: estimated concentration, U: not detected (concentration shown is reporting limit), nc: not calculated, mg/L: parts per million (mg/L), µg/L: parts per billion (µg/Kg), NA: Not Available, TEQ: Toxic Equivalent.

[1] Total DDTs are the sum of all DDT related compounds (*p,p'*-DDT, *o,p'*-DDT, DDE, and DDD) in a sample

5.6 NATURE AND EXTENT OF CONTAMINATION

Summarized below are the key findings regarding the nature and extent of contamination. Additional details can be found by medium and by chemical or chemical group in the summary tables provided in Section 7.2 of the RI report.

Chemical concentrations in soils were generally highest at the Facility, with the exception of selected metals, where the highest concentrations were measured in the wetlands near the west corner of the Facility. All soil samples were collected beneath a gravel layer of approximately one foot. The Site has since been paved with asphalt. The highest concentrations of chemicals detected on-Site were located in seven specific areas: in the central portion of the Facility; near the tank farm along the northeast Facility boundary; along the southwest Facility boundary; near the Facility entrance (east corner of the Facility); along the Facility roadway; in the area of the former unlined holding pond/C-shaped area; or in the west corner of the Facility. The locations with the highest chemical concentrations (which were usually greater than screening levels) varied by chemical:

- The highest cPAH TEQs in soils were detected in the central portion of the Facility (near the tank farm and former truck-cleaning operation) and in one sample from the soil berm in the west corner of the Facility.
- TPH concentrations in soils were highest near the former truck-cleaning operation and along the southwest boundary of the Facility.
- The highest total PCB concentrations in soils were detected near the Facility entrance, in the central portion of the Facility, and along the Facility roadway.
- The highest concentrations of total DDTs in soils were detected in the central portion of the Facility, in the former C-shaped area where the unlined holding pond was located, and along the southwest boundary of the Facility and wetlands, where historical ponds and sumps that received drainage from the truck wash were located.
- The highest concentrations of arsenic (and other metals) in soils were detected in the west corner of the Facility, near the C-shaped area where the unlined holding pond was located, and in the former drainage ditch.

In most cases, concentrations were highest in surface soil samples (both at the Facility and in the wetlands), except in areas where historical holding ponds or sumps were known to have been located. In these areas, concentrations were sometimes highest in

intermediate soil samples but lower in deep soil samples, indicating that the extent of the highest concentrations was limited.

Patterns of chemical concentrations in the wetlands are consistent with former drainage patterns at the Facility, as well as the location of historical sumps and holding ponds that were along the southwest Facility boundary (which may have extended into what is now considered the wetlands). Metals, PCBs, and total DDTs were all elevated in the wetlands adjacent to the Facility's western and southern boundaries. However, the areal extent is not significant enough to have impacts to receptor populations.

In general, detected concentrations of chemicals were limited to shallow groundwater, with detected concentrations low relative to human health screening levels or MCLs, and of limited lateral extent. No plumes were discernible from the data. Detections of metals, dichlorodiphenyldichloroethane (DDD), six VOCs, and one SVOC in intermediate or deep well samples were attributable to non-Facility-related sources because detections were located upgradient of Facility operations or, with regard to DDD, to a possible well seal breach or drilling-induced drag-down of impacted soil into the screen interval at the MW-2i/B-4 well cluster location as discussed in the RI.

A thin layer (0.1 ft) of light non-aqueous phase liquid (LNAPL) was collected from monitoring well GA-30 in 2008; only trace thicknesses (0.01 to 0.02 ft) have been observed in this well during follow-up monitoring. Trace thicknesses of LNAPL (0.01 ft or less) have been observed in two of the precautionary (i.e., never used) extraction wells. The LNAPL appears to be the result of a petroleum spill. The maximum PCB concentration in the LNAPL was 26 mg/kg. No LNAPL has been observed in wells located along the downgradient boundary of the Facility. No LNAPL was observed in adjacent soil borings to GA-30. The LNAPL is very limited in extent, and downgradient monitoring wells do not show elevated concentrations of SVOCs, VOCs, TPH, PAHs, metals, pesticides, or PCBs.

Chemical concentrations in Force Lake sediment and surface water were low relative to concentrations in Facility or wetland soils and were mostly lower than screening levels or, for metals, background concentrations. No lateral concentration gradients were apparent in lake sediments. Concentrations in Force Lake surface sediment were higher than those in Force Lake subsurface sediment. PCBs, total DDTs, and copper were the primary risk drivers for ecological receptors. There were no exceedances of ambient water quality criteria, with the exception of one copper exceedance.

With the exception of metals, chemical concentrations in North Lake sediment were

usually lower than those in Force Lake sediment. Concentrations of metals in North Lake sediment were generally similar to those in Force Lake and to Oregon background concentrations. These results indicate that there is minimal transport of chemicals from Force Lake.

SECTION 6

CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

This section discusses the current and reasonably anticipated future land, groundwater, and surface water uses at the Site. This information forms the basis for reasonable exposure assessment assumptions and risk characterization conclusions.

6.1 CURRENT LAND USES

The Site is currently occupied by an industrial Facility that processes petroleum products, petroleum waste, and petroleum-impacted wastewater. Similar operations have occupied the Site since 1961. The Facility and properties to the northwest, northeast, and southeast are zoned IG2, Industrial General 2. Property to the southwest is zoned OS, Open Space.

The City of Portland Quarter Section Zoning Maps 1827 and 1927 indicate that the Study Area is located within the PEN 1 NRMP area, and the Facility is zoned as IG2dh, as are the properties immediately to the northwest, northeast, and southeast. The "d" indicates that the Study Area is located in a Design Overlay Zone, which promotes conservation, enhancement, and continued vitality of areas of the City with special scenic, architectural, or cultural values. The "h" indicates the the Study Area is located in the Aircraft Landing Overlay Zone for the Portland International Airport. The property to the Southwest (wetlands) has a specific zoning of OShp. The "p" is reflective of an Environmental Overlay Zone, which limits new development to only "rare and unusual circumstances."

Surrounding properties are used for a convention center, bulk transportation Facility, and golf course. There are no residential areas adjacent to or near the property.

6.2 FUTURE LAND USES

The 2010 City of Portland Comprehensive Plan designates the Facility and surrounding properties as an Industrial Sanctuary. This designation is intended for areas where City policy is to reserve land for existing and future industrial development. Non-industrial uses are limited to prevent land use conflicts and to preserve land for industry.

6.3 SUMMARY

The current and likely future land use of the Facility is industrial, as identified by the Industrial Sanctuary designation. The current and likely future land-use designation of the wetlands and Force and North Lakes are open space, indicating that these areas will continue to be used for recreation and as habitat. If the land-use designation were to change, additional analyses would be needed. Future residential land use is highly unlikely at the Site based on current and expected future land-use designations by the City of Portland. In addition, the NCP states, "the assumption of future residential land use may not be justifiable if the probability that the Site will support residential use in the future is small."

SECTION 7

SUMMARY OF SITE RISKS

A baseline HHRA and ERA were performed to evaluate the potential for adverse human health and environmental effects to occur from exposure to site-related contaminants. Current and future risks were estimated under the assumption that no remediation or institutional controls were applied. The conclusions from the HHRA and ERA provide the basis for the no-action remedy. This section summarizes the results of the HHRA and ERA.

7.1 BASELINE RISK ASSESSMENTS

The baseline HHRA and ERA were summarized in Section 6.0 and presented in Appendices I and J, respectively, of the RI report.

7.2 HUMAN HEALTH RISK ASSESSMENT

The baseline HHRA presented human health risk estimates associated with potential exposures to chemicals in soil, wetland and lake sediment, surface water, groundwater, and fish caught in Force Lake. The exposure scenarios and assumptions assessed in the HHRA are based on current and reasonably anticipated future land use at the Site, and represent estimates of the reasonable maximum exposure. As a result, actual risks are unlikely to be underestimated. The following scenarios were evaluated in the HHRA:

- **Industrial (construction/trenching) worker under reasonable maximum exposure (RME) scenario:** evaluated risks to current and future workers exposed (ingestion, inhalation, and dermal) to contaminants in soil and groundwater during construction or excavation work conducted outdoors on the Facility property.
- **Future outdoor worker RME scenario:** evaluated risks to future outdoor workers exposed (ingestion, inhalation, and dermal) to contaminants in soil in the event that different operations or activities are conducted at the Facility and/or that the gravel fill material and pavement that currently covers most of the Facility are removed.
- **Industrial/commercial worker vapor intrusion scenario:** evaluated risks to current and future workers exposed to contaminants in vapor (inhalation), while

performing routine activities inside buildings on the Facility.

- **Force Lake recreational user RME scenario:** evaluated risks to current and future recreational users exposed (ingestion and dermal) to contaminants in wetland soil, lake sediment, and lake surface water during recreation-associated activities at Force Lake and in the surrounding wetlands, including bird watching, remote-control boating, golf ball retrieval, or fishing.
- **Force Lake fish consumer RME scenario:** evaluated risks to current and future fish consumers exposed (ingestion) to contaminants in fish caught in Force Lake. Calculations performed in the HHRA assumed three different consumption rates (1.88 g/day or three (8-ounce) meals per year, 3.75 g/day or 6 meals per year, and 17.5 g/day or 28 meals per year). To sustain the consumption rate of 3.75 g/day of fish for six adults would require five to ten times the number of fish observed during the 2009 Force Lake survey to be present in Force Lake. This information indicates that Force Lake could not support a significant and sustained level of fishing.

Table 7-1 summarizes the total excess cancer risk and noncancer health hazard expressed as hazard index (HI) for each of the scenarios evaluated under the RME scenario in the HHRA. When applicable, these risk estimates are the combined risks across the relevant exposure media. All excess cancer risk estimates were within or less than EPA's acceptable cancer risk range of 10^{-6} to 10^{-4}. The overall HI (i.e., sum of noncancer hazard quotients [HQs]) was less than or equal to EPA's threshold of unity (1) for all scenarios except the Force Lake fish consumer scenario. However, when target organ/effect HIs (e.g., developmental or nervous system endpoints) were calculated for this scenario, no target organ/effect HIs were greater than 1 because the effects of the various contaminants are not the same and the mechanisms of the effects are dissimilar. Consequently, application of the HI equation to a number of compounds that are not expected to induce the same type of effects or that do not act by the same mechanism could overestimate the potential for effects. Thus, the HI of three for the Force Lake fish consumer scenario likely overestimates the noncancer hazard.

Table 7-1. Summary of Total Excess Cancer Risks and Noncancer Health Hazard (Hazard Index) under Reasonable Maximum Exposure

Scenario Name	Total Excess Cancer Risk	Hazard Index
Industrial (construction/trenching) worker (cumulative risk across media)	3×10^{-6}	1
Future outdoor worker	2×10^{-5}	0.6
Industrial/commercial worker vapor intrusion	9×10^{-7}	Not evaluated due to very limited to no VOCs in groundwater or soil
Force Lake recreational user (cumulative risk across media)	1×10^{-5}	0.4
Force Lake fish consumer RME scenario	2×10^{-5}	3 (target organ/effect HIs were less than or equal to 1)

A screening assessment was also conducted to estimate risks based on a hypothetical residential use of the Site. This assessment indicated that excess cancer risks would likely be above the upper end of EPA's target risk range (10^{-4}) and that noncancer target organ/effect HIs would also be above EPA's threshold (1) for adults and children. This potential risk, however, is based on residential land use at the Site. Based on current uses, zoning, and other land use plans, EPA does not consider residential use to be a reasonably likely future use scenario.

Uncertainties in the Human Health Risk Assessment

The HHRA included an uncertainty analysis of the assumptions used in the risk assessment to evaluate whether they would over or underestimate risk at the Site. The only parameters that were determined to have a high level of uncertainty and a potential to significantly affect the risk estimates were the utilization of biota-sediment accumulation factors (BSAF) and the fish consumption rate. The use of BSAFs to calculate the uptake of contaminants in sediments by fish are believed to have a low-medium impact on the risk estimate and that impact is likely to overestimate the concentration of contaminants in fish. To assess the effect of various consumption rates on the overall risk estimates, the risk assessment evaluated three different consumption rates. Based on the fish surveys, the current fish population is not sufficient to support a consumption rate of 6 eight-ounce meals per year (3.75 g/day) for six anglers.

However, at that rate, the lifetime excess cancer risk was within EPA's acceptable risk range, and even if the consumption rate were raised to 28 meals per year (17.5g/day) the lifetime excess cancer risk would still not exceed the upper end of EPA acceptable cancer risk range (10^{-4}). The risk assessment likely overestimates the risk posed by consuming fish from Force Lake. The risk assessment also likely overestimates risk to current Site workers because all samples were obtained from below an approximately 1-ft gravel layer that will generally limit ingestion and dermal contact with contaminated media.

There were no noncancer risks that exceeded an HI of 1, with the exception of consumption of fish caught in Force Lake. However, the effects that resulted in a HI of 3 for this scenario are not additive and thus not a reflection of an unacceptable non-cancer hazard.

7.3 ECOLOGICAL RISK ASSESSMENT

The baseline ERA presented risk estimates for benthic invertebrates, terrestrial invertebrates, fish, and wildlife species (mammals and birds) that may be exposed to chemicals in wetland soil, Force Lake surface sediment, Force Lake surface water, and aquatic or terrestrial biota (i.e., as prey through dietary consumption). The risk assessment was designed to be protective of the range of species that have been observed at or could use the Site. Conservative assumptions, such as the use of the lowest toxicity values and the use of either the maximum detected concentrations or upper confidence limits (UCLs) for estimating exposure, were used in an attempt to ensure that risk estimates, although uncertain, were conservative. Following EPA guidance, an additional screen of chemicals of potential concern (COPCs) was conducted to eliminate from further consideration COPCs that have lower concentrations than their respective background values.

In this ERA, the following receptors of concern (ROCs), representing various feeding guilds, were evaluated:

- **Invertebrates:** aquatic benthic invertebrate community and wetland invertebrate community
- **Fish:** brown bullhead (omnivorous fish) and pumpkinseed (invertivorous fish) **Birds:** ruddy duck (invertivorous bird), great blue heron (piscivorous bird), and red-tailed hawk (higher-trophic-level carnivorous bird
- **Mammals:** shrew (invertivorous mammal) and Eastern cottontail (herbivorous mammal)

Table 7-2 provides a summary of hazard quotients (HQs) for all receptors of concern-contaminants of potential concern (ROC-COPC) pairs with effects-based HQs that were greater than one. Table 7-2 also presents HQs based on background (for metals) or reference area (for organic compounds) concentrations for comparison with those based on Study Area concentrations.

Table 7-2. Hazard Quotients

Contaminant of Potential Concern	Matrix	NOAEL-Based HQ	LOAEL-Based HQ	Background or Reference Area LOAEL-Based HQ
Aquatic Benthic Invertebrate Community				
DDD	surface sediment	**2.4 – 17**	1.0 **– 7.2**	0.072 – 0.079
DDE	surface sediment	**6.4 – 110**	**1.3 – 22**	1.0 – **1.5**
Terrestrial Invertebrate Community				
Chromium	wetland soil	**3.3 – 75**		**21**
Copper	wetland soil	0.21 – **25**		0.72
Zinc	wetland soil	0.31 – **6.2**		0.72
Total HPAHs	wetland soil	0.0056 **– 3.2**		0.003 – 0.022
Fish – Pumpkinseed				
Copper	diet	**3.5**	**1.8**	0.30
Fish – Brown Bullhead				
Copper	diet	**2.1**	**1.1**	0.18
Birds – Red-Tailed Hawk				
Total DDTs	diet	**5.8**	**1.2**	0.020 – 0.47
Mammals – Eastern Cottontail				
Mercury	diet	**5.9**	**1.2**	0.54
Mammals – Shrew				
Mercury	diet	**65**	**13**	**5.7 – 15**
Total DDTs	diet	**9.2**	**8.5**	0.0053 – 0.41

DDD – dichlorodiphenyldichloroethane
DDE – dichlorodiphenyldichloroethylene
DDT – dichlorodiphenyltrichloroethane
HPAH – high-molecular-weight polycyclic aromatic hydrocarbon
LOAEL – lowest-observed-adverse-effect level
NOAEL – no-observed-adverse-effect level
Bold identifies HQs greater than 1.0.

This table shows that lowest observed adverse effect level (LOAEL)-based HQs were greater than one for metals, DDD, dichlorodiphenyldichloroethylene (DDE), and high molecular weight-PAHs (HPAHs) for at least one receptor (Table 7-2). LOAEL-based HQs were greater than one for DDE (aquatic invertebrates), DDD (aquatic invertebrates), chromium (terrestrial invertebrates), copper (terrestrial invertebrates), total DDTs (shrew), and zinc (terrestrial invertebrates). LOAEL-based HQs were also greater than one for mercury (shrew). Although there were HQs greater than one, only DDE for aquatic invertebrates, copper and chromium for terrestrial invertebrates, and mercury for shrew had HQs greater than 10. But mercury concentrations were within the range of Oregon DEQ background concentrations. This indicates that although there is the potential for risk, it is not significantly elevated over reference values. In addition, as discussed in the uncertainty evaluation below, there was no evidence that terrestrial invertebrates were absent from the Site in areas with elevated copper and chromium values.

7.3.1 Uncertainties in the Ecological Risk Assessment

Aquatic Benthic Invertebrate Community: DDD and DDE were the only COPCs with concentrations in sediment that were greater than screening levels; however, concentrations of total DDTs were less than the screening level, and the bioavailability of DDD and DDE would be limited because total organic carbon (TOC) concentrations in the sediment were high (up to 13.1% with an average of 7.1%), reducing the bioavailability of the contaminants. No COPCs were identified for surface water; therefore, no risks to the aquatic benthic invertebrate community from exposure to surface water are expected.

As part of the uncertainty analysis, the potential exposure of aquatic benthic invertebrates to chemicals detected in nearby wetland soils and in shallow groundwater wells closest to Force Lake was evaluated. It was determined that shallow groundwater along the downgradient (i.e., south) side of the Facility is not expected to be a significant pathway of exposure for aquatic benthic invertebrates, because there were no COPCs in groundwater at concentrations that could pose risks to aquatic invertebrates. Also, the potential for unacceptable risk to aquatic benthic invertebrates from the potential erosion of wetland soils into the lake is minimal because: 1) metals and PCB concentrations in wetland soils near Force Lake were low compared with screening levels; and 2) concentrations of total DDTs in lake sediment were much lower than those in wetland soils, which likely indicates that there is limited transport of wetland soils to Force Lake.

Terrestrial Invertebrate Community: Four COPCs (chromium, copper, zinc, and total HPAHs) were identified for the terrestrial invertebrate community. HQs were above 1, but less than 10, except for copper (with HQs from 0.21 to 25 and a background HQ of 0.72) and chromium (with HQs from 3.3 to 75 and a background HQ of 21). This assessment overestimated risk because the soil screening levels are conservative thresholds intended for screening only (i.e., they are not intended to serve as cleanup values); they do not take into account site-specific bioavailability. The exposure assumptions did not consider the TOC in wetland soils, which averaged 10 percent and had a maximum of 30 percent. The conservative screening level used for chromium is 21 times greater than the background soil concentration. In addition, the chromium toxicity reference value (TRV) was based on chromium VI, a more toxic form of chrome than what is expected to be present at the Site. Finally, although soil concentrations were greater than soil TRVs, the limited areal extent of elevated COPCs is not large enough to have ecological relevance. In addition, earthworms were frequently observed during field sampling, including in those areas where metals concentrations were highest.

Fish: Three measures of assessment were evaluated for the two fish ROCs, pumpkinseed and brown bullhead: tissue-residue, surface water, and dietary dose. Copper was the only identified COPC having an exposure concentration greater than the LOAEL TRV, indicating the potential for adverse effects. However, the LOAEL-based HQs were slightly above one (1.8 for pumpkinseed and 1.1 for brown bullhead). Consistent with the uncertainty evaluation conducted for the aquatic benthic invertebrate community, the potential for exposure to fish from shallow groundwater discharging into Force Lake is not expected to be a significant pathway of exposure.

Uncertainties that may affect the fish ROC risk estimates include the use of literature-based BSAFs (effect on risk estimates is expected to overestimate risk because high TOC in lake sediments was not considered) and the selected dietary composition for pumpkinseed (risks may be overestimated based on the assumption of aquatic benthic invertebrate prey).

Birds: For birds (ruddy duck, great blue heron, and red-tailed hawk), all chemicals evaluated for exposure to the three ROCs, except total DDTs to the red-tailed hawk, had LOAEL-based HQs below one. The LOAEL-based HQ for total DDTs to the red-tailed hawk was slightly above one (1.2).

Uncertainties that may have affected the risk estimates include the use of literature-based BSAFs and bioaccumulation factors (BAFs). The BAFs do not take into consideration site-specific TOC concentrations, as discussed previously. The effect of using BAFs on risk estimates is expected to overestimate risk.

Mammals: For mammals (Eastern cottontail and shrew), 11 COPCs were evaluated based on the COPC screen. For Eastern cottontail, LOAEL-based HQs for mercury (1.2) were slightly greater than 1.0, indicating the potential for adverse effects. However, the background LOAEL-based HQ for mercury (0.54) was half that of the Study Area HQ, indicating that background contributions to the risk estimate were significant. For shrew, LOAEL-based HQs for mercury (13) and total DDTs (8.5) were greater than 1.0, indicating the potential for adverse effects. The background LOAEL-based HQs for mercury ranged from 5.7 to 15 (compared with a Study Area HQ of 13), indicating that background concentrations are an important consideration for mercury. Reference area LOAEL-based HQs for total DDTs were less than 1.0. Uncertainties that may affect the mammal risk estimates include the use of literature-based BAFs and BSAFs, and the very limited areal extent with soil concentrations of total DDTs or mercury that exceed reference values.

To further evaluate risks to shrew from total DDTs, a map (Figure 7-11) was created to evaluate the spatial extent of areas with concentrations that resulted in LOAEL-based HQs greater than 1.0. Shrew were assumed to consume both aquatic and terrestrial invertebrates; however, the majority of their COPC exposure (> 99%) can be attributed to concentrations of total DDTs in wetland soil (i.e., through the terrestrial food chain). Wetland areas with concentrations of total DDTs that resulted in area-wide HQs greater than 1.0 were limited to two small (10,000 sqft) areas, generally within the central portion of the wetlands between the Facility and Force Lake. The limited areal extent of elevated total DDTs is not large enough to have ecological relevance.

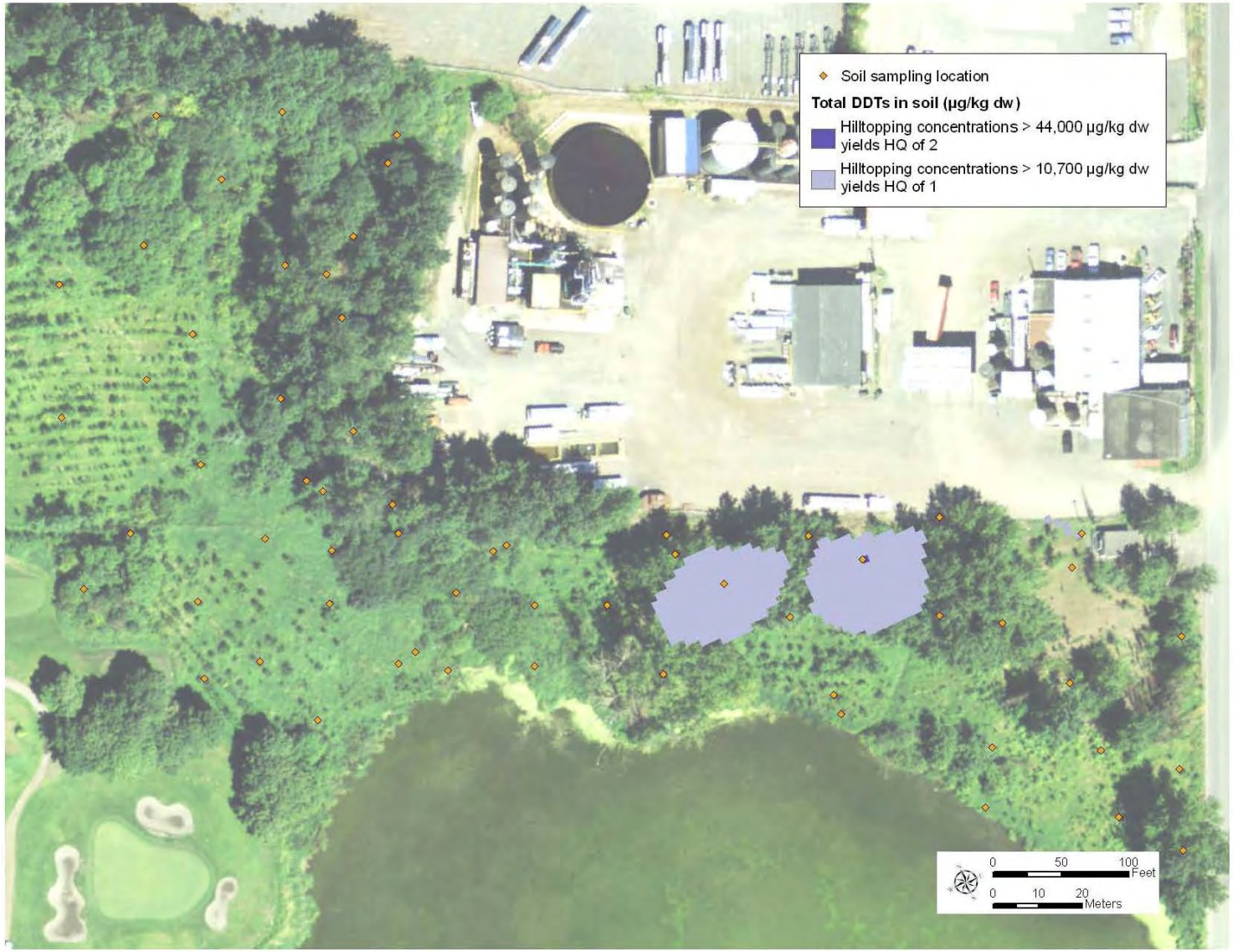

Figure 7-1. Interpolation of Total DDTs in Soil Relative to Risks to Shrew

SECTION 8

BASIS FOR THE NO-ACTION DECISION FOR THE HARBOR OIL SUPERFUND SITE

Based on the RI, the Risk Assessments, all the supporting information in the Administrative Record, and comments on the Proposed Plan, EPA has determined that the Site does not pose an unacceptable risk and therefore, that action under CERCLA is not warranted for the Harbor Oil Superfund Site. This decision is documented in this ROD, supported by the Administrative Record, and summarized below.

8.1 GUIDANCE

OSWER DIRECTIVE 9355.0-30, "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decision", dated April 22, 1991, is relevant guidance for making remedy selection decisions in accordance with CERCLA and the NCP. The following excerpts summarize the parts of that Directive that pertain to the Harbor Oil Site and that EPA relied upon in making the no-action decision for the Site.

"RISKS WARRANTING REMEDIAL ACTION"

…As a general policy and in order to operate a unified Superfund program, EPA generally uses the results of the baseline risk assessment to establish the basis for taking a remedial action using either Section 104 or 106 authority. EPA may use the results of the baseline risk assessments to determine whether a release or threatened release poses an unacceptable risk to human health or the environment that warrants remedial action and to determine if a site presents an imminent and substantial endangerment. The risk assessment methodology for all sites should be the same regardless of whether the RI/FS or remedial design and remedial action is performed by EPA or potentially responsible parties.

Generally, where the baseline risk assessment indicates that a cumulative site risk to an individual using reasonable maximum exposure assumptions for either current or future land use exceeds the 10(-4) lifetime excess cancer risk end of the risk range, action under CERCLA is generally warranted at the site. For sites where the cumulative site risk to an individual based on reasonable maximum exposure for both current and future land use is less than 10(-4), action generally is not warranted, but may be warranted if a chemical specific standard that defines acceptable risk is violated or unless there are noncarcinogenic effects or an adverse environmental impact that

warrants action. A risk manager may also decide that a lower level of risk to human health is unacceptable and that remedial action is warranted where, for example, there are uncertainties in the risk assessment results. Records of Decision for remedial actions taken at sites posing risks within the 10(-4) to 10(-6) risk range must explain why remedial action is warranted.

The cumulative site baseline risk should include all media that the reasonable maximum exposure scenario indicates are appropriate to combine and should not assume that institutional controls or fences will account for risk reduction. For noncarcinogenic effects of toxicants, unacceptable risk occurs when exposures exceed levels that represent concentrations to which the human population, including sensitive subgroups, may be exposed without adverse effect during a lifetime or part of a lifetime, as appropriate to address teratogenic and developmental effects.

…Unacceptable environmental risks also may prompt remedial action and may occur where there is no significant risk to human health. Threats or potential threats to sensitive habitats, such as wetlands, and critical habitats of species protected under the Endangered Species Acts are especially important to consider when determining whether to take an action under CERCLA Section 104 or 106…

8.2 HARBOR OIL SITE-SPECIFIC FACTORS

As described in the preceding sections of this ROD, the baseline human health and ecological risk assessments and the comparison of exposure concentrations to chemical-specific standards demonstrates that there is no unacceptable risk to human health or the environment from the Site. Although potential risks to ecological receptors exceeded screening levels and the associated hazard indices were estimated to be above a Hazard Index of 1, the calculated risks likely overestimate risks, as explained in Section 7.2 of this ROD. In addition, there are no endangered or threatened species present at the Site and the areas with elevated soil contaminants are too small and discontinuous to have any effect on receptor communities. Since releases from the Site do not pose any unacceptable risks to human health or the environment, EPA has determined that action under CERCLA is not warranted for this Site.

At sites such as this one where no remedial action under CERCLA is warranted, then the CERCLA Section 121 cleanup standards for selection of a Superfund remedy, including the requirement to meet applicable or relevant and appropriate requirements (ARARs) such as the definition of acceptable risk levels in Oregon's laws and regulations, are <u>not</u> triggered. CERCLA section 121 (a) requires only that those remedial actions that are "determined to be necessary ... Under section 104 or ... 106 ... be selected in accordance with section 121." If EPA determines that an action is necessary, the

remedial action must attain ARARs, unless a waiver is invoked. Of course, sites that do not warrant action under CERCLA sections 104 or 106 may warrant action under another State or Federal statute, such as RCRA subtitle D requirements for the appropriate closure of a solid waste landfill, or the individual and cumulative acceptable risk levels as defined by the Oregon Administrative Rule (OAR 340-122-115).

8.3 DEQ DOES NOT CONCUR

Oregon DEQ does not concur with the decision for a no-action remedy at the Harbor Oil Site. The DEQ has been involved with this Site for many years; their involvement includes reviewing planning documents and technical reports, conducting inspections, and assuring consistency with Oregon regulatory programs. DEQ concurs that the no-action decision is consistent with the NCP and follows the CERCLA risk-based decision process. However, the CERCLA risk decision process does not require compliance with potential ARARs, such as the cumulative acceptable risk levels as defined by the Oregon Administrative Rule (OAR 340-122-115), when the need for action under CERCLA is not warranted. Based upon the differing federal and state standards, DEQ disagrees with EPA's conclusions that contaminants present at the Site do not pose an unacceptable risk because concentrations of some individual chemicals are above Oregon's regulatory standards for acceptable risk. At this time, DEQ does not consider contamination at the Site to be of as great a magnitude as other NPL sites in the region, but has stated that further study is needed to better support a remedy selection. EPA's decision that remedial action under CERCLA is not warranted at the Site does not prevent DEQ from taking action at this Site to comply with Oregon regulatory standards.

8.4 TRIBAL INPUT

Six tribes within the boundaries of Region 10 were offered the opportunity for government-to-government consultation on the project in 2007. No tribe requested consultation at the time it was offered. Two tribes, the Nez Perce Tribe and the Confederated Tribes and Bands of the Yakama Nation entered into cooperative agreements with EPA for financial assistance to enable them to have meaningful engagement at the Site. All six tribes have been kept informed throughout the CERCLA process for this Site. EPA provided a second opportunity for government-to-government consultation in March 2013 to all six tribes. No request for consultation has been received by EPA. The Nez Perce Tribe commented on the Draft Proposed Plan. They commented that it would be appropriate to apply Institutional Controls to prevent future residential development of the property. Because institutional controls are considered to be limited action, a risk must be present and an action must be triggered

in order to select and implement institutional controls at the Site.

8.5 COMMUNITY INPUT

The Proposed Plan was released for public comment in November 2012. Following a 30-day public comment period, a public meeting was held on December 6, 2012 at Historic Kenton Firehouse, 8105 N Brandon St. Portland, Oregon. At that meeting, EPA presented the findings of the RI and the preferred no-action alternative for the Harbor Oil Site and received public input. Public comments on the Proposed Plan received at the public meeting and via written correspondence are addressed in EPA's Responsiveness Summary, Part 3 of this document.

SECTION 9

DOCUMENTATION OF SIGNIFICANT CHANGES

The selected no-action alternative remained unchanged from the Proposed Plan to this Record of Decision.

PART 3

RESPONSIVENESS SUMMARY

COMMENT 1:

The EPA received a package of letters from the Harbor Oil Community Advisory Group (HOCAG) that included all the correspondence from the HOCAG to EPA since the Site was listed on the NPL. All of these comments were considered by EPA at the time they were originally received. The "comment" submittal included the following letters:

October 2004 Letter from Mark Stephan and other parties who would form the HOCAG to Dan Opalski, ECL Director--The letter identified concerns the parties had with EPA management of the project, including the identification of a new RPM, Attorney, project schedule, and regional priority, and identification of PRPs.

> EPA Response: This comment does not address the preferred alternative. No response is required.

June 2006 Letter from Mark Stephan, HOCAG Chair, to Dan Opalski, ECL Director--The HOCAG contends that EPA is ignoring the HOCAG and their concern with lack of progress in commencing the RI for the Site.

> EPA Response: This comment does not address the preferred alternative. No response is required.

June 11, 2007 Memorandum from Mark Stephan, HOCAG Chair, to Chris Cora, RPM-The HOCAG expresses frustration with the lack of communication from EPA's Regional (Seattle) office and identifies its expectations of EPA.

> EPA Response: This comment does not address the preferred alternative. No response is required.

November 13, 2009 Letter from Mark Stephan, HOCAG Chair, to Chris Cora, RPM-- The HOCAG identifies six main concerns regarding the Draft Risk Assessments for the Site:

1) Without an understanding of the distribution of contaminants that would be presented in the Remedial Investigation Report, it is very difficult to determine whether appropriate risk evaluations have been completed.
2) The approach used to group and average sample concentrations appears to have removed real and significant risks from the risk management decision-making process.
3) The seasonal variability of concentrations in groundwater and surface water has not been defined sufficiently to evaluate site risks.
4) Tissue samples should be collected to provide more accurate inputs to the risk assessment calculations.
5) Applicable requirements under Oregon cleanup rules have been ignored.

EPA Response: The concerns identified in this letter were on draft versions of the Baseline Human Health and Ecological Risk Assessments for the Site. The comments submitted by the HOCAG were considered by EPA in its review. These documents were subsequently revised based in part on comments submitted by DEQ, EPA, and the HOCAG.

May 14, 2010 Letter from Mark Stephan, HOCAG Chair, to Chris Cora, RPM-- The letter contained comments on the Draft Remedial Investigation Report.

EPA Response: The comments submitted by the HOCAG on the draft RI were considered by EPA in its review. This document was subsequently revised (including the addition of a fish consumption rate of 17.5 g/day) based in part on comments submitted by DEQ, EPA, and the HOCAG.

October 18, 2010 Letter from Mark Stephan, HOCAG Chair, to Dan Opalski, ECL Director-- The HOCAG identifies concerns with the Draft Final Remedial Investigation Report for the Site. The concerns included the following:

1) The draft RI report documents two human health exposure scenarios (construction/trench worker and fish consumption) where EPA's unacceptable target risk ranges were met. For ecological risk, the exceedances were associated with three chemicals of concern (COCs) for wildlife, two COCs for fish, and five COCs for terrestrial invertebrates. In addition, several COCs exceeded maximum contaminant levels (MCLs) for groundwater.

EPA Response: The HOCAG is incorrectly interpreting EPA's unacceptable target risk ranges for Human Health. The HOCAG believed that 10^{-6} was the cancer risk threshold that triggers the need to evaluate remedial alternatives. In fact, EPA utilizes a 10^{-4} cancer risk threshold for triggering when remedial action should be considered. There were no single or additive risks posed by releases from the Site that exceeded 10^{-4}, the maximum risk value was $2x10^{-5}$. In regards to the Ecological risks, it was determined that Site releases do not pose unacceptable risks to ecological receptors for numerous reasons, including the following: use of literature values that over-estimated risks due to more stringent screening values, limited areal impacts and detection frequency, presence of soil invertebrates, availability of total organic carbon in sediments or soils, and background values for metals equivalent to site concentrations.

2) The data sets utilized in the risk assessment do not characterize the site adequately.

EPA Response: EPA does not concur that the data sets are inadequate for characterizing the Site. The data met EPA's Data Quality Objective criteria and was sufficient to assess potential exposures.

3) The fish consumption number used in the human health risk assessment should be increased to 17.5 grams per day and removal of the fish advisory signs should be added as a remedial action objective (RAO).

EPA Response: At the HOCAG's request, EPA included a consumption rate of 17.5 g/day in the Exposure Assessment of the Final Human Health Risk Assessment. Even at that rate of consumption, the risk posed would not exceed EPA's acceptable risk range. The placement of the fish advisory signs done by the Oregon Health Authority and was not conducted by or coordinated with EPA. The removal of the signs is the responsibility of the Oregon Health Authority.

4) Several stakeholders have expressed concerns about the process and standards that have been applied to the Harbor Oil Superfund Site. EPA needs to meet with the stakeholders. The appropriate process and standards need to be agreed upon and documented so everyone has the same expectations.

EPA Response: The HOCAG concerns about the process and standards that have been applied at the Site were addressed by EPA during a December 15, 2010

public meeting attended by HOCAG members, the Site RPM, an EPA risk assessor, an EPA attorney, and the EPA supervisor. At this meeting, EPA provided details on how the process and standards applied at Harbor Oil are consistent with EPA guidance for conducting a Remedial Investigation under CERCLA.

May 27, 2011 Letter from Mark Stephan, HOCAG Chair, to Chris Cora, RPM--The letter identified the following concerns:

1) The HOCAG believes that "un-included data" (TPH and PCB soil data collected in 2003) should have been used in the RI, or new samples should have been taken at the same locations.

EPA Response: Use of the 2003 data would have reduced the exposure point concentrations from what was used in the Final Risk Assessment. Therefore, EPA's risk assessment is using higher PCB concentrations than would have been obtained from including the 2003 data.

TPHd was not evaluated as a COPC in the risk assessment, and the maximum detected on-Site concentration of 13,000 mg/kg is less than the DEQ risk-based screening level (RSL) of 23,000 mg/kg (based on exposures for a construction-worker scenario). Consistent with the ATSDR 1999 Toxicological profile for TPH , 85 percent of the total TPH value is presumed to be aliphatic hydrocarbons. The maximum detected concentration in the 2003 data is 103,000 mg/kg (5 ft bgs at HC-04). Considering TPHd a possible COPC, EPA calculated an exposure concentration of 10,096 mg/kg. This calculation is substantially influenced by the two detections of approximately 100,000 mg/kg at HC-04 and HC-07, both at 4.5 - 5 ft bgs. Both samples apparently represent sidewall samples collected from the excavation. Excluding these two results from the calculation, the resultant exposure concentration is 1,914 mg/kg. Both exposure concentrations are less than the DEQ RBC of 23,000 mg/kg for construction workers, and 70,000 mg/kg for occupational exposure. However, the DEQ RBCs are based on the toxicity criteria for complex mixtures of aliphatic hydrocarbons for C9-C18 now available from the Superfund Technical Support Center. Using standard EPA default exposure factors for occupational exposures, EPA calculated a RBC of 7,700 mg/kg, based on a noncancer hazard quotient of 1. This RBC is greater than the exposure concentration calculated for on-Site exposures at Harbor Oil using both the RI data set and the 2003 data with results from HC-04 and -07 excluded. Using the exposure concentration inclusive of data from HC-04 and -07 yields a hazard quotient of 1.3, rounded to 1. However, it seems inappropriate from the

standpoint of a reasonable exposure assessment to use the calculated exposure concentration of 10,096 mg/kg site-wide, as it is substantially influenced by two values that are approximately an order of magnitude greater than any other reported values. Site-wide, exposures to TPHd are more appropriately represented by the exposure concentration of approximately 2,000 mg/kg.

2) The City of Portland's on-site stormwater sample indicates troubling pesticides and PCBs increases after on-site treatment. Additional sampling should be conducted.

EPA Response: The discharge of stormwater from the Facility is regulated by the Facility's October 1 2011 NPDES Industrial Stormwater Discharge Permit. The permit requires the Facility to monitor for total PCBs four times per year for the first three years. The risk assessments for the Site determined that PCBs were not posing an unacceptable risk to ecological receptors or human health via exposure to sediments or surface water in Force Lake. The appropriate regulatory mechanism for controlling and monitoring current discharges is through the NPDES program.

3) There has been a recent report of oil-saturated soils exposed during trenching activities at the Site. The HOCAG is concerned that the Harbor Oil Site contains oil in areas that have been deemed 'clean' but obviously are not.

EPA Response: EPA does not contest the fact that there are areas with significant volumes of uncontained oil at the Site. EPA has never claimed these areas are "clean." The presence of oil (total petroleum hydrocarbons) is part of the conceptual site model and was evaluated in our Risk Assessments. The extent and concentration of uncontained oil do not result in unacceptable risks for worker exposure or as a source of groundwater contamination. The RI identifies areas that have been impacted by past spills; these are limited in extent, highly weathered, and non-mobile.

4) The HOCAG expressed its view that EPA has the discretion to move forward with a Feasibility Study and that such action is warranted.

EPA Response: EPA is not required to conduct feasibility studies for sites where the releases do not pose risks that exceed the risk ranges identified in the NCP. Considering the low risks posed by the Site, EPA believes its decision not to conduct a feasibility study is reasonable.

January 2, 2012 Letter from Mark Stephan, HOCAG Chair, to Dennis McLerran, EPA Region 10 Administrator--The letter identifies the following concerns:

1) Sediment bioassays: The Risk Assessment concluded that there were "no unacceptable risks to sediment-The HOCAG believes that, because the sample results show exceedances of some numeric criteria, sediment bioassays that account for the complex mixture and in-situ bioavailability of Force Lake sediment would be beneficial to validate the Risk Assessment conclusions. The HOCAG also believes that using biota-sediment accumulation factors (BSAF) and bioaccumulation factors (BAF) to model fish tissue contaminant concentrations from observed sediment concentrations introduces a high degree of uncertainty, and is not adequate to determine risk to humans or ecological receptors at the Site. They recommended that fish tissue samples be collected from Force Lake and analyzed for PCB congeners, total DDTs, mercury, and lipids.

EPA Response: An assessment of various BSAFs from literature sources was conducted in the Risk Assessments for the main COPC's (arsenic, total PCBs, and total DDTs). That assessment determined that use of the BSAFs selected in the risk assessments is unlikely to result in a significant underestimation of the total excess cancer risk. Because conservative (i.e., health protective) BSAFs were used, the total excess cancer risk is more likely to be overestimated. Since the estimation is an order of magnitude greater than 10^{-4}, it is reasonable to conclude the risks are within EPA's acceptable risk range. Mercury was not identified as a COPC at the Site. Bioassays of Force Lake sediment and analysis of fish tissue samples is unwarranted given the results of the Risk Assessments.

2) US EPA method 1668 would provide a better estimate of the total PCB concentration in sediment as the sum of detected congeners. It also allows calculation of "dioxin-like" toxicity equivalents in sediment. It would also have the potential to support inferences about sources of the PCBs. Moreover, these data should be collected using incremental sampling methods that provide a more reliable estimate of the mean or average concentration, while limiting the number of analyses. PCBs in sediment are likely to be weathered to the point where standard PCB Aroclor analysis may not be adequate to characterize the nature and extent of PCB contamination.

EPA Response: The sampling protocols for characterizing the Site met all the Data Quality Objectives in the Work Plan. Although PCBs account for a significant portion of the risk at the site, those risks are still an order of magnitude less risky than would justify taking action at the Site. EPA does not believe that changing methods would alter the ultimate result.

3) Stormwater analyses: Stormwater containing Harbor Oil contaminants of concern has been and continues to be discharged to Force Lake. Stormwater should be collected from the Site and analyzed for PCB congeners, DDTs, and mercury.

EPA Response: The RI characterized surface water and sediments, as influenced by stormwater discharges, in Force Lake. The results indicate that neither surface water nor sediments pose an unacceptable risk and demonstrates that stormwater discharges are not significantly contributing to risks. Stormwater discharges from the site are regulated by a National Priorities Discharge Elimination System permit for industrial stormwater.

4) EPA should reconsider its finalization of the remedial investigation in order to conduct the analyses identified above.

EPA Response: EPA determined that there was insufficient basis to justify additional analysis to reduce the uncertainty when the major contributors of uncertainty have overestimated risks. The Site has been adequately characterized, and the releases do not pose an unacceptable risk.

COMMENT 2 (testimony given during the public meeting held on November 15, 2012): I'm Dale Svart, and I'm on the board of directors of the Friends of Smith and Bybee Lakes. I also represent the Friends on the Smith and Bybee Lakes Advisory Committee. And just to give you a -- first of all, I've only known about this whole EPA thing since I read the article in the Oregonian about three weeks ago, so this -- my comments might be a little disjointed because I just learned a bunch of stuff right here tonight, but I would like to make some comments about it just simply because ORRCO, Oil Re-Refining Company, is also a -- an oil re-refinery about a mile downstream from -- on North Suttle Road, and Bill Briggs -- Bill and I know each other fairly well. ORRCO was just required by DEQ to do a cleanup on -- at their Site because part of their Site is a wetland; it's part of Smith and Bybee Lakes. And one of their requirements for their cleanup was a bio-swale system that all of their surface water goes through before it enters the wetland, and I guess what I'd like to see at the Harbor Oils Site, just simply out of concern for future spills, potential levy failures, other hydrological events that may happen at the Site, it would be nice to see something other than just an oil/water separator for the -- for the surface water runoff at the Harbor Oils Site. So if EPA is going to essentially not become a partner in a cleanup on this Site, I'd like to see maybe DEQ consider taking this on and get some better surface water drainage happening. That's pretty much, at this point, my comment. I may write a written -- more written comments as I read more about this.

EPA Response: Comment noted. The Facility has a permit for discharging treated stormwater. Nothing about EPA's decision here prevents actions or responses by any other agency or organization.

COMMENT 3 (testimony given during the public meeting held on November 15, 2012):

Good evening. I'm Susan Barthel. I work for the City of Portland Bureau of Environmental Services, and I have just a very brief comment. The City of Portland is not convinced that the project work to date on the Force Lake wetlands portion -- Force Lake and wetlands portion of the Site is protective of human and environmental health. And that's it. Thank you.

EPA Response: EPA respectfully disagrees that the Site work to date is not protective of human health or the environment. The quality and quantity of RI data collected is sufficient to characterize releases that could pose risks at the Site. Considering the low levels of contaminant concentrations detected throughout the study area, EPA is justified in concluding that there are no sizable high-concentration releases at the Facility that would increase the uncertainty in the risk assumptions. Given the conservatism inherent in the assumptions, the risk assessment likely overestimates the risks posed by releases from the Site.

COMMENT 4 (testimony given during the public meeting held on November 15, 2012):

My name is Mark Stephan, and actually, it's S-T-E-P-H-A-N for the record. I am the chair of the Harbor Oil Community Advisory Group. This was a group of local citizens -- actually, Susan as well from -- representing the city's perspective. Small group of us from north Portland who were tracking the cleanup process for Superfund, have been doing so since 2004, and so for eight -- over eight years now, have been tracking what EPA has been doing and really overall had a sort of a few summary comments that we want to make, and it's as much actually for the public at large as it is for EPA. And it sort of backs a little bit of what Susan has just said. One thing that stands out for our group -- and I'll say it's not only our community advisory group, but also from what we understand from Susan, but also from other stakeholders; the Yakama nation, the Nez Perce. Other stakeholders were also actively tracking this Site, and I can't quote them or speak for them in an official capacity, but unofficially, I will say that there were a numerous number of stakeholder groups who all agree that the Site characterization was not adequate. Simply put, it was not adequate. Now, that said, it was not that we thought it was hugely inadequate. It wasn't like we thought this was just a, you know,

enormous mischaracterization of the Site, but we thought that there were things that could have been done that should have been done, sampling and other sorts of things, which EPA already knows about. We sort of set it out for them for a while now. That then convinced us that then more could have been done to the characterization that would have made it proper. Part of the reason I mention that is because, as Chris pointed out, EPA's perspective -- and this is the Superfund law, basically, is that they basically have to find that there's no unacceptable risk. All right. That's the language. Really, what it means to us sort of laypeople is that they're basically saying from a legal perspective there is acceptable risk.

Right? No unacceptable risk. Take all the -- the no and the unacceptable out, they're saying that there is acceptable risk. And from a legal perspective, as they have characterized the Site, there is. There's not any question about that characterization leading to the conclusion that they've drawn, but from the community perspective, what acceptable risk is is not necessarily what EPA calls acceptable risk, and so I think from our perspective, there is unacceptable risk at the Site; ecological risk, potentially human health risk, maybe not in the short term, but over the longer haul, and so we are very concerned about that. The second point I want to make is that -- and I'll try to make it as quickly as I can. The way the law works, the way CERCLA works, the way the Superfund program works, is that these decisions are not simply scientific or scientific decisions. They are also administrative decisions. They are also on some level bureaucratic decisions, and I don't mean that in a negative way. They just simply are bureaucratic decisions. And the reason I say that is that if just a few things were a little bit different -- and, in fact, I don't think they will even need to be that different than where they are -- in fact, it depends on interpretation. Our sense again from the CAG's perspective was that it was in -- within EPA's discretion to move to the next step, that they did have under the law the discretion to move from the remedial investigation to the risk assessment and that kind of stuff to the feasibility study. If they had moved to the feasibility study, if they were going to -- if they would at this point move to the feasibility study, it would mean these ARARs would kick in, including Oregon law, and potentially would -- potentially would require a more thorough action of the Site than what is going to occur. As Chris pointed out, it may not. There's a balancing act that happens at the next step, and easily we could be back here -- if this were to occur, we could be back here a number of years from now and having this conversation. The EPA at that point can still say no action and it could have a whole list of reasons why that were true. The perspective of those of us in the community advisory group is that we would rather move to that next step than not, understanding that there is a really tough trade-off that the EPA has to make. The fact is is that the U.S. Congress is simply not

giving them enough money and resources to do everything that they probably can and should do, and so they make these trade-offs. Okay? So, again, I can't emphasize it enough. It is within -- in our view, it is within the discretion of the EPA to move to the next step. They are choosing not to. We disagree with that choice. I think, generally speaking, the group respects the work, the hard work that Chris and others have done. We don't in any way want to disrespect that, but we simply disagree with the evaluation that it is an acceptable Site characterization and that it is also acceptable to not move to the next step. And we feel pretty strongly about that and felt strongly about that for a few years now; have really had no leverage over EPA in this regard. They're going to move forward as they're going to move forward from our perspective. We're going to accept it because we have no choice at this point to accept it. Now, is there possibilities for organizations like Friends of Force Lake and others in the community to step up to maybe talk with DEQ, to talk with others about more that can be done? Certainly. And that probably will be the next step for those of us in the community. But, again, from the perspective about this moment and -- and EPA's choice -- there really is a choice on their part -- we disagree with the choice. Thanks.

> **EPA Response:** EPA respectfully disagrees that the characterization was inadequate to support the risk assessment and assess the risk posed by releases from the Site. All the Data Quality Objectives, as outlined in the Work Plan, were met. All media were characterized adequately to assess risks from any releases from the Site. Although EPA understands the different opinions by stakeholders, the National Contingency Plan identifies the degree of risk that triggers a requirement for remedial action. That threshold for risk was not met at this Site.

COMMENT 5 (written comments received during the public comment period):

Thank you for the opportunity to comment on the Proposed Plan for the Harbor Oil Site. On behalf of the Harbor Oil Voluntary Group, Windward Environmental has reviewed the Proposed Plan, and agrees with EPA's decision that no cleanup actions are required at the Site under EPA's CERCLA guidance. As EPA states in the Proposed Plan, this decision is well supported by the results of the remedial investigation and baseline risk assessments, which found that risks do not pose unacceptable threats to humans or the environment based on the current and anticipated future uses of the site. The Voluntary Group appreciates the professionalism that was shown by EPA and its consultants throughout the project.

> **EPA Response:** Comment noted. No response necessary.

END OF RESPONSE TO COMMENTS

References

ATSDR. 1999. Toxicological profile for total petroleum hydrocarbons (TPH). Agency for Toxic Substances and Disease Registry, US Public Health Service, Atlanta, GA.

ATSDR. 2004. Public health assessment for Harbor Oil Incorporated, Portland, Multnomah County, Oregon. EPA Facility ID ORD071803985. Agency for Toxic Substances and Disease Registry, US Public Health Service, Atlanta, GA.

Bridgewater, GeoDesign, Windward. 2008. Remedial investigation/feasibility study: work plan for the Harbor Oil site. Prepared for the Voluntary Group for the Harbor Oil Site RI/FS. Bridgewater Group, Inc., Lake Oswego, OR; GeoDesign Inc., Portland, OR; Windward Environmental LLC, Seattle, WA.

Coles Environmental Consulting. 2002. Review of existing environmental data for the Harbor Oil Site, Portland, Oregon: preliminary risk assessment problem formulation. Prepared for Energy and Materials Recovery, Inc. Coles Environmental Consulting, Inc., West Linn, OR.

Coles Environmental Consulting. 2007. Soil analysis results for the 2003 excavations required for construction of the EMRI base-oil plant: field notes, chain-of-custody forms, and laboratory analysis reports. Coles Environmental Consulting, Inc., West Linn, OR.

City of Portland. 1997. Natural resources management plan for Peninsula Drainage District No. 1. Bureau of Planning, City of Portland, Portland, OR.

DEQ. 2001. Guidance for ecological risk assessment: level II screening update. Waste Management and Cleanup Division, Oregon Department of Environmental Quality, Portland, OR.

DEQ. 2008. Molalla-Pudding Subbasin TRML & WQMP. December 2008 [online]. Oregon Department of Environmental Quality, Portland, OR. Available from: http://www.deq.state.or.us/wq/tmdls/docs/willamettebasin/MolallaPudding/MoPudExecutiveSummary.pdf.

Ecology and Environment. 2001. Harbor Oil preliminary assessment/site inspection, Portland, Oregon. Prepared for US Environmental Protection Agency Region 10, Seattle, WA. Ecology and Environment, Inc., Seattle, WA.

Efroymson RA, Will ME, Suter GW, II. 1997. Toxicological benchmarks for contaminants of potential concern for effects on soil and litter invertebrates and heterotrophic process: 1997 revision. ES/ER/TM-126/R2. Oak Ridge National

Laboratory, US Department of Energy, Oak Ridge, TN.

EPA. 2007. Ecological soil screening levels (Eco-SSL) [online]. US Environmental Protection Agency, Washington, DC. Updated 8/14/07. Available from: http://www.epa.gov/ecotox/ecossl/.

Golder Associates. 1990. Site investigation and preliminary remediation plan for Portland Stockyards. Prepared for Oregon Waste Systems. Golder Associates Inc., Portland, OR.

Goodling J. 2007. Personal communication (conversation between J. Goodling and S. Brown, Bridgewater Group, hydraulics of surface water bodies downstream of Force Lake). Superintendent, Heron Lakes Golf Course, Portland, OR. June 29, 2007.

Hinkle SR, Polette DJ. 1999. Arsenic in ground water of the Willamette basin, Oregon. Water-Resources Investigations Report 98-4205. US Geological Survey, Portland, OR.

Windward, Bridgewater, Hain, GeoDesign. 2012. Remedial Investigation Report for the Harbor Oil site. Prepared for the Voluntary Group for the Harbor Oil Site RI/FS. Windward Environmental LLC, Seattle, WA; Bridgewater Group, Inc., Lake Oswego, OR; Hain Associates, Inc., Portland OR; GeoDesign, Inc., Portland, OR.