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Portland, Oregon

Amended Record of Decision

McCormick and Baxter Creosoting Company
Portland Plant
Portland, Oregon

March 1998

AMENDED RECORD OF DECISION

McCORMICK AND BAXTER CREOSOTING COMPANY PORTLAND PLANT

THE DECLARATION

SITE NAME AND LOCATION

McCormick and Baxter Creosoting Company, Portland Plant
Portland, Oregon

STATEMENT OF BASIS AND PURPOSE

This decision document presents an amendment to the selected remedial actions for the McCormick and Baxter Creosoting Company, Portland Plant site (McCormick & Baxter or Site) located in Portland, Oregon. This Record of Decision Amendment (ROD Amendment) has been developed in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC §9601 *et seq.* (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the Administrative Record for the Site. The documents added to the Administrative Record since the issuance of the original ROD in March 1996 are listed in Appendix B.

The State of Oregon concurs with the ROD Amendment.

ASSESSMENT OF THE SITE

The McCormick & Baxter site is located on the Willamette River in Portland, Oregon, and covers approximately 58 acres of terrestrial and aquatic land. The McCormick & Baxter Creosoting Company operated a wood-treating facility on a portion of the site from 1944 until 1991. Site contamination is primarily attributed to releases of hazardous substances from these wood-treating activities and on-site disposal of wastes.

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in this ROD Amendment, may present an imminent and substantial threat to human health, welfare, and/or the environment.

DESCRIPTION OF THE AMENDMENT TO THE REMEDY

This ROD Amendment changes a component of the selected remedial action for contaminated soil. The original selected remedy documented in the March 1996 Record of Decision (ROD) is a series of remedial actions that address the principal threats at the Site, by removing the most highly contaminated soil, extracting nonaqueous phase liquid (NAPL) from and treating contaminated groundwater, and capping the most highly contaminated sediment. These are considered to be the final actions needed to control the release of contaminants and reduce the risks to human health, welfare, and the environment from the Site.

The original soil remedy in the 1996 ROD called for excavation and on-site biological treatment of contaminated soils, with an estimated 1,000 cubic yards of highly contaminated soil and other wastes requiring off-site treatment and disposal. This 1,000 cubic yards was to include soil with significant dioxin concentrations (i.e., several orders of magnitude above protective levels). After the ROD was signed, DEQ initiated the detailed design of the selected soil remedy, including additional soil sampling. Based on the data gathered during the sampling, DEQ determined that dioxin contamination of soils was more widespread than previously reported. The volume of soil with significant levels of dioxin is now estimated to be approximately 20,000 cubic yards, versus 1,000 cubic yards estimated in the 1996 ROD. In addition, the dioxin contamination is predominantly located in the same areas where elevated concentrations of pentachlorophenol (PCP) and polycyclic aromatic hydrocarbons (PAHs) are found in soils.

While the biological treatment included in the original remedy is effective in reducing concentrations of PCP and PAHs in soil, it has not been demonstrated to be effective at significantly reducing dioxin concentrations in soil. Because significant levels of dioxin are present in soil areas originally identified for excavation and on-site biological treatment (i.e., areas where contamination exceeds the action levels for PCP and PAHs), it now appears unlikely that this intended treatment will achieve the level of risk reduction contemplated in the 1996 ROD. Accordingly, DEQ and EPA have selected an alternative remedy for contaminated soil at the McCormick & Baxter site.

The major components of the selected (amended) remedy for contaminated soil include:

- Completion of demolition and off-site disposal or recycling (except for concrete rubble) of above-ground structures and debris, and of underground structures that interfere with soil excavation;

- Excavation, to a maximum depth of approximately 4 feet, of contaminated soil that exceeds the action levels for arsenic, PAHs and PCP established in the 1996 ROD;

- Use of engineering controls during excavation and transportation, such as dust suppression with water sprays, truck washing prior leaving site; lining and covering trucks and/or rail cars during loading and transport; and planning truck routes and schedules to minimize potential adverse impacts on the surrounding community;

- Off-site treatment of excavated soil that exceeds the toxicity characteristic leaching procedure (TCLP) hazardous waste criteria for arsenic, chromium, and/or PCP, established under the Resource Conservation and Recovery Act (RCRA);

- Off-site disposal of excavated soil at a RCRA-permitted hazardous waste disposal facility, following any required treatment, as described above;

- Excavation of any soil beyond the property boundary with site-related contaminant concentrations above the cleanup goals, and placement of that soil onto the site property to be capped;

- Backfilling of existing, in-ground concrete sumps, vaults, etc. with concrete rubble from above-ground demolition activities, and backfilling of soil excavations with clean soil imported to the site;

- Placement of a two-foot thick, clean soil cap over the entire site, as described in the 1996 ROD, followed by long-term monitoring and maintenance; and

- Establishment of institutional controls, as described in the 1996 ROD, including but not limited to, deed notices containing information on the levels and location of contamination on the property, and deed restrictions, such as environmental easements or restrictive covenants limiting future uses of the site to industrial/commercial or open-space recreational activities. The deed restrictions will prohibit future land uses not consistent with the level of protectiveness achieved by the cleanup. Deed restrictions may also include requirements for routine maintenance and repair of the cap, restrictions on soil excavation activities without the necessary health and safety, and engineering controls, and the proper disposal of any contaminated soil excavated during installation or maintenance of underground utilities by future owners or lessees, as applicable. Deed restrictions will be set forth in a DEQ-approved form, running with the land and enforceable by DEQ against present and future owners of the property.

All other elements of the selected remedy set forth in the 1996 ROD are unchanged in this ROD Amendment.

DECLARATION

Although this ROD Amendment changes a component of the remedy selected in the 1996 ROD, the amended remedy continues to be protective of human health and the environment, attains federal and state requirements that are legally applicable or relevant and appropriate for this remedial action, and is cost effective. Because this remedy will result in hazardous substances remaining on site above health-based levels, a review will be conducted within five years after commencement of remedial action, to ensure that the remedy continues to provide adequate protection of human health and the environment.

The amended remedy includes many similar components to the original remedy selected in the 1996 ROD. Specifically, demolition and off-site disposal or recycling of structures and debris; excavation of soil contaminated above action levels to a maximum depth of approximately 4 feet below ground surface; placement of a soil cap over the entire site; and institutional controls, such as deed restrictions. Instead of on-site treatment, the amended soil remedy calls for off-site disposal of soil in a permitted landfill, preceded by treatment, if the excavated soil exceeds the TCLP hazardous waste criteria for PCP, arsenic and/or chromium.

The remedy for contaminated soil, as amended, continues to utilize treatment, although to a lesser degree than the soil remedy contained in the 1996 ROD. Soil that exceeds the TCLP Hazardous Waste criterion for PCP will be incinerated at a permitted off-site facility prior to disposal. Soil (and ash resulting from incineration of site soil) that exceeds the TCLP Hazardous Waste criteria for arsenic or chromium will be stabilized prior to disposal in a permitted off-site landfill. During development of this ROD Amendment, on-site treatment of wastes (i.e., stabilization) was evaluated to address the statutory preference for treatment to permanently and significantly reduce the volume, toxicity, or mobility of principal threat wastes. However, on-site stabilization of soil would result in a significant increase in the volume of wastes to be managed on-site. Furthermore, the long-term reliability of stabilization for organic contaminants (e.g., dioxin) is uncertain. Therefore, off-site treatment (when necessary) and disposal was selected.

Langdon Marsh
Director
Oregon Department of Environmental Quality

3-20-98
Date

Chuck Clarke
Regional Administrator
United States Environmental Protection Agency
Region 10

3/17/98
Date

AMENDED RECORD OF DECISION

FOR

FINAL REMEDIAL ACTION
McCORMICK AND BAXTER CREOSOTING COMPANY
PORTLAND PLANT
PORTLAND, OREGON

DECISION SUMMARY

MARCH 1998

AMENDED RECORD OF DECISION
McCORMICK AND BAXTER CREOSOTING COMPANY
PORTLAND PLANT
PORTLAND, OREGON

DECISION SUMMARY

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McCORMICK AND BAXTER CREOSOTING COMPANY
PORTLAND PLANT

DECISION SUMMARY

INTRODUCTION

Site Name and Location

The McCormick and Baxter Creosoting Company, Portland Plant site (McCormick & Baxter or Site) is located at 6900 North Edgewater Street on the east bank of the Willamette River in Portland, Oregon (Figure 1). The site covers approximately 43 acres of land and 15 acres of sediment in the Willamette River (Figure 2). The site is downstream of Swan Island and upstream of the St. John's Bridge.

Lead and Support Agencies

The Oregon Department of Environmental Quality (DEQ) is the lead agency for this Superfund site, with cooperation and support of the United States Environmental Protection Agency (EPA).

Statutory Citation for a Record of Decision Amendment

Section 117(c) of CERCLA, 42 USC §9617(c) provides for addressing and documenting changes to the selected remedy after issuance of a Record of Decision (ROD). This ROD Amendment documents the changes to the remedy set forth in the ROD. Additionally, since fundamental changes are being made to the remedy, public participation and documentation procedures specified in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Section 300.435(c)(2)(ii) have been followed.

Date of Original Record of Decision

The original ROD is dated March 1996. It was signed on March 29, 1996 by EPA, and on April 4, 1996 by DEQ.

Administrative Record

This ROD Amendment will become part of the Administrative Record file for this site, in accordance with the NCP, Section 300.823(a)(2). The Administrative Record is available for review at the St. John's Community Library, located at 7510 North Charleston Street, Portland, Oregon, and at DEQ's Headquarters located at 811 Southwest Sixth Avenue (7th Floor), Portland, Oregon. A third information repository, which contains most of the

documents in the Administrative Record, is at the North Portland Neighborhood Office, located at 2401 N. Lombard St., Portland, Oregon.

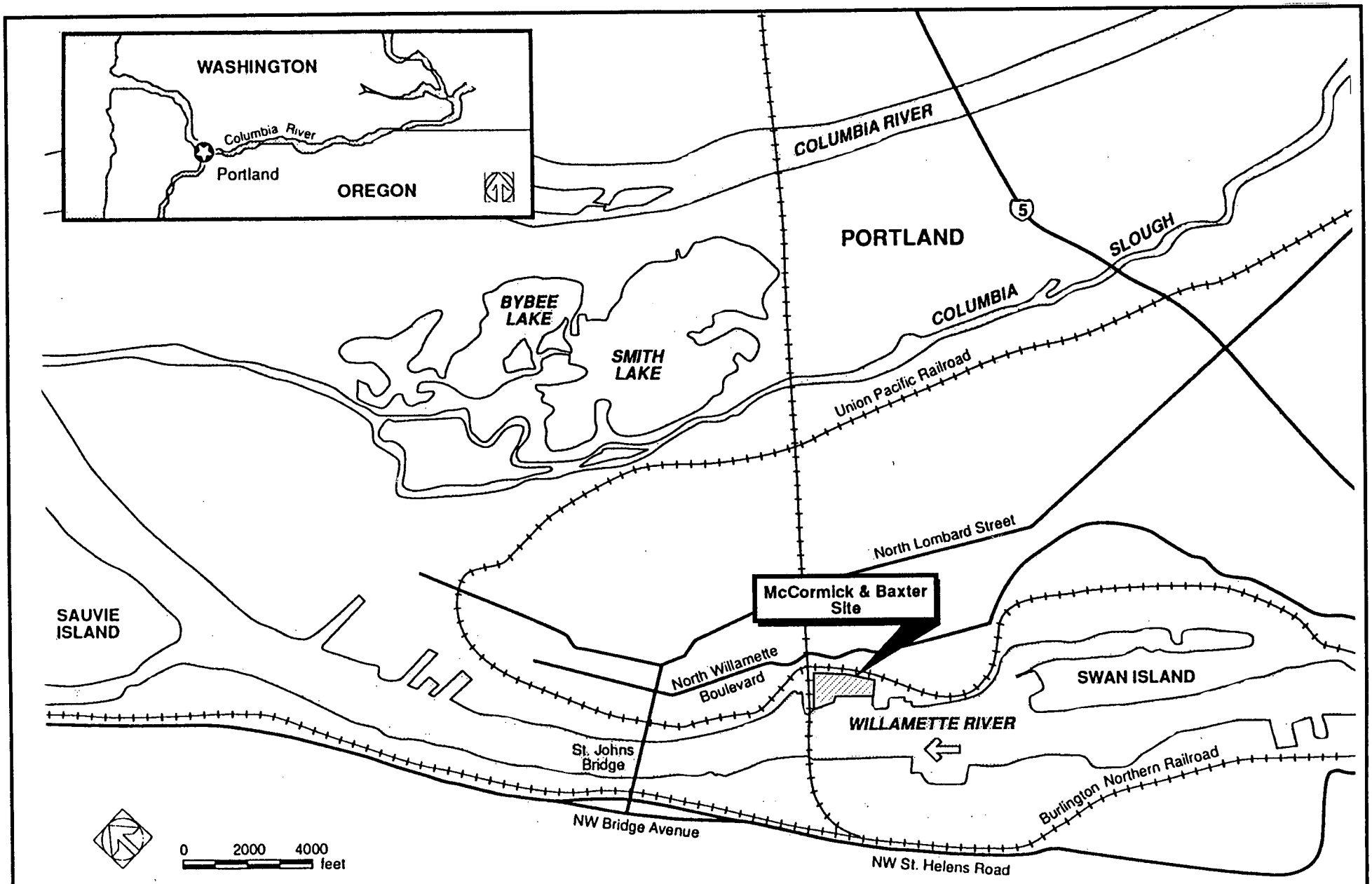

Figure 1 SITE LOCATION MAP

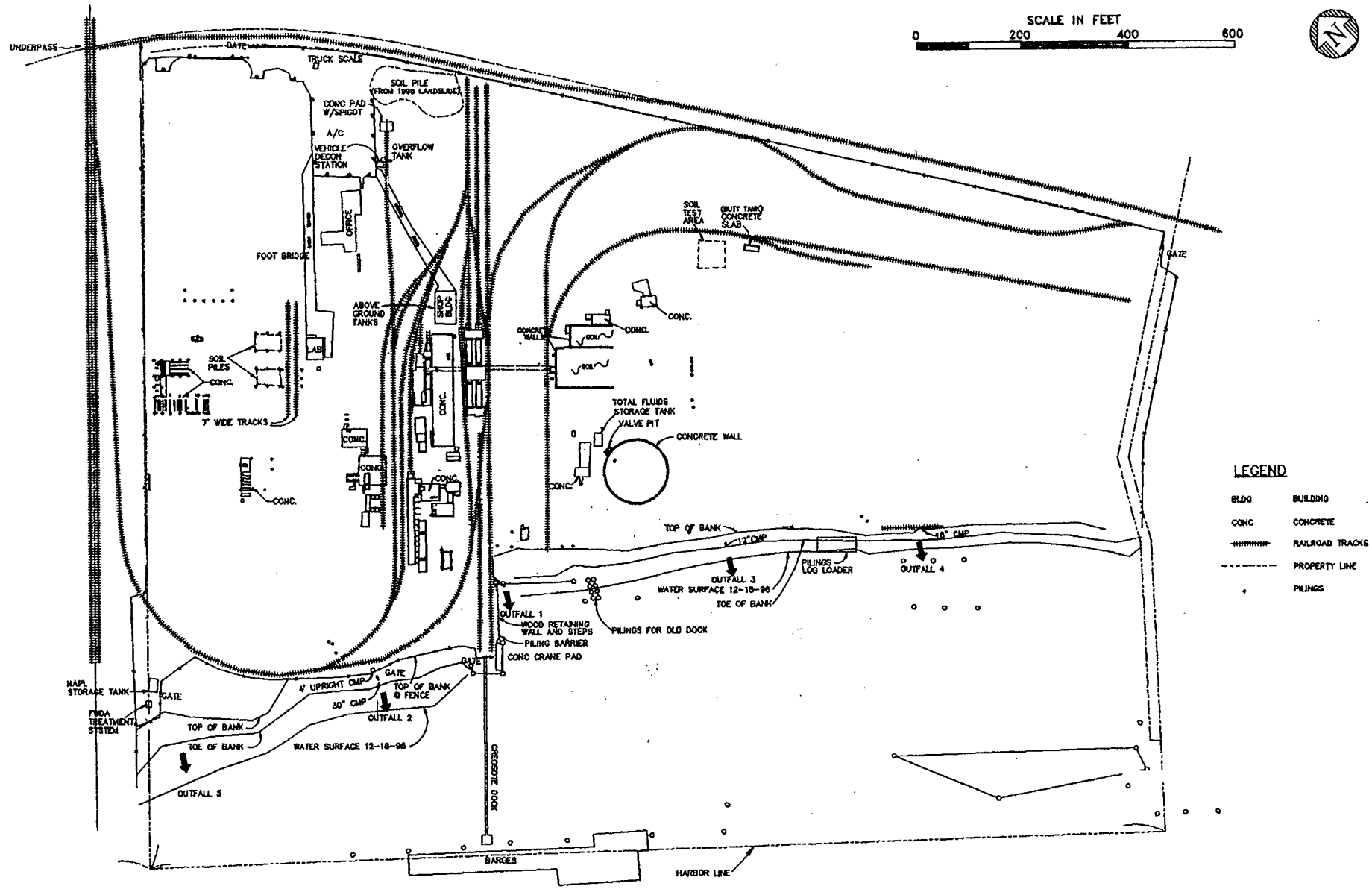

Figure 2 SITE MAP

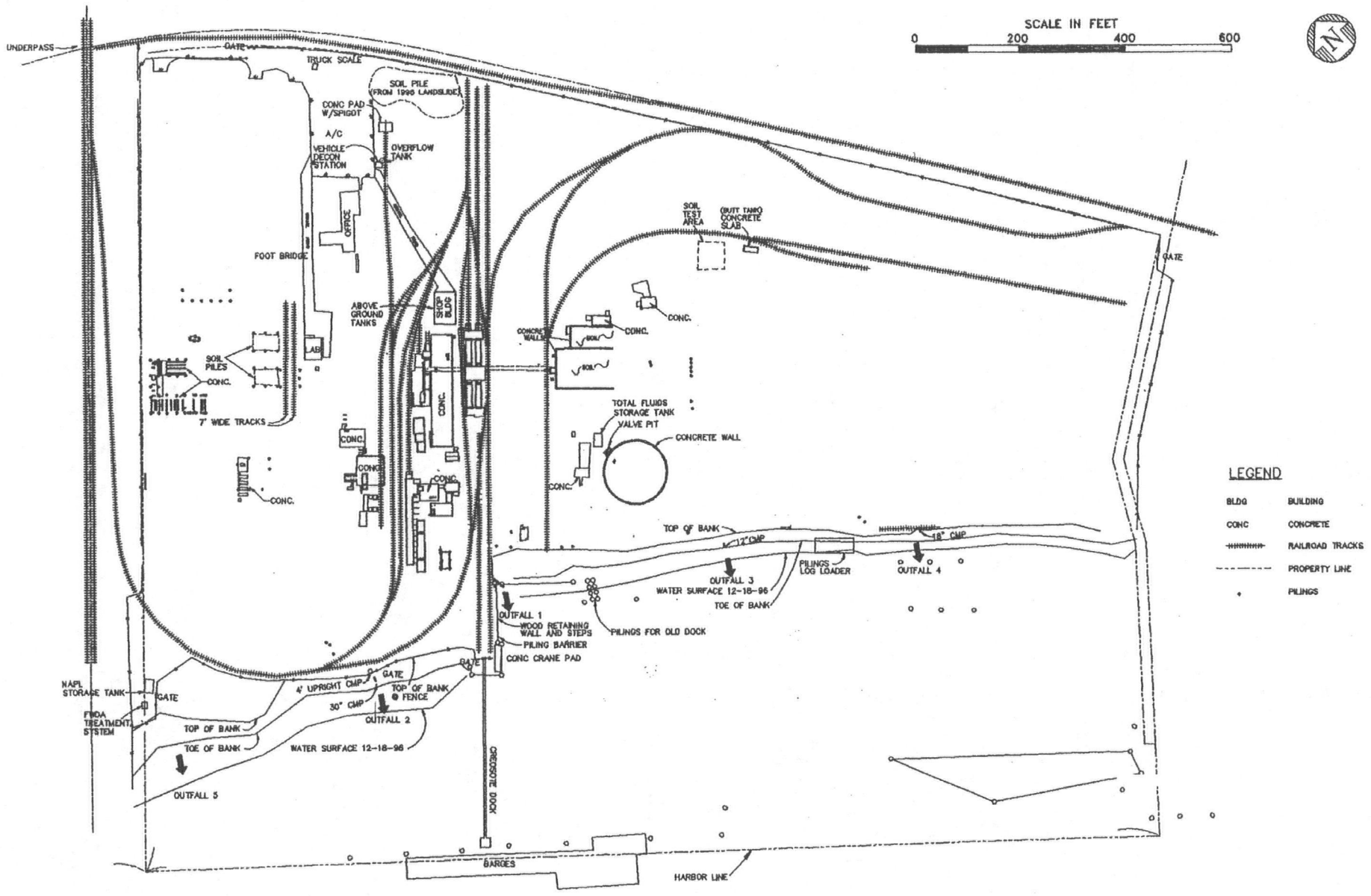

Figure 2 SITE MAP

Highlights of Community Participation

Community relations efforts prior to March 1996 are discussed in Section 3 of the original ROD. The following community relations activities are relevant to this amended ROD. A Responsiveness Summary is included as Appendix A.

April 1996	DEQ conducted a public meeting at the St. John's Community Center, on April 23, 1996, to discuss cleanup for McCormick and Baxter, to respond to comments received concerning the October 30, 1995 Proposed Plan, and to discuss the March 1996 ROD.
May 1996	DEQ conducted a second public meeting to respond to comments concerning the 1995 Proposed Plan and to discuss the 1996 ROD. This meeting was held at the University of Portland on May 29, 1996.
July 1996	DEQ issued a fact sheet describing the Cooperative Agreement between DEQ and EPA, ongoing groundwater remediation activities, preparation of RD and RA planning documents, as well as discussing issues relating to site security.
October 1996	DEQ issued a fact sheet describing the Remedial Design Work Plan and associated Sampling and Quality Assurance Plan, the Phase I Demolition and Debris Removal Plan, and ongoing site activities.
January 1997	DEQ issued a fact sheet notifying the public that Phase I demolition was delayed due to the characterization of some materials as hazardous wastes for disposal purposes. The fact sheet also described the December 1996 soil sampling event and the plan to install a second water treatment system at the Site.
March 1997	DEQ issued a fact sheet announcing that Phase I demolition would begin on March 17, 1997, and describing the truck route, hours of operation, dust control measures and other details.
May 1997	DEQ issued a fact sheet presenting the status of Phase I demolition, and explaining the need for additional soil sampling to better define the extent of dioxin contamination and to try to derive a proposed action level for handling dioxin-contaminated soil. The fact sheet also described ongoing groundwater remedial actions and announced that a report pertaining to biological treatment of PAHs and PCP in soil was available for review.
August 1997	DEQ issued a fact sheet indicating that the current plan for cleaning up the contaminated soil at McCormick & Baxter should be changed, due to the widespread presence of dioxin at the Site. The fact sheet explained that dioxin cannot be effectively treated by biological treatment, the soil cleanup technology selected in the ROD.

October 1997 The Proposed Plan for the ROD Amendment was released to the public on October 1, 1997. Notices were sent to each person on the mailing list for the site, and were published in the Oregon *Secretary of States' Bulletin*, and in *The Oregonian*, on October 1, 1997. The plan described the site conditions necessitating a change to the selected soil remedy and identified the preferred alternative proposed by DEQ and EPA for final cleanup of contaminated soil at the site under Oregon's Environmental Cleanup Rules and EPA's Superfund Law. The public comment period was officially open from October 1 through October 31, 1997. A public meeting was held on October 9, 1997 to present the plan and to allow for public comment and testimony. EPA and DEQ responded to questions at the meeting, but no public testimony was received. Written comments from one individual were submitted on October 31, 1997 and received on November 5, 1997 (see Appendix A).

November 1997 On November 11, 1997, DEQ and EPA staff spoke at a meeting of the Friends of Cathedral Park Neighborhood Association, to discuss the ROD Amendment and to answers citizen's questions concerning the Site.

REASONS FOR ISSUING THE ROD AMENDMENT

Circumstances Prompting a ROD Amendment

The need for this ROD Amendment arose during soil sampling associated with design of the original soil remedy. The soil sampling documented the widespread presence of dioxins in soil. DEQ and EPA have determined that the remedy selected in the ROD is no longer appropriate for soil cleanup, based on the extent of dioxin contamination found in the soils.

Soil Remedy Selected in the 1996 ROD

The major components of the selected remedy for contaminated soil contained in the original ROD are described below:

- Excavation and on-site biological treatment and/or stabilization of approximately 30,000 cubic yards of soil contaminated above health-based action levels established for PCP, PAHs (the primary constituents of creosote), and arsenic;

- Consolidation and capping of treated soil;

- Capping of all areas of the Site having soil contamination above established protective levels (i.e., cleanup goals), but below the specified action levels for soil excavation and treatment (essentially the entire site); and

- Excavation and off-site treatment and disposal of approximately 1,000 cubic yards of highly contaminated soil and other wastes that were not expected to be effectively treated on-site using bioremediation or stabilization. This 1,000 cubic yards of highly contaminated soil was to include soil with significant dioxin concentrations (i.e., several orders of magnitude above protective levels); and

- Institutional controls, and long-term monitoring and maintenance, to ensure the continuing integrity of the cap.

Subsequent Events and New Information

After the ROD was signed, DEQ began conducting remedial design activities. To prepare the final remedial design for soil, field investigations, including additional soil sampling, were conducted to refine the extent and volume of soil requiring treatment, identify soil characteristics to confirm the efficacy of biological treatment, determine the magnitude of dioxin contamination, and to confirm that there is no off-site contamination. These investigations are described in the November 1997 Revised Draft Remedial Design Data Summary Report, and are summarized below.

210 surface soil samples and 260 subsurface soil samples were collected, in December 1996, and analyzed for arsenic, PAHs and PCP. Based on sampling results presented in the 1992 Remedial Investigation (RI) Report and in the 1995 Revised Feasibility Study (FS) Report, the sampling locations included 14 contaminant source areas (e.g., the central processing area, tank farm area, former waste disposal area, etc.), and other non-source areas, such as areas that may require capping, the site perimeter and off-property locations along North Edgewater St. and the east gate area. In addition, 20 of the surface soil samples were also analyzed for dioxin. Two of those samples were collected from each of the major contaminant source areas and one sample was collected from each of the other source areas.

The results of the December 1996 soil sampling indicated that contaminant concentrations exceeded the cleanup goals in the 1996 ROD, virtually across the entire site, and that dioxin contamination was much more widespread than previously believed (dioxin was detected in each of the 20 samples collected). In addition, significant levels of dioxin (i.e., concentrations several orders of magnitude above the cleanup goal) were found only in, or directly adjacent to, areas that were slated for soil excavation and treatment (remedial action areas), because contaminant concentrations for arsenic, PAHs and/or PCP in those areas exceed the action levels in the 1996 ROD (see Figure 3). Accordingly, further sampling was conducted to better characterize the nature and extent of dioxin contamination. Archived soil samples from the December 1996 investigation were combined into 26 composite samples, in May 1997, representing the 20 proposed remedial action areas, and areas along the site perimeter, North Edgewater St. and the east gate area.

Based on the data gathered during these field investigations, DEQ determined that the volume of soil to be excavated (i.e., soil exceeding the ROD's action levels) was lower than expected (approximately 20,000 cubic yards versus the 30,000 estimated in the ROD). However, dioxin contamination was found to be more widespread than originally believed, and dioxin contamination was found to be co-located with the other contaminants of concern (PCP, PAHs

and arsenic). On-site biological treatment was the method identified in the ROD to remediate organic contaminants (PCP and PAHs). However, biological treatment is not an effective treatment technology for dioxin. The ROD included a provision for off-site disposal of approximately 1,000 cubic yards of soil that was not expected to be effectively treated on site, but the post-ROD investigations indicated that the volume of such soil would be approximately 20,000 cubic yards, as described above.

Summary of DEQ and EPA Rationale for Changing the Selected Remedy

Based on the data collected during remedial design field investigations, DEQ and EPA began to consider changing the soil remedy to specifically address the dioxin contamination in site soil. DEQ conducted a risk evaluation (completed September 1997) to determine whether the concentrations of dioxin found in site soil pose unacceptable risks. The risk evaluation concluded that dioxin poses more risk than other contaminants, in 13 of the 20 areas designated for soil excavation (remedial action areas) - see Tables 1 and 2, and Figure 3. The risk evaluation is discussed further in the Summary of Risks section of this ROD Amendment. Furthermore, DEQ and EPA determined that on-site biological treatment would not effectively reduce the toxicity, mobility, or volume of dioxin. Although the original selected remedy provides for off-site treatment and disposal of a limited volume of soil, the actual volume of dioxin-contaminated soil that would be disposed off-site would be so much greater than anticipated that it essentially would be inconsistent with the intent of the original ROD. In order to remediate the dioxin-contaminated soil in a timely manner, and achieve protectiveness of human health, DEQ and EPA considered alternative treatment and disposal methods.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The McCormick & Baxter site was proposed for addition to the National Priorities List (NPL) on June 18, 1993. The Site was added to the NPL on June 1, 1994. In March 1996, after a detailed study of the nature and extent of contamination at the Site and a detailed analysis of cleanup alternatives, a remedy for the Site was selected and described in the ROD. A complete description of the prior site history and enforcement activities is included in Section 2 of the ROD. Subsequent to the ROD, DEQ has continued to operate interim groundwater remedial actions at the Site and has conducted demolition activities prescribed by the ROD.

SCOPE AND ROLE OF AMENDED SOILS REMEDY

This amended remedy is intended to be the final remedial action for contaminated soil at the Site. The selected remedial actions for contaminated sediment and groundwater remain unchanged from the original ROD. The purposes of those remedial actions are to prevent current or future exposure to contaminated sediment, and to minimize NAPL discharges to the Willamette River and NAPL migration to the deep aquifer, respectively.

Approximately 20,000 cubic yards of soil within four feet of the surface are contaminated with dioxin, and with PCP, PAHs, and/or arsenic at concentrations exceeding excavation action levels set in the ROD. The excavated soils will be taken to an off-site Resource Conservation

and Recovery Act (RCRA)-permitted hazardous waste disposal facility, where any required treatment of soils failing the RCRA toxicity characteristic leaching procedure (TCLP) for Hazardous Waste determination will be conducted.

In addition, as provided in the 1996 ROD, the ROD Amendment requires that virtually the entire site will be capped with two-feet of clean soil, to prevent current or future exposure to the residual soil contamination. Capping of the Site will be followed by long-term monitoring and maintenance, with institutional controls as necessary, to ensure that the Site remains protective of human health and the environment.

SUMMARY OF SITE CHARACTERISTICS

Site characteristics are described in detail in the Summary of Site Characteristics section (Section 5) of the original ROD. Information pertinent to changes in the remedial action for soil at the Site is presented below.

As noted above, the data gathered during the remedial design field investigations, in December 1996 and May 1997, indicated that dioxin contamination was more widespread than previously reported. The estimated volume of soil with significant levels of dioxin is now estimated to be approximately 20,000 cubic yards versus the 1,000-cubic-yard estimate presented in the 1996 ROD. As defined in the ROD, "significant levels" of dioxin means concentrations several orders of magnitude above the protective cleanup goal of 40 parts per trillion (ppt). In addition, based on the available data, the significant levels of dioxin contamination are found in the same soil areas where elevated concentrations of PCP, PAHs, and arsenic are found (i.e., the areas where concentrations for those constituents exceed the excavation action levels specified in the 1996 ROD).

With respect to off-property soil samples, none exceeded the action levels for excavation and treatment of soil set forth in the ROD. One out of five surface soil samples collected along North Edgewater Street, outside of the site fence, exceeded the (lower) cleanup goal for PAHs and the composite sample from this area exceeded the cleanup goal for dioxin. Furthermore, several samples collected inside the fence along the site perimeter exceeded the cleanup goals, but not the excavation action levels, for PAHs and/or arsenic, and the cleanup goal for dioxin.

SUMMARY OF SITE RISKS

After completing the remedial design investigation, DEQ conducted a supplemental risk evaluation (the original risk assessment for the Site was completed in 1992) to determine the results of the soil removal action that was conducted in 1994, and to evaluate the significance of the newly collected dioxin data. During the 1994 removal action, 377 tons of the most highly contaminated soil were excavated and disposed off site. As a result of that removal, the maximum dioxin concentration at the Site was found to be lower in the December 1996 sampling than previously reported (380 parts per billion before the removal action, versus 75 parts per billion after the removal action). Although risks calculated during the supplemental risk evaluation are not significantly different than those reported in the 1992 risk assessment,

the new data indicated that dioxin contributes more significantly than other contaminants to site risks, because dioxin contamination is more widespread than previously reported.

A summary of the dioxin data collected from each of the planned remedial action areas is presented in Table 1, along with the total excess lifetime cancer risks (from all site-related compounds) calculated for each of these areas. Table 2 presents the excess lifetime cancer risk from each contaminant of concern, as well as the total excess lifetime cancer risk, for each of these areas. These risks represent the potential probability that a future site worker could develop cancer, if no remedial action occurred at the Site, and if exposed to contaminants in soil through incidental ingestion, dermal contact, and inhalation of wind-blown particulates, over a lifetime of working at the Site. Figure 3 depicts the approximate remedial action areas and shows the contaminant that is the primary risk driver at each area. DEQ and EPA determined that biological treatment of soil at these areas would not adequately reduce risks associated with 13 of these 20 areas, because dioxin is not believed to be amenable to biological treatment.

This ROD Amendment does not change the risk-based action levels and cleanup goals identified in the 1996 ROD, nor does it add an action level for dioxin, because dioxin is co-located with other contaminants of concern. Therefore, soil excavation based on the original action levels, followed by capping areas exceeding the original cleanup goals, will achieve the level of protection envisioned in the 1996 ROD. Protectiveness is based on continued industrial land use or open space recreational use of the Site.

DESCRIPTION OF THE NEW SOIL REMEDIAL ACTION ALTERNATIVES

The three alternatives considered by DEQ and EPA to replace the remedy for contaminated soil described in the 1996 ROD are discussed below. Pursuant to Section 121(d) of CERCLA, remedial actions shall, upon their completion, reach a level or standard of control for such hazardous substances, pollutants or contaminants which at least attains legally applicable or relevant and appropriate federal standards, requirements, criteria, or limitations, or any promulgated standards, requirements, criteria, or limitations under a state environmental or facility siting law that is more stringent than any federal standard.

All of the soil cleanup alternatives under consideration would be designed to meet applicable or relevant and appropriate requirements (ARARs). Since the alternatives considered during development of this ROD Amendment incorporate similar components and technologies to the alternatives included in the 1996 ROD, the ARARs have not changed significantly. The ARARs specific to the soil remedy are discussed below:

Table 1

REMEDIAL ACTION AREA DIOXIN DATA AND RISK SUMMARY

Site Area	Remedial Action Area	Sample Locations (Sample Type)[1]	Sample Depth (feet bgs)	Dioxin TEQ Concentration (ppt)	Primary Remedial Action Area Risk Driver	Total Excess Lifetime Cancer Risk: On-site Worker[2]
Log Storage Area	RA1	LSA4, LSA5 (Composite)	0 - 1	6,140	Dioxin	7×10^{-4}
	RA2	LSA17, LSA19 (Composite)	0 - 1	29,930	Dioxin	3×10^{-3}
		LSA14 (Grab)	0.5	4,076		
Pole Dryer Area	RA3	PDA25, PDA27, PDA28, PDA29 (Composite)	0 - 1	74,903	Dioxin	7×10^{-3}
		PDA28 (Grab)	0.5	50,606		
East Yard Area	RA4	EYA35, EYA38 (Composite)	0 - 1	1,280	Arsenic	8×10^{-4}
	RA5	EYA44 (Composite-multiple depths)	0 - 1	2,535	Dioxin	4×10^{-4}
		EYA35 (Grab)	0.5	1,280		
Stacker Shed Area	RA6	SSA119, SSA77, SSA83 (Composite)	0 - 1	3,276	Dioxin	5×10^{-4}
	RA7	SSA79 (Composite-multiple depths)	0 - 1	2,386	Dioxin	4×10^{-4}
	RA8	SSA91, SSA95 (Composite)	0 - 1	5,016	Dioxin	5×10^{-4}
	RA9	SSA92 (Composite-multiple depths)	0 - 1	25,450	Dioxin	2×10^{-3}
		SSA85 (Grab)	0.5	129		
Southern Corner Area	RA11	SCA56 (Composite-multiple depths)	0 - 1	625	Arsenic	2×10^{-4}
		SCA57 (Grab)	0.5	933		
Former Waste Disposal Area	RA10	FWD205 (Composite-multiple depths)	0 - 4	3,780	Dioxin	7×10^{-4}
		FWD205 (Grab)	0.5	2,305		
	RA12	FWD214 (Composite-multiple depths)	0 - 10	47,320	Dioxin	9×10^{-3}
		FWD211, FWD212 (Composite)	0 - 10	16,125		
		FWD214 (Grab)	0.5	480		
Central Processing Area	RA13-A	CPA226 (Composite-multiple depths)	0 - 10	346	Arsenic	4×10^{-4}
	RA13-B	CPA232, CPA233 (Composite)	0 - 4	56,650	Dioxin	5×10^{-3}
	RA13-C	CPA238, CPA239, CPA241 (Composite)	0 - 4	5,750	PCP	2×10^{-2}
		CPA243, CPA244 (Composite)	0 - 10	51,980		
Southeast Waste Disposal Trench	RA14	SEW290 (Grab)	0.5	5,534	Dioxin	6×10^{-4}
	RA15	SEW293 (Grab)	0.5	6,665	Dioxin	8×10^{-4}
	RA16	SEW294	0 - 4	756	Arsenic	2×10^{-4}

Table 1

REMEDIAL ACTION AREA DIOXIN DATA AND RISK SUMMARY

Site Area	Remedial Action Area	Sample Locations (Sample Type)[1]	Sample Depth (feet bgs)	Dioxin TEQ Concentration (ppt)	Primary Remedial Action Area Risk Driver	Total Excess Lifetime Cancer Risk: On-site Worker[2]
		(Composite-multiple depths)				
Tank Farm Area	RA17	TFA251, TFA253 (Composite)	4- 10	3,650	PAHs	1×10^{-3}
		TFA251 (Grab)	0.5	3,222		
		TFA256 (Grab)	0.5	1,917		
Creosote Tank Area	RA18	CTA262 (Composite-multiple depths)	4 - 10	40	PAHs	2×10^{-4}
		CTA262 (Grab)	0.5	0.27		
		CTA268 (Grab)	0.5	261		

1 Dioxin data are presented for areas where concentrations of at least one contaminant exceed site-specific action levels.

2 Total excess cancer risk includes risks from all compounds.

Abbreviations:

TEQ 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin toxicity equivalents.

Bgs Below ground surface.

Ppt parts per trillion (nanograms/kilogram).

Notes:

The soil cleanup goal for dioxin TEQ concentration, as established in the 1996 ROD, is 40 ppt.

Table 2

TOTAL EXCESS LIFETIME CANCER RISKS
ON-SITE WORKER EXPOSURE SCENARIO

Remedial Action Areas	Dioxin	Arsenic	Pentachlorophenol	Carcinogenic Polycyclic Aromatic Hydrocarbons	TOTAL
RA1	5×10^{-4}	2×10^{-4}	1×10^{-5}	9×10^{-6}	7×10^{-4}
RA2	2×10^{-3}	2×10^{-4}	2×10^{-5}	1×10^{-5}	3×10^{-3}
RA3	6×10^{-3}	5×10^{-4}	5×10^{-5}	8×10^{-5}	7×10^{-3}
RA4	1×10^{-4}	6×10^{-4}	4×10^{-6}	4×10^{-5}	8×10^{-4}
RA5	2×10^{-4}	1×10^{-4}	1×10^{-6}	5×10^{-6}	4×10^{-4}
RA6	3×10^{-4}	3×10^{-4}	4×10^{-6}	5×10^{-6}	5×10^{-4}
RA7	2×10^{-4}	1×10^{-4}	2×10^{-5}	4×10^{-5}	4×10^{-4}
RA8	4×10^{-4}	1×10^{-4}	1×10^{-6}	8×10^{-6}	5×10^{-4}
RA9	2×10^{-3}	1×10^{-4}	6×10^{-6}	8×10^{-5}	2×10^{-3}
RA10	3×10^{-4}	1×10^{-4}	1×10^{-4}	2×10^{-4}	7×10^{-4}
RA11	5×10^{-5}	2×10^{-4}	3×10^{-7}	3×10^{-6}	2×10^{-4}
RA12	4×10^{-3}	1×10^{-3}	2×10^{-3}	2×10^{-3}	9×10^{-3}
RA13 A	3×10^{-5}	3×10^{-4}	2×10^{-8}	2×10^{-7}	4×10^{-4}
RA13 B	5×10^{-3}	3×10^{-4}	2×10^{-4}	2×10^{-4}	5×10^{-3}
RA13 C	4×10^{-3}	5×10^{-5}	2×10^{-2}	3×10^{-4}	2×10^{-2}
RA14	5×10^{-4}	8×10^{-6}	2×10^{-5}	1×10^{-4}	6×10^{-4}
RA15	6×10^{-4}	1×10^{-4}	2×10^{-5}	1×10^{-4}	8×10^{-4}
RA16	6×10^{-5}	9×10^{-5}	8×10^{-7}	2×10^{-6}	2×10^{-4}
RA17	3×10^{-4}	3×10^{-6}	2×10^{-5}	7×10^{-4}	1×10^{-3}
RA18	3×10^{-6}	6×10^{-7}	ND	2×10^{-4}	2×10^{-4}

Key:
ND = Not detected

Notes:
The most significant risk driver at each area is shaded.

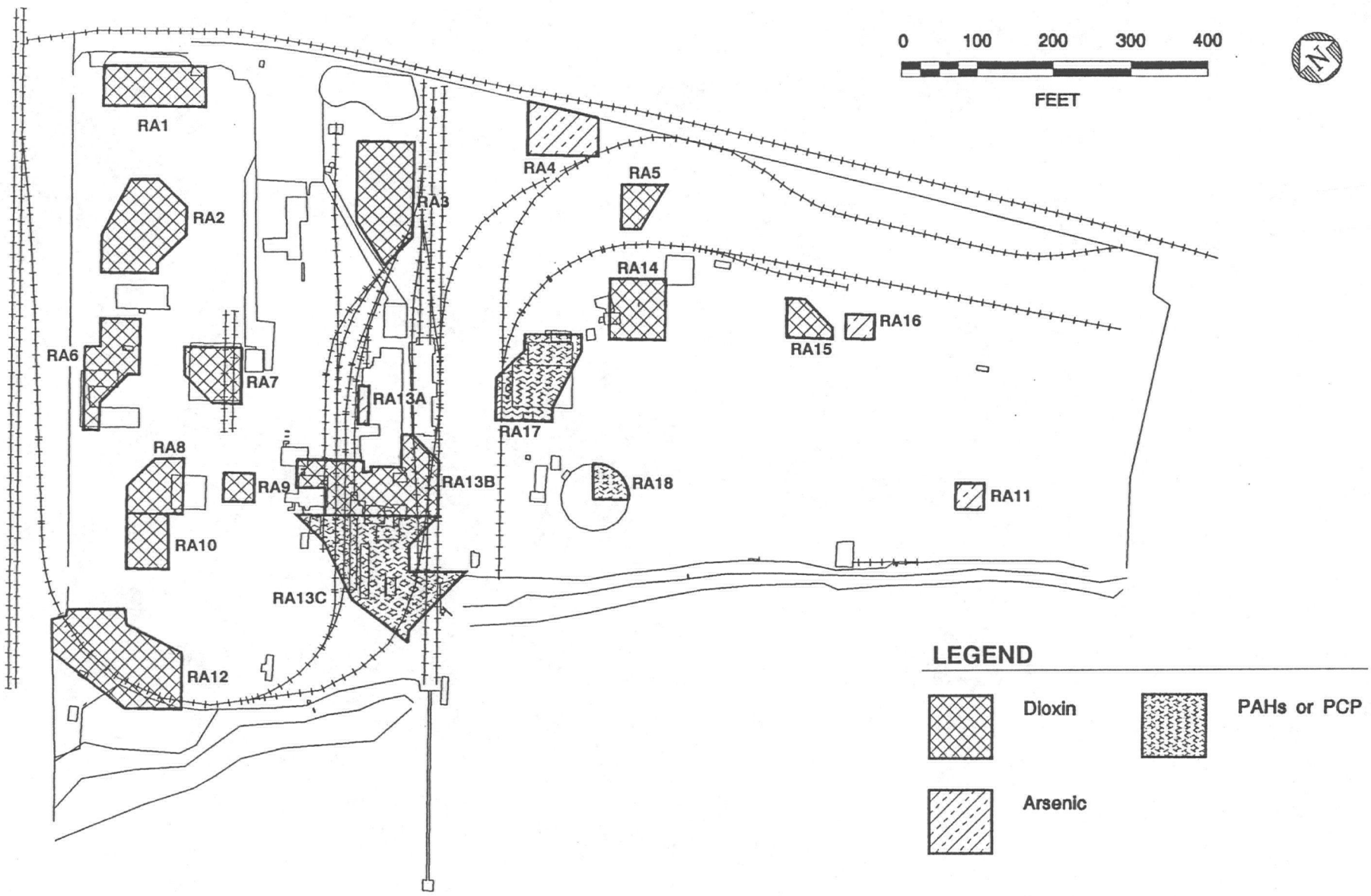

Figure 3 PRIMARY RISK DRIVERS AT REMEDIAL ACTION AREAS

Chemical-Specific ARARs. Chemical-specific requirements are usually health-based or risk-based numerical values or methodologies that establish the acceptable amount or concentration of a chemical in the ambient environment. No Chemical-specific ARARs apply to the proposed soil cleanup alternatives.

Location Specific ARARs. Location-specific requirements are restrictions based on the conduct of the activities in specific locations. These may restrict or preclude certain remedial actions or may apply only to certain portions of a site.

- Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands, May 24, 1977 incorporated in 40 CFR Part 6, Appendix A; Federal Clean Water Act, Section 404, 42 USC §1344. These requirements regulate actions that occur in wetlands and flood plains and may be applicable to actions that may adversely affect wetlands and flood plains.

Action-Specific ARARs. Action-specific requirements are restrictions on certain activities at a site.

- Solid Waste Disposal Act, also known as the Resource Conservation and Recovery Act, Subchapter III, (42 USC § § 6921-6939; 40 CFR Parts 261-264 and 268); and, Oregon Hazardous Waste Management Act (ORS 466.005 et seq.). State management of hazardous waste is authorized in the Oregon Hazardous Waste Management Act (ORS 466.005 et seq.). The law is implemented by regulations that are codified at OAR 340-100-001 et seq. Oregon hazardous waste management regulations adopt by reference most of the substantive provisions of Subtitle C of RCRA. Subtitle C is the primary federal law for the management of hazardous waste. The principal federal regulations that implement Subtitle C are codified in 40 CFR Parts 260-271. If federal and Oregon hazardous waste laws conflict, the more stringent law will be followed. The specifics of how RCRA applies to or is relevant and appropriate for cleanup activities at this site are discussed in greater detail in the following section.

- CFR Part 261: Identification and Listing of Hazardous Waste. Part 261 contains RCRA definitions and criteria for identifying hazardous waste. All listed or characteristic wastes transported off-site for treatment and/or disposal will comply with these regulations.

- CFR Part 262: Standards Applicable to Generators of Hazardous Waste. The regulations in Part 262 establish standards for generators of hazardous waste regarding manifesting, pre-transportation requirements, record keeping and reporting, and exports of hazardous waste. All hazardous wastes generated at the Site, such as excavated soil, will be managed in accordance with these regulations.

- CFR Part 263: Standards Applicable to Transporters of Hazardous Waste. Part 263 establishes standards for transporters of hazardous waste including manifesting, record keeping, and hazardous waste discharge response requirements. In the regulations set forth in Parts 262 and 263, EPA has expressly adopted certain regulations of the Department of Transportation (DOT) governing the transportation of hazardous

materials. Refer to the description of the requirements for transportation of hazardous materials (49 CFR 171-177) in the next section. All hazardous wastes transported from the Site will be managed in accordance with these regulations.

- CFR Part 264: Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities. This ROD Amendment eliminates the on-site treatment portion of the soil remedy. Also, excavation, consolidation, stockpiling, and sorting of soil and debris, and replacement of concrete rubble, will be conducted within the area of contamination (AOC) at the Site. Therefore, these regulations are no longer applicable. Also, there is no longer a need to designate a portion of the Site a Corrective Action Management Unit (CAMU), as was done in the 1996 ROD. This ROD Amendment removes that designation. Landfill closure requirements are relevant and appropriate for the Site and will be met through a hybrid landfill closure. The requirement for an impermeable cap is not met, since protection of groundwater is not one of the Remedial Action Objectives for the Site.

- Procedures for Planning and Implementing Off-Site Response Actions (40 CFR 300.440). This regulation is applicable to, and will be complied with, for all wastes that are transported off-site for treatment and/or disposal.

- Endangered Species Act (16 USC 1531 et seq.). Peregrine Falcon have been observed near the Site; however, no nests or use of the Site by this protected bird have been observed. If Peregrine Falcon are observed at the Site during implementation of the remedy, precautionary steps will be taken to protect their habitat, in accordance with this regulation.

- Oregon Hazardous Substance Remedial Action Act and Rules (ORS 465.200 et seq.) The selected remedy meets the substantive requirements of these applicable regulations.

Policy, Guidance, and Regulations To-Be-Considered. Additional policies, guidance, and other laws and regulations to be considered for source control and remedial actions include, but are not necessarily limited to, the following.

- Transportation of Hazardous Materials (49 CFR 171-177; OAR 860-66-001 et seq.) Transporters must comply with U.S. Department of Transportation labeling, containment, and spill reporting regulations found in 49 CFR, Subchapter C. Transportation of hazardous waste by rail or highway must comply with regulations of the Public Utility Commissioner (OAR 860-66-001 et seq.), which adopt by reference U.S. Department of Transportation regulations in Title 49 CFR. These regulations are applicable for hazardous or dangerous waste disposed off-site. The selected remedy will comply with these federal and related state regulations.

- EPA Area of Contamination Policy (Federal Register Volume 55, No. 46, March 8, 1990, pages 8759-8760). Excavation, consolidation, stockpiling, and sorting of soil and debris, and replacement of concrete rubble, will be conducted within the AOC at the Site.

- Willamette Greenway Plan. DEQ has received Land Use Compatibility Statements demonstrating that the selected remedy is consistent with these requirements.

- The Lower Willamette River Management Plan (LWRMP). Requirements of the LWRMP are waived for environmental cleanup plans selected by DEQ and developed in consultation with the Division of State Lands.

The most significant ARARs affecting the development and selection of cleanup alternatives for the soil remedy for the McCormick & Baxter site are the regulations implementing RCRA and the Oregon Hazardous Waste Management Act.

The regulations in 40 CFR Part 261 and parallel Oregon regulations (ORS 466.005 *et seq*; OAR340-100-001 *et seq*) contain definitions and criteria for identifying RCRA hazardous waste. Listed waste codes associated with the residuals from the wood-preserving processes used at the McCormick & Baxter site are F032, F034, and F035. Although McCormick & Baxter ceased operations prior to the effective dates of the F032, F034, and F035 listings in Oregon (October 16, 1992, for F034 and F035, and June 6, 1991, with a conditional stay until February 6, 1992, for F032), media contaminated with waste that meets the definition of a listed hazardous waste takes on that waste designation when it is actively managed (i.e., treated, stored, or disposed under RCRA) outside the area of contamination (AOC). Because the entire McCormick & Baxter site is contaminated to varying degrees, DEQ and EPA have designated the entire site an AOC. Transfer of soil to a newly constructed, engineered unit (for example, a stabilization unit under Alternative 2 below) is considered to be outside of the AOC.

In addition, the contaminated medium may require management as a characteristic hazardous waste, based on the toxicity characteristic for PCP (waste code D037), arsenic (waste code D004) and/or chromium (waste code D007).

For those RCRA hazardous wastes that are disposed off-site or managed on-site outside the AOC, and are RCRA listed or characteristic wastes, substantive RCRA 40 CFR 264 and 268 standards are applicable. This will primarily affect alternatives involving treatment of the wastes. The regulations in 40 CFR 268 set standards that must be met before a hazardous waste can be land disposed. Currently there is a two-year National Capacity Treatment Variance (expiring May 12, 1999) from the Land Disposal Restrictions (LDRs) for the soil designated as F032, F034 and F035 wastes. Therefore, these F-listed wastes will not require treatment prior to land disposal on or before May 12, 1999, unless the wastes are also characteristic wastes. These wastes would be considered characteristic (i.e., carry the D004, D007, or D037 waste codes discussed above), if the leachate concentration exceed the criteria specified 40 CFR Section 261.24. Therefore, under Alternatives 2 and 3 below, excavated soil for which the leachate concentrations exceeds the criteria for PCP, arsenic, and/or chromium would be treated prior to land disposal, by stabilization, incineration, or potentially some other method, depending on the waste constituents and characteristics, and the regulations in place at the time of disposal. Because no RCRA waste would be generated (i.e., excavated) under Alternative 1 below, no RCRA requirements are applicable or relevant for that alternative.

Where the substantive RCRA hazardous waste requirements are not applicable, they may still be relevant and appropriate. At the McCormick & Baxter site, RCRA closure requirements have been determined to be relevant and appropriate for contaminated soil within the AOC that poses an unacceptable threat to human health and the environment.

EPA rules allow contaminated soil and other wastes to be excavated and consolidated and/or replaced within an AOC, and processed within an AOC (but not in a separate unit such as a tank), without the activity constituting a new placement of the soil that would cause the soil to become regulated as a hazardous waste (46 FR 8758). Therefore, the RCRA closure regulations of 40 CFR Part 264 are not applicable to the excavation, consolidation, stockpiling, and sorting of the soil and debris, nor to the use of concrete rubble for backfill at the Site. The requirements of 40 CFR Part 264 may be applicable to any alternative that involves ex-situ treatment and replacement of hazardous waste soil (e.g., Alternative 2), unless a CAMU is established.

Each alternative also includes institutional controls, as described in the 1996 ROD, which will be used to prevent exposures to residual contamination remaining at the Site following remedial action. Institutional controls will apply to current and all future landowners. Some institutional controls, such as perimeter fencing and warning signs are already in place and would be maintained until completion of the remedial measures. Other institutional controls, such as deed restrictions, would include specific DEQ and EPA notification requirements, as well as property restrictions, limiting the future use and development of the property to uses consistent with the remedial action objectives specified in the ROD (i.e., health protectiveness in an industrial land use or open space recreational scenario). Specific deed restrictions also would inform future owners of the nature and extent of residual contamination on the property and mandate precautions to be taken prior to disturbance of the cap or excavation. The deed restrictions may include the granting of an environmental protection easement, that would provide DEQ with continued future access to the site. Deed restrictions, along with other components of the remedy, will be evaluated no less than every five years, to ensure that the remedy continues to provide an adequate level of protection of human health and the environment. A more comprehensive discussion of the institutional controls to be used may be found in Sections 8.1.2 and 10.3.5 of the 1996 ROD.

The summary of alternatives presented below includes a cost estimate and estimated time frame for completion of each remedial alternative. Cost estimates for each alternative are given in present-value (1997) dollars and include design, construction, and long-term operation and maintenance (O&M) costs. In accordance with EPA guidance, O&M costs were estimated for a 30-year period; however, O&M activities at this site may extend beyond 30 years. The cost estimates are believed to be accurate within +50 to -30 percent. Estimated time frames include construction, operation and maintenance of the remedial alternatives. However, some institutional controls will remain indefinitely.

In accordance with EPA's and DEQ's regulations, a "no action" alternative must be considered. The No Action Alternative serves as a baseline against which other alternatives are evaluated. In the case of this ROD Amendment, the soil remedy selected in the 1996 ROD serves as the No Action Alternative. As discussed above, DEQ and EPA have determined that

this alternative is not protective. Therefore, it is not evaluated further. The following sections discuss the three new alternatives considered by DEQ and EPA.

Alternative 1: Capping in Place

Alternative 1 includes building demolition and debris removal (which has been partially completed), site clearing, grading, and placement of a 2-foot thick cap of clean soil across the entire McCormick & Baxter property. Concrete rubble from on-site, above-ground demolition activities would be used to fill existing in-ground concrete sumps and vaults, prior to capping. Any soil outside the site fence that was contaminated as a result of the wood-treating operations, and which exceeds the established cleanup goal concentrations, would be excavated and moved onto the site property to be capped. The cap design would include a gravel layer, a soil layer, and a topsoil/vegetation cover, consistent with the 1996 ROD.

- Estimated Capital Cost: $3.55 million
- Estimated Annual O&M Costs: $0.56 million
- Estimated Total Present Value Cost: $4.11 million
- Estimated Implementation Time Frame: 3 to 6 months construction, 30 years O&M.

Alternative 2: On-Site Stabilization, Consolidation, and Capping

Alternative 2 includes all of the elements of Alternative 1, plus the excavation of soil with contamination exceeding the actions levels established in the 1996 ROD. Excavated soil would be stabilized on site with a mixture of Portland cement, fly ash, and activated carbon, to reduce contaminant mobility. This alternative would retain the RCRA corrective action management unit (CAMU) designated in the 1996 ROD, to allow for on-site treatment of hazardous wastes. The CAMU could be necessary to address RCRA land disposal restrictions or minimum technology requirements that are applicable to treatment and/or placement of hazardous wastes. Stabilized soil would be placed in consolidation cells on site, prior to capping the Site. Clean soil would be imported to the site to backfill the soil excavations. Following this backfilling, the site will be capped, as in Alternative 1. This alternative also includes off-site treatment and disposal of approximately 2,000 cubic yards of the most highly contaminated soil and other wastes that are not expected to be effectively stabilized on site. Because this 2,000 cubic yards of soil would be managed outside of the CAMU (i.e., off site at a RCRA-permitted disposal facility), land disposal restrictions and minimum technology requirements would be applicable. All wastes that are excavated and treated and/or disposed either on- or off-site will be managed in accordance with the applicable RCRA standards.

- Estimated Capital Cost: $9.08 million
- Estimated Annual O&M Costs: $0.56 million
- Estimated Total Present Value Cost: $9.64 million
- Estimated Implementation Time Frame: 1 year construction, 30 years O&M.

Alternative 3: Excavation, Off-site Disposal, and Capping

Alternative 3 includes all of the elements of Alternative 1 and soil excavation as described in Alternative 2. However, unlike Alternative 2, excavated soil would be disposed off site. Off-site treatment of soil prior to disposal would also be required, when leachate from that soil exceeds the established RCRA hazardous waste criteria for arsenic, chromium, or PCP using the toxicity characteristic leaching procedure (TCLP) . Soil exceeding the TCLP criteria for arsenic or chromium would be stabilized, and soil exceeding the TCLP criterion for PCP would be incinerated, prior to disposal, under the current regulations. The treatment, if needed, would be conducted at an off-site RCRA-permitted treatment, storage and disposal facility, in accordance with the regulations in effect at that time. Excavations would be backfilled with clean soil, as in Alternative 2, and the site would be capped, as in Alternatives 1 and 2.

- Estimated Capital Cost: $10.23 million
- Estimated Annual O&M Costs: $0.56 million
- Estimated Total Present Value Cost: $10.79 million
- Estimated Implementation Time Frame: 6 months to 1 year construction, 30 years O&M.

EVALUATION OF SOIL REMEDIAL ACTION ALTERNATIVES

EPA and DEQ criteria, defined in Table 3, are used to compare the alternatives, to determine their relative performance and to identify their respective advantages and disadvantages.

Overall Protection of Human Health and the Environment

All of the alternatives satisfy this criterion. All of the alternatives reduce risks by eliminating direct contact with contaminated soil by capping the Site. Continued protectiveness, however, is dependent on maintenance of the site cap. Some incremental reduction in risk is realized for Alternative 2 by stabilizing excavated soil and by removing approximately 2,000 cubic yards of highly contaminated soil. Under Alternative 3, an incremental reduction in long-term risk is realized through removal of approximately 20,000 cubic yards of highly contaminated soil for treatment (when applicable) and disposal at an off-site RCRA-permitted facility. Protective cleanup goals for all alternatives are based on assumed continued industrial use of the property. However, consistent with the 1996 ROD, these cleanup goals would also be protective for open space recreational use.

Compliance with ARARs

All of the cleanup alternatives under consideration would be designed to meet applicable, or relevant and appropriate, criteria or standards. All wastes that are excavated and treated either on- or off-site will be managed in accordance with the appropriate RCRA standards. The alternative involving on-site treatment and placement (in a treatment cell) of hazardous wastes (Alternative 2) would retain the designation of a RCRA CAMU, as provided in the 1996 ROD. The CAMU would allow for on-site treatment and for site-specific cleanup standards, rather than those dictated by the RCRA land disposal restrictions.

Long-Term Effectiveness

Alternative 3 best satisfies this criterion, since it includes removal of the largest quantity of highly contaminated soil from the Site, and poses the least risk should the cap fail. All of the alternatives rely, to some degree, on capping the Site, to attain long-term effectiveness, and all would satisfy this criterion, as long as the soil cap is not disturbed. The long-term effectiveness and permanence of the cap can be assured through restrictions on cap disturbance or penetration and by required inspection and maintenance of the cap. Compared to Alternative 1, Alternative 2 (stabilization) should increase the long-term effectiveness and permanence, and removes about 2,000 cubic yards of highly contaminated soil. However, treatability tests would be required to determine risks associated with solidified soil and the long-term reliability of such treatment, particularly for organic contaminants.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Alternative 1 does not provide any reduction of toxicity, mobility, or volume of contaminated soil through treatment. However, the mobility of soil contaminants through soil erosion and contact with surface water would be reduced, due to the cap. Alternative 2 involves a reduction in mobility of contaminants for the more highly contaminated soil through stabilization; however, stabilization results in a significantly increased volume of material to be managed. Additional reduction in mobility is realized, due to the cap, as discussed in Alternative 1. Alternative 3 may involve some treatment prior to disposal at a permitted off-site facility. Under current regulations, soil exceeding the TCLP hazardous waste criteria for arsenic and chromium would be stabilized prior to disposal, resulting in reduced mobility and increased volume. Soil exceeding the TCLP Hazardous Waste criterion for PCP would be incinerated prior to disposal, resulting in reduced toxicity through destruction of the contaminants. Alternative 3 would achieve the greatest reduction in the volume of contaminated soil remaining on site, but not through treatment.

Short-Term Effectiveness

Each of the alternatives would create some risk to site workers during construction of the cap. Also, site clearing and grading and placing the cap would result in dust production, and noise which could impact neighboring properties and significant increases in truck traffic. However, air monitoring and dust suppression measures, such as watering, would be used to minimize transport of dust to nearby residential areas. There would also be a significant increase in truck traffic, if the clean soil for the cap was delivered by trucks. However, use of barges is more likely. Alternatives 2 and 3 create some additional risk to site workers and neighbors, during the excavation of the contaminated soil, as a result of increased dust production, noise, and truck traffic. It should be noted that the good planning and implementation during recent demolition activities at the Site resulted in no complaints to DEQ about increased truck traffic, but rail transportation is also being considered. Alternative 2 has the greatest short-term risk to site workers and neighbors, due to the increased potential dust generation during soil handling for the solidification process. In addition, Alternative 2 would have the longest time frame for implementation - an estimated 1 year, versus an estimated six months to one year for Alternative 3 and an estimated 3 to 6 months for Alternative 1.

Implementability

Alternative 1 would be the easiest alternative to implement, since it only involves capping. Alternative 3 is also easily implemented. In addition to capping, it includes excavation and transportation to a permitted off-site disposal facility; any treatment required would be conducted at the disposal facility. Alternative 2 would require establishment of an on-site treatment facility and construction of an earthen berm to contain treated soil. Treatability testing would be required to determine the optimum mix of stabilizing agents and the reliability of stabilization under Alternative 2, particularly for organic contaminants. Materials, equipment, and labor are readily available for all of the alternatives.

Costs

The total estimated present value cost, for the original soil remedy in the 1996 ROD, was $10.66 million. The total estimated present value costs for the three proposed Alternatives are:

Alternative 1: $4.11 million

Alternative 2: $9.64 million

Alternative 3: $10.78 million

Because all three alternatives utilize materials, equipment, and labor that are readily available, these cost estimates are considered to have an acceptable degree of certainty and to be proportionate to the risk reduction achieved.

Supporting Agency Acceptance

Although EPA is responsible for issuance of this ROD Amendment, DEQ is the lead agency for implementing the remedial actions at the site. All of the alternatives are acceptable to DEQ.

TABLE 3 - EVALUATION CRITERIA FOR ALTERNATIVES

EPA Criteria

Overall protection of human health and the environment - How well does the alternative protect human health and the environment, both during and after construction?

Compliance with federal and state environmental standards - Does the alternative meet all applicable or relevant and appropriate requirements (ARARs)?

Long-term effectiveness and performance - How well does the alternative protect human health and the environment after completion of cleanup? What, if any, risks remain at the Site?

Short-term effectiveness - Are there potential adverse effects to either human health or the environment during construction or implementation of the alternative? How fast does the alternative reach the cleanup goals?

Reduction of toxicity, mobility, or volume through treatment - Does the alternative effectively treat the contamination to significantly reduce the toxicity, mobility, and volume of the hazardous substance?

Implementability - Is the alternative both technically and administratively feasible? Has the technology been used successfully on other similar sites?

Cost - What are the estimated costs of the alternative?

State (or supporting agency) acceptance - What are the DEQ's comments or concerns about the alternatives considered and the preferred alternative?

Community acceptance - What are the community's comments or concerns about the preferred alternative? Does the community generally support or oppose the preferred alternative?

DEQ Criteria

Protectiveness - Is the alternative protective of present and future public health, safety, and welfare, and the environment? See EPA criterion "overall protection of human health and the environment".

Effectiveness - What is the magnitude of risk from untreated waste remaining absent of any risk reduction achieved through onsite management of exposure pathways? What is the adequacy of engineering and institutional controls? Time until remedial action objectives would be achieved? See EPA criterion "long-term effectiveness and performance".

Long-term reliability - What is the reliability of treatment technologies in meeting treatment objectives? What is the reliability of engineering and institutional controls necessary to manage the risk from treatment residuals and untreated hazardous substances left on site?

Implementability - see EPA criterion "implementability".

Implementation risk - See EPA criterion "short-term effectiveness".

Reasonableness of cost - See EPA criterion "costs" . In addition, what is the degree to which the costs of the remedial action are proportionate to the benefits to human health and the environment created through risk reduction or risk management? What is the degree of sensitivity and uncertainty of the costs?

Treatment of hot spots - To what extent does the remedial action alternative treat hot spots of contamination?

Community Acceptance

Only one written comment was received during the 30-day public review and comment period. The commentor raised a number of questions, but supported DEQ's and EPA's preferred alternative, Alternative 3. Informal, verbal comments received at two public meetings were also generally supportive of Alternative 3 (see Appendix A).

Long-Term Reliability

Alternative 3 offers the greatest degree of long-term reliability, because, to the greatest extent feasible, the most highly contaminated soil would be excavated and treated and/or disposed off site at a RCRA-permitted disposal facility. For Alternative 2 (on-site stabilization), wastes would remain on site, but in a less mobile state. Treatability tests would be required to determine the long-term reliability of stabilization. For all three alternatives, the long-term reliability of the cap can be assured through restrictions on cap disturbance or penetration, and by required inspection and maintenance of the cap.

Treatment of Hot Spots

Alternatives 2 and 3 satisfy this criterion, because hot spots of contamination are excavated to the extent feasible and are treated either on or off site. Alternative 1 does not satisfy this criterion.

THE SELECTED SOIL REMEDY

Based on the new site data and the difficulty of treating dioxin-contaminated soil on site, DEQ and EPA have determined that excavation and off-site treatment and disposal is the most appropriate and protective remedy for contaminated soil. This remedy is preferred because it best satisfies the nine criteria. In particular, this remedy provides the greatest overall protection of human health and the environment, because approximately 20,000 cubic yards of the most highly contaminated soil will be removed from the site. It also provides the highest degree of long-term effectiveness and achieves the greatest reduction in toxicity, mobility or volume. The selected remedy includes:

- Completion of demolition and off-site disposal or recycling (except for concrete rubble) of above-ground structures and debris, and of underground structures that interfere with soil excavation;

- Excavation, to a maximum depth of approximately 4 feet, of contaminated soil that exceeds the action levels for arsenic, PAHs, and PCP, established in the 1996 ROD.

- Use of engineering controls during excavation and transportation, such as dust suppression with water sprays, truck washing prior to leaving the site; lining and covering trucks and/or rail cars during loading and transport; and planning truck routes and schedules to minimize potential adverse impacts on the surrounding community;

- Off-site treatment of excavated soil that exceeds the toxicity characteristic leaching procedure (TCLP) hazardous waste criteria for arsenic, chromium, and/or PCP, established under the Resource Conservation and Recovery Act (RCRA);

- Off-site disposal of excavated soil at a RCRA-permitted hazardous waste disposal facility, following any required treatment, as described above;

- Excavation of any soil beyond the property boundary with site-related contaminant concentrations above the cleanup goals, and placement of that soil onto the Site property to be capped;

- Backfilling of in-ground concrete sumps, vaults, etc. with concrete rubble from on-site demolition activities, and bacfilling of soil excavations with clean soil imported to the Site;

- Placement of a two-foot thick, clean soil cap over the entire Site, as described in the 1996 ROD, followed by long-term monitoring and maintenance; and

- Establishment of institutional controls, as described in the 1996 ROD, including but not limited to, deed notices containing information on the levels and location of contamination on the property, and deed restrictions, such as environmental easements or restrictive covenants limiting future uses of the Site to industrial/commercial or open-space recreational activities. The deed restrictions will prohibit future land uses not consistent with the level of protectiveness achieved by the cleanup. Deed restrictions may also include requirements for routine maintenance and repair of the cap, restrictions on soil excavation activities, without the necessary health and safety, and engineering controls, and the proper disposal of any contaminated soil excavated during installation or maintenance of underground utilities by future owners or lessees, as applicable. Deed restrictions will be set forth in a DEQ-approved form, running with the land and enforceable by DEQ against present and future owners of the property.

STATUTORY DETERMINATIONS

The amended remedy satisfies the provisions of Section 121 of CERCLA, 42 USC §9621 and the Oregon Revised Statutes (ORS) 465.315. DEQ and EPA believe that the amended remedy is protective of human health and the environment. Section 121 of CERCLA establishes several other statutory requirements and preferences. These preferences specify that, when complete, final remedial actions must comply with ARARs and must be cost-effective and

utilize permanent solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable. In addition, the statute establishes a preference for remedies that permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances over remedies that do not achieve such results through treatment. The following sections discuss how the selected remedy meets these requirements.

Protection of Human Health and the Environment. The selected remedy is protective of human health and the environment. The future land use at the Site will be restricted to industrial or open space recreational uses, and the selected remedy is protective for these uses at all points of exposure to each contaminated medium.

Soil contamination at the Site includes a mixture of both organic and inorganic contaminants. Through on- or off-site treatment, off-site disposal, and containment, the selected remedy will eliminate the risks posed by direct contact and incidental ingestion and reduce concentrations in soil to levels acceptable under state and federal guidelines.

Compliance With Applicable or Relevant and Appropriate Requirements. Pursuant to Section 121(d) of CERCLA, remedial actions shall, upon their completion, reach a level or standard of control for such hazardous substances, pollutants or contaminants which at least attains legally applicable or relevant and appropriate federal standards, requirements, criteria, or limitations, or any promulgated standards, requirements, criteria, or limitations under a state environmental or facility siting law that is more stringent than any federal standard.

The selected soil remedy, as amended, satisfies this requirement by complying with all ARARs. The action-specific and location-specific ARARs (there are no chemical-specific ARARs) for this remedy are listed below:

- Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands, May 24, 1977 incorporated in 40 CFR Part 6, Appendix A; Federal Clean Water Act, Section 404, 42 USC §1344. These requirements regulate actions that occur in wetlands and flood plains and may be applicable to actions that may adversely affect wetlands and flood plains.

- Solid Waste Disposal Act, also known as the Resource Conservation and Recovery Act, Subchapter III, (42 USC § § 6921-6939; 40 CFR Parts 261-264, and 268); Oregon Hazardous Waste Management Act (ORS 466.005 et seq.). State management of hazardous waste is authorized in the Oregon Hazardous Waste Management Act (ORS 466.005 et seq.). The law is implemented by regulations that are codified at OAR 340-100-001 et seq. Oregon hazardous waste management regulations adopt by reference most of the substantive provisions of Subtitle C of RCRA. Subtitle C is the primary federal law for the management of hazardous waste. The principal federal regulations that implement Subtitle C are codified in 40 CFR Parts 260-271. If federal and Oregon hazardous waste laws conflict, the more stringent law will be followed. These regulations address requirements for defining, characterizing and listing hazardous wastes; for generators, pertaining to manifesting, transporting, and record keeping; for transporters, pertaining to shipment of hazardous waste off-site; and land disposal

restrictions. These regulations are applicable to the excavation, characterization, transportation, treatment, and disposal of contaminated soil from the site.

- Procedures for Planning and Implementing Off-Site Response Actions (40 CFR 300.440). This regulation is applicable to, and will be complied with, for all wastes that are transported off-site for treatment and/or disposal.

- Endangered Species Act (16 USC 1531 et seq.). Peregrine Falcon have been observed near the Site; however, no nests or use of the Site by this protected bird have been observed. If Peregrine Falcon are observed at the Site during implementation of the remedy, precautionary steps will be taken to protect their habitat, in accordance with this regulation.

- Oregon Hazardous Substance Remedial Action Act and Rules (ORS 465.200 et seq.) The selected remedy meets the substantive requirements of these applicable regulations.

- Transportation of Hazardous Materials (49 CFR 171-177; OAR 860-66-001 et seq.) Transporters must comply with U.S. Department of Transportation labeling, containment, and spill reporting regulations found in 49 CFR, Subchapter C. Transportation of hazardous waste by rail or highway must comply with regulations of the Public Utility Commissioner (OAR 860-66-001 et seq.), which adopt by reference U.S. Department of Transportation regulations in Title 49 CFR. These regulations are applicable for hazardous or dangerous waste disposed off-site. The selected remedy will comply with these federal and related state regulations.

- EPA Area of Contamination Policy (Federal Register Volume 55, No. 46, March 8, 1990, pages 8759-8760). Excavation, consolidation, stockpiling, and sorting of soil and debris, and replacement of concrete rubble, will be conducted within the AOC at the Site.

- Willamette Greenway Plan. DEQ has received Land Use Compatibility Statements demonstrating the selected remedy is consistent with these requirements.

- The Lower Willamette River Management Plan (LWRMP). Requirements of the LWRMP are waived for environmental cleanup plans selected by DEQ and developed in consultation with the Division of State Lands.

Cost Effectiveness. The selected remedy is cost-effective, because it has been determined to provide overall effectiveness proportional to its costs and duration for remediation of the contaminated soil.

Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practical. DEQ and EPA determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be used cost-effectively at the McCormick & Baxter site. Of those alternatives that are protective of human health and the environment and comply with ARARs,

DEQ and EPA have determined that the selected remedy provides the best balance of trade-offs, in terms of long-term effectiveness and permanence; reduction in toxicity, mobility, or volume achieved through treatment; short-term effectiveness; implementability; cost; the statutory preference for treatment as a principle element; and considering state and community acceptance.

Preference for Treatment as a Principal Element. The remedy for contaminated soil, as amended, continues to utilize treatment, although to a lesser degree than the soil remedy contained in the 1996 ROD. Under current regulations, soil that exceeds the TCLP hazardous waste criterion for PCP will be incinerated at a permitted off-site facility prior to disposal. Soil (and ash resulting from incineration of site soil) that exceeds the TCLP criteria for arsenic or chromium will be stabilized prior to disposal in a permitted off-site landfill (actual treatment requirements will be dependent upon the regulations in place at the time of disposal). During development of this ROD Amendment, on-site treatment of wastes (i.e., stabilization) was evaluated to address the statutory preference for treatment to permanently and significantly reduce the volume, toxicity, or mobility of principal threat wastes. However, on-site stabilization of soil would result in a significant increase in the volume of wastes to be managed on-site. Furthermore, the long-term reliability of stabilization for organic contaminants (e.g., dioxin) is uncertain. Therefore, off-site treatment (when necessary) and disposal was selected as part of the amended remedy.

DOCUMENTATION OF SIGNIFICANT CHANGES

There have been no significant changes from the Proposed Plan. The selected Remedial Action for contaminated soils is the same as that described to the public in the Proposed Plan dated October 1, 1997.

APPENDIX A

RESPONSIVENESS SUMMARY

AMENDED RECORD OF DECISION

McCORMICK AND BAXTER CREOSOTING COMPANY PORTLAND PLANT

RESPONSIVENESS SUMMARY

This responsiveness summary summarizes and responds to substantive comments received during the public comment period regarding the Oregon Department of Environmental Quality's (DEQ's) and the United States Environmental Protection Agency's (EPA's) proposed revised cleanup plan for the McCormick & Baxter Creosoting Company Site in Portland, Oregon. Section 117(c) of CERCLA, 42 USC §9617(c) provides for addressing and documenting changes to the selected remedy after issuance of a Record of Decision (ROD). Additionally, since fundamental changes are being made to the remedy, public participation and documentation procedures specified in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Section 300.435(c)(2)(ii) have been followed.

DEQ and EPA published notice of the proposed ROD Amendment in the Oregon *Secretary of State's Bulletin* and in *The Oregonian* newspaper on October 1, 1997. In addition, notices were mailed to 130 individuals on DEQ's mailing list for the site. A public comment was provided from October 1, through October 31, 1997. A public meeting was held near the site on October 9, 1997. Nineteen people attended. DEQ and EPA staff also attended a meeting of the Friends of Cathedral Park Neighborhood Association, on November 11, 1997, to discuss the proposed ROD Amendment.

During the public comment period, written comments were received from one individual, Mr. Peter Teneau. In addition, informal verbal comments were received during the public meeting on October 9, and at the neighborhood association meeting on November 11. A summary of the comments received, and DEQ's and EPA's responses, are presented below.

COMMENTS FROM MR. PETER TENEAU, DATED OCTOBER 31, 1997.

The majority of Mr. Teneau's comments referenced previous recommendations included in the January 16, 1996 *Review Report on McCormick & Baxter Creosoting Site - Proposed Cleanup Plan and Feasibility Study*, prepared by SJO Consulting Engineers, Inc. (SJO Report). DEQ and EPA have previously responded to those recommendations in the Responsiveness Summary (Appendix A) of the 1996 Record of Decision (ROD). DEQ and EPA have responded to these comments of Mr. Teneau by referencing the appropriate sections in the 1996 Responsiveness Summary, as follows:

1. **COMMENT**: Mr. Teneau emphasized Recommendation 5 from the SJO Report without comment. Recommendation 5 recommended off-site ambient air quality monitoring in residential areas nearest the site, during remedial action activities.

RESPONSE: DEQ and EPA have previously responded to this SJO Recommendation. See Comment 5 in the Responsiveness Summary (Appendix A), in the 1996 ROD.

2. **COMMENT**: Mr. Teneau referenced Recommendations 12, 13, and 14 from the SJO Report. These recommendations concern the potential future use of the site and residual risks. In addition, Mr. Teneau stated that the method of capping will have a direct bearing on future use of the site and should be planned in a more considered way than simply laying two feet of soil cap over the entire site. Also, that it would be better to know what the future use of the property will be before undertaking a more site-specific plan, if this would not incur undue delay in the cleanup. In addition, Mr. Teneau noted that an impermeable cap placed over the St. Johns Landfill did not allow for the planting of trees. He expressed concern that similar restrictions at the McCormick & Baxter site would make the land unattractive, and notes that many people would like to see the property become a park. In closing, he asked if excavations deeper than four feet would be allowed, to provide for tree planting.

RESPONSE: DEQ and EPA have previously responded to these SJO Recommendations. See Comments 12, 13 and 14 in the Responsiveness Summary (Appendix A), in the 1996 ROD. In addition, Section 10.1.5 of the ROD states in part that cap installation "may be delayed up to 2 years to coordinate future site development infrastructure into final cap design." Section 10.1.5 further states that "Additional soil to increase the thickness of the cap may be added or required of future landowners when zoning and future property use become more firmly established. The appropriate cap thickness would take into consideration building foundations; root depth for grasses, bushes, and trees; and surface contours. The actual thickness of the cap and the soil/material type used may vary, depending on developments in land ownership, land use zoning and use designations, and engineering specifications." The ROD Amendment does not change this portion of the ROD. DEQ and EPA will confer with the City of Portland, the Port of Portland, Metro and/or other appropriate land use planning agencies in developing a final design for the site cap. As presently envisioned, the cap would be permeable (unlike the cap at the St. Johns Landfill) and would allow for the planting of trees. Excavations greater than 4 feet could be allowed, as long as excavated soil was appropriately managed.

3. **COMMENT**: Mr. Teneau emphasized Recommendations 25 and 26 from the SJO Report without further comment. These recommendations request that residual risks be calculated after soil excavation and treatment, but before capping. Also, that the volume of soil excavation required to achieve the cleanup goals, without the benefit of capping, should be determined.

RESPONSE: DEQ and EPA have previously responded to these SJO Recommendations. See Comments 25 and 26 in the Responsiveness Summary (Appendix A), in the 1996 ROD. However, the response to Comment 25 envisioned on-site treatment of excavated soil. DEQ and EPA stated that residual risk would be calculated following on-site treatment. Since the ROD Amendment substitutes off-site disposal for on-site treatment, residual risk will be based on the action levels for soil excavation. The action levels for arsenic and carcinogenic PAHs (constituents of creosote) are equivalent to an excess lifetime cancer risk of 1×10^{-4} (1 in 10,000), and the action level for pentachlorophenol is equivalent

to an excess lifetime cancer risk of 1 x 10^{-5} (1 in 100,000), based on industrial land use. These risk levels are within the range considered acceptable by EPA, for the anticipated land use, but exceed the level considered acceptable by DEQ. Therefore, a cap is required, in addition to the planned soil excavation, to comply with DEQ's rules. The residual risk for dioxin cannot be calculated, due to insufficient data, but the soils having the highest concentrations of dioxin will be excavated and removed from the site, and the soil cap and institutional controls will greatly reduce any residual risk.

4. **COMMENT**: Mr. Teneau referenced Recommendation 29 from the SJO Report and added that one remedial action alternative without capping would provide a useful perspective. This recommendation requested that DEQ and EPA consider at least one remedial action alternative that did not include capping.

RESPONSE: DEQ and EPA have previously responded to this SJO Recommendation. See Comment 29 in the Responsiveness Summary (Appendix A), in the 1996 ROD.

5. **COMMENT**: Mr. Teneau emphasized Recommendation 30 from the SJO Report and noted that this comment also relates to SJO Recommendations 12, 13 and 14, as described above. Recommendation 30 requests that other cap designs be considered which provide better isolation of contaminants (e.g., geotextile, asphalt or other barriers to intrusion).

RESPONSE: DEQ and EPA have previously responded to this SJO Recommendation. See Comment 30 of the Responsiveness Summary (Appendix A), in the 1996 ROD. It should also be noted that SJO Recommendation 30, which asks DEQ and EPA to consider an impermeable cap, seems to conflict with Mr. Teneau's request, in Comment 2 above, for a cap design that would facilitate the planting of trees.

6. **COMMENT**: Mr. Teneau referenced Recommendation 31, 32, 33, and 34 from the SJO Report and asked additional questions concerning the groundwater and sediment remedies.

RESPONSE: DEQ and EPA have previously responded to these SJO Recommendations. See Comments 31, 32, 33, and 34 in the Responsiveness Summary (Appendix A), in the 1996 ROD. However, these comments, and Mr. Teneau's supplemental comments and questions, pertain to the groundwater and sediment remedies which are beyond the scope of this ROD Amendment (i.e., only the soil remedy is being amended). DEQ will respond to Mr. Teneau concerning these issues, separately from this Responsiveness Summary.

In addition to the above comments, Mr. Teneau also commented on the October 1, 1997 Proposed Plan for the ROD Amendment, as follows:

7. **COMMENT**: Mr. Teneau stated that he much prefers Alternative 3, to Alternatives 1 and 2, but he expressed concern about the handling of excavated soil. He recommended that all possible precautions be taken to insure that there is minimal escape of dust and/or liquid from trucks onto roadways or into the environment.

RESPONSE: DEQ and EPA acknowledge Mr. Teneau's support of Alternative 3, which is DEQ's and EPA's recommended alternative. In addition, DEQ and EPA recognize the need to control leaks, spills or other discharges of contaminated soil and/or water from trucks. The remedial action construction specifications will include strict requirements and precautionary measures related to truck loading and contaminated soil transportation in accordance with U.S. Department of Transportation (DOT), EPA Resource Conservation and Recovery Act (RCRA), and DEQ regulations. Requirements will include, at a minimum, lining trucks prior to loading and covering loads with tarps during transport. These regulations also require the immediate cleanup of any spill of hazardous wastes by transporters.

A truck washing rack has been constructed at the McCormick & Baxter site to clean the exterior and tires of all trucks leaving the site. All trucks are inspected for the presence of visible soil contamination by DEQ's contractor, prior to leaving the site. Dust control measures, such as water sprays, will be used as necessary to control dust generation during soil excavation and truck loading.

In addition, as stated below, DEQ and EPA will evaluate rail haul as an alternative to truck transport of excavated soil from the site.

VERBAL COMMENTS RECEIVED AT PUBLIC MEETINGS

1. **COMMENT**: The October 1995 Proposed Plan indicated that excavation and off-site disposal of soil would be too expensive. Now DEQ and EPA are saying that the cost of excavation and off-site disposal is about the same as the cost of on-site biological treatment and stabilization, as described in the 1996 ROD. How can this be?

RESPONSE: There are several reasons for this apparent inconsistency. First, the cost presented in the ROD is for excavation and on-site treatment of approximately 30,000 cubic yards of soil. The cost in the proposed ROD Amendment is for excavation and off-site management of approximately 20,000 cubic yards of soil. Second, the costs for off-site disposal of contaminated soil fluctuate with market conditions, and are currently 20 to 25 percent lower than they were when the Proposed Plan was issued in 1995. Third, DEQ and EPA recommended on-site treatment in 1995, instead of off-site disposal, primarily because of the statutory preference for treatment as a principal element of the remedy. Current information, however, indicates that on-site treatment would not be effective.

2. **COMMENT**: A number of individuals expressed concern about potential increased truck traffic through their neighbor, and about potential spills or leaks of waste from trucks.

RESPONSE: See response to comment number 7 above.

3. **COMMENT**: A number of individuals requested that rail haul be considered as an alternative to truck transportation of excavated soil.

RESPONSE: DEQ and EPA will evaluate the possibility of using rail transportation, as requested.

APPENDIX B

ADMINISTRATIVE RECORD

March 1998

McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND PLANT
PORTLAND, OREGON

ADMINISTRATIVE RECORD INDEX

1.0 SITE IDENTIFICATION

1.1 Site inspection, McCormick & Baxter Creosoting Company. Prepared for the U.S. Environmental Protection Agency, Region 10. Ecology and Environment, Seattle, WA. December 9, 1983

1.2 Preliminary Site Investigation of McCormick & Baxter Creosoting Company Plant, dated April 3, 1984, prepared by CH2M Hill. Submitted to Oregon Department of Environmental Quality by McCormick & Baxter.

1.3 McCormick & Baxter Creosoting Company site water and soil investigation. Interim Report. Submitted to Oregon Department of Environmental Quality, Portland, OR. CH2M Hill, Portland, OR. January 1985.

1.4 CH2M Hill. February 1987. McCormick & Baxter Creosoting Co. Portland Plant: environmental contamination site assessment and remedial action report. Volume 1. Submitted to Oregon Department of Environmental Quality, Portland, OR. Prepared by McCormick & Baxter Creosoting Company and CH2M Hill, Portland, OR.

1.5 CH2M Hill. December 1989. McCormick & Baxter Creosoting Company 1988 and 1989 environmental monitoring summary report. Prepared for McCormick & Baxter Creosoting Company, Portland, OR. CH2M Hill, Portland, OR.

1.6 McCormick & Baxter Creosoting Company 1990 environmental monitoring summary report. Prepared for McCormick & Baxter Creosoting Company, Portland, OR. CH2M Hill, Portland, OR. December 1990.

2.0 REMOVAL RESPONSE

2.1. PTI. March 1991. McCormick & Baxter Creosoting Company interim remedial action work plan. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA.

2.2. PTI. August 1991. McCormick & Baxter Creosoting Company interim remedial action summary. Draft. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA.

2.3. PTI. September 1991. McCormick & Baxter Creosoting Company interim remedial action creosote recovery work plan. Draft. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA.

2.4. McCormick & Baxter Creosoting Company DNAPL Extraction Design Report. October 1992. Prepared for Oregon Department of Environmental Quality, Portland. PTI Environmental Services.

2.5. Creosote extraction system performance evaluation. McCormick & Baxter Creosoting Company. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Lake Oswego, OR. June 1993.

2.6. McCormick & Baxter Creosoting Company Extracted Groundwater Pilot Treatment System Preliminary Engineering Analysis. March 1994. Prepared for Oregon Department of Environmental Quality and PTI Environmental Services by Onsite Enterprises.

2.7. Site Activity Status Report, McCormick & Baxter Creosoting Company. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Lake Oswego, OR. June 1994.

2.8. NAPL Extraction System Operations and Maintenance Manual, McCormick & Baxter Creosoting Company. Prepared for Oregon Department of Environmental Quality by PTI Environmental Services, dated December 1994.

2.9. Tank Dismantling Summary Report, McCormick & Baxter Creosoting Company. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Lake Oswego, OR. January 1995.

2.10. Quarterly Creosote Extraction Summary, Fourth Quarter 1994. McCormick & Baxter Creosoting Company. Prepared for Oregon Department of Environmental Quality by PTI Environmental Services, dated February 1995.

2.11. EPA Action Memorandum dated March 2, 1995 authorizing Removal Action for the McCormick & Baxter Creosoting Site.

2.12. Quarterly Creosote Extraction Summary, First Quarter 1995. McCormick & Baxter Creosoting Company. Prepared for Oregon Department of Environmental Quality by PTI Environmental Services, dated April 1995.

2.13. Quarterly Creosote Extraction Summary, Second Quarter 1995. McCormick & Baxter Creosoting Company. Prepared for Oregon Department of Environmental Quality by PTI Environmental Services, dated July 1995.

2.14. Monthly Creosote Extraction Summary Reports dated June 1993 through August 1994, Prepared for Oregon Department of Environmental Quality by PTI Environmental Services.

2.15. Pre-Remedial Design Work Plan, McCormick & Baxter Creosoting Company Portland Plant. Prepared for Oregon Department of Environmental Quality by Ecology & Environment, Inc., dated February 1996.

2.16. Memorandum from Mike Wiltsey, DEQ Northwest Region, to Jim Sheetz, DEQ Northwest Region, dated February 21, 1995. Memorandum provides mixing zone modeling results for interim NPDES discharge limits for treated groundwater discharge to Willamette River.

3.0 REMEDIAL INVESTIGATION (RI)

3.1. McCormick & Baxter Creosoting Company Remedial Investigation and Feasibility Study Sampling and Analysis Plan and Quality Assurance Project Plan. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA. September 1990.

3.2. McCormick & Baxter Creosoting Company Remedial Investigation and Feasibility Study Work Plan. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA. September 1990.

3.3. McCormick & Baxter Creosoting Company Phase II Remedial Investigation Work Plan. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA. September 1991.

3.4. McCormick & Baxter Creosoting Company Phase II Remedial Investigation Sampling and Analysis Plan. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA. October 1991.

3.5. McCormick & Baxter Creosoting Company Remedial Investigation/Feasibility Study Pilot Extraction Testing Results. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA.

3.6. McCormick & Baxter Creosoting Company Remedial Investigation Report. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA. September 1992.

3.7. Supplemental Characterization and Initial Removal of Contaminated Soils, McCormick & Baxter Creosoting Company Draft. Prepared for Oregon Department of Environmental Quality. PTI Environmental Services, Lake Oswego, OR. October 1994.

4.0 FEASIBILITY STUDY (FS)

4.1. PTI. September 1992. McCormick & Baxter Feasibility Study Report. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Lake Oswego, OR.

4.2. McCormick & Baxter Creosoting Company Revised Feasibility Study. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Lake Oswego, OR. September 1995.

4.3. McCormick & Baxter Creosoting - Review of Treatability Study Data for Wood-Treating Sites. Prepared for Oregon Department of Environmental Quality, Portland, OR. PTI Environmental Services, Bellevue, WA. August 1992

4.4. Solid-Phase Bioremediation of Creosote- and PCP-contaminated soils: pilot test results. Prepared for McCormick & Baxter Creosoting Company, Portland, OR. CH2M Hill, Portland, OR. 1990.

4.5. Supplemental Technical Note: Laboratory Study PCP Degradation in an Oregon Soil. Prepared by Grace Dearborn for U.S. Environmental Protection Agency dated May 1995.

4.6. Memorandum to the McCormick & Baxter Project file from Bruce Gilles, Project Manager dated May 22, 1995. Provides written comments on the draft Revised FS Report dated April 1995.

4.7. Memorandum to McCormick & Baxter Project File dated October 18, 1995 concerning interpretations of applicable or relevant and appropriate RCRA regulations for the McCormick & Baxter Site.

4.8. Memorandum to McCormick & Baxter Project File, dated March 14, 1996, by Bruce Gilles, Project Manager, Oregon DEQ. Errata and Addenda for Revised Feasibility Study, Appendix C - Alternate Concentration Limits Development.

4.9. Memorandum to McCormick & Baxter Project File, dated March 11, 1996, by Bruce Gilles, Project Manager, Oregon DEQ - Rationale for Revision of Remedial Action Level for Treatment for PAHs.

4.10. Memorandum from Bruce Gilles, DEQ Project Manager, to Jim Sheetz, DEQ Northwest Region Water Quality dated March 8, 1996. Final NPDES Discharge Limits for Treated Groundwater Discharge to Willamette River.

4.11. Memorandum from Yu-Ting Liu, EPA Remedial Project Manager, to McCormick & Baxter Project File concerning EPA's assessment of DEQ's March 11, 1996 memorandum on PAH action level revisions.

5.0 RECORD OF DECISION (ROD)

5.1. McCormick & Baxter Cleanup Plan dated December 1992 prepared by Oregon Department of Environmental Quality.

5.2. The Proposed Cleanup Plan for the McCormick and Baxter Creosoting Site prepared by the Oregon Department of Environmental Quality and U.S. Environmental Protection Agency. October 30, 1995.

5.3. Record of Decision, McCormick & Baxter Creosoting Company Portland Plant dated March 1996.

5.4. Proposed Cleanup Plan for ROD Amendment, McCormick and Baxter Creosoting Site, Portland, Oregon. Prepared by the Oregon Department of Environmental Quality and U.S. Environmental Protection Agency. October 1, 1997.

6.0 STATE COORDINATION

6.1. Letter from Mary Wahl, Oregon DEQ to Carol Rushin, EPA Region X dated March 4, 1994 requesting State Lead for the McCormick & Baxter Site.

6.2. Letter from Carol Rushin, EPA Region X, to Mary Wahl, Oregon DEQ, dated May 11, 1994 prepared in response to DEQ request for State Lead for remedial design and remedial action for the McCormick & Baxter Site.

6.3. Letter from Mary Wahl, Oregon DEQ, to Carol Rushin, EPA Region X, in response to EPA's May 11, 1994 letter.

6.4. Memorandum from Allison Hiltner, EPA Remedial Project Manager, to Bruce Gilles, DEQ Project Manager dated November 2, 1994 transmitting comments on the 1992 RI/FS and necessary documentation to support a final remedy decision by EPA.

6.5. Superfund State Contract between U.S. Environmental Protection Agency and Oregon Department of Environmental Quality dated March 30 1995. Contract provides funding from EPA for removal action for continued creosote extraction activities being performed by DEQ.

6.6. Cooperative Agreement between Oregon Department of Environmental Quality and U.S. Environmental Protection Agency for funding of interim remedial actions (IRA), March 1995.

6.7. Memorandum from Scott Huling, U.S. EPA Robert S. Kerr Environmental Research Laboratory, to Allison Hiltner, EPA Remedial Project Manager, dated April 11, 1995. Memorandum of comment on Technical Memorandum on Groundwater Remediation, for the McCormick & Baxter Creosoting Site.

6.8. Memorandum from Allison Hilter, EPA Remedial Project Manager, to Bruce Gilles, DEQ Project Manager, dated May 8, 1995. Provides EPA comments on the draft Revised FS, dated April 1995.

6.9. IRA Credit Application from Oregon DEQ to U.S. EPA for remedial action costs incurred by DEQ prior to placement of the McCormick & Baxter Creosoting Company site on the NPL, dated September 29, 1995.

6.10. Cooperative Agreement Amendment for IRA activities between Oregon DEQ and U.S. EPA, dated February 29, 1996.

7.0 ENFORCEMENT

7.1. Stipulation and Final Order No. HW/WQ-NWR-97-64 between McCormick & Baxter Creosoting Company and the Oregon Department of Environmental Quality, dated November 24, 1987.

7.2. CERCLA Section 104(e) letter from Michael Gearheard, U.S. EPA Region 10 to Rhone Poulenc Inc., dated January 11, 1996.

7.3. CERCLA Section 104(e) letter from Michael Gearheard, U.S. EPA Region 10 to Burlington Northern Railway Company, dated January 11, 1996.

8.0 HEALTH ASSESSMENTS

8.1. Public Health Assessment, McCormick & Baxter Creosoting Company, Portland, Multnomah County, Oregon. CERCLIS No. ORD009020603. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry. June 13, 1995.

8.2. Toxicological Profile for Pentachlorophenol. Agency for Toxic Substances and Disease Registry. Document No. ATSDR/TP-93/13.

8.3. Toxicological Profile for Creosote, Draft Report. Agency for Toxic Substances and Disease Registry. February 1995.

8.4. Toxicological Profile for 2,3,7,8-tetrachlorodibenzodioxin (TCDD), Agency for Toxic Substances and Disease Registry. Document No. ATSDR/TP-88/23.

8.5. Toxicological Profile for Arsenic. Agency for Toxic Substances and Disease Registry. Document No. ATSDR/TP-92/02.

8.6. Focused Human Health Risk Evaluation, McCormick & Baxter Site, Portland, Oregon. Prepared by Ecology & Environment, Inc. for the Oregon Department of Environmental Quality. August 27, 1997.

9.0 NATURAL RESOURCE TRUSTEES

9.1. Letter from Bruce Gilles, Oregon DEQ to Russell Peterson, U.S. Fish and Wildlife Service requesting endangered species consultation for the McCormick & Baxter Creosoting Site, Portland. November 18, 1994.

9.2. Letter from Russell Peterson, U.S. Fish and Wildlife Service to Bruce Gilles, Oregon DEQ, dated January 30, 1995 providing list of endangered or threatened species that may occur within the area of the McCormick & Baxter Creosoting Site.

9.3. Notification of Natural Resource Trustees Letter from Deborah Yamamoto, EPA Remedial Project Manager, to Mr. Chris Beaverson, NOAA Coastal Resource Coordinator, dated October 30, 1995 requesting comment on DEQ and EPA Proposed Cleanup Plan for the McCormick & Baxter Creosoting Co. Superfund Site.

9.4. Notification of Potential Natural Resource Damages Letter from Deborah Yamamoto, EPA Remedial Project Manager, to Mr. Donald Samson, Chairman, Board of Trustees, Confederated Tribes of the Umatilla Indian Reservation, dated October 30, 1995 requesting comment on DEQ and EPA Proposed Cleanup Plan for the McCormick & Baxter Creosoting Co. Superfund Site.

9.5. Notification of Potential Natural Resource Damages Letter from Deborah Yamamoto, EPA Remedial Project Manager, to Mr. Donald Samson, Chairman, Board of Trustees, Confederated Tribes of the Umatilla Indian Reservation, dated October 30, 1995 requesting comment on DEQ and EPA Proposed Cleanup Plan for the McCormick & Baxter Creosoting Co. Superfund Site.

9.6. Notification of Potential Natural Resource Damages Letter from Deborah Yamamoto, EPA Remedial Project Manager, to Mr. Samuel N. Penney, Chairman, Nez Perce Tribe of Idaho, dated October 30, 1995 requesting comment on DEQ and EPA Proposed Cleanup Plan for the McCormick & Baxter Creosoting Co. Superfund Site.

9.7. Notification of Potential Natural Resource Damages Letter from Deborah Yamamoto, EPA Remedial Project Manager, to Bruce Brunoe, Chairman, Confederated Tribes of Warm Springs, dated October 30, 1995 requesting comment on DEQ and EPA Proposed Cleanup Plan for the McCormick & Baxter Creosoting Co. Superfund Site.

9.8. Notification of Potential Natural Resource Damages Letter from Deborah Yamamoto, EPA Remedial Project Manager, to Jerry Meninick, Chairman, Yakima Tribal Council, dated October 30, 1995 requesting comment on DEQ and EPA Proposed Cleanup Plan for the McCormick & Baxter Creosoting Co. Superfund Site.

9.9. Notification of Natural Resource Trustees Letter from Deborah Yamamoto, EPA Remedial Project Manager, to Mr. Charles Polityka, U.S. Department of Interior, dated October 30, 1995 requesting comment on DEQ and EPA Proposed Cleanup Plan for the McCormick & Baxter Creosoting Co. Superfund Site.

9.10. Preliminary Natural Resources Survey for the McCormick & Baxter Creosoting Company Superfund Site dated September 1995. Prepared by National Oceanic and Atmospheric Administration for U.S. Environmental Protection Agency.

10.0 PUBLIC PARTICIPATION

10.1. DEQ Proposed plan for the McCormick and Baxter Creosoting Company Site. Oregon Department of Environmental Quality, Portland, OR. December 1992.

10.2. News Release dated December 30, 1992 and February 4, 1993 issued by Oregon DEQ; Public notices dated December 30, 1992 to Secretary of State's Bulletin and Oregonian. Follow-up advertisements/articles published in local newspapers:

- *St. Johns Review*. Thursday, December 31, 1992.
- *Daily Journal of Commerce*. January 5, 1993.
- *Oregon Insider*. January 15, 1993.

10.3. DEQ Project Public Relations files containing Fact Sheets mailed to project mailing list between November 1990 to July 1995, newspaper articles and information meetings concerning the McCormick & Baxter Creosoting Site investigations and interim cleanup activities conducted by DEQ.

10.4. Letter of Comment on Proposed Cleanup Plan from Julie Winslow to Paul Burnet, Oregon DEQ, dated February 2, 1993.

10.5. Letter of Comment on Proposed Cleanup Plan from John E. Lilly, Oregon Division of State Lands, to Paul Burnet, Oregon DEQ dated February 3, 1993.

10.6. Letter of Comment on Proposed Cleanup Plan from Dave King, Cathedral Park

Neighborhood Association to Paul Burnet, Oregon DEQ, received February 16, 1993.

10.7. Memoranda to McCormick & Baxter project file from Paul Burnet, Oregon DEQ summarizing the January 26, 1993 and February 2, 1993 public comment meeting on proposed plan.

10.8. Letter of Comment on Proposed Cleanup Plan from Lee Poe, Chair of Portsmouth Neighborhood Association and Odor Abatement Committee to Paul Burnet, Oregon DEQ, dated March 5, 1993.

10.9. Memorandum of Comment on Proposed Cleanup Plan from Pam Arden, Kenton Neighborhood Association, to Paul Burnet, Oregon DEQ, dated March 8, 1993.

10.10. Response to Comment on the Proposed Cleanup Plan letters from Paul Burnet to Pam Arden, Julie Winslow, Dave King, and Lee Poe dated March 13, 1993.

10.11. Community Relations Plan for the McCormick & Baxter Creosoting Site prepared by the Oregon Department of Environmental Quality, dated January 23, 1995.

10.12. Advertisements Announcing Availability of Proposed Cleanup Plan for Public Comment in the Oregonian and St Johns Review Newspapers, November 6, 1995.

10.13. Letter from Dave Soloos, President of WAKE-UP, dated November 14, 1995, to Bruce Gilles, DEQ Project Manager requesting a 60 day extension of the public comment period for the proposed cleanup plan.

10.14. Letter from Bruce Gilles, Oregon DEQ, to Dave Soloos, President of WAKE-UP, dated November 22, 1995 notifying WAKE-UP of DEQ and EPA's decision to grant a 35 day extension of the public comment period to Friday, January 15, 1996.

10.15. Transcript and written comments from the public hearing held on November 28, 1995 at St Johns Community Center.

10.16. Letter of comment on the 1995 Proposed Cleanup Plan from Richard Robinson, Agency for Toxic Substances and Disease Registry, dated December 5, 1995.

10.17. Letter of comment on the 1995 Proposed Cleanup Plan from Mike Burton, Executive Officer for METRO, dated December 8, 1995.

10.18. Letter of comment on the 1995 Proposed Cleanup Plan from Bowen Blair, Vice President of The Trust for Public Land, dated December 29, 1995.

10.19. Letter of comment on the 1995 Proposed Cleanup Plan from Connie Lively, Project Coordinator for Portland Development Commission, dated January 3, 1996.

10.20. Review Report on McCormick & Baxter Creosoting Site - Proposed Cleanup Plan and Feasibility Study, Prepared for Willamette Associates for Kindness to the Environment in University Part (WAKE-UP) by SJO Consulting Engineers, dated January 16, 1996.

10.21. Letter of comment on the 1995 Proposed Cleanup Plan from Stephen Miller, Architect for Turtle Cove Community Trust, dated January 16, 1996.

10.22. Letter from James E. Benedict; Cable Huston Benedict & Haagensen, to Bruce Gilles, DEQ, dated January 16, 1996.

10.23. Letter from Bill Barnes to Bruce Gilles, dated December 8, 1995.

10.24. Letter of comment on the 1995 Proposed Cleanup Plan from Russell D. Peterson, State Supervisor, U.S. Department of Interior Fish & Wildlife Service dated January 19, 1996.

11.0 LAWS AND REGULATIONS

11.1. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986.

11.2. The National Contingency Plan, 40 CFR Part 300.

11.3. Oregon Hazardous Substance Remedial Action Rules OAR Chapter 340, Division 122.

11.4. Oregon Hazardous Waste Management Act/RCRA. (ORS 466.005 et seq. and implementing regulations codified in OAR 340-100-001 et seq.

11.5. Corrective Action Management Units and Temporary Units; Final Rule. Federal Register, Volume 58, No. 29, Tuesday, February 16, 1993.

11.6. Federal Register, Volume 59, No. 103, Tuesday, May 31, 1994 Listing McCormick & Baxter Creosoting Site on the National Priorities List.

11.7. Federal Register, Volume 58, No. 182, Wednesday, September 22, 1993. Amendments to NCP; Procedures for Planning and Implementing Off-Site Response Actions.

12.0 TECHNICAL SOURCES AND GUIDANCE DOCUMENTS

12.1. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, OERR, EPA/540/G-89/004, OSWER Directive 9355.3-01, October 1988.

12.2. Risk Assessment Guidance for Superfund, Volume I, Human Health and Evaluation Manual (Part A), EPA/540/1-89/002, December 1989.

12.3. Human Health Evaluation Manual, Part B: Development of Risk Based Preliminary Remediation Goals, OSWER Directive No. 9285.7-01B, December 1991.

12.4. Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual, EPA/540/1-89/001, March 1989.

12.5. Final Guidance on Administrative Records for Selecting CERCLA Response Actions, OSWER Directive No. 9833.3A-1.

12.6. CERCLA Compliance With Other Laws Manual, Part 1, EPA/540/G-89/006, August 1988.

12.7. CERCLA Compliance With Other Laws Manual, Part 2, Clean Air Act and Other Environmental Statutes and State Requirements, EPA/540/G-89/009, August 1989.

12.8. Guidance on Remedial Actions for Contaminated Ground Water, OSWER Directive 9283.1-2FS, April 1989.

12.9. On-Site Treatment of Creosote and Pentachlorophenol Sludges and Contaminated Soil, EPA/600/2-91/019, May 1991.

12.10. Contaminants and Remedial Options at Wood Preserving Sites, EPA/600/R-92/182. Prepared by Foster Wheeler Enviresponse, Inc., Edison, NJ. Prepared for U.S. Environmental Protection Agency, Office of Research and Development, Risk Reduction Engineering Laboratory, Washington, DC., October 1992.

12.11. Presumptive Remedies for Soils, Sediments, and Sludges at Wood Treating Sites. U.S. Environmental Protection Agency. Draft Publication, November 1994.

12.12. Technology Selection Guide for Wood Treater Sites. Memorandum from Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Washington, DC., EPA/540/-F-93-020, May 1993.

12.13. Guidance for Evaluating the Technical Impracticability of Ground Water Restoration. U.S. Environmental Protection Agency. Directive 9234.2-25, September 1993,

12.14. DNAPL Site Evaluation. Prepared by Robert M. Cohen and James W. Mercer of Geotrans, Inc. for the U.S. Environmental Protection Agency. EPA/600/R-93/022. February 1993.

12.15. Land Use in the CERCLA Remedy Selection Process. U.S. Environmental Protection Agency. OSWER Directive No. 9355.7-04. May 1995.

12.16. Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual, Part C, Risk Evaluation of Remedial Alternatives. OSWER Directive 9285.7-01C.

12.17. DNAPL Site Characterization, EPA/540/f-94/049. OSWER Publication 9355.4-16FS. September 1994.

13.0 REMEDIAL DESIGN

13.1. Remedial Design Work Plan, McCormick & Baxter Creosoting Company, Portland Plant, Portland, Oregon. Prepared by Ecology & Environment, Inc. for the Oregon Department of Environmental Quality. October 1996.

13.2. Wood Debris Sampling Plan, McCormick & Baxter Creosoting Company, Portland Plant, Portland, Oregon. Prepared by Ecology & Environment, Inc. for the Oregon Department of Environmental Quality. October 1996.

13.3. Sampling and Quality Assurance Plan, Site Management Plan, Data Management Plan, McCormick & Baxter Creosoting Company, Portland Plant, Portland, Oregon. Prepared by Ecology & Environment, Inc. for the Oregon Department of Environmental Quality. November 1996.

13.4. Literature and Vendor Reports on the Biodegradation of Polyaromatic Hydrocarbons and Pentachlorophenol, Wood Debris Sampling Plan, McCormick & Baxter Creosoting Company, Portland Plant, Portland, Oregon. Prepared by Ecology & Environment, Inc. for the Oregon Department of Environmental Quality. April 1997.

13.5. Supplemental Soil Sampling Plan, McCormick & Baxter Creosoting Company, Portland Plant, Portland, Oregon. Prepared by Ecology & Environment, Inc. for the Oregon Department of Environmental Quality. August 1997.

13.6. Revised Draft Remedial Design Data Summary Report, McCormick & Baxter Creosoting Company, Portland Plant, Portland, Oregon. Prepared by Ecology & Environment, Inc. for the Oregon Department of Environmental Quality. November 1997.

14.0 REMEDIAL ACTION

14.1. Remedial Action Work Plan, McCormick & Baxter Creosoting Company, Portland Plant, Portland, Oregon. Prepared by Ecology & Environment, Inc. for the Oregon Department of Environmental Quality. March 1997.

Notes:

Documents in the Administrative Record are available for public review at the designated locations:

St Johns Community Library, 7510 N. Charleston, Portland

Oregon Department of Environmental Quality, 811 S.W. 6th Avenue, Portland (10th floor)

Most documents contained in the administrative record are also available for review at:

North Portland Neighborhood Office, 2410 N. Lombard, Portland.