EXPLANATION OF SIGNIFICANT DIFFERENCES

for the

Northwest Pipe and Casing /Hall Process Company Superfund Site
OU1 – Soil

Clackamas County, Oregon

ORD980988307

March 2004

Issued by: Date:

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I. INTRODUCTION

Site Name and Location

The Northwest Pipe and Casing / Hall Process Company ("Northwest Pipe") Site is located between S.E. Lawnfield and S.E. Mather Roads in Clackamas County, Oregon, approximately 20 miles southeast of downtown Portland (Figure 1). The site is approximately one-half mile north and east of the Interstate Highway 205/Highway 224 Interchange. The CERCLIS ID number for this site is ORD 980988307.

Lead and Support Agencies

The United States Environmental Protection Agency ("EPA") is the lead agency for conducting response actions. The Oregon Department of Environmental Quality ("DEQ") is the support agency for the site. DEQ support is provided by staff in the DEQ Northwest Region Office.

Statutory Citation for an Explanation of Significant Differences

Section 117(c) of CERCLA, 42 USC §9617(c), and the National Contingency Plan (NCP), 40 C.F.R. Section 300.435(c)(2)(i) require that an Explanation of Significant Differences ("ESD") be prepared when the differences in the remedial action significantly change but do not fundamentally alter the remedy selected in the ROD with respect to scope, performance or cost.

Date of Record of Decision

EPA has organized response actions for site contamination problems into two operable units ("OUs"): OU1 is for contaminated soil and debris ("Soil OU") and OU2 is for contaminated groundwater ("Groundwater OU").

The Record of Decision ("ROD") for the Soil OU was issued on June 29, 2000. The soil remedy is being implemented in two phases: Phase1, consisting of soil hot spots removal, was conducted in 2001; Phase 2 includes a soil cap, wetlands restoration and institutional controls. Phase 2 construction activities took place in 2003-2004.

The ROD for the Groundwater OU was issued on September 27, 2001. The remedial action for the Groundwater OU was constructed in 2003-2004. The groundwater remedy is a long-term response action involving *in-situ* groundwater circulation wells ("GCWs") and closed-loop air stripping.

This ESD addresses the Soil OU.

Circumstances Prompting a Change in the Selected Soil OU Remedy

This ESD describes changes to the Soil OU remedy made after issuance of the Soil OU ROD. During the Phase 1 soil remedial design and remedial action, site conditions were encountered that resulted in the completion of additional activities, i.e., not originally anticipated nor described in the ROD. Circumstances regarding available analytical methods for the contaminant vinyl chloride resulted in revisions to the soil cleanup verification method and the soil cleanup level for vinyl chloride. Wetlands were discovered on the Site, resulting in the inclusion of wetland ARARs and

development of a restoration measure to compensate for the loss of existing wetlands resulting from the soil cap placement. Other minor changes to the remedy were made.

Administrative Record
This ESD is supported by and, when issued, 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 following locations: Clackamas County Library, Clackamas Corner Branch, located at 11750 SE 82nd Avenue, Suite D, Clackamas, Oregon; EPA, Oregon Operations Office, 811 SW Sixth Avenue, 3rd Floor, Portland, Oregon; and the Superfund Records Center, EPA Region 10, 1200 Sixth Avenue, Seattle, Washington.

II. BACKGROUND

Summary of Site Description, Land Use, History, Soil Contamination and Soil Remedy
The site is located in a mixed commercial and light industrial district. The Camp Withycombe Army National Guard facility is located to the immediate southeast of the site. Adjacent businesses to the east along Mather Road include a petroleum products warehouse/distribution facility and a truck manufacturing facility. A small residential community known as Hollywood Gardens is located to the south of Camp Withycombe. The bluff west of the site is occupied by a collection of retail and commercial businesses concentrated along S.E. 82nd Avenue, including restaurants, motels, gas stations, stores and an elementary school.

The site covers approximately 53 acres of land under three current ownerships. A thirty-acre parcel ("Parcel B"), formerly used for pipe coating, is currently vacant. Title to this parcel is held by the DEQ in trust for EPA and DEQ. An adjacent 11-acre parcel is owned and occupied by the Oregon Department of Transportation ("ODOT"). A third parcel is owned by Northwest Development Corporation and includes three commercial buildings called Clackamas Commerce Park.

Parcel B is flat, thus standing water is common during the rainy season. Most of the surface water from Parcel B infiltrates into the ground. Some surface water drains into manmade ditches along the east and west boundaries of the site, which subsequently drains into Dean Creek.

Between 1967 and 1985, Northwest Pipe and Casing Company ("Northwest Pipe and Casing ") manufactured and stored steel pipe on a portion of the site. Beginning in 1956, Hall Process Company ("Hall") operated a pipe-coating facility on another portion of the site. In 1978, Hall ceased operations and leased the pipe-coating facility to Northwest Pipe and Casing, who continued pipe-coating. In 1985, Northwest Pipe and Casing declared bankruptcy and stopped all pipe coating operations at the site.

Pipe coating operations used several coating materials including coal tar, coal tar epoxy, asphalt, polyethylene epoxy, and concrete. A volatile organic-based primer was used to adhere the coatings to the pipe. Solvents were used to clean pipe-coating equipment. Solidified coal tar was brought to the site and heated to liquefy it prior to use. Several underground tanks on the site were used to

store fuel and possibly waste oil.

Used solvents, oil and water mixtures and metal filings were disposed directly on the ground. Wastes from the pipe-coating operations were also disposed by burial, dumping, burning and spreading at various site locations. These wastes included used solvents from maintenance activities, primers, excess coating material (coal tar), coating product containers, condensed coal tar residues and oils, pipe trimmings, and engine and hydraulic oils. Leaks and spills from pipe-coating equipment and product containers also occurred.

Soil at the site was contaminated with polynuclear aromatic hydrocarbons ("PAHs"), polychlorinated biphenyls ("PCBs"), and volatile organic compounds ("VOCs"). PCBs in the soil most likely originated from indiscriminate dumping of cutting oils, hydraulic oils, cooling oils, and/or electrical transformers used at the site. PCB-contaminated oils may have been used for on-site dust suppression based on their widespread detection in shallow soils. Chlorinated solvents used to clean pipe-coating equipment are the likely source of VOC contamination, including tetrachloroethene ("PCE"), and its breakdown products, trichloroethene ("TCE") and vinyl chloride.

EPA placed the Northwest Pipe site on the Superfund National Priorities List on October 14, 1992. EPA completed a Remedial Investigation ("RI") and Feasibility Study and a Human Health and Ecological Baseline Risk Assessment in 1999.

EPA conducted a CERCLA removal action in 1993, consisting of perimeter fencing, warning signs, demolition of vacant buildings and off-site disposal of demolition debris. EPA also removed approximately 230 tons of surface debris (coal tar, abandoned car tires and batteries) from Parcel B in 1997 prior to the Remedial Investigation. Two underground storage tanks discovered during the RI were removed in 1998.

EPA issued a ROD for the Soil OU in June 2000. The ROD established soil cleanup levels for eleven soil chemicals of concern ("COC"). The ROD also set Excavation Criteria ("EC") for these COCs to define the most highly contaminated soils targeted for remedial action. The EC levels were generally two orders of magnitude higher than the cleanup levels. The ROD identified seven site locations, referred to as Excavation Areas ("EAs"), where soil COC concentrations exceeded the EC. The ROD stated soil with COC concentrations above the EC would be excavated and sent for off-site thermal treatment or disposal. Thermally treated soil was to be returned to the site to backfill excavated areas. The excavated soil with high PCB levels was planned to be disposed at a permitted hazardous waste landfill.

Soil Remedial Action Objectives and Selected Remedy

The Soil OU ROD set two remedial action objectives ("RAOs") for soil contamination:

1. Prevent exposure of trespassers, future construction workers and future maintenance workers through direct contact (ingestion or dermal contact) with contaminated soil that

would result in an excess lifetime cancer risk greater than one in a million (1E-06) for individual carcinogens, above 1E-05 for additive carcinogenic contaminants, or above a Hazard Quotient of 1.

2. Prevent migration of soil contaminants to groundwater that would result in exposure to a future off-site resident through direct contact (ingestion, inhalation and dermal contact) with contaminated groundwater that would result in an excess lifetime cancer risk greater than one in a million (1E-06) for individual carcinogens, above 1E-05 for additive carcinogenic contaminants, or above a Hazard Quotient of 1.

The selected soil remedy in the ROD generally included the following actions to achieve these RAOs:

- Soil pile 1 (predominantly asphalt) will be buried on-site.
- Soil piles 2 and 3 will be used as backfill or graded flat, depending on COC concentrations.
- Soil pile 4 and (drums of) IDW soil will be thermally treated off-site.
- The aboveground tank containing solidified coal tar and the metal bins containing refuse will be disposed off-site.
- Underground storage tanks (if any further USTs are located) will be removed for off-site disposal.
- Subsurface piping in areas to be excavated will be removed and disposed off-site.
- The in-ground structure at plant 3 will be left in-place or disposed off-site, based upon the extent of contamination and feasibility of removal.
- All soil with COC concentrations exceeding the EC will be excavated and removed from the site. The total volume of soil to be removed is estimated at 32,600 cubic yards (cy). Storm water runoff control measures will be taken as necessary during construction activities to minimize adverse impacts to surface waters.
- Excavated soil with less than 50 mg/kg PCB and that is not RCRA (Resource Conservation and Recovery Act) characteristic hazardous waste will be transported to an off-site thermal desorption facility for treatment. Thermally treated soil will be returned to the site and used to backfill the excavated areas, supplemented as necessary with clean fill material. Treated soil will be required to meet the soil cleanup criteria before being placed on-site for backfill. An estimated 28,550 cy of excavated soil will be thermally treated off-site.
- Excavated soil with total PCBs concentrations exceeding 50 mg/kg, the allowable limits of the thermal desorption facility's permit, will be transported to and disposed in an off-site TSCA (Toxic Substances Control Act) -compliant RCRA Subtitle C landfill. An estimated 4,050 cy of excavated soil will be land filled off-site.
- An Area of Contamination (AOC), encompassing all of Parcel B, is designated by this ROD. Soil which exhibits the RCRA TCLP (Toxicity Characteristic Leaching Potential) characteristic for PCE will be treated in the AOC until it no longer fails the TCLP characteristic, prior to land disposal. An estimated 120 cy of excavated soil in the vicinity of Plant 3 and a presently-undetermined quantity of PCE- contaminated soil from other areas of Parcel B may exhibit the RCRA TCLP characteristic for PCE.

- Security patrols of Parcel B will be continued until the site cap is completed.
- A two-foot cap of clean soil will be placed on Parcel B and graded to an acceptable contour. The cap will be re-vegetated. The soil cap will be constructed after the soil excavation and backfilling are completed, unless EPA determines that construction of the groundwater remedy would compromise or interfere with the cap. In the later case, the cap placement may be delayed until after the groundwater remedy construction is completed. A storm water management system for Parcel B will be evaluated after cap placement, and constructed if needed.
- A long-term monitoring and maintenance program will be developed and implemented for the Parcel B soil cap.
- Institutional controls to limit and manage human exposure to remaining contaminated soil underneath the cap on Parcel B will be obtained.
- If the Plume 4 source area investigation of Parcel A identifies contaminated soil with COC concentrations exceeding the VOC hot spot levels, EPA expects to remediate this soil using the remedy selected in this ROD, if practicable.

III. BASIS FOR THE SIGNIFICANT DIFFERENCES

Subsequent Events and New Information Since Issuance of the ROD

During the Phase 1 soil remedial design and remedial action, further site investigations were conducted and site conditions were encountered which resulted in changes to the design and completion of additional activities, i.e., activities which were not originally anticipated or described in the ROD. These changes to the remedy were made by EPA to ensure the remedy remained protective of human health and the environment, supported attainment of the RAOs and complied with ARARs.

Supporting Information

This ESD is based on information collected and developed since the Soil OU ROD was issued in 2000. This information is contained in the Administrative Record for the Northwest Pipe & Casing Site. The primary documents referenced in this ESD include:

- *Interim Remedial Action Report, Soil Operable Unit OU1*, prepared by URS for EPA, March 2002.
- *Post-RI Fieldwork Summary Report*, prepared by URS for EPA, May 2001.
- *Basis of Design Report for the Phase 1 Soil Remedial Action*, prepared by URS for EPA, March 2001.
- *Project Specifications, Plans and Subcontract Documents for Remediation and Demolition, Final Design*, prepared by URS for EPA, June 2001
- *Highlights of the Phase 1 Soil Remedial Action*, prepared by EPA, April 2002.
- *Modification of the Vinyl Chloride limit for Thermally Treated Soil, Northwest Pipe and Casing -- OU1 Remedial Action Technical Memorandum*, prepared by EPA, March 2002.
- *Basis of Design Report for the Soil Cap*, prepared by URS for EPA, March 2003.

IV. DESCRIPTION OF THE SIGNIFICANT DIFFERENCES

This section describes the significant differences between the soil remedy as presented in the ROD and the soil remedial actions carried out in 2001 and 2003-2004.

Revised Soil Cleanup Level for Vinyl Chloride

Several of the COCs found at the Site are leachable from soil to groundwater; indeed, PCE, TCE and vinyl chloride were detected in site groundwater at concentrations exceeding the Maximum Contaminant Levels ("MCLs") set under the Safe Drinking Water Act. Therefore, the Soil OU ROD established an RAO to prevent the migration of soil contaminants to groundwater at levels which would result in an excess cancer risk from groundwater contact greater than one in a million for individual carcinogens. To achieve the RAO, the ROD then set soil cleanup levels for these COCs. A soil cleanup concentration of 0.1 µg/kg for vinyl chloride was set by applying a simple linear equilibrium soil/water partition equation to the risk-based groundwater protective concentration of 0.02 µg/L.

The soil ROD also established maximum concentration limits for COCs in thermally treated soil which was planned to be returned to the site as backfill. EPA determined that treated soil had to meet the same COC concentration limits as the cleanup levels for soil remaining at the site. Thus, the maximum level of vinyl chloride in treated soil was set at 0.1 µg/kg, the soil cleanup level.

While preparing the Quality Assurance Project Plan ("QAPjP") during remedial design, EPA found that analytical laboratories were unable to guarantee the consistent analysis of vinyl chloride in soil at or below the 0.1 µg/kg cleanup concentration, using standard analytical methods (Method 8260). This situation threatened to undermine EPA's ability to confirm that thermally treated soil being returned to the site met the maximum permissible level of vinyl chloride set in the ROD. The practical quantitation limit (PQL) for vinyl chloride in soil using standard analytical methods was determined to be 1.0 µg/kg.[1]

EPA and DEQ considered the potential environmental effects of raising the vinyl chloride maximum limit in treated soil to 1.0 µg/kg. The agencies concluded that such a change would be protective of groundwater quality at the site, considering that the groundwater ROD established the vinyl chloride groundwater cleanup goal at 1.0 µg/L rather than at the preliminary target level of 0.02 µg/L. Considering the high volatility of vinyl chloride, which has a boiling point of 7° F and a vapor pressure of 1 atmosphere, and the equilibrium partitioning which occurs between soil and water, a level of1.0 µg/kg would not be expected to result in an exceedance of the groundwater cleanup goal.

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[1]During development of the groundwater ROD in 2001, EPA identified a similar issue with analytical methods for monitoring compliance with the proposed vinyl chloride groundwater cleanup target of 0.02 µg/L. Pursuant to EPA and Oregon DEQ policy, when the risk-based protective concentration is below the PQL, the PQL may be used as the action level where engineering and/or institutional controls would be employed. Thus, the groundwater ROD set the cleanup goal for vinyl chloride at the PQL of 1.0 µg/L, instead of the proposed target of 0.02 µg/L.

As a practical matter, EPA and DEQ expected it would be highly unlikely for measurable levels of vinyl chloride to remain in the soil after thermal treatment, since the treatment process at the treatment facility involved heating the soil to a temperature exceeding 800°F. As long as the treated soil met the maximum limits for the other two VOCs, (PCE and TCE), and the vinyl chloride quantitation limit of 1.0 µg/kg, EPA and DEQ believed the treated soil could safely be returned to the site for backfill.

As a result of these considerations, EPA raised the maximum limit for vinyl chloride in treated soil to 1.0 µg/kg and directed its remedial action contractor to use Method 8260 for verifying the treated soil VOC concentrations before allowing the treated soil to be returned to the site.

This ESD also raises the soil cleanup level for vinyl chloride from 0.1 µg/kg, established in the Soil ROD, to 1.0 µg/kg. The reason for this change is the practical quantitation limit (PQL) for vinyl chloride in soil using standard analytical methods is 1.0 µg/kg. As a result of this change, the maximum permissible concentration of vinyl chloride in treated and untreated soil at the Site remain identical. Table 1 contains the soil cleanup levels for all COCs, as modified by this ESD.

Construction of a Wetland Restoration

The RI concluded there were no wetlands on the site. Hence the Soil ROD did not identify any wetlands-associated ARARs.

After issuance of the Soil ROD, a field visit by EPA's contractor identified several suspected wetland areas. EPA then conducted a comprehensive wetland delineation and prepared a Preliminary Jurisdictional Determination during remedial design.

The wetland delineation identified a total of six wetland areas in the northwest corner of the site. The size of the wetlands ranged from 0.024 to 0.675 acres. A total of 1 acre of wetlands were identified at the site. The wetland delineation report was submitted to the Oregon Division of State Lands ("DSL") for review. DSL concurred with the findings of the delineation report.

Construction activities during the soil excavations in Phase 1of the RA were designed and conducted to avoid impacting the wetlands; however, EPA recognized the soil cap planned for Phase 2 of the RA would result in filling in the wetlands.

In March 2003, a Basis of Design Report for the Soil Cap was prepared. The report identified additional applicable or relevant and appropriate requirements ("ARARs") regarding wetlands (see following discussion). To meet the substantive requirements of these laws, the project Plans and Specifications included construction of a one-acre wetland to mitigate the loss of existing wetlands from soil cap placement. The mitigation approach restored one acre of wetlands in the northeast corner of the Site, where it was likely that historical wetlands were once present prior to site development. In addition, EPA worked with Oregon DSL on the mitigation design prior to including the restoration in the soil cap design documents.

This ESD amends the Soil OU remedy to include constructing a one-acre wetland restoration on the Site. The wetland restoration was constructed in 2003.

Identification of ARARs
The confirmation of wetlands on the Site subsequent to the soil ROD necessitated an evaluation of applicable or relevant and appropriate requirements ("ARARs") in establishing the design requirements of the soil cap.

EPA has identified the following additional ARARs for the soil remedy:

> *Federal Clean Water Act Section 404 (33 U.S.C. 1344)* regulates actions that occur in wetlands and that may adversely affect wetlands. If a discharge to wetlands would have potential adverse impacts, the Clean Water Act 404(b)(1) Guidelines (40 CFR 230.10 to 230.80) require a hierachical approach to mitigation measures, consisting of impact avoidance, impact minimization and compensatory mitigation.
>
> *Executive Order 11990, Protection of Wetlands* requires federal agencies to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.
>
> *Oregon Fill and Removal Law* regulates actions that occur in wetlands. Wetland mitigation is required if an action will adversely impact wetlands.

The Soil OU remedy, as amended by this ESD to include constructing a one-acre wetland restoration, complies with these ARARs.

Expected Outcomes Following Implementation of the Significant Differences
EPA expects that the significant differences identified in this ESD will affect the expected outcomes of the soil remedy as follows:

- No effect on the likely future land use of the site, although the constructed wetland will slightly reduce the amount of land available for future re-development.

- No effect on the human health risks posed by soil contaminants leaching to groundwater at the site. The groundwater cleanup level for vinyl chloride set by the groundwater ROD is unchanged; the soil cleanup level for vinyl chloride as modified by this ESD remains protective of groundwater.

V. DESCRIPTION OF MINOR, NON-SIGNIFICANT DIFFERENCES

A number of minor changes to the soil remedy were made during design and during actual construction of the soil remedy. These differences between the soil ROD and the constructed soil remedy are not significant and therefore do not require issuance of an ESD; however, EPA is using

this ESD to document these minor changes for the public. Additional details on these minor changes are contained in documents listed in Section III of this ESD.

The minor differences include the following:

Less Soil Excavated

The ROD estimated 32,600 cubic yards (cy) of contaminated soil exceeded the EC and therefore would need to be excavated. The ROD estimate contained conservative assumptions, such as all excavations would be to a uniform maximum depth, and areal extent of each excavation area was determined by extrapolating equally between 100-foot spaced sampling points in the RI.

The actual amount of soil excavated in the 2001 Phase 1 RA was 21,340 cy. Decisions on how much soil to remove from each of the seven excavation areas were based on the results of confirmation samples of remaining soil, taken immediately after excavation. Thus, the field sampling during the RA was more precise than the extrapolations used in the ROD. This was the main reason why the actual amount of soil excavated was less than the ROD estimate.

Concrete Demolition and Removal

A site investigation during remedial design uncovered the existence of numerous partially buried concrete footings and foundation slabs associated with former site structures. The estimated quantity was 2,000 cy of concrete. The ROD did not address the existence or disposition of these concrete structures. EPA incorporated demolition and off-site disposal of these structures into the final design of the RA to eliminate their interference with the soil excavations and the subsequent site-wide soil cap planned for Phase 2.

During the 2001 RA, EPA's contractor conducted a value engineering analysis on disposing the demolished concrete. It was determined that on-site crushing and reuse for backfill was less costly than off-site solid waste landfill disposal. Therefore, non-contaminated demolished concrete structures were crushed on-site and the concrete then used as supplemental backfill for soil excavations. Some of the concrete structures showed significant staining. Sampling showed these pieces of concrete has PCB contamination. This contaminated concrete was taken to an approved landfill for disposal.

Drum Excavation and Disposal

Buried drums were discovered in EA 2 during the post-ROD Investigation. During excavation activities at EA 2, a total of 50 buried drums were removed. Most of the buried drums were crushed and empty, but some drums had residual levels of brown, oily liquid or sludge. The drums were significantly deteriorated, such that when the drums were removed from the ground, their contents leaked out. The drum contents which leaked were contained with the underlying soil and sent off-site for disposal. A very small amount of sludge remained in some of the drums and therefore the drums were considered hazardous debris The drums were transported to an approved hazardous waste disposal site where they were encapsulated prior to being land filled.

Underground Perforated Tanks Removal

During soil excavations in EA 3 and EA 6, two buried metal structures were encountered. In EA 3, the RA contractor excavated and removed the structure, which was determined to be a 10,000 gallon cylindrical tank perforated with several hundred slots . The structure was cut open, pressure washed, and transported to an off-site metal recycling facility. The structure in EA 6 was approximately five feet in diameter and fifteen feet in length, with an estimated volume of 2,200 gallons. Similar to the structure at EA 3, it was found to be a metal cylinder containing numerous 1-inch diameter holes. Backfill around the structure consisted of rounded gravel fill. This suggests that the structure may have been used for dewatering soils around the former Plant 3 area. The structure was approximately half full with water. The RA contractor drained the tank and removed it from the ground. It was then cut open, pressure washed, and transported to an off-site metal recycling facility.

Soil Pile 4

Soil Pile 4, formerly located on the ODOT facility on the northern portion of the site, was re-used by ODOT for highway landscaping after the ROD was issued. Sampling conducted by ODOT showed the soil was safe for highway landscaping reuse. Therefore, disposal of the soil pile was deleted from the scope of the Phase 1 RA.

New Soil Pile 5

During vegetation removal near EA 5, an additional soil pile was encountered in the northeast corner of the site. It consisted of approximately 300 cy of well-graded silty gravel with sand, similar to Soil Pile 2. This soil pile was designated Soil Pile 5. This soil pile was unknown when the ROD was issued.

Two composite samples were collected from Soil Pile 5, and analyzed for PAHs, PCBs, and VOCs. The samples contained no exceedances of the EC and the soil pile was used as backfill at EA 5. The footprint of Soil Pile 5 was leveled, and hydroseed was applied for erosion control.

Perforated Concrete Drains

Three unknown buried perforated concrete drains were encountered during the soil RA. One was located at EA 4 and the other two were located at EA 6. The drains were removed and their corresponding excavations were backfilled with soil. The concrete was visibly clean, so the drains were combined with other clean concrete debris, crushed and reused for backfill.

Tire Ash Pile

EPA identified a pile of burnt tire ash at the south end of the site. The ash pile resulted from a tire fire which occurred previously at the site. The RA subcontractor collected a sample of the ash for characterization and waste profiling. Based on these results, the pile was approved for disposal at a permitted solid waste disposal facility.

"Clean" Excavated Soil Backfilled

The soil ROD conservatively assumed that all soil excavated from the seven EAs would exceed the excavation criteria and hence require off-site treatment or disposal. However, the remedial design investigation determined that contaminated soil in some EAs was overlaid with clean fill/soil, i.e., soil which did not exceed the EC. Therefore, the final design of the soil RA provided that excavated soil which, based on sampling and analysis, did not exceed the soil EC, would be placed back into the excavation. About 9,000 tons of excavated soil was clean and reused for backfill during the RA.

Ripping Native Soil Bottom of EA 6

The remedial design plans called for soil excavations to stop at a designated maximum depth. As stated earlier, EPA over-excavated in some areas based on visual observations or confirmation sampling. In EA6, EPA did not over-excavate native soil at the excavation bottom sample locations with EC exceedances for VOCs. Instead, in an effort to volatilize the VOCs in the native soil, EPA ripped the native soil at these areas of the excavation floor. The entire excavation bottom was ripped five times using a dozer. The excavation bottom was re-sampled for VOCs approximately two weeks later. All but two of the remaining samples no longer exceeded the EC for VOCs. EA6 was then backfilled.

VI. HIGHLIGHTS OF COMMUNITY PARTICIPATION

In accordance with the NCP, Section 300.435(c)(2)(i)(B), when this ESD is issued a public notice of its availability will be published in a local newspaper. In addition, a copy of the public notice will be mailed to the Northwest Pipe and Casing Site mailing list.. The Administrative Record, including this ESD, will be available for public review at the Site information repositories listed above.

VII. SUPPORT AGENCY COMMENTS

The Oregon DEQ reviewed the ESD and provided comments to EPA. The final ESD addresses DEQ's comments. DEQ supports issuance of this ESD.

VIII. STATUTORY DETERMINATIONS

This ESD changes components of the remedy selected in the Soil OU ROD. The remedy continues to satisfy the provisions of Section 121 of CERCLA, 42 USC §9621. DEQ and EPA believe the remedy is protective of human health and the environment, attains Federal and State requirements that are legally applicable or relevant and appropriate for this remedial action as identified in the Soil ROD and modified by this ESD, is cost effective and continues to utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. This remedy also continues

to satisfy the statutory preference for treatment that reduces toxicity, mobility and volume of hazardous substances as a principal element. As provided in the ROD, reviews will the conducted every five years to ensure that the remedy continues to provide adequate protection of human health and the environment. The next Five-Year Review is scheduled for June 18, 2006.

Table 1

Soil Cleanup Levels as Modified by this ESD

COC	SOIL CLEANUP LEVEL
Benzo(a)anthracene	2,500 µg/kg
Benzo(b)fluoranthene	2,500 µg/kg
Benzo(k)fluoranthene	2,500 µg/kg
Benzo(a)pyrene	250 µg/kg
Chrysene	250,000 µg/kg
Dibenz(a,h)anthracene	250 µg/kg
Indeno(1,2,3-cd)pyrene	2,500 µg/kg
Total PCBs	1,000 µg/kg
Tetrachloroethene (PCE)	7 µg/kg
Trichloroethene (TCE)	13 µg/kg
Vinyl Chloride	1.0 µg/kg

Notes: COC- Chemicals of Concern

µg/kg - micrograms per kilogram, or parts per billion