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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON

AMENDED RECORD OF DECISION, DECISION SUMMARY

THE REVISED REMEDIAL ACTION FOR THE SOIL AND GROUNDWATER OPERABLE UNIT OF THE HARBOR ISLAND SUPERFUND SITE IN SEATTLE, WASHINGTON

JANUARY 1996

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Declaration for the
Soil and Groundwater Operable Unit of the Harbor Island
Superfund Site
Amended Record of Decision

Site

Soil and Groundwater Operable Unit, Harbor Island Site
Seattle, King County, Washington

Statement of Basis and Purpose

This amendment to the Record of Decision (Amended ROD) has been developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. Section 9601 et seq., and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. This decision is based on the Administrative Record for this site, updated August 24, 1995, to include new information generated since the original ROD. The documents which have been added to the Administrative Record, upon which the modification is based, are provided in attachment A.

This decision document modifies the remedial action for treating petroleum contaminated soil at the Soil and Groundwater Operable Unit of the Harbor Island Site (Site) in Seattle, Washington. The ROD for this operable unit, signed on September 30, 1993, required thermal desorption treatment for hot-spot soil with total petroleum hydrocarbon (TPH) concentrations exceeding 10,000 mg/kg. This soil is not considered to be a Resource Conservation and Recovery Act (RCRA) waste because it contains no contaminants at levels of concern other than petroleum, which is exempted under RCRA. However, petroleum is a dangerous waste under the State of Washington's Dangerous Waste Regulations. The purpose of this Record of Decision amendment is to allow TPH hot-spot soil, which can be classified as non-dangerous waste, to be disposed at the Roosevelt Regional Landfill in Klickitat County, Washington, or an equivalent landfill. After excavation, soil will be analyzed to determine if it is non-dangerous or dangerous waste. Soil which is determined to be non-dangerous according to these analyses will be disposed at an off-site landfill. Soil which is dangerous waste will be treated by thermal desorption as specified in the original remedy.

The State of Washington concurs with the selection of the modified remedy described in this document. EPA's Office of Solid Waste and Emergency Response was also consulted prior to the selection of the modified remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the remaining components of the selected remedy, as documented in the original ROD, may present an imminent and substantial threat to human health, welfare, or the environment.

Declaration

Although this Amended ROD modifies the original remedy selected in the ROD, the modified remedy is considered to be protective of human health and the environment. Implementation of the remaining components of the selected remedy still comply with federal and state applicable or relevant and appropriate requirements, are cost effective, and utilize treatment to the maximum extent practicable.

The proposed changes to the remedy do not negate the need for a five year review. Hazardous substances will remain on the site within the ground water above health-based levels, therefore, 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.

Chuck Clarke

CHUCK CLARKE
Regional Administrator, Region 10
U.S. Environmental Protection Agency

1/2 1986
date

SOIL AND GROUNDWATER OPERABLE UNIT, HARBOR ISLAND
SUPERFUND SITE
AMENDED RECORD OF DECISION
DECISION SUMMARY

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SOIL AND GROUNDWATER OPERABLE UNIT, HARBOR ISLAND
SUPERFUND SITE
AMENDED RECORD OF DECISION

DECISION SUMMARY

INTRODUCTION

Site Name and Location

Harbor Island, Soil and Groundwater Operable Unit, Seattle, Washington

Lead and Support Agencies

The U.S. Environmental Protection Agency (EPA) is the lead agency and the Washington State Department of Ecology (Ecology) is the support agency for this Site.

Statutory Citation for a ROD Amendment

In Section 117(c) of CERCLA, provisions are made for addressing and documenting changes to the selected remedy that occur after the Record of Decision (ROD) is signed. This Amended ROD documents the changes to the selected remedy in accordance with CERCLA Section 117. Additionally, since fundamental changes are being made to the original remedy, public participation and documentation procedures specified in NCP section 300.435(c)(2)(ii) have been followed.

Date of ROD Signature

The ROD for the Harbor Island Soil and Groundwater operable unit was signed on September 30, 1993.

Need for a ROD Amendment

Forty Potentially Responsible Parties (PRPs) signed the Consent Decree to perform the remedy selected in the ROD. In March 1995, as EPA was preparing to lodge the Consent Decree for this operable unit, the PRPs submitted a proposal, in the form of two letters dated March 24, 1995, and April 11, 1995 (see attachment A). This proposal requested that EPA allow TPH hot-spot soil, which is determined to be non-dangerous waste, to be disposed at the Roosevelt Regional Landfill located in Klickitat County, Washington. This soil is not considered to be a Resource Conservation and Recovery Act (RCRA) waste because it contains no contaminants at levels of concern other than petroleum, which is exempted under RCRA. However, petroleum is considered to be a

dangerous waste under the State of Washington's Dangerous Waste Regulations.

The proposal provided new information on the cost and timeframe for off-Site disposal of TPH hot-spot soil. The proposal concluded that off-Site disposal would reduce cost and allow completion of the remedy in a shorter timeframe than the remedy selected in the ROD. After reviewing the proposal, EPA agreed that the modified remedy had the potential to save significant cost and time, and decided that a ROD amendment was appropriate. The Consent Decree, with a copy of the proposed ROD amendment attached, was lodged in Federal District Court for the Western District of Washington, Seattle Division, on October 6, 1995.

Administrative Record

This ROD amendment will become part of the Administrative Record for the Harbor Island Superfund Site, as required by Section 300.825(a)(2) of the NCP, and will be available to the public at the following location:

U.S. Environmental Protection Agency
Record Center, 7th Floor
1200 Sixth Avenue
Seattle, Washington 98101

SITE HISTORY

Harbor Island is located approximately one mile southwest of downtown Seattle, in King County, Washington, and lies at the mouth of the Duwamish River on the southern edge of Elliott Bay. The island is approximately 400 acres in size and is bordered by the east and west waterways of the Duwamish River (see Figure 1).

From 1903 to 1905, Harbor Island was created from marine sediments dredged from the Duwamish River. Dredged sediment was placed across the Duwamish tidelands to form a generally homogeneous sandy fill which is now Harbor Island. Since construction, Harbor Island has been used for commercial and industrial activities including shipping, railroad transportation, bulk petroleum storage and transfer, secondary lead smelting, lead fabrication, shipbuilding, and metal plating. Warehouses, laboratories, and office buildings have also been located on the island. Harbor Island was placed on the National Priorities List as a Superfund Site in 1983 due to elevated lead concentrations in soil from the former lead smelter on the island, (which ceased operation in 1984) as well as elevated levels of other hazardous substances identified at the Site.

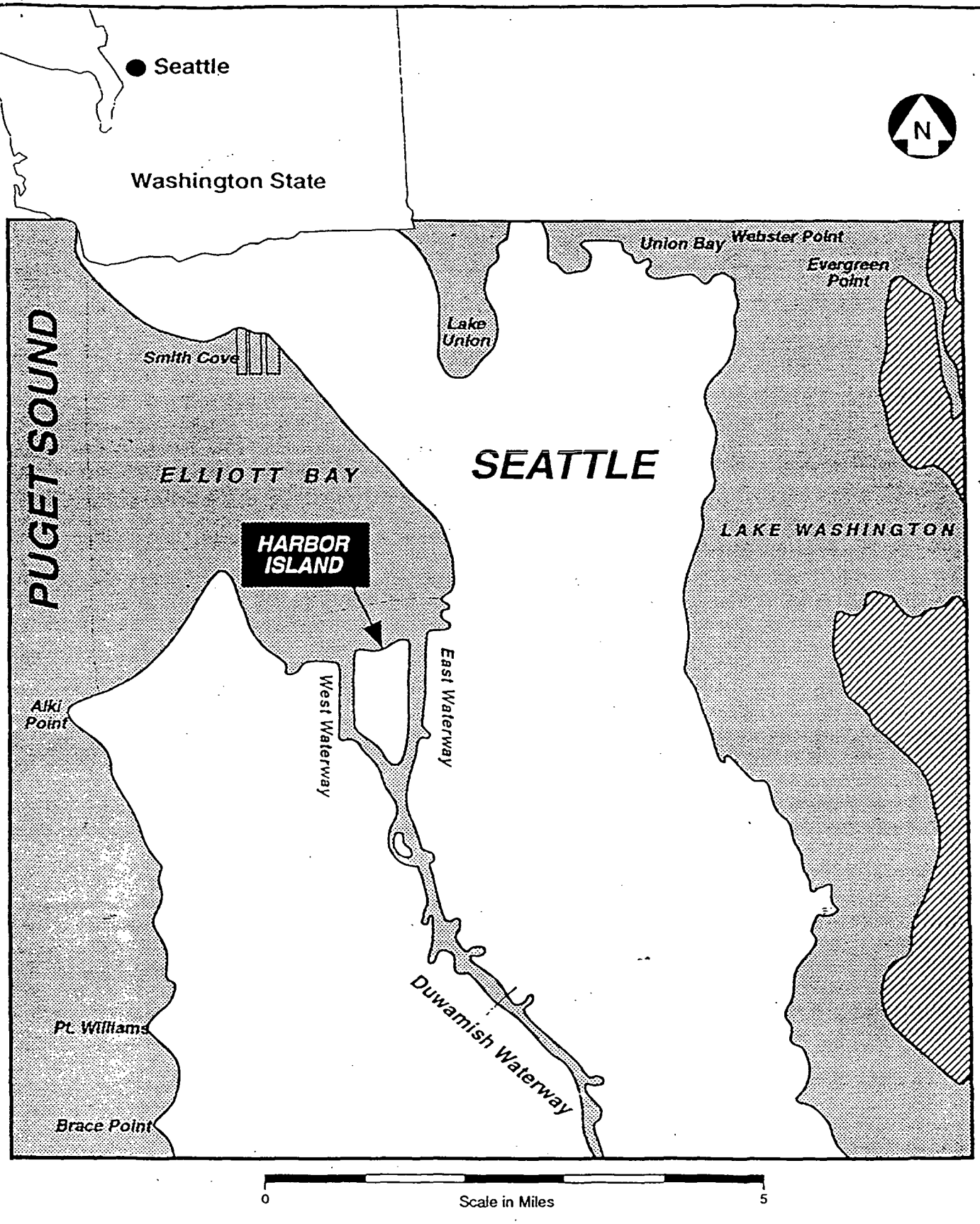

Figure 1
Harbor Island Location

EPA has divided the Site into five operable units: 1) the petroleum storage tank facilities operable unit, 2) the marine sediment operable unit, 3) the shipyard sediment operable unit, 4) the Lockheed Shipyard facility operable unit, and 5) the "soil and groundwater" operable unit which covers the rest of the island. EPA is the lead agency for the Lockheed, marine sediments, shipyard sediments, and soil and groundwater operable units. The ROD for the Lockheed Shipyard facility was signed on June 28, 1994. A Consent Decree committing Lockheed to perform the necessary remedial actions for this operable unit was entered in February, 1995. EPA has designated Ecology as the lead agency for the petroleum storage tank operable unit because the primary contaminant there is petroleum, which is excluded from CERCLA but is a hazardous substance under the State's Model Toxic Control Act (MTCA). Ecology intends to issue a Cleanup Action Plan for the petroleum storage tank unit in 1996.

EPA completed a Phase I Remedial Investigation of Harbor Island in 1990. EPA initiated a Phase II investigation in May, 1991, and completed the Remedial Investigation and Feasibility Study reports for the Soil and Groundwater operable unit in February, 1993. The results of the Remedial Investigation are summarized below.

The most significant inorganic contaminant in the soil is lead, which is found over most of the island and originated primarily from the lead smelter. The majority of samples with elevated lead in the range from 5,000 to 200,000 mg/kg, occurred in surface soil in the central portion of the site. The highest concentrations of other inorganics were also found in surface soil and include: arsenic at 1,830 mg/kg, cadmium at 131 mg/kg, and chromium at 791 mg/kg.

The most significant organic contaminant found in subsurface soil was petroleum. The range of petroleum concentrations were between approximately 20 mg/kg and 51,000 mg/kg. Soil with Total Petroleum Hydrocarbon (TPH) concentrations exceeding 10,000 mg/kg were identified as TPH "hot spots". Because most of the TPH hot spot soil is in the subsurface, concentrations of inorganics in the TPH hot spots are much lower than found in surface soil and range from background to about 300 mg/kg. Also present in smaller quantities in surface soil were polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). The highest concentrations of PAHs found in surface soil ranged between 10 and 50 mg/kg. PCBs in surface soil ranged from 2 to 420 mg/kg.

Floating petroleum product was found at one location adjacent to the shoreline on the north end of the island. Groundwater at several locations along the shoreline on the northern portion of the island also contained benzene, ethylbenzene, and xylene, vinyl chloride, and other compounds associated with petroleum products. Elevated levels of inorganic

contaminants including mercury, nickel, cadmium, lead, and zinc are also found in groundwater across the island.

On June 23, 1993, issued a Proposed Plan for the soil and groundwater operable unit. The ROD for this unit was signed on September 30, 1993. An Explanation of Significant Difference (ESD) for this ROD was signed on July 26, 1994. The ESD modified the selected thermal desorption treatment technology to include an afterburner.

A detailed description of Site characteristics, nature and extent of contamination, human health risks, and Remedial Action Objectives can be found in the ROD for this operable unit.

REMEDY SELECTED IN THE ROD

The remedy selected in the ROD for the soil and groundwater operable unit, as modified by the ESD, includes the following components:

- Excavate and treat or dispose soil hot spots which contain the highest concentrations of contamination. These soil hot spots are defined as Total Petroleum Hydrocarbons (TPH) greater than 10,000 mg/kg, PCBs greater than 50 mg/kg, and soil with mixed carcinogens with a total risk greater than 10^{-4}. TPH hot spot soil will be treated on-Site by a thermal desorption system with an afterburner. PCB and mixed-carcinogen hot spot soil will be disposed in an off-Site hazardous waste disposal facility.

- Contain exposed contaminated soil exceeding inorganic or organic cleanup goals. Containment will be achieved with a three inch asphalt cap which would prevent infiltration of rainwater and reduce contaminant migration into the environment. Existing asphalt and concrete surfaces will be repaired to prevent infiltration of rainwater.

- Remove and treat floating petroleum product and associated contaminated groundwater at Todd Shipyards to prevent its migration into the marine environment. Monitor groundwater quality for 30 years and review groundwater quality data every 5 years to assess the effectiveness of the selected remedy.

- Invoke institutional controls which would require long term maintenance of new and existing caps, warn future property owners of remaining contamination contained under capped areas on their properties, and specify

procedures for handling and disposal of excavated contaminated soil from beneath the capped areas if future excavation is necessary.

The remedial action selected for the soil and groundwater operable unit addresses all contaminated soil and groundwater exclusive of the petroleum tank farms and the Lockheed Shipyard, which are separate operable units. The remedy selected for the Lockheed operable unit is consistent with the remedy for this unit.

Contaminated media at Harbor Island consists of soil, groundwater and sediments. The overall remedial strategy for Harbor Island is to initiate clean up of contaminated soil and groundwater first because they pose a risk to human health and act as sources of contamination to the marine sediments. The need for cleanup of sediments will be the subject of future RODs. Actions necessary to address the tank farms will be identified by Ecology in a state ROD. Cleanup of the sediments, if necessary, will occur after control of on-Site contaminant sources has been initiated.

REASONS FOR ISSUING AMENDED ROD

The proposed modification to the remedy would allow TPH hot spot soil, which is non-dangerous waste, to be disposed off-Site in a solid waste landfill instead of being treated on-Site by thermal desorption. Off-Site disposal of contaminated soil at a hazardous waste landfill had been considered as an alternative for the soil and groundwater unit, but was not selected as the remedy because it is significantly more expensive than other alternatives which were considered. However, TPH hot spot soil which is non-dangerous waste, as determined by appropriate tests, could be disposed at a permitted solid waste facility. According to the proposal submitted by the PRPs, disposal at a solid waste facility would cost less and could be conducted in a shorter timeframe than on-Site thermal desorption.

According to the PRPs' proposal, the estimated overall savings of disposing TPH hot spot soil at a solid waste facility, instead of treating it by thermal desorption, is about $6 Million. Disposal at a solid waste facility could also be conducted in a shorter timeframe because the contaminated soil could be shipped off-Site by rail at a faster rate than it could be treated by thermal desorption. According to the PRPs' proposal, this modified remedy can be completed in 5 months, compared to about 16 months to complete on-Site thermal desorption according to EPA's current estimate. This amounts to a potential time savings of approximately 11 months.

Based on the potential cost and time savings identified above, EPA has determined that it is appropriate to modify the selected remedy. Due to the fundamental nature of the remedy modification, it was further determined that a ROD amendment was necessary to document this decision.

DESCRIPTION OF THE MODIFIED REMEDY

This amendment modifies only the thermal desorption treatment portion of the remedy selected in the ROD. The modified remedy will allow TPH hot spot soil, which is non-dangerous waste, to be disposed of at the Roosevelt Regional Landfill or an equivalent upon prior written approval by EPA. TPH hot spot soil, which is non-dangerous waste, may nevertheless be treated by thermal desorption if a good reason for doing so, such as a significant savings of time or money, is advanced by the PRPs. Treatment by thermal desorption of non-dangerous waste which would be accepted by Roosevelt Regional Landfill shall require prior written approval from the EPA Remedial Project Manager.

To identify soil which exceeds the hot spot criteria and requires excavation, a gas chromatography field analytical method WTPH-HCID (detection limit 100 mg/kg), will be used to determine total *in-situ* TPH concentrations prior to excavation. Soil will be analyzed for TPH at a minimum frequency of about one sample per 100 cubic yards of soil or whenever visual inspection indicates a change in TPH concentration. To determine when the boundary of the TPH hot spots is reached and when excavation will cease, confirmatory analysis of soil samples will be required by method WTPH-HCID (detection limit 50 mg/kg) at an off-Site laboratory approved by EPA under the Contract Laboratory Program.

To determine which TPH hot spot soil is non-dangerous waste, soil will be tested according to the methods specified in, "Analytical Requirements for Petroleum Contaminated Soil Disposal at Roosevelt Regional Landfill, Klickitat County, Washington". The required analyses will be as follows. Soil with *in-situ* TPH concentrations between 10,000 and 30,000 mg/kg will be excavated and placed in a separate stockpile. Representative samples of this stockpile will be analyzed for: 1) TPH concentration according to methods WTPH-G, WTPH-D, or WTPH-418.1 modified (depending on the results of the *in-situ* analyses), 2) leachable metals according to EPA's TCLP method, 3) volatile organic compounds according to EPA method 8240, and 4) semi-volatile organic compounds according to EPA method 8270.

Soil with *in-situ* TPH concentrations exceeding 30,000 mg/kg will be segregated into individual stockpiles, each of which contain TPH concentrations covering a range of about 10,000 mg/kg. This will result in individual stockpiles for concentration ranges of 30,000-40,000 mg/kg, 40,000-50,000 mg/kg,

50,000-60,000 mg/kg, etc, respectively. Representative samples of each of these stockpiles will first be analyzed by the methods specified above. If soil is determined to be non-dangerous waste according to this first tier of tests, it will then be tested by the fish bioassay method identified in WAC 173-303-101(5).

Soil which is non-dangerous waste according to the above tests will be shipped by rail in closeable containers to the Roosevelt Regional Landfill for disposal. Soil which is dangerous waste according to any of the above test will be treated by thermal desorption as specified in the original remedy.

In order to operate the thermal desorption systems under optimal conditions, soil fed into the system cannot contain TPH concentrations exceeding approximately 30,000 mg/kg. To achieve this objective, any soil which must be treated and which exceeds a TPH concentration of 30,000 mg/kg should be blended with clean soil or soil with TPH concentrations less than 30,000 mg/kg prior to treatment.

EVALUATION OF ALTERNATIVES

The NCP establishes nine criteria for evaluating remedial action alternatives. Under SARA Section 121, a profile of the original selected remedy and the modified remedy against the nine criteria is required. In this section, the treatment portion of the remedy selected in the ROD will be compared to the modified remedy based on the nine evaluation criteria.

Overall Protection of Human Health and the Environment

Both the original and modified remedies are considered to be protective of human health and the environment. The original remedy meets this criteria by requiring thermal destruction of TPH contamination exceeding concentrations of 10,000 mg/kg. The modified remedy allows non-dangerous waste TPH hot spot soil to be disposed off-Site. This modification to the remedy is also protective because it will prevent migration of contaminants and potential exposure to these contaminants through confinement. Confinement is assured because the selected landfill has an impermeable liner with a leachate collection system overlying a two-foot thick layer of recompacted clay soil. In addition, this landfill is isolated from the regional aquifer by 300 feet of naturally-occurring clay soil.

Compliance With ARARs

Both alternatives comply with all ARARs. The portion of the remedy which will be modified addresses only TPH contaminated soil which is neither a hazardous substance under CERCLA, nor a

dangerous waste under the Washington State Dangerous Waste Regulations.

Long-Term Effectiveness and Permanence

Both the original and modified remedies are considered to have comparable long-term effectiveness and permanence. The original remedy achieves permanence by thermal destruction of TPH contamination. The modified remedy achieves permanence through a combination of confinement of non-dangerous waste TPH hot spot soil in an off-Site landfill, and thermal destruction of TPH contamination in soil which is determined to be dangerous waste. The long-term confinement of TPH contamination in the Roosevelt landfill is assured by two factors: 1) a state-of-the-art design which includes an impermeable liner with a leachate collection system overlying a two-foot thick layer of recompacted clay soil, and 2) a location in a remote, arid area where migration of contaminants to the regional aquifer is prevented by 300 feet of naturally-occurring clay soil.

Reduction of Toxicity, Mobility, and Volume Through Treatment

The original remedy specifies treatment of all TPH hot spot soil, which amounts to a volume of approximately 90,000 cubic yards of soil. The modified remedy will require treatment of significantly less soil because, based on experience, the operator of the Roosevelt Regional Landfill expects most, if not all, of the soil with TPH concentration below 30,000 mg/kg to be non-dangerous waste and acceptable to the landfill. Current data indicates that a majority of the hot spot soil has TPH concentrations below 30,000 mg/kg.

Although treatment remains an integral component of the modified remedy, the original remedy better meets this criteria since it guarantees treatment of a greater volume of soil, thus providing a greater overall reduction in toxicity, mobility, and volume.

Short Term Effectiveness

EPA estimates that the timeframe to implement soil treatment component of the original remedy would be about 16 months. This duration of time is required because of the limited rate at which TPH contaminated soil can be treated by a thermal desorption system. The PRPs' proposal estimates that is will take about 5 months to implement the modified remedy. The modified remedy can be conducted in a shorter timeframe because a majority of the contaminated soil will be shipped by rail off-Site for disposal, which can be done at a faster rate than if it were treated on-Site by thermal desorption. The modified remedy would also have the advantage of less stockpiling and handling of the TPH contaminated soil, which would reduce worker exposure and the

potential for further release of contamination to the environment. Based on the above reasons, the modified remedy better meets the criteria for short term effectiveness.

Implementability

Of the two alternatives, the original remedy will require more area to implement because it will require additional area for stockpiling of excavated soil and for operation of the thermal desorption system. Also, because the original remedy would take approximately 11 more months to complete, it would cause greater disruption to operating businesses on the Site either as a direct result of excavation and treatment of soil on their property or from general disruption due to increased traffic associated with cleanup activities. For these reasons, the modified remedy better meets this criteria.

Cost

The cost analysis provided in the PRPs' proposal estimates that the total cost saving of the modified remedy over the original remedy will be about $6 Million. A large portion of this saving is due to the lower cost of off-Site disposal of TPH hot spot soil compared to the cost for on-Site thermal desorption treatment for this soil. As stated in the proposal, the cost for disposal at the Roosevelt Regional Landfill is $59/cubic yard, which includes the cost of transportation and clean replacement soil delivered to the Site. Also according to the proposal, the cost of treating this soil with a thermal desorption system would be about $95/cubic yard. Therefore, landfill disposal offers a potential cost savings of about $36/cubic yard. The modified remedy is therefore more cost effective and better meets this criteria.

State Acceptance

Ecology concurs with the selection of the modified remedy described above.

Community Acceptance

There was little community concern about the proposed ROD amendment. Only one comment was received, and it was in favor of the amendment. This comment also proposed that the petroleum hot spot soil, which is disposed in an off-site landfill, be mixed with garbage near the surface of the landfill so that air can diffuse into the soil and the petroleum can be decomposed by soil bacteria. This is similar to a technique called "landfarming" which has been used successfully at many other sites to accelerate the natural biodegradation of petroleum products. Since long-term confinement of the TPH soil is the main objective of off-Site disposal,landfarming to reduce TPH concentrations is

not necessary and may be too costly for the landfill operators to perform. EPA will inquire whether landfarming is feasible.

STATUTORY DETERMINATION

The modified remedy satisfies the provisions of CERCLA Section 121. The lead and support agencies believe that the modified remedy remains protective of human health and the environment, complies with federal and state requirements identified in the original ROD as ARARs at the time the original ROD was signed, and is cost-effective.

Attachment A

THE PROPOSAL TO MODIFY THE SELECTED REMEDY

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March 24, 1995

Mr. Keith Rose
Superfund Branch (HW-113)
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Re: Allowing off-site disposal of certain TPH-containing soil under the Record of Decision for the Harbor Island Soil and Groundwater Operable Unit

Dear Mr. Rose:

The Record of Decision ("ROD") that EPA Region 10 issued in September 1993 for the Soil and Groundwater Operable Unit of the Harbor Island Superfund Site selected a soil remediation remedy that included excavation and treatment of certain soil "hot spots." These were defined as areas where (i) Total Petroleum Hydrocarbon (TPH) levels exceed 10,000 mg/kg, (ii) PCB levels exceed 50 mg/kg or (ii) the total risks from mixed carcinogens exceed 1×10^{-4}. The ROD requires the latter two categories of soils to be excavated and shipped to an off-site hazardous waste disposal facility or, as an option for the PCB-contaminated soils, shipped to an off-site treatment facility for incineration. The ROD specified that soils requiring treatment due to their TPH levels are to be treated on-site in a thermal desorption unit.

As you know, the Prot of Seattle and many of the other current owners and operators of property within the Soil and Groundwater Operable Unit have agreed to carry out the remedial action specified in the ROD. Their agreement to carry out this work has prompted them to closely evaluate the various components of the selected remedy to determine whether there are any opportunities for making the remedy more cost-effective while not changing its scope or otherwise making it any less protective of human health and the environment. The component that appears to offer the greatest opportunity for such enhancement is the requirement for thermal desorption of all soils having TPH levels above 10,000 mg/kg. The PRPs believe that there are strong reasons under the applicable National Contingency Plan (NCP) remedy selection criteria for exempting soils having TPH levels of between 10,000 mg/kg and 30,000 mg/kg from thermal desorption requirements and allowing them to be handled in a manner similar to that allowed for certain other contaminated soils at the

site, i.e. through shipment to an appropriate off-site disposal facility. Such an approach would not only reduce remediation costs significantly but also be simpler to implement and achieve an overall level of human health and environmental protection relating to these soils at least equal to that provided by thermal desorption.

The following summarizes the alternative being proposed here and evaluates this alternative under the remedy selection criteria set forth in the NCP. We would be glad to meet with you at your convenience to provide any additional information that you would find useful regarding this proposal or its acceptability under the NCP criteria.

I. The proposed alternative

The PRP proposal is to remediate the soils having TPH levels of between 10,000 mg/kg and 30,000 mg/kg by shipping these soils to an appropriate off-site disposal facility, and thereby limit the thermal desorption specified in the ROD to those soils having TPH levels above 30,000 mg/kg. The PRPs propose to set the upper TPH concentration limit at 30,000 mg/kg because soils having concentrations below this level almost certainly will not be designated as toxic dangerous waste under WAC Chapter 173-303, and therefore will not require disposal at a permitted dangerous or hazardous waste disposal facility.

The PRPs would carry out analyses to identify the soils that have TPH concentrations within the 10,000 mg/kg to 30,000 mg/kg range, excavate these soils, place them in closeable containers and ship the containers by rail to the Roosevelt Regional Landfill in Klickitat County, Washington. The fact that there is an existing rail line on Harbor Island would make rail shipment simple and cost-effective. Return trains would bring clean soil from the landfill, which the PRPs would use as backfill for the excavated areas.

This approach would offer several significant advantages over thermal desorption for the soils in the 10,000 mg/kg to 30,000 mg/kg TPH range. Many of these advantages are discussed in the attached letter dated March 21, 1995 from the Regional Disposal Company, which operates the Roosevelt Regional Landfill (see Attachment A). A principal advantage is that the affected soils could be remediated much more quickly than would be the case with thermal desorption. Depending on the schedule that the PRPs adopt, it is estimated that the affected soils could be excavated, shipped off-site and backfilled with clean soil within two to five months. This compares to an estimated thirty months, or 2-1/2 years, to carry out thermal desorption. The more expedited remediation that off-site disposal would make possible represents a significant environmental advantage for this option since identical cleanup levels would be achieved in much less time. It also represents a significant advantage from the standpoint of implementability, since there would be less overall disruption to ongoing operations at Harbor Island and less need for prolonged coordination and EPA oversight of on-site excavation and treatment activities. Disruption also would be

minimized because (i) excavated areas could be backfilled quickly, given the short turnaround time of the rail cars (on the order of two days) that would return clean fill material to the site, and (ii) the use of clean fill would eliminate the cumbersome analysis and tracking of thermally desorbed soils that would be required before these soils could be used as backfill.

An additional advantage of off-site disposal includes the fact that this option would reduce potential exposures from soils handling and eliminate the generation of combustion products that is inherent in operating thermal desorption units. These issues are examined in some detail in Attachment A. Carrying out thermal desorption requires multiple steps of soil handling, such as transporting soils on-site to and from the staging area and thermal desorption unit and returning the treated soil to the excavated areas for use as backfill. Off-site disposal, in contrast, would merely require placing the soil in containers at the site and unloading these sealed containers at the Roosevelt Landfill. Less dust generation and potential exposure to such dust would be involved under this off-site disposal option. Similarly, as discussed in Attachment A, off-site disposal would eliminate the release of combustion products that is unavoidable in carrying out thermal desorption. While the dust and combustion releases would not be environmentally significant their reduction makes off-site disposal to that extent more effective than desorption.

A further advantage of the off-site disposal option is that it would reduce significantly the overall cost of remediation at the Soil and Groundwater Operable Unit. Attached to this letter is an estimated dated March 20, 1995 prepared by Morrison-Knudsen Corporation comparing projected remediation costs with and without the option of shipping soils having TPH levels of between 10,000 mg/kg and 30,000 mg/kg to an off-site disposal facility (see Attachment B). The estimate concludes that allowing these soils to be shipped to an off-site facility rather than requiring them to undergo thermal desorption would reduce overall remedial action costs by more than $6 million.

These environmental, implementation and cost advantages would be achieved without any reduction in human health or environmental protection relating to the ultimate disposition of the soils. The landfill to which the soils would be sent for disposal would be the Roosevelt Regional Landfill in Klickitat County, Washington. The Roosevelt Landfill has superlative design and location characteristics that provide essentially permanent isolation of waste materials from the environment. These characteristics, which are summarized in Attachment A, include engineered systems such as a recompacted two-foot thick clay soil layer overlain by an 80-mil high density polyethylene plastic liner and other factors such as the location of the landfill in remote, arid country and its separation from the regional aquifer by approximately 300 feet of naturally occurring clay. In the unlikely event of a catastrophic failure of all liner and leachate collection systems it would take approximately 1,500 years for any leachate to reach this aquifer. The landfill also has an exceptionally safe

and reliable rail transportation system that the PRPs would use for shipping the affected TPH soils to the facility.

The above factors as presented in more detail in Attachment A demonstrate that the Roosevelt Landfill option being proposed here would provide a high degree of protection to human health and the environment. Furthermore, this option is similar in kind to the overall remediation currently specified in the ROD and would provide comparable protection or better. Treating the soils at issue here in the thermal desorption unit would remove virtually all the TPH from such soils. However, it would not remove the metals that often are found in the Harbor Island soils. The ROD takes this into account by requiring (i) post-description solidification of any soils that are found to exceed TCLP criteria and (ii) on-site capping of any soils that, following desorption, are found to contain metals or other constituents below TCLP thresholds but above the cleanup goals specified in the ROD. The existing ROD thus already ensures protection of human health and the environment through a combination of treatment and containment. Allowing the PRPs to dispose of certain TPH soils at the Roosevelt Landfill therefore would change the overall mix of treatment and containment but not the fundamental nature of the site remedy. The Roosevelt Landfill option also would be at least as protective as thermal desorption given (i) the uniquely secure design of the Roosevelt Landfill and (ii) the ancillary dust and other releases that would occur during thermal desorption.

II. Application of the remedy selection criteria specified in the National Contingency Plan

The above discussion provides general information regarding the proposed off-site disposal of soils having TPH in the 10,000 mg/kg to 30,000 mg/kg range and the environmental, implementation and cost factors that favor this approach. The above information also is relevant in evaluating this option under the specific remedy selection criteria set forth in the NCP.

A. The NCP remedy selection criteria

The NCP establishes nine criteria for evaluating remedial action alternatives. These are set forth at 40 C.F.R. §300.430(e)(9)(iii), and consist of the following: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility and volume through treatment; (5) short-term effectiveness; (6) implementability; (7) cost; (8) state acceptance and (9) community acceptance. An approach that would allow the off-site disposal of soils that contain relatively moderate amounts of TPH ranks at least as high under these criteria as the current approach that specifies thermal desorption for all soils with TPH levels above 10,000 mg/kg approach under which these soils would undergo thermal desorption.

B. Application of the NCP criteria to the proposed off-site disposal option

The remedy selection criteria fall into three basic groups. The first relates to the protectiveness of the remedy and includes considerations of short-term and long-term effectiveness and compliance with ARARS. This group encompasses the first five of the criteria listed above. The second group relates to issues of implementability and cost, corresponding to criteria numbers 6 and 7. The third group concerns the state and community acceptance of the proposed option and corresponds to criteria numbers 8 and 9. The following discussion addresses the remedy selection criteria in the context of these three groups.

1. Overall protection of human health and the environment

Evaluating the proposed off-site disposal option under the NCP criteria that require remedial actions to protect human health and the environment involves consideration of essentially two factors. The first and most important consideration is whether the proposed disposal site would prevent future releases of the TPH and other constituents that would be present in the soils that the PRPs shipped to that facility. The second is an evaluation of the effectiveness of this remedy with respect to the Harbor Island site itself.

The information provided in the opening section of this letter describes some of the design and locational characteristics of the Roosevelt Landfill that make it highly protective of human health and the environment. Additional information regarding the landfill is set forth in Attachment A. Of particular relevance in Attachment A are excerpts from the Environmental Impact Statements (EISs) that Klickitat County prepared in 1989 and 1992 regarding the landfill. These documents contain objective, thorough evaluations of the potential environmental impacts that could result from operation of this landfill. The EISs concluded that adverse impacts were highly unlikely given the combination of state-of-the-art landfill design, closely supervised operation and locational factors that effectively isolate the landfill from the local aquifer. These factors remain unchanged and lead to the same conclusion that the landfill provides exceptional short-term and long-term human health and environmental protection with respect to the waste materials it accepts.

The off-site disposal option also would provide tangible benefits in terms of human health and environmental protection at the Harbor Island site itself. The principal benefit would be prompt completion of a significant part of the overall remedy-- as discussed above, off-site disposal of soils within the 10,000 mg/kg to 30,000 mg/kg TPH range could be completed within 2 to 5 months as compared to the 30 months that might be required to complete thermal desorption. This option also would provide long-term cleanup effectiveness at the site because there would be no reduction in the ROD-specified cleanup levels and areas from which soils would be excavated for off-site disposal would be backfilled with clean soils

from the Roosevelt Landfill. ARAR compliance would be unchanged since the site cleanup standards would not vary from those specified in the ROD and the off-site disposal would comply with all applicable waste transportation and disposal requirements. Lastly, while off-site disposal would not provide the treatment or permanent reduction in waste volume that normally is preferred under CERCLA, this does not change the fact that this option would be (i) protective of human health and the environment and (ii) consistent with the general approach taken under the current ROD under which the remedy includes a combination of treatment and containment.

2. Implementability and cost

The second set of NCP remedy selection criteria relates to issues of implementability and cost. These factors strongly favor the off-site disposal option proposed here. Implementation of the remedy would be simplified since, as discussed previously, there would be substantially less handling of the soils in the 10,000 mg/kg to 30,000 mg/kg TPH range and the opportunity for prompt completion of the excavation, off-site shipment and backfilling would minimize the time during which ongoing site operations would be disrupted. The need for ongoing PRP coordination and EPA oversight regarding the remedial action also would be minimized.

The off-site disposal option also would substantially reduce the remedial action costs at the site. Attachment B is an estimate prepared by Morrison-Knudsen Corporation comparing the projected cost of remedial action with and without the allowance for off-site disposal of soils in the 10,000 mg/kg to 30,000 mg/kg TPH range. This estimate is based on a careful evaluation of the expected unit costs of the activities associated with the thermal desorption and off-site disposal options, and on reasonable assumptions regarding the soil volumes that would be involved and the likely characteristics of those soils. The supporting documentation included with Attachment A explains these assumptions and unit cost estimates in considerable detail. The estimate concludes that the off-site disposal option proposed here would save the PRPs over $6 million. Varying the assumptions could increase or decrease this amount somewhat. Under virtually any scenario, however, the cost savings would be very substantial.

3. State and community acceptance

The final set of NCP remedy selection criteria requires a consideration of whether the proposed remedy would be accepted by the state and local community. To the PRPs' knowledge neither the state nor the community have indicated formally whether they would approve of this proposed off-site disposal. There is reason to believe, however, that they would not object to such disposal given the expedited cleanup this approach could achieve

and the fact that this option meets the applicable remedy selection criteria set forth at 40 C.F.R. §300.430(e)(9)(iii).

III. Conclusion

Off-site disposal of the soils at the Harbor Island Soil and Groundwater Operable Unit that have TPH levels between 10,000 mg/kg and 30,000 mg/kg would be environmentally protective and, on the basis of implementability and cost, preferable to thermal desorption. For these and other reasons this disposal option also meets the NCP remedy selection criteria. EPA should take whatever steps are necessary to allow the PRPs to utilize this option under the ROD.

The Port of Seattle looks forward to your response to this proposal. The other members of the Harbor Island Soil and Groundwater Operable Unit PRP Group also support this general proposal but have not yet had an opportunity to review this letter or its attachments. This approach may require some adjustment in the manner in which certain common costs would be allocated among the PRPs under their PRP agreement. We are confident, however, that any necessary adjustments could be made so as to allow this off-site disposal option to go forward. The Port suggests a meeting between the PRPs and EPA in the near future to discuss this proposal in more detail.

Very truly yours,

HELLER, EHRMAN, WHITE & McAULIFFE

David M. Heineck

David M. Heineck

klm

Attachments (2)

cc (w/attachments):

Charlie Ordine
Len Sorrin
Zane Bolen
Tom Kearns
Fred Frederickson
Mark Myers
Tom Newlon
Bill Joyce
Mark Zuschek
Anne DeVoe Lawler
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April 11, 1995

RECEIVED
APR 11 1995
SUPERFUND REMEDIAL BRANCH

Mr. Keith Rose
Superfund Branch (HW-113)
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Re: Additional information regarding proposed revision to Harbor Island Soil and Groundwater Unit RD/RA

Dear Mr. Rose:

This is a follow-up to our meeting of April 3, 1995, during which we discussed the merits of revising the Harbor Island Soil and Groundwater Unit RD/RA to allow off-site disposal at the Roosevelt Landfill of soils that have TPH levels of between 10,000 mg/kg and 30,000 mg/kg. At the meeting you asked for additional clarification of three matters: (i) the schedules under which the different remedial options currently being reviewed could be carried out, (ii) the parameters that Pemco used in developing its estimate of thermal desorption unit costs and (iii) the thermal desorption production rate that Pemco used in its cost estimate. This letter and its attachments address these three issues.

The projected schedules for carrying out the three variations of the Harbor Island RD/RA that we have discussed are enclosed as Attachment A to this letter. The three variations consist of (i) the current remedial alternative that requires thermal desorption of all soils having TPH levels of 10,000 mg/kg or more, (ii) an alternative under which all of the soils having TPH above action levels (and below state dangerous waste thresholds) could be disposed off-site and (iii) the alternative that would call for a hybrid approach in which soils having TPH levels between 10,000 mg/kg and 30,000 mg/kg could be shipped for off-site disposal and soils having TPH at higher concentrations would be treated through on-site thermal desorption. As you know, the Port of Seattle and the other Harbor Island PRPs are proposing the third of these options. We have included a schedule showing the second option for comparison purposes only.

Also included at Attachment A is an description of the assumptions that have been made in developing these schedules. Common assumptions have been made throughout. As a result, changing any assumption regarding the time required to carry out a common work item would change all the schedules equally and would not change the time savings we are projecting for the hybrid option we are proposing. The time savings would be realized at the point of remedial action field construction. As these schedules indicate, we are projecting that this work would require 18 months under the current thermal desorption approach but only 5 months under the hybrid approach. The remedial action therefore could be completed 13 months more quickly under the hybrid alternative that combines thermal desorption and off-site disposal.

Attachment B consists of a letter and attachment that responds to your questions regarding Pemco's cost estimate and the thermal desorption production rate. This information provides some additional detail regarding the assumptions that Pemco used in developing its cost estimate. It also provides further information regarding Pemco's rationale for using a 15 ton/hour thermal desorption production rate in its cost estimate. Please let me know if this information doesn't adequately respond to your questions regarding these two issues.

We appreciate your consideration of this proposal. We remain available to meet with you at your convenience and willing to provide additional written information if that would be helpful in your evaluation of this matter.

Sincerely,

HELLER, EHRMAN, WHITE & McAULIFFE

David M. Heineck

David M. Heineck

Attachments (2)

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RECEIVED
JUN 14 1995
SUPERFUND BRANCH

June 8, 1995

Keith Rose, Superfund Project Manager
U.S. Environmental Protection Agency
Region 10, HW-113
1200 Sixth Avenue
Seattle WA 98101

Dear Mr. Rose:

Ecology has reviewed the revised Harbor Island Record of Decision Amendment dated June 2, 1995, that proposes to conduct fish toxicity tests to determine whether soils exceeding TPH concentrations of 30,000 mg/kg designate as dangerous waste, to determine whether it is appropriate to send these soils to the Roosevelt Regional Landfill.

Based on your May 31, 1995, telephone conversation with Mr. Nnamdi Madakor, it is Ecology's understanding that the Roosevelt Regional Landfill unconditionally accepts TPH-contaminated soils up to 5,000 mg/kg. Given that Roosevelt Regional Landfill accepts TPH-contaminated soils up to the 5,000 mg/kg level, it is the Port of Seattle's or any other PRP's responsibility to ensure that any TPH-contaminated soils transported off-site that contain greater than 5,000 mg/kg are disposed of and/or treated appropriately.

The enclosed guideline can be used as a screening test to determine if a waste could potentially fail the TCLP before the TCLP test is actually conducted.

Ecology hereby concurs with the proposed Record of Decision Amendment.

If you have any questions, please contact Nnamdi Madakor, Northwest Regional Office, at (206) 649-7112.

Sincerely,

Emily Ray

Emily Ray, Acting Program Manager
Toxics Cleanup Program

ER:cp
Enclosure

cc: Mike Gallagher, Section Manager, TCP-NWRO
Nnamdi Madakor, Site Manager, Harbor Island, TCP-NWRO
Tanya Barnett, Assistant Attorney General, Ecology Division