STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the Matter of Remedial Action by:	)	
	)	AGREED ORDER
Aluminum Company of America	)	
Vancouver Works	)	DE 97 TC-I032
	)	

TO: Mr. Albert Piecka
Environmental Manager
Aluminum Company of America
Post Office Box 221
Wenatchee, WA 98801

I.

Jurisdiction

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

II.

Findings of Fact

Ecology makes the following Findings of Fact, without admission of such facts by the Aluminum Company of America.

1. The Aluminum Company of America, ("Alcoa") presently owns property adjacent to the VANALCO Aluminum plant at 5701 Northwest Lower River Road, Vancouver, Washington.

2. Studies conducted at the facility have found polynuclear aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCB) in soils at the site. The contaminants appear to be located within a small dump area on the northern edge of the site. The Site is known as the Northeast Parcel Site and is shown in Appendix A.

3. The PAH and PCB levels in the dump area are greater than the Method A cleanup level of the Model Toxics Cleanup Act (MTCA). The highest levels of PAH are 1,077.38 mg/kg. One hot spot of PCB measured 161.6 mg/kg PCB measured as Aroclor 1248.

4. Studies to date do not indicate any downgradient ground water contamination.

5. Studies of the area indicate that approximately 5,000 cubic yards of material are contaminated.

III.

Ecology Determinations

1. Alcoa is an "owner or operator" as defined at RCW 70.105D.020(11) of a "facility" as defined in RCW

70.105D.020(4).

2. The facility is known as Alcoa Vancouver Works Northeast Parcel Site (Northeast Parcel Site) and is located on Lower River Road in Vancouver, Washington.

3. The substances found at the facility as described above are "hazardous substances" as defined at RCW 70.105D.020(7).

4. Based on the presence of these hazardous substances at the facility and all factors known to the Department, there is a release of hazardous substances from the facility, as defined at RCW 70.105D.020(19).

5. By a letter dated November 13, 1996 Ecology notified Alcoa of its proposed status as a "potentially liable person" under RCW 70.105D.040. Alcoa did not object to Ecology's proposed finding within the thirty (30) days provided by law. By letter dated December 16, 1996, Ecology notified Alcoa of its determination that Alcoa is a PLP with respect to the Northeast Parcel Site.

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 Alcoa take the following remedial actions and that these actions be conducted in accordance with Chapter 173-340 WAC unless otherwise specifically provided for herein. Within 90 calendar days of the effect date of this order, Alcoa shall begin the remedial action described below.

1. Cleanup Action Plan. Ecology's CAP constitutes an integral part of this Order and is attached as Exhibit B.

2. Scope of Work. The scope of work for the Northeast Parcel Site consists of the following. Alcoa, through its contractor and subcontractors as necessary, shall accomplish the following work:

A. Obtain any and all state, federal, or local permits required by applicable law except as provided in Section V.12.B of this Order before work on-Site can begin. Within seven days of the start of the construction phase of the project notifty the City of Vancouver the start date and the estimated finish dates for the construction activities.

B. Complete a wetlands delineation survey and a tree density survey of the Northeast Parcel and TCE landfill Sites. Alcoa shall submit for approval to the Department of Ecology within 14 days of the start of construction activities the wetlands delineation survey and tree density survey. Prior to the start of construction activites wetlands and wetlands buffer boundaries shall be marked in the field with erosion control fencing. No construction activities shall occur within the wetland designated areas.

C. Remove contaminated soils containing concentrations of PAH's and/or PCB's greater than the Method A cleanup standard. The contaminants of concern are found in the

northern half of the site and consist of two categories of waste. These categories are waste that designates as dangerous waste under federal or state rules and waste containing PAH's and/or PCB's in concentrations that are greater than the MTCA residential cleanup standards but that does not designate as dangerous waste under federal or state rules. The approximate amount of soils to be removed is 5,000 cubic yards. The material which tests as a state or federal dangerous waste shall be transported to a RCRA-permitted hazardous waste landfill and be placed there for final disposal. The contaminated soil that does not designate as a dangerous waste under Federal or State rules shall be transported to either: (a) the TCE landfill site south of the Northeast Parcel for short term storage, (b)a Subtitle D solid waste landfill for final disposal or (c)a WAC 173-304 solid waste permitted landfill for final disposal. Alcoa can store contaminated soils that are above MTCA method A standards but below dangerous waste designation levels at the TCE landfill site for a period of no more than two

years. At the end of the two year period Alcoa shall have either removed the material to a permitted solid waste landfill or entered into a legal agreement with Ecology that establishes final placement of the material at the TCE site. If Alcoa chooses to store the contaminated soil at the TCE site then the waste shall be covered and vegetated for proper surface water drainage. Proper erosion controll measures shall be used prior to, during and after all construction grading and fill activities, and until the site is stablized with vegetation. These measures shall include: (a) erosion control fencing at wetlands boundaries, (b) erosion control fencing to prevent sedimentation of the Columbia River, and (c) the use of dust suppressant or watering of travelled areas to prevent excess particulate emmissions. Alcoa shall construct and use a "wheel cleanout" entrance prior to any removal of soil from the site.

D. After Alcoa believes it has all contaminated soil removed then the soil located in the bottom and side walls of the excavation(s) shall be characterized to determine if

cleanup standards are met. Ecology Publication No. 94-9 "Guidance on Sampling and Data Analysis Methods" shall be used to direct the confirmational sampling.

Confirmational samples shall be analyzed for PCB's and individual PAH's using methods described in EPA publication SW 846. The analytical methods used for individual analytes in compliance sampling shall have the lowest detection limits as described in SW 846. Alcoa shall remove any additional contaminated soil encountered in the course of confirmational sampling.

E. Once cleanup standards are met then Alcoa shall fill and cap the excavation(s) with clean fill. The area shall be graded for proper surface water drainage and revegetated. If during the remedation, the tree density requirements of "30 tree units" per acre are not maintained, Alcoa shall prepare a tree replacement plan meeting the requirements of Vancouver Municipal Code 20.96. This plan shall be approved by the Department of Ecology.

F. Once the excavations are filled with clean soil the upper boundary of the wetland buffer area shall be marked with

a permanent physical boundary such as a fence, hedging or other prominent physical marking approved by the Department of Ecology. Wood or metal signs shall be posted at an interval of one per every 100 feet. The signage shall read "Protection of this wetland and buffer area is in your care. Alteration or distrubance is prohibited by law. Contact City of Vancouver for more information."

G. Waste removal shall be accomplished in compliance with all federal, state, and local requirements, including shipping manifests and other record-keeping as appropriate.

H. Alcoa shall prepare a project completion report documenting all phases of the waste removal program, soil replacement, revegetation, tree replacement, and wetland protection. This report shall be certified by a professional engineer.

I. Cleanup standard for the site shall be MTCA Method A. Contaminates of concern at the site are PAH's and PCB's. If Alcoa is unable to attain cleanup standards at this

site, then it shall immediately notify Ecology. The parties will then terminate this Order and begin negotiations for a consent decree for the site.

J. At the completion of the soil remediation, Alcoa shall either dedicate the wetlands and its buffer deliniated in the wetland survey to the City of Vancouver to hold as a sensitive land undevelopable execpt as provided by Vancouver Municipal Code Section 20.50.240 or record a conservation covenent shown in Appendix III with the Clark County Auditor within 365 days of the effective date of this Order.

3. Schedule. The schedule for the performance of the work identified above is as follows:

A. Permits, wetlands delination, and tree survey: Apply for applicable permits within 30 days of the effective date of this Order. Complete and submit wetlands delination and tree survey within fourteen days of start of construction phase of the project.

B. Waste removal and Confirmational Sampling: Complete within 270 days of the effective date of this Order.

C. Clean fill replacement: Complete within 270 days of the effective date of this Order.

D. Project completion report and tree replacement plan: Complete within 365 days of the effective date of this Order.

E. Compliance monitoring report: Complete within 365 days of the effective date of this Order.

F. Conservation Covenent or Wetland Dedication: Complete within 365 days of the effective date of this order.

G. Final disposal of any MTCA contaminated waste stored at the TCE site shall be completed 730 days after the acceptance of the Project completion report by Ecology.

V.

Terms and Conditions of Order

1. Definitions

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

2. Public Notices.

RCW 70.105D.030(2)(a) 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 Ecology that the Order is inadequate or improper in any respect.

3. Remedial Action Costs. Alcoa shall pay to Ecology 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 and support costs of direct activities as defined in WAC 173-340-550(2). Alcoa shall pay the required amount within 90 days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff, and the amount of time spent by involved staff members on the project. A general description of work performed will be provided upon request. Itemized

statements shall be prepared quarterly. Failure to pay Ecology's costs within 90 days of receipt of the itemized statement of costs will result in interest charges at the rate of twelve (12) percent per annum.

4. Designated Project Coordinators. The project coordinator for Ecology is:

Paul Skyllingstad
Department of Ecology
P. O. Box 47706
Olympia, WA 98504-7706

The project coordinator for Alcoa is:

Al Piecka
Aluminum Company of America
P. O. Box 221
Wenatchee, WA 98801

The project coordinator(s) shall be responsible for overseeing the implementation of this Order. To the maximum extent possible, communications between Ecology and Alcoa, 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 Alcoa change project coordinator(s), written notification shall be provided to Ecology or Alcoa at least ten (10) 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 hydrogeologist, or similar expert, with appropriate training, experience and expertise in hazardous waste site investigation and cleanup. Alcoa 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. Alcoa shall provide a copy of this Order to all agents, contractors and subcontractors retained to perform work required by this Order and shall ensure that all work undertaken by such agents, contractors and subcontractors will be in compliance with this Order.

Except where necessary to abate an emergency situation, Alcoa shall not perform any remedial actions at the Northeast Parcel Site other than those required by this Order unless

Ecology concurs, in writing, with such additional remedial actions.

WAC 173-340-400(7)(b)(i) requires that "construction" performed on the Site must be under the supervision of a professional engineer registered in Washington.

6. Access. Ecology or any Ecology authorized representative shall have the authority to enter and freely move about 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 Alcoa. By signing this Agreed Order, Alcoa agrees that this Order constitutes reasonable notice of access, and agrees to allow access to the Site at all reasonable times for purposes of overseeing work performed under this Order. Ecology shall allow

split or replicate samples to be taken by Alcoa during an inspection unless doing so interferes with Ecology's sampling. Alcoa shall allow split or replicate samples to be taken by Ecology and shall provide seven (7) days notice before any sampling activity.

7. Public Participation Ecology shall maintain the responsibility for public participation at the site. Alcoa shall help coordinate and implement public participation for the site.

8. Retention of Records. Alcoa 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 be undertaken through contractors or agents of Alcoa, then Alcoa agrees to include in its contract with such contractors or agents a record retention requirement meeting the terms of this paragraph.

9. Dispute Resolution. Alcoa may request Ecology to resolve disputes which may arise during the implementation of this Order. Such request shall be in writing and directed to the signatory, or his/her successor(s), to this Order. Ecology resolution of the dispute shall be binding and final. Alcoa 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/No Settlement. This Agreed Order is not a settlement under ch. 70.105D RCW. Ecology's signature on this Order in no way constitutes a covenant not to sue or a compromise of any Ecology rights or authority. Ecology will not, however, bring an action against Alcoa to recover remedial action costs paid to and received by Ecology under this Agreed Order. In addition, Ecology will not take additional enforcement actions against Alcoa to require those remedial actions required by this Agreed Order, provided Alcoa complies with this Agreed Order.

Ecology reserves the right, however, to require additional

remedial actions at the Site should it deem such actions necessary.

Ecology also reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the releases or threatened releases of hazardous substances from the Northeast Parcel Site.

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 Alcoa to stop further implementation of this Order for such period of time as needed to abate the danger.

11. Transference of Property Prior to any voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site, Alcoa shall provide 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

Alcoa may have in the site or any portions thereof, Alcoa 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, shall notify Ecology of the contemplated transfer.

12. Compliance with Other Applicable Laws.

A. All actions carried out by Alcoa pursuant to this Order shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits, except as provided in paragraph B of this section.

B. Pursuant to RCW 70.105D.090(1), the substantive requirements of chapters 70.94, 70.95, 70.105, 75.20, 90.48, and 90.58 RCW and of any laws requiring or authorizing local government permits or approvals for the remedial action under this Order that are known to be applicable at the time of issuance of the Order have been included in the Scope or Work and Cleanup Action Plan and are binding and enforceable requirements of the Order.

Alcoa has a continuing obligation to determine whether additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under this Order. In the event Alcoa determines that additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under this Order, it shall promptly notify Ecology of this determination. Ecology shall determine whether Ecology or Alcoa shall be responsible to contact the appropriate state and/or local agencies. If Ecology so requires, Alcoa shall promptly consult with the appropriate state and/or local agencies and provide Ecology with written documentation from those agencies of the substantive requirements those agencies believe are applicable to the remedial action. Ecology shall make the final determination on the additional substantive requirements that must be met by Alcoa and on how Alcoa must meet those requirements. Ecology shall inform Alcoa in writing of these requirements. Once established by Ecology, the additional requirements shall be enforceable requirements of this Order. Alcoa shall not begin or continue the remedial action potentially subject to the additional requirements until Ecology

makes its final determination.

Ecology shall ensure that notice and opportunity for comment is provided to the public and appropriate agencies prior to establishing the substantive requirements under this section.

C. Pursuant to RCW 70.105D.090(2), in the event Ecology determines that the exemption from complying with the procedural requirements of the laws referenced in RCW 70.105D.090(1) would result in the loss of approval from a federal agency which is necessary for the State to administer any federal law, the exemption shall not apply and Alcoa shall comply with both the procedural and substantive requirements of the laws referenced in RCW 70.105D.090(1), including any requirements to obtain permits.

VI.

Satisfaction of this Order

The provisions of this Order shall be deemed satisfied upon Alcoa's receipt of written notification from Ecology that Alcoa 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

1. 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 a state or federal court.

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

C. In the event Alcoa refuses, without sufficient cause, to comply with any term of this Order, Alcoa 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: May 5, 1997.

ALUMINUM COMPANY OF AMERICA

By _____

Mr. Kevin McKnight
Manager NRDA/CERCLA
Remediation
Aluminum Company of
America

STATE OF WASHINGTON

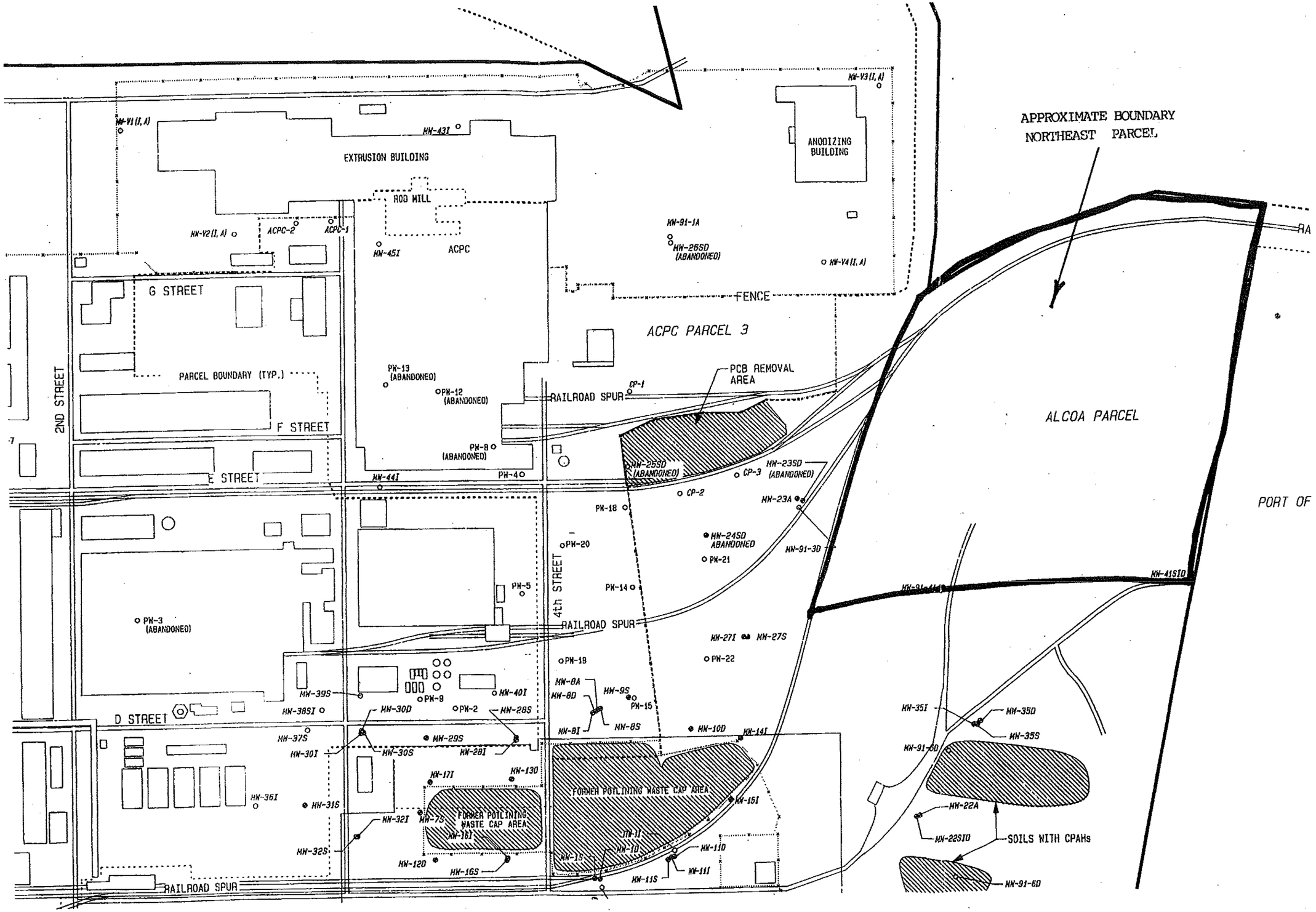
DEPARTMENT OF ECOLOGY

By _____

Mr. M. F. Palko
Supervisor
Industrial Section, Central Programs
Department of Ecology

APPENDIX A

Site Map


APPROXIMATE BOUNDARY
NORTHEAST PARCEL
EXTRUSION BUILDING
ROD MILL
ANODIZING BUILDING
ACPC
ACPC PARCEL 3
ALCOA PARCEL
PORT OF
FENCE
G STREET
F STREET
E STREET
D STREET
2ND STREET
4th STREET
PARCEL BOUNDARY (TYP.)
RAILROAD SPUR
PCB REMOVAL AREA
FORMER POTLINING WASTE CAP AREA
SOILS WITH CPAHs
MW-V1 (I, A)
MW-V2 (I, A)
MW-V3 (I, A)
MW-V4 (I, A)
MW-43I
MW-45I
MW-91-1A
MW-265D (ABANDONED)
ACPC-1
ACPC-2
CP-1
CP-2
CP-3
PW-12 (ABANDONED)
PW-13 (ABANDONED)
PW-8 (ABANDONED)
PW-40
MW-44I
MW-259D (ABANDONED)
MW-235D (ABANDONED)
MW-23A
PW-18
MW-24SD ABANDONED
MW-91-3D
PW-20
PW-21
PW-14
MW-41SID
PW-5
PW-3 (ABANDONED)
MW-27I
MW-27S
PW-19
PW-22
MW-8A
MW-8D
MW-9S
PW-15
MW-8I
MW-8S
MW-10D
MW-14I
MW-35I
MW-35D
MW-35S
MW-91-6D
MW-22A
MW-22SID
MW-91-6D
MW-39S
MW-385I
MW-40I
PW-9
PW-2
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MW-30D
MW-37S
MW-30I
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MW-28I
MW-17I
MW-13D
MW-36I
MW-31S
MW-32I
MW-7S
MW-16I
MW-32S
MW-12D
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MW-11S
MW-1S
MW-1D

Figure One.

APPENDIX B

Cleanup Action Plan

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1.0 INTRODUCTION

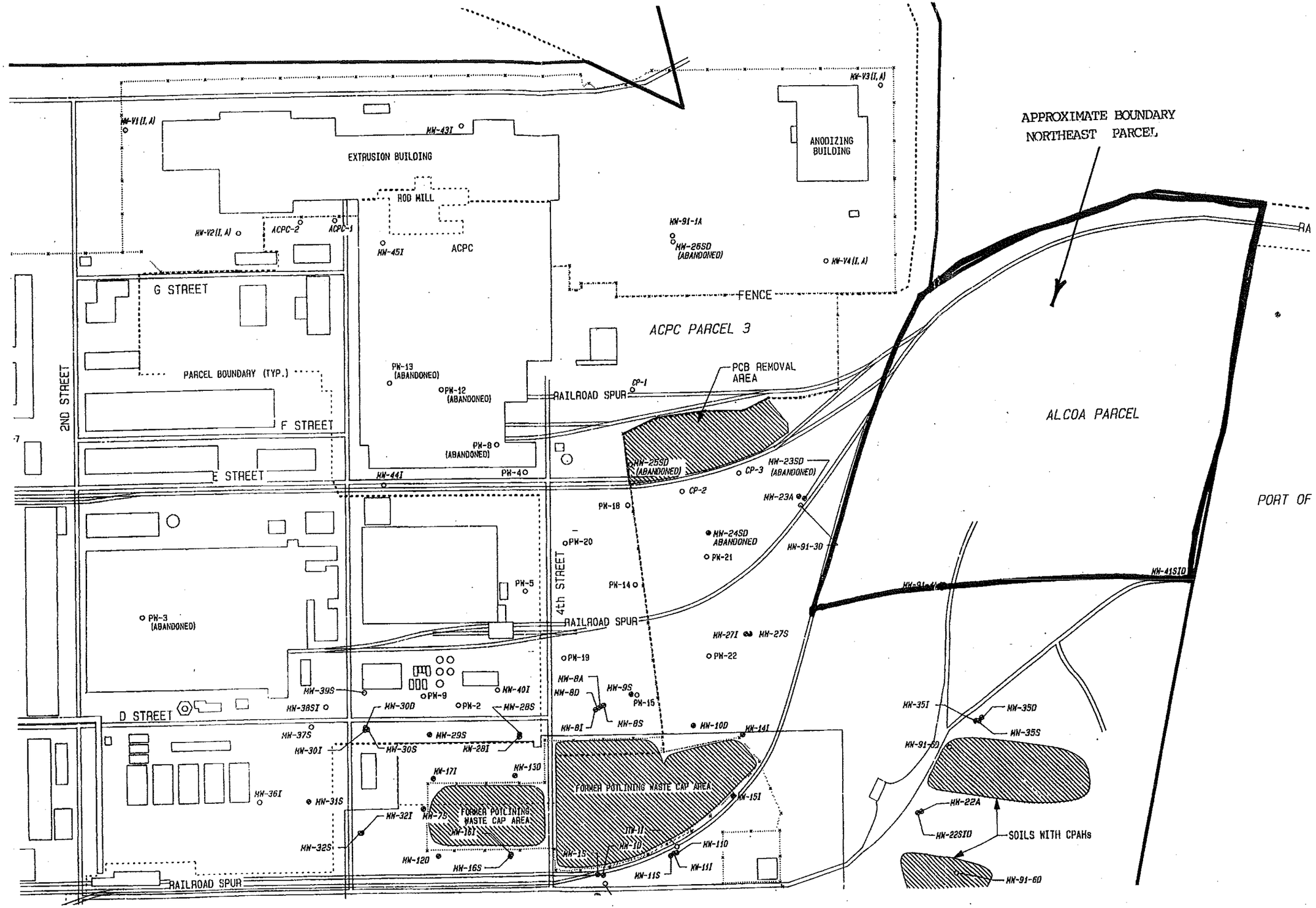
This cleanup action plan (CAP) is provided to describe the proposed remedial action for the Alcoa-Vancouver Northeast Parcel Site located adjacent to the VANALCO aluminum smelter and Clark County Public Utility generation facility. The site is located at approximately 5701 Northwest Lower River Road, Vancouver, Washington. The CAP has been prepared to satisfy the requirements of the Model Toxics Control Act (MTCA). The purposes of the CAP are to: 1) describe the Site, including a summary of its history and the extent of the contamination as presented in site characterization reports prepared by Alcoa and it's subcontractors, 2) identify the site-specific cleanup standards, and 3) summarize the selected cleanup alternative for Site remediation.

2.0 SITE DESCRIPTION

The Site is located on the eastern side of the VANALCO smelter complex approximately three miles northeast of downtown Vancouver, Washington. The smelter complex was constructed during 1939 and 1940. The smelter was owned and operated by Alcoa from the late 1940's to 1986. The facility from the early 1950's to the mid 1980's contained an aluminum smelter, and a series of fabrication plants to form aluminum metal into finished goods such as wire, rod, and extruded channel. In 1987 Alcoa sold the smelter to VANALCO and retained title to the manufacturing section of the property. Since 1987 Alcoa has been closing and selling portions of the remaining manufacturing facility. The Northeast Parcel Site is one of those parcels of land.

The Northeast Parcel Site consists of approximately 18 acres of scrub timber and grassland. It is located directly east of the Alcoa/VANALCO railroad spur and directly west of Port of Vancouver property that is presently used as import auto parking (Figure 1). Two different contaminated sites, the TCE Landfill Site and the NPL Potliner Site, are located near the Northeast Parcel Site. The Northeast Parcel Site was once the northern half of the TCE Landfill site. Airphoto interpretation indicates that the TCE Landfill Site was used by Alcoa as a waste disposal area probably during the early years of smelter operation. The remedial investigation of the landfill site indicates that it was used for the disposal of polynuclear aromatic hydrocarbons (PAH) scrubber wastes and trichloroethylene (TCE) wastes probably in the early 1950's. To the southwest of the Northeast Parcel site is the NPL Potliner Site. The contaminants of concern at the potliner site are cyanide and fluoride. The potliner site was discovered in the early 1980's, cleaned up in 1993 and delisted from the NPL in 1996.

The TCE Landfill Site consists of a small solid waste filled, 15 to 20 foot deep, drainage valley which emptied into the Columbia River. Alcoa filled the valley with bake oven brick, aluminum and steel cable, miscellaneous solid waste and scrubber sludges. During the same time period minor amounts of PCB and PAH contaminated wastes were disposed of upland of the TCE landfill. These wastes now form the Northeast Parcel Site.


APPROXIMATE BOUNDARY
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ACPC PARCEL 3
ALCOA PARCEL
FENCE
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F STREET
E STREET
D STREET
2ND STREET
4th STREET
PARCEL BOUNDARY (TYP.)
RAILROAD SPUR
PCB REMOVAL AREA
FORMER POTLINING WASTE CAP AREA
SOILS WITH CPAHs
MW-V1 (I, A)
MW-V2 (I, A)
MW-V3 (I, A)
MW-V4 (I, A)
MW-43I
MW-45I
MW-44I
MW-91-1A
MW-265D (ABANDONED)
MW-259D (ABANDONED)
MW-235D (ABANDONED)
MW-24SD ABANDONED
MW-23A
MW-91-3D
MW-41SIO
MW-27I
MW-27S
MW-35I
MW-35D
MW-35S
MW-91-6D
MW-22A
MW-22SIO
MW-91-6O
MW-8A
MW-8D
MW-8I
MW-8S
MW-9S
MW-10D
MW-14I
MW-15I
MW-11D
MW-11O
MW-11I
MW-11S
MW-17I
MW-13D
MW-18I
MW-7S
MW-12O
MW-16S
MW-32I
MW-32S
MW-31S
MW-36I
MW-37S
MW-30I
MW-30D
MW-30S
MW-29S
MW-28I
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MW-40I
PW-2
PW-3 (ABANDONED)
PW-5
PW-8 (ABANDONED)
PW-9
PW-12 (ABANDONED)
PW-13 (ABANDONED)
PW-14
PW-15
PW-18
PW-19
PW-20
PW-21
PW-22
PW-40
CP-1
CP-2
CP-3

Figure One.

3.0 SITE CHARACTERIZATION

In September of 1990 the Department of Ecology issued an Agreed Order to Alcoa to conduct a remedial investigation to determine the source of TCE found in a process water well located at the VANALCO aluminum facility. Alcoa conducted a two phase remedial investigation to determine the TCE source. The first phase consisted of further sampling of existing wells for TCE and historical research on waste handling practices at the smelter. Phase I found two potential sources of TCE contamination. The Phase One investigation was finished in Spring of 1991.

The second phase of the remedial investigation consisted of ground water and soil sampling in the two potential source areas found in the Phase I investigation. The Phase Two investigation located high concentration PAH wastes in a buried landfill located directly east of the NPL site and the smelter. Accompanying the PAH wastes were high levels of TCE in soils and ground water. Soil trenching crudely outlined the contaminated areas. The Phase II investigation was complete in the winter of 1992/1993.

In October of 1993 the Department received a proposal for an independent feasibility study to determine what remedial action should be completed at the site. During the feasibility planning phase it was determined that more data was required to measure the extent and volume of the contamination. In the fall of 1994 Alcoa presented modeling data which described TCE pathways to both the Columbia River and the VANALCO production water wells. Alcoa also reported on the progress it was making in establishing an alternative water source for the smelter and determining what the final cleanup alternative would be completed at the site.

In December of 1995 Alcoa proposed a third phase of test pit investigations. The third phase sampling was used to collect more data on the extent of contamination around the two known areas of contamination and to grid trench sample the area directly northeast of the landfill to characterize the soils. The sampling was completed in the spring of 1996. The sampling of the TCE Landfill Site did not extend the area of contamination. The limits of the two known contaminated areas were specifically located during the sampling program.

The grid sampling program discovered minor amounts of contamination in two areas. The grid sampling area was split from the TCE Landfill Site in 1996 and named the Northeast Parcel Site. Data from two grid sampling locations indicated the potential for more contamination north of the landfill. In the summer of 1996 Alcoa used a small truck mounted Geoprobe push drill to characterize the soils and determine the extent of contamination in the northern section of the Northeast Parcel Site. The area which was sampled appears as a high spot on both airphotos and the ground. The 1996 Geoprobe drill sampling outlined the limits of the contamination on the Northeast Parcel Site.

3.1 Groundwater Quality

Hydrogeology is characterized by numerous groundwater monitoring wells located on the NPL site and the TCE Landfill Site. All of the wells are located downgradient or adjacent to the Northeast Parcel Site. The Northeast Parcel Site is situated on the flood plain of the nearby Columbia River. The ground water system in the area can be divided into four general hydrogeologic units: the shallow zone, the intermediate zone, the deep zone, and the aquifer zone. The predominant ground water flow direction in the deeper hydrogeologic units beneath the Site is toward the Columbia River.

The shallow zone consists of dredged sand placed on the Site during the late 1940's and early 1950's. A perched water table is located in the shallow zone during the wetter months of the year. The movement of water in the saturated portions of the shallow zone beneath the Site is to the south. Information from monitoring wells approximately 250 feet southwest of the Site indicate that the shallow zone is approximately 10 feet thick and has a horizontal hydraulic conductivity of 10^{-3} to 10^{-4} cm/sec.

Materials directly beneath the dredged sand shallow zone are the intermediate zone silty clays and clayey silts that were deposited in relatively low energy flood plain environments. This zone is saturated. The movement of water in the intermediate zone is predominantly downward due to high vertical hydraulic gradient. Information from monitoring wells 250 feet southwest of the Site indicates that the intermediate zone silts and clays are approximately 30 to 40 feet thick and have a horizontal conductivity of 10^{-4} to 10^{-6} cm/sec. Pump testing in the intermediate zone indicates that the ability of small individual sand and silt units in the zone to produce water is highly variable. The two pump tests that were completed in the intermediate zone show this variability. The pump test wells were placed approximately 220 feet apart. The first test well did not produce water after bailing (< 0.07 gpm) while the second test recovered quickly after bailing and produced greater than five gallons per minute during the test. Hydraulic conductivity's were calculated to range from 1.11×10^{-2} to 1.8×10^{-2} in the second well. Hydraulic conductivity's of good aquifers range from 10^{-3} to 1 cm/sec. Laboratory testing of the intermediate silts indicates that the vertical conductivity's of the material is often considerably less than the horizontal values. The results of the testing show values in the range of 10^{-7} to 10^{-8} cm/sec.

Ground water flow in the deep zone and the aquifer zone beneath the TCE landfill site are southerly toward the Columbia River. Continuous water level measures taken in both zones of the TCE Landfill Site indicate that tidal influence of Columbia River is present in both of the hydrologic units. Both of the units are hydrologically connected to the Columbia River. The hydraulic conductivity of the deep zone sand unit is 10^{-2} to 10^{-4} cm/sec. The hydraulic conductivity of the aquifer zone is 10^{-2} to 10^{-3} cm/sec. Pump testing of the aquifer zone indicate that the transitivity of the aquifer zone ranges from two to four million gallons per day per foot. This is a very high value. Pumping analysis of production wells located west of the site indicate that the deep zone and the aquifer

zone behave independently as separate hydrologic units while still being connected hydraulically to the Columbia River.

Groundwater monitoring has been conducted quarterly around the NPL Site since 1985. The TCE Landfill site had a groundwater monitoring network placed into service in 1992. Two of the TCE Landfill site up gradient wells are downgradient wells for the Northeast Parcel Site. The wells do not show any contamination from the Northeast Parcel Site. The monitoring wells are MW- 41 S,I,D and MW-91-4A. The wells monitor the shallow (S), intermediate (I), Deep (D) and aquifer (A) water zones. Both PAH and volatile organic chemical analysis have been completed on each of the monitoring wells. The water does not show any concentrations of organic analytes above the detection limits of the analytical method. Because of the chemical data from the downgradient wells, it is Ecology's opinion that the groundwater has not been a significant pathway for migration of contaminants at the Northeast Parcel site.

3.2 Soil Quality

Most of the surface of the Northeast Parcel Site is covered with grass, shrubs and small trees. Surface soil sampling was completed on the site in two phases. The first phase consisted of grid sampling using a backhoe to dig three foot pits at 200 foot square grid intervals and perimeter trenching of the TCE Landfill Site. Twenty sample locations were sampled in the Northeast Parcel. Test pits that had contamination or construction debris were continued below the level of the contamination or debris. The pits were never dug below seven feet and no final sample was collected where the debris was present through the entire length of the pit. At seven feet the pit was backfilled and relocated. The bottom of each test pit was sampled using the backhoe bucket. Upon completion of each test pit, a composite sample was collected from the soil in the backhoe. None of the test pits in the Northeast Parcel Site were encountered contamination deeper than the initial three foot sample depth.

Samples collected from the Northeast Parcel were relatively free of contamination, with one exception. Samples were tested for metals, PCBs, semivolatile organic compounds (PAHs), volatile organic compounds, and total petroleum hydrocarbons. The exception is the area around two test pits in the north central portion of the site. The samples from these two pits indicated several detected compounds including metals, PAH's and cyanide. Only PAH's were above MTCA method A cleanup levels. The rest of the chemicals were detected in soil below MTCA cleanup levels. Concentrations of aluminum well above background confirm the visual observation of alumina in the two pits.

The second phase of soil sampling concentrated in the contaminated area in the northcentral portion of the site near the two pit samples which contained trace amounts of contamination which were below MTCA cleanup standards except for PAH's, which were above MTCA method A levels. The sampling consisted of using a truck mounted Geoprobe drill rig to soil sample to a depth of ten feet. Twenty seven locations were

sampled and screened for PCB's and PAH's. All samples were driven through the contaminated area into clean soil. Samples were tested in the field using an immunoassay method to determine relative screening values for PCB's and PAH's. If the screening sample showed high levels of either PCB's or PAH's, the sample was submitted to the laboratory for analysis. Six samples were submitted to the lab for further analysis. PCBs were detected in four of the samples, with three of the samples above the MTCA method A cleanup standard of 1.0 mg/kg (SA-B902 2.34 mg/kg, SA-B904 1.077 mg/kg, SA-B1902 161.6 mg/kg, and SA-B2402 0.339 mg/kg). PAHs were found in five of the six samples at levels above the MTCA method A standard of 1.0 mg/kg (SA-B401 2.34 mg/kg, SA-B902 1,077.38 mg/kg, SA-B1902 707.75, SA-B2402 37.59 mg/kg). Arsenic was detected in one sample SA-B902 at the MTCA method A level of 20 mg/kg. Total cyanide was also detected at levels that range from less than 1.0 mg/kg to 5 mg/kg. These levels are below the MTCA method B cleanup standard for cyanide. The second round of sampling outlined a small area of approximately 5,000 cubic yards of contaminated soils.

4.0 CLEANUP STANDARDS

Cleanup standards were developed for this site based on Chapter 173-340 WAC. The Model Toxics Control Act cleanup regulation provides three methods for determining cleanup levels at a contaminated site. The methods are known as Method A, Method B, and Method C. Method A applies to relatively straight forward sites that involve only a few hazardous substances. The method defines cleanup levels for 25 of the most hazardous substances. It also requires that the cleanup meet promulgated federal and state regulations such as maximum contaminant levels established by the Clean Water Act. Method B is a standard method that can be used at all sites. The clean up levels are set using a site risk assessment which focuses on-site characteristics or concentrations of individual hazardous substances set under applicable state and federal laws. Method C is similar to Method B. The main difference is that the lifetime cancer risk is set at a lower number. This method can be used only when either Method A or Method B are technically impossible, the site is defined as an industrial site, or when the attainment of Method A or Method B cleanup levels has the potential for creating a significantly greater overall threat to human health and the environment. In addition, Method C also requires that the person undertaking the action comply with all applicable state and federal laws. Method A standards will be used at the Northeast Parcel Site.

The Northeast Parcel Site is considered a routine site where either the Method A soil standard or Method B soil standard can apply. The known contaminants of concern are PCB's and PAH's. The standards for the Northeast Parcel Site are set according to WAC 173-340-740 (2) or (3). The Method A soil cleanup levels for these two contaminants are: PCB - 1.0 mg/kg and PAH - 1.0 mg/kg. The standards are set to protect human health via the direct contact exposure route. Method A shall be used at the Northeast Parcel Site. Groundwater cleanup standards have not been established because all available data indicates that groundwater has not been effected by the site.

5.0 SUMMARY OF REMEDIAL ALTERNATIVES

The Model Toxics Control Act (MTCA) requires at a minimum that all cleanup actions protect human health and the environment, comply with cleanup standards, comply with applicable state and federal laws, and provide for compliance monitoring if needed. In addition all cleanup actions must consider implementation time, cost effectiveness, permanent solutions, and resource recovery technologies to the maximum extent possible.

Alcoa has proposed to clean the site to residential (Method A) cleanup standards. Four cleanup alternatives were discussed to remedial the contaminated soil. The single driving factor in clean up is meeting Method A standards. The following alternatives were discussed with Alcoa.

Alternative One.	No action.
Alternative Two.	The contaminated material would be moved to the TCE Landfill site for two year storage or final disposal. Soils that are contaminated above dangerous waste levels would be transported to a dangerous waste landfill for final disposal. Excavated areas would be backfilled with clean fill material. Site would be graded to drain stormwater
Alternative Three	The contaminated material would be tested and removed off site to an appropriate landfill. The landfill would be either a Subtitle D or permitted hazardous waste landfill. Excavated areas would be backfilled with clean fill material. The site would be graded to drain storm water.
Alternative Four	The contaminated material would be excavated and bioremediated or treated to levels that are less than the method A cleanup standard. The excavation would be backfilled with clean fill material. The site would be graded to drain storm water.

6.0 SELECTED CLEANUP ACTION

Alternative Two was selected as the most appropriate cleanup alternative. Off site removal of the soils contaminated at dangerous waste levels and TCE site storage for two years was chosen as the preferred alternative because biological or chemical treatment of contaminated PAH and PCB soils are not technically feasible in the time frame allowed or at the relatively low concentrations found at the site. PAH compounds typically take several years to bioremediate when found in concentrations much higher than those found at the Northeast Site. The compounds found on the Northeast Site have been naturally

bioremediating for over twenty years. To use biotreatment to degrade the compounds below the MTCA standard of 1.0 mg/kg PAH would take an unknown length of time. At the end of the two year period the MTCA contaminated soils at the TCE site will be removed to a solid waste landfill or disposed of on site and covered with a cap.

6.1 Detailed Description of Cleanup Action.

The alternative selected consists of :

1. Removing approximately 5,000 cubic yards of contaminated soils from the site. The removed waste, depending on it's composition, is to be transported to either a permitted solid waste landfill, a RCRA-permitted hazardous waste landfill or the TCE site for two year storage. During construction, Alcoa will mitigate airborne dust by using watering and will use sediment barriers to mitigate potential sediment impacts to local storm water drainage. All waste which designates as dangerous waste under federal or state rules will be transported to a permitted dangerous waste landfill. Soils containing hazardous substances at concentrations that exceed MTCA levels, but are below dangerous waste levels will be landfilled or stored at the TCE site.
2. Sample the bottom and sidewalls of the excavation(s) to determine if cleanup standards are met.
3. Fill the excavation(s) with clean soils or sand and cap. The area of the excavation(s) shall be graded to drain stormwater and revegetated. If wastes are stored at the TCE site they will be covered and vegetated if necessary for proper storm water drainage.
4. Prepare a final report documenting all phases of the removal program, soil replacement and revegetation. Have the final report and project certified by a professional engineer.
5. MTCA Method A cleanup standards are appropriate at the site. Contaminants of concern are PAH's and PCB's. If cleanup standards are not met at the site then Alcoa will immediately inform Ecology. Both parties will then begin negotiations for a consent decree for the site.
6. The project will be completed in 365 days.
7. Waste stored at the TCE site will be disposed of at a solid waste landfill or on the TCE site within 730 days of the Ecology acceptance of the project completion report.

6.2 Points of Compliance/Compliance Monitoring

The proposed cleanup action requires that the site meet MTCA Method A cleanup standards. If those standards are met there is no additional requirement for monitoring on the site. If the standards are not met and contaminated material is left in place on the site this order will terminate and Alcoa will immediately begin negotiations for a consent decree for the site.

7.0 JUSTIFICATIONS/DETERMINATIONS

The MTCA requires that any alternative selected for site remediation must, as a minimum, meet four threshold requirements as follows: protect human health and the environment; comply with cleanup standards; comply with applicable state and federal laws; and provide for compliance monitoring.

7.1 Protection of Human Health and the Environment

The risks that can be identified with the Northeast Parcel Site are similar to those identified at both the TCE Landfill and NPL Sites. These are: 1) potential human health impacts from ingestion and inhalation of on-site contaminated soil which contain elevated levels of PAH's and PCB's. 2) potential ground water contamination and 3) potential impacts to the Columbia River.

The major risk identified with the Northeast Parcel Site is the potential of ingestion of the contaminated soils on the site. The investigative stage of the cleanup eliminated the potential of impact to the groundwater and the Columbia River. Downgradient groundwater monitoring wells do not show any effects of the contamination. The only risk pathway which is still a viable risk pathway at the site is the soil direct contact pathway. The selected remedial action for the Site will eliminate direct contact risk pathway with the removal of the contaminated soil contaminant source.

7.2 Compliance with Cleanup Standards

The selected alternative is designed to comply with the residential cleanup standards of the MTCA. When the remediation is completed the site will have levels below residential cleanup standards and have no specific land development restrictions.

7.3 Compliance with Applicable or Relevant and Appropriate Requirements

The following state laws and federal regulations could be applicable or relevant for the Northeast Parcel selected cleanup action. The cleanup action will comply with these regulations and laws.

State Laws and Federal Regulations

1. Model Toxics Control Act Cleanup Regulation, Chapter 173-340 WAC.
2. Hazardous Waste Cleanup - Model Toxics Control Act, Chapter 70.105D RCW
3. State Environmental Policy Act, Chapter 197-11 WAC.
4. Water Pollution Control, Chapter 90.48 RCW
5. Water Quality Standards for Surface Water of the State of Washington, Chapter 173-201A WAC
6. Dangerous Waste Regulations, Chapter 173-303 WAC

7. Washington Clean Air Act, Chapter 70.94 RCW

7.4 Compliance Monitoring

Compliance monitoring as specified in WAC 173-340-410 will occur as pit conformational sampling. If the Method A standards are met then there is no requirement for continued monitoring.

7.5 Short-Term Effectiveness

Short-Term effectiveness considers how each alternative would impact the human health and the environment during the implementation (construction) phase of the project.

The construction phase of the proposed cleanup action involves various earthmoving activities. The earth work has a potential to impact the community from the exposure to airborne dust. The potential will be mitigated through the use of watering to reduce dust generation. The earth work may increase the sediment load of nearby storm water drainage's. The use of sediment barriers and timing the remediation to occur during areas of low rainfall will mitigate potential sediment impacts to local drainage's. If waste is stored on the TCE site it will be covered and revegetated if necessary to prevent soil erosion.

7.6 Long-Term Effectiveness

Long-term effectiveness is evaluated in terms of the magnitude of residual risk and the adequacy and reliability of the cleanup action.

Implementation of the selected remedy will eliminate the contaminate source. The site should be available for all types of development with no environmental restrictions. All available information indicates that groundwater is not contaminated at the site. If Method A standard is met there should be no residual environmental risk.

7.7 Reduction of Toxicity, Mobility, or Volume

As stated in Section 6 above, biological or chemical treatment of the contaminants was not chosen because these methods are not technically feasible at the relatively low concentrations of the contaminants found at the site. At these concentrations, the time frame for remediation would be technically infeasible. The human health and environmental risks associated with this site are related to potential contact with the contaminants. Removal will eliminate the mobility and potential for contact of the contaminants.

7.8 Implementability/Technical Feasibility

The removal alternative employs conventional technologies and, therefore, should be readily implemented. No direct cost comparisons were done between treatment and removal because of the technical problems connected with the treatment.

8.0 CLEANUP ACTION REQUIREMENTS

The cleanup action as selected in this document is designed to accomplish the following MTCA requirements:

1. Protect human health and the environment.
2. Comply with cleanup standards per WAC 173-340-700 through 760.
3. Comply with applicable state and federal laws per WAC 1730340-710.
4. Use permanent solutions to the maximum extent practicable.
5. Provide a reasonable restoration time frame.
6. Consider public concerns, if any, raised during the public comment period.

9.0 SCHEDULE FOR IMPLEMENTATION/COMPLETION

The project is scheduled to start in early 1997. The Agreed Order directs Alcoa to start the cleanup within 30 days of signature. The waste removal, clean fill replacement, and revegetation must be completed within 270 days of signature of the Order. The final report is due one year from the signature of the Order. The project is scheduled to be completed in one year. If MTCA waste is stored at the TCE site it must be remediated or removed within two years of the completion of the project.

APPENDIX C

Conservation Covenant

APPENDIX C

CONSERVATION COVENANT RUNNING WITH THE LAND

A COVENANT to the City of Vancouver, State of Washington, hereinafter "City," entering into in conjunction with the site plan of certain real property on behalf of themselves and all their heirs, assigns and successors in interest into whose ownership said property may pass, covenant that certain wetland and streams and their associated buffer areas shown on the attached site plan of Exhibit A, will be maintained in their natural state.

Owners herein covenant and agree to the City on behalf of themselves and all of their heirs, assigns and successors in interest into whose ownership the below described real property might pass, as follows, it being specifically agreed and covenanted that this is a covenant running with the land hereinafter described.

1. Owners are the sole and exclusive owners of the following described property located in the City of Vancouver, Clark County, State of Washington: located in Sections 19 and 20, Township 2 North, Range 1 East of the Willamette Meridian and described in Exhibit A.

2. It is the purpose of this covenant to require that certain wetland and stream buffer areas as shown on the aforementioned site map Exhibit A and wetlands delineation survey be maintained in natural state in order to preserve and protect the wetland ecosystem.

3. A physical demarcation along the upland boundary of the buffer area shall be erected and thereafter maintained. Such demarcation may consist of fencing, hedging, or other prominent physical marking approved by the City of Vancouver Director of Community Development or his/her designee. Any change to the type of demarcation shall similarly be approved by the Director of Community Development.

4. Consistent with the purpose of this covenant, wetlands streams, and their associated buffers shall be left in a natural state. A wetland permit must be approved by

the City of Vancouver Director of Community Development, for the following activities within such areas: the construction of any structure; the removal, excavation, grading or dredging of soil, sand, gravel, minerals, organic matter or material; the draining, flooding, or disturbing of the water level or water table; or the destruction or alteration of vegetation through clearing, harvesting, intentional burning, or planting or vegetation: provided: provided, however, that the foregoing shall not be construed to prohibit the pruning or removal of dead, dying, or diseased trees and shrubs, the harvesting of wild crops in a manner that is not injurious to natural production of such crops, or the planting of native vegetation which is indigenous to the area.

5. Nothing in this covenant shall be construed to provide for public use of or entry into the wetland or buffer areas shown on the above-referenced site map. However, representatives and agents of the City of Vancouver are hereby authorized to make reasonable entry upon such land for purposes related to administering this covenant: provided that owners or their heirs, successors of assigns are given at least 24-hours advanced notice of any such entry.

6. The provisions of this covenant are enforceable in law or equity by the City of Vancouver and the Department of Ecology and its successors.

7. This covenant and all of its provisions, and each of them, shall be binding upon the owners and any and all of their heirs, assigns, and successors in interest into whose ownership the above-described real property may pass, and any obligations made herein by owners, shall be enforceable against all of their heirs, assigns and successors in interest into whose ownership the above described property may pass.