McNeil Island

MTCA

ENFORCEMENT ORDER

In the Matter of Remedial Action by:	)	Enforcement Order
Department of Corrections Post Office Box 9699, MS FN-61 Olympia, Washington 98504	)	No. DE 91-S147

TO: Department of Corrections

I.

Jurisdiction

This Order is issued pursuant to the authority of RCW 70.105D.050(1).

II.

Statement of Facts

1. The project area in this matter is comprised of three (3) separate and distinct sites at the McNeil Island Corrections Center (MICC). The MICC is located on McNeil Island in southern Puget Sound southwest of Tacoma. The sites, depicted on the map (Exhibit A) attached to this Order, are the following: Diesel Yard, Fire Depot, and Dip Tank.

2. MICC is a minimum to medium security penal institution operated by the Washington Department of Corrections (Corrections). The prison was operated by the Federal government from 1873 to 1981 when ownership was relinquished to the State. Approximately 1,000 inmates are housed at MICC. Some 40 families of facility employees also live on the island in homes. The prison operation areas comprise roughly one quarter of the island, which is approximately seven square miles in total. The remainder of the island is administered as a wildlife reserve by the Washington State Department of Wildlife.

3. A series of investigations and cleanup activities were conducted between 1986 and 1990 by Corrections, Ecology, and the U.S. Bureau of Prisons. The reports describing the site characterization and remedial action

activities completed are listed on page 4 of Exhibit B, the Cleanup Action Plan attached to this Order.

4. A Preliminary Assessment was conducted for the Dip Tank area. A Site Investigation and Feasibility Study was conducted for the Diesel Yard and the Fire Depot areas. These sites are described in the following paragraphs.

5. The Diesel Yard is a relatively flat, eight-acre area located approximately 500 feet upgradient of Butterworth Reservoir, which is the main drinking water source for the island residents. Site characterization conducted by the Corrections consultant has confirmed the presence of polychlorinated biphenyls (PCBs) and lead in the soil, and PCBs in the ground water. In 1986, approximately 1000 cubic yards of soils containing high concentrations of PCBs (up to 2,700 ppm) were excavated and disposed off-site at a hazardous waste landfill. Eleven ground water monitoring wells have been installed, sampled, and analyzed. Four of these wells are part of an ongoing quarterly monitoring program. Surface and subsurface soil samples have also been collected and analyzed during the course of these investigations. Approximately one acre in the center of the Diesel Yard contains soils ranging from 10 to 35 parts per million (ppm) of PCBs and 500 to 3500 ppm of lead. Approximately eight acres surrounding the center acre contain soils ranging from 1 to 10 ppm PCBs and from 20 to 500 ppm lead.

6. The Fire Depot is located west of the main prison facility and north of the Boat Yard. Surface and subsurface soil samples were collected and analyzed for several analytes including PCBs, lead, and copper. PCBs were found in surface soil samples at levels ranging from 0.1 to 6 ppm, except for one sample which had 46 ppm PCBs. No PCBs were found in subsurface soil samples. Concentrations of lead in surface samples ranged from 32 to 750 ppm. Ground water samples were collected and analyzed for lead from three monitoring wells in the Fire Depot area. No lead was present in the ground water.

7. The Dip Tank area is located in the northeast portion of McNeil Island along the shores of Still Harbor. The area consisted of a three-walled

floorless shed with a tank (since removed) made of several 55-gallon drums that had been halved and welded together. Concentrations of four polycyclic aromatic hydrocarbons (PAHs), constituents of creosote, were detected at several hundred ppm in five composite soil samples.

8. Based on the above facts, Ecology has determined that the release or threat of release of hazardous substances from the three sites listed above require remedial action to protect public health, welfare, and the environment.

III.

Ecology Determinations

1. The Department of Corrections is an "owner or operator" as defined at RCW 70.105D.020(6) of a "facility" as defined at RCW 70.105D.020(3).

2. The facility is known as McNeil Island Corrections Center and is located at McNeil Island.

3. The substances found at the facility and as described above are "hazardous substances" as defined at RCW 70.105D.020(5).

4. Based on the presence of these hazardous substances at the facility and all factors known to the Department, there is a release or threatened release of hazardous substances from the facility, as defined at RCW 70.105D.020(10).

5. By letter dated April 10, 1991, Ecology notified Department of Corrections of its status as a "potentially liable person" under RCW 70.105D.040 after notice and opportunity for comment.

6. Pursuant to RCW 70.105D.030(1) and 70.105D.050, the Department may require potentially liable persons to investigate or conduct other remedial actions with respect to the release or threatened release of hazardous substances, whenever it believes such action to be in the public interest.

7. Based on the foregoing facts, Ecology believes the remedial action required by this Order is in the public interest.

IV.

Work to be Performed

Based on the foregoing Facts and Determinations, it is hereby ordered that Department of Corrections take the following remedial actions.

1. Corrections shall implement the remedial actions as presented in the Cleanup Action Plan (attached) at three sites on the island: the Fire Depot area, the Dip Tank area, and the Diesel Yard. The Cleanup Action Plan, attached as Exhibit B, is an integral and enforceable part of this Order.

2. Within forty-five (45) calendar days of the effective date of this Order, Corrections shall submit to Ecology for review and comment the following draft plans for implementing the remedial actions pursuant to WAC 173-340-400 and 410:

a. Engineering Design Report,

b. Work Plan,

c. Verification Sampling and Analysis Plan, and

d. Compliance Monitoring Plan.

Upon receipt of Ecology comments, Corrections shall incorporate the comments and submit final project plans to Ecology within thirty (30) calendar days for Ecology's approval. Corrections may discuss the comments with Ecology. Based on the discussions, Ecology may amend its comments if deemed appropriate.

3. The Engineering Design Report shall include the plans, specifications, and design drawings for soil excavation areas and geomembrane cover for the Diesel Yard and Current Landfill.

4. The Work Plan shall describe the practices to follow in performing the cleanup actions. This report shall include the following:

a. Procedures consistent with Chapter 173-303 WAC (Dangerous Waste Regulations) for the handling of hazardous substances at the site prior to final disposal;

b. Procedures for documenting the transport and final disposal of all hazardous substances from the site;

c. Identification of all applicable federal, state, and local permits and approvals needed for implementing remedial work;

d. A plan for the long-term maintenance and inspection of the geomembrane cover to be installed at the Diesel Yard; and

e. A schedule for implementing the remedial work.

5. The Verification Sampling and Analysis Plan and the Compliance Monitoring Plan may be combined into one document. The document shall comply with the applicable provisions of WAC 173-340-410, -820 and -830. The Compliance Monitoring Plan shall include a plan for long-term monitoring of groundwater at the Diesel Yard.

6. A Health and Safety Plan shall be prepared in accordance with WAC 173-340-810. Prior to initiation of site work, Corrections shall provide the Washington State Department of Labor and Industries a copy of the Health and Safety Plan and documentation that all personnel involved with the remedial work have complied with the training and medical monitoring requirements of the Washington Industrial Safety and Health Act (Chapter 49.17 RCW) and appropriate regulations. Corrections shall also provide a copy of the Health and Safety Plan to Ecology for review and comment.

7. At the Fire Depot, Corrections shall excavate all soils which exceed one (1) part per million (ppm) PCB or 250 ppm lead. The excavated soil shall be transferred to the Diesel Yard and remediated there via installation of a geomembrane synthetic cover. Corrections shall implement post-excavation verification sampling in accordance with the provisions as described in this Order and in the final Cleanup Action Plan to ensure compliance with the soil cleanup standards for PCBs and lead.

8. At the Dip Tank area, Corrections shall excavate all soils which exceed one (1) ppm total PAHs (carcinogenic). The excavated soil shall be disposed off-site at an EPA-approved hazardous waste treatment, storage and disposal facility. The contractor shall document the transport and final deposition of the soil from the site. Corrections shall implement post-excavation verification sampling in accordance with the provisions as

described in this Order and in the final Cleanup Action Plan to ensure compliance with the soil cleanup standard of one (1) ppm.

9. At the Diesel Yard, the cleanup level for soils shall be 250 ppm for lead, one (1) ppm for PCBs. The remedial action shall be a combination of covers: a geomembrane cover for soils exceeding ten (10) ppm PCBs, and capping or treatment of soils with concentrations between one (1) and ten (10) ppm PCBs. (Further discussion of remedial action for soils containing between one (1) and ten (10) ppm PCBs is contained in the Cleanup Action Plan.) Fencing shall be installed around the perimeter of the geomembrane cover to prevent human or vehicular disturbance of the cover.

11. While remedial work described above is ongoing, Corrections shall submit to the Ecology Project Manager a monthly progress report documenting all pertinent information on the status of the remedial work. The report shall be delivered to Ecology within twenty-one (21) calendar days of the month's end. At a minimum, the report shall present the following:

a. Available results of any sampling and monitoring conducted;

b. Any modifications or design changes that vary from approved project plans;

c. Volumes of contaminated soil excavated and ultimate disposal location;

d. Deviations from approved schedules; and

e. Significant problems encountered.

V.

Terms and Conditions of Order

1. Definitions

Unless otherwise specified, the definitions set forth in Chapter 70.105D RCW and Chapter 173-340 WAC shall control the meanings of the terms used in this Order.

2. Public Notice

Chapter 70.105D RCW requires that, at a minimum, this Order be subject to concurrent public notice. Ecology shall be responsible for providing such

public notice and reserves the right to modify or withdraw any provisions of this Order should public comment disclose facts or considerations which indicate to the Department that the Order is inadequate and improper in any respect.

3. Remedial Action Costs

The Department of Corrections shall pay to Ecology those costs incurred by Ecology pursuant to this Order. These costs shall include work performed by Ecology or its contractors for investigations, remedial actions, and Order preparation, oversight, and administration. Ecology costs shall include costs of direct activities; e.g., employee salary, laboratory costs, travel costs, contractor fees, and employee benefit packages; and agency indirect costs of direct activities. The Department of Corrections shall pay the required amount within 90 days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, a general description of work performed, and identification of involved staff, and the amount of time spent by involved staff members on the project. Failure to pay Ecology's costs within 90 days of receipt of the itemized statement of costs may result in interest charges.

4. Designated Project Coordinators

The project coordinator for Ecology is:

Mary Beth Hayes
Department of Ecology
Southwest Regional Office
7272 Cleanwater Lane
Olympia, WA 98504-6811

The project coordinator for the Department of Corrections is:

Paul Szumlanski
Department of Corrections
417 West 4th Street
Olympia, WA 98504

The project coordinator(s) shall be responsible for overseeing the implementation of this Decree. To the maximum extent possible, communications between Ecology and the Department of Correction, and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be

directed through the project coordinator(s). Should Ecology or the Department of Corrections change its project coordinator(s), written notification shall be given to Ecology or the Department of Corrections at least ten (10) calendar days prior to the change.

5. Performance

All work performed pursuant to this Order shall be under the direction and supervision, as necessary, of a professional engineer or certified hydrogeologist, or equivalent, with experience and expertise in hazardous waste site investigation and cleanup. The Department of Corrections shall notify Ecology as to the identity of such engineer(s) or hydrogeologist(s), and of any contractors and subcontractors to be used in carrying out the terms of this Order, in advance of their involvement at the Site.

6. Access

Ecology or any Ecology authorized representative shall have the authority to enter and freely move about all property at the site at all reasonable times for the purposes of, inter alia: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Order; reviewing the progress in carrying out the terms of this Order; conducting such tests or collecting samples as Ecology or the project coordinator may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Order; and verifying the data submitted to Ecology by the Department of Corrections. Ecology shall provide reasonable notice before entering property unless an emergency prevents notice. Ecology shall allow split or replicate samples to be taken by the Department of Corrections during an inspection unless doing so would interfere with Ecology's sampling. The Department of Corrections shall allow split or replicate samples to be taken by Ecology and shall provide Ecology seven (7) days notice before any sampling activity.

7. Public Participation

The Department of Corrections shall prepare and/or update a public participation plan for the Site. Ecology shall maintain the responsibility

for public participation at the Site. The Department of Corrections shall help coordinate and implement public participation for the Site.

8. Retention of Records

The Department of Corrections shall preserve in a readily retrievable fashion, during the pendency of this Order and for ten (10) years from the date of completion of the work performed pursuant to this Order, all records, reports, documents, and underlying data in its possession relevant to this Order. Should any portion of the work performed hereunder to be undertaken through contractors or agents of the Department of Corrections, a record retention requirement meeting the terms of this paragraph shall be required of such contractors and/or agents.

9. Dispute Resolution

The Department of Corrections may request Ecology to resolve factual or technical disputes which may arise during the implementation of this Order. Such request shall be in writing and directed to the signatory of this Order. Ecology resolution of the dispute shall be binding and final. The Department of Corrections is not relieved of any requirement of this Order during the pendency of the dispute and remains responsible for timely compliance with the terms of the Order unless otherwise provided by Ecology in writing.

10. Reservation of Rights

Ecology reserves all rights to issue additional orders or take any action authorized by law in the event or upon the discovery of a release or threatened release of hazardous substances not addressed by this Order and/or upon discovery of any factors not known at the time of issuance of this Order or in order to abate an emergency, or under any other circumstances deemed appropriate by Ecology.

In the event Ecology determines that conditions at the Site are creating or have the potential to create a danger to the health or welfare of the people on the site or in the surrounding area or to the environment, Ecology may order the Department of Corrections to stop further implementation of this Order for such period of time as needed to abate the danger.

11. Transference of Property

No voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated by the Department of Corrections without provision for continued implementation of all requirements of this Order and implementation of any remedial actions found to be necessary as a result of this Order.

Prior to transfer of any legal or equitable interest the Department of Corrections may have in the Site or any portions thereof, the Department of Corrections shall serve a copy of this Order upon any prospective purchaser, lessee, transferee, assignee, or other successor in such interest. At least thirty (30) days prior to finalization of any transfer, the Department of Transportation shall notify Ecology of the contemplated transfer.

12. Compliance With Other Applicable Laws

All actions carried out by the Department of Corrections pursuant to this Order shall be done in accordance with all applicable federal, state, and local requirements.

VI.

Satisfaction of this Order

The provisions of this Order shall be deemed satisfied upon the Department of Corrections' receipt of written notice from Ecology that the Department of Corrections has completed the remedial activity required by this Order, as amended by any modifications, and that all other provisions of this Agreed Order have been complied with.

VII.

Enforcement

Pursuant to RCW 70.105D.050, this Order may be enforced as follows:

A. The Attorney General may bring an action to enforce this Order in state, or federal court.

B. The Attorney General may seek, by filing an action, if necessary, to recover amount spent by Ecology for investigative and remedial actions and orders related to the Site.

C. In the event the Department of Corrections refuses, without sufficient cause, to comply with any term of this Order, the Department of Corrections will be liable for:

(1) up to three times the amount of any costs incurred by the state of Washington as a result of its refusal to comply; and

(2) civil penalties of up to $25,000 per day for each day it refuses to comply.

D. This Order is not appealable to the Washington Pollution Control Hearings Board. This Order may be reviewed only as provided under RCW 70.105D.060

Effective date of this Order: _____

DATED this 15 day of May, 1991.

Michael A. Wilson
Southwest Region Supervisor
Toxics Cleanup Program

Site Location Map

Exhibit A of Enforcement Order DE 91-S147

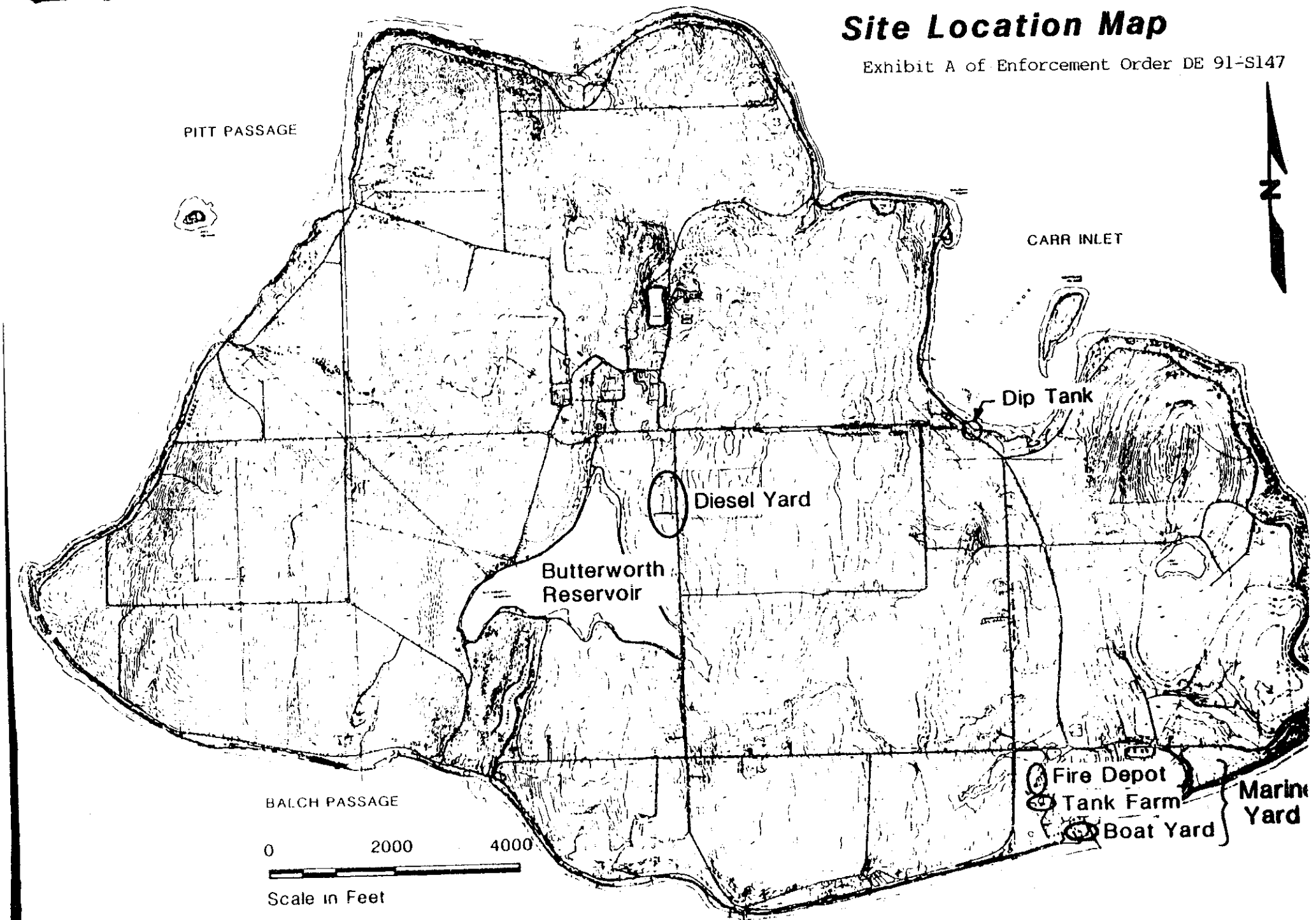

Exhibit B of Enforcement Order No. DE 91-S147

CLEANUP ACTION PLAN
MCNEIL ISLAND CORRECTIONS CENTER
PIERCE COUNTY, WASHINGTON

April 26, 1991

PURPOSE

This decision document presents the proposed cleanup action for three hazardous waste sites identified on McNeil Island, located in Pierce County, Washington: the Diesel yard, the Fire Depot, and the Dip Tank. This decision is based primarily on the results of preliminary assessments (PAs) and a remedial investigation/feasibility study (RI/FS) of the island conducted by Hart Crowser, Inc. The PA/RI/FS evaluations were prepared for the Washington State Department of Corrections (Corrections), a potentially liable person (PLP) under RCW 70.105D.040.

DECLARATION

The Washington State Department of Ecology (Ecology) has selected the cleanup actions described herein because they will: 1) be protective of human health and the environment; 2) comply with recently adopted cleanup standards under the Model Toxics Control Act (MTCA; WAC 173-340); 3) comply with applicable state and federal laws; 4) provide for compliance monitoring; and 5) utilize permanent solutions to the maximum extent practicable.

SITE HISTORY

The McNeil Island Corrections Center is a state penal institution acquired in 1981 from the federal government. Presently, approximately 1,000 inmates live on McNeil Island, along with 30 to 40 families of facility employees. As a result of an ongoing prison expansion project, the inmate population will likely increase in the future. Because of the prison activities, access to the island is tightly controlled.

Operation areas currently utilized by the correctional facility represent only a small fraction of the 7 square mile island. The majority of island land is administered by the Washington State Department of Wildlife.
Prior to state acquisition, the U.S. Bureau of Prisons also operated a correctional facility on the island. Federal prison operations date back to 1873.

Throughout the years of its existence, the correctional facility has operated a number of support facilities including water supply reservoirs, electric power transmission, fuel storage, ship building and repair, motor vehicle maintenance and repair, furniture refinishing, lumber production and wood treatment, dairy and agricultural farming, and landfill waste disposal. Some of these activities involved handling of chemical substances now recognized as hazardous to human health and the environment.

In 1984, Ecology and the U.S. Environmental Protection Agency (EPA) identified potential risks resulting from possible past releases of hazardous chemicals on the island. The primary concern noted at that time was an apparent release of electrical transformer fluids onto soils in the Diesel Yard (Figure 1). Subsequent sampling in the transformer storage area confirmed the presence of polychlorinated biphenyls (PCBs) at concentrations in excess of relevant PCB cleanup guidelines available at that time. Hazardous chemical releases were also suspected, and in some cases subsequently confirmed, at a number of other island locations.

In response to these concerns, a series of investigation and cleanup activities were conducted between 1986 and 1989 by Corrections, Ecology, and the U.S. Bureau of Prisons.

ENVIRONMENTAL STUDIES

The combined preliminary assessment, remedial investigation, feasibility study, and ongoing water quality monitoring activities at the Diesel Yard, Fire Depot, and Dip Tank have resulted in the collection of over 200 samples of surface and subsurface soils, ground water and surface water, sediment, and biological tissue samples for chemical analysis. Many of these samples were analyzed for nearly 130 priority pollutants, including metals, volatile and semivolatile organic constituents, PCBs, and pesticides. Together these data form an information base sufficient to characterize the nature and extent of contamination at these three sites on McNeil Island.

The following reports document the primary investigations and cleanup evaluations conducted at McNeil Island:

- PCB Removal: McNeil Island Corrections Center. Report prepared by Whitacre Engineers for Washington Department of Corrections, 1987.

- Preliminary Contamination Assessment: McNeil Island Correctional Center. Report prepared by Hart Crowser, Inc. for Washington Department of General Administration, 1987.

- Site Characterization and Feasibility Studies: McNeil Island Correctional Center, Pierce County, Washington. Report prepared by Hart Crowser, Inc. for Washington Departments of Corrections and General Administration, 1989.

- Preliminary Assessment Sites: McNeil Island Correctional Center, Pierce County, Washington. Report prepared by Hart Crowser, Inc. for Washington Departments of Corrections and General Administration, 1989.

- Results of Quarterly Ground water Monitoring: McNeil Island Correctional Center, Pierce County, Washington. Report prepared by Hart Crowser, Inc. for Washington Department of Corrections, 1991.

SITE CONDITIONS AND CLEANUP ALTERNATIVES

Summaries of findings at the three waste sites identified on McNeil Island are presented below, along with a site-by-site discussion of cleanup standards and cleanup alternatives considered during RI/FS evaluations.

Diesel Yard

The Diesel Yard was the first hazardous waste site identified on McNeil Island. Encompassing an area of approximately 8 acres, 500 feet to the east of Butterworth Reservoir (Figure 1), the Diesel Yard was formerly used as a salvage/scrap area and diesel repair shop.

Testing performed in 1985 revealed the presence of PCBs in soils within the vicinity of the transformer storage area of the Diesel Yard. In response to this finding, during 1986 approximately 1,000 cubic yards of site soils containing high concentrations of PCBs (to 2,700 ppm) were excavated and disposed off-island at the Arlington, Oregon hazardous waste landfill. This prior excavation removed the highest concentration material from the site, along with a large portion of the total site mass of PCBs. However, residual levels of PCBs above the 2 ppm cleanup standard applicable at that time still remained on-site at the conclusion of the 1986 excavation.

A comprehensive characterization of chemical contaminants remaining at the Diesel Yard site was completed in 1989. Based on these data, and an associated assessment of potential site risks, PCBs were confirmed as the principal contaminant present at the site. However, other chemicals were also detected at the site, including lead, chloroform, and total petroleum hydrocarbons (TPH). A summary of current site conditions is presented below.

PCBs. Soil PCB concentrations at individual sample locations at the Diesel Yard range from less than 0.1 ppm to 35 ppm. The highest PCB concentrations (greater than 10 ppm) occur in surface soils (0 to 1 foot depth) beneath the former scrap pile. All scrap has been removed from the site. Approximately 3,000 cubic yards (yd^3) of soil at the site exceed a PCB concentration of 10 ppm. Approximately 50,000 yd^3 exceed a concentration of 1 ppm, the MTCA Method A soil cleanup standard for PCBs.

Low concentrations of PCBs (less than 0.02 to 0.54 ppb) have been detected in surface waters and ground waters migrating towards Butterworth Reservoir. One surface water location (DY-SW03) and one groundwater location (DY-MW10), both located in or adjacent to the former PCB excavation, contained PCB concentrations in excess of the MTCA Method A ground water cleanup standard of 0.1 ppb. The depth to water at DY-MW10 has varied from approximately 35 to 37 feet below ground surface. PCB concentrations at this location have ranged from less than 0.02 ppb to 0.30 ppb over the past 2-1/2 years, with the lowest concentration (less than 0.02 ppb) observed during the most recent sampling (March, 1991). However, a statistically significant downward trend in PCB concentrations has not yet been observed. Quarterly water quality monitoring in the Diesel Yard area is ongoing.

Prior releases of PCBs associated with soils (to 2,700 ppm) within the 1986 excavation area immediately upgradient of DY-MW10 appear to have been the predominant source of elevated PCB concentrations in ground water at DY-MW10. All soils in this area with PCB concentrations above 10 ppm were removed from the site during the 1986 excavation. Current soil concentrations in the DY-MW10 area range from less than 0.1 ppm to 10 ppm.

Lead. Soil concentrations of lead at the Diesel Yard range from 15 ppm to 5,900 ppm. Similar to PCBs, the highest lead concentrations (greater than 250 ppm) occur in surface soils (0 to 1 foot depth) beneath the former scrap pile. Approximately 3,000 to 4,000 yd^3 of soil in this area exceeds the MTCA Method A soil cleanup standard for lead of 250 ppm. The location of these soils is similar to that of PCBs in excess of 10 ppm.

Of 24 on-site ground water and surface water samples collected and analyzed, only one contained detectable concentrations of lead. The single lead detection, at an estimated concentration of 0.5 ppb, is also below the MTCA Method A ground water (5 ppb) and surface water (3.2 ppb; freshwater aquatic life chronic criterion) cleanup standards. The general absence of lead in site waters is also consistent with the low leachability of metals observed in tests of site soils. None of the soils at the Diesel Yard would be designated as a dangerous waste based on lead leachability characteristics.

Applicable cleanup levels for chemicals and media of concern identified at the Diesel Yard site are based on MTCA Method A cleanup standards. These levels are summarized below:

SOILS:

PCBs = 1 ppm based on WAC 173-340-740(2)(a)(i). The point of compliance is established throughout the site.

Lead = 250 ppm based on WAC 173-340-740(2)(a)(i). The point of compliance is established throughout the site.

GROUND WATER:

PCBs = 0.1 ppb based on WAC 173-340-720(2)(a)(i). Compliance will be measured against the Practical Quantitation Limit (PQL), which is 0.65 ppb for PCBs in aqueous media. It is required that, when the PQL is above the cleanup level, Ecology shall consider the availability of improved analytical techniques when performing periodic reviews (WAC 173-340-707(4)). The point of compliance is established in all monitoring wells (existing or future) throughout the site.

SURFACE WATER:

PCBs = 0.000027 ppb based on WAC 173-340-730(2)(a)(ii). Compliance shall be measured against the PQL of 0.65 ppb as noted above. The point of compliance is established in all surface waters throughout the site.

A variety of potential response actions and process options were reviewed during the RI/FS for this site to develop a list of alternative remedial actions which are appropriate for consideration at the Diesel Yard. A preliminary screening of potential alternatives based on applicability, effectiveness, implementability, and cost resulted in the formulation of twelve initial remedial alternatives for the Diesel Yard.

Based primarily on considerations of human health risks, environmental protection, regulatory policies, and costs, three alternatives for soil remediation were selected for more detailed analysis of effectiveness, implementability, and cost. These included minimal further action; placement of a geomembrane cover; and soil stabilization. Although thermal destruction (i.e., incineration) of PCBs is technically feasible, this technology was not selected for detailed analysis because of ineffectiveness in reducing lead concentrations, difficulty in obtaining permits, and high cost. Based on

ground water contaminant concentrations, it is expected that ground water will attain cleanup standards if the source of contamination (soil) is controlled. Therefore, ground water remediation technologies were not examined. A summary of the detailed analysis of alternatives is presented below.

- **Minimal Further Action.** The 1986 PCB excavation and off-island disposal was conducted at a cost of approximately $1,000,000. This action reduced the potential lifetime cancer risk by three-fold (due to potential direct soil contact exposures). The minimal further action alternative includes additional site access restrictions (e.g., fencing). No further capital improvements or long-term maintenance would be completed. Quarterly water quality monitoring of one upgradient and three downgradient monitoring points would be performed for a period of two years, and annually thereafter depending upon data variability. The present worth cost of the minimal further action alternative is approximately $60,000, excluding the $1,000,000 already spent during the 1986 excavation. This alternative would not meet MTCA soil cleanup standards.

- **Geomembrane Cover.** Under this alternative, a synthetic geomembrane cover would be placed over those areas of the site which exceed 10 ppm PCBs and 250 ppm lead. The cover would be designed and constructed according to minimum functional standards for solid waste sites (Chapter 173-304 WAC) in order to prevent human or wildlife contact with soils and minimize ground water infiltration. A long-term maintenance and water quality monitoring program would be included. The geomembrane cover would provide adequate and effective control of PCB migration to Butterworth Reservoir, via surface water runoff as well as ground water infiltration. A fence or barrier will be erected around the geomembrane cover to prevent people or vehicles from disturbing the cover. The present worth cost of this alternative, including long-term water quality monitoring and maintenance as outlined above, is approximately $220,000.

  In addition, Corrections will develop a method (treatment or cover) for the remaining site area with PCB concentrations ranging between 1 ppm and 10 ppm. Ecology shall provide for 30-day public review and comment for this action. As the method of treatment has not been selected, there is no cost proposal for this portion of the remedial action.

- **Soil Stabilization.** This alternative includes the excavation of soils exceeding 10 ppm PCBs and 250 ppm lead, followed by solidification with a cement or polymer stabilization agent. The stabilized soils would then be disposed on-site at the Diesel Yard and covered with an asphalt cement surface. Like the geomembrane cover, implementation of this alternative

would reduce site risks below 10^{-6}, and reduces the mobility of lead and PCBs. The present worth cost of the stabilization alternative, which includes long-term water quality monitoring is approximately $530,000.

As indicated above, a method for treatment of the remaining site area containing from 1 to 10 ppm PCBs in soil would be required in addition to the soil stabilization.

Institutional controls have already been implemented at the Diesel Yard site which preclude the use of this area or adjacent lands for future residential use. These controls provide partial attainment of the soil cleanup standards, which are based on residential site use assumptions.

Most of the site risk remaining at the Diesel Yard site is associated with potential direct contact with site soils. Both the Geomembrane Cover and Soil Stabilization alternatives provide suitable barriers to future soil contact. Considering further that prior removal activities have substantially reduced site risks and minimized further PCB migration, and comparing the effectiveness of additional migration controls, Ecology has selected the Geomembrane Cover alternative as the preferred cleanup option. Containment of soils exceeding 10 ppm PCBs and 250 ppm lead was selected as the primary cleanup action at the Diesel Yard site. However, the secondary cleanup action at the Diesel Yard will be the treatment or covering of soils containing between 1 ppm and 10 ppm PCBs to prevent risks due to potential direct contact with soils.

The Geomembrane Cover alternative would address applicable state and federal ARARs and reduce site risks to below 10^{-6}. Because quantities of wastes would remain on-site under this alternative, Ecology is also requiring long-term water quality monitoring and maintenance of the cap, as outlined above. Monitoring will assure the integrity and continued operation of the containment system.

Fire Depot

The 2-acre Fire Depot area has been used for receiving and storing motor oil and transformers, along with a furniture refinishing wastes and a variety of building materials and equipment. The area is also used for automotive repair.

The contaminants identified during site characterization and risk assessment of the Fire Depot site are limited to lead and PCBs. Concentrations of lead

in soil range from 32 ppm to 763 ppm, while PCB levels range from less than 0.1 ppm to 46 ppm. The distributions of both contaminants at the site are similar, with elevated concentrations limited to surface soils near the former electrical equipment maintenance shop. Lead was not detected in ground water samples collected and analyzed from the site. Ground water samples have not yet been analyzed for PCBs. Prior to the excavation of soils from this site, ground water will be collected and analyzed for PCBs. If PCBs are detected in the ground water, further ground water monitoring will be required.

Applicable cleanup levels for chemicals and media of concern identified at the Diesel Yard site are based on MTCA Method A cleanup standards. These levels are summarized below:

SOILS:

PCBs = 1 ppm based on WAC 173-340-740(2)(a)(i). The point of compliance is established throughout the site.

Lead = 250 ppm based on WAC 173-340-740(2)(a)(i). The point of compliance is established throughout the site.

Overall, an estimated 1,000 yd^3 of soil at the Fire Depot exceeds the MTCA Method A soil cleanup standards cited above. Ecology is proposing that the cleanup action consist of removing soils with PCB and lead concentrations in excess of MTCA Method A soil cleanup standards. Remediation of these soils will be included with similar materials at the Diesel Yard (see above). The present worth cost of this alternative is approximately $15,000.

Dip Tank

Ihe Dip Tank site is a small (less than 300 square feet) area adjacent to Still Harbor where wood poles, pilings, and fence posts were treated with a creosote wood preservative (Figure 1). A limited number of soil and water samples have been collected during PA activities at this site.

Elevated concentrations carinogenic polycyclic aromatic hydrocarbons (CPAHs) were detected in a localized area of visually stained soils in the former Dip Tank area. The specific compounds are phenanthrene, fluoranthene, benz(a)anthracene, and chrysene. Maximum CPAH concentrations within the stained area (280 ppm) exceeded the MTCA Method A soil cleanup standard of 1.0 ppm total CPAHs. Based on the limited available data, concentrations outside of the stained area appear to contain CPAH concentrations of less than 0.2

ppm. No other contaminants were identified. Less than 60 yd^3 of soil at the site likely exceed the cleanup standard.

No metals or organic compounds were detected in surface water samples collected from the site at concentrations above MTCA surface water cleanup standards. Nearshore sediment concentrations were all below Chapter 173-204 WAC Sediment Management Standards. No PAHs or other contaminants were detected in nearshore shellfish tissue samples.

Applicable cleanup levels for chemicals and media of concern identified at the Diesel Yard site are based on MTCA Method A cleanup standards. These levels are summarized below:

SOILS:

CPAHs = 1 ppm based on WAC 173-340-740(2)(a)(i). The point of compliance is established throughout the site.

The proposed remediation plan involves the excavation of soils exceeding the MTCA Method A soil cleanup standard for CPAHs of one (1) ppm, and off-site disposal of these materials at a hazardous waste landfill. Bioremediation was not considered effective as it would be an extremely slow process (on the order of years) and would not remove the heavier PAHs (chrysene and fluoranthene). The costs of incineration, estimated at $200,000, would be substantial and disproportionate compared to disposal at a hazardous waste landfill. The present worth cost of this alternative is less than $30,000.

PROPOSED CLEANUP PLAN

As discussed above,the major components of Ecology's proposed cleanup plan for hazardous waste releases at McNeil Island involve:

- **Install a Geomembrane Cover Above Soils Exceeding MTCA Cleanup Standards at the Diesel Yard Site.** A synthetic geomembrane cover will be placed over those areas of the site which exceed 10 ppm PCBs and 250 ppm lead. The cover will be designed and constructed according to minimum functional standards for solid waste sites (Chapter 173-304 WAC) in order to prevent human or wildlife contact with soils and minimize ground water infiltration. A long-term maintenance and water quality monitoring program is included. Construction of the geomembrane cover will be completed before the end of calendar year 1991.

In addition to the geomembrane cover, Corrections will propose a treatment or capping method for the remaining site area (approximately 8 to 9 acres) with PCB concentrations ranging between 1 ppm and 10 ppm. Ecology must approve the treatment or capping method. The selected remedial action will be completed by the end of calendar year 1993.

- **Excavate Soils at the Fire Depot Which Exceed 1 ppm PCBs and/or 250 ppm Lead, and Incorporate These Soils into the Remediation of the Diesel Yard Site.** Ecology is proposing that the cleanup action consist of removing soils with PCB concentrations in excess of 1 ppm PCBs and/or 250 ppm lead. Remediation of these soils will be included with similar materials at the Diesel Yard (see above). The cleanup action will be completed by the end of calendar year 1991.

- **Excavate Soils at the Dip Tank Area Which Exceed MTCA Soil Cleanup Standards, and Dispose Off-site at a Permitted Hazardous Waste Landfill.** The remediation plan involves the excavation of soils exceeding the MTCA soil cleanup standard for CPAHs of one (1) ppm, and off-site disposal of these materials at a hazardous waste landfill. The cleanup action will be completed by the end of calendar year 1991.