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1 I. BACKGROUND

2 1. The United States of America ("United States"),
3 on behalf of the United States Environmental Protection Agency
4 ("EPA") and the federal Natural Resource Trustees (as defined in
5 paragraph 31(J)), and the other Natural Resource Trustees (also
6 defined in paragraph 31(J)) are filing Complaints in this matter,
7 concurrently with this Consent Decree, under Sections 106 and 107
8 of the Comprehensive Environmental Response, Compensation, and
9 Liability Act of 1980 (CERCLA), 42 U.S.C. §§ 9606 and 9607, as
10 amended, and Section 311 of the Federal Water Pollution Control
11 Act, 33 U.S.C. § 1321. This Consent Decree addresses the St.
12 Paul Waterway Problem Area sediment remedial action, associated
13 monitoring, reporting, contingency planning activities, and
14 natural resource damages matters with respect to the Settling
15 Defendants.

16 2. The United States and the other Natural Resource
17 Trustees in their Complaints seek: (i) reimbursement of monies
18 and costs incurred by the United States for its investigations,
19 studies, response and enforcement activities, and other necessary
20 response actions at the St. Paul Waterway Problem Area of the
21 Commencement Bay Nearshore/Tideflats (CB/NT) Superfund Site in
22 Tacoma, Washington, together with accrued interest; (ii) an
23 injunction requiring the Settling Defendants to perform Work at
24 the St. Paul Waterway Problem Area, as set forth in the attached
25 Monitoring, Reporting and Contingency Plan (the "Monitoring
26 Plan") (Exhibit A), and in conformity with EPA's Record of
27 Decision for the CB/NT site dated September 30, 1989 ("ROD");

1 Exhibit B), the National Contingency Plan ("NCP"), 40 C.F.R. Part
2 300, as amended, 55 Fed. Reg. 8666 (March 8, 1990), and CERCLA;
3 (iii) recovery of costs that will be incurred by EPA in
4 connection with the Work to be performed in (ii) above; (iv) the
5 submittal of a Superfund Completion Report regarding the sediment
6 remedial action for the St. Paul Waterway Problem Area; (v)
7 natural resource damages and associated costs for the St. Paul
8 Waterway Problem Area; and (vi) such other relief as the Court
9 finds appropriate.

10 3. In accordance with Sections 104(b)(2) and
11 121(f)(1)(F) of CERCLA, 42 U.S.C. §§ 9604(b)(2) and
12 9621(f)(1)(F), EPA has notified the State of Washington
13 Department of Ecology ("Ecology") of negotiations with
14 potentially responsible parties ("PRPs") regarding the scope of
15 the remedial action for the St. Paul Waterway Problem Area, and
16 EPA has provided the State of Washington with an opportunity to
17 participate in these negotiations and to be a party to any
18 settlement. As described further in paragraph 20 et seq.,
19 Ecology previously entered into a State Consent Decree (Wa. State
20 Dept. of Ecology v. Simpson Tacoma Kraft Co. and Wa. State Dept.
21 of Natural Resources, Pierce County Superior Court No. 87-2-
22 07673-9, December 24, 1989) (the "State Consent Decree") for
23 implementation of the St. Paul Waterway Area Remedial Action and
24 Habitat Restoration Project. EPA has also notified the Puyallup
25 Tribe of Indians ("Puyallup Tribe") of these negotiations. The
26 Puyallup Tribe has participated in these negotiations consistent
27 with the Cooperative Agreement between EPA and the Puyallup Tribe
28 ST. PAUL WATERWAY CONSENT DECREE.- Page 5

1 | dated April 28, 1989, under which the Puyallup Tribe is a
2 | supporting agency for remedial actions at the Site. All other
3 | federal, state, and local agencies with jurisdiction which have
4 | issued permits for the remedial work have also been notified,
5 | including the U.S. Army Corps of Engineers, the State of
6 | Washington Department of Fisheries, and the City of Tacoma.

7 | 4. In accordance with Section 122(j)(1) of CERCLA,
8 | 42 U.S.C. § 9622(j)(1), EPA has notified the federal, state, and
9 | tribal natural resource trustees of the EPA's negotiations with
10 | the potentially responsible parties regarding the release or
11 | threatened release of hazardous substances at the St. Paul
12 | Waterway Problem Area and CB/NT site which may have resulted in
13 | injury to natural resources under their trusteeship. EPA has
14 | encouraged the participation of the federal, state and tribal
15 | natural resource trustees in such negotiations. The natural
16 | resource trustees for the St. Paul Waterway Problem Area and
17 | Commencement Bay are: (i) the National Oceanic and Atmospheric
18 | Administration of the U.S. Department of Commerce, (ii) the U.S.
19 | Department of Interior, (iii) the Washington Department of
20 | Ecology (on behalf of the Washington Department of Fisheries, the
21 | Washington Department of Natural Resources, and the Washington
22 | Department of Wildlife), (v) the Puyallup Tribe of Indians, and
23 | (vi) the Muckleshoot Indian Tribe. These parties (the "Natural
24 | Resource Trustees") have participated in the negotiations, and
25 | have reached a settlement with the Settling Defendants of their
26 | claims for damages due to injury to, destruction of, or loss of
27 | natural resources in the St. Paul Waterway Problem Area. The

1 Natural Resource Trustees and the Settling Defendants agree that,
2 on the basis of the preliminary information available regarding
3 natural resource damages at the St. Paul Waterway Problem Area,
4 settlement of the claims as set forth in this Consent Decree is
5 in the public interest and is made in good faith and after arms-
6 length negotiations, and that entry of this Consent Decree is the
7 most appropriate means to resolve the matters covered herein.

8 The Settlement Agreement reached between the Settling Defendants
9 and the Natural Resource Trustees also provides a mechanism by
10 which the Settling Defendants and other potentially responsible
11 parties in Commencement Bay can participate in a Bay-wide natural
12 resource damage assessment. This Settlement Agreement is
13 attached to this Consent Decree as Exhibit C, and by this
14 reference incorporated herein and made a part of this Consent
15 Decree.

16 5. Pursuant to Section 105 of CERCLA, 42 U.S.C.
17 § 9605, as amended, EPA placed the CB/NT site in Tacoma,
18 Washington (the "Site" as defined in paragraph 31(S) below) on
19 the National Priorities List, set forth at 40 C.F.R. Part 300,
20 Appendix B, by publication in the Federal Register on
21 September 8, 1983, 48 Fed. Reg. 40,658.

22 6. Because of the complexity of the CB/NT site,
23 Superfund response actions at the CB/NT site are currently
24 coordinated under seven separate operable units managed primarily
25 by EPA and Ecology, including: (i) Operable Unit 01 - CB/NT
26 Sediments; (ii) Operable Unit 02 - Asarco Tacoma Smelter; (iii)
27 Operable Unit 03 - Tacoma Tar Pits; (iv) Operable Unit 04 -

1 Asarco Off-Property; (v) Operable Unit 05 - CB/NT Sources; (vi)
2 Operable Unit 06 - Asarco Sediments; and (vii) Operable Unit 07 -
3 Asarco demolition. This Consent Decree involves the St. Paul
4 Waterway sediment contamination, one of eight Problem Areas
5 within Operable Unit 01 of the Site identified for remedial
6 action in the ROD (Exhibit B).

7 7. In 1983, in response to a release or a
8 substantial threat of a release of hazardous substances at or
9 from the Site, EPA entered into a CERCLA Cooperative Agreement
10 with Ecology to conduct a Remedial Investigation and Feasibility
11 Study ("RI/FS") at the Site. The results of the RI were
12 published in August 1985, and the results of the FS were
13 published in February 1989.

14 8. Pursuant to Section 117 of CERCLA, 42 U.S.C.
15 § 9617, EPA published notice of the completion of the RI/FS and
16 of the proposed plan for remedial action on February 24, 1989,
17 and provided an opportunity for public comment on the proposed
18 remedial action through June 24, 1989. The ROD includes a
19 response to each of the significant comments, criticisms, and new
20 data submitted during the public comment period.

21 9. On September 30, 1989, EPA issued the ROD for two
22 operable units of the CB/NT site. The ROD addresses both
23 sediment remediation (Operable Unit 01) and source control
24 (Operable Unit 05). The ROD was concurred in by Ecology and the
25 Puyallup Tribe, with whom EPA has entered into Superfund
26 Cooperative Agreements for remedial activities at the Site.
27 Under a Cooperative Agreement with Ecology, effective May 1,

1 1989, EPA is designated as the lead agency for remediation of
2 contaminated sediments and Ecology as the lead agency for source
3 control of hazardous substances. The Cooperative Agreement with
4 the Puyallup Tribe is described in paragraph 3 above.

5 10. As described in the RI/FS for the CB/NT site,
6 there were nine Problem Areas of contaminated sediments and
7 sources of hazardous substances contamination. The ROD addressed
8 eight of these Problem Areas, including the St. Paul Waterway
9 Problem Area. The ninth Problem Area, the Asarco Sediments, is
10 now a separate operable unit of the CB/NT site and will be the
11 subject of a subsequent ROD. This Consent Decree addresses the
12 St. Paul Waterway Problem Area.

13 11. The St. Paul Waterway Problem Area contains
14 contaminated sediments adjacent to the Tacoma Kraft Mill
15 ("Mill"), now owned and operated by the Simpson Tacoma Kraft
16 Company ("Simpson"). The Mill is situated on a peninsula of
17 filled tidelands projecting into Commencement Bay between the
18 mouths of the Puyallup River and the St. Paul Waterway.

19 12. Simpson, a Washington corporation, owns and
20 operates the Mill facilities, which include a secondary
21 wastewater treatment plant, uplands, and the adjoining St. Paul
22 Waterway landward of the inner harbor line. Pulp and paper
23 operations began at the Mill in 1927 under the ownership of the
24 Union Bag Company, which operated the Mill until 1930. The St.
25 Regis Paper Company acquired the Mill in 1930 and operated it
26 until 1985, when St. Regis Paper Company merged with Champion
27 International Corporation ("Champion").

1 13. Simpson acquired the Mill from Champion in August
2 1985. The State of Washington owns the harbor area (the area
3 between the inner and outer harbor lines) and adjacent aquatic
4 lands, which are managed on behalf of the state by the State of
5 Washington Department of Natural Resources ("DNR"). Simpson
6 leases state-owned aquatic lands from the state by and through
7 DNR, as did previous mill owners and operators. Simpson and DNR
8 have entered into a lease and related agreement which include use
9 of the lands for the purposes set forth in this Consent Decree.

10 14. The bottom sediments in the St. Paul Waterway
11 Problem Area and adjacent to the Mill are contaminated by
12 chemicals and organic debris. As documented in the RI/FS, the
13 St. Paul Waterway Problem Area was among the most biologically
14 stressed areas in the Commencement Bay tideflats, with
15 concentrations of several chemicals over 1,000 times higher than
16 reference area concentrations. These findings were confirmed by
17 sampling of the Site by Parametrix, Inc., consultants for
18 Simpson, in their Tacoma Kraft Mill Sediment Investigation
19 submitted to Ecology in 1986.

20 15. Several studies have been conducted to
21 characterize the nature and extent of the hazardous substances,
22 pollutants and contaminants in the St. Paul Waterway Problem
23 Area, as well as any such substances present in the Puyallup
24 River sediments that were utilized for Simpson's sediment capping
25 action under the State Consent Decree (see paragraphs 3 and 20).
26 These studies have been described, referenced, and incorporated
27 into a document entitled Project Analysis for the St. Paul

1 Waterway Area Remedial Action and Habitat Restoration Project
2 ("Project Analysis", July 1987), consisting of a Project
3 Overview, SEPA Environmental Checklist and related environmental
4 assessment, ten technical appendices including Focused
5 Feasibility Study for the St. Paul Waterway Area (Appendix VI),
6 and other applicable studies referenced therein, including
7 relevant portions of the RI/FS as supplemented by Supplemental
8 Information Packets (September and December 1987).

9 16. The 17-acre St. Paul Waterway Problem Area was
10 identified for remedial action as a result of sediment
11 contamination adjacent to the Mill, which included five acres of
12 sediments near the old mill outfall with a high level of chemical
13 contamination and some organic debris, an area to the southeast
14 with a high level of organic debris and some chemical
15 contamination and the bottom of the entrance to the St. Paul
16 Waterway itself, which was contaminated by wood chips.

17 17. The principal chemicals identified in the RI/FS
18 as contaminants in the St. Paul Waterway Problem Area
19 included 4-methylphenol, phenol, 2-methoxyphenol, 1-methyl-2-
20 (methylethyl) benzene and other compounds, which are known to be
21 toxic to marine life. Measurements taken during the RI showed
22 concentrations of these chemicals in the sediments that exceeded
23 the cleanup goals and standards subsequently specified in the
24 CB/NT ROD. The RI also showed that the organic debris present in
25 sediments at the St. Paul Waterway problem area was in sufficient
26 quantities to restrict biological productivity.

1 18. The hazardous substances, pollutants, and
2 contaminants at the St. Paul Waterway Problem Area were primarily
3 released from the Mill.

4 19. Simpson has taken measures to reduce the levels
5 of hazardous substances or contaminants released from the Mill,
6 including a source control program and the installation of a new
7 Clean Water Act NPDES outfall for its secondary wastewater
8 treatment plant and additional stormwater and chip control
9 systems. Pursuant to delegated authority under the Clean Water
10 Act, Ecology required the NPDES outfall relocation. Ecology is
11 revising the Mill's NPDES permit in 1990.

12 20. On December 24, 1987, Simpson, Champion, and DNR
13 entered into a State Consent Decree with Ecology under applicable
14 hazardous waste cleanup laws (see paragraph 3 above). The State
15 Consent Decree required Simpson to isolate toxic concentrations
16 of contaminated sediments from the marine environment by
17 placement of a cap of clean sediments from a nearby section of
18 the Puyallup River over the contaminated sediments. These
19 activities were conducted between December 1987 and September
20 1988 and are described in more detail in the Superfund Completion
21 Report (Exhibit D). A habitat restoration program designed to
22 mitigate adverse biological impacts, to create intertidal habitat
23 for marine biota, and to support a productive biological
24 community was implemented along with the capping activities. The
25 project was designed to be consistent with all applicable,
26 relevant and appropriate laws and to meet state and local

1 environmental standards, including those under state hazardous
2 waste cleanup laws.

3 21. EPA was not a party to the 1987 State Consent
4 Decree and at the time the State Consent Decree was entered did
5 not formally approve of, concur in, or oversee the sediment
6 cleanup action, which was completed prior to issuance of EPA's
7 CB/NT ROD.

8 22. EPA's decision on the final remedial action plan
9 to be implemented under CERCLA and the NCP for the St. Paul
10 Waterway Problem Area is described in the CB/NT ROD.

11 23. In the ROD, EPA determined that there are five
12 major elements of the selected remedy for the Site sediments and
13 sources that will be applied, as appropriate, to each Problem
14 Area:

15 (A) Site Use Restrictions - To protect human health
16 by limiting access to edible resources prior to and
17 during implementation of source and sediment remedial
18 activities.

19 (B) Source Controls - To be implemented to prevent
20 recontamination of sediments.

21 (C) Natural Recovery - Included as an optional (and
22 preferred) remediation strategy for marginally
23 contaminated sediments that are predicted to achieve
24 acceptable sediment quality through burial and mixing
25 with naturally accumulating clean sediments within a
26 ten year period.

1 (D) Sediment Remedial Action - To address
2 contaminated sediments that are not expected to
3 naturally recover within ten years following
4 implementation of all known, available, and reasonable
5 source control measures.

6 (E) Source and Sediment Monitoring - To refine
7 cleanup volume estimates, characterize the
8 effectiveness of source controls, and implement long-
9 term monitoring of the sediment remedial actions(s) to
10 ensure long-term protectiveness of the remedy.

11 24. For the St. Paul Waterway Problem Area, the ROD
12 specifies that source control, confinement of contaminated
13 sediments, and source and sediment monitoring are the selected
14 remedy. Capping in place was specifically identified as the most
15 appropriate option for confinement of contaminated sediments in
16 the St. Paul Waterway Problem Area, given the type, extent, and
17 severity of the sediment contamination. While the actions
18 previously implemented by Simpson in the St. Paul Waterway
19 Problem Area under the 1987 State Consent Decree implemented and
20 largely accomplished EPA's selected remedy for the cleanup of
21 contaminated sediments in the St. Paul Waterway Problem Area as
22 determined in the ROD, revisions in the Monitoring Plan are
23 necessary to ensure consistency of the St. Paul Waterway action
24 with EPA's ROD and with the settlement of natural resource damage
25 claims. Source control and related activities are being
26 implemented under the Mill's NPDES permit administered by
27 Ecology.

1 25. Pursuant to Section 121(d)(1), the Settling
2 Parties agree that the sediment remedial action previously
3 conducted by the Settling Defendants at the St. Paul Waterway
4 under the 1987 State Consent Decree, subject to monitoring and
5 maintenance by the Settling Defendants in accordance with the
6 provisions of this Consent Decree and attached Monitoring Plan
7 (Exhibit A), will attain a degree of cleanup that assures
8 protection of human health and the environment.

9 26. In signing this Decree, defendants Simpson,
10 Champion, and DNR deny any and all legal and equitable liability
11 under any federal, state, local, or tribal statute, regulation,
12 or common law for any endangerment, nuisance, response, removal,
13 or remedial costs incurred or to be incurred by the United
14 States, the State of Washington, or other person as a result of
15 the release or threat of release of hazardous substances to, at,
16 from or near the Site. Pursuant to 42 U.S.C. § 9622(d)(1)(B),
17 entry of this Consent Decree is not an acknowledgement by
18 Settling Defendants that any release or threatened release of a
19 hazardous substance constituting an imminent and substantial
20 endangerment to human health or the environment has occurred or
21 exists at the Site. Defendants do not admit and retain the right
22 to controvert any of the factual or legal statements or
23 determinations made herein in any judicial or administrative
24 proceeding except an action to enforce this Consent Decree. They
25 do agree, however, to the Court's jurisdiction over this matter.
26 This Consent Decree shall not be admissible in any judicial or
27

1 administrative proceeding as proof of liability or an admission
2 of any fact dealt with herein, but it shall be admissible in an
3 action to enforce this Consent Decree.

4 NOW, THEREFORE, it is hereby Ordered, Adjudged, and
5 Decreed:

6 27. The Settling Parties agree to the entry of this
7 Consent Decree and agree to be bound by its terms. The Settling
8 Parties recognize, and the Court by entering this Consent Decree
9 finds, that implementation of this Consent Decree will fully
10 accomplish the St. Paul Waterway Problem Area sediment remedial
11 action in accordance with EPA's ROD for the CB/NT site, will
12 resolve natural resource damage claims with respect to the St.
13 Paul Waterway Problem Area, address certain matters relating to
14 the CB/NT site, and will avoid prolonged and complicated
15 litigation between the Settling Parties, and that the entry of
16 this Consent Decree is in the public interest.

17 II. JURISDICTION

18 28. This Court has jurisdiction over the subject
19 matter herein, pursuant to 28 U.S.C. §§ 1331 and 1345 and
20 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has
21 personal jurisdiction over the Settling Defendants, which solely
22 for purposes of this Consent Decree and the underlying Complaint,
23 waive all objections and defenses that they may have to
24 jurisdiction of the Court or to venue in this District. The
25 Complaint states claims against the Settling Defendants upon
26 which relief may be granted.

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III. PARTIES BOUND

29. This Consent Decree applies to and is binding upon the United States, the U.S. Environmental Protection Agency, the Natural Resource Trustees, and the undersigned Settling Defendants, and all of their respective directors, officers, employees, agents, successors, trustees, and assigns.

30. The Settling Defendants shall be responsible for ensuring that their contractors and subcontractors perform the Work in accordance with this Consent Decree and Monitoring Plan and shall include the requirement to perform the Work in accordance with this Consent Decree and Monitoring Plan in their contracts and subcontracts. Each contractor and subcontractor hired by Settling Defendants to perform Work under this Consent Decree shall be deemed to be related by contract to the Settling Defendants within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3). Thus, as to acts or omissions of contractors, the Settling Defendants shall not assert a defense based upon Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3). The Settling Defendants shall provide a copy of this Consent Decree to each contractor and each subcontractor hired to perform Work that is required by this Consent Decree in an amount greater than \$100,000.

IV. DEFINITIONS

31. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning

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1 assigned to them in the statute or its implementing regulations.
2 Whenever terms are used in this Consent Decree and the Exhibits
3 attached hereto, the following definitions specified in this
4 paragraph shall apply.

5 (A) "Consent Decree" means this Decree and all
6 Appendices and Exhibits attached hereto.

7 (B) "Consulted Agencies" means the governmental
8 entities which have committed to participating in the
9 Monitoring Plan and its contingency planning process.

10 These entities are: the Washington Department of
11 Ecology ("Ecology"), Washington State Department of
12 Fisheries ("WDF"), Washington State Department of
13 Natural Resources ("DNR") (in its capacity as a
14 natural resource trustee), Washington State Department
15 of Wildlife, National Oceanic and Atmospheric
16 Administration ("NOAA") of the U.S. Department of
17 Commerce, United States Department of the Interior
18 including the U.S. Fish and Wildlife Service and
19 Bureau of Indian Affairs, Puyallup Tribe of Indians
20 ("Puyallup Tribe"), and the Muckleshoot Tribe of
21 Indians.

22 (C) "Contractor" or "Subcontractor" means the company
23 or companies retained by or on behalf of the Settling
24 Defendants to undertake and accomplish the Work and
25 associated activities required by this Consent Decree
26 and attached ROD and Monitoring Plan.

1 (D) "Effective Date" means the date the Consent
2 Decree is entered by the Court.

3 (E) "EPA" means the United States Environmental
4 Protection Agency.

5 (F) "Future Response Costs" shall mean all direct and
6 indirect investigation, enforcement, and response
7 costs (including applicable interest), except
8 oversight response costs, incurred by the United
9 States with respect to the St. Paul Waterway Problem
10 Area after the date of entry of this Consent Decree.

11 (G) "Institutional Controls" refer to the land use
12 restrictions and other regulations, ordinances,
13 covenants, and controls developed pursuant to the
14 Consent Decree to maintain the integrity and prevent
15 the unauthorized disturbance of the sediment cap,
16 monitoring stations, or other structures that will be
17 constructed, or other remedial measures that will be
18 implemented, at the St. Paul Waterway Problem Area.

19 (H) "Monitoring Plan" means the "Monitoring,
20 Reporting and Contingency Plan" attached as Exhibit A
21 to this Consent Decree which describes the monitoring
22 requirements, sampling, analyses, quality
23 assurance/quality control procedures, reporting
24 requirements and contingency plans and other actions
25 necessary for the proper operation and maintenance of
26 the sediment remedial action in the St. Paul Waterway
27 Problem Area.

1 (I) "National Contingency Plan ('NCP')" shall be used
2 as that term is used in 42 U.S.C. § 9605 and 40 C.F.R.
3 Part 300, as amended, 55 Fed. Reg. 8666 (March 8,
4 1990).

5 (J) "Natural Resource Trustees" shall mean those
6 entities identified as such pursuant to Section 107(f)
7 of CERCLA and Subpart G of the National Contingency
8 Plan, 40 C.F.R. §§ 300.600 through 300.615, and
9 include the National Oceanic and Atmospheric
10 Administration of the U.S. Department of Commerce, and
11 the U.S. Department of the Interior (hereinafter the
12 "federal Natural Resource Trustees"), and the
13 Washington Department of Ecology (on behalf of the
14 Washington Department of Fisheries, the Washington
15 Department of Natural Resources, and the Washington
16 Department of Wildlife), the Puyallup Tribe of
17 Indians, and the Muckleshoot Indian Tribe (hereinafter
18 the "other Natural Resource Trustees").

19 (K) "Oversight Response Costs" shall mean all costs,
20 including indirect costs, incurred by the United
21 States in overseeing the remedial action and
22 Monitoring Plan, including but not limited to, the
23 costs of reviewing and developing plans, reports and
24 other items pursuant to this Consent Decree and
25 verifying the remedial action and Work. Oversight
26 Response Costs shall also mean costs incurred by the
27 United States under its cooperative agreement with

1 Ecology, in an amount not to exceed \$10,000, and under
2 its cooperative agreement with the Puyallup Tribe for
3 the following tribal activities: (1) conduct of an
4 annual cap inspection, (2) review of draft and final
5 reports required under the Monitoring Plan, and (3)
6 participation in the Contingency Planning Process.

7 (L) "Past Response Costs" shall mean all costs,
8 including accrued interest and indirect costs incurred
9 by the United States and through EPA's cooperative
10 agreements with Ecology and the Puyallup Tribe, with
11 respect to the St. Paul Waterway Problem Area through
12 the date of entry of this Consent Decree. EPA's Past
13 Response Costs through the date of the ROD (September
14 30, 1989) are specified in the Cost Allocation Summary
15 (Exhibit E).

16 (M) "Project Coordinator" means the person designated
17 by the Settling Defendants with responsibility for
18 supervising or overseeing the Work to be performed
19 under this Consent Decree and Monitoring Plan.

20 (N) "Record of Decision ('ROD')" shall mean the EPA
21 Record of Decision set forth as Exhibit B to this
22 Consent Decree relating to the Commencement Bay
23 Nearshore/Tideflats Superfund Site, including the St.
24 Paul Waterway Problem Area, signed on September 30,
25 1989, by the Regional Administrator, EPA Region 10,
26 and all attachments thereto.

1 (O) "Sediment Remedial Action" means the sediment
2 remedial action for the St. Paul Waterway Problem Area
3 described in section 10.2.4 of the ROD and in the
4 Superfund Completion Report (Exhibit D).

5 (P) "Settling Defendants" means the Defendants
6 Simpson Tacoma Kraft Company, Champion International
7 Corporation, and the State of Washington, by and
8 through the State of Washington Department of Natural
9 Resources.

10 (Q) "Settling Parties" means the Settling Defendants,
11 the United States on behalf of EPA and the federal
12 Natural Resource Trustees, and the other Natural
13 Resource Trustees.

14 (R) "St. Paul Waterway Problem Area" refers to the
15 17-acre area, inclusive of the contaminated sediments
16 contained therein, located adjacent to the Simpson
17 Tacoma Kraft Mill in the St. Paul Waterway as
18 described in the ROD and the Superfund Completion
19 Report.

20 (S) "Site" means the entire Commencement Bay
21 Nearshore/Tideflats Superfund Site and project area,
22 located in Tacoma, Washington, as defined in the ROD,
23 including the St. Paul Waterway Problem Area.

24 (T) "Work" means all activities the Settling
25 Defendants are required to perform under this Consent
26 Decree to implement the ROD for the St. Paul Waterway
27 Problem Area of the Site, including the sediment

1 remedial action tasks described in this Consent Decree
2 and the attached Monitoring Plan and schedules.

3
4 V. GENERAL PROVISIONS

5 32. The objectives of the Settling Parties in
6 entering into this Consent Decree are (i) to protect the public
7 health and welfare and the environment from releases or
8 threatened releases of hazardous substances, pollutants, or
9 contaminants from the St. Paul Waterway Problem Area of the Site
10 by the implementation of the sediment remedial action and
11 monitoring, reporting and contingency activities by the Settling
12 Defendants, (ii) to restore habitat and natural resources with
13 respect to past activities in the St. Paul Waterway Problem Area,
14 (iii) to reimburse governmental entities for all Past, Future,
15 and Oversight Response costs, and (iv) to encourage public and
16 private cooperation to accomplish effective cleanup actions and
17 to restore the environmental health of Commencement Bay.

18 33. Settling Defendants shall finance and perform the
19 Work in accordance with this Consent Decree and Monitoring Plan
20 (Exhibit A), CERCLA and the NCP, and any amendments to CERCLA and
21 the NCP which occur during the implementation of the Work, other
22 applicable laws (see paragraphs 43, 117, and 118) and in a manner
23 consistent with the ROD. EPA has determined that the activities
24 contemplated by this Consent Decree are consistent with the NCP.

25 34. The obligations of Settling Defendants to finance
26 and perform the Work and to reimburse the United States for its
27 Past Response Costs, Oversight Response Costs and Future Response

1 Costs under this Consent Decree are joint and several. In the
2 event of the insolvency or other failure of any one or more
3 Settling Defendants to implement the requirements of this Consent
4 Decree, the remaining Settling Defendants shall complete all such
5 requirements.

6 35. Except as provided in Section 121(e) of CERCLA
7 and the NCP, no permit shall be required for any portion of the
8 Work under this Consent Decree conducted entirely within the
9 Site. This Consent Decree is not, and shall not be construed to
10 be, a permit issued pursuant to any federal or state statute or
11 regulation. Settling Defendants shall obtain all permits or
12 approvals necessary for Work under this Consent Decree outside of
13 the Site, or for any purposes other than implementation of this
14 Consent Decree, under federal, state, or local laws and shall
15 submit timely applications and requests for any such permits and
16 approvals. All existing permits for the Work performed to date
17 are hereby superseded by this Consent Decree, and Settling
18 Defendants are not required to take any further actions under
19 those permits.

20 36. The Settling Parties agree that if Settling
21 Defendants or their Contractors arrange for the off-site storage,
22 treatment, disposal, or transportation of any hazardous substance
23 from the St. Paul Waterway Problem Area, then Settling Defendants
24 will, as required, obtain EPA prior written approval of the use
25 of any such off-Site facility in accordance with 42 U.S.C.

1 § 9621(e), and will comply with the applicable provisions of 40
2 C.F.R. Parts 261, 262, 263, 264, 265, and any relevant EPA
3 policies or guidances.

4 37. The standards and provisions of Section XIV
5 describing Force Majeure shall govern delays in obtaining any
6 necessary approvals or permits required for the Work and also the
7 denial of any such approvals or permits. However, the Settling
8 Defendants are required to make timely application for necessary
9 permit approvals and must provide any additional information
10 needed by the regulatory or consulting agency in a timely manner.

11 38. Settling Defendants shall include in all
12 contracts or subcontracts entered into for Work required under
13 this Consent Decree, provisions stating that such contractors or
14 subcontractors, including their agents and employees, shall
15 perform all activities required by such contracts or subcontracts
16 in compliance with all applicable laws and regulations.

17 39. All exhibits, appendices, and attachments to this
18 Consent Decree and any and all reports, plans, specifications,
19 schedules, and other documents required by the terms of this
20 Consent Decree and approved by EPA in accordance with the
21 provisions of this Consent Decree are incorporated into this
22 Consent Decree and enforceable under it.

23
24 VI. TRANSFERS OF INTEREST OR PROPERTY

25 40. The obligations of each Settling Defendant who
26 owns any interest in the Mill or property included in the St.
27 Paul Waterway Problem Area, with respect to undertaking and

1 maintaining the Work set forth in this Consent Decree and the
2 attached Monitoring Plan, or developed thereunder, shall run with
3 the land and shall be binding upon any and all persons who
4 acquire any interest in the Mill or any property included in the
5 St. Paul Waterway Problem Area. Within thirty (30) calendar days
6 of the effective date of this Consent Decree, the Settling
7 Defendants shall record a copy of this Decree with the Recorder's
8 Office, Pierce County, Washington. A copy of the recorded notice
9 shall be sent to EPA.

10 41. The Mill or any property within St. Paul Waterway
11 Problem Area may be freely alienated provided that at least sixty
12 (60) calendar days prior to the date of such alienation, the
13 Settling Defendants notify EPA in writing of such proposed
14 alienation, the name of the grantee, and a description of the
15 Settling Defendants' obligations, if any, to be performed by such
16 grantee. In the event of such alienation, all of Settling,
17 Defendants' obligations pursuant to this Decree shall continue to
18 be met by the Settling Defendants or, subject to EPA approval, by
19 Settling Defendants and the grantee.

20 42. Prior to termination of this Consent Decree under
21 paragraph 125, any deed, title, or other instrument of conveyance
22 regarding the Mill or St. Paul Waterway Problem Area shall
23 contain a notice that such property is the subject of this
24 Consent Decree, setting forth the style of the case, case number,
25 and Court having jurisdiction herein.

1 VII. PERFORMANCE OF THE WORK BY SETTLING DEFENDANTS

2 43. The Work to be performed is specified in the
3 attached Monitoring Plan (Exhibit A). The provisions of this
4 Monitoring Plan shall take effect on the effective date of this
5 Consent Decree. The Monitoring Plan is incorporated by reference
6 into this Consent Decree and its terms, conditions, and
7 requirements are enforceable under the provisions of this Decree.
8 All Work shall be conducted in accordance with CERCLA, the NCP,
9 and the requirements of this Consent Decree. Any modifications
10 to the Work performed shall be approved by EPA under paragraph
11 46, 68, or 120.

12 44. The following Work shall be performed, as
13 specified in the Monitoring Plan:

14 (A) Conduct monitoring and report results in
15 accordance with the schedules, methods, sampling and
16 analysis protocols in the Monitoring Plan.

17 (B) Review and revise annual monitoring programs
18 under EPA direction and approval.

19 (C) Implement contingency planning, contingency
20 response, and expedited review procedures, if
21 necessary.

22 45. Simpson shall perform or arrange for the
23 performance of the monitoring unless the Settling Defendants
24 inform EPA otherwise. Work under this Consent Decree shall be
25 under the direction and supervision, as applicable, of a
26 qualified professional engineer, biologist, environmental
27 professional, certified hydrogeologist, or equivalent, with

1 | experience and expertise in contaminated site monitoring. Where
2 | appropriate, Simpson's project coordinator may direct and
3 | supervise the Work. EPA shall have the right to approve such
4 | supervisor, which consent shall not be unreasonably withheld.
5 | Simpson shall also inform EPA of the principal contractors and
6 | subcontractors to be used in advance of their involvement at the
7 | site where possible. In the event of EPA disapproval, Simpson
8 | shall promptly, but not later than 30 days, resubmit to EPA the
9 | names of its new selections.

10 | 46. Performance standards. (i) Purpose of
11 | performance standards. The performance standards are designed to
12 | evaluate the protectiveness of the remedy at the St. Paul
13 | Waterway Problem Area. These standards, as described in
14 | subparagraph (ii) below, shall be met at the St. Paul Waterway
15 | Problem Area. These performance standards are based on sediment
16 | quality objectives in the ROD, specific human health risk
17 | assessments, environmental effects tests, and associated
18 | interpretive guidelines. The Settling Defendants shall conduct
19 | sampling and monitoring activities in accordance with the
20 | attached Monitoring Plan in order to determine whether these
21 | performance standards are being attained. In accordance with the
22 | Contingency Planning Procedures of the Monitoring Plan, EPA may
23 | direct the Settling Defendants to conduct additional sampling and
24 | analysis if necessary to determine whether the performance
25 | standards are being attained.

26 | (ii) Definition of performance standards. There are
27 | three types of performance standards: physical, biological and

1 chemical. The chemical performance standards are interim
2 standards that apply as described in subparagraph (C) and until
3 reference stations for biological tests are established and
4 approved by EPA in accordance with the Monitoring Plan. At that
5 time, the biological performance standards will become effective
6 under this Decree. All data will be used throughout the duration
7 of monitoring activities under this Consent Decree for evaluating
8 the early warning triggers specified in the Monitoring Plan.

9 (A) Physical performance standard. A minimum of
10 three feet of sediment meeting the performance
11 standards in this paragraph shall be maintained at all
12 times throughout Areas A and B of the Problem Area
13 (see Figure 1d of Monitoring Plan, Exhibit A).

14 (B) Biological performance standard. (1)
15 This standard is measured by three
16 biological tests: benthic infauna
17 abundance, amphipod mortality bioassay, and
18 larval abnormality bioassay. These tests
19 were used to establish the sediment quality
20 objectives specified in the ROD. A
21 determination by EPA of an adverse effect
22 for the benthic infauna test, the amphipod
23 mortality bioassay, and either the bivalve
24 larvae abnormality test or echinoderm
25 larvae bioassay test shall be considered a
26
27

1 failure to attain the biological performance
2 standard.

3 (2) The Monitoring Plan contains requirements for
4 annual monitoring of benthic and epibenthic abundance
5 and monitoring of seeps, vents, and sediments in the
6 Problem Area; there are no routine requirements for
7 conducting bioassay tests. Should EPA determine that
8 the data resulting from the Monitoring Plan indicate
9 the need for further evaluation or sampling to
10 determine whether the performance standards are being
11 attained, EPA may require the Settling Defendants to
12 conduct additional biological tests or take other
13 actions in accordance with the Contingency Planning
14 Process of the Monitoring Plan.

15 (3) EPA shall determine adverse effects for each of
16 the three biological performance standard tests, as
17 described below:

18 (a) Benthic infauna abundance (in-situ). The
19 test sediment sample has a lower (statistically
20 significant using a one-tailed t-test with a
21 comparison error rate of $P \leq 0.05$) mean abundance
22 than the reference sediment sample of any of the
23 following major taxa: crustacea, mollusca, and
24 polychaeta; and the test sediment sample mean
25 abundance is less than 50 percent of the
26 reference sample mean total abundance.

1 (b) Amphipod mortality bioassay. The test
2 sediment sample has a higher (statistically
3 significant using a one-tailed t-test with a
4 comparison error rate of $P \leq 0.05$) mean mortality
5 than the reference sample, and the test sediment
6 sample mean mortality exceeds 25 percent
7 (absolute).

8 (c) Larval abnormality bioassay (oyster or
9 echinoderm). The test sediment sample has a
10 higher (statistically significant using a one-
11 tailed t-test with a comparison error rate of $P \leq$
12 0.05) mean abnormality than the reference
13 sediment sample, and the test sediment sample
14 mean abnormality exceeds 20 percent (absolute).

15 (4) The selection of reference areas for the purpose
16 of taking reference sediment samples for the
17 biological tests will be determined in accordance with
18 the Monitoring Plan. Samples for benthic infauna
19 analyses shall be taken in accordance with the
20 sampling and analytical methods, including replicate
21 samples, specified in the Monitoring Plan. Sediment
22 samples for bioassay analyses shall be collected from
23 the top two centimeters of the cap and analyzed in
24 accordance with applicable Puget Sound Estuary Program
25 protocols. The control and reference area criteria
26 established for the bioassays by the Puget Sound
27 Estuary Program protocols shall be used.

1 (C) Chemical performance standards. These standards
2 are interim performance standards as described above
3 and are specified as the lowest AET in Table 7 of the
4 Monitoring Plan. These standards are based upon the
5 interpretation of the biological tests described in
6 subparagraph (B) above using the Apparent Effects
7 Threshold (AET) method and on human health risk
8 assessment procedures. These chemical performance
9 standards are attained when the concentration of a
10 chemical in a sediment sample taken from the top two
11 centimeters of the cap is less than the lowest AET
12 value for that chemical in Table 7. However, if the
13 lowest AET value in Table 7 is exceeded, EPA may
14 determine, under the Contingency Planning Process,
15 that the chemical performance standard is being
16 attained if a combination of chemical and biological
17 data demonstrate no adverse biological effects.

18 (iii) Modifications to AET database or sampling and
19 test evaluation protocols. EPA may propose modifications to the
20 AET database or sampling and test evaluation protocols, including
21 QA/QC protocols, for the biological and chemical performance
22 standards after the date of this Consent Decree. EPA will first
23 consult with Settling Defendants and consulting agencies on
24 proposed modifications. If EPA and the Settling Defendants
25 agree on a modified AET database or sampling and test evaluation
26 protocols, the modified database or protocols will be used in
27 determining attainment of performance standards. If agreement is

1 not reached, the matter will be resolved in accordance with the
2 dispute resolution procedures described in Section XV of this
3 Consent Decree. Any modifications of the AET database or
4 sampling and test evaluation protocols will be documented and
5 filed with the court in accordance with paragraph 120 of this
6 Consent Decree.

7 47. Failure to attain performance standards. If one
8 or more of the performance standards is not attained, or if the
9 remedy is otherwise not protective of human health and the
10 environment, EPA shall determine -- where appropriate under the
11 Contingency Planning Procedures of the Monitoring Plan or under
12 Section IX, XIX, or XXIV below -- the additional response
13 activities to be conducted. If the problem has not been
14 corrected after proceeding under the Contingency Planning
15 Process, EPA shall determine whether the Settling Defendants
16 have failed to comply with the requirements of this Consent,
17 Decree. Such failure shall be considered a matter not covered
18 under Section XVIII below and subject to the provisions of
19 paragraph 101 below.

20 48. The Settling Defendants acknowledge and agree
21 that nothing in this Consent Decree, including the Monitoring
22 Plan, constitutes a warranty or representation of any kind by EPA
23 or the United States that compliance with this Consent Decree
24 will achieve the performance standards set forth in paragraph 46
25 above, and that such compliance shall not foreclose the United
26 States from seeking performance of all terms and conditions of
27 this Consent Decree.

1
2 VIII. ADDITIONAL WORK

3 49. If the Settling Defendants determine that
4 additional Work may be necessary to attain the performance
5 standards of this Consent Decree, the Settling Defendants shall
6 obtain EPA's approval to proceed prior to performing such Work.

7 50. As specified in the Contingency Planning Process
8 in the Monitoring Plan, EPA shall consult and coordinate Work
9 with the Consulted Agencies prior to performing additional Work,
10 or requiring the Settling Defendants to perform additional Work,
11 that is authorized by the Contingency Response Process. Further,
12 EPA shall use best efforts consistent with this Consent Decree
13 and the State Consent Decree dated December 24, 1987, as amended,
14 to coordinate with Ecology in the event that any future
15 enforcement actions are initiated by EPA under this Consent
16 Decree or by Ecology.

17
18 IX. PERIODIC REVIEW TO ENSURE PROTECTION OF HUMAN HEALTH AND
19 THE ENVIRONMENT

20 51. EPA will conduct reviews of the sediment remedial
21 action in accordance with CERCLA § 121(c), 42 U.S.C. § 9621(c),
22 and any applicable regulations or guidance, based on data
23 received under the Monitoring Plan together with any other
24 appropriate information. If EPA determines as a result of this
25 review that further response action under CERCLA § 104 or § 106
26 may be necessary, EPA shall provide the Settling Defendants a
27 reasonable opportunity to confer in accordance with the

1 contingency planning process prior to implementing a response
2 action. After such consultation, EPA shall, in writing, either
3 affirm, modify, or rescind the determination of the need for
4 further response action. If directed by EPA, the Settling
5 Defendants shall perform the response action unless they request
6 review of EPA's final decision pursuant to the dispute resolution
7 provisions in Section XV of this Decree, to the extent permitted
8 by CERCLA § 113, 42 U.S.C. § 9613.

9
10 X. QUALITY ASSURANCE

11 52. Settling Defendants shall use quality assurance,
12 quality control, and chain of custody procedures in accordance
13 with EPA's "Interim Guidelines and Specifications for Preparing
14 Quality Assurance Project Plans" (QAM-005/80), EPA's "Data
15 Quality Objective Guidance" (EPA/540/G87/003 and 004), Puget
16 Sound Estuary Protocols (1986-1990), and subsequent amendments to
17 such guidelines. All such procedures and provisions for
18 modifications are included in the Monitoring Plan and paragraph
19 46 of this Consent Decree. Should any need for modifications
20 arise, the modifications will be provided to the Settling
21 Defendants by EPA and incorporated into the Monitoring Plan
22 pursuant to paragraphs 46 and 120. Any disagreements with such
23 modifications shall be resolved under the dispute resolution
24 provisions in this Consent Decree. Sampling data generated
25 consistent with the Monitoring Plan shall be admissible as
26 evidence against Settling Defendants, and Settling Defendants

1 waive any objection to admissibility of such evidence in any
2 proceeding under this Consent Decree.

3 53. Selection of any laboratory to be utilized by
4 Settling Defendants in implementing this Consent Decree is
5 subject to approval by EPA. Settling Defendants shall ensure
6 that EPA and its authorized representatives have reasonable
7 access to each laboratory in order to inspect that laboratory,
8 pertinent laboratory records, and equipment utilized in
9 implementing this Consent Decree. Settling Defendants shall also
10 require each laboratory selected to submit a quality assurance
11 plan to EPA. In addition, Settling Defendants shall require each
12 laboratory to perform analyses of samples provided by EPA
13 according to EPA specified methods, to demonstrate the quality of
14 each laboratory's analytical data.

15
16 XI. SITE ACCESS AND SAMPLING

17 54. (i) As of the effective date of this Consent
18 Decree, EPA and its authorized representatives, including Ecology
19 and the Puyallup Tribe, and their contractors, shall have access
20 to the St. Paul Waterway Problem Area and any property to which
21 access is required for the oversight or implementation of this
22 Consent Decree, to the extent access to the property is
23 controlled by or available to Settling Defendants. EPA, Ecology,
24 the Puyallup Tribe and their authorized representatives shall
25 have the authority to enter and freely move about such property
26 at all reasonable times for the purposes of overseeing the

1 requirements of this Consent Decree, including, but not limited
2 to:

3 (A) Conducting any activity authorized by or related
4 to CERCLA, the Resource Conservation and Recovery Act
5 ("RCRA"), 42 U.S.C. §§ 6901 et seq., the NCP or this
6 Consent Decree;

7 (B) Monitoring the Work, progress of such Work, or
8 any other activities undertaken on the property;

9 (C) Verifying any data or information submitted to
10 EPA;

11 (D) Inspecting and copying records, operation logs,
12 contracts, or other documents maintained or generated
13 by Settling Defendants or their agents or contractors
14 for the Work undertaken pursuant to this Consent
15 Decree;

16 (E) Conducting such tests, investigations, or sample
17 collections as deemed necessary to monitor compliance
18 with this Consent Decree;

19 (F) Using a camera, sound recording, or other
20 documentary type equipment to record Work done
21 pursuant to this Consent Decree;

22 (G) Assessing the need for, planning, or implementing
23 additional response actions at or near the St. Paul
24 Waterway Problem Area; and

25 (H) Assessing Settling Defendants' compliance with
26 the terms of this Consent Decree.

1 (ii) Settling Defendants shall have the right to
2 accompany EPA, Ecology, the Puyallup Tribe, or their authorized
3 representative on the property. Parties with access to the
4 property shall comply with applicable health and safety
5 requirements and shall not interfere, to the extent practicable,
6 with ongoing operations.

7 55. To the extent that the St. Paul Waterway or any
8 other area where Work is to be performed under this Consent
9 Decree is owned or controlled by persons other than Settling
10 Defendants, Settling Defendants shall use best efforts to secure
11 from such persons access for Settling Defendants, as well as for
12 EPA and its representatives, including Ecology and the Puyallup
13 Tribe and their contractors, as necessary to implement this
14 Consent Decree. For purposes of this paragraph "best efforts"
15 includes, but is not limited to, seeking judicial assistance. If
16 any access required to complete the Work is not obtained within
17 thirty (30) days of the effective date of this Consent Decree, or
18 within 30 days of the date EPA notifies Settling Defendants in
19 writing that additional access beyond that previously secured is
20 necessary, Settling Defendants shall promptly notify EPA. EPA
21 may thereafter assist Settling Defendants in obtaining access.
22 Settling Defendants shall reimburse the United States, in
23 accordance with the procedures in Section XVII, for Future
24 Response Costs incurred in implementing this paragraph.

25 56. Notwithstanding any provision of this Consent
26 Decree, EPA, Ecology and the Puyallup Tribe retain all of their
27 access authorities and rights under CERCLA, RCRA and any other

1 applicable federal or state statute, regulation or other
2 authority.

3
4 XII. REPORTING, DOCUMENT RETENTION AND AVAILABILITY

5 57. Settling Defendants shall report to EPA or its
6 authorized representatives the results of all sampling and/or
7 tests, quality assurance data, and other data generated by
8 Settling Defendants as specified by the Monitoring Plan. All
9 reports submitted to EPA under the Monitoring Plan shall be
10 signed by the Project Coordinator or designee and shall be filed
11 with the Court after approval by EPA.

12 58. All required work plans, reports, and other
13 documents ("documents") shall be subject to review and approval
14 by EPA.

15 59. Except as provided in the Monitoring Plan:

16 (A) EPA shall notify the Settling Defendants in
17 writing of approval or disapproval of the document, or
18 any part thereof, within thirty (30) calendar days of
19 receipt of any document required by this Consent
20 Decree. In the event EPA needs a longer review
21 period, EPA shall notify Settling Defendants of its
22 revised response date within thirty (30) calendar days
23 of receipt of the document.

24 (B) In the event of disapproval, EPA shall specify in
25 writing any deficiencies and modifications to the
26 document. Nothing in this provision shall negate

27 EPA's right to approve or disapprove a submittal by

1 the Settling Defendants should the time periods stated
2 in this paragraph be exceeded by EPA, nor shall such
3 delay by EPA subject Settling Defendants to any
4 enforcement action.

5 (C) Within thirty (30) calendar days of receipt of
6 any document disapproval or comments for revision, the
7 Settling Defendants shall either: (1) submit a revised
8 document to EPA which incorporates EPA's modifications
9 or summarizes and addresses EPA's concerns or (2)
10 provide a notice of dispute under Section XV of this
11 Consent Decree.

12 60. If the date for submission of any item or
13 notification required by this Consent Decree falls upon a weekend
14 or state or federal holiday, the time period for submission of
15 that item or notification is extended to the next working day
16 following the weekend or holiday.

17 61. Upon the occurrence of any event during
18 performance of the Work under this Consent Decree which, pursuant
19 to Section 103 of CERCLA, 42 U.S.C. § 9603, and 40 C.F.R.
20 § 300.63, and pursuant to Section 304 of the Emergency Planning
21 and Community Right-to-Know Act ("EPCRA"), 42 U.S.C. § 11004,
22 requires reporting, the Settling Defendants shall within
23 twenty-four (24) hours orally notify the EPA Project
24 Coordinator/OSC, and the EPA Superfund Response and Investigation
25 Section, Region 10, in addition to the reporting required by
26 Section 103 of CERCLA and Section 304 of EPCRA. Within twenty
27 (20) calendar days of the onset of such an event, the Settling

1 Defendants shall furnish to EPA a written report setting forth
2 the events which occurred and the measures taken, and to be
3 taken, in response thereto. Within thirty (30) calendar days of
4 the conclusion of such an event, the Settling Defendants shall
5 submit a report setting forth all final actions taken to respond
6 thereto. Reports submitted in compliance with other laws that
7 include information required by this Consent Decree may be
8 submitted under this Consent Decree and may be appended to a
9 regular monitoring report rather than being submitted to the
10 court separately.

11 62. The Settling Defendants shall make available to
12 EPA, and shall retain, during the pendency of this Consent Decree
13 and for a period of ten (10) years after its termination, all
14 records, data, and documents in their possession, custody or
15 control which relate to the performance of this Consent Decree,
16 and State Consent Decree, including documents reflecting the
17 results of any sampling and all documents pertaining to their own
18 or any other person's response actions or costs under CERCLA.
19 The Settling Defendants shall require all such records in the
20 possession of their contractors or agents to be provided to them
21 and shall retain originals or true copies of all such records.
22 After the ten (10) year period of document retention, the
23 Settling Defendants shall notify EPA at least ninety (90)
24 calendar days prior to the destruction of any such documents and
25 the Settling Defendants shall relinquish custody of the documents
26 to EPA on request.

1 63. Except as provided by paragraph 65 below, the
2 Settling Defendants may assert business confidentiality claims
3 covering part or all of the information provided in connection
4 with this Consent Decree to the extent permitted by and in
5 accordance with Section 104(e)(7)(A) of CERCLA, 42 U.S.C.
6 § 9604(e)(7)(A), and pursuant to EPA's Confidential Business
7 Information regulations contained at 40 C.F.R. §§ 2.203 - 2.206.

8 64. Documents or information determined to be
9 confidential by EPA will be afforded the protection specified in
10 40 C.F.R. Part 2, Subpart B. If no such written claim
11 accompanies the information when it is submitted to the EPA, or
12 if EPA has notified Settling Defendants that the documents or
13 information are not confidential under the standards of Section
14 104(e)(7) of CERCLA, the public may be given access to such
15 information without further notice to the Settling Defendants
16 unless such information is subject to the requirements of
17 paragraph 65.

18 65. Information acquired or generated by the Settling
19 Defendants in performance of the Monitoring Plan and Work under
20 this Consent Decree that is subject to the provisions of Section
21 104(e)(7)(F) of CERCLA, 42 U.S.C. § 9604(e)(7)(F), shall not be
22 claimed as confidential by the Settling Defendants. EPA may make
23 Settling Defendants' preliminary or draft data or documents
24 available to its contractors involved in reviewing such
25 information in accordance with contractual requirements on
26 confidentiality. Except as specifically provided in the
27 Monitoring Plan, EPA shall not make Settling Defendants'

1 documents that are marked as preliminary or draft data or
2 documents available to Consulted Agencies or any other person
3 without prior consultation with the Project Coordinator. Except
4 as provided in the Monitoring Plan, the Consulted Agencies also
5 shall not make Settling Defendants' preliminary or draft data or
6 documents available to any other person without prior
7 consultation with EPA's RPM and the Project Coordinator. If
8 Settling Defendants request, EPA or the Consulted Agency shall
9 include an explanation regarding the reliability or status of any
10 preliminary or draft data or documents being made available.

11
12 XIII. DESIGNATION OF REMEDIAL PROJECT MANAGER/ON-SCENE
13 COORDINATOR AND PROJECT COORDINATOR

14 66. Within twenty (20) calendar days of the effective
15 date of this Consent Decree, the Settling Defendants shall notify
16 EPA, in writing, of the name, address, and telephone number of
17 their designated Project Coordinator and Alternate Project
18 Coordinator responsible for supervising or overseeing the Work to
19 be performed under this Consent Decree and Monitoring Plan. The
20 Project Coordinator shall have primary responsibility for
21 implementation of the Work at the St. Paul Waterway Problem Area
22 under this Consent Decree and Monitoring Plan as provided in
23 Section VII above. Champion and DNR shall provide the name,
24 telephone number, and address of a project contact for EPA. The
25 Settling Defendants may change their Project Coordinator(s) or
26 Contacts by notifying EPA, in writing, at least ten (10) calendar
27 days prior to the change.

1 67. EPA shall designate a Remedial Project Manager
2 (RPM) who shall oversee the Work performed by Settling Defendants
3 pursuant to this Consent Decree and Monitoring Plan. In addition
4 to the RPM designated by EPA pursuant to paragraph 116 of this
5 Consent Decree, EPA may designate other representatives,
6 including its contractors and consultants, and persons from, or
7 working for, Ecology or the Puyallup Tribe, to observe and
8 monitor the progress of activities undertaken pursuant to this
9 Consent Decree. EPA's RPM shall have the authority lawfully
10 vested in a RPM and On-Scene Coordinator (OSC) by the National
11 Contingency Plan, 40 C.F.R. Part 300, as amended, and as provided
12 under Section XXIV of this Consent Decree.

13 68. To the maximum extent possible, except as
14 specifically provided in this Consent Decree, communications
15 between Settling Defendants and EPA concerning the implementation
16 of the Work under this Consent Decree shall be made between the
17 Settling Defendants' Project Coordinator and EPA's RPM. The
18 Settling Defendant's Project Coordinator and EPA's RPM are
19 authorized to make minor modifications to the requirements of
20 this Consent Decree (see paragraph 120 below).

21
22 XIV. FORCE MAJEURE

23 69. "Force Majeure," for purposes of this Consent
24 Decree is defined as any event arising from causes entirely
25 beyond the control of the Settling Defendants which Settling
26 Defendants could not avoid by the exercise of due diligence and
27 which delays or prevents the timely performance of any obligation
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1 under this Consent Decree notwithstanding Settling Defendants'
2 best efforts to avoid the delay, including but not limited to
3 using best efforts to address any potential Force Majeure (i) as
4 it is occurring and (ii) following the potential Force Majeure
5 event, such that the delay is minimized to the greatest extent
6 possible. Force Majeure shall not include increased costs or
7 expenses in connection with the performance of the Work under the
8 Consent Decree or Monitoring Plan, changed financial
9 circumstances of Settling Defendants or nonattainment of the
10 performance standards set forth in Section VII of this Consent
11 Decree.

12 70. When circumstances or any event occurs or has
13 occurred which may delay the completion of any phase of the Work
14 or delay access to the St. Paul Waterway Problem Area or to any
15 property on which any part of the Work is to be performed,
16 whether or not caused by a Force Majeure event, the Settling
17 Defendants shall promptly (but no later than 48 hours) orally
18 notify EPA's RPM, or other EPA representative in his/her absence.
19 Within five (5) working days of the event which Settling
20 Defendants contend is responsible for the delay, Settling
21 Defendants shall notify EPA in writing of reason(s) for the
22 delay, the anticipated duration of such delay, the measures taken
23 and to be taken by Settling Defendants to prevent or minimize the
24 delay, the timetable for implementation of such measures, and a
25 statement as to whether, in the opinion of the Settling
26 Defendants, such event may cause or contribute to an endangerment
27 to public health, welfare or the environment. Failure to give

1 oral notice to EPA's Project Coordinator and to give written
2 explanation to EPA in a timely manner shall constitute a waiver
3 of any claim of Force Majeure.

4 71. If EPA agrees that the delay or anticipated delay
5 is or was attributable to a Force Majeure event, the time for
6 performance of the obligations under this Consent Decree that are
7 directly affected by the Force Majeure event shall be extended by
8 agreement of the Settling Parties for a period of time to allow
9 the completion of the specific phase of Work and/or any
10 succeeding phase of the Work affected by such delay.

11 72. If EPA does not agree that the delay or
12 anticipated delay has been or will be a Force Majeure event, or
13 that the duration of the delay is or was warranted under the
14 circumstances, the Settling Parties shall resolve the dispute
15 according to Section XV hereafter. In any such proceeding,
16 Settling Defendant has the burden of demonstrating by a
17 preponderance of evidence that the delay or anticipated delay has
18 been or will be caused by a Force Majeure as a defense to
19 compliance with this Consent Decree.

20 21 XV. DISPUTE RESOLUTION

22 73. If the parties cannot resolve a disagreement
23 under this Consent Decree, EPA shall use the procedures set forth
24 in this Section and shall promptly make a determination or
25 certify issues to the court for resolution.

26 74. The Settling Parties shall attempt to resolve
27 expeditiously and informally any disagreements concerning
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1 implementation of this Consent Decree or any Work required
2 thereunder. Informal negotiations between the parties to the
3 dispute may last for a period of up to fourteen (14) calendar
4 days from the date that written notice of the existence of the
5 dispute is served on all Settling Parties, unless it is extended
6 by written agreement between the Settling Parties.

7 75. In the event that any dispute arising under this
8 Consent Decree is not resolved informally within the fourteen
9 (14) day time period indicated in paragraph 74 above, the party
10 who gave the notice shall then within ten (10) days serve on the
11 Settling Parties a written statement of the issues in dispute,
12 the relevant facts upon which the dispute is based, and factual
13 data, analysis or opinion supporting its position, and all
14 supporting documentation on which such party relies (hereinafter
15 the "Statement of Position"). Opposing parties shall serve their
16 Statements of Position, including supporting documentation, no
17 later than ten (10) calendar days after receipt of the
18 complaining party's Statement of Position. In the event that
19 these ten-day time periods for exchange of Statements of Position
20 may cause a delay in the Work, they shall be shortened in
21 accordance with written notice by EPA.

22 76. An administrative record of any dispute under
23 this Section shall be maintained by EPA. At its option, EPA may
24 determine, which determination shall not be reviewable by a
25 court, that any dispute which relates to the selection, extent,
26 or adequacy of any aspect of any response actions is to be
27 resolved on an administrative record. For purposes of this

1 paragraph, the adequacy of any aspect of any response action
2 includes: (i) the adequacy or appropriateness of plans,
3 procedures to implement plans, or any other items requiring
4 approval by EPA under this Consent Decree; and (ii) the adequacy
5 of response actions performed pursuant to this Consent Decree.
6 The record shall include the written notification of such dispute
7 and the Statements of Positions and any other materials submitted
8 by the parties in support of their positions. The record shall
9 be available for review by all Settling Parties to this Consent
10 Decree.

11 77. Upon review of the administrative record, EPA
12 shall issue a final decision and order resolving the dispute
13 within fourteen (14) calendar days.

14 78. Any decision and order of EPA pursuant to the
15 preceding paragraph shall be binding unless a Notice of Judicial
16 Appeal is filed with this Court within ten (10) calendar days of
17 receipt of EPA' decision and order. In any event, judicial
18 review will be conducted on the administrative record, using an
19 arbitrary and capricious standard of review. The Settling
20 Defendants shall bear the burden of proof for demonstrating that
21 the decision is arbitrary and capricious. The filing of a
22 judicial appeal shall not stay the accrual of stipulated
23 penalties pursuant to Section XVI. After the date of termination
24 of this Consent Decree specified in Section XXXII hereof,
25 judicial review will be available only by instituting new
26 action(s) to the extent permitted by law, except for those
27 continuing obligations set forth in paragraph 125.

1 79. The invocation of the procedures stated in this
2 Section shall not extend or postpone the Settling Defendants'
3 obligations under this Consent Decree with respect to the
4 disputed issue unless and until EPA finds, or the Court orders,
5 otherwise.

6 80. In no event will the standards for performance of
7 the Work set forth in paragraph 46 of this Consent Decree be
8 subject to challenge by the Settling Defendants. Disputes on
9 whether the performance standards have been met or on
10 modifications to such performance standards proposed by EPA are
11 subject to dispute resolution under this Section.

12
13 XVI. STIPULATED PENALTIES

14 81. The Settling Defendants shall be jointly and
15 severally liable for stipulated penalties in the amounts set
16 forth in paragraph 87 for each violation of the requirements of
17 this Consent Decree unless EPA or a court determines that such
18 failure is excused under Section XIV ("Force Majeure").
19 Violations by the Settling Defendants shall include, but are not
20 limited to, failure to complete an activity under this Consent
21 Decree, or any matter under this Consent Decree in a manner
22 acceptable to EPA and within the specified reporting schedules,
23 established in and approved under this Consent Decree. Any
24 modifications of the time for performance shall be mutually
25 agreed to in writing pursuant to paragraph 68 or 120.

26 82. All penalties begin to accrue on the day that
27 complete performance is due or a violation occurs, and continue

1 to accrue through the final day of correction of the
2 noncompliance. Nothing herein shall prevent the simultaneous
3 accrual of separate penalties for separate violations of this
4 Consent Decree.

5 83. Following a determination by EPA that Settling
6 Defendants have failed to comply with any requirement of this
7 Consent Decree, EPA shall give Settling Defendants written
8 notification of the violation and describe the noncompliance.
9 EPA shall use best efforts to issue such notification within
10 thirty (30) days of its determination of a violation. This
11 notice shall also indicate the amount of penalties currently due,
12 and the rate of accrual for continuing violations.

13 84. All penalties owed under this Section shall be
14 payable within thirty (30) calendar days of receipt of the
15 notification of noncompliance, unless the Settling Defendants
16 invoke the dispute resolution procedures under Section XV.
17 Penalties shall accrue from the date of violation regardless of
18 whether EPA simultaneously notified the Settling Defendants of a
19 violation. Interest shall begin to accrue on the unpaid balance
20 at the end of the thirty day period pursuant to paragraph 89 of
21 this Section. Such penalties shall be paid by certified check to
22 the "Hazardous Substances Response Superfund," and shall contain
23 Settling Defendants' complete and correct address, the Site name,
24 and the civil action number. All checks to the "Hazardous
25 Substances Response Trust Fund" shall be mailed to U.S. EPA
26 Superfund, P.O. Box 371003M, Pittsburgh, Pennsylvania 15251.

1 85. Neither the filing of a petition to resolve a
2 dispute nor the payment of penalties shall alter in any way the
3 Settling Defendants' obligation to fully perform the requirements
4 of this Consent Decree.

5 86. The Settling Defendants may dispute EPA's right
6 to the stated amount of penalties by invoking the dispute
7 resolution procedures under Section XV. Penalties shall accrue
8 but need not be paid during the dispute resolution period. If
9 the District Court becomes involved in the resolution of the
10 dispute, the period of dispute shall end upon the rendering of a
11 decision by the District Court regardless of whether any party
12 appeals such decision. If the Settling Defendants do not prevail
13 upon resolution, the United States has the right to collect all
14 penalties which accrue prior to and during the period of dispute.
15 In the event of an appeal by Settling Defendants, such penalties
16 shall be placed into an escrow account until a decision has been
17 rendered by the final court of appeal. If the Settling
18 Defendants prevail upon resolution, no penalties shall be payable
19 and the sums held in the escrow account shall be refunded to the
20 Settling Defendants.

21 87. The following stipulated penalties shall be
22 payable per violation per day for any noncompliance identified in
23 paragraph 81 above.

<u>Amount/Day</u>	<u>Period of Noncompliance</u>
\$1,500	1st through 30th day
\$5,000	30th through 60th day
\$10,000	60th day and beyond

1 88. No payments made under this Section shall be tax
2 deductible.

3 89. Pursuant to 31 U.S.C. § 3717, interest shall
4 accrue on any amounts overdue at a rate established by the
5 Department of Treasury for any period after the date of billing.
6 A handling charge will be assessed at the end of each thirty day
7 late period, and a six percent per annum penalty charge will be
8 assessed if the penalty is not paid within ninety (90) calendar
9 days of the due date.

10 90. If the Settling Defendants fail to pay stipulated
11 penalties, the United States may institute proceedings to collect
12 the penalties. Notwithstanding the stipulated penalties
13 provisions of this Section, the United States may elect to assess
14 civil penalties and/or bring an action in U.S. District Court
15 pursuant to Section 109 of CERCLA, as amended, or other
16 applicable law, to enforce the provisions of this Consent Decree.
17 Payment of stipulated penalties shall not preclude the United
18 States from electing to pursue any other remedies or sanctions to
19 enforce this Consent Decree, including seeking additional
20 penalties for civil or criminal contempt proceedings, and nothing
21 shall preclude the United States from seeking statutory penalties
22 against the Settling Defendants for violations of any statutory
23 or regulatory requirements.

XVII. REIMBURSEMENT

91. Settling Defendants shall, jointly and severally, pay three hundred fifty four thousand, five hundred thirty six dollars (\$354,536.00) plus any interest due, in reimbursement of Past Response Costs through September 30, 1989, within thirty (30) calendar days of the entry of this Consent Decree, to the "EPA Hazardous Substances Response Superfund." Interest, including prejudgment interest, shall accrue on any amount owed after thirty (30) days of the Settling Defendants' receipt of EPA's special notice and formal demand letter and shall continue to accrue on any unpaid balance following the date of entry of this Consent Decree. In addition, Settling Defendants shall, jointly and severally, pay sixty (60) percent of EPA's Past Response Costs, plus any interest due, incurred from September 30, 1989 through the date of entry of this Consent Decree and not inconsistent with the National Contingency Plan, within thirty (30) calendar days of receipt of EPA's demand letter and Financial Management Cost Summary, to the "EPA Hazardous Substances Response Superfund." Interest shall accrue on any amount owed after thirty days of the Settling Defendants' receipt of EPA's formal demand letter. Such amounts shall be sent to the U.S. EPA Superfund, P.O. Box 371003M, Pittsburgh, Pennsylvania 15251, payable to "EPA Hazardous Substances Response Superfund" and shall contain the Site name and civil action number. A copy of such check with an explanatory transmittal letter shall be sent to the Director of the Hazardous Waste Division, EPA, Region

1 10, the EPA RPM and the EPA Hearing Clerk, Office of Regional
2 Counsel, EPA, Region 10.

3 92. The payments made under paragraph 91 of this
4 Section are for reimbursement of EPA's Past Response Costs plus
5 interest, incurred through the date of entry of this Consent
6 Decree, claimed by the United States in this action. Nothing
7 herein shall be construed as limiting the rights of the United
8 States to seek any cost recovery from liable persons not party to
9 this Consent Decree.

10 93. Settling Defendants shall, jointly and severally,
11 reimburse the United States for all Oversight Response Costs and
12 Future Response Costs plus interest from the date of entry of
13 this Consent Decree not inconsistent with the National
14 Contingency Plan incurred by the United States and EPA. The
15 United States shall send Settling Defendants a demand for
16 payment, by certified mail return receipt requested, which shall
17 include an EPA Region 10 Financial Management Office Cost Summary
18 of all direct and indirect costs incurred by EPA and the United
19 States and their contractors, on an annual basis, with each
20 demand to be made as soon as practicable after the anniversary
21 date of the entry of this Consent Decree. Payments shall be made
22 in the manner described in paragraph 91 within 30 days of
23 Settling Defendants' receipt of each demand for payment.

24 94. Copies of check(s) paid pursuant to paragraph 93,
25 and any accompanying transmittal letter(s), shall be sent to the
26 United States and EPA as provided in paragraph 93.

1 95. Settling Defendants may contest payment of any
2 Past Response Costs incurred during the period September 30, 1989
3 through the effective date of this Consent Decree and Oversight
4 Response Costs or Future Response Costs incurred after entry of
5 this Consent Decree pursuant to paragraph 93 if they determine
6 that EPA has made an accounting error or if they allege that a
7 cost item that is included represents costs incurred for efforts
8 undertaken in a manner that was inconsistent with the NCP. Such
9 objection shall be made in writing within 30 days of receipt of
10 the accounting and must be sent to the United States pursuant to
11 Section XV. Any such objection shall specifically identify the
12 contested Oversight Response Costs or Future Response Costs and
13 the basis for objection. In the event of an objection, which
14 shall be resolved under the dispute resolution procedures of
15 Section XV, the Settling Defendants shall within the 30 day
16 period remit a certified or cashier's check for an amount
17 covering any non-contested Oversight Response Costs or Future
18 Response Costs to the United States in the manner described in
19 paragraphs 91 and 93. The dispute resolution procedures of
20 Section XV shall apply. If EPA prevails in the dispute, the
21 Settling Defendants shall pay the amount due plus interest and
22 applicable charges pursuant to paragraph 96.

23 96. In the event that the payments required by
24 paragraphs 91 or 93 are not timely made, Settling Defendants
25 shall pay interest on the unpaid balance at the rate established
26 by the Department of the Treasury pursuant to 31 U.S.C. § 3717
27 and 4 C.F.R. 102.13. Settling Defendants shall, jointly and

1 severally, further pay: (i) a handling charge of one percent, to
2 be assessed at the end of each thirty-day late period, and (ii) a
3 six (6) percent per annum penalty charge, to be assessed if
4 Settling Defendants have not paid in full within ninety (90) days
5 after the payment is due. Payments made under this paragraph
6 shall be in addition to such other remedies or sanctions
7 available to EPA and the United States by virtue of Settling
8 Defendants' failure to make timely payments under this Section.
9 If Oversight Response Costs are outstanding at the time the
10 United States plans to terminate this Consent Decree, the
11 Settling Defendants shall, within thirty (30) calendar days of
12 the submission of an itemized cost statement and supporting
13 documentation by the United States, and before termination of
14 this Consent Decree, pay such oversight costs.

15 97. The Past Response Costs set forth in this Section
16 are not inconsistent with the NCP.

17
18 XVIII. COVENANT NOT TO SUE

19 98. In consideration of actions which will be
20 performed and payments which will be made by the Settling
21 Defendants under the terms of this Consent Decree, and except as
22 otherwise specifically provided in this Decree, the United States
23 on behalf of EPA and the federal Natural Resource Trustees, and
24 the other Natural Resource Trustees, covenant not to sue the
25 Settling Defendants or its officers, directors, employees,
26 agents, successors, trustees, or assigns, for "Covered Matters."
27 These covenants not to sue shall take effect upon receipt by EPA

1 of the payments required by paragraph 91 of this Decree and upon
2 receipt by the Natural Resource Trustees of the payments required
3 under the Settlement Agreement on Natural Resource Damages
4 attached hereto as Exhibit C. With respect to future liability,
5 these covenants not to sue shall take effect upon the date of
6 issuance of the Certification of Completion by EPA under
7 paragraph 124. The covenant not to sue DNR for natural resource
8 damages in the St. Paul Waterway Problem Area shall take effect
9 upon: (i) completion of the administrative review and
10 identification of properties referred to in the Settlement
11 Agreement, and (ii) receipt of DNR's written commitment to make
12 available properties, that are acceptable to the Natural Resource
13 Trustees, for the habitat restoration project referred to in the
14 Settlement Agreement. "Covered Matters" means the following:

15 (A) Exclusively with respect to the St. Paul Waterway
16 Problem Area, liability for any and all civil claims
17 available to the United States on behalf of EPA and
18 the federal Natural Resource Trustees, and the other
19 Natural Resource Trustees, under Sections 106 and 107
20 of CERCLA, Section 7003 of RCRA, and Section 311 of
21 the Federal Water Pollution Control Act for:

22 (1) A release or threat of release of hazardous
23 substances that was remedied by Work described in
24 this Consent Decree and the Superfund Completion
25 Report.

26 (2) Work performed in accordance with this
27 Consent Decree and Monitoring Plan.

1 (3) Recovery of Past Response Costs, Oversight
2 Response Costs, and Future Response Costs
3 associated with contaminated sediments within the
4 St. Paul Waterway Problem Area.

5 (4) Damages for injury to, destruction of, or
6 loss of natural resources under federal, state,
7 and tribal trusteeship.

8 (B) With respect to Simpson and Champion in the other
9 Problem Areas described in the ROD, liability for any
10 and all civil claims available to the United States on
11 behalf of EPA under Sections 106 and 107 of CERCLA and
12 Section 7003 of RCRA for:

13 (1) Other sediment remedial actions.

14 (2) Past Response Costs, Oversight Response
15 Costs, and Future Response Costs associated with
16 contaminated sediments.

17 (C) Covered Matters under this paragraph do not
18 include the Middle Waterway Problem Area described in
19 the ROD.

20 99. (i) The covenants not to sue set forth above do
21 not pertain to any matters other than those expressly specified
22 to be "Covered Matters." In addition, the following are
23 specifically identified as matters that are not "Covered
24 Matters:"

25 (A) Criminal liability.
26
27

1 (B) Claims based on a failure of the Settling
2 Defendants to meet the requirements of this Consent
3 Decree.

4 (C) Liability for violations of applicable federal,
5 state, or tribal law or regulation by a Settling
6 Defendant in carrying out this Consent Decree.

7 (D) Liability arising from hazardous substances that
8 are removed by or at the direction of a Settling
9 Defendant from the St. Paul Waterway Problem Area or
10 the Site after the effective date of this Consent
11 Decree, where such removal is not authorized by this
12 Consent Decree.

13 (E) Liability, including but not limited to, claims
14 for Response Costs, under applicable federal, state,
15 or tribal law or regulation arising from any future
16 release or threat of release of hazardous substances
17 not described in the ROD and supporting documents or
18 as a "Covered Matter."

19 (F) Any matters for which the United States is owed
20 indemnification under Section XXII hereof.

21 (G) Oversight Response Costs and Future Response
22 Costs, if incurred and not reimbursed to the United
23 States under paragraph 93.

24 (H) Liability under applicable federal, state, or
25 tribal law or regulation for contaminated sediments in
26 the Middle Waterway Problem Area.

1 (I) Liability for unknown conditions as described in
2 paragraph 100 of this Consent Decree.

3 (J) Liability for damages for injury to, destruction
4 of, or loss of natural resources, including damages
5 with respect to petroleum product releases occurring
6 after July 1, 1990, and excluding damages with respect
7 to the St. Paul Waterway Problem Area.

8 (K) Liability for releases of petroleum products or
9 hazardous substances (not described in the ROD and
10 supporting documents or as a "Covered Matter") at the
11 St. Paul Waterway Problem Area after July 1, 1990,
12 pursuant to Section 311 of the Federal Water Pollution
13 Control Act, as amended by the Oil Pollution Act of
14 1990, P.L. No. 101-380, 104 STAT. 484, or any other
15 applicable provision of that Act.

16 (ii) Settling Defendants reserve their right to
17 assert defenses under CERCLA, including but not limited to, the
18 defense set forth in Section 107(b)(3) of CERCLA, to any of the
19 matters described in subparagraphs (A) through (K) above.

20
21 **XIX. RESERVATION OF RIGHTS**

22 100. The United States on behalf of EPA and the
23 federal Natural Resource Trustees, and the other Natural Resource
24 Trustees on their own behalf, reserve, and this Consent Decree is
25 without prejudice to, all rights against Settling Defendants with
26 respect to all matters not described as Covered Matters,
27 including additional response Work at the St. Paul Waterway

1 Problem Area or the Site which are not covered by the covenant
2 not to sue. EPA and the Natural Resource Trustees maintain all
3 rights without reservation with respect to DNR in all Problem
4 Areas other than the St. Paul Waterway Problem Area. If
5 previously unknown conditions or information are discovered, as
6 defined in subparagraphs (A) and (B) below, the United States
7 reserves the right to: (i) perform additional response Work
8 caused by a release from the St. Paul Waterway Problem Area or
9 the Site; (ii) institute proceedings in this action or in a new
10 action seeking to compel the Settling Defendants to perform any
11 additional response Work at the St. Paul Waterway Problem Area or
12 the Site; or (iii) institute proceedings in this action or in a
13 new action seeking to compel the Settling Defendants to reimburse
14 the United States on behalf of EPA for its response costs
15 relating to the St. Paul Waterway Problem Area or the Site.

16 (A) Previously unknown conditions means:

17 (1) Conditions at the St. Paul Waterway Problem
18 Area or the Site, previously unknown to the
19 United States, are discovered after the date of
20 this Consent Decree; or

21 (2) Information, including scientific or
22 technical information, data, facts, or documents
23 is received, in whole or in part, or new analyses
24 of information not contained in the record for
25 the initial remedy selection decision are
26 completed, after the effective date of this
27 Consent Decree.

1 (B) EPA and the Natural Resource Trustees reserve
2 their rights if either EPA or the Natural Resource
3 Trustees find, based on these previously unknown
4 conditions or information described in subparagraph
5 (A), together with site-specific and any other
6 relevant information, that:

7 (1) The response action associated with
8 contaminated sediments in the St. Paul Waterway
9 Problem Area implemented under the provisions of
10 this Consent Decree is no longer protective of
11 human health or the environment, or

12 (2) A Settling Defendant is potentially liable
13 under Sections 106 or 107 of CERCLA with respect
14 to a release or threat of release of hazardous
15 substances at the Site resulting from:

16 (a) The acts or failure to act of that
17 Settling Defendant, or

18 (b) A facility or vessel owned or operated
19 by that Settling Defendant which is located
20 outside of the St. Paul Waterway Problem
21 Area, or

22 (c) Transportation or arrangement for
23 transport by that Settling Defendant for
24 disposal or treatment of such hazardous
25 substances.

26 (C) Settling Defendants reserve their right to assert
27 defenses under CERCLA, including but not limited to

1 the defenses set forth in Section 107(b)(3) of CERCLA,
2 to claims or actions brought under this paragraph.

3 101. If Settling Defendants fail to meet the
4 requirements of this Consent Decree, EPA shall provide written
5 notice to the Settling Defendants of such failure. Consistent
6 with this Consent Decree, EPA, independently or in conjunction
7 with the Natural Resource Trustees, may perform, or may require
8 the Settling Defendants to perform, any or all portions of Work
9 necessary to correct such failure. EPA reserves its rights
10 under Sections XVI through XX of this Decree to assess stipulated
11 penalties. EPA and the Puyallup Tribe reserve their rights to
12 seek recovery of costs incurred after the entry of the Consent
13 Decree that result from failure to meet the requirements of the
14 Consent Decree and that: (1) relate to any portion of the Work
15 funded or performed by EPA or the Puyallup Tribe; or (2) are
16 incurred by the United States or the Puyallup Tribe as a result
17 of having to seek judicial assistance to remedy conditions at or
18 adjacent to the St. Paul Waterway Problem Area or the Site. In
19 any proceeding for costs under this Decree, the Settling
20 Defendants shall have the burden of proving that costs claimed by
21 EPA and/or the Puyallup Tribe were for Work inconsistent with or
22 beyond the scope of this Consent Decree or were inconsistent with
23 the NCP.

24 102. Nothing in this Consent Decree shall constitute
25 or be construed as a release or a covenant not to sue regarding
26 any claim or cause of action against any person, firm, trust,
27 joint venture, partnership, corporation, or other entity not a
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1 signatory to this Consent Decree for any liability it may have
2 arising out of or relating to the St. Paul Waterway Problem Area
3 or the Site. The United States, either on behalf of EPA or the
4 federal Natural Resource Trustees, or both, and the other Natural
5 Resource Trustees on their own behalf, expressly reserve the
6 right to sue any person other than the Settling Defendants, in
7 connection with the St. Paul Waterway Problem Area or any other
8 area at the Site.

9
10 XX. COVENANT BY SETTLING DEFENDANTS; ASSIGNMENT OF CLAIMS

11 103. Settling Defendants hereby covenant not to sue
12 and agree not to assert any claims or causes of action against
13 the United States, EPA, or the Natural Resource Trustees, for any
14 claims for costs, damages, or attorneys fees related to or
15 arising from "Covered Matters" including but not limited to any
16 direct or indirect claim for reimbursement from the Hazardous
17 Substance Superfund (established pursuant to the Internal Revenue
18 Code, 26 U.S.C. § 9507) pursuant to Sections 106(b)(2), 111, or
19 112, 42 U.S.C. §§ 9606(b)(2), 9611, or 9612, or NCP section
20 300.700(d) or (e). Nothing in this Consent Decree shall be
21 deemed to constitute preauthorization of a claim within the
22 meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or NCP
23 section 300.700(d).

24
25 XXI. EFFECT OF SETTLEMENT; CONTRIBUTION PROTECTION

26 104. Nothing in this Consent Decree shall be
27 construed to create any rights in, or grant any cause of action
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1 to, any person not a party to this Consent Decree. Each of the
2 Settling Parties expressly reserves any and all rights, including
3 any right to contribution, defenses, claims, demands, and causes
4 of action which each party may have with respect to any matter,
5 transaction, or occurrence relating in any way to the St. Paul
6 Waterway Problem Area or the Site against any person not a party
7 hereto. In the event the United States and the Puyallup Tribe do
8 not recover all of their Past Response Costs, Oversight Response
9 Costs, and Future Response Costs related to the St. Paul Waterway
10 Problem Area or the Site, the United States and the Puyallup
11 Tribe shall have a first right of recovery against any non-
12 settling parties as provided in Section 113(f)(3)(C) of CERCLA.
13 Nothing in this Consent Decree shall limit the right of the
14 Settling Defendants to assert claims for contribution at any time
15 against non-settling parties.

16 105. With regard to claims for contribution against
17 Settling Defendants for matters addressed in this Consent Decree,
18 the parties hereto agree that the Settling Defendants are
19 entitled as of the effective date of this Consent Decree to such
20 protection from contribution actions or claims as provided in
21 CERCLA § 113(f)(2), 42 U.S.C. § 9613(f)(2). "Matters addressed"
22 in this Consent Decree means:

23 (A) The sediment remedial action in and the natural
24 resource damages with respect to the St. Paul Waterway
25 Problem Area.

26 (B) Work performed in accordance with this Consent
27 Decree and Monitoring Plan.

1 (C) EPA's and the Natural Resource Trustees' Past
2 Response Costs and Oversight Response Costs that are
3 reimbursed by the Settling Defendants.

4 (D) The Future Response Costs of EPA or the Natural
5 Resource Trustees, if expended by them and reimbursed
6 by the Settling Defendants.

7 106. The Settling Defendants agree that with respect
8 to any suit or claim for contribution brought by or against them
9 for matters related to this Consent Decree they will notify the
10 representatives of EPA, the United States, and the other Natural
11 Resource Trustees, within 30 days of the initiation of service of
12 such suit or claim upon them.

13 107. In any subsequent administrative or judicial
14 proceeding initiated either by the United States or by the other
15 Natural Resource Trustees, or both, for injunctive relief,
16 recovery of response costs, or other appropriate relief relating
17 to the St. Paul Waterway Problem Area or any other area within
18 the Site, Settling Defendants shall not assert, and may not
19 maintain, any defense or claim based upon the principles of
20 waiver or claim-splitting, or based upon any contention that the
21 claims raised by the United States or the other Natural Resource
22 Trustees in the subsequent proceeding were or should have been
23 brought in the instant case; provided, that nothing in this
24 paragraph affects the enforceability of the covenants not to sue
25 set forth in Section XVIII. The terms of this Consent Decree
26 and the fact of entry of this Decree do not constitute claim-
27 splitting by any party.

1 XXII. INDEMNIFICATION; OTHER CLAIMS

2 108. The United States does not assume any liability
3 by entering into this Agreement or by virtue of any designation
4 of Settling Defendants as EPA's authorized representatives under
5 Section 104(e) of CERCLA. Simpson and Champion agree to
6 indemnify and save and hold harmless the United States, EPA, and
7 the Natural Resource Trustees, and/or their agents, employees and
8 representatives for or from any and all claims or causes of
9 action arising from acts or omissions of Simpson and Champion
10 and/or their officers, employees, agents, contractors,
11 subcontractors, representatives, and any persons acting on their
12 behalf or under their control, in carrying out activities
13 pursuant to this Consent Decree, including any claims arising
14 from any designation of Simpson and Champion as EPA's authorized
15 representatives under Section 104(e) of CERCLA. The United
16 States and the other Natural Resource Trustees shall not be held
17 out as a party to any contract entered into by or on behalf of
18 Settling Defendants in carrying out activities pursuant to this
19 Consent Decree. Neither Settling Defendants nor any such
20 contractor shall be considered an agent of the United States or
21 the other Natural Resource Trustees. EPA shall notify Settling
22 Defendants of any such claims or actions after receiving notice
23 that such a claim or action is anticipated or has been filed.

24 109. Simpson and Champion waive, and shall indemnify
25 and hold harmless the United States and the other Natural
26 Resource Trustees with respect to any claims for damages or
27 reimbursement from the United States or the other Natural

1 Resource Trustees, or for set-off of any payments made or to be
2 made to the United States or the other Natural Resource Trustees,
3 arising from or on account of any contract, agreement, or
4 arrangement between any one or more of Settling Defendants and
5 any person for performance of Work relating to the St. Paul
6 Waterway Problem Area, including claims on account of
7 construction delays. Nothing in this Consent Decree shall
8 constitute or be construed as a release from any claim, cause of
9 action or demand in law or equity against any person, firm,
10 partnership, corporation, or state or local government entity not
11 a signatory to this Consent Decree for any liability it may have
12 arising out of or relating in any way to the generation, storage,
13 treatment, handling, transportation, release, or disposal of any
14 hazardous substances, hazardous wastes, pollutants, or
15 contaminants found at, taken to, or taken from, the St. Paul
16 Waterway Problem Area or any other area within the Site.

17 110. EPA and the Natural Resource Trustees are not to
18 be construed as a party to, and do not assume any liability for,
19 any contract entered into by the Settling Defendants in carrying
20 out the activities under this Consent Decree. The proper
21 completion of the Work under this Consent Decree is solely the
22 responsibility of the Settling Defendants.

23
24 XXIII. INSURANCE/FINANCIAL RESPONSIBILITY

25 111. Simpson and Champion shall purchase and maintain
26 an insurance policy in an amount reasonably acceptable to the
27 United States, which shall protect the United States and the
28 ST. PAUL WATERWAY CONSENT DECREE - Page 68

1 public against any and all liability arising out of Settling
2 Defendants' and their contractors and other agents' acts or
3 omissions in performance of the Work under this Consent Decree
4 and Monitoring Plan. Prior to the entry of this Consent Decree,
5 Settling Defendants shall provide EPA with a certificate of
6 insurance and a copy of the insurance policy for approval by the
7 United States.

8
9 XXIV. ENDANGERMENT

10 112. In the event EPA determines or concurs in a
11 determination by another local, state, tribal or federal agency
12 that any activities pertaining to implementation of this Consent
13 Decree, or any other circumstances or activities at the St. Paul
14 Waterway Problem Area or surrounding Site, which causes or
15 threatens an unpermitted release of a hazardous substance(s), or
16 which may present an immediate threat or imminent and substantial
17 endangerment to the public health or welfare or the environment,
18 the EPA may order the Settling Defendants to stop further
19 implementation of this Consent Decree for such period of time as
20 needed to abate the danger and/or immediately undertake all
21 appropriate action to prevent, abate, or minimize such release or
22 endangerment. If the Settling Defendants object to any order by
23 the RPM, they may petition the Court to stay or set aside such
24 order. The filing of such a petition shall not operate to stay
25 the effectiveness of such order, nor shall it in any way operate
26 to preclude EPA from taking response actions, or from seeking to
27 enforce such order. During any stoppage of Work under this

1 Section, the Settling Defendants' obligations with respect to the
2 Work ordered to be stopped shall be suspended and the time
3 periods for performance of that Work, as well as the time period
4 for any other Work dependent upon the Work which stopped, shall
5 be extended, for such period of time as EPA determines is
6 reasonable under the circumstances, in no event less than the
7 time of the stoppage.

8 113. In the event of any action or occurrence during
9 the performance of the Work under this Consent Decree or
10 Monitoring Plan which causes or threatens a release of a
11 hazardous substance(s), which may threaten the integrity of the
12 sediment remedial action or affect the biological populations, or
13 which may present an immediate threat to public health, welfare,
14 or the environment, the Settling Defendants shall immediately
15 take all appropriate action to prevent, abate, or minimize such
16 release or endangerment, and shall immediately notify the EPA
17 RPM, or if unavailable, the EPA Emergency Response and
18 Investigations Section, Superfund Branch, EPA Region 10.
19 Settling Defendants shall take such action in accordance with all
20 applicable provisions of the Health and Safety and Contingency
21 Plans developed pursuant to the Monitoring Plan. In addition,
22 Settling Defendants agree to prohibit any and all activities that
23 will or may potentially threaten or impair the integrity of the
24 sediment remedial action for the St. Paul Waterway Problem Area,
25 or that will or may potentially impair the health of or recovery
26 of the biological populations in the St. Paul Waterway Problem
27 Area.

1 114. In the event that Settling Defendants fail to
2 take appropriate response action as required by this Section, and
3 EPA takes such action instead, Settling Defendants shall
4 reimburse EPA all costs of the response action not inconsistent
5 with the NCP. Payment of such costs or response shall be made in
6 the manner described in paragraph 93 of Section XVII, as
7 applicable, within thirty (30) days of Settling Defendants'
8 receipt of demand for payment and a Region 10 Financial
9 Management Office Cost Summary of all of the direct and indirect
10 costs incurred.

11 115. Any disagreements under this Section XXIV shall
12 be resolved through the dispute resolution procedures under
13 Section XV. Nothing in the preceding paragraphs 112, 113, and
14 114 shall be deemed to limit any authority of EPA, the United
15 States, or this Court to take, direct, or order all appropriate
16 action to protect human health and the environment or to prevent,
17 abate, or minimize an actual or threatened unpermitted release of
18 hazardous substance(s) at, or from the St. Paul Waterway Problem
19 Area or any other area within the Site.

1 XXV. NOTICES

2 116. Whenever, under the terms of this Consent Decree,
3 notice is required to be given, or a report or other document is
4 required to be forwarded by one party to another, or service of
5 any papers or process is necessitated by the dispute resolution
6 provisions of Section XV hereof, such correspondence shall be
7 directed to the individuals at the addresses specified below.
8 Inadvertent failure to provide multiple copies to a party shall
9 not be considered noncompliance with this Consent Decree.

10
11 As to the United States or EPA:

12 Four copies to:

13 Lori Cohen, Remedial Project Manager
14 Superfund Branch (HW-113) •
15 U.S. Environmental Protection Agency
16 Region 10
1200 Sixth Avenue
Seattle, Washington 98101

17 One copy to:

18 Allan Bakalian, Assistant Regional Counsel
19 Office of Regional Counsel
20 U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

21 One copy to:

22 Assistant Attorney General
23 Environment and Natural Resources Division
24 U.S. Department of Justice
10th and Pennsylvania Avenue, N.W.
Washington, D.C. 20530
25 (DOJ Reference No. 90-11-3-363)

1 | As to the Settling Defendants:

2 | David McEntee
3 | Environmental Manager
4 | Simpson Tacoma Kraft Company
5 | P.O. Box 2133
6 | Portland Avenue
7 | Tacoma, Washington 98401

8 | Edward J. Reeve
9 | Senior Counsel
10 | Simpson Tacoma Kraft Company
11 | 1201 Third Avenue
12 | Seattle, Washington

13 | Kenneth S. Weiner
14 | Preston Thorgrimson Shidler Gates & Ellis
15 | 5400 Columbia Center
16 | Seattle, Washington 98104

17 | James Carraway
18 | Senior Manager, Special Projects
19 | Environmental Affairs
20 | Champion International Corporation
21 | One Champion Plaza
22 | Stamford, CT 06921

23 | Ann J. Morgan
24 | Manager, Division of Aquatic Lands
25 | Washington Department of Natural Resources
26 | John Cherberg Building
27 | MS: QW-21
28 | Olympia, Washington 98504

29 | Christa L. Thompson
30 | Office of the Attorney General
31 | 7th Floor
32 | Highway License Building
33 | Olympia, WA 98504

34 | As to the Consulted Agencies, one copy each to:

35 | Simpson Tacoma Kraft Mill Project Manager
36 | Department of Ecology
37 | Hazardous Waste Investigations and Cleanup
38 | Program
39 | Mail Stop PV-11
40 | Olympia, Washington 98504-8711

1 Bill Sullivan
2 Environmental Department
3 Puyallup Tribe of Indians
4 2002 East 28th Street
5 Tacoma, Washington 98404

6 Morgan Bradley
7 Muckleshoot Indian Tribe
8 39015 - 172nd Avenue S.E.
9 Auburn, Washington 98002

10 Thom Hooper
11 Washington Department of Fisheries
12 115 General Administration Building
13 Olympia, Washington 98504

14 Tom Mumford
15 Washington Department of Natural Resources
16 Division of Aquatic Lands
17 900 - 47th Avenue N.E.
18 Olympia, Washington 98506

19 John Carleton
20 Washington Department of Wildlife
21 600 Capital Way N.
22 Olympia, Washington 98501-4091

23 Don Kane
24 United States Fish & Wildlife Services
25 Division of Ecological Services
26 2625 Parkmont Lane S.W., Building B-3
27 Olympia, Washington 98502

28 Chris Mebane
Coastal Resources Coordinator
NOAA
c/o EPA Region 10 (HW-113)
1200 Sixth Avenue
Seattle, Washington 98101

Charles S. Polityka
Regional Environmental Office
Department of Interior
1002 N.E. Holladay - Suite 354
Portland, Oregon 97232-4181

Ron Eggers
Bureau of Indian Affairs
Portland Area Office
P.O. Box 3785
Portland, Oregon 97208

1 Fred Gardner
2 Department of Ecology-Rowesix
3 4224 6th Avenue S.E.
4 Lacey, Washington 98503

5 Richard Du Bey
6 Special Environmental Counsel to the
7 Puyallup Tribe of Indians
8 3110 Bank of California Center
9 Seattle, WA 98164

10 XXVI. CONSISTENCY WITH NATIONAL CONTINGENCY PLAN

11 117. The United States and Settling Defendants agree
12 that Work required under this Consent Decree is consistent with
13 the provisions of the NCP pursuant to 42 U.S.C. § 9605.
14

15 XXVII. COMPLIANCE WITH LAWS

16 118. All actions carried out by the Settling
17 Defendants pursuant to this Consent Decree shall be done in
18 accordance with all applicable or relevant and appropriate
19 requirements under federal, state, and tribal, statutes, rules,
20 regulations and ordinances as required by Section 121 of CERCLA,
21 42 U.S.C. § 9601, and the National Contingency Plan, 40 C.F.R.
22 Part 300, as amended.

23 XXVIII. RESPONSE AUTHORITY

24 119. Except as provided in paragraph 98 ("covenant not
25 to sue"), nothing in this Consent Decree shall be deemed to limit
26 the response authority of EPA under 42 U.S.C. §§ 9604 and 9606,
27 or to alter the applicable legal principles governing the
28 judicial review of EPA's Record of Decision concerning remedial
action at the St. Paul Waterway Problem Area or the Site.

1 (iv) Nothing in this paragraph shall be deemed to
2 alter the Court's power to supervise or modify this Consent
3 Decree.
4

5 XXX. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

6 121. The United States shall publish a notice of this
7 Consent Decree's availability for review and comment upon its
8 lodging with the United States District Court as a proposed
9 settlement in this matter pursuant to the provisions of 42 U.S.C.
10 § 9622(d)(2) and 28 C.F.R. § 50.7. The United States will
11 provide persons who are not parties to the proposed settlement
12 with the opportunity to file written comments during at least a
13 thirty (30) calendar day period following such notice. The
14 United States will file with the Court a copy of any comments
15 received and the response of United States to such comments.
16 After the close of the public comment period, the United States
17 reserves the right after review of such comments to withdraw or
18 withhold its consent to the Consent Decree if such comments
19 disclose facts or considerations which indicate that the proposed
20 settlement is inappropriate, improper, or inadequate. Settling
21 Defendants consent to the entry of this Consent Decree without
22 further notice, but reserve their right to withdraw or withhold
23 consent if revisions to the Consent Decree are made after the
24 close of the public comment period.
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27

1 distribution of any of its community relations
2 documents.

3 (C) Simpson or Champion shall notify and invite EPA
4 to participate in their community relations activities
5 directed to the St. Paul Waterway Problem Area.

6 Simpson or Champion shall provide EPA the opportunity
7 to review draft fact sheets, press releases, and other
8 public notices. EPA may participate in public
9 meetings that are held or sponsored by Simpson or
10 Champion that concern the St. Paul Waterway Problem
11 Area. Any communications or notices issued by
12 Simpson or Champion independent of EPA's community
13 relations activities at the St. Paul Waterway Problem
14 Area shall be presented as separate and independent of
15 EPA's community relations activities.

16 (D) EPA's RPM and the Project Coordinator shall be
17 the contacts for coordination under this Section.

18
19 XXXII. EFFECTIVE AND TERMINATION DATES

20 123. Effective date. The effective date of this
21 Consent Decree shall be the date upon which it is entered by the
22 Court, except as otherwise provided herein.

23 124. Certification of Completion. The Settling
24 Defendants shall submit to EPA a Notice of Completion and a final
25 report called a Superfund Completion Report no later than thirty
26 (30) days after the date of the Regional Administrator's
27 signature on this Consent Decree. The final report must

1 summarize the Work performed and the performance standards
2 achieved and shall include or reference any supporting
3 documentation. Based upon its review of this report, the
4 supporting documentation, and the remedial activities conducted
5 at the St. Paul Waterway Problem Area, EPA will issue a
6 Certification of Completion for the St. Paul Waterway Problem
7 Area if the sediment remedial action has been satisfactorily
8 completed and has achieved standards of performance required
9 under this Consent Decree. The United States will not lodge this
10 Consent Decree until EPA has issued the Certification of
11 Completion.

12 125. Termination of Consent Decree. After EPA
13 determines that compliance with Section VII ("Performance of the
14 Work") is no longer required in order to assure that the sediment
15 remedial action remains protective of human health and the
16 environment, this Consent Decree shall be terminated upon motion
17 of any Settling Party and Order of this Court. Termination of
18 this Consent Decree shall not affect the "Covenant Not to Sue" in
19 Section XVIII, the "Reservation of Rights" in Section XIX, and
20 the "Effect of Settlement; Contribution Protection" in Section
21 XXI.

22
23 XXXIII. RETENTION OF JURISDICTION

24 126. This Court shall retain jurisdiction over this
25 matter for the purpose of enabling any of the Settling Parties to
26 apply to the Court at any time for such further order, direction,
27 and relief as may be necessary or appropriate for the
28 ST. PAUL WATERWAY CONSENT DECREE - Page 80

1 interpretation, construction, implementation, or modification of
2 this Consent Decree, or to effectuate or enforce compliance with
3 its terms, or to resolve disputes in accordance with Section XV
4 hereof.

5

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XXXIV. SIGNATORIES

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127. The undersigned representative of each Settling Defendant to this Consent Decree, the Department of Justice, the Environmental Protection Agency, and each of the Natural Resource Trustees, certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such party to this document.

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128. Each Settling Defendant shall identify, on the attached signature page, the name and address of an agency who is authorized to accept service of process by mail on behalf of that party with respect to all matters arising under or relating to this Consent Decree. Settling Defendants hereby agree to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure, including service of summons, any applicable local rules of this Court.

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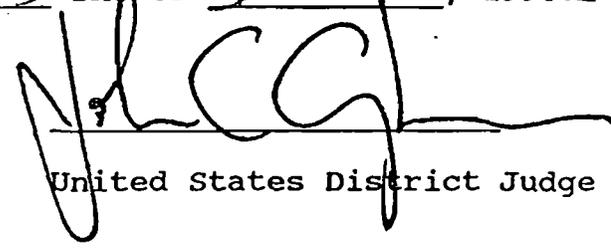
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SO ORDERED THIS 13 DAY OF Dec, ¹⁹⁹¹~~1990~~



United States District Judge

1 THE UNDERSIGNED SETTLING PARTIES enter into this
2 Consent Decree in the matter of United States v. Simpson Tacoma
3 Kraft Company, et al., relating to the St. Paul Waterway Problem
4 Area of the Commencement Bay Nearshore/Tideflats Superfund Site.

5 FOR THE UNITED STATES OF AMERICA

6 By: *Russell Stewart* Dated: 6-5-91

7 Assistant Attorney General
8 Environment and Natural Resources
9 Division
10 U.S. Department of Justice
11 Washington, D.C. 20530

11 By: *Kalyn Cherie Free* Dated: May 1 1991

12 *Kalyn Cherie Free*, Thomas W. Swegle
13 Nancy Flickinger
14 Attorney
15 Environment and Natural Resources
16 Division
17 U.S. Department of Justice
18 Washington, D.C. 20536

16 By: *Susan L. Barnes* Dated: 6/13/91

17 Assistant United States Attorney
18 3600 Seafirst Fifth Avenue Plaza
19 800 Fifth Avenue
20 Seattle, Washington 98104

20 By: *Thomas J. Durand* Dated: September 27, 1990

21 Regional Administrator
22 EPA, Region 10
23 Seattle, Washington 98101

23 By: *Bob Gold* Dated: September 27, 1990

24 for
25 Allan Bakalian
26 Assistant Regional Counsel
27 EPA, Region 10
28 Seattle, Washington 98101

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By: Raymond B. Ludwiszewski

Dated: 3/7

Raymond B. Ludwiszewski
Acting Assistant Administrator
Office of Enforcement
Environmental Protection Agency
Washington, D.C.

1 SIMPSON TACOMA KRAFT COMPANY

2 By: *G.T. Roach*
3 Vice President and
4 Chief Financial Officer

Dated: September 27, 1990

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ST. PAUL WATERWAY CONSENT DECREE - Page 83

1 CHAMPION INTERNATIONAL CORPORATION

2 By: 

Dated: 9/27/90

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1 WASHINGTON DEPARTMENT OF NATURAL RESOURCES

2 BY: James A. Starns

Dated: Sept. 27, 1990

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6 For matters arising under or relating to the Consent Decree, service may be
7 made on the Office of the Attorney General, Christa L. Thompson, Assistant
8 Attorney General, Natural Resources Division, Highways-Licenses Building,
9 M.S. PB-71 Olympia, WA 98504
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1 THE WASHINGTON DEPARTMENT OF ECOLOGY

2 BY: Carol L. Flesher

Dated: 1/9/91

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4 BY: Jay J. Manning
5 Jay J. Manning
6 Assistant Attorney General
State of Washington

Dated: 1/9/91

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1 THE PUYALLUP TRIBE OF INDIANS

DEC 13 1990

2
3 By:

Henry John

Dated:

9/27/90

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1 THE MUCKLESHOOT INDIAN TRIBE

2 BY: Virginia Cross

Dated: 3-28-91

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EXHIBITS

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3 Exhibit A Monitoring and Contingency Plan
4 Exhibit B Record of Decision
5 Exhibit C Settlement Agreement on Natural
6 Resource Damages
7 Exhibit D Superfund Completion Report
8 Exhibit E Cost Allocation Summary
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UNITED STATES v. SIMPSON TACOMA KRAFT COMPANY, CHAMPION INTERNATIONAL, AND WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES (ST. PAUL WATERWAY CONSENT DECREE);

ENVIRONMENTAL PROTECTION AGENCY REGION 10 AGREEMENT AND CONCURRENCE

The ENVIRONMENTAL PROTECTION AGENCY REGION 10, signatory to the St. Paul Waterway Consent Decree on September 27, 1990, hereby acknowledges and concurs with the following modification and addition to Paragraph 99(J) and (K) on page 60 of the St. Paul Waterway Consent Decree:

"(J) Liability for damages for injury to, destruction of, or loss of natural resources, including damages with respect to petroleum product releases occurring after July 1, 1990, and excluding damages with respect to the St. Paul Waterway Problem Area.

(K) Liability for releases of petroleum products or hazardous substances (not described in the ROD and supporting documents or as a "Covered Matter") at the St. Paul Waterway Problem Area after July 1, 1990, pursuant to Section 311 of the Federal Water Pollution Control Act, as amended by the Oil Pollution Act of 1990, P.L. No. 101-380, 104 STAT. 484, or any other applicable provision of that Act."

The Environmental Protection Agency Region 10 further agrees by executing this Agreement and Concurrence that the St. Paul Waterway Consent Decree, as revised and circulated to the parties on November 28, 1990, incorporating the above-referenced modification and addition, will supersede, for purposes of these revisions, the prior version of the Consent Decree executed by the Environmental Protection Agency.

This Agreement and Concurrence will be attached to the Environmental Protection Agency Region 10's previously executed signature page to the St. Paul Waterway Consent Decree.

ENVIRONMENTAL PROTECTION AGENCY

By: Dana A. Rasmussen
Dana A. Rasmussen
Regional Administrator

Dated: December 21, 1990

By: Allan B. Bakalian
Allan B. Bakalian
Assistant Regional Counsel

Dated: December 21, 1990

UNITED STATES v. SIMPSON TACOMA KRAFT COMPANY, CHAMPION
INTERNATIONAL, AND WASHINGTON STATE DEPARTMENT OF NATURAL
RESOURCES (ST. PAUL WATERWAY CONSENT DECREE); SETTLING PARTIES
AGREEMENT AND CONCURRENCE

The undersigned representative of the SIMPSON TACOMA KRAFT COMPANY, a Settling Party to this action, hereby acknowledges and concurs with the Environmental Protection Agency's following modification and addition to Paragraph 99(J) and (K) on page 60 of the St. Paul Waterway Consent Decree previously executed by the undersigned Settling Party:

"(J) Liability for damages for injury to, destruction of, or loss of natural resources, including damages with respect to petroleum product releases occurring after July 1, 1990, and excluding damages with respect to the St. Paul Waterway Problem Area.

(K) Liability for releases of petroleum products or hazardous substances (not described in the ROD and supporting documents or as a "Covered Matter") at the St. Paul Waterway Problem Area after July 1, 1990, pursuant to Section 311 of the Federal Water Pollution Control Act, as amended by the Oil Pollution Act of 1990, P.L. No. 101-380, 104 STAT. 484, or any other applicable provision of that Act."

The undersigned representative further agrees by executing this Agreement and Concurrence that EPA's November 27, 1990, revised St. Paul Waterway Consent Decree, incorporating the above-referenced modification and addition, will supersede, for purposes of these revisions, the prior version of the Consent Decree executed by such Settling Party.

This Agreement and Concurrence will be attached to the Settling Parties' previously executed signature pages to the St. Paul Waterway Consent Decree.

SIMPSON TACOMA KRAFT COMPANY

By: 

Dated: December 12, 1990

UNITED STATES v. SIMPSON TACOMA CRAFT COMPANY, CHAMPION INTERNATIONAL, AND WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES (ST. PAUL WATERWAY CONSENT DECREE); SETTLING PARTIES AGREEMENT AND CONCURRENCE

The undersigned representative of the CHAMPION INTERNATIONAL CORPORATION, a Settling Party to this action, hereby acknowledges and concurs with the Environmental Protection Agency's following modification and addition to Paragraph 99(J) and (K) on page 60 of the St. Paul Waterway Consent Decree previously executed by the undersigned Settling Party:

(J) Liability for damages for injury to, destruction of, or loss of natural resources, including damages with respect to petroleum product releases occurring after July 1, 1990, and including damages with respect to the St. Paul Waterway Problem Area.

(K) Liability for releases of petroleum products or hazardous substances (not described in the ROD - supporting documents or as a "Covered Matter") in the St. Paul Waterway Problem Area after July 1, 1990, pursuant to Section 311 of the Federal Water Pollution Control Act, as amended by the Oil Pollution Act of 1990, P.L. No. 101-38 104 STAT. 484, or any other applicable provision of that Act.

The undersigned representative further agrees by executing this Agreement and Concurrence that EPA's November 27, 1990, revised St. Paul Waterway Consent Decree, incorporating the above-referenced modification and addition, will be used for purposes of these revisions, the prior version of the Consent Decree executed by such Settling Party.

This Agreement and Concurrence will be attached to the settling parties' previously executed signature page of the St. Paul Waterway Consent Decree.

CHAMPION INTERNATIONAL CORPORATION

By:



Dated:

1-15-91

DEC 6 1990

UNITED STATES v. SIMPSON TACOMA KRAFT COMPANY, CHAMPION INTERNATIONAL, AND WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES (ST. PAUL WATERWAY CONSENT DECREE); SETTling PARTIES AGREEMENT AND CONCURRENCE

The undersigned representative of the PUYALLUP TRIBE OF INDIANS, a Settling Party to this action, hereby acknowledges and concurs with the Environmental Protection Agency's following modification and addition to Paragraph 99(J) and (K) on page 60 of the St. Paul Waterway Consent Decree previously executed by the undersigned Settling Party:

"(J) Liability for damages for injury to, destruction of, or loss of natural resources, including damages with respect to petroleum product releases occurring after July 1, 1990, and excluding damages with respect to the St. Paul Waterway Problem Area.

(K) Liability for releases of petroleum products or hazardous substances (not described in the ROD and supporting documents or as a "Covered Matter") at the St. Paul Waterway Problem Area after July 1, 1990, pursuant to Section 311 of the Federal Water Pollution Control Act, as amended by the Oil Pollution Act of 1990, P.L. No. 101-380, 104 STAT. 484, or any other applicable provision of that Act."

The undersigned representative further agrees by executing this Agreement and Concurrence that EPA's November 27, 1990, revised St. Paul Waterway Consent Decree, incorporating the above-referenced modification and addition, will supersede, for purposes of these revisions, the prior version of the Consent Decree executed by such Settling Party.

This Agreement and Concurrence will be attached to the Settling Parties' previously executed signature pages to the St. Paul Waterway Consent Decree.

PUYALLUP TRIBE OF INDIANS

By: Henry John

Dated: 12/5/90

UNITED STATES v. SIMPSON TACOMA KRAFT COMPANY, CHAMPION INTERNATIONAL, AND WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES (ST. PAUL WATERWAY CONSENT DECREE); SETTLING PARTIES AGREEMENT AND CONCURRENCE

The undersigned representative of the WASHINGTON DEPARTMENT OF NATURAL RESOURCES, a Settling Party to this action, hereby acknowledges and concurs with the Environmental Protection Agency's following modification and addition to Paragraph 99(J) and (K) on page 60 of the St. Paul Waterway Consent Decree previously executed by the undersigned Settling Party:

"(J) Liability for damages for injury to, destruction of, or loss of natural resources, including damages with respect to petroleum product releases occurring after July 1, 1990, and excluding damages with respect to the St. Paul Waterway Problem Area.

(K) Liability for releases of petroleum products or hazardous substances (not described in the ROD and supporting documents or as a "Covered Matter") at the St. Paul Waterway Problem Area after July 1, 1990, pursuant to Section 311 of the Federal Water Pollution Control Act, as amended by the Oil Pollution Act of 1990, P.L. No. 101-380, 104 STAT. 484, or any other applicable provision of that Act."

The undersigned representative further agrees by executing this Agreement and Concurrence that EPA's November 27, 1990, revised St. Paul Waterway Consent Decree, incorporating the above-referenced modification and addition, will supersede, for purposes of these revisions, the prior version of the Consent Decree executed by such Settling Party.

This Agreement and Concurrence will be attached to the Settling Parties' previously executed signature pages to the St. Paul Waterway Consent Decree.

WASHINGTON DEPARTMENT OF NATURAL RESOURCES

BY:

James A. Stearns

Dated:

Dec. 6, 1990

UNITED STATES v. SIMPSON TACOMA KRAFT COMPANY, CHAMPION INTERNATIONAL, AND WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES (ST. PAUL WATERWAY CONSENT DECREE); SETTling PARTIES AGREEMENT AND CONCURRENCE

The undersigned representative of the WASHINGTON DEPARTMENT OF ECOLOGY, a Settling Party to this action, hereby acknowledges and concurs with the Environmental Protection Agency's following modification and addition to Paragraph 99(J) and (K) on page 60 of the St. Paul Waterway Consent Decree previously executed by the undersigned Settling Party:

"(J) Liability for damages for injury to, destruction of, or loss of natural resources, including damages with respect to petroleum product releases occurring after July 1, 1990, and excluding damages with respect to the St. Paul Waterway Problem Area.

(K) Liability for releases of petroleum products or hazardous substances (not described in the ROD and supporting documents or as a "Covered Matter") at the St. Paul Waterway Problem Area after July 1, 1990, pursuant to Section 311 of the Federal Water Pollution Control Act, as amended by the Oil Pollution Act of 1990, P.L. No. 101-380, 104 STAT. 484, or any other applicable provision of that Act."

The undersigned representative further agrees by executing this Agreement and Concurrence that EPA's November 27, 1990, revised St. Paul Waterway Consent Decree, incorporating the above-referenced modification and addition, will supersede, for purposes of these revisions, the prior version of the Consent Decree executed by such Settling Party.

This Agreement and Concurrence will be attached to the Settling Parties' previously executed signature pages to the St. Paul Waterway Consent Decree.

WASHINGTON DEPARTMENT OF ECOLOGY

BY: Carol L. Flesher

Dated: January 9, 1991

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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON AT TACOMA

THE UNITED STATES OF AMERICA,
STATE OF WASHINGTON, PUYALLUP TRIBE
OF INDIANS, AND MUCKLESHOOT INDIAN
TRIBE,

Plaintiffs,

v.

SIMPSON TACOMA KRAFT COMPANY,
CHAMPION INTERNATIONAL CORPORATION, AND
WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES,

Defendants.

Civil No.

UNITED STATES'
NOTICE OF LODGING

Pursuant to 28 C.F.R. § 50.7, a proposed Consent Decree
for the St. Paul Waterway Problem Area of the Commencement Bay
Nearshore/Tideflats Superfund Site is concurrently being lodged
with the Court in this Civil Action, after having been concurred
to and signed by the appropriate parties. After the requisite
Federal Register Notice is published, the time period for
comments has run, and the comments, if any, have been evaluated,

UNITED STATES ATTORNEY
800 Fifth Ave., Room 3600
Seattle, Washington 98104
(206) 553-5196

1 the Court will be further advised as to any action which may be
2 required by the Court at that time. During the pendency of the
3 Federal Register notice comment period under 28 C.F.R. § 50.7, no
4 action is required by the Court.

5
6 DATED this 24th day of June, 1991.

7
8 Respectfully submitted,

9
10 MIKE MCKAY
11 United States Attorney

12
13 
14 SUSAN L. BARNES *JLH*
15 Assistant United States Attorney
16 3600 Seafirst Fifth Avenue Plaza
17 800 Fifth Avenue
18 Seattle, Washington 98104
19 (206) 553-4149

20
21 DANA A. RASMUSSEN
22 Regional Administrator
23 U.S. Environmental Protection
24 Agency

25
26 
27 ALLAN B. BAKALIAN
28 Assistant Regional Counsel
U.S. Environmental Protection
Agency
1200 Sixth Avenue, SO-125
Seattle, Washington 98101
(206) 553-1789

Federal Consent Decree Exhibit A

MONITORING, REPORTING, AND CONTINGENCY PLAN

**for the St. Paul Waterway Area Sediment Remedial Action
and Habitat Restoration Project**

September 1990

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TABLE 1. MONITORING ACTIVITIES AND REPORTING

Activity	Sample Method	Frequency	Report Due Dates	
			Draft	Final
Visual Inspection	Aerial photography, ground inspections, photos & field notes	Annually, May-June until 1998 and thereafter every 5 years as necessary	Oct. 15	Dec. 31
Bathymetry	Ground survey during extreme low tide	Annually, May-June 1991, 1992, 1993, 1995, 1998 thereafter every 5 years as necessary	Oct. 15	Dec. 15
Intertidal Transects	Ground survey during extreme low tide	March, May-June, Nov.-Dec. 1991, 1992; May-June 1993, 1995, 1998 thereafter every 5 years as necessary	Oct. 15 Jan. 31	Dec. 31 March 30
Sediment Deposition	Measure sediment depth over buried plates	As necessary	Oct. 15	Dec. 15
Intertidal Seeps	Grab sample water and surface sediment, 3 stations	Annually, May-June 1991, 1993, 1998 thereafter as necessary	Oct. 15	Dec. 15
Gas Vents	Core sample sediment, 5 stations	Annually, May-June 1991, 1992, 1993, 1995, 1998 thereafter as required	Oct. 15	Dec. 15
Surface Chemistry	Sample surface sediment, 5 stations	Annually, May-June 1991, 1992, 1993, 1995, 1998 thereafter as required	Oct. 15	Dec. 15
Subsurface Chemistry	Core sample 12 stations, sample 30-40 cm below surface, 90-100 cm and 30-40 cm above cap-sediment boundary	Annually May-June 1991, 1992, 1993, 1995, 1998 thereafter every 10 years as necessary	Oct. 15	Dec. 15

Benthos	Van Veen grab, 5 replicates at 6 stations on cap and 2 reference stations	Annually, March 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998	Oct. 15	Dec. 15
Epibenthos	Suction sampler, 6 cap stations, 1 reference station	Annually April, May, June, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998 thereafter as necessary	Oct. 15	Dec. 15
Macrophytes	Ground survey and aerial photography	June-August 1991-1998 thereafter as necessary	Oct. 15	Dec. 15
Table 1 (annual activities)	Update monitoring	Not applicable	Annually for duration of monitoring	Jan. 31 March 1

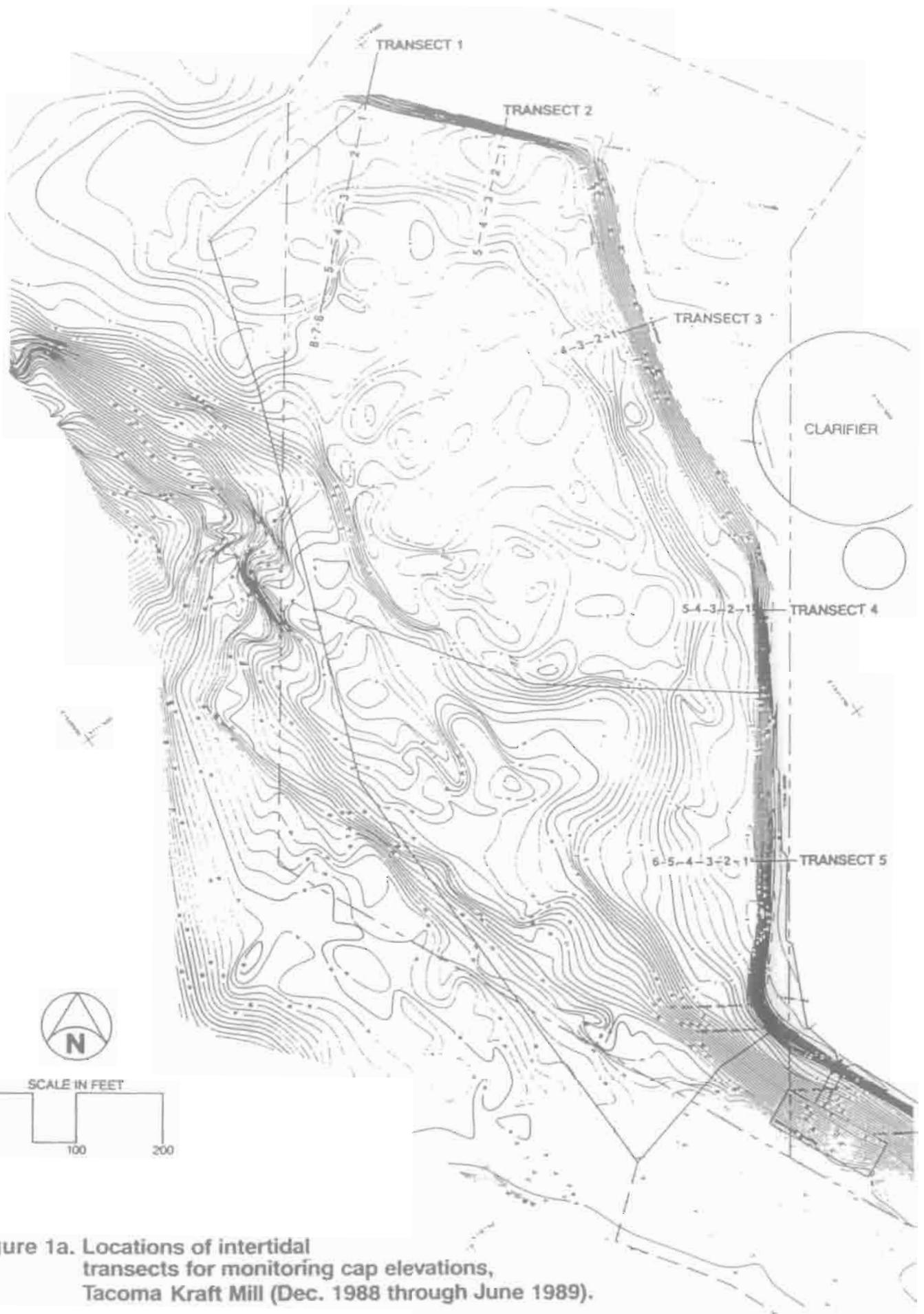


Figure 1a. Locations of intertidal transects for monitoring cap elevations, Tacoma Kraft Mill (Dec. 1988 through June 1989).

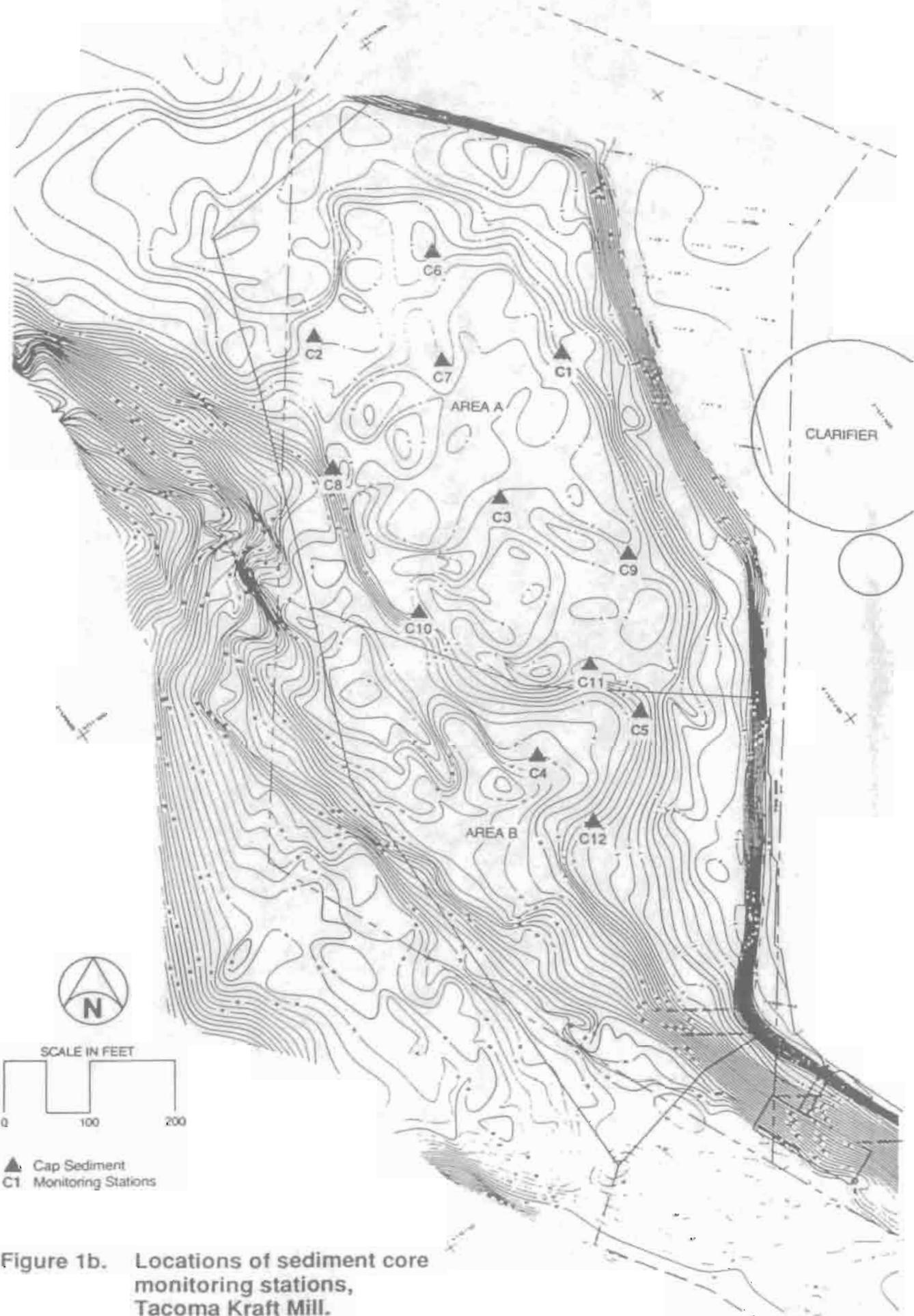


Figure 1b. Locations of sediment core monitoring stations, Tacoma Kraft Mill.

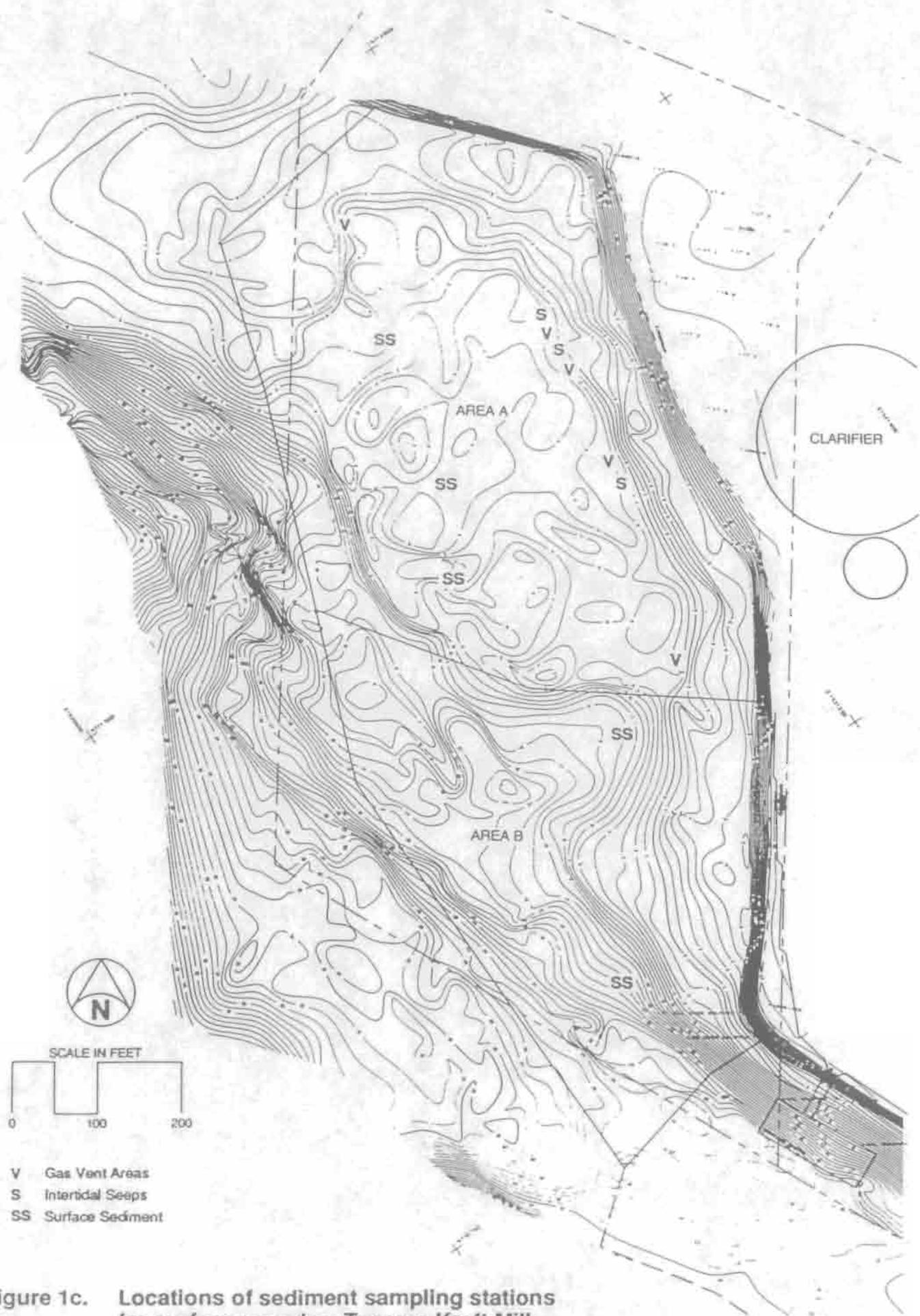


Figure 1c. Locations of sediment sampling stations for surface samples, Tacoma Kraft Mill.

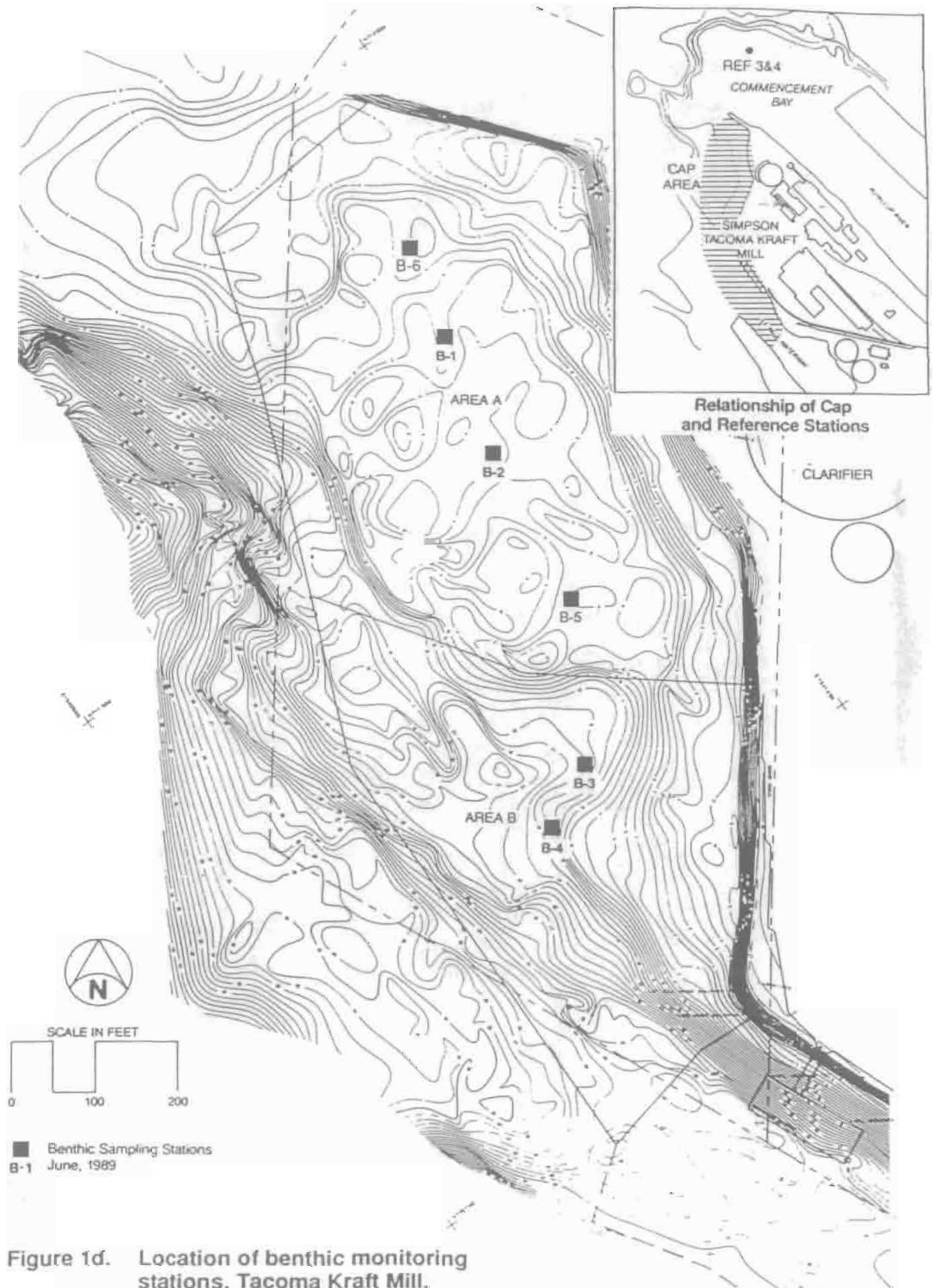


Figure 1d. Location of benthic monitoring stations, Tacoma Kraft Mill.

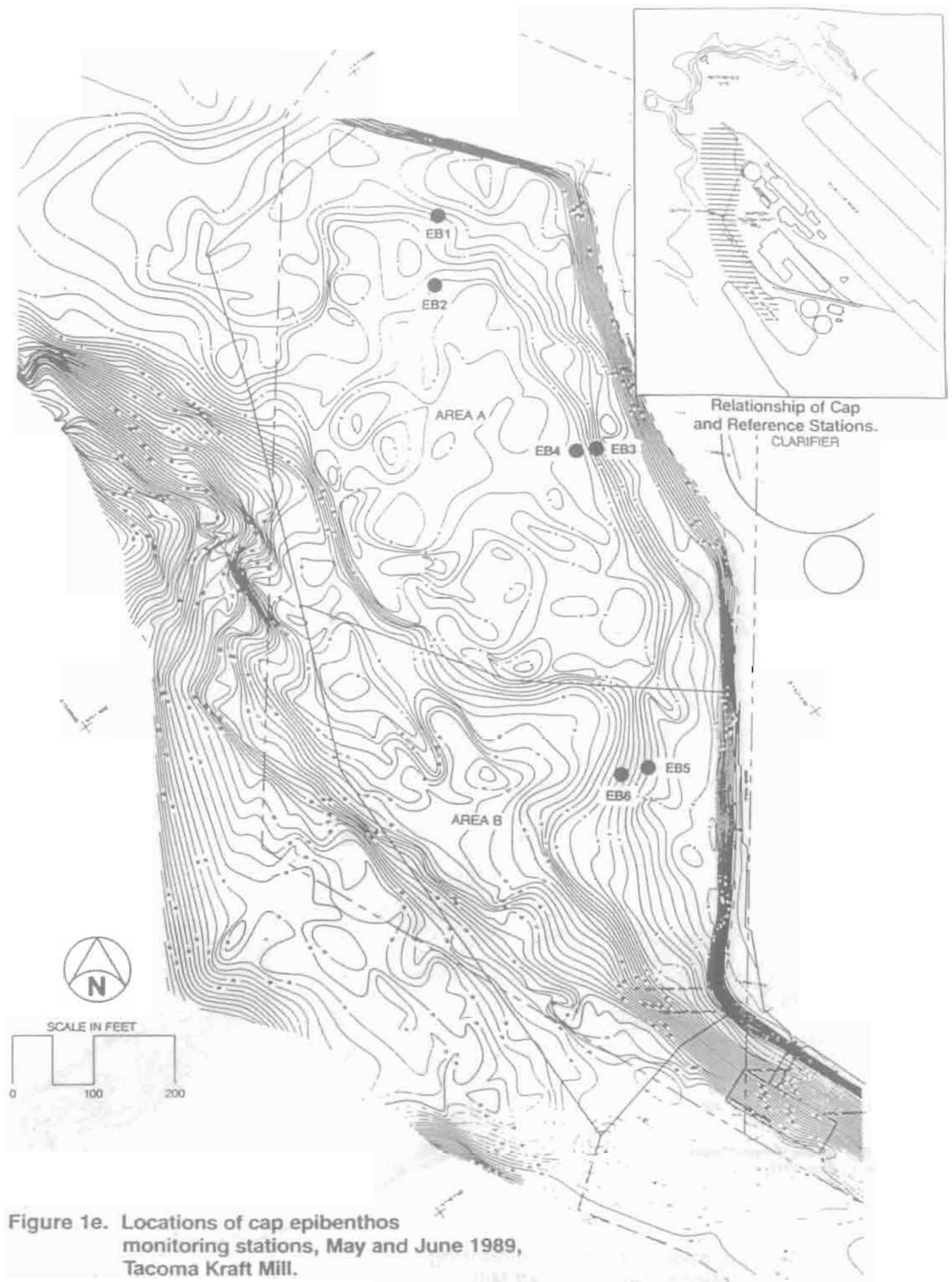


Figure 1e. Locations of cap epibenthos monitoring stations, May and June 1989, Tacoma Kraft Mill.

INTRODUCTION

Simpson Tacoma Kraft Company (Simpson), the Washington Department of Natural Resources (WDNR), and Champion International Paper Corporation (Champion) entered into a state court consent decree with the Washington Department of Ecology (Ecology) in 1987 to undertake sediment remedial action and habitat restoration. The remedial action included placement of a sediment cap over contaminated sediments and habitat restoration to provide substrate for development of a healthy biological community. The State Decree specified a monitoring program to assure the contaminated sediments remained isolated below the cap and that a healthy biological community would repopulate the area.

The remedial actions were conducted in 1988 in the problem area at the mouth of St. Paul Waterway prior to completion of the Commencement Bay Nearshore/Tideflats (CB/NT) Superfund study. The record of decision (ROD) for the CB/NT Superfund site was signed September 30, 1989 by the U.S. Environmental Protection Agency (EPA), and it identified the capping/restoration methodology, source control through the NPDES program, and comprehensive long-term monitoring as the selected remedy in the St. Paul Waterway Area. One purpose of this monitoring element is to ensure long-term protectiveness of sediment remedial actions, in accordance with Comprehensive Environmental Response Compensation and Liability Act (CERCLA) provisions and other applicable laws. This document defines the requirements of the monitoring element for the sediment remedial action in the St. Paul Waterway area. The remedy is considered effective if it isolates the contaminated sediments, supports a biological community comparable to reference areas and meets the performance standards in the federal consent decree.

The ROD also specifies that Ecology will be the lead agency for source control, and EPA will be the lead agency for sediment remedial action. Therefore, EPA will provide oversight of the Simpson sediment remedial action and Ecology will continue to oversee source control activities. A separate plan to monitor the wastewater outfall is governed by a state waste discharge and National Pollutant Discharge Elimination System (NPDES) permit. Should source control not prove effective, Ecology will require Simpson to take corrective action. Should the sediment remedial action not perform as expected, EPA will require the potentially responsible parties (PRPs) to implement contingency actions. This plan also describes how EPA will implement the contingency planning process should the sediment cap not perform as expected.¹

This plan replaces and reflects a refinement of an existing monitoring plan (State Decree, Exhibit D). It is divided into five major sections: a description of monitoring plan objectives, required monitoring activities, monitoring methods and quality assurance/quality control (QA/QC) procedures, reporting requirements, and contingency procedures. The plan was developed with and has the concurrence of the various consulted agencies. The consulted agencies for the project are the: Washington State Department of Fisheries (WDF), Ocean Assessments Division of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of the Interior (DOI) (U.S. Fish & Wildlife Service (FWS)), Ecology, WDNR, Puyallup Tribe, and the Muckleshoot Tribe. Monitoring data for the first three years following cap construction have also been considered in refining this plan.

¹ Where appropriate, EPA will review monitoring data under the NPDES permit for the Mills' outfall and other data on potential sources of contamination in accordance with the Contingency Planning Process before determining the source of recontamination of the cap surface. If the Settling Defendants disagree with EPA's conclusions regarding the monitoring data under the NPDES permit and the source of the recontamination, the dispute will be resolved under the dispute resolution proceedings of the federal consent decree.

EPA's Remedial Project Manager (RPM) is responsible for oversight of the Monitoring Plan, and Simpson's Project Coordinator is responsible for implementation of the Plan. The RPM and Project Coordinator can designate other representatives to represent them and carry out specific tasks. However, their designation of any representations to participate in any meetings or conferences on the contingency planning process and the Table 1 Update in this plan shall be done with prior and mutual consent.

This plan is incorporated by reference as an exhibit to the federal and state consent decrees. The federal consent decree is signed by U.S. EPA, the natural resource trustees and the PRPs, including Simpson, WDNR, and Champion Paper. The state consent decree is signed by Ecology, Simpson, Champion, and WDNR. The WDNR is both a PRP and a natural resource trustee and has different representation for each role.

MONITORING OBJECTIVES

The goals of the sediment remedial action taken by Simpson and Champion are to ensure that:

- Toxic concentrations of previously identified chemicals of concern in the sediments are isolated from marine biota.
- Cap sediments are not recontaminated with chemicals of concern from underlying sediments or the mill.
- Contaminated sediments remain isolated for a sufficient period of time to allow the concentrations of chemicals of concern to decrease to an acceptable level (i.e., chemical and microbial activity modify chemical composition of buried sediments over time).
- The natural habitat has been restored to support a productive biological community comparable in species composition and abundance to other relatively noncontaminated estuarine habitats in urban areas.

The integrity of the sediment cap and source control are fundamental to the achievement of these goals. Cap integrity depends upon maintenance of the designed cap thickness to avoid contaminants' contact with biota and the continued attainment of the performance standards in paragraph 48 of the federal consent decree. The following processes will be monitored:

- **Physical erosion to assure cap depth is sufficient to isolate marine organisms from contaminated sediments.** Bathymetric and chemical monitoring can detect these changes.
- **Physical mixing to assure that the cap and the underlying contaminated sediments are not being mixed and pose a threat to cap integrity.** Chemical monitoring can detect this process.
- **Upward diffusion to assure contaminants are not moving through the cap and pose a threat to cap integrity.** Chemical monitoring can detect this type of change.
- **Surface contamination to assure seeps and vents are not vehicles for recontamination.** Chemical monitoring can detect this type of change.
- **Surface contamination from other sources.** For example, potential offsite contaminant sources could impact the remediation site and deposit chemicals of concern. Chemical monitoring can detect this process.

The objective of this monitoring plan is to detect any loss of cap integrity, and to assess if the natural habitat has been restored relative to reference areas. Physical, chemical, and biological monitoring are required to meet these objectives. The exact nature of this monitoring and the criteria used to determine cap integrity are discussed in the following section.

MONITORING ACTIVITIES

Monitoring will be conducted to measure the success of completed remedial actions and assess the fate of the capped sediments. This monitoring plan is designed to detect any future contamination of surface sediments as well as the failure to adequately confine the existing underlying contaminated sediments. Monitoring will also measure the rate and extent of repopulation of the cap area by plants and invertebrates.

The specific components of the monitoring plan are listed in Table 1 (Page iii). Each component is discussed below with a description of its relationship to the monitoring plan objectives. Specific criteria that are used to trigger additional actions are also described. Monitoring methods and associated QA/QC procedures are addressed in the next section. The maps contained in this plan indicate general locations of sampling stations. Thirty days prior to any sampling effort, EPA will be provided a copy of the proposed station locations for review, comments, and final approval. This will include a map and associated coordinates (i.e., latitude, longitude, or Washington state plane coordinates) for each station.

The Project Coordinator will notify the RPM when a complete raw data set specific to each monitoring component is received. The federal and state consent decrees contain provisions governing the availability of these data. EPA has the authority to obtain a subsample (field split) from any chemistry or biological sample collected by Simpson.

Simpson and the regulatory agencies will use the results of the first 10 years of monitoring to define the appropriate sampling type and frequency for subsequent years. Review will occur every 5 years in accordance with Superfund, although actual monitoring could occur less frequently. As part of the 5-year review, the Project Coordinator may provide information and analysis to EPA for consideration.

The 5- and 10-year reviews will provide a basis for evaluating the monitoring program and making any adjustments that may be necessary. The early warning process described in the contingency planning section provides a basis for revising the monitoring program, as necessary, based on monitoring results. Should refinement of this plan be necessary, the consent decree provides for appropriate revisions in the monitoring and contingency plans by mutual agreement, without formally amending the decree itself.

A map of the area to be monitored is shown in Figure 1 (Pages iv et seq.). Region A is the area in which the highest levels of contamination existed prior to construction of the cap. The cap is 8-12 feet thick in this area. Region B, located immediately south of Region A, is an area where low levels of contamination existed. A 4-6 foot cap was placed over this region.

Any contractor or subcontractor performing more than \$100,000 worth of monitoring work is required to obtain a copy of the consent decree from Simpson.

ANNUAL VISUAL INSPECTION

Annual visual inspections of the capped areas are to be conducted during an extreme low-tide period in May-June. These inspections, to be conducted annual through 1998 and every 5 years thereafter if necessary, will include photographic and written records of observed conditions. A low-altitude overflight photograph of the area is to be a part of the photographic record. Details to be noted include, but are not limited to, general contours and topography of the site; the color, texture, and odor of surface sediments; the presence of observable biological communities and organisms; and the presence and locations of special, unusual, or abnormal features such as gas vents. These inspections will be conducted jointly by EPA and Simpson representatives; consulted agencies will be invited to attend. Simpson will notify EPA and the consulted agencies at least 3 weeks prior to the planned inspection date. This requirement does not preclude any of the parties listed from conducting additional inspections.

Information obtained during these inspections will be used to determine the overall physical condition of the cap. Comparison can be made with previous visual inspections and used to assess gross physical changes in the area. Visual data can also substantiate trends noted in the analysis of monitoring data.

BATHYMETRIC SURVEY

The physical condition of the cap will be monitored by both a topographic survey and intertidal transect surveys. The topographic survey will provide information on the loss or deposition of sediments between +6 feet and -4 feet to -7 feet mean lower low water (MLLW). Movement of sediment into deeper water, for example, will be detected using topographic data. The intertidal transect survey will provide more detailed data for the portion of the cap exposed at extreme low water. The techniques used to conduct the intertidal survey must be capable of detecting annual changes in elevation on the order of ± 4 inches.

A topographic survey of the entire cap area (Regions A and B) will be conducted during a spring low tide (-3 feet MLLW or greater) in 1991, 1992, 1993, 1995 and 1998 if necessary, every 5 years thereafter while the monitoring program is in effect. Bathymetric surveys will follow the methods described in the Monitoring Methods and Quality Assurance/Quality Control section. Data will be plotted as topographic contours on maps. These maps shall include all actual survey locations and record elevations.

Intertidal transect surveys will be conducted three times per year in March, May-June, and November-December in 1991 and 1992; annually (May-June) in 1993, 1995, 1998 and, if necessary every 5 years thereafter while the monitoring program is in effect. Intertidal surveys may be required more frequently depending on the results of annual or post-storm visual inspections. These surveys will measure cap elevations at tide levels of -4 to +6 feet MLLW along five transects within Region A (Figure 1).

If a major or catastrophic storm or an earthquake of significance occurs in the immediate area, an additional low-tide visual inspection will be performed immediately by Simpson. A major storm is defined as any storm with winds blowing from the north to the northwest at 30 miles per hour or greater, for a period of 4 hours or longer. Simpson is also required to perform an intertidal transect survey immediately following such an event. The inspection and survey will be initiated without EPA direction and the results will be reported to EPA within 21 days of the storm event.

SEDIMENT DEPOSITION MONITORING

A series of elevation markers have been placed within Regions A and B to serve as permanent reference points for deposition monitoring. These markers consist of four stakes, 1.5 meters long, driven into the sediment adjacent to the four corners of a steel or plastic square plate (0.5 x 0.5 meters). The square plate was buried about 30 cm beneath the sediment surface. The location and elevation of each station was determined by theodolite and electronic distance measuring (EDM) equipment with reference to permanent shoreline monuments. The locations of the sediment-marker stations are shown in Figure 1. These deposition plates will remain in place permanently.

The elevation of the sediment surface relative to each marker will be measured during a spring low tide (-3 feet MLLW or greater) under the contingency planning process when ever sufficient need for monitoring of this nature arises.

TABLE 3. EPA PRIORITY POLLUTANTS AND HAZARDOUS SUBSTANCES

EPA NO. ^a	Compound	EPA No. ^a	Compound
	Phenols		Chlorinated Aliphatic Hydrocarbons
65	Phenol	12	Hexachloroethane
HSL	2-Methylphenol	52	Hexachlorobutadiene
HSL	4-Methylphenol	53	Hexachlorocyclopentadiene
34	2,4-Dimethylphenol		
	Substituted Phenols		Halogenated Ethers
24	2-Chlorophenol	18	Bis(2-chloroethyl)ether
31	2,4-Dichlorophenol	42	Bis(2-chloroisopropyl)ether
22	4-Chloro-3-methylphenol	43	Bis(2-chloroethoxy)methane
21	2,4,6-Trichlorophenol	40	4-Chlorophenyl phenyl ether
HSL	2,4,5-Trichlorophenol	41	4-Bromophenyl phenyl ether
64	Phenachlorophenol		
57	2-Nitrophenol		Phthalates
59	2,4-Dinitrophenol	71	Dimethyl phthalate
	Low Molecular Weight Aromatics	70	Diethyl phthalate
		68	Di-n-butyl phthalate
		67	Butylbenzylphthalate
55	Naphthalene	66	Bis(2-ethylhexyl)phthalate
77	Acenaphthylene	69	Di-n-octylphthalate
1	Acenaphthene		
80	Fluorene		Miscellaneous Oxygenated Compounds
81	Phenanthrene		
78	Anthracene	54	Isophorone
	Low Molecular Weight PAH	HSL	Benzyl alcohol
		HSL	Benzoic acid
39	Fluoranthene	129	2,3,7,8-Tetrachlorodibenzo-p-dioxin
84	Pyrene		Dibenzofuran
72	Benzo(a)anthracene	HSL	
76	Chrysene		
74	Benzo(b)fluoranthene		Organonitrogen Compounds
75	Benzo(k)fluoranthene		
73	Benzo(a)pyrene	HSL	Aniline
83	Indeno(1,2,3-c,d)pyrene	56	Nitrobenzene
82	Dibenzo(a,h)anthracene	63	N-nitroso-di-n-propylamine
79	Benzo(g,h,i)perylene	HSL	4-Chloroaniline
	Chlorinated Aromatic Hydrocarbons	HSL	2-Nitroaniline
		HSL	3-Nitroaniline
		HSL	2-Nitroaniline
26	1,3-Dichlorobenzene	36	2,6-Dinitrotoluene
27	1,4-Dichlorobenzene	35	2,4-Dinitrotoluene
25	1,2-Dichlorobenzene	62	N-nitrosodiphenylamine
8	1,2,4-Trichlorobenzene	5	Benzidine
20	2-Chloronaphthalene	28	3,3'-Dichlorobenzidine
9	Hexachlorobenzene		

Table 3. (Continued)

EPA NO. ^a	Compound	EPA No. ^a	Compound
	Pesticides		Volatile Halogenated Alkenes
93	p,p'-DDE	88	Vinyl chloride
94	p,p'-DDD	29	1,1'-Dichloroethene
92	p,p'-DDT	30	Trans-1,2-dichloroethene
89	Aldrin	33	Cis- and trans- 1,3-dichloropropene
90	Dieldrin		
91	Chlordane	87	Trichloroethene
95	α-Endosulfan	85	Tetrachloroethene
96	β-Endosulfan		
97	Endosulfan sulfate		Volatile Aromatic Hydrocarbons
98	Endrin		
99	Endrin aldehyde	4	Benzene
100	Heptachlor	86	Toluene
101	Heptachlorepoxyde	38	Ethylbenzene
102	α-HCH	HSL	Styrene
103	β-HCH	HSL	Total xylenes
104	δ-HCH		
105	τ-HCH		
113	Toxaphene		Volatile Chlorinated Aromatic Hydrocarbons
	PCBs	7	Chlorobenzene
106	Aroclor 1242		Volatile Unsaturated Carbonyl Compounds
110	Aroclor 1248		
107	Aroclor 1254		
111	Aroclor 1260	2	Acrolein
		3	Acrylonitrile
	Volatile Halogenated Alkanes		Volatile Ethers
45	Chloromethane		
46	Bromoethane	19	2-Chloroethylvinylether
16	Chloroethane		
44	Methylene chloride		Volatile Ketones
13	1,1'-Dichloroethane		
23	Chloroform	HSL	Acetone
10	1,2-Dichloroethane	HSL	2-Butanone
11	1,1,1-Trichloroethane	HSL	2-Hexanone
6	Carbon tetrachloride	HSL	4-Methyl-2-pentanone
48	Bromodichloromethane		
32	1,2-Dichloropropane		Miscellaneous Volatile Compounds
51	Chlorodibromomethane		
14	1,1,2-Trichloroethane		
47	Bromoform	HSL	Carbon disulfide
15	1,1,2,2-Tetrachloroethane	HSL	Vinyl acetate

^a HSL - Hazardous substance list.

CHEMICAL MONITORING

The concentrations of chemicals of concern will be monitored within Regions A and B. Chemical monitoring includes subsurface sediment sampling and surface sediment sampling which includes a contamination pathway assessment. The subsurface data will be used to confirm the integrity of the cap over a broad area, determine the degree to which the sediment at the bottom of the cap may have been mixed with underlying contaminated sediments, and provide a frame of reference for past and subsequent comparisons with monitoring data. Subsurface samples will also be used to detect possible migration of contaminants into the cap from the underlying contaminated sediments. The chemical data obtained from the contamination pathway assessment will be used to determine if the contaminants remain confined to the area underlying the cap or if contaminants are transported by seeps and vents. Additional surface sediment sampling will be conducted to assess if contaminated from off the site may affect the surface sediment quality at the site. The contingency planning procedures section describes how monitoring data will be evaluated and what contaminant levels will trigger additional action.

Sediment samples collected for chemical analysis will be analyzed for conventional and priority pollutants and other organic parameters listed in Tables 2 and/or Table 3, as specified below, and in accordance with the monitoring methods and quality assurance/quality control section of this document. All chemical concentrations will be reported as bulk sediment concentrations on a dry weight basis. Chemicals were selected based on their presence within the region prior to remediation or their association with Kraft pulp mills. Further consideration has been given to polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) to supplement the PCDD and PCDF data collected during the RI/FS.

Descriptions of each of the types of sediment chemistry monitoring, and the additional PCDD and PCDF analyses, are outlined below.

Subsurface Sediment

Sediment borings will be obtained at twelve stations each year in 1991, 1992, 1993, 1995 and 1998 and thereafter every 10 years if necessary. (Figure 1.) These will include nine stations in Area A (8-12 foot cap) where the greatest contamination was measured. Three stations will be in Area B (4 foot cap). Samples will be taken from the 30-40 cm and 90-100 cm elevations above the cap/sediment boundary for physical and chemical analyses. A third sample will be collected from the borings at a depth of 30-40 cm below the cap surface in each of the twelve borings. All other portions of the boring between the cap-sediment boundary and 120 cm above will be stored for a six-month period should additional analyses be required.

Each sample collected for chemical analysis will be analyzed for a number of conventional, priority pollutant and other organic parameters. Conventional parameters will include:

- total solids,
- total volatile solids,
- total organic carbons
- oil and grease, and
- sulfides

Subsurface sediment samples collected in 1991 will be analyzed for the parameters listed in Table 2. In subsequent years, specified above, the subsurface sediment samples will be analyzed for p-cresol (4 methylphenol) and chlorinated guaiacols unless other parameters are determined to be necessary by the contingency planning process. All chemical concentrations will be reported as total concentrations per dry weight. Each of these parameters has been measured in the baseline samples collected prior to construction.

Intertidal Seeps

In coordination with consulted agencies, three intertidal seeps in Area A will be selected for sampling. The seeps will be mapped from the May-June 1991 aerial photographs. Samples of flowing water in each seep will be collected during a May-June low tide period (-1 feet MLLW or lower). A 2 cm surface sediment sample will be collected near the lower edge of each seep where fine grained material appears to accumulate due to washing by the seep.

Water samples will be analyzed for all Table 2 parameters except grain size and total volatile solids. Sediment samples will be analyzed for all Table 2 parameters. Aliquots from all sediment samples will be archived for possible future analysis. Archived samples will be stored for at least 6 months as described for the subsurface sediment samples.

Intertidal seep sampling will be conducted in 1991, 1993 and 1998, and thereafter if necessary.

Gas Vents

In combination with the consulted agencies, five gas vents in Area A will be identified for sediment sampling in 1991, 1992, 1993, 1995 and 1998 and thereafter if necessary. Active vents will be selected and sampled during a May-June low tide period (-1 foot MLLW or lower). Vents will be mapped by means of field notes and aerial photography. Sediment samples will be collected from the top 2 cm of sediment at the vent and from below the vent opening itself by use of a hand core. A 10 cm sediment core sample will be collected at a depth of 30-40 cm below the surface of each vent opening. In 1991 sediment samples will be analyzed for all Table 2 parameters. In subsequent sampling years 1992, 1993, 1995 and 1998) sediment samples will be analyzed for p-cresol (4 methylphenol) and chlorinated guaiacols unless other parameters are determined to be necessary by the contingency planning process. Aliquots from all sediment samples will be archived for possible future analysis. Archived samples will be stored for at least 6 months as described for the subsurface sediment samples.

Surface Sediment Chemistry

In 1991, 1992, 1993, 1995 and 1998, and thereafter if necessary, surface sediment samples will be collected from cores at 5 of the subsurface sampling locations. Two samples will be analyzed for the Table 2 parameters and the remaining 3 samples will be analyzed for Table 2 and Table 3 parameters. Two surface samples will be collected from Area A cores and 3 surface samples will be collected from Area B cores. The top 2 cm of each surface sample will be analyzed.

Sediment PCDD and PCDF Monitoring

To supplement PCDD and PCDF data collected during the RI/FS additional sediment PCDD and PCDF assessment is necessary. In 1991, 1993 and 1998, therefore, eight subsurface baseline cores, one surface seep and one surface vent sediment sample, and three of the five samples collected at surface sediment stations will be analyzed for PCDDs and PCDFs. Samples from the eight subsurface cores will be collected from immediately below the cap-sediment boundary; three samples will be analyzed for PCDDs and PCDFs, the other five will be archived for possible future analysis. This monitoring will be modified following the first year of data collection based on the three following results:

- PCDDs and PCDFs are undetected in any sample. If PCDDs or PCDFs are not detected in any samples, then no further monitoring for PCDDs or PCDFs in subsurface sediments is required. PCDDs and PCDFs in surface sediments should continue to be monitored on a reduced frequency relative to other chemicals. At a minimum, PCDDs and PCDFs will be monitored at one vent, one seep and three surface stations 5 and 10 years following cap construction (1993 and 1998).
- PCDDs or PCDFs are detected in subsurface sediments only. This situation may indicate that organisms could be exposed to PCDDs or PCDFs if cap failure occurs. Subsequent

monitoring for PCDDs and PCDFs will be required at a minimum at those subsurface stations where the chemicals were detected during 1991, 1993, and 1998. The PCDDs and PCDFs will also be monitored at a minimum in the vent, seep and surface sediment stations 5 and 10 years following cap construction (1993) and (1998).

- PCDDs or PCDFs are detected in surface sediments. If PCDDs or PCDFs are detected at concentrations of concern in surface sediments the contingency planning process would be implemented. Additional sampling and analysis may be required to define the spatial extent, level of contamination, and source of contamination. Other contingency actions may be required as appropriate.

BIOLOGICAL MONITORING

The goals of the sediment remedial action include ensuring that the natural habitat has been restored to support a productive biological community. Biological monitoring will be performed to ensure that the fauna inhabiting the sediment cap are comparable in species composition and abundance to those found in relatively noncontaminated urban areas. Three specific types of biological data will be collected: benthic infauna, epibenthos, and macrophytes. Biological data will be used as an indicator of potential sediment contamination in the upper layers of the cap. Data for selected epibenthic species will be used to assess the degree to which the ecological function of the cap ecosystem has been restored. Specifically, several species of epibenthic crustaceans are important in the diet of salmonids. The macrophyte census will be used to provide information on the presence and distribution of aquatic plants on the cap surface.

The establishment of appropriate reference stations is central to the successful interpretation of these biological data. It may be impossible to establish biological triggers for contingency action without data from reference stations that are comparable to the physical conditions present on the cap. Accordingly, Simpson will establish at least two reference stations by 30 June 1992. Between the date that the consent decree is signed and 30 June 1992, Simpson will investigate, sample, and establish the appropriateness of the candidate reference sites, as well as obtain EPA approval of the sites. Simpson will allow reasonable review periods for EPA and consulted agencies (i.e., at least 30 days) to examine related reports and data. The new reference stations should be established at locations that match, to the extent possible, the range in grain size, depth (intertidal height), salinity, and total organic carbon of the sediment cap and are in proximity to a river comparable in sediment load to the Puyallup. Sediment chemistry data from the reference area should not indicate the presence of chemicals above the levels in Table 7 and may use relevant existing data. Areas on the Puyallup River delta and on the Nisqually delta should be investigated as likely candidates for reference stations sites. Simpson is required to submit data (i.e., sediment chemistry, water depth, and benthic or epibenthic infauna abundance) substantiating the appropriateness of the proposed reference locations. Sampling and data reporting will proceed at a pace sufficient to ensure that reference stations are selected and approved by EPA before the 30 June 1992 deadline.

An adaptive approach will be used to develop the specific biological triggers. Specific triggers will be developed and revised as these data become available. An initial set of warning triggers and performance standards will be proposed by Simpson in time to allow EPA approval prior to 30 June 1992. Simpson will allow reasonable review periods for EPA and consulted agencies (i.e., at least 30 days) to examine related reports and data. The early warning triggers will become effective and apply to all data collected in 1993. Simpson or EPA may propose modifications to the triggers. The initial criteria to be used in selecting trigger criteria are described below for the benthic infauna and epibenthos monitoring components.

Benthic Infauna Surveys

Six benthic infauna sampling stations will be established within the cap area (Figure 1), four in Region A (at -2 to -6 feet MLLW) and two in Region B. At each station, five van Veen grab samples

will be collected for benthic infauna analysis and one for physical analysis (grain size). These stations and the biological reference stations will be sampled annually in March 1991-1998. Taxa will be identified and enumerated to the species level and data will be reported as total macrofauna, major taxa (polychaetes, gastropods, bivalves, and crustaceans), total pollution-tolerant species, and total pollution-sensitive species. Simpson in consultation with EPA, will propose those taxa to be included in the pollution-tolerant and pollution-sensitive categories. Simpson, together with EPA, will evaluate similar statistical comparisons for pollution-tolerant/sensitive taxa. Individual species to be considered will include: 1) well-documented indicators of polluted or unpolluted urban areas, 2) important components in benthic food webs involving commercially important species (e.g., several species of amphipods), or 3) significant bioturbators (if present) capable of moving sediments and contaminants from within or below the cap to the surface or near the surface. Selecting individual species as triggers must balance the benefit of their use with possible problems arising from the need for increased sample replication or different sampling techniques. Significant reductions in abundance at an α level of 0.05 will trigger additional action (as specified in the Contingency Planning section). These tests will begin with the data collected in 1993. Prior data collected under the monitoring program in June are considered valid and usable for qualitative comparison with the data to be collected in March under this revised monitoring plan.

Similarity among stations will also be computed by applying the Bray-Curtis similarity index to the species data for each station pair. These similarity values will be used to assist in the interpretation of interstation differences. Three community indices will also be computed for each station: Shannon-Wiener diversity, Simpson's index, and evenness (J).

Epibenthos Surveys

Epibenthic monitoring will be conducted annually to characterize the community of epibenthic organisms populating Regions A and B (Figure 1) in accordance with the methods described in the following section. Epibenthos samples will be collected at two upper intertidal shoreline stations and two lower intertidal stations in Region A. Exact station locations will be proposed to EPA for approval. One lower intertidal and one upper intertidal station will be sampled in Region B (Figure 1). The locations of the stations on the transects will be changed, if necessary, to sample the same tide elevations each year. Epibenthos sampling will be conducted three times each year (1991-1998) in late April, mid-May, and early June. Epibenthos will also be sampled at similar tidal elevations at the reference station on the Puyallup River delta shown on Figure 1. EPA will review the data to confirm the suitability of the location or request another reference station be proposed. A minimum of ten samples will be collected at each station. Taxa within all samples collected prior to 30 June 1992 (date for establishing trigger value) will be identified and enumerated to the species level. One sediment sample will be collected by a van Veen grab sampler at each epibenthos station for one grain size analysis.

-Pairwise statistical comparisons (t-test or Mann-Whitney U-test) will be made between each station and each reference location (see Biological Monitoring Methods). Variables to be tested will include those species of epibenthic crustaceans known to be important constituents in the diets of salmonids or other commercial species. Simpson, in consultation with EPA and the consulted agencies, will select those taxa to be identified and tested to develop a biological early warning trigger. This group will consider including the following organisms: *Tisbe* sp., *Harpacticus uniremis*, *Huntenannia jadensis*, and *Eoganmarus confervicolus*. Similarity among station pairs will be calculated using the Bray-Curtis similarity index for all data collected prior to 30 June 1992. Three community indices will also be computed for each station including the Shannon-Wiener diversity, Simpson's index, and evenness (J). These similarity and community indices will be used to assist in the interpretation of station differences. Additional analyses of data may be required in the future, as deemed appropriate by EPA.

Aquatic Macrophytes

Aquatic plants growing on the shallow portions of the cap area will be surveyed annually by aerial photography. Photographs will be taken during a mid-day, low tide period (-3 to -4 feet MLLW) between June and August. These photographs will provide documentation of the extent of macrophytes on the cap area. During approximately the same period, a biologist will verify through a ground survey the species of

plants present during the low tide. Data collected will include maps illustrating the spatial distribution and percent cover of each species.

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MONITORING METHODS AND QUALITY ASSURANCE/QUALITY CONTROL

PHYSICAL MONITORING METHODS

Positioning

Positioning of sampling equipment and activities during monitoring will be recorded using one of several techniques, including range pole/range-finder, theodolite/EDM, range-range microwave, or range-azimuth equipment.

Theodolite/EDM positioning uses a land-based surveyor operating a standard theodolite together with an EDM device to measure distance, angle, and elevation from a predetermined shoreline location. This system can be used to independently verify the position of a survey vessel or activity to provide quality assurance as well as routine monitoring of position.

Range-range microwave positioning systems such as the Motorola Mini-Ranger or the Del Norte trisponder operate on the principle of pulsed signals, using a transmitter located on the survey vessel to interrogate onshore reference stations. The systems use distances from two onshore stations to triangulate the position. These systems are typically used in conjunction with a data processor and fathometer. The vessel operator can then utilize the x-y positioning information to maintain correct heading on the transect or specific position.

Range-azimuth positioning systems utilize a microprocessor-controlled shore station equipped with a laser beam range-finder. The survey vessel is equipped with a UHF-telemetry processor and a ring of target reflectors. The shore station automatically tracks the location of the vessel and transmits x-y positioning information to the onboard processor. The vessel's onboard processor stores the data along with the fathometric readings. The vessel operator utilizes x-y positioning to maintain a transect heading or specific position.

Bathymetry

Bathymetry refers to the measurement of sediment elevations relative to a datum plane, typically MLLW. Data obtained are also called the z values (depths) when used in context with x-y-z integrated computer survey systems for hydrographic surveys. Bathymetry data are obtained through theodolite/EDM land survey techniques. The bathymetric survey will encompass the cap area from +6 feet MLLW to between -4 ft. and -7 ft MLLW.

Intertidal bathymetry is measured at previously established points between +6 and -2 feet MLLW tide levels on five transects. The cap elevation will be measured with reference to a permanent shoreline benchmark. The elevation of the cap will be measured every 5 feet along five transects from +6 to -2 feet MLLW using a survey transit, leveling rod, and tape measure. These five transects will be located along lines shown in Figure 1.

Deposition Stations

Sediment deposition markers have been previously placed at each station by burying a square plate about 30 cm under the surface of the cap sediment. Five foot long iron stakes have been driven into the sediment at the four corners of each plate. The stakes extend approximately 50 cm above the original surface of the cap. Measurements will be made and recorded for the distances from the top of the stakes to both the sediment surface and the square plate. The elevation of the square plate serves as

a station reference for subsequent measurements. These existing sediment deposition plates will remain in place for future reference as necessary.

CHEMICAL MONITORING METHODS

All QA/QC procedures recommended by the Puget Sound Estuary Program (PSEP) (PSEP 1986-1990) will be followed during this monitoring program except where noted below. The version of PSEP protocols in effect at the time of sampling and analysis will be used. Sediment samples for chemical analyses will be placed in the sample containers and preserved according to the type of analysis to be conducted. Table 4 lists the appropriate sample handling techniques for each type of analysis.

Samples for chemical analysis will be transported from the field to the analytical laboratory in iced coolers. Chain-of-custody forms will be prepared listing every sample number transported for analysis. Samples will then be shipped with the chain-of-custody records to the contract laboratories for analysis. Chain-of-custody records will then be signed and returned to Simpson with analysis results. All samples will be extracted and analyzed within 30 days, or within the holding times specified in the methods.

Details of analytical and QA/QC requirements for major chemical categories are described in the following sections. Geographic accuracy of ± 2 meters is required for all chemical sampling.

TABLE 4. SAMPLE HANDLING TECHNIQUES

Analyte Group	Container	Preparation	Preservation
Extractable organic compounds	250-mL glass jar TFE-lined lid	Detergent wash, distilled water rinse, kiln fired at 450° C for >1 hour	Ice (4° C) ^o
Metals	125-mL glass jar	Soak in 20% HNO ₃ , distilled water rinse	Ice (4° C) ^a
Conventional parameters (except sulfides)	125-mL glass jar	Detergent wash, distilled water rinse	Ice (4° C)
Grain size	Polyethylene bag	None	Ice (4° C)
Sulfide	Glass or plastic jar	Detergent wash, distilled water rinse	5-mL 2N zinc acetate solution per 30-gram sample, mix and seal, ice (4° C)

^a Upon delivery to laboratory, samples will be analyzed immediately or frozen at -20° C.

Metals and Conventional Parameters

Analyses for trace metals in water samples and conventional parameters in water and sediment samples will be in accordance with analytical methods specified by PSEP guidelines (PSEP 1986-1990). Metals will be analyzed by EPA SW-846 methods as modified by EPA Contract Laboratory Program (CLP) statement of work (SOW). Analysis will be performed with inductively coupled plasma (ICP) spectroscopy for cadmium, copper, nickel, and zinc; graphite furnace atomic absorption (GFAA) spectroscopy for arsenic and lead; and cold vapor atomic absorption (CVAA) spectroscopy for mercury. The limits of detection for trace metals in water samples will range from 0.02 to 7 $\mu\text{g/L}$ and range from 0.01 to 4.0 mg/kg (dry weight basis) in sediment samples. Practical quantitation limits for 1 gram samples are 0.2-30 mg/kg dry weight. Recommended frequencies and control limits for metal quality assurance (QA) samples are summarized in Table 5.

Organic Compounds

Analyses performed on water and sediment samples for acid/base neutral (ABN), pesticides/PCBs, and volatile organic compounds will be in accordance with PSEP recommended guidelines (PSEP 1986-1990). These guidelines are modifications to existing EPA CLP protocols for low level analyses.

The method of isotope dilution (EPA Method 1625C) shall be used for ABN extractable compounds. Stable isotope-labeled surrogates for each ABN compound shall be added to all field samples and quality control samples prior to extraction to monitor and correct for analyte recovery.

The following analytical sensitivity is required for ABN compounds:

- Limits of detection (LOD) for ABN compounds water shall be in accordance with detection limits stated in EPA Method 1625C
- LOD for ABN compounds in sediment samples shall be 10-50 $\mu\text{g/kg}$ (dry weight)
- The practical quantification limit (PQL) for ABN compounds shall be 200 $\mu\text{g/kg}$.

In order to attain these lower detection limits in sediments, modifications to CLP protocols are necessary. These modifications include the use of a large sample size (approximately 100 grams), a final extract volume of 0.5 ml, and an injection volume of 1-2 μl .

The following analytical sensitivity is required for pesticide and PCB analyses:

- LOD for water samples shall be in accordance with those stated in the EPA CLP statement of work
- LOD for pesticides shall be 0.01-1 $\mu\text{g/kg}$ (dry weight) and PCBs shall be 1-5 $\mu\text{g/kg}$ (dry weight)
- PQL for pesticides shall be 2 $\mu\text{g/kg}$ and PCBs shall be 10 $\mu\text{g/kg}$, both on a dry weight basis.

In order to achieve these lower detection limits, modifications to CLP protocols are necessary and will include extraction of larger sample size (approximately 100 grams), a final extraction volume of 10 ml, and an injection volume of 2 μl .

All ANB and pesticides/PCBs extracts shall be subjected to gel permeation chromatography (GPC) to reduce interferences.

Analysis of polychlorinated dibenzodioxins (PCDDs), including 2,3,7,8-TCDD, and polychlorinated dibenzofurans (PCDFs) will be analyzed following procedures specified by EPA SW-846 Method 8290. The method calibration limits shall range from 1.0 to 200 ng/kg for sediment samples. These maximum calibration limits are referenced from EPA SW-846 Method 8290, Table 1.

Recommended frequencies and control limits for QA samples are summarized in Table 6.

BIOLOGICAL MONITORING METHODS

All sampling and QA/QC recommendations contained in the PSEP protocols (PSEP 1986-1990) are requirements for the biological monitoring methods. Prior data collected under the monitoring program in June is considered valid and usable for qualitative comparison with the data to be collected in March under this revised monitoring plan. Geographic accuracy of ± 2 meters is required for all biological sampling. Highly accurate station locations allow repeatability for future sampling and better detection of contamination trends or gradients.

Benthic Infauna

Benthic infauna sampling will be conducted during mean or higher tide stages from a sampling vessel. The sampling vessel will be positioned at the previously selected stations using an EDM system. The accuracy of this system is within 1.5-3.0 cm, more accurate than a vessel can hold steady on station. Vessel motion due to wind or current increases this error to about ± 1 meter. Offset of the EDM reflecting board from the sampler wire will be accounted for in position calculations to place the wire at the station location rather than at the reflecting board. Wire angle will be measured to ensure angles less than 2° occur at the time the sampler is released. These constraints will provide a sample location with an error less than 2 meters.

**TABLE 5. RECOMMENDED FREQUENCIES AND CONTROL LIMITS
FOR METALS QUALITY ASSURANCE SAMPLES**

Analysis	Frequency of Analysis ^{a,b}	Control Limit ^c
Preparation blanks	5% or one per batch ^d , whichever is more frequent	Low level; $\leq 2 \times \text{IDL}$ High level; $< \text{IDL}$
Certified reference materials ^e	5% or one per batch ^d , whichever is more frequent	80-120% recovery
Matrix spikes	5% or one per batch ^d , whichever is more frequent	75-125% recovery
Analytical replicates	5% or one per batch ^d , whichever is more frequent	$\pm 20\%$ RPD

^a Frequencies listed are minimums; some programs may require higher levels of effort.

^b For batches of five samples or less, the minimum QA checks should include a method blank and the analysis of a certified reference material (CRM). If an analyte is not in the CRM, a matrix spike must be analyzed for that particular analyte. In general, for small batches (i.e., ≤ 5 samples), the priority of QC checks should be: CRM > analytical duplicates > matrix spikes. If several batches of the same matrix are analyzed sequentially (i.e., for several small projects), a CRM can be analyzed at a frequency of 5 percent overall, with at least one sample duplicate analyzed per individual batch.

^c IDL - instrument detection limit
RPD - relative percent difference.

^d A batch is ≤ 20 samples.

^e Certified values not available for all elements (e.g., silver).

TABLE 6. RECOMMENDED FREQUENCIES AND CONTROL LIMITS FOR SEMIVOLATILE CHEMICAL QUALITY ASSURANCE SAMPLES

Analysis Type	Frequency of Analysis ^a	Control Limit
Method blanks	One per extraction batch ^b or one per 12-hour shift (whichever is most frequent)	Phthalates: 5 ug total or <50% of analyte concentration in samples Other organic compounds: 2.5 ug total or <5% of analyte concentration in samples
Certified reference materials ^c	<50 samples: one per set of samples submitted to laboratory >50 samples: one per 50 samples analyzed	95% confidence interval for certified reference material ($\pm 1.96SD$)
Matrix spikes	Not required if complete isotope dilution used <20 samples: one per set of samples submitted to laboratory ≥ 20 samples: 5% of total number of samples	$\geq 50\%$ recovery; $\leq 100\%$
Field and analytical replicates	<20 samples: one per set of samples submitted to laboratory ≥ 20 samples: one triplicate and additional duplicates for a minimum of 5% total replication	$\pm 100\%$ coefficient of variation (for >2 replicates) or $\pm 100\%$ RPD (for duplicates)
Surrogate spikes	Every sample	$\geq 50\%$ recovery ($\geq 10\%$ if isotope dilution is used)
Initial calibration	Before any samples are analyzed, after each major disruption of equipment, and when ongoing calibration fails to meet criteria. Initial calibration includes 5% calibration.	$\leq 20\%$ coefficient of variation; $\leq 30\%$ for highly polar compounds or other analytes at the discretion of the QA reviewer
Ongoing calibration	At the start of each work shift, every 10-12 samples, or every 12 hours (whichever is more frequent), and at the end of each shift for gas chromatography/mass spectrometry (GC/MS) and gas	$\leq 25\%$ of initial calibration for GC/MS; $\leq 15\%$ of initial calibration for GC/ECD;

chromatography/flame ionization detection
(GC/FID).

$\leq 15\%$ of initial
calibration for GC/FID

At the start of each work shift, every 6
samples, or every 6 hours (whichever is
less frequent), and at the end of each
shift for gas chromatography/electron
captive detection (GC/ECD).

^a Frequencies listed are minimums; some programs may require more control samples.

^b A batch is ≤ 20 samples.

^c As available.

Sediment samples will be collected following the protocol outlined in the PSEP protocol manual (PSEP 1986-1990). Surficial sediment samples will be collected using a modified 0.1-m², van Veen grab sampler. The grab will be lowered and raised at a controlled speed of approximately 30 cm/second. After the sampler has been lowered, raised, and secured on deck, the sediment sample will be inspected carefully before being accepted. The following acceptability criteria will be used:

- The sampler is not overfilled with sample so that the sediment surface is pressed against the top of the sampler
- Overlying water is present (indicates little leakage)
- The overlying water is not excessively turbid (indicates little sample disturbance)
- The sediment surface is relatively flat (indicates little disturbance or winnowing)
- The desired penetration depth is achieved (4-5 cm in medium coarse sand, 6-7 cm for fine sand, >10 cm for muddy sediment).

If a sample does not meet these criteria, it will be rejected. After a sample is judged acceptable, sediment characteristics will be recorded on the field data sheets. Station locations, water depth, grab penetration depth, and other general observations will also be recorded. Sample numbers assigned to each sample will include a unique coding system that identifies the type of sample collected and the location sampled.

At each station one sample will be collected for physical analysis and five for benthic infaunal analysis. Before sampling the surface sediment for physical analysis, the overlying water will be removed from the grab by slowly siphoning the water off near one side of the sampler. Minimal sediment surface disturbance is desired prior to taking a sample. Once the overlying water is removed, the sediment can be subsampled.

Following the initial observations, the benthic samples will be transferred from the van Veen grab sampler to a sluice box, or other adequate receptacle, and washed through a 1.0-mm sieve. The sample may be washed through the sieve using a gentle stream of water from a hose when it is necessary to clean the sample.

Sieved samples will be transferred to glass or plastic jars of appropriate size. A 10 percent solution of buffered seawater-formalin will be added to the sample immediately. A waterproof label will be added before the sample jar is sealed, along with an external label on the jar and lid. These labels will have been prepared prior to sampling. All sample containers will be organized in a logical manner in wooden or other sturdy transfer cases to allow review of sample label data during transfer and storage.

After collection, grain size samples will be placed on ice in coolers and transported to the analytical laboratory. Samples will be stored in a refrigerator at 4° C until they are analyzed. The maximum holding time recommended by PSEP protocol is 6 months. Sample analysis will begin immediately upon arrival of samples at the laboratory and will be completed well within the recommended maximum 6-month holding time.

All biological samples will be transported to the analytical laboratory at the end of each sampling effort. An inventory of samples will be conducted as soon as possible after reaching the laboratory. Each sample will be rinsed to remove the formalin solution (within 48 hours of sample collection) and transferred to a solution of 70 percent alcohol. Rose bengal stain, at a concentration of 1 g/L, may be added to the alcohol-preserved samples. The rose bengal stain is used to make the organisms in the sample more easily visible to the sorters. During the preservative changing process, all internal labels will remain with the samples and new external labels will be added if the containers are changed.

In the laboratory, sediment volumes of 5-10 mL will be sorted in a Petri dish under a 20-300 power dissecting microscope. Water will be added and the sediment spread evenly over the bottom of the Petri dish. The Petri dish is then passed back and forth through the microscope viewing field until the entire dish has been scanned. Organisms are removed during the scanning process and placed in vials labeled annelids, arthropods, mollusks, and miscellaneous. The sediment is then stirred and scanned a second time to obtain any remaining organisms. Large particles of debris (e.g., wood, bark, clay) are removed from the sample, examined, and any organisms removed before the debris is returned to the original sample container. Organisms are preserved with fresh alcohol in the vials. An internal waterproof paper label is placed in each vial recording the station number, replicate, sorter, and date of collection for each sample. This procedure will be repeated for every sample. After a sample has been sorted, the vials containing the organisms from that sample will be banded together and stored in a container with other samples from the same project.

All sorted sediments will be retained in labeled containers until completion of the annual project. Counts of each type of organism will be recorded during sorting for later use in the QC process. Sorted organisms will be provided to a qualified taxonomist for identification to species or the lowest practical taxonomic level. The qualified taxonomist will be a specialist in taxonomy of each specific group of organisms. Transfer of samples to these taxonomists will include complete chain-of-custody records and an inventory of the samples at the time of packaging. The same information will be provided upon return to the analytical laboratory.

All vials to be transferred will be packed by major taxonomic group (e.g., annelids, arthropods). Each sample will be sealed with tape or in another manner that will prevent loss of preservative during shipment and storage. Each specialist receiving such samples must sign a listing of all samples received and all samples returned to the laboratory as part of the chain-of-custody requirements. The specialists will provide a written record of any reference organisms retained by the specialist when the samples are returned to the laboratory. The specialist will be required to provide the laboratory with a reference collection of all organisms identified. All identification and enumeration of data will be recorded on standard forms prepared prior to initiation of the task. The reference collection will be sent to a different taxonomist for validation.

A QC check will be conducted on each sample to ensure that all organisms have been sorted from the sample. This QC process will begin immediately following the initial sorting of the first few samples. Beginning the QC process immediately prevents inadequate sorting of large numbers of samples. A 20 percent aliquot of sediment will be removed from each sorted sample after the sample has been thoroughly mixed. The aliquot will be sorted for all organisms remaining in the sediment. The number of organisms recovered is multiplied by 5 to estimate the total number of organisms remaining in the sample after the initial sorting. If the QC test determines that more than 5 percent of the total number of organisms originally counted remain in the sample, the sample will have failed the QC test. All samples failing the QC analysis will be resorted. All QC sorting will be conducted by an individual who has not previously participated in the sorting of that particular sample.

The data derived from the laboratory analysis will be in the form of numerical abundances or densities of biological organisms by species (or lowest practical taxonomic level). These benthos data will be analyzed in several ways to characterize the benthic communities present.

Statistical comparison using numerical abundance will be performed. The numerical abundance of the major taxa (gastropods, bivalves, crustacea, and polychaetes) as well as total abundance will be compared between pairs of test stations and reference stations. Abundances will be compared using a statistical procedure that tests for differences among means (i.e., t-test for a parametric test or Mann-Whitney U-test for a nonparametric test). A parametric test will be used if the underlying assumptions can be met (e.g., equality of variance among the sampled groups). Homogeneity among the variances will be tested to determine if a parametric or nonparametric test should be used. If the variances are heterogeneous, a nonparametric test will be used. All comparisons will be judged significant at the $P < 0.05$ level.

Statistical comparisons alone are not sufficient to define an adverse effect. Numerical abundance (or lack thereof) is not the only indicator of detrimental effects. A station with a high numerical abundance of polychaetes (all one species) may not be a healthier station than one with significantly less abundance but a variety of species. Therefore, the results of the statistical comparisons must be interpreted along with the qualitative comparisons.

Cluster analysis is used to compare the similarity between samples and stations. The Bray-Curtis (1957) similarity Index is calculated for all combinations of pairs of sampling stations. The similarity measure utilizes both the identity and abundance of each species for comparison.

The formula for the dissimilarity measure is:

$$\text{Similarity} = 1 - \frac{\sum_{j=1}^n X_{1j} + X_{2j}}{\sum_{j=1}^n (X_{1j} + X_{2j})}$$

where:

X_{1j} and X_{2j} = the abundance values of the species at two respective sites

n = total number of species at the two sites.

The measure equals 1.0 for complete similarity and 0.0 for complete dissimilarity:

A log transformation, which tends to decrease the effect of very large values and provide more uniform data, will be made on the abundance of each species at each station before dissimilarity values are calculated. This is done because the Bray-Curtis measure tends to be biased by large values. The large values still dominate after transformation but to a lesser degree. The clustering algorithm that will be used includes a complete linkage strategy that tends to form tight clusters because species tend to form new groups rather than chain into existing ones.

Epibenthos

Epibenthos samples will be collected using a diver-operated venturi suction sampler equipped with 0.25-mm sieve bags, or by an epibenthic pump with attached cone sampler. For each diver-operated replicate at each station, a 0.018-m² quadrat is placed on the sediment surface and the area inside is vacuumed to a depth of 2 cm and sieved by the sampler. The remote epibenthic pump collects organisms within a 0.018-m² area. Samples are labeled, placed in glass jars, and preserved with a 10 percent buffered formalin-seawater solution. Upon return to the laboratory, the preservative will be changed from formalin to a 70 percent alcohol solution. Rose bengal stain may be added at this time at a concentration of 1 g/L to impart color to the organisms. This stain makes the organisms more visible and aids in the process of separating the organisms from the sediment.

Epibenthic samples generally contain a large number of organisms, far too many to readily sort from the entire sample. To aid in the sorting process, each sample will be split into equal portions with a Jones-type splitter. Each sample will likely be split 2-4 times (25-50 percent of the original sample), or until approximately 100 organisms remain in the sample. All sediments will be retained from each split to ensure that the organism count will be 100 or greater.

Sorting will be conducted under a dissecting microscope at 7-30 power. Organisms will be removed and placed in vials containing ethyl alcohol for preservation. Samples will then be shipped to taxonomic specialists for identification and enumeration.

Epibenthic crustacean densities will be computed using data from the sorting, splitting, and identification procedures. Total densities will be calculated using the organisms enumerated from the sorted portion of the sample. For example, if the sample to be enumerated was split to 6.25 percent, the number of organisms removed from the sample will be multiplied by 16 to obtain the total number of organisms for the entire sample. Harpacticoid copepods and amphipods will be identified to the species level.

Data will be analyzed similar to that for benthic infauna [i.e., statistical tests for differences in abundance (total fauna, total harpacticoids, total amphipods and interstation similarity using the Bray-Curtis index].

QC procedures will be performed on the sorting of all epibenthic samples. Because of the small amount of sediment retained in each split to be sorted, the same sediment will be entirely resorted by another sorter. Organisms that are recovered on the re-sort of the sample will be counted and the resulting numbers will be added to the data from the initial sorting.

Aquatic Macrophytes

The aquatic macrophyte survey will be conducted once each year in August. During a midday extreme low tide (-2 feet MLLW or lower), aerial photographs of the site will be taken. Low-altitude aerial photography will be conducted using true color film (Kodak 2448 Aerochrome MS or equivalent) in a 9 x 9-inch aerial camera. Photographs will be taken at an altitude appropriate to yield an image scale of about 1 inch = 100 feet.

During the same tide series a biologist will conduct a site inspection of the intertidal and subtidal portions of the cap area. This inspection will identify the types of macrophytes inhabiting the site for interpretation of the aerial photographs. The ground survey information together with the aerial photographs will be used to prepare vegetation maps of the site.

REPORTING REQUIREMENTS

DATA MANAGEMENT PLAN

Simpson, Champion, and WDNR will prepare a data management plan for review and approval by EPA relative to all data collected under this decree. This plan will be prepared and approved by EPA prior to any sampling activities. The plan will be submitted to EPA as follows:

1. Submit draft to EPA (30 days after signature of consent decree)
2. EPA review (approximate 30 day review)
3. Submit final plan to EPA (within 30 days of EPA comments).

The data management plan will describe the methods to be used to ensure that all data collected or generated since the cap was put in place are stored and reported in a consistent and systematic manner. EPA is developing a geographic information system (GIS) for the CB/NT site. The contractor will consult with the GIS staff of EPA Region 10 to develop a plan that addresses the following requirements for data processing and storage:

- Assigning a unique identification code to all monitoring and sampling stations (i.e., surface water, soil, air, animal, and vegetation sampling locations)
- Encoding location data using latitude and longitude and descriptive information for each of these monitoring and sampling stations
- Identifying, encoding, and storing in a database all sample analytical results, field measurements, qualifier codes, and observations
- Ensuring that these analytical results are correlated with respective sampling station location and descriptive information (i.e., use identification codes assigned to sampling stations)
- Storing this information in a database that can be accessed and manipulated by the EPA Region 10 GIS.

All sample and analytical data must be submitted in accordance with the EPA-approved data management plan.

MONITORING REPORTS

Monitoring reports are to be submitted in accordance with Table I. Except for the Table 1 Update, these reports will describe the data collection activities and analyses performed since the previous reporting period. These reports should address and be organized as follows:

- **Executive Summary**--A description of all data collection efforts and major findings.
- **Introduction**--A brief description of the monitoring efforts to be reported.
- **Materials and Methods**--Description of methods used to collect data, highlighting any departure from the specifications in this plan, QA/QC protocol, or field decisions. Subsections will address station positioning, sediment chemistry, benthic infauna, epibenthos, macrophytes, and bathymetry.

- **Results**--All data generated during monitoring activities. Data shall be presented in an easy-to-read tabular format in accordance with the data management plan. Results of all statistical tests, data comparisons with trigger values, computations required by this plan, and any departures from the prescribed reporting requirements shall be included. If large amounts of data are being presented (e.g., species abundance), data summaries can be included in the Results section and all detailed data listed in an appendix. All data including individual observations for each field and laboratory replicate will be presented in the report.
- **Discussion**--Integration of all data collected since cap construction. Data should be discussed as they relate to objectives of the monitoring plan, reference areas, early warning triggers, cap integrity, and biological recovery.
- **Recommendations**--Recommendations for reduced, additional, or modified monitoring or other modifications to the Monitoring Plan should also be included (e.g., reduction or increase in sample replication, changes in the variables measured, early warning triggers, changes in the number or location of stations).
- **Quality Assurance Reviews**--Results from any quality assurance audits performed on the data. Results of all QA/QC audits and analyses required by or described in the *Monitoring Methods and Quality Assurance/Quality Control* section are to be reported. This QA/QC section will be organized according to data type (i.e., sediment organics, sediment metals, sediment conventionals, benthic infauna, epibenthos). Chemical data types will generally address the following issues:
 - Sample collection
 - Shipping and holding time
 - Completeness
 - Analytical methods (calibration, detection limits, compound confirmation)
 - Accuracy (sediment reference materials, matrix spikes, surrogate recoveries)
 - Precision
 - Blanks.

Data package validation for chemistry will follow EPA data validation functional guidelines for organic or inorganic analyses, if appropriate. If the functional guidelines do not apply, then criteria will be developed on a site-specific basis and will include the main headings in the functional guidelines.

Benthic infauna and epibenthic QA reports will address the following:

- Sorting efficiency
- Taxonomic accuracy (names of taxonomists, independent verification, reference collection)
- Total counts
- Adequacy of replication (power analysis giving minimum detectable difference achieved with observed standard error and mean at an α of 0.05 and power of

0.8). Plots of minimum detectable differences vs. the number of replicate samples are to be included. The statistical techniques used to create these plots should be referenced.

Techniques and data used to validate all station positioning requirements should also be included.

On January 31 of each year Simpson will submit a Table 1 Update to EPA. The Update will summarize the work to be conducted in the coming monitoring season including any changes in sampling methods. The updated table will be finalized by March 30 to ensure all necessary components of the annual monitoring are being addressed.

Simpson will submit five copies of all reports to EPA on the dates specified in Table 1. Concurrently, Simpson will forward a copy of each report to the consulted agencies.

- **Certification**--A responsible Official representing the Settling Defendants shall certify that the information contained in the report is true, accurate, and complete. This statement shall read as follows:

"I certify that the information contained in or accompanying this (submission) (document) is true, accurate, and complete.

"As to (the) (those) identified portion(s) of this (submission) (document) for which I cannot personally verify (its) (their) truth and accuracy, I certify as the company official having supervisory responsibility for the person(s) who, acting under my direct instructions, made the verification, that this information is true, accurate, and complete."

As indicated in the decree, all required work plans, reports, and other documents ("documents") shall be subject to review and approval by EPA. Except as otherwise provided: (A) EPA shall notify the Settling Defendants in writing of approval or disapproval of the document, or any part thereof, within thirty (30) calendar days of receipt of any document required by this Consent Decree. In the event EPA needs a longer review period, EPA shall notify Settling Defendants of its revised response date within thirty (30) calendar days of receipt of the document. (B) In the event of disapproval, EPA shall specify in writing any deficiencies and modifications to the document. Nothing in this provision shall negate EPA's right to approve or disapprove a submittal by the Settling Defendants should the time periods stated in this paragraph be exceeded by EPA, nor shall such delay by EPA subject Settling Defendants to any enforcement action. (C) Within thirty (30) calendar days of receipt of any document disapproval or comments for revision, the Settling Defendants shall either: (1) submit a revised document to EPA which incorporates EPA's modifications or summarizes and addresses EPA's concerns or (2) provide a notice under the dispute resolution process.

CONTINGENCY PLANNING PROCEDURES

INTRODUCTION

The contingency planning procedures consist of four parts: (1) early warning, (2) contingency planning, (3) contingency response, and (4) expedited review. Each is briefly discussed below, followed by a more detailed description. Note that the procedures are similar to those outlined in Appendix D of the State Decree with the main difference being EPA's decision-making role and the technical requirements. The technical requirements (e.g., triggers) have been revised.

Early Warning Process

The purpose of the early warning process is to identify potential problems early enough to conduct a rational and deliberate process to determine whether there is in fact a problem and, if so, how serious the problem may be.

Because laboratory measurements are based on analysis of small quantities of sediments and expected concentrations of some chemicals are near the analytical detection limit, there is a possibility of problems arising in the laboratory testing of these samples. Therefore, the first step (following receipt of information that suggests a problem may exist) will usually involve confirming the accuracy of the sampling results (verification).

The early warning process will enable the agencies and Simpson to determine what kinds of data verification or response is appropriate, so that contingency planning or response actions are based on proper assumptions.

Contingency Planning Process

The purpose of the contingency planning process is to develop plans for contingency actions that may become necessary depending on future monitoring results. As monitoring data are collected they will be examined and interpreted relative to possible cap failure. Five areas of monitoring were identified on page 2 of the plan:

- Physical erosion of the cap;
- Physical mixing of contaminated sediments and cap material;
- Diffusion of contaminants through the cap;
- Surface contamination from seeps, vent and other sources
- Other specific, but currently undefined, processes.

The monitoring plan was designed to detect these processes as well as the biological recovery of the cap area. Should the monitoring data indicate that potential problems exist, then plans, developed per the contingency planning process must be prepared to correct or mitigate or otherwise address the situation.

The contingency planning process could result in an approved contingency response action to be implemented in accordance with an approved schedule. It could also result in agreement on a conceptual approach or a set of criteria for taking further action, pending the results of future monitoring. The process incorporates applicable permit requirements, interagency consultation, and public review of contingency plans prior to approval.

Contingency Response Process

The purpose of the contingency response process is to implement approved plans for contingency actions. This includes agreement on a final schedule, any amendments to the consent decree if necessary, and completion and monitoring of the response action.

Expedited Review Process

The purpose of the expedited review process is to allow the parties to shorten the time frame of the standard process or to implement one or more of the above steps simultaneously when reliable early warning data indicate that a problem warrants immediate action.

Notes on the Overall Contingency Planning and Decisionmaking Process

The contingency planning procedures set forth below are described in terms of *tasks* and *steps*. The steps are numbered consecutively rather than being renumbered under each task. Figure 2 provides an outline of the contingency planning process. However, these tasks and steps may not occur in strict chronological order, because certain actions may occur simultaneously or more than once in the planning process.

Two items should be noted with respect to those situations where final decisions are required on potential contingency actions:

- 1) A number of agencies have expressed a desire to be involved in such decisions because of their role in the permitting and approval process for this remedial action. These agencies are collectively referred to below as consulted agencies and include Ecology, WDNR, WDF, NOAA, DOI (FWS and BIA), the Puyallup Tribe, and the Muckelshoot Tribe. This monitoring and contingency plan is a condition of several of these agencies' permits or approvals for the remedial action, and these agencies have agreed to use the procedures in this plan in the event that contingency planning is needed.
- 2) Because of the need for a coordinated decision-making process and a focus of responsibility, EPA will make final decisions under the terms of the accompanying consent decree. These decisions will be subject to the consultation process set forth below. In the event of dispute, a judge will review and make the ultimate decision. EPA will also be responsible for convening meetings and sending notices of major decision points. Simpson will send reports and data packages to the consulted agencies. EPA and Simpson may invite other entities to participate in the contingency planning procedures and may update the consulted agency list in response to agency requests.

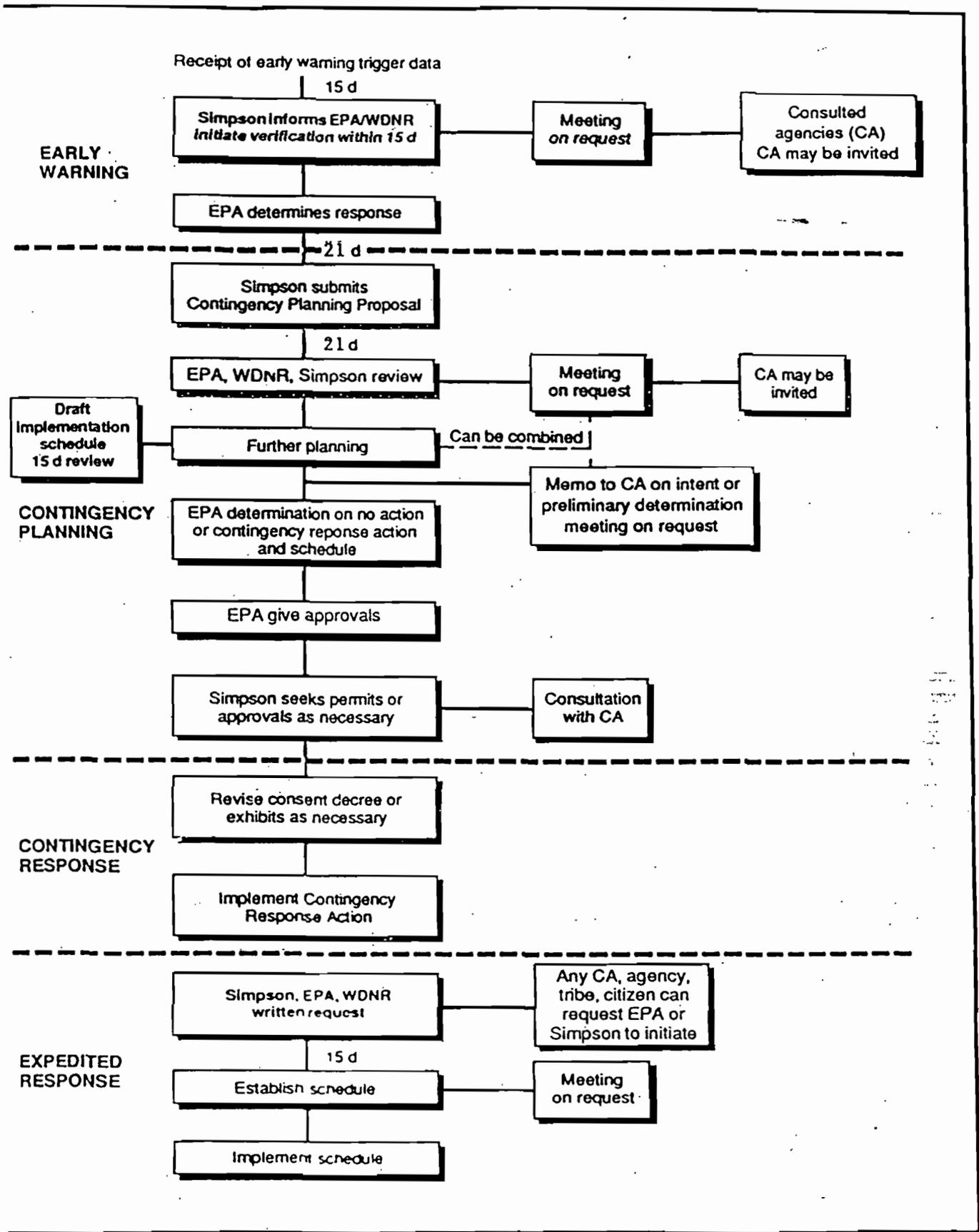


Figure 2. Contingency planning process

EARLY WARNING PROCESS

Task 1. Triggers (Any One of Which Initiates the Early Warning Process)

Step 1: Chemical--Under the monitoring plan, Simpson receives sampling results that indicate contamination levels for the chemicals of concern equal to or greater than 80 percent of the lowest established apparent effects threshold (AET) for benthic organisms, oyster larvae, or amphipods, based on samples collected within 30-90 cm (1-2 feet) above the contaminated sediments or at the sediment surface. The applicable chemicals of concern and their corresponding AET levels are listed in Table 7. No AET currently exist for some chemicals (e.g., PCDDS, PCDFs, resin acids, and chlorinated guaiacols). The detection of PCDDS, PCDFs, or chlorinated guaiacols will be evaluated on a case by case basis by EPA, Simpson and the consulted agencies with a decision made on the need for additional action. The trigger value for resin acids is 1,000 ug/kg dry weight. In addition, a 5-times increase in the concentration of a non-AET chemical measured in the subsurface migration samples relative to baseline will initiate the contingency planning process.

Step 2: Physical--Bathymetric, intertidal, or sediment deposition surveys received by Simpson (under the monitoring plan) show cap thickness in Regions A or B has changed 12 inches from the previous survey, or an average of more than 10 inches/year over a period of 2 years and unusual information obtained from the annual visual inspection or post-storm inspections (e.g. methane vents or surface erosion) may also trigger contingency action.

Step 3: Biological--Simpson will propose appropriate indicators of biological stress to EPA by December 31, 1992. After EPA approval, these indicators will become effective in 1993. Should macrophyte beds be established in an area, subsequent large decreases in cover (>50 percent) for a single species relative to the previous sampling period will trigger additional action.

Task 2. Notice and Verification

Step 4--Simpson will provide written and verbal notification to EPA and the consulted agencies within 7 days of the receipt of this information and will not wait until submitting a data report. Consulted agencies should provide their comments to EPA within 7 days of receipt of the information.

Step 5--Any involved party may decide to undertake verification (e.g. checking laboratory procedures, evaluating split samples, resampling) or EPA may direct Simpson to undertake verification sampling. Simpson will set up a meeting with EPA prior to undertaking verification actions, unless EPA determines a meeting is unnecessary. Simpson will initiate mutually agreed upon verification sampling within 15 days unless EPA authorizes more time.

TABLE 7. APPARENT EFFECTS THRESHOLD SEDIMENT QUALITY VALUES
(ug/kg dry weight for organics; mg/kg dry weight for metals)

Chemical	Amphipod AET	Oyster AET	Benthic AET
Low molecular weight PAHs ^a	5,500	5,200	6,100
Naphthalene	2,400	2,100	2,700
Acenaphthylene	1,300	560G ^b	1,300
Acenaphthene	2,000	500	730
Fluorene	3,600	540	1,000
Phenanthrene	6,900	1,500	5,400
Anthracene	13,000	960	4,400
2-Methylnaphthalene	1,900	670	1,400
High molecular weight PAHs	38,000	17,000	51,000G
Fluoranthene	30,000	2,500	24,000
Pyrene	16,000	3,300	16,000
Benzo(a)pyrene	3,000	1,600	3,600
Indeno(1,2,3-c,d)pyrene	1,800	690	2,600
Dibenzo(a,h)anthracene	540	230	970
Benzo(g,h,i)perylene	1,400	720	2,600
Total chlorinated benzenes	680	400	400
1,3-Dichlorobenzene	170G	170G	170G
1,4-Dichlorobenzene	120	120	110G
1,2-Dichlorobenzene	110G	50	50
1,2,4-Trichlorobenzene	51	64	--
Hexachlorobenzene	130	230	22
Total PCBs ^c	2,500	1,100	1,100
Phenols			
Phenol	1,200	420	1,200
2-Methylphenol	63	63	72
4-Methylphenol	3,600	670	1,800
2,4-Dimethylphenol	72	29	210
Pentachlorophenol	360	140G	690
2-Methoxyphenol	930	930	580
Miscellaneous extractables			
Retene	1,700	2,000G	2,000
Metals			
Arsenic	93	700	57
Cadmium	6.7	9.6	5.1
Copper	1,300	390	530
Lead	660	660	450
Mercury	2.1	0.59	2.1
Nickel	120G	39	--
Zinc	960	1,600	410

^a PAH - polycyclic aromatic hydrocarbon.

^b G - indicates that a definite AET could not be established because there were *no effects* stations with chemical concentrations above the highest concentration among *no effects* stations.

^c PCB - polychlorinated biphenyls.

Step 6--Simpson is committed to verifying the sample results in question as long as the verification procedure is reasonable under the circumstances. If there is disagreement after following the procedures set forth in this section, the signatories to this decree will use the dispute resolution procedure in the consent decree to resolve the issue.

Task 3. Meeting and Consultation

Step 7--Consulted agencies or other entities identified by EPA and Simpson may be invited to attend the meeting or meetings discussed in Step 5. Meeting notices and agendas will specify that the meeting is part of an early warning review to determine what kind of verification or response to the data is appropriate. EPA and the consulted agencies reserve the right to meet and consult throughout the early warning and contingency planning process and prior to final contingency planning decisions (see Task 3 of the contingency planning process below).

Task 4. Response to Early Warning

Step 8--EPA will make a final determination of the most appropriate response based on all available information. Potentially appropriate responses to early warning data include but are not limited to one or more of the following actions:

- Concluding the situation does not require further action at this time
- Verifying the data
- Seeking expert advice on the interpretation of monitoring data
- Preparing a report of analyses needed to define or describe the problem or situation in terms of potential threat to human health and the environment
- Developing more specific criteria to evaluate the data or future sampling
- Revising the sampling plan for the specific area, media, or chemical of concern (e.g., more frequent sampling, additional stations, groundwater monitoring, testing for additional parameters) on a temporary or ongoing basis
- Conducting sediment bioassays
- Initiating the contingency planning process (see below)
- Initiating expedited review and planning response actions (see below).

CONTINGENCY PLANNING PROCESS

Task 1. Initiation

Step 1--The contingency planning process may be initiated after the early warning process.

Task 2. Contingency Planning Proposal

Step 2--Within 21 days (or within any time frame on which the signatories to this decree mutually agree), Simpson will propose contingency response actions that will be taken if necessary to address the

problems identified in the early warning process (i.e., a contingency planning proposal). The proposal will include the type of action to be initiated and a proposed schedule for implementation.

Step 3--EPA will review the contingency planning proposal within 21 days (or within the time frame on which they mutually agree). EPA may decide to (1) refrain from further action at this time, (2) require further planning, or (3) proceed with implementation (see contingency response process below). A meeting will be held prior to the conclusion of this review period if requested by any one party.

Task 3. Meeting, Consultation, and Further Planning

Step 4--Consulted agencies or other entities identified by EPA and Simpson may be invited to attend contingency planning process meetings. Consulted agencies will be sent a memorandum by EPA summarizing the preliminary decision and requesting comments. A meeting will be held prior to a final decision if a consulted agency so requests.

Step 5--Meeting notices and agendas will specify that the meeting is part of the contingency planning process to determine the nature and timing of appropriate response actions necessary to address potential problems identified in the early warning process.

Step 6--The contingency planning proposal identified in Step 2 may be conceptual in nature. The precise technology, cost, timing, and other matters may be refined through a series of revisions, consultations, and meetings as part of further planning. The signatories of this decree may establish a schedule for completing the planning of a contingency response action under Step 3; however, Simpson must provide a detailed plan to EPA within 30 days of approval of the contingency planning proposal (Task 2, Step 3). Disagreement on the schedule will be handled through the dispute resolution process in the consent decree.

Task 4. Approvals for Contingency Planning Proposal

Step 7--Prior to the conclusion of the contingency planning process, EPA will issue a final determination as to the necessity and type of further remedial action required to be implemented by Simpson. EPA will also determine, after consultation with Simpson, whether permits, other approvals, or public participation are needed to implement the contingency planning proposal. Consulted agencies will be given an opportunity to review such decisions before EPA makes its final determination.

Step 8--If EPA deems it necessary, the PRPs will develop a more detailed implementation schedule for the contingency planning proposal, including reasonable time periods for any permits, approvals, public participation, or amendments to the consent decree. Simpson will draft the implementation schedule.

Step 9--EPA has 30 days to review the draft implementation schedule. EPA will not make a determination on a final schedule without prior consultation with Simpson and the consulted agencies, although EPA is the final decision-maker for accepting the schedule.

Step 10--Unless specifically prohibited by law, EPA will approve all facets of a contingency response action over which it has jurisdiction prior to requesting or requiring Simpson to seek any permits or other approvals.

Step 11--EPA and Simpson will initiate permit or approval processes in accordance with the implementation schedule. EPA will assist in obtaining any federal, state, or local permits or approvals. This process may occur prior to the contingency response process (below) if obtaining prior approvals is necessary or desirable to facilitate prompt contingency response action.

CONTINGENCY RESPONSE PROCESS

Task 1. Initiation

Step 1--The contingency response process will be initiated after the contingency planning process.

Task 2. Implementation

Step 2--Upon approval of the contingency response proposal, it is anticipated that the signatories to this decree will revise the consent decree by adding a description of the work to be performed and a schedule for implementing the approved proposal (contingency response action). The consent decree may be amended if appropriate under the amendment process set forth in the consent decree. Work will proceed according to the plans and schedules agreed to in previous tasks while the amendment is being drafted and signed by the agency and signatories.

Step 3--The contingency response plans, and implementation schedule and actions will become an enforceable part of this consent decree except as the decree may be amended under Step 2 above.

EXPEDITED REVIEW PROCESS

Task 1. Initiation

Step 1--The expedited review process may be initiated at any time in the contingency planning procedures. EPA will inform or notify the consulted agencies when this occurs.

Step 2--The signatories to this decree may initiate the expedited review process by submitting a written request to the other parties if a party reasonably believes that (1) the early warning process is unnecessary to commence contingency planning, (2) a release or threatened release of hazardous substances at much higher levels than the early warning triggers indicate has been discovered, (3) a previously unknown threat to human health or the environment is discovered, or (4) there is cause for concern about the adequate performance of the remedial action plan that the normal contingency planning procedures may not sufficiently address.

Step 3--In addition, any consulted agency; federal, state, or local agency with jurisdiction; Indian tribe, or citizen may request that EPA or Simpson consider initiating expedited review. EPA, in cooperation with Simpson, will establish a mailing list and inform persons on the list of the availability of any annual or semiannual reports submitted under this plan. If mutually agreed upon, this list may be combined with notification systems for other Commencement Bay or EPA program activities. EPA or Simpson may hold informal discussions with the requester to learn about or respond to the requester's concern. The request may be withdrawn at any time. Prior to initiating the expedited review process, EPA or Simpson will convene a meeting to discuss the request with the requester, EPA, Simpson, and any other agencies or entities identified by EPA and Simpson to discuss the request.

Task 2. Expedited Procedures and Planning Schedule

Step 4--In consultation with PRPS, EPA will determine whether to conduct an expedited early warning process (see Step 4 below) or whether to proceed directly to the contingency planning or contingency response procedures.

Step 5--Within 15 days of initiation of the expedited review process, the signatories to this decree will establish a schedule for accomplishing the steps set forth in the normal contingency planning procedures (expedited planning schedule). They may add or omit steps, or shorten the time periods

associated with particular steps. The schedule will allow reasonable time for Simpson to meet with EPA and WDNR and review any contingency response actions recommended by either agency. EPA will not approve an expedited planning schedule without prior consultation with Simpson and WDNR, including a meeting (if requested) and an opportunity to resort to the dispute resolution process in the consent decree.

Potentially appropriate responses include but are not limited to the actions noted above in response to early warning and detailed analyses, such as a focused remedial investigation or feasibility study.

Step 6--Disagreements will be resolved under the dispute resolution procedures, however, EPA may invoke the endangerment or other applicable provisions of the consent decree in order to take action to protect human health and welfare or the environment.

RELATED MATTERS

The consent decree makes the monitoring and contingency plan an enforceable part of the decree. Therefore, the terms and conditions of the consent decree apply to the implementation of the monitoring and contingency plan, as further specified in the decree.

Lack of specific and timely comment by a consulted agency or entity that is given the opportunity to consult or comment under this monitoring and contingency plan shall be construed as lack of objection.

Nothing in the consent decree or monitoring and contingency plan regulates or limits Simpson from voluntarily conducting additional monitoring, sampling, or contingency planning at its own expense beyond the requirements of the monitoring and contingency plan. These actions do not require consultation with EPA or other agencies or entities under the plan or consent decree.

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U.S. Environmental Protection Agency
Region 10
Seattle, Washington

Commencement Bay Nearshore/Tideflats
RECORD OF DECISION



September 1989

October 19, 1990

EXHIBIT C

SETTLEMENT AGREEMENT
BETWEEN
CHAMPION INTERNATIONAL CORPORATION, SIMPSON TACOMA KRAFT COMPANY,
WASHINGTON DEPARTMENT OF NATURAL RESOURCES
AND
THE COMMENCEMENT BAY NATURAL RESOURCE TRUSTEES
REGARDING
ST. PAUL WATERWAY NATURAL RESOURCE DAMAGE

I. PARTIES

This Agreement is by and between Champion International Corporation, the Simpson Tacoma Kraft Company (the Companies), the Washington Department of Natural Resources (DNR), and the Commencement Bay Natural Resource Trustees, consisting of: the Puyallup Tribe of Indians (Puyallup Tribe); the Muckleshoot Indian Tribe (Muckleshoot Tribe); the Washington Department of Ecology (WDOE) as lead State Trustee; the Washington Department of Natural Resources (WDNR); the Washington Department of Fisheries (WDF); the Washington Department of Wildlife (WDW); the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce; and the U.S. Department of the Interior (DOI). NOAA and DOI collectively constitute the federal Natural Resource Trustees.

II. RECITALS

A. Governmental Parties

The above governmental parties are Natural Resource Trustees (Trustees) under applicable federal, state and tribal law, and the Trustees enter into this Agreement in furtherance of their responsibilities to evaluate and, if appropriate, assert claims for damages to natural resources, including, but not limited to, the replacement and restoration of damaged resources and the recovery for lost use and non-use values of damaged resources.

Although not a Trustee or a party to this Agreement, the U.S. Environmental Protection Agency (EPA) has helped to coordinate the work of the Trustees and is the principal federal agency responsible for implementation of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. §9601-9675.

B. The Companies and DNR

The Companies are the past or present owner/operators of the paper mill on the St. Paul Waterway (Tacoma Kraft Mill). The State of Washington is the owner of and DNR manages the tidelands which are or have been under lease to the Companies. The State of

Washington represented by DNR, and the Companies, are potentially responsible parties (PRPs) under CERCLA.

C. Consent Decree

The Companies, DNR, the United States, on behalf of EPA and the federal Natural Resource Trustees, and the other Natural Resource Trustees on their own behalf have entered into a Consent Decree in the U.S. District Court for the Western District of Washington entitled "Commencement Bay Nearshore/Tideflats Superfund Site; St. Paul Waterway Problem Area Consent Decree" (Consent Decree). Except for the Funding and Participation Agreement attached as Enclosure No. 1, which is independent of the Consent Decree, this Agreement shall terminate when the Consent Decree is terminated in accordance with Section X below. This Agreement shall be Exhibit C to the Consent Decree being simultaneously executed by the Companies, EPA and Commencement Bay Natural Resource Trustees. Sections XVIII (Covenant Not to Sue), XIX (Reservation of Rights) and XXI (Effect of Settlement; Contribution Protection) of the Consent Decree are expressly incorporated into the terms of this Settlement Agreement by this reference.

D. Geographic Scope

This Agreement addresses the assessment, evaluation and restoration of the natural resources damaged in the St. Paul Waterway Problem Area. Enclosure No. 1 addresses the assessment of natural resource damages for the remainder of Commencement Bay. The St. Paul Waterway Problem Area is located within the Commencement Bay environment, in the State of Washington and the Puyallup Indian Reservation. The Commencement Bay environment includes, but is not limited to, the St. Paul Waterway Problem Area, as defined in the Consent Decree, the Commencement Bay Nearshore/Tideflats National Priority List (NPL) site, and the South Tacoma Channel NPL site.

E. Purpose

1. The Trustees intend to assess damages to injured natural resources in the Commencement Bay environment as provided for by CERCLA, the National Contingency Plan (NCP), 40 C.F.R. Part 300, and other applicable federal, state and tribal laws. The Trustees have not yet determined whether, or to what extent, they will follow or utilize the natural resource damage assessment regulations promulgated by the U.S. Department of the Interior at 43 CFR Part 11 for the Commencement Bay-wide natural resource damage assessment described in Section V.E below. Each Trustee acknowledges its trust responsibility to protect, restore and enhance natural resources within its jurisdiction or control.

2. The Companies and DNR seek to settle their potential liability to the extent possible, and with respect to natural resource damages, prefer to devote financial and other resources to actions that will restore and protect the environment and help protect and restore natural resources in the Commencement Bay environment in perpetuity.

3. The Trustees, Companies and DNR (Parties) recognize the importance of integrating and coordinating the assessment of natural resource damages with ongoing studies, remedial actions, enforcement and restoration activities in the Commencement Bay environment. The Funding and Participation Agreement, which is Enclosure No. 1 to this Agreement and is by this reference incorporated herein, is intended to establish a mechanism by which the Parties may coordinate and integrate their activities as a part of this Agreement.

4. The Parties recognize the value of the waters and resources of the Commencement Bay environment, including the Puyallup River, to the Trustees, in particular the Puyallup Tribe and the Muckleshoot Tribe, and the importance of these resources to the employees of the Tacoma Kraft Mill, as well as to the broader Puget Sound community. Toward that end they wish to recognize and account for the significant pollution control, habitat restoration and habitat enhancement actions already taken by the Companies at the Tacoma Kraft Mill and in the St. Paul Waterway Problem Area.

5. The Parties wish to establish, through this Agreement and the Enclosure hereto, a mechanism to coordinate their various activities regarding the restoration, rehabilitation and enhancement of natural resources of the Commencement Bay environment.

6. This Agreement and the enclosed Funding and Participation Agreement further the mutual goals and purposes of the Parties and address natural resource damage claims by:

(a) settling natural resources damage claims for the St. Paul Waterway Problem Area consistent with Section XVIII of the Consent Decree; and

(b) establishing a framework for cooperation and coordination among themselves and with other interested public and private entities regarding a Commencement Bay-wide natural resources damage assessment and restoration activities.

7. The Parties also wish to encourage other public and private entities to undertake cooperative cleanup activities and

habitat restoration and enhancement of the Commencement Bay environment.

III. AUTHORITY

This Agreement is entered into pursuant to the natural resource trustee provisions of Section 107(f) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 U.S.C. §9607(f); Section 311 of the Clean Water Act (CWA) as amended, 33 U.S.C. §1321 (except with regard to oil spill events occurring subsequent to July 1, 1990); the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Subpart G, 40 CFR §§300.600 - 300.615 (55 Federal Register 8666, 8813, 8857, March 8, 1990); and other applicable federal, state and tribal law. The following officials or their designees act on behalf of the public as State, Federal and Tribal Trustees for natural resources under this Agreement:

- * The Director of the Department of Ecology for the State of Washington, as lead State Trustee, the Commissioner of the Department of Natural Resources, the Director of the Department of Wildlife and the Director of the Department of Fisheries;
- * The Tribal Council, or its designee, for the Puyallup Tribe of Indians;
- * The Tribal Council, or its designee, for the Muckleshoot Tribe;
- * The Secretary of the Interior; and
- * The Under Secretary for Oceans and Atmosphere, Administrator of the National Oceanic and Atmospheric Administration, acting on behalf of the Secretary of Commerce.

IV. SCOPE

This Agreement shall cover natural resources as defined under Section 101(16) of CERCLA, as amended, 42 U.S.C. §9601 et seq., belonging to, managed by, controlled by, or appertaining to the Trustees under CERCLA, the NCP, and other applicable federal, state and tribal law in the St. Paul Waterway Problem Area. The Agreement also relates, as noted herein, to the Commencement Bay environment, in the State of Washington and the Puyallup Indian Reservation, which is that area described in Section II.D above.

WHEREFORE in consideration of the mutual promises set forth below, the Parties agree as follows:

V. TERMS AND CONDITIONS

A. Summary of Payments Made by Companies and Consideration Provided by DNR

1. Companies. The Companies shall pay the Trustees FIVE HUNDRED THOUSAND AND NO/100S DOLLARS (\$500,000) after the effective date of this Agreement in accordance with Section V.B.2 below. This payment shall be in compensation for and in settlement of claims for damages in the St. Paul Waterway Problem Area to natural resources owned, managed, or controlled by the Trustees. In addition, the Companies shall pay the Trustees ONE HUNDRED THOUSAND DOLLARS AND NO/100S (\$100,000) after the effective date of this Agreement in accordance with Section V.C.2 below, in compensation for and settlement of the claims of the Trustees against the Companies for past oversight and investigation costs incurred by the Trustees with respect to the St. Paul Waterway Problem Area. Payments under this paragraph shall be made by certified or cashier's check, payable to and to be deposited in an account or accounts established under the Restoration Project Trust Fund described in Section V.B below.

2. Department of Natural Resources.

(a) The Washington Department of Natural Resources (DNR) shall, with the use of funding not previously dedicated for such use(s), undertake an expedited review of state-owned aquatic lands in the Commencement Bay environment, with particular regard to lands in or near the St. Paul Waterway and the Puyallup River, which are available and appropriate for habitat restoration. The Trustees shall be provided an opportunity to work with DNR and to provide DNR information such as scientific data and habitat criteria which DNR shall consider in selecting lands for habitat restoration projects. The Trustees shall use their best efforts to provide this information by December 15, 1990 and DNR shall use its best efforts to complete this review by January 31, 1991. Upon completion of this review, DNR shall:

- (1) Identify those properties that have a high value for natural resource habitat restoration, and are either immediately available for lease or are subject to lease renewal within thirty six (36) months of the effective date of this Agreement. In addition, this review will identify properties that have a high value for natural resource habitat restoration purposes that will subsequently become available.

- (2) Offer selected state-owned aquatic lands to the Trustees for the natural resource restoration project(s) referred to in Section V.B.3(b). The Natural Resource Trustees, in consultation with DNR, may select the lands necessary for the successful implementation of the restoration project or projects.
- (3) Attempt to determine, by mutual agreement with the Trustees, the economic value established for state-owned aquatic lands identified by the Trustees and DNR. If DNR and the Trustees cannot agree on the value of the state-owned aquatic lands within thirty (30) days, the value shall be determined by the procedure set forth in this paragraph (Section V.A.2(a)(3)). The Parties agree that the value established by this procedure shall be final, and there shall be no further review or appeal. The procedure shall be as follows. Within thirty (30) days, the Trustees and DNR shall each retain or select a qualified real estate appraiser to determine the value of the property selected. Within sixty (60) days thereafter, the two appraisers shall attempt in good faith to reach agreement on the value of the selected lands. If the appraiser selected by DNR and the appraiser selected by the Trustees cannot agree, then the two appraisers shall within thirty (30) days select a third appraiser. This third appraiser shall determine within thirty (30) days which of the two appraisals most closely approximates the value of the selected property, and he or she shall select that appraisal value as the value of the selected lands. All appraisers retained or selected shall be competent, impartial and members of the American Institute of Real Property Appraisers (or successor association or body of comparable standing).
- (4) Continue to work together with the Trustees even if the Trustees do not select state-owned aquatic lands for the restoration project or projects, and attempt to identify other services and/or lands that could be made available to enable DNR to satisfy the requirements of this Agreement. The lands made available by DNR will be considered by the Trustees for other Commencement Bay habitat restoration projects.

(b) The economic value of DNR's services expended in this administrative review and applied as a credit toward the total consideration provided by DNR pursuant to this Agreement shall not exceed FORTY THOUSAND AND NO/100S DOLLARS (\$40,000.00). The economic value of consideration provided by DNR pursuant to this

Agreement, inclusive of DNR's services and the state-owned properties identified in accordance with Section V.A.2(a)(2) above, for habitat restoration project(s) purposes, shall have a cumulative economic value of not less than TWO HUNDRED THOUSAND AND NO/100S DOLLARS (\$200,000). None of the consideration provided by DNR in its capacity as a PRP to the Trustees pursuant to Section V.A.2 of this Agreement shall be reimbursed as either a past or future Trustee response cost under the terms of this Agreement.

(c) If the total economic value of the consideration provided by DNR to the Trustees pursuant to this Agreement exceeds TWO HUNDRED THOUSAND AND NO/100S DOLLARS (\$200,000), then the economic value of the consideration provided by DNR in excess of TWO HUNDRED THOUSAND AND NO/100S DOLLARS (\$200,000) shall be credited to DNR's liability, if any, for Commencement Bay-wide natural resource damages. If the Trustees do not select lands offered by DNR, then the value of DNR's services expended in the administrative review up to the ceiling amount identified above (\$40,000.00) shall be credited toward the \$200,000.00 liability attributed to DNR for natural resource damages associated with the St. Paul Waterway Problem Area.

(d) Properties to be made available by DNR pursuant to this Agreement for natural resource restoration project(s) shall be made available to the Trustees by means of either a long term renewable lease to the Trustees at a rental cost of ONE AND NO/100S DOLLARS (\$1.00) per year, or by such other mechanism available to DNR and acceptable to the Trustees that will result in the long-term use of the property for natural resource habitat restoration project(s) purposes.

(e) The Trustees' covenant not to sue DNR for natural resource damages in the St. Paul Waterway Problem Area, set forth in Section XVIII of the Consent Decree, shall not take effect until: (1) DNR completes the administrative review and identification of the properties referenced in Section V.A.2(a); and (2) the Trustees' acceptance of DNR's written commitment to make selected property (properties) available to the Trustees for natural resource habitat restoration project purposes.

B. Establishment of Restoration Project Trust Fund

Pursuant to Section V.B.1 below, the Trustees shall establish the Restoration Project Trust Fund. The Parties recognize that the Restoration Project Trust Fund may consist of more than one account, in accordance with applicable law, and that such determination will be made as soon as possible after the effective date of this Agreement and communicated in writing to the Companies in accordance with Section V.B.2 below.

1. Establishment of Account. Within ten (10) working days of the effective date of the Consent Decree, the Trustees shall use their best efforts to establish the Commencement Bay Restoration Project Trust Fund (which Fund may consist of more than one account) for the Trustees' use to fund a restoration project (or projects) in the Commencement Bay environment and to provide an initial short-term means of enhancing the Trustees' institutional capability to work with the Companies and other interested entities in protecting the Commencement Bay environment and discharging the Companies' CERCLA liability for past St. Paul Waterway Problem Area near-shore natural resource damages. The location of the account or accounts shall be established by the Trustees and identified to the Companies in writing.

2. Funding Mechanism. The Companies, as provided for in Section V.A.1 above, shall contribute FIVE HUNDRED THOUSAND AND NO/100S DOLLARS (\$500,000) to fund the Restoration Project Trust Fund. The FIVE HUNDRED THOUSAND AND NO/100S DOLLARS (\$500,000) shall be paid to the Trustees within ten (10) working days after the Trustees provide the Companies with written notice of the establishment of the Restoration Project Trust Fund Account and other relevant and necessary information. The Companies shall deliver certified or cashier's check or checks payable to the account or accounts established by the Trustees. The Companies shall be obligated to make the payment(s) required under this Section and under Sections V.C.2(a) or (b) below within ten (10) working days after the Trustees have provided written notification to the Companies of the identification of such account(s) and instructions for drafting of such checks. The principal amount of the Restoration Project Trust Fund is to be used for the sole purpose of implementing a habitat restoration project or projects in the Commencement Bay environment. The Companies also wish to utilize this process to obtain appropriate public recognition of their efforts toward restoration of habitat and other natural resources in the Commencement Bay environment, and the initial funding provided by the Companies may be augmented by future PRP contributions. As further defined in the Funding and Participation Agreement, it is anticipated that the Trustees and Companies will meet regularly to discuss work to be performed in the Commencement Bay environment.

3. Trustees' Use. The Restoration Project Trust Fund shall be utilized by the Trustees in their sole discretion as follows: the Trustees may use any interest earned on the principal amount in trust fund for the purposes set forth in Section V.B.3(a)-below; and the Trustees in their sole discretion may invade and allocate some or all of the interest earned and shall use all of the principal of the trust fund at any time for the purposes set forth

in Section V.B.3(b) below. Such discretionary allocation by the Trustees shall not obligate the Companies to make additional contributions to the Restoration Trust Fund.

(a) The Trustees may establish either a temporary or permanent full or part time professional position to work for the Trustees and further the work of the Trustees in the Commencement Bay environment.

(b) The Trustees shall establish one or more natural resource restoration projects in the Commencement Bay environment. It is the intent of the Trustees that the restoration project or projects be developed under an MOA or cooperative agreement between the Trustees and Companies (which may include DNR). The restoration project(s) shall be selected from among a range of alternatives identified by the Trustees in consultation with the Companies. This process may involve other interested entities, e.g. EPA, Corps of Engineers, in order to ensure that the restoration project(s) will enhance the natural resources of the Commencement Bay environment. If after good faith negotiations the Parties are unable to agree, The Trustees reserve the right to proceed with restoration project(s).

C. Payment of Trustee Response Costs

1. Purpose. Reimburse the Trustees for their past and future governmental response/oversight costs associated with the near-shore St. Paul Waterway Problem Area natural resource damages claim.

2. Funding Mechanism.

(a) Past Costs. The Companies shall deliver ONE HUNDRED THOUSAND AND NO/100S DOLLARS (\$100,000) in certified or cashier's checks, as provided for by Section V.A.1 and Section V.B.2 above, to the entity identified in writing by the Trustees to reimburse the Trustees for their Near-shore/Tideflats St. Paul Waterway Problem Area Natural Resource Damage Claim governmental response/oversight costs incurred through entry of the Consent Decree (Past Costs). The Trustees in their sole discretion shall allocate this payment among Trustees for reimbursement of such Trustees' past governmental response/oversight costs. If the Trustees find that they have incurred Past Costs in an amount greater than \$100,000, they may, in their sole discretion, seek such Past Costs from other potentially responsible parties which have not signed

this Agreement, and by entering into this Agreement do not waive any rights against such parties. If the Trustees find that they have incurred Past Costs in an amount less than \$100,000, the unused portion of the Past Costs shall be allocated to future governmental response/oversight costs with respect to the St. Paul Waterway Problem Area, and shall be in addition to the SEVENTY-FIVE THOUSAND AND NO/100S DOLLARS (\$75,000.00) in future costs set forth in Section V.C.2(b)(i) below.

(b) Future Costs. The Companies shall reimburse the Trustees by certified or cashier's checks, as provided for by Section V.B.2 above, to the entity identified in writing by the Trustees for the Trustees' future governmental response/oversight costs for natural resource damages claims with respect to the St. Paul Waterway Problem Area incurred after entry of the Consent Decree (Future Costs) up to a total amount of SEVENTY-FIVE THOUSAND AND NO/100S DOLLARS (\$75,000). The Trustees shall submit written requests for reimbursement of Future Costs on a semiannual basis, with the first such request to be submitted six (6) months after the effective date of this Agreement and thereafter at six (6) month intervals, until the Companies have paid a total of \$75,000. Allocation of the Trustees' future governmental response/oversight costs will be at the discretion of the Trustees.

(c) Total Cost. Total cost to the Companies for the Trustees' Past Costs and the Trustees' Future Costs shall not exceed ONE HUNDRED SEVENTY-FIVE THOUSAND AND NO/100S DOLLARS (\$175,000), payable by the Companies as specified above.

D. Trustee Accounting

The Trustees agree to implement an accounting mechanism to track expenditures from the Restoration Project Trust Fund using the "EPA Guidance for Federal Agencies on Superfund Financial Management and Recordkeeping" (EPA/220/M-89/001, January 1989), to the extent that the EPA Guidance is consistent with the Trustees' respective accounting practices. Bimonthly accounting reports will be available for inspection by the Companies and other PRPs and members of the public.

E. Commencement Bay-wide Natural Resource Assessment

1. Participacion. The Companies have requested an opportunity to participate in the ongoing Commencement Bay-wide Natural

Resource Assessment to be undertaken by the Trustees. The Trustees support this concept and all parties understand that the potential CERCLA liability of the Companies and DNR for Commencement Bay-wide natural resource damages is not addressed by this Agreement and is specifically excluded from the scope of the covenant not to sue in the foregoing Consent Decree. No party to this Agreement waives any defense or remedy they may have regarding the Bay-wide Assessment and natural resource damages.

2. Purpose. The Trustees shall conduct a Commencement Bay-wide Natural Resource Assessment as is further described in Section V.E.3 below.

3. Mechanism. A Funding and Participation Agreement for the Commencement Bay-wide Natural Resource Damage Assessment (Funding and Participation Agreement) has been executed concurrently with this Agreement by the Trustees, DNR and the Companies, a copy of which is attached as Enclosure No. 1. The Funding and Participation Agreement provides for the establishment of a Commencement Bay Natural Resource Trust Account (NRT Account) for the purpose of partially funding future damage assessment activities conducted by Trustees in Commencement Bay. The Funding and Participation Agreement is independent of the Consent Decree and the settlement of natural resource damages with respect to the St. Paul Waterway Area. Participation by the Companies and DNR is defined by the Funding and Participation Agreement and is not governed by the terms and conditions of the Consent Decree except as specifically provided for in that Agreement.

VI. TOLLING OF TIME LIMITATIONS

Any time limitations set forth in Section 113(g) of CERCLA, as amended, 42 U.S.C. 9613(g), respecting claims for natural resource damages against the Companies or DNR or any other time limitations for the filing of natural resource damage claims against the Companies or DNR under any other applicable federal, state or tribal law, are tolled in their entirety until one hundred forty-five (145) days after the expiration of this Agreement. This provision does not apply to any claims for natural resource damages that are presently barred by the applicable statutes of limitations or other law as of the effective date of this Agreement.

VII. TEMPORARY STAY ON TRUSTEE ENFORCEMENT

For a period of nine (9) months, commencing on October 1, 1990 and except as provided for herein, the Trustees agree that they will not issue notice letters to any person or other entity with respect to natural resource damage claims of any Trustee for natural resource damages alleged to have occurred within the

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Commencement Bay Nearshore/Tideflats NPL Site. The purpose of this temporary stay period is to allow the Companies, DNR, and any other participating PRPs an opportunity to obtain participation of additional PRPs in the funding of the Plan and Assessment. At the end of the initial nine (9) month period, if the Trustees determine that the Companies have made substantial progress in obtaining such participation and that an additional temporary stay period on notice letters, not to exceed six (6) months, may result in further participation by additional PRPs, the Trustees may in their sole discretion agree to such extension. Furthermore, the Parties shall work together to provide for such further stays as may be appropriate to further the goals and purposes of this Agreement. The Trustees reserve the right to issue notice letters in conjunction with special notice letters issued by EPA under Section 122 of CERCLA, 42 U.S.C. Section 9622, when they deem it necessary to facilitate negotiations with respect to the natural resource damage matters. Additionally, the Trustees agree subsequent to the issuance thereof to provide copies of such notice letters to the Companies.

VIII. COMMUNICATIONS

Written communications among the Parties to this Agreement shall be addressed to their representatives identified below. EPA shall also be provided with all written communications required under this Agreement.

TRUSTEES

State of Washington

Fred Gardner
Department of Ecology
Rowe Six, Building 4
4224 6th Avenue S.E.
Lacey, Washington 98503

Tom Mumford
Washington Department of Natural Resources
Division of Aquatic Lands
900 47th Avenue N.E.
Olympia, Washington 98506

John Carleton
Washington Department of Wildlife
600 Capital Way N.
Olympia, Washington 98501-1091

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Thom Hooper
Washington Department of Fisheries
115 General Administration Building
Olympia, Washington 98504

Puyallup Tribe of Indians

Mr. Bill Sullivan, Director
Environmental Programs
The Puyallup Tribe of Indians
2002 East 28th Street
Tacoma, Washington 98404

Richard A. Du Bey
Special Environmental Counsel
Puyallup Tribe of Indians
The Du Bey Law Firm
3110 Bank of California Center
Seattle, Washington 98164-1002

Muckleshoot Indian Tribe

Morgan Bradley
Muckleshoot Tribe
39015 172nd Avenue S.E.
Auburn, Washington 98002

Robert Otsea
Tribal Attorney
Muckleshoot Tribe
39015 172nd Avenue S.E.
Auburn, Washington 98002

U.S. Department of the Interior

Charles Polityka
Regional Environmental Office
Department of the Interior
1002 N.E. Holladay, Suite 354
Portland, Oregon 97232-4181

Don Kane
U.S. Fish and Wildlife Service
Division of Ecological Services
2625 Parkmont Lane S.W., Building B-3
Olympia, Washington 98502

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Ron Eggers
Bureau of Indian Affairs
Portland Area Office
P.O. Box 3785
Portland, Oregon 97208

Barry Stein
Office of the Regional Solicitor
500 N.E. Multnomah, Suite 607
Portland, Oregon 97232

The National Oceanic and Atmospheric Administration

Chris Mebane
Coastal Resources Coordinator
NOAA, c/o EPA Region X, (HW-113)
1200 Sixth Avenue
Seattle, Washington 98101

Craig O'Connor
Senior Counsel
National Oceanic and Atmospheric Administration
Office of General Counsel, GCNW
7600 Sandpoint Way N.E., BIN C15700
Seattle, Washington 98115

Environmental Protection Agency

Lori Cohen
Remedial Project Manager
Superfund Branch (HW-113)
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

Allan Bakalian
Assistant Regional Counsel
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

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THE COMPANIES AND DNR

Champion International

James Carraway
Senior Manager, Special Projects
Environmental Affairs
Champion International Corporation
One Champion Plaza
Stamford, CT 06921

Simpson Tacoma Kraft Company

Dave McEntee
Environmental Manager
Simpson Tacoma Kraft Company
P.O. Box 2133
Portland Avenue
Tacoma, Washington 98401

Edward J. Reeve
Senior Counsel
Simpson Tacoma Kraft Company
1201 Third Avenue, Suite 4900
Seattle, Washington 98101-3009

Kenneth S. Weiner
Preston, Thorgrimson, Shidler, Gates & Ellis
5400 Columbia Center
Seattle, Washington 98104-7011

State of Washington
Department of Natural Resources

Ann Morgan
Manager, Division of Aquatic Lands
Washington Department of Natural Resources
John Cherberg Building, M/S QW-21
Olympia, Washington 98504

Christa L. Thompson
Office of the Attorney General
Highway License Building, 7th floor
Olympia, Washington 98504

IX. GENERAL MATTERS

A. Except for matters provided for herein, this Agreement in no way affects or relieves the Companies or DNR from their responsibility to comply with, nor does it impair the Trustees' ability to enforce, any applicable federal, state or tribal law, administrative order, regulation, or permit.

B. It is the intent of the Parties that the clauses of this Agreement are severable, and should any part of this Agreement be declared by a court of competent jurisdiction to be invalid, the other parts of this Agreement shall remain in full force and effect.

C. All modifications of this Agreement shall be in writing and executed by all the Parties.

D. This Agreement can be executed in one or more counterparts, all of which will be considered the original document.

E. The Parties shall not disclose nor seek the disclosure in any state or federal judicial proceeding, except to enforce these Agreements, of settlement and compromise negotiations leading to this Agreement, including Enclosure No. 1, be they between the Parties hereto or between the Trustees and other potentially responsible parties.

X. TERM

The effective date of this Agreement shall be the date on which the Consent Decree is entered by the Court, except as may be otherwise provided for in the Consent Decree. Except for the Funding and Participation Agreement attached hereto as Enclosure No. 1, this Agreement shall terminate in the same manner as the Consent Decree in accordance with Section XXXII thereof. Accordingly, after EPA determines that compliance with "Performance of the Work" (Consent Decree Section VII) is no longer required in order to assure that the sediment remedial action remains protective of human health and the environment, this Agreement shall terminate upon Order of this Court issued pursuant to the Consent Decree. Termination of this Agreement shall not affect the following provisions of the Consent Decree: the "Covenant Not to Sue" (Consent Decree Section XVIII); the "Reservation of Rights" (Consent Decree Section XIX); and the "Effect of Settlement; Contribution Protection" (Consent Decree Section XXI). Termination of this Agreement shall not affect the status of any Funding and Participation Agreement then in existence among the Parties including that attached as Enclosure No. 1.

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XI. PARTIES BOUND

The provisions of this Agreement shall apply to and be binding upon the Parties to this Agreement, their agents, successors and assigns. The undersigned representative of each party certifies that he or she is fully authorized by the party or parties whom he or she represents to enter into this Agreement and to bind that party to it.

St. Paul Waterway NRD
Settlement Agreement
October 19, 1990
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IN WITNESS WHEREOF, the Parties have signed this Agreement on
the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice on behalf of
the federal Natural Resource Trustees

DATED

THE COMPANIES AND INR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

Fred Olson
State of Washington

Dec. 10, 1990
DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice on behalf of
the federal Natural Resource Trustees

DATED

THE COMPANIES AND DNR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

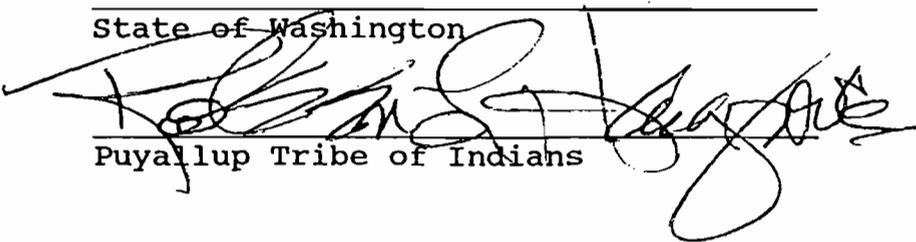
DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED



Puyallup Tribe of Indians

DATED

10-19-90

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice on behalf of
the federal Natural Resource Trustees

DATED

THE COMPANIES AND DNR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

DATED

Virginia Cross

Muckleshoot Indian Tribe

3-28-91

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice on behalf of
the federal Natural Resource Trustees

DATED

THE COMPANIES AND INR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington
DATED

Puyallup Tribe of Indians
DATED

Muckleshoot Indian Tribe
DATED

Charles N. Eher

National Oceanic and Atmospheric Administration
11/15/90
DATED

U.S. Department of Justice on behalf of the federal Natural Resource Trustees
DATED

THE COMPANIES AND DNR

Champion International
DATED

Simpson Tacoma Kraft Company
DATED

State of Washington
Department of Natural Resources
DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

Richard Brown

10-5-91

U.S. Department of Justice on behalf of
the federal Natural Resource Trustees

DATED

THE COMPANIES AND ENR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington,
Department of Natural Resources

DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

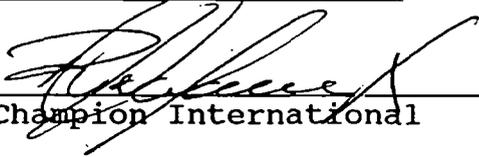
National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice on behalf of
the federal Natural Resource Trustees

DATED

THE COMPANIES AND DNR



Champion International

10/27/90

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

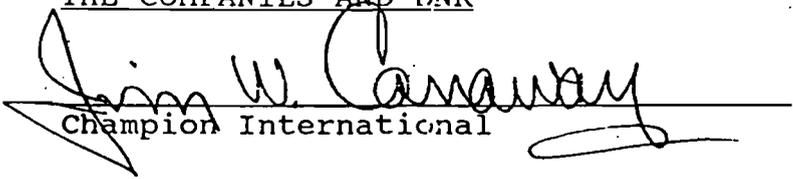
National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice on behalf of
the federal Natural Resource Trustees

DATED

THE COMPANIES AND CNR



Champion International

1-7-90

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice on behalf of
the federal Natural Resource Trustees

DATED

THE COMPANIES AND DNR

Champion International

DATED

4


Simpson Tacoma Kraft Company
VICE PRESIDENT & CHIEF FINANCIAL OFFICER

October 24, 1990
DATED

State of Washington
Department of Natural Resources

DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice on behalf of
the federal Natural Resource Trustees

DATED

THE COMPANIES AND DNR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

James N. Stearns

State of Washington
Department of Natural Resources

10-26-90

DATED

October 19, 1990

ENCLOSURE No. 1

**FUNDING AND PARTICIPATION AGREEMENT
FOR
THE COMMENCEMENT BAY-WIDE
NATURAL RESOURCE DAMAGE ASSESSMENT**

I. PARTIES

This Agreement is by and between Champion International Corporation and the Simpson Tacoma Kraft Company (the Companies); the Washington Department of Natural Resources (DNR); and the Commencement Bay Natural Resource Trustees, consisting of: the Puyallup Tribe of Indians (Puyallup Tribe); the Muckleshoot Indian Tribe (Muckleshoot Tribe); the Washington Department of Ecology (WDOE) as lead State Trustee; the Washington Department of Natural Resources (WDNR); the Washington Department of Fisheries (WDF); the Washington Department of Wildlife (WDW); the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce; and the U.S. Department of the Interior. This Agreement is intended to serve the common interests of the Trustees and the Companies and to evaluate natural resource damages (Assessment Plan) in accordance with Section IV.B of this Agreement.

II. RECITALS

A. Consent Decree

The Companies, DNR, the United States on behalf of EPA and the federal Natural Resource Trustees, and the other Natural Resource Trustees have entered into a Consent Decree in the U.S. District Court for the Western District of Washington entitled "Commencement Bay Nearshore/Tideflats Superfund Site; St. Paul Waterway Problem Area Consent Decree" (Consent Decree). This Funding and Participation Agreement is independent of the Consent Decree and is not governed by its terms and conditions except as specifically provided herein.

B. Governmental Parties

The above governmental parties are Natural Resource Trustees (Trustees) under applicable federal, state and tribal law, and the Trustees enter into this Agreement in furtherance of their responsibilities to evaluate and, if appropriate, assert claims for

damages to natural resources, including, but not limited to, the replacement and restoration of damaged resources and the recovery for lost use and nonuse values of damaged resources.

C. The Companies and DNR

The Companies are the past or present owner/operators of the paper mill on the St. Paul Waterway (Tacoma Kraft Mill). The State of Washington is the owner of tidelands which are or have been under lease to the Companies and DNR manages these tidelands on behalf of the State. DNR and the Companies are potentially responsible parties (PRPs) under CERCLA.

D. Geographic Scope

This Agreement addresses the assessment, evaluation and restoration of natural resource damages in the Commencement Bay environment, in and around the State of Washington and the Puyallup Indian Reservation. The Commencement Bay environment includes, but is not limited to, the Commencement Bay Nearshore/Tideflats National Priority List (NPL) site, and the South Tacoma Channel NPL site.

E. Purpose

1. The Trustees intend to assess damages to injured natural resources in the Commencement Bay environment as provided for by CERCLA, the National Contingency Plan (NCP), 40 C.F.R. Part 300, and other applicable federal, state and tribal laws. The Trustees have not yet determined whether or to what extent they will follow or utilize the natural resource damage assessment regulations promulgated by the U.S. Department of the Interior at 43 CFR Part 11. Each Trustee acknowledges its trust responsibility to protect, restore and enhance natural resources within its jurisdiction or control.

2. The Companies and DNR seek to settle their potential liability to the extent possible, and with respect to natural resource damages, prefer to devote financial and other resources to actions that will restore and protect the environment and help protect and restore natural resources in the Commencement Bay environment in perpetuity.

3. The Trustees, Companies and DNR (Parties) recognize the importance of integrating and coordinating the assessment of natural resource damages with ongoing studies, remedial actions, enforcement and restoration activities in the Commencement Bay environment. One purpose of this Funding and Participation Agreement is to establish a mechanism for such integration so that

the Parties may coordinate their activities as a part of this Agreement.

4. The Parties also wish to encourage other public and private entities to undertake cooperative clean up activities and habitat restoration and enhancement of the Commencement Bay environment and to contribute to the natural resource damage assessment. It is the Parties' intent to develop a framework sufficiently definite to reflect their commitment to a cooperative approach and sufficiently flexible to accommodate additional participants and experience gained in the assessment process.

III. AUTHORITY

This Agreement is entered into pursuant to the natural resource trustee provisions of Section 107(f) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. Section 9607(f); Section 311 of the Clean Water Act (CWA) as amended, 33 U.S.C. Section 1321 (except with regard to oil spill events occurring subsequent to July 1, 1990); the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), Subpart G, 40 CFR Sections 300.600-300.615 (55 Federal Register 8666, 8813, 8857, March 8, 1990); and other applicable federal, state and tribal law. The following officials and their designees act on behalf of the public as state, federal and tribal trustees for natural resources under this Agreement:

- * The Director of the Department of Ecology for the State of Washington as lead State Trustee and the Commissioner of the Department of Natural Resources, the Director of the Department of Wildlife and the Director of the Department of Fisheries;
- * The Tribal Council, or its designee, for the Puyallup Tribe of Indians;
- * The Tribal Council, or its designee, for the Muckleshoot Tribe of Indians;
- * The Secretary of the Interior; and
- * The Undersecretary for Oceans and Atmosphere, Administrator of the National Oceanic and Atmospheric Administration, acting on behalf of the Secretary of Commerce.

WHEREFORE, in consideration of the mutual promises set forth below, the parties agree as follows:

IV. TERMS AND CONDITIONS

A. Commencement Bay Environment Natural Resource Trust Account

Pursuant to Section IV.A.1 below, the Trustees shall establish the Natural Resource Trust Account (NRT Account). The parties recognize that the NRT Account may consist of more than one account, in accordance with applicable law, and that the Trustees will make a determination regarding the creation and management of the NRT Account as soon as possible after the effective date of this Agreement. Pursuant to Section IV.A.2 below, the Trustees shall promptly notify the Companies with respect to the establishment of the NRT Account.

1. Establishment of Account. Within ten (10) working days of the effective date of the Consent Decree, the Trustees shall use their best efforts to establish the Commencement Bay Environmental NRT Account for the Trustees' use to fund the Commencement Bay natural resource damages assessment activities further defined by Section IV.B below, and to reimburse the Trustees' costs for such activities. The location of the account shall be established by the Trustees and identified in writing to the Companies.

2. Payments by Companies. The Companies shall make payment to the Trustees as follows:

a. Within ten (10) working days after the Trustees provide the Companies with written notice of the establishment of the NRT Account, the Companies shall deposit ONE HUNDRED THOUSAND AND NO/100S DOLLARS (\$100,000) into the NRT Account, by certified or cashiers' check or checks payable to the specific account or accounts established by the Trustees. The primary purpose of this payment is to fund a technical study related to the Bay-wide Assessment process. The Trustees agree that not more than twenty percent (20%) of this payment may be used to reimburse Trustee management costs associated with the Assessment process.

b. The Companies shall use their best efforts to assist the Trustees in obtaining broad-based PRP funding participation for the remaining costs of the Assessment. Accordingly, the Companies shall pay to the Trustees an additional TWENTY-FIVE THOUSAND AND NO/100S DOLLARS (\$25,000) for deposit in the NRT Account during their first year of participation, if additional PRP funding toward the Commencement Bay-wide Assessment in an amount of TWO HUNDRED FIFTY THOUSAND AND NO/100S DOLLARS (\$250,000) (beyond the Companies' \$100,000 payment) is not obtained within twelve (12) months of the effective date of the Consent Decree.

c. If the Companies meet the TWO HUNDRED FIFTY THOUSAND AND NO/100S DOLLARS (\$250,000) funding goal set forth in Section IV.A.2(b) above, then a nonrefundable sum of TWENTY-FIVE THOUSAND AND NO/100S DOLLARS (\$25,000) of the Companies' FIVE HUNDRED THOUSAND AND NO/100S DOLLARS (\$500,000) allocation provided for by the Settlement Agreement shall be deemed a credit toward any natural resource damage liabilities of the Companies in the event that the Companies are determined to be responsible for Bay-wide natural resource damages.

3. Use of NRT Account by Trustees

a. The Parties agree that the funds contributed by the Companies and other PRPs to the NRT Account shall be used to prepare the Assessment Plan described in Section IV.B below and to fund other costs incurred by the Trustees with regard to activities related to the preparation of the Assessment Plan.

b. All disbursements and expenditures from the NRT Account must be authorized by the Trustees. The Trustees agree to implement an accounting mechanism to track expenditures from the NRT Account using the "EPA Guidance for Federal Agencies on Superfund Financial Management Recordkeeping" (EPA/220/M-89/001, January 1989), to the extent that the EPA Guidance is consistent with the Trustees' respective accounting practices. Bimonthly accounting reports will be available for inspection by the Companies, DNR, other PRPs and members of the public.

4. Additional Contributions to the NRT Account

a. The Parties recognize that additional funds will be necessary to complete the Assessment Plan, to fund other costs related to preparation of the Assessment Plan, to complete the damage assessment and to pay the costs incurred by the Trustees with regard to such activities. Accordingly, on an annual basis, the Trustees may request that the Companies provide additional funds to the NRT Account.

b. The Companies agree to give any such requests prompt consideration, but are not bound to act favorably upon such requests. For purposes of this Agreement, prompt consideration shall mean a written response made within thirty (30) days of the Companies' receipt of the Trustees' written request for additional funds. If the Companies do not respond within thirty (30) days of the request, they shall be deemed to have rejected the request.

c. The Companies' continued participation in this Agreement beyond the initial one year period following the effective date of the Consent Decree shall be conditioned upon each of the Companies' making annual contributions to the NRT Account in an amount to be agreed upon between the Companies and the Trustees.

5. Surplus Funds in the NRT Account

Unless otherwise agreed to between the Companies and the Trustees, within sixty (60) days of the Companies' receipt of the Trustees' approved Assessment Plan, any unobligated funds in the NRT Account provided by the Companies (except for those funds held by the United States) shall be returned to the Companies. If the Trustees and the Companies agree to implement the Assessment Plan within the sixty (60) day period, remaining unobligated funds shall be applied to the costs of implementing the Assessment Plan.

B. Administration of the Natural Resource Damage Assessment Plan

1. Coordinating Committee

a. In order to advance the purposes of this Agreement, and in exchange for the mutual considerations contained in this Agreement, the Parties agree to establish a Coordinating Committee. The Coordinating Committee shall consist of the Trustees, one PRP representative from each of the Companies, one PRP representative from DNR, and one representative from each other PRP that executes a Funding and Participation Agreement with the Trustees. Each representative may bring such advisors as they deem appropriate. Except for DNR, PRP membership on the Coordinating Committee shall be based upon their continued agreed annual contributions to the natural resource damage assessment process.

b. It is the Parties' desire to establish a functioning NRD Working Group. The PRP members of the Coordinating Committee shall select a number of their members, including representatives from the Companies and DNR, who are willing to commit their time and resources to work with the Trustees on an NRD Working Group. The PRP representatives on the NRD Working Group and the Trustees or the Trustees' designees on the NRD Working Group will work together in good faith to identify issues, develop recommendations, and facilitate coordination among the members of the Coordinating Committee in the implementation of this Funding and Participation Agreement. It is the intent of the Parties that the NRD working group be of manageable size and function in a cost-effective manner in furthering the purposes of this Agreement.

2. It is understood that the Trustees retain the right to make all final decisions with regard to the discharge of their duties under CERCLA and other applicable law. In the discharge of their fiduciary responsibilities, the Trustees shall act in good faith and as a coordinated group in working with the PRP members of the Coordinating Committee and the PRP representatives on the NRD Working Group in the Trustees' preparation (through the Trustees' own personnel and any contractors, and/or any other participant under the direction and/or control of the Trustees) of a scope of work (SOW) for the plan of study and evaluation of natural resource damages in the Commencement Bay environment (the Assessment Plan or the Plan). At a minimum, the PRP members of the Coordinating Committee and the PRP representatives on the NRD Working Group shall have an opportunity to participate in the development of the SOW and the Plan as provided for in 43 CFR Section 11.32. In addition, PRP involvement shall include but is not necessarily limited to participation in:

a. The selection of membership on any technical panel that may be established by the Trustees with respect to the SOW or the Plan.

b. The development of any request for proposals (RFP) for the SOW and the Plan that the Trustees may prepare.

c. The identification and selection of consultant(s) or contractor(s) that the Trustees may retain to develop the SOW and the Plan.

d. The review and comment upon nonconfidential or nonprivileged progress reports and other interim deliverables produced by the Trustees' consultant(s) or contractor(s).

e. The review and comment upon nonconfidential or nonprivileged data submitted to or developed by the Trustees or their consultant(s) or contractor(s) in connection with the Trustees' development of the SOW or the Plan.

f. The review and comment upon nonconfidential or nonprivileged draft and/or final reports submitted to the Trustees by their consultant(s) or contractor(s) for the SOW or the Plan.

g. The attendance at public meetings, public hearings or other public processes undertaken by the Trustees in connection with the SOW or the Plan. It is understood that members of the public retain the right to request and to have separate meetings with the Trustees.

3. The SOW shall include a preliminary estimate of the cost of the Assessment Plan and the Assessment.

4. The Parties acknowledge and agree that the Trustees have the final authority and discretion to establish, approve, or disapprove, direct, conduct, and implement the SOW and the Plan.

C. Content of the Assessment Plan

1. The Assessment Plan shall be designed to:

a. Determine the extent of any injury to, destruction of, or loss of natural resources resulting from the release of hazardous substances by the Companies' and/or any other facilities into the Commencement Bay environment.

b. Estimate the costs and expenses for restoration of, or loss of natural resources resulting from the release of hazardous substances by the Companies' and/or any other facilities into the Commencement Bay environment.

c. Estimate the value of any loss of use of such natural resources that have been injured, destroyed or lost.

d. Estimate any other damages for injury, destruction or loss of natural resources to the extent that damages may be recoverable by the Trustees under Section 107 of CERCLA.

e. Assess the extent to which releases of hazardous substances by the Companies' and/or any other facilities contributed to, or continue to contribute to, injury, destruction or loss of natural resources.

2. The Assessment Plan shall identify and document the scientific and economic methodologies that are intended to be used during the assessment. The Assessment Plan shall provide for full consideration of and, as appropriate, incorporation and integration of quality assured/quality controlled data developed by the Companies and accepted by the Trustees and EPA. To the extent appropriate in the judgment of EPA and the Trustees, the best scientific information available, including governmental and nongovernmental information, shall be considered in development of the SOW and the Plan.

3. When the Trustees have completed the Assessment Plan, the Plan shall be made available for public review and comment, and upon proper notice, one or more public meetings concerning the Plan shall be held in the vicinity of the Commencement Bay environment.

The Parties believe that regular, informal communication with the public is an important part of preparing the Assessment Plan. Section IX of this Agreement provides for the Parties to work together with interested members of the public to develop a plan that will encourage meaningful public involvement.

4. In the development and implementation of the Assessment Plan, the PRP members of the Coordinating Committee and the PRP representatives on the NRD Working Group shall be given reasonable notice of, and an opportunity to participate in, all nonconfidential and nonprivileged meetings of the Trustees that concern the Assessment Plan and shall be provided access to all nonconfidential, nonprivileged written communications regarding the Assessment Plan between or among the Trustees and their consultants or contractors. In general, all technical, scientific and factual information used by the Trustees in the Assessment process, regardless of its source, shall be available to the Parties. It is the position of the Trustees that the information will be withheld only where it is necessary to protect the public interest, and when materials are withheld the Parties shall be advised. The PRP members of the Coordinating Committee and the PRP representatives on the NRD Working Group shall also be given reasonable notice of and opportunity to attend public meetings sponsored by the Trustees with respect to the Assessment Plan. It is understood that members of the public retain the right to request and to have separate meetings with the Trustees.

5. Within thirty (30) days of their receipt of the Trustees' approved Assessment Plan, the NRD Working Group and other interested members of the Coordinating Committee will meet to discuss the cost, timing, and funding of implementation of the Assessment Plan by the Companies, DNR and other PRPs. The Trustees, the Companies, DNR and other PRPs that join in this Agreement shall use their best efforts to develop a cooperative process and agree on terms under which the Trustees, Companies, DNR and other PRPs may discuss and provide for implementation of the Assessment Plan consistent with the terms and conditions of this Agreement. It is the Parties' intent to initiate dialogue regarding this process as soon as practicable, and to reach agreement no later than six (6) months prior to completion of the Assessment Plan. It is the Parties' intent to include in the process an appropriate stay of enforcement similar in nature to Section VI of this Agreement to encourage cooperative efforts to implement restoration actions. Even if the Parties do not agree, the Trustees reserve the right to implement the Assessment Plan.

6. The parties intend to identify early in the process the opportunities and priorities for natural resource restoration in the Commencement Bay environment and to encourage the implementa-

tion of restoration actions on an ongoing basis in coordination with the Assessment Plan. This includes the Trustees and DNR advising the NRD Working Group on an ongoing basis of the actions by DNR to identify state lands under Section V.A.2 of the attached Settlement Agreement. Completion of the Assessment Plan is not required before implementing restoration actions or undertaking and concluding further settlement negotiations.

V. TOLLING OF TIME LIMITATIONS

Any time limitations set forth in Section 113(g) of CERCLA, as amended, 42 U.S. Section 9613(g), respecting claims for natural resource damages against the Companies and DNR or any other time limitations for the filing of natural resource damage claims against the Companies under any other applicable federal, state or tribal law, are tolled in their entirety, until one hundred forty-five (145) days after the expiration of this Agreement. This provision does not apply to any claims for natural resource damages that are presently barred by the applicable statutes of limitations as of the effective date of this Agreement.

VI. TEMPORARY STAY ON TRUSTEE ENFORCEMENT

For a period of nine (9) months, commencing on October 1, 1990 and, except as provided for herein, the Trustees agree that they will not issue notice letters to any person or other entity with respect to natural resource damage claims of any Trustee for natural resource damages alleged to have occurred within the Commencement Bay Nearshore/Tideflats NPL site. The purpose of this temporary stay period is to allow the Companies, DNR, and any other participating PRPs an opportunity to obtain participation of additional PRPs in the funding of the Plan and Assessment. At the end of the initial nine (9) month period, if the Trustees determine that the Companies have made substantial progress in obtaining such participation and that an additional temporary stay period on notice letters, not to exceed six (6) months, may result in further participation by additional PRPs, the Trustees may in their sole discretion agree to such extension. Furthermore, the Parties shall work together to provide for such further stays as may be appropriate to further the goals and purposes of this Agreement. The Trustees reserve the right to issue notice letters in conjunction with special notice letters issued by EPA under Section 122 of CERCLA, 42 U.S.C. Section 9622, when they deem it necessary to facilitate negotiations with respect to the natural resource damage matters. Additionally, the Trustees agree subsequent to the issuance thereof to provide copies of such notice letters to the Companies.

VII. COMMUNICATIONS

Written communications among the Parties to this Agreement shall be addressed to their representatives identified below. EPA shall also be provided with all written communications required under this Agreement.

TRUSTEES

State of Washington

Fred Gardner
Department of Ecology
Rowe Six, Building 4
4224 6th Avenue S.E.
Lacey, Washington 98503

Tom Mumford
Washington Department of Natural Resources
Division of Aquatic Lands
900 47th Avenue N.E.
Olympia, Washington 98506

John Carleton
Washington Department of Wildlife
600 Capital Way N.
Olympia, Washington 98501-1091

Thom Hooper
Washington Department of Fisheries
115 General Administration Building
Olympia, Washington 98504

Puyallup Tribe of Indians

Mr. Bill Sullivan, Director
Environmental Programs
The Puyallup Tribe of Indians
2002 East 28th Street
Tacoma, Washington 98404

Richard A. Du Bey
Special Environmental Counsel
Puyallup Tribe of Indians
The Du Bey Law Firm
3110 Bank of California Center
Seattle, Washington 98164-1002

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Muckleshoot Indian Tribe

Morgan Bradley
Muckleshoot Tribe
39015 172nd Avenue S.E.
Auburn, Washington 98002

Robert Otsea
Tribal Attorney
Muckleshoot Tribe
39015 172nd Avenue S.E.
Auburn, Washington 98002

U.S. Department of the Interior

Charles Polityka
Regional Environmental Office
Department of the Interior
1002 N.E. Holladay, Suite 354
Portland, Oregon 97232-4181

Don Kane
U.S. Fish and Wildlife Service
Division of Ecological Services
2625 Parkmont Lane S.W., Building B-3
Olympia, Washington 98502

Ron Eggert
Bureau of Indian Affairs
Portland Area Office
P.O. Box 3785
Portland, Oregon 97208

Barry Stein
Office of the Regional Solicitor
500 N.E. Multnomah, Suite 607
Portland, Oregon 97232

The National Oceanic and Atmospheric Administration

Chris Mebane
Coastal Resources Coordinator
NOAA, c/o EPA Region X, (HW-113)
1200 Sixth Avenue
Seattle, Washington 98101

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Craig O'Connor
Senior Counsel
National Oceanic and Atmospheric Administration
Office of General Counsel, GCNW
7600 Sandpoint Way N.E., BIN C15700
Seattle, Washington 98115

Environmental Protection Agency

Lori Cohen
Remedial Project Manager
Superfund Branch (HW-113)
Environmental Protection Agency, Region X
1200 Sixth Avenue
Seattle, Washington 98101

Allan Bakalian
Assistant Regional Counsel
Environmental Protection Agency, Region X
1200 Sixth Avenue
Seattle, Washington 98101

THE COMPANIES AND DNR

Champion International

James Carraway
Senior Manager, Special Projects
Environmental Affairs
Champion International Corporation
One Champion Plaza
Stamford, CT 06921

Simpson Tacoma Kraft Company

Dave McEntee
Environmental Manager
Simpson Tacoma Kraft Company
P.O. Box 2133
Portland Avenue
Tacoma, Washington 98401

Edward J. Reeve
Senior Counsel
Simpson Tacoma Kraft Company
1201 Third Avenue, Suite 4900
Seattle, Washington 98101-3009

Commencement Bay-wide NRDA
Funding and Participation Agreement
October 19, 1990
Page 14

Kenneth S. Weiner
Preston, Thorgrimson, Shidler, Gates & Ellis
5400 Columbia Center
Seattle, Washington 98104-7011

State of Washington
Department of Natural Resources

Ann Morgan
Manager, Division of Aquatic Lands
Washington Department of Natural Resources
John Cherberg Building, M/S QW-21
Olympia, Washington 98504

Christa L. Thompson
Office of the Attorney General
Highway License Building, 7th floor
Olympia, Washington 98504

VIII. RESERVATION OF RIGHTS

A. Except with respect to the St. Paul Waterway Problem Area as defined in the Consent Decree, and as expressly provided herein, no party to this Agreement waives or diminishes any claims or defenses it may have with regard to the Commencement Bay environment.

B. This Agreement in no way affects or relieves the Companies and DNR from their responsibility to comply with, nor does it impair the Trustees' ability to enforce, any applicable federal, state or tribal law, administrative order, regulation or permit.

C. Notwithstanding any other provision of this Agreement, the stay of enforcement under Section VI shall be voidable at the sole discretion of the Trustees in the event that the Trustees, or any Trustee, discover data indicating that an imminent threat to public health or the environment exists, and that such imminent threat requires prompt response action. If the Trustees discover such information and determine that an immediate threat exists that requires prompt response action, the Trustees shall immediately notify the Companies and DNR in writing of this determination. If time permits, the Trustees shall provide the Companies and DNR with an opportunity to confer to determine whether such threat can be addressed by action on the part of the Companies and DNR without litigation.

IX. PUBLIC PARTICIPATION

The parties recognize and agree that public participation in the natural resource damage assessment planning process is both desirable and necessary. At a minimum, the parties will ensure that public participation in the process meets all legal requirements, including but not limited to the types of public participation activities contained in federal regulations related to natural resource damage assessments, 43 CFR Part 11. Within six (6) months of the formation of the NRD Working Group referred to in Section IV.B.1(b) above, it is anticipated that additional PRPs will have joined the group and will have gained experience regarding how the planning process will proceed and the level of commitment members of the public wish to make to this process. The Trustees, in cooperation with the NRD Working Group, any other interested members of the Coordinating Committee, and members of the public, will formulate and implement a Public Participation Plan which will provide for early, regular and meaningful public involvement into the natural resource damage assessment process for Commencement Bay.

X. GENERAL MATTERS

A. This Agreement shall not be used in any judicial or administrative proceeding to establish the truth of any matter stated herein except in an action to enforce this Agreement.

B. It is the intent of the parties that the clauses of this Agreement are severable, and should any part of this Agreement be declared by a court of competent jurisdiction to be invalid, the other parts of this Agreement shall remain in full force and effect.

C. Any modification of this Agreement shall be in writing, executed by all the Parties.

D. This Agreement can be executed in one or more counterparts, all of which will be considered the original document.

E. The Parties shall not disclose nor seek the disclosure in any state or federal judicial proceeding, except to enforce these Agreements, of settlement and compromise negotiations leading to the Settlement Agreement among the Parties regarding St. Paul Waterway natural resource damage, and this Funding and Participation Agreement, be they between the Parties hereto or between the Trustees and other potentially responsible parties.

XI. TERM

This Agreement shall be effective on the effective date of the Consent Decree, and shall be renewable on an annual basis, subject to payment by the Companies of continued agreed annual contributions to the natural resource damage assessment process established under this Agreement and the Trustees' acceptance of same. Subject to the foregoing, this Agreement is intended to continue in full force and effect until sixty (60) days after the earlier of (a) the Companies' receipt of the Trustees' approved Natural Resource Damage Assessment Plan described in Section IV.B hereof or (b) the exhaustion of the Commencement Bay Environment Natural Resource Trust Account described in Section IV.A herein.

XII. PARTIES BOUND

The provisions of this Agreement shall apply to and be binding upon the Parties to this Agreement, their agents, successors and assigns. The undersigned representative of each party certifies that he or she is fully authorized by the party or parties whom he or she represents to enter into this Agreement and to bind that party to it.

Commencement Bay-wide NRDA
Funding and Participation Agreement
October 19, 1990
Page 17

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

Fred Olson
State of Washington

Dec. 10, 1990
DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice

DATED

THE COMPANIES AND DNR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

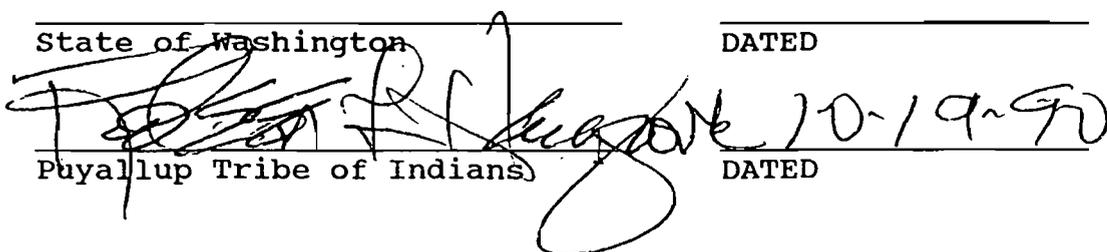
DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED



Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice

DATED

THE COMPANIES AND DNR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

DATED

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Virginia Cross

Muckleshoot Indian Tribe

3-28-91

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National Oceanic and
Atmospheric Administration

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U.S. Department of Justice

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THE COMPANIES AND DNR

Champion International

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Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

Charles N. Eber

National Oceanic and
Atmospheric Administration

11/15/90

DATED

U.S. Department of Justice

DATED

THE COMPANIES AND DNR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

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TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

Ronald Stewart

6-5-91

U.S. Department of Justice

DATED

THE COMPANIES AND DNR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

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Muckleshoot Indian Tribe

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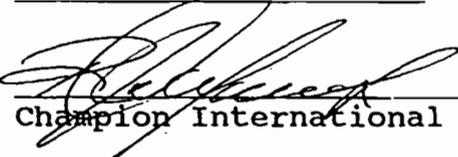
National Oceanic and
Atmospheric Administration

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U.S. Department of Justice

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THE COMPANIES AND DNR



Champion International



DATED

Simpson Tacoma Kraft Company

DATED

State of Washington
Department of Natural Resources

DATED

Commencement Bay-wide NRDA
Funding and Participation Agreement
October 19, 1990
Page 17

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

State of Washington

DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice

DATED

THE COMPANIES AND DNR

Champion International

DATED

J. C. Roach

Simpson Tacoma Kraft Company
VICE PRESIDENT & CHIEF FINANCIAL OFFICER

October 24, 1990
DATED

State of Washington,
Department of Natural Resources

DATED

IN WITNESS WHEREOF, the Parties have signed this Agreement on the day and year appearing opposite their signatures.

TRUSTEES

James A. Stearns
State of Washington

10-2
DATED

Puyallup Tribe of Indians

DATED

Muckleshoot Indian Tribe

DATED

National Oceanic and
Atmospheric Administration

DATED

U.S. Department of Justice

DATED

THE COMPANIES AND DNR

Champion International

DATED

Simpson Tacoma Kraft Company

DATED

James A. Stearns
State of Washington
Department of Natural Resources

10-26-90
DATED



Reply To
Attn Of: HW-113

MEMORANDUM

Subject: Sediment Remedial Action Certification of Completion
St. Paul Waterway Problem Area
Commencement Bay - Nearshore/Tideflats Superfund Site

From: Philip G. Millam, Chief
Superfund Branch

A handwritten signature in black ink, appearing to read "Philip G. Millam".

Through: ~~for~~ Charles E. Findley, Director
Hazardous Waste Division

A handwritten signature in black ink, appearing to read "Charles E. Findley".

To: Dana A. Rasmussen
Regional Administrator

The purpose of this memo is to confirm the completion of the sediment remedial action in the St. Paul Waterway of the Commencement Bay - Nearshore/Tideflats (CB/NT) Superfund site. The sediment remedial action has been completed by Simpson Tacoma Kraft Company and Champion International, and is documented in the attached completion report prepared by the companies. The report has been reviewed by my staff to ensure that the remedial actions taken were consistent with the September 1989 Record of Decision (ROD) for the site.

The St. Paul Waterway is one of eight problem areas covered by the CB/NT ROD which require a combination of source control and sediment clean-up. The St. Paul Waterway is the first waterway in which source control and sediment remedial actions have been completed. The work was accomplished voluntarily by the two companies, with the assistance of the Washington Department Natural Resources, and is formally embodied in the September 27, 1990, Consent Decree executed by EPA.

Long-term monitoring of source controls and the sediment remedial action will be conducted to ensure the effectiveness and protectiveness of these actions. The actions taken to date are a significant precedent for similar actions that will be required in the CB/NT site.

The Washington Department of Ecology (Ecology) and the Environmental Protection Agency (EPA) share the lead agency role at the site. Ecology is the lead agency for source control. The source control completion report approved by EPA on September 28, 1990, describes the source control actions to taken to date,

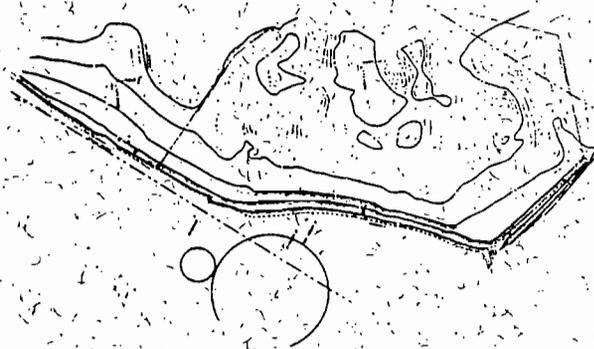
and future plans to monitor source control through the National Pollution Discharge Elimination System (NPDES) program. EPA will be the lead agency for sediment remedial action and will oversee the sediment remedy in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the federal Consent Decree (to be lodged after this certification is complete). The agencies will pursue other clean-up actions at the other problem areas in the CB/NT site in accordance with the ROD.

Approved: ✓ Disapproved: _____ Date: 1/30/91

Dana A. Rasmussen

Dana A. Rasmussen
Regional Administrator

**Commencement Bay Nearshore Tideflats
Superfund Completion Report for
St. Paul Waterway
Sediment Remedial Action**



Simpson

January 1991

Cover printed on Simpson Evergreen Recycled Paper; text printed on Simpson xerographic recycled paper.

Commencement Bay Nearshore Tidelands
Superfund Completion Report for
St. Paul Waterway
Sediment Remedial Action

By

Kenneth S. Weiner

submitted to the U.S. Environmental Protection Agency
for Simpson Tacoma Kraft Company and
Champion International Corporation

January 1991

The author gratefully acknowledges the assistance and advice of the following people in the preparation of this report: EPA Region X Superfund staff and legal counsel; Dave McEntee, Simpson Tacoma Kraft Co.; Ted Reeve and John Pulliam, Simpson; Jerry Ficklin, Ficklin Environmental Services; Don Weitkamp, Parametrix, Inc.; Mike Thorp, Heller Ehrman White & McAuliffe, attorney for Champion International Corporation; and Kathleen Barrett, Scott Waugh, and Jon McPhee, Preston Thorgrimson Shidler Gates & Ellis.

Kenneth S. Weiner

Preston Thorgrimson
Shidler Gates & Ellis
Attorney for Simpson
Tacoma Kraft Co.

December 1990

Simpson

January 11, 1991

Ms. Lori Cohen
Superfund Site Manager
EPA Region X
1200 Sixth Avenue
Seattle, WA 98101



Re: Notice of Completion

Dear Ms. Cohen:

It is my sincere pleasure to submit this Superfund Completion Report for the St. Paul Waterway Sediment Remedial Action in the Commencement Bay Nearshore Tideflats Superfund NPL site under paragraph 124 of the executed federal consent decree.

We understand that this is the first Superfund Completion Report in Commencement Bay and Puget Sound, and one of the first cleanups in the nation to reach this stage.

We are pleased that the federal EPA and state Department of Ecology have been able to work together with each other, with Simpson and Champion, and with the state Department of Natural Resources and other government agencies and Indian Tribes to achieve this cleanup. Advice and encouragement from interested citizens and environmental groups have been not only instrumental but have been an exciting part of this process.

It has been very important to us that the project was able to integrate pollution control and natural resource restoration because of Simpson's conviction that the Tacoma harbor and the Commencement Bay estuary can be a model of a healthy maritime economy and marine ecology.

I would also like to acknowledge the efforts of our project team, without whom this accomplishment would have remained a dream, including but certainly not limited to: my predecessor Jerry Ficklin, lead consultants Don Weitkamp and Greg Hartman, Simpson engineer Ron Larsen, Simpson Senior Counsel Ted Reeve and special environmental counsel Ken Weiner, and Jim Carraway, my counterpart at Champion, and his colleagues and legal staff.

We appreciate your guidance in the preparation of this report and your comments on the drafts submitted previously. As we discussed, we will update the bibliography to include relevant documents prior to the entry of the consent decree. Should you have any specific questions regarding the content of the report, please contact Ken Weiner at (206) 623-7580.

Sincerely,

A handwritten signature in black ink, appearing to read "Dave McEntee". The signature is written in a cursive style with a long horizontal line extending to the right.

Dave McEntee
Manager, Environmental Services and
St. Paul Waterway Project Coordinator

Enclosure: Final Superfund Completion Report

SUPERFUND COMPLETION REPORT

For St. Paul Waterway Sediment Remedial Action
Commencement Bay Nearshore Tidelands Superfund Site, Tacoma, Washington

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SUPERFUND COMPLETION REPORT

For Sediment Remedial Action at the
St. Paul Waterway Problem Area
Commencement Bay Nearshore Tideflats Superfund Site
Tacoma, Washington

I. SUMMARY OF SITE CONDITIONS

A. Background: St. Paul Waterway Problem Area in the Commencement Bay Nearshore Tideflats Site

Introduction

Commencement Bay is the urban bay and harbor for the City of Tacoma. It is located between the mouth of the Puyallup River, which is a shoreline of statewide significance, and Puget Sound, which is an estuary of national significance (see Figure 1). The U.S. Environmental Protection Agency (EPA) initially placed Commencement Bay on the federal Superfund interim priority list in 1981 and formally designated it as the Commencement Bay Nearshore/Tideflats Site (Site or CB/NT Site) on the National Priority List in 1983. EPA has organized the Site into seven "Operable Units" and various "Problem Areas" within these units, as explained below.

This Completion Report for sediment remedial action describes the Superfund response actions and related environmental improvements that have been implemented for the St. Paul Waterway Problem Area, the area immediately to the south and west of the Puyallup River (see #6 on Figure 1). Superfund studies identified three potentially responsible parties at the St. Paul Waterway Problem Area: Simpson Tacoma Kraft Co. (Simpson), Champion International Corp. (Champion), and the Washington State Department of Natural Resources (DNR). Simpson proposed and performed the actions described in this report entirely with private funds from Simpson and Champion. As described below, federal, state, and local agencies, Indian Tribes, and interested citizens were involved in developing and overseeing the actions.

The response actions at the St. Paul Waterway Problem Area represent the first approved and completed sediment remedial action at the Site, as well as the first natural resource damage settlement for a waterway in Commencement Bay. In addition, the source controls being implemented for the St. Paul Waterway Problem Area represent the first approved and completed source control actions in the Commencement Bay Nearshore Tideflats.¹

¹ On September 28, 1990, EPA approved Ecology's Completion Report on the source control actions described in the CB/NT ROD for the St. Paul Waterway Problem Area.

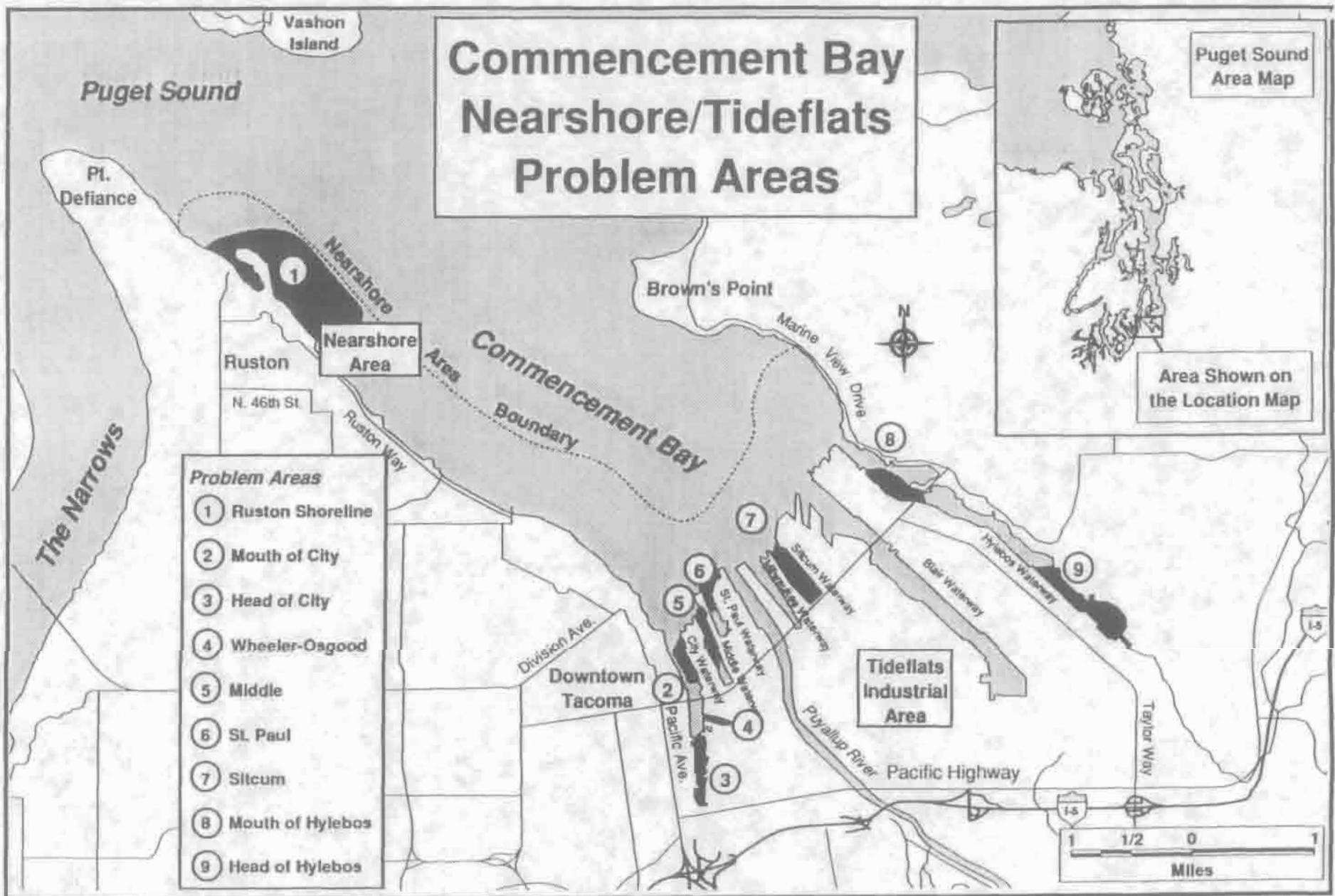


Figure 1. Commencement Bay Nearshore/Tideflats study area

The approval for the response actions takes the form of a federal consent decree (to which this Completion Report is appended), natural resource damage settlement agreement (appended to the federal consent decree), and a state consent decree. An overview and more detailed description of the regulatory approval process can be found in Parts II and IV below.

Overview of the Commencement Bay Nearshore Tidel flats Superfund Site

The designation of a large portion of Commencement Bay as a Superfund site presents special challenges. The site includes contaminated marine sediments as well as highly industrialized upland areas. Unlike a typical landfill, where many people put material into a single facility, the CB/NT Site involves many parties who disposed of hazardous substances on separate pieces of property and into eight different waterways.

Although they have common elements, each waterway also has its own environmental conditions, sources of pollution, and potentially responsible parties. In addition, as EPA studies and its Record of Decision for the Commencement Bay Nearshore Tidel flats (ROD or CB/NT ROD) found, cleaning up mixtures of hazardous substances that have settled to the bottom of marine bays presents special difficulties. The difficulties are compounded because of the environmental sensitivity of disrupting fisheries and habitat during remedial actions. For example, federal, state, and local agencies and Indian Tribes prohibit all work in these waters at least six months each year to protect migrating salmon.

Recognizing the complexity of addressing the cleanup of the Commencement Bay environment, EPA organized the Site into manageable parts. There are currently seven of these "Operable Units": (1) CB/NT Sediments; (2) Asarco Tacoma Smelter; (3) Tacoma Tar Pits; (4) Asarco Off-Property; (5) CB/NT Sources; (6) Asarco Sediments; and (7) Asarco Demolition. Under a cooperative agreement, Ecology is the lead agency for source control (operable unit 05), and EPA is the lead agency for the others.

The CB/NT sediments (Operable Unit 01) have been in turn been divided into eight "problem areas" in part because they are contaminated by different sources in different waterways. This allows the remedy to be designed and implemented to address the contaminants of concern and to fit the specific environment of each waterway. (After the ROD was issued, EPA redesignated the ninth problem area, identified on Figure 1 as the Ruston Shoreline, as Operable Unit 06 - Asarco Sediments.) The St. Paul Waterway Problem Area is one of the eight problems areas in the CB/NT ROD which required sediment remedial action. The overall CB/NT process and cleanup strategy is described below in Section IV.A.

Overview of Agencies Involved

There are several other government bodies that assert jurisdiction over the cleanup and restoration of the contaminated areas in Commencement Bay. Most of these governmental entities have memoranda of agreement (MOAs) relating to their working relationships under these laws. The project described in this report has the formal approval or concurrence of all of these agencies:

- Both the federal and state governments have "Superfund" laws that apply to the site. The federal law is administered by EPA, while the state law is administered by the Department of Ecology (Ecology). Federal Superfund is the Comprehensive Environmental Response, Compensation and Liability Act or CERCLA; the Washington law is the Model Toxics Control Act or MTCA.

- The Puyallup Tribe of Indians (Puyallup Tribe), a sovereign nation which recently settled its land claims with the United States, State of Washington, local governments in Pierce County, and other parties, has treaty rights relating to fishery resources and habitat.
- Much of the aquatic land where sediments have been contaminated is owned by the State of Washington, which manages the land through the state Department of Natural Resources (DNR). DNR has independent management and enforcement authority through its leases with the users of these aquatic lands.
- Federal and state hazardous waste cleanup and water quality laws also provide for restoration of or compensation for damages to natural resources, which involves federal, tribal, and state agencies with responsibilities for natural resource, wildlife, and fisheries. The National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce is the lead federal natural resource trustee, and Ecology is the lead state trustee. the Puyallup Tribe and Muckleshoot Tribe are also trustees.
- Other permitting agencies such as the U.S. Army Corps of Engineers (Corps of Engineers) or the City of Tacoma (City) may be involved if cleanup or restoration actions require permits for dredging, filling or other work in the Bay or along its shorelines.

Key references for this report are found at the conclusion of each Part and in the attached bibliography.

B. Summary of Environmental Conditions and History of the St. Paul Waterway Problem Area

Environmental Conditions

The St. Paul Waterway Problem Area is located between the Puyallup River to the north and the Middle Waterway to the south (Figure 1). A rubble mound jetty was constructed on the west bank of the Puyallup River mouth in the 1930s by the Corps of Engineers as part of the Tacoma Harbor Project. The jetty separates the Puyallup River from the St. Paul Waterway, creating a shallow and calm area of Commencement Bay which ranges in depth from about 20 feet to a sandbar that is exposed at low tide. Natural forces are gradually building up this area by depositing sediment from the Puyallup River. As will be described below, the key areas of sediment contamination were located in this shallow subtidal area. Prior to the remedial action, the St. Paul Waterway Problem Area was subtidal.

The St. Paul Waterway itself is about 2,000 feet long, about 500 feet wide, and from about 10 to 30 feet deep. The Waterway was created in stages, beginning in the 1920s. The Waterway area is not used or needed for navigation, other than its historical and current use for log rafts, chip barges, and similar small craft. A 57-acre peninsula of filled tidelands lies between the mouths of the Puyallup River and the St. Paul Waterway. This area was originally an intertidal mudflat between two forks of the mouth of the Puyallup River. The original 1,750 acres of productive mudflat throughout Commencement Bay has been reduced to less than 100 acres in the past century.

Ownership and Industrial Use

The filled uplands and the adjacent tidelands have been used for pulp and paper and related forest products operations since 1927. The Tacoma Kraft Mill (mill), a pulp and paper facility, is located there. Five years ago, Champion acquired the mill as a result of a merger with the St. Regis Corporation. Several months later in August 1985, Simpson acquired the mill from Champion and is the current owner and operator. Although the St. Paul Waterway itself has been privately owned by the mill owners, Simpson and previous owners leased the tidelands in Commencement Bay adjacent to the Waterway and mill from DNR, as well as leasing some uplands between the inner and outer harbor lines. DNR manages the leased lands for the State of Washington.

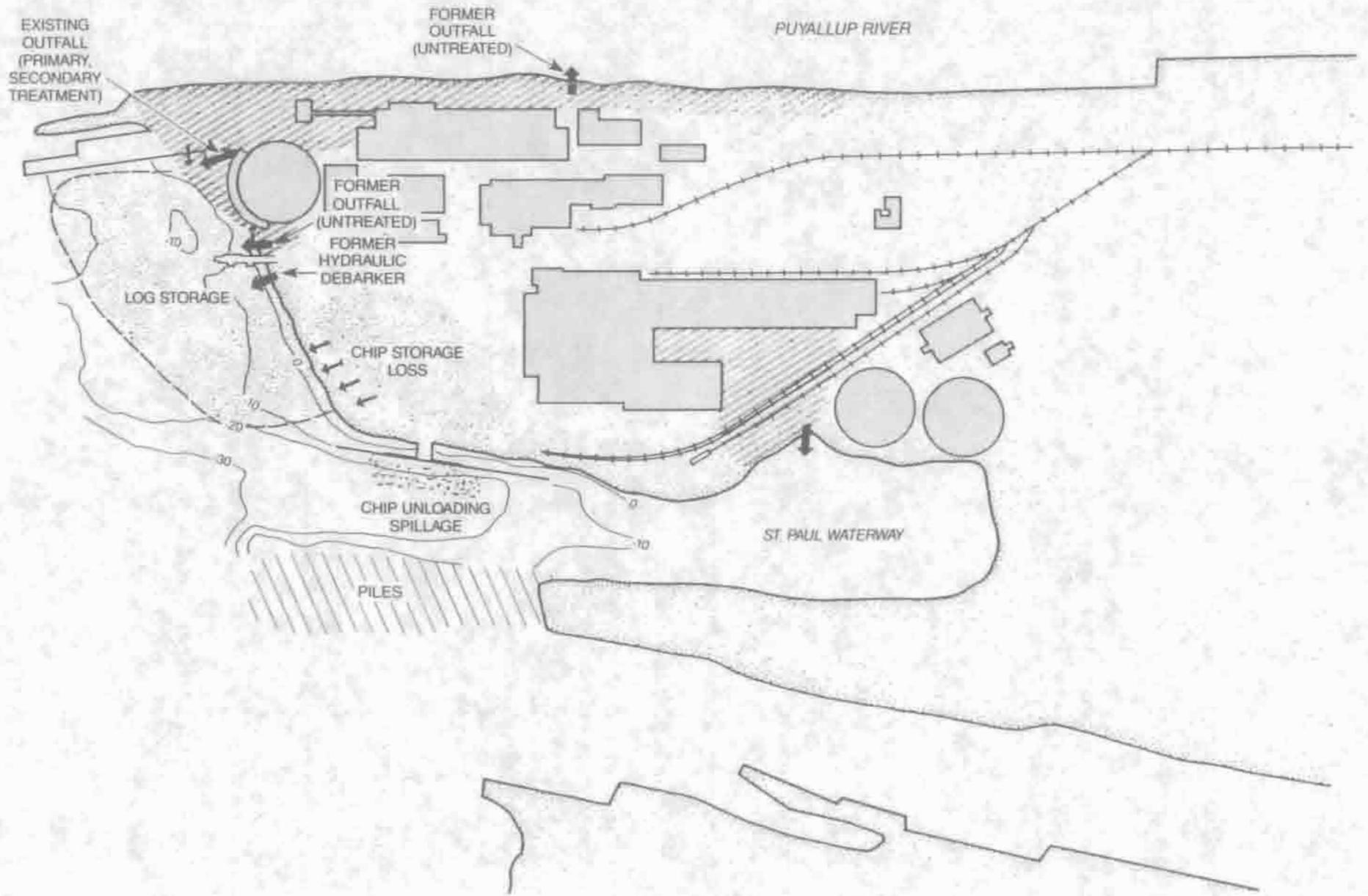
C. Summary of Sediment Contamination

From 1983-85, EPA and Ecology prepared a study on the nature and sources of contamination in the Bay (the Commencement Bay Nearshore Tidelands Remedial Investigation or CB/NT RI). This study identified the St. Paul Waterway Problem Area as a 17-acre area of contaminated marine sediments adjacent to the mill. Simpson and Champion (the Companies) then began detailed studies to review, confirm, and further characterize the St. Paul Waterway Problem Area, in consultation with the agencies, Puyallup Tribe, and the public as described further below.

The problems basically stemmed from two sources (see Figure 2):

- *Wastewater* from the plant, which was untreated until the 1960s. This led to contaminated sediments near the mill's outfall. The Superfund studies discovered that several of the key chemicals came from shipments of contaminated products and materials to the plant from other companies and not from the pulp and paper process. One result of the remedial investigation was that immediate source control actions were taken by Simpson, including discontinuing the purchase of contaminated raw materials. These efforts succeeded in eliminating more than *one million* pounds of potential chemical pollutants on an annual basis. Simpson will continue to perform extensive monitoring under the NPDES program, as noted in Ecology's source control completion report.
- *Loss and runoff of woody debris* from log and wood chip operations and from stormwater runoff from process areas of the mill.

The sediments of Commencement Bay next to the mill became contaminated with chemicals and organic debris. In the area near the outfall, chemicals toxic to marine life, such as phenolics, cresols and cymenes, settled into the sediments on the bottom of the Bay. In the same area, and extending into the Waterway, accumulations of logs, wood chips, sawdust, and similar organic debris blanketed the bottom and mixed with the sediments. The data showed three fairly distinct areas of contamination, with lower levels of concern as the distance from the former outfall increased (see Figure 3). Area A, closest to the former mill outfall, had the most chemical contamination and less organic woody material. Area B was a mixture of chemical and organic woody material. Area C was largely woodchips on top of the natural sediments.



- Point Source
- Wood Chips and Debris
- Runoff

Figure 2.
Sources of Sediment Contaminants
from the Tacoma Kraft Mill

Wastewater and Outfall

The RI identified, and the Companies' studies confirmed, that the following chemical compounds were found in the sediments adjacent to the mill: p-cresol (4-methylphenol), p-cymene (1-methyl-2-methylethyl benzene), guaiacol (2-methoxyphenol), phenol, naphthalene, low molecular weight polyaromatic hydrocarbons (LPAHs). Of these compounds, p-cresol, guaiacol and phenol were found at concentrations exceeding the apparent effects thresholds (AET) in a number of sediment samples taken in the immediate vicinity of the old outfall. Also, p-cymene – for which an AET has not been established – was found at high concentrations (5,500-273,000 ppb) in many of the same samples. Naphthalene and LPAHs exceeded AETs in laboratory tests with small shrimp-like organisms called amphipods in samples collected adjacent to the mill outfall. This chemical sampling provided the basis for evaluating feasible remedial technologies, for determining indicator chemicals for the monitoring and contingency plan, and for establishing performance standards for the remedy. Apparent effects thresholds or AETs were developed for Puget Sound sediment criteria and represent the highest concentration of an individual chemical contaminant shown *not* to have adverse biological effects, based on tests using sensitive marine organisms such as amphipods, oyster larvae, and so on (see footnotes 5 and 6).

As noted above, the contaminant concentrations of concern and the number of contaminants exceeding amphipod AETs dropped rapidly with distance from the outfall (see data in Appendix IV - Sediment Quality of the Project Analysis cited in footnote 3 below). The shallow sandbar (-2 to +2 ft MLLW) at the edge of the Puyallup River delta near the end of the mill's former pier formed a boundary to chemical contaminants on the north side of the area. Contaminant concentrations of concern extended parallel to the shoreline for about 600 feet. This data enabled a margin of safety to be included in the geographic boundary used for the sediment remedial action (see dotted line on Figure 3).

There were three different but related aspects to the sources of contamination, which are described in more detail in the source control completion report. First, the mill's wastewater was discharged without treatment for 37 years. In the 1960s, the mill began primary treatment of its wastewater. Secondary treatment commenced in the mid-1970s.

Second, the problem chemicals identified in the sediments were not those typically associated with paper mills or the pulping process. The Superfund studies, coupled with detailed analysis for the mill's source control efforts, found that raw materials supplied to the mill were contaminated with chemicals of which the mill was previously unaware and which were unnecessary to the pulping process.

Third, the mill's outfall (the pipe that releases the treated water, or effluent, into the Bay) was located on the bank of the shoreline in the shallow area to the west of the mill, between the River and the St. Paul Waterway. Depending on the tide, the outfall was within 0-12 feet of the water's surface. When up to 30 million gallons a day of warm wastewater coming out of the outfall first mixed with the Bay's saltwater, the initial dilution was in the range of 2:1 to 5:1 (ratio of seawater to effluent). This low level of initial dilution allowed a process to occur called "flocculation," where dissolved material and smaller particles combined into larger particles. These larger particles were heavier and sank onto the sediments on the bottom of the Bay near the outfall.

Simpson implemented source control actions simultaneously with the sediment remedial action to address each of these problems and prevent future recontamination of the site from mill operations. Although these source control actions are not governed by the federal and state consent decrees

on the sediment remedial action, they were an integral part of the project planning and implementation. They are described in this section and in Parts II and III below to help the reader understand the relationship between the sediment response actions and the overall St. Paul Waterway Area Remedial Action and Habitat Restoration project.

The discharge of secondary-treated effluent from the new outfall was designed to prevent flocculation (it regularly achieves a dilution ratio of more than 70:1 in marine water) and to trap in the layer of water that moves away from the shoreline, where the most sensitive biological areas are located in the Commencement Bay estuary. Other major source control actions noted in the source control completion report include installation of a new bleach plant, pulp washing line, and chlorine substitution processes; purchasing of makeup chemicals and improvement of operating practices; containment and control of woodchips and stormwater.

In order to confirm the assumptions and performance of the predictive models and tests used by Simpson to plan and implement its source control actions, the final NPDES permit will include the following: (1) calculation of the actual dilution of effluent; (2) sampling of particulates in the effluent to determine the presence of problem chemicals; (3) influent and effluent sampling of internal waste streams; (4) sediment sampling in the vicinity of the outfall; and (5) acute and chronic toxicity testing of the effluent. In addition to these studies, the NPDES permit contains a reopener such that permit modifications could occur if studies show that the source control measures are not protective of sediment quality.

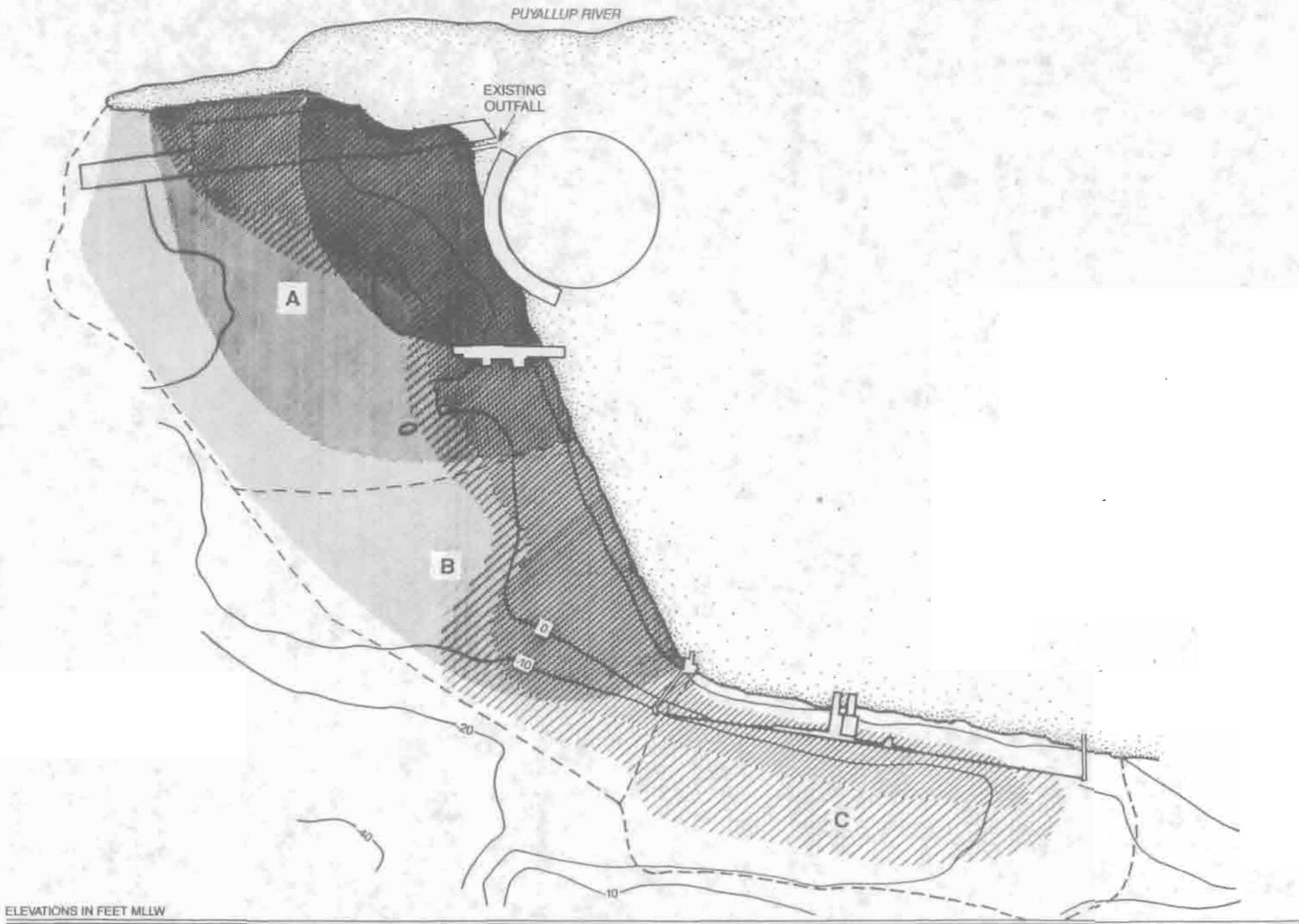
Other long term Ecology actions taken to confirm protectiveness and assess adequacy include: (1) permittee submittal of monthly discharge monitoring reports which include the results of continuous monitoring of pH, flow and temperature; daily test data for dioxin, AOX, biological oxygen demand and total suspended solids; and weekly test results for soluble copper; and (2) regular NPDES permit inspections to verify permittee compliance with self-monitoring requirements and compliance schedules. The different types of NPDES inspections that Ecology conducts include: compliance evaluation, compliance sampling, toxics sampling, compliance biomonitoring, and reconnaissance inspection. The methods and procedures for conducting each inspection type is contained in the EPA NPDES Compliance Inspection Manual.

Woody Material and Runoff

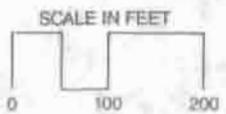
The shallow area to the west of the mill, between the Puyallup River and the St. Paul Waterway, had been used as a log pond from the late 1800s through the early 1970s. Logs were stored, sorted, and debarked there. Stormwater also carried woody debris into the Bay. Until 1977, fine organic debris and suspended solids were discharged in primary effluent from the old outfall.

Wood chips also sank to the bottom of the St. Paul Waterway during the importing, unloading and storing of wood chips for mill operations. Additional organic material came to the water of the Bay from the mill site through surface runoff or the action of the wind.

The extent of contamination by organic debris was found to be more pervasive than chemical contamination as measured by total volatile solids (TVS) concentrations of the sediments. Sampling data showed TVS concentrations of 30% in a band adjacent to the shore and outfall area, followed by a narrow band of 20% concentration and a wider band of 10% concentration. Estuarine sediments commonly have TVS concentrations of 5-10% and greater. The amphipod AET calculated for TVS is 27% (an amphipod is a small shrimp-like marine organism). To provide a greater degree of cleanup and restoration, organic concentrations exceeding 20% were



ELEVATIONS IN FEET MLLW



- Remedial Action Boundary
- Chemical Contaminants
- ▨ Organic Debris Contamination (+20%)

Figure 3.
General Areas of Concern

considered by the Companies to be concentrations of concern and were included in the sediment remedial action (see Figure 3).

Marine Biology

The sediment conditions in the St. Paul Waterway Problem Area were adverse to most of the biota commonly found in shallow water portions of Puget Sound. Near the outfall, the RI concluded from lab tests that the conditions were among the most biologically stressed in the nearshore tideflats. The woody organic debris did not pollute in the same way as chemicals, but the decomposition of this organic material required so much oxygen that there was little or no oxygen available to support normal marine life. The natural biological populations in this area of the Bay were severely depressed by contamination from both chemical and organic debris.

Key references for Part I: *Project Analysis for the St. Paul Waterway Area Remedial Action and Habitat Restoration Project* and references cited in the Project Analysis (see footnote 3 below), CB/NT RI, FS, and ROD, Ecology Source Control Completion Report for the St. Paul Waterway Problem Area, and project documents and supporting analyses listed in Part B of the attached bibliography.

II. REMEDIAL PLANNING ACTIVITIES

A. Overview of the Process

The remedial planning activities summarized in this completion report is somewhat more complicated than may be typical, both because of the complexity of the Commencement Bay site and because federal and state approvals were involved. In addition, the sediment remedial action planning was part of an integrated environmental improvement project which included habitat restoration and source control. The following two paragraphs provide a brief overview of the state and federal processes, which are explained further in this Part and in Part IV below.

In acquiring the mill in 1985, Simpson assumed responsibilities and a requirement to design and construct an improved outfall. Cognizant of the ongoing Commencement Bay Superfund studies and encouraged by Ecology to examine source control, sediment remedial action and habitat restoration alternatives, Simpson and Champion planned a more comprehensive approach with agencies, citizens, and the Puyallup Tribe during 1986-87. Simpson implemented an aggressive source control program under state supervision, leading to Ecology's submittal in September 1990 of the first Source Control Completion Report in the Commencement Bay Nearshore/Tideflats Site. The program included extensive capital facilities and process changes to control chlorinated organics, dioxins, copper, and other chemicals; stormwater collection and treatment; and a different outfall design than was initially planned.

Plans for addressing sediment contamination and restoring and enhancing the nearshore habitat evolved at the same time. Although the sediment remedial action was initially planned as a joint federal-state Superfund action, this was not possible. The Companies therefore proceeded under a state consent decree, along with numerous other permits and approvals obtained during the last six months of 1987. Construction was completed by September 1988, and the ongoing monitoring

program commenced. EPA issued the CB/NT ROD in September 1989. After consulting with the natural resource trustees, EPA and the trustees began negotiations with the Companies and DNR in May 1990, which led to the federal consent decree, revised monitoring plan, natural resource damage settlement, and amended state consent decree. This first completed remedial action in Puget Sound has been privately-funded; no public funds were used for the project.

B. Agency and Public Consultation and Development of a Comprehensive Approach

Upon acquiring the mill in 1985, Simpson assumed an NPDES permit and an administrative order issued by Ecology which required the construction of a new outfall. Encouraged by Ecology to address several environmental problems at the same time, Simpson began in 1986 to investigate and implement better control of sources of pollution at the mill and, with Champion, to plan remedial action for the contaminated sediments. A number of studies were conducted by Parametrix, Inc. to characterize the nature and extent of the contaminants in the St. Paul Waterway Problem Area. These are included in the *Project Analysis for the St. Paul Waterway Area Remedial Action and Habitat Restoration Project* (see footnote 3 below).

Remedial action planning for the St. Paul Waterway Problem Area proceeded in parallel with the RI/FS process for the Commencement Bay Nearshore/Tideflats Site, as discussed below and in a detailed chronology included in the attached bibliography.

Before proposing any actions, Simpson and Champion consulted with the Puyallup Tribe, environmental groups and interested citizens, federal, state, and local officials and agency staff beginning in January 1987. In addition to meetings with Ecology and EPA staff, Simpson and Champion had coordination meetings with TetraTech, the agencies' consultants on the CB/NT studies, to ensure that the remedial action planning for the St. Paul Waterway Problem Area was consistent with the overall CB/NT FS process and apparent effects threshold (AET) methods and values. Because the CB/NT FS was scheduled to be completed in the summer of 1987, the original plan was for simultaneous federal and state approval. The CB/NT FS fell behind schedule, and the Companies' project initially proceeded under a state consent decree.

A comprehensive environmental cleanup and restoration approach took shape which addressed cross-media environmental issues. "Cross-media" refers to the situation where issues involving one part of the environment, such as land or air, affect another part, such as water. The approach included:

- a *new outfall* for the secondary treatment plant.
- *permanent isolation* of the contaminated sediments from marine life by *capping* the area with clean sediments from the nearby Puyallup River.
- *habitat restoration* and enhancement of nearshore and intertidal areas.
- *preventive measures* against future sediment contamination from the mill, including source control within the mill, monitoring and contingency plans.

Several corollary objectives emerged from these discussions that shaped the remedial action planning and consistency with applicable, relevant and appropriate legal requirements. Some of these requirements were the City's shoreline management master program (the applicable Coastal Zone Management Plan), DNR's constitutional and statutory aquatic lands management mandates, the Puget Sound Management Plan adopted by the Puget Sound Water Quality Authority, and the

Clean Water Act's Section 404(b)(1) guidelines administered by the Corps, EPA, and other agencies. These corollary objectives for this particular problem area included:

- minimizing dredging of contaminated sediments.
- preserving existing water dependent and harbor uses.
- using reliable and appropriate technology.
- designing the project to complement the natural forces at work in Commencement Bay.

Meetings with the public and agencies also identified additional information that they would need to evaluate the alternatives. This information included, for example:

- additional research into the availability of bioremediation, solidification and other innovative technologies used here and abroad.
- analytical modeling to determine whether toxic concentrations would migrate upward through the cap and the performance of alternative capping technologies.
- extensive sampling and sediment quality analysis of the Puyallup River sediments to ensure that they would provide a suitable new habitat.
- development of physical, chemical, and biological monitoring plans – before, during and after construction – to minimize environmental impacts and assure the effectiveness of the remedy.
- preparation of remedial design and action (RD/RA) plans to enable detailed public review and to support agency permitting and other decisions.²

Project planning integrated sediment remedial action and habitat restoration. While the bottom portion of the cap would be used to isolate contamination, the upper portion was designed to provide a suitable base for new marine life. In addition, the existing conditions over nearly all of the 17-acre area were subtidal. The project was designed to enhance the restoration by creating intertidal habitat over approximately a third of the area, including more than 1,400 feet of new intertidal beach. Intertidal areas provide important biological functions. Juvenile chum and chinook salmon commonly reside in these areas during their first few weeks of life in the estuary. Shorelines, juvenile marine fish, and a wide variety of invertebrates also depend on the intertidal mudflat habitat. As noted in Section I.B, Commencement Bay has lost most of its intertidal habitat over the past century of urban development.

²Although CERCLA provides that on-site remedial actions are exempt from having to obtain conventional permits, the Companies decided to obtain permits for four main reasons. As the project was likely to be the first remedial action in Puget Sound, the Companies believed there would be considerable potential for public misunderstanding if the project were to proceed without permits, regardless of whether hazardous waste laws exempted the project from permitting. Applying for permits would also allow the project to proceed under state law if EPA was not in a position to enter a federal consent decree. Another consideration was that an efficient way to demonstrate compliance with applicable, relevant and appropriate requirements (ARARs) was to have permits from the agencies which administer those laws. Given the limited period when work is allowed in the marine waters of Puget Sound or in the Puyallup River, it was critical to be ready to start the remedial work as soon as a consent decree was approved. In addition to the regulatory uncertainty about whether the project would be approved by EPA, Ecology or both, the State of Washington was also in the midst of a debate over a state Superfund initiative. One of the issues was the need for environmental impact analysis and permitting for cleanup actions. By conducting analyses under the National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) and by obtaining permits, the project would be consistent with whichever version of the state hazardous waste cleanup law was ultimately enacted.

The habitat enhancement involved two basic actions: (1) raising the elevation of the Bay bottom above a subtidal area; and (2) providing substrate of more natural characteristics. These characteristics included using clean, native sediments of coarse sand and silt from the adjacent Puyallup River bed, constructing varied topography allowing pools as well as ridges, and scattering large cobbles and small boulders to provide a substrate for many forms of algae. The rocks, together with the biota they support, were designed to increase the diversity of organisms inhabiting the site and to increase both the cover and feeding opportunities for juvenile fish. The plan was based on the premise that, given the high productivity of this Puget Sound estuary, marine life would rapidly reestablish itself under natural physical conditions. The plan was also designed to limit human intervention and "over-engineering" of the restoration and enhancement effort.

The *Project Analysis for the St. Paul Waterway Area Remedial Action and Habitat Restoration Project* (Project Analysis) was circulated to agencies and the public in July 1987, in conjunction with filing applications for federal, state, and local permits and approvals (the approvals obtained in this section did not include federal Superfund approval, which is described below in Part IV). The relevant information needed to review the proposed project under the various applicable laws was combined in a single document to assist public and interagency review.³ The Project Analysis explained the remedial design, planning, and decisionmaking process in detail (Appendix IX). It also contained a plain English explanation of the key laws and the public notice and comment period under all applicable laws (Overview and Appendix IX). Prior to the formal review process, public participation was sought through meetings with environmental organizations, union representatives, and public service groups.

The formal public and agency review process prior to commencing remedial construction activities is summarized in this paragraph and described in more detail in the attached bibliography and chronology. Joint public notices, meetings, and hearings were held, except for the Corps of Engineers' permit process which ran concurrently. Extensive public notice was given through the Project Analysis, mailings to interested groups and individuals, display ads, and legal notices. A public information meeting was held on August 11, 1987 followed by comment periods in compliance with SEPA, Shoreline, and Corps of Engineers' permit requirements. In addition, copies of the Project Analysis and other relevant documents were made available at 22 locations from the beginning of the comment period. Public and agency comments were received, and no opposition to the project from the public was expressed. On September 22, 1987, a public hearing was held before the Tacoma Hearing Examiner, which was advertised and convened as a joint hearing to meet the requirements other laws as well.

Even though Ecology was acting as lead agency under state law, the documents, notices and opportunity to comment were provided and, although not requested by EPA, a verbatim transcript was made and transcribed consistent with the public participation provisions of Section 117 of CERCLA. As stated above and in the federal consent decree, this approach was taken to ensure that the project was designed to be consistent with all federal, state, and local laws.

³The Project Analysis described, referenced, and incorporated the relevant studies and consisted of a Project Overview, SEPA Environmental Checklist and related environmental assessment, ten technical appendices including a Focused Feasibility Study for the St. Paul Waterway Area (Appendix VI). It was supplemented by Supplemental Information Packets (September and December 1987).

The City of Tacoma Hearing Examiner found and concluded that the proposed remedial action would have the least adverse environmental impacts and the most environmental benefits among the alternatives studied, was the preferred alternative at the problem area location from the standpoint of consistency with shoreline policies and requirements, was in the public interest, and appeared to be the only alternative that could be implemented in the very near future at the site.

Simpson, Champion, DNR, and Ecology began negotiating a state consent decree for the sediment and habitat restoration components. Informal consultation with the public continued during this time, including review of a draft of the proposed decree. A proposed decree was filed with state court on November 6, 1987, for a 30-day public and agency comment period.

C. Agency Approvals

As part of the interagency review process, several agencies requested the development of a more detailed monitoring plan and a contingency plan in the event the project did not perform as planned. Representatives from EPA, Ecology, the Corps of Engineers, the Puyallup and Muckleshoot Tribes, federal and state fisheries and natural resource agencies, and the Companies met for approximately three months and developed the Monitoring and Contingency Plan. Despite some reservations by a few agencies, this plan became Exhibit D to the state consent decree and was made a condition of the Corps of Engineers, hydraulics, and shoreline permits, Ecology's water quality certification, and DNR's lease (see list of agency approvals below).

Over a five-and-a-half month period, the following permits and approvals were granted for the RD/RA phase of the work:⁴

- EPA Letter of Concurrence on the 404/Section X permit to the Corps of Engineers (September 11, 1987).
- Shoreline Management Substantial Development Permit and Shoreline Conditional Use Permits (City of Tacoma File No. 141.422) (October 13, 1987); Shoreline Conditional Use Permit #590-14-7278 approved by Ecology (October 20, 1987).
- NPDES Permit Extension for Outfall (Ecology Order No. DE 87-307)(November 9, 1987), amending Condition S3 of NPDES Permit WA-000085-0.
- Ecology Coastal Zone Management Certification and State of Washington Concurrence to the Corps of Engineers (November 18, 1987).
- Ecology Water Quality Certification (November 18, 1987).

⁴It should be noted by way of clarification that some of these approvals address different components of the work. The approvals under the 1987 state consent decree and the 1990 federal consent decree, which will be described below, address the sediment and habitat restoration actions. Other components, such as source control, continue to be governed by other laws and permits, such as the Clean Water Act.

- Hydraulic Project Approval (Department of Fisheries No. B2-11576-03, November 17, 1987) and exchange of correspondence regarding interpretation of conditions (November 25 and December 18, 1987).
- Corps of Engineers 404/Section X Permit No. 071-OYB-2-011576 (December 15, 1987).
- Corps of Engineers Permit Evaluation and Decision Document, including NEPA Environmental Assessment and Finding of No Significant Impact and Section 404(b)(1) Evaluation of Alternatives (December 16, 1987).
- Ecology Letter of Approval for the Dredge and Disposal Plan (December 16, 1987).
- DNR Harbor Area Lease No. 22-002658 (December 21, 1987); Material Removal Agreement No. 31-049168 (December 21, 1987); and Material Deposition Agreement No. 20-012631 (December 21, 1987).
- Consent Decree (state consent decree) among Simpson, Champion, the DNR and Ecology entered by the Superior Court for the State of Washington for Pierce County, File No. 87-2-07673-9 (December 24, 1987).

D. Community Review and Acceptance

Environmental organizations, citizens concerned about Commencement Bay, and other interested members of the public were involved in the remedial action planning from the outset. The chronology in the bibliography indicates regular informal and formal consultation with many groups and individuals, including the Audubon Society, Sierra Club, Washington Environmental Council, League of Women Voters, The Mountaineers, Greenpeace, Friends of the Earth, and the Puget Sound Alliance.

The public was involved at each step described above, including review of preliminary draft documents such as the environmental analyses, monitoring plan and consent decree.

The degree of community support for the action was reflected by the following items, which are in the attached bibliography:

- 22 Tacoma-Pierce County labor, environmental, business, citizen leaders and elected officials sent a letter to EPA and other agencies urging approval of the project.
- The Washington Environmental Council comment letter on the proposed state consent decree stated: "We hope other plans will be as good as this one."
- At the public hearing, a Sierra Club member testified: "We see it as a model of how industry can involve environmental groups early in the process."
- Nominated by the Tahoma Audubon Society, Simpson received from Governor Gardner the 1988 Washington State Environmental Excellence Award (Industrial Category) by the Washington State citizen's Ecological Commission as an

"outstanding voluntary environmental program or activity that exceed regulatory permit or license requirements."

E. Summary of Actions Implemented

Pre-construction monitoring, construction activities, and associated monitoring began immediately and were completed in September 1988, as further described below in Part III on Remedial Construction Activities.

The alternative that was implemented under these approvals is summarized by the following statement from the Project Analysis:

Recognizing that a better outfall, better control of sources of pollution at the mill, and remedial action for the contaminated sediments were all related, Simpson began planning a series of actions to address these "cross-media" environmental concerns The proposed project will correct the problem of sediment contamination on the bottom of the Bay near the mill by permanently capping this relatively shallow area with clean Puyallup River sediments; installing a new secondary treatment plant outfall; collecting and providing secondary treatment for stormwater; containing chip spillage; and creating substantial new intertidal habitat for bird and marine life, thus enhancing Commencement Bay and Puyallup River aquatic resources. The proposed project will preserve existing water-dependent harbor and maritime uses of the site

Key references for Part II: Project Analysis, Fact Sheet, permits and approvals in Part A of the bibliography, public notices and fact sheets in Part C of the bibliography, public hearing transcripts, exhibits and comment letters in Part D of the bibliography, principal agency correspondence and general index of responses to agency comment letters in Parts E and F of the bibliography, sampling of press clippings and articles on the project in Part G of the bibliography, and summary of project chronology in Part H of the bibliography.

III. REMEDIAL CONSTRUCTION ACTIVITIES

A. Overview of Tasks Performed Including Monitoring and Reporting

Construction of the sediment remedial action and related activities such as the outfall, source control, and habitat restoration actions, consisted of nine tasks: dredging for the outfall alignment; placement of outfall dredged material; removal of the former outfall; site preparation; chip barge dredging and placement of dredged material with temporary cap; construction of the initial part of the cap (sometimes referred to as a "berm," although it was not actually a berm but was the first lift of the cap, strategically placed to prevent a mud wave of contaminated sediments); placement of the sediment cap; fill over the existing outfall area; and habitat enhancement capping (see Figure 4 and Exhibit B of state consent decree).

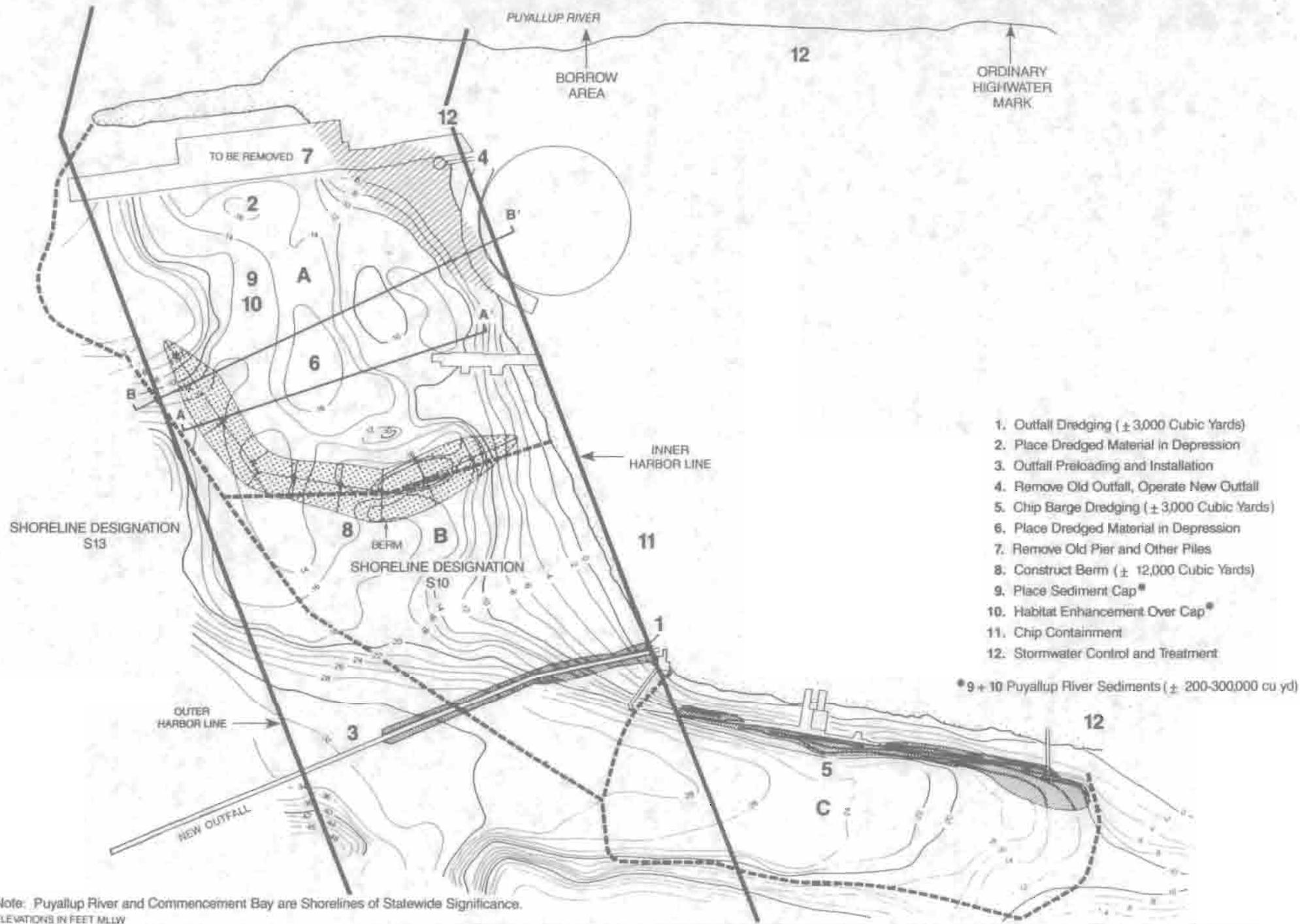


Figure 4.
Sequence of Remedial Actions
and Source Control

Construction monitoring was designed to assure compliance with the project design by determining the quantity and location of all material dredged and deposited, to assure compliance with water quality certification and to determine final cap thickness and bed topography (see Project Analysis, Appendix VIII, for monitoring methods and equipment, as supplemented by the Monitoring and Contingency Plan, which was made a part of the state consent decree and construction permits, and the Dredging Plan, which was made a part of the water quality certification, hydraulic project approval, and DNR agreements).

Monitoring and construction activities were required to be reported monthly to Ecology and specified agencies with jurisdiction and available to consulted agencies identified in the Monitoring and Contingency Plan, including EPA, NOAA, Puyallup Tribe and Muckleshoot Tribe. Key progress reports were also sent to public interest groups and other interested citizens. Nine monthly progress reports were submitted to Ecology by Simpson from commencement of construction to completion (January - September, 1987).

During construction, Simpson's Project Manager was Jerry Ficklin, Environmental Services Manager of the mill at that time. Simpson engineer Ronald S. Larsen assisted Mr. Ficklin as Project Supervisor. Parametrix, Inc. and Ogden Beeman & Associates, Inc. served as the principal consultants for remedial design planning and construction oversight. Parametrix, Inc. served as the monitoring contractor, and Analytical Resources Incorporated performed the laboratory analysis. General Construction Company and A. H. Powers of Seattle, Washington, and Nehalem River Dredging Company of Nehalem, Oregon, served as principal dredging and bathymetry contractors.

The Puyallup Tribe, under contract with Simpson, had representatives observing and coordinating dredging work in the Puyallup River. Ecology, in consultation with other agencies, inspected the construction work for each task on an ongoing basis for compliance with remedial design specifications, issuing letters of acceptance and approval as appropriate. The bibliography contains a more detailed listing of personnel and firms involved with the project.

B. Outfall Relocation and Site Preparation

The outfall needed to be relocated before the sediment and habitat restoration components. The outfall's permitted 30 mgd discharge of secondary effluent into a calm and shallow area did not allow both dredging of contaminated sediments as well as the placement of clean, native Puyallup River sediments without dispersing these sediments. As noted above, the new outfall was designed to prevent flocculation and to take advantage of the natural off-shore currents within Commencement Bay.

To understand the remedial construction activities, it is necessary to understand the fishery "windows" in Puget Sound. Because of fishery and habitat concerns, federal, state, and local agencies and Indian Tribes place strict limitations on work in the waters of Puget Sound and the Puyallup River. Work in the waters of Commencement Bay is generally prohibited between mid-March and mid-June and between mid-October and mid-December each year (in other words, the fishery "windows" open and allow work only between December-March and June-October each year). In addition, work in the Puyallup River itself is generally prohibited, except for a portion of the summer months. Construction activities, including dredging, must stop when the fishery windows close - even if work is incomplete. These restrictions require careful staging and management of projects dealing with contaminated sediments.

In-water work began on December 16, 1987, after receipt of the 404/Section X permit from the Corps of Engineers. By March 17, 1988, when the fishery window closed, the new, extended outfall and diffuser was fully operational under Ecology's NPDES permit. Baseline monitoring for the new outfall and diffuser was also performed. The old discharge structure was removed and the old outfall line was sealed. The materials dredged for the placement of the new outfall and removed from in front of the chip unloading dock were deposited in depressions in the area of contaminated sediments and covered with an interim cap of clean material from the Steilacoom quarry. The one-foot depth of the temporary cover was verified by monitoring.

Construction activities for the overall project occurred on or ahead of schedule and met or performed better than required. One unexpected event is described below because it may be instructive in managing future sediment remedial actions. A mechanical problem that occurred during the dredging of the trench required to bury the shallow portion of the outfall pipe. On December 23, 1987, a barge containing dredged material was moored within the project area, waiting to be moved into position for discharge with the proper slack tide conditions. That evening, a hydraulic problem on the barge caused the bottom of the barge to open 24 inches wide, discharging approximately 700 cubic yards of dredged material. In accordance with the contingency plan, emergency meetings were held among the agencies, Simpson, and its consultants and contractors to assess the situation.

The material had been dredged from a portion of the outfall alignment which previous sampling indicated would not be contaminated. Nonetheless, the dredged material remaining in the barge and the material on the Bay bottom were both sampled and visually inspected for any release of contaminants, including personal underwater inspection by divers including Simpson's Project Manager Jerry Ficklin and principal remedial design consultant Don Weitkamp of Parametrix, Inc. Although problems appeared unlikely, Ecology and Simpson directed the dredging contractor to remove the material and place it in the area to be capped in accordance with the remedial design and engineering plans. The corrective actions were completed by December 31, 1987, and Ecology sent Simpson a letter of commendation for its prompt response. At a meeting on March 31, 1988 to assess the effectiveness of the remedial construction and monitoring techniques, the agencies and Simpson recommended that any hydraulic barges used for transporting contaminated sediments should be positioned over the precise disposal site if possible during temporary moorage.

Site preparation for the sediment and habitat components was also complete by March 17, 1988. Site preparation actions reflected the integration of pollution control and natural resource objectives in the remedial construction activities. Old pilings and large pieces of debris in the contaminated sediments were removed in order to prevent them from providing pathways for upward migration of toxicants. Their removal was also integral to using the Bay's natural forces to protect the physical integrity of the remedy and to reestablish habitat. Their removal, along with the outfall relocation, allowed restoration of natural tidal forces and accretion in the St. Paul Waterway area. By removing artificial seagull perching habitat which had been created by the old docks, there would be fewer seagulls serving as predators in the immediate area. This would help re-populate the new intertidal habitat by reducing the competition for food in the area, especially for young salmon.

Old above-water structures were removed and more than 1200 piles were pulled. The design required that all subsurface debris extending more than two feet above the sediment be removed. During this procedure, it was observed that sediment was being resuspended in the water column. In consultation with Ecology, both design and construction methods were altered to avoid disturbance of the sediments as logs and debris were mechanically pulled out of the areas of

greatest contamination. Construction methods were altered by using diver inspections to identify those logs and debris that were sufficiently exposed to warrant their removal to ensure cap integrity. The design was revised by leaving in place logs where less than three feet protruded from the sediment and by increasing the minimum thickness of the cap to eight feet in that area to provide an additional margin of safety. As noted below, post-construction monitoring confirmed compliance and cap thickness of between 12 and 20 feet in these areas. Other areas were prepared by a combination of mechanical methods and visual survey by divers. (Progress Report #3, dated March 17, 1988.)

Water quality data was submitted to Ecology in April 1988 for the period between December 1987 and March 1988 in a report entitled "Simpson Dredging and Disposal Monitoring Report". This report described the monitoring undertaken to evaluate the effects of dredging and disposal activities. Monitoring included sampling 150 feet down-current from each dredge site, and sampling at 150 feet, 300 feet and 600 feet from each disposal site. Additional water column samples were collected at the request of Ecology. Water quality remained within the state standards for Class B marine waters as measured for dissolved oxygen, percent light transmittance/turbidity, total suspended solids, pH, and hydrogen sulfide (Appendices A-D of the report provide the monitoring data). This report demonstrated that appropriate methods were used to control the disbursement of sediments during dredging and deposition.

C. Sediment and Habitat Capping and Completion

Because of fish migration in the Puyallup River, no in-water construction took place between March 15 and June 15, 1988. The final construction phase to place clean Puyallup River sediments over the contaminated area began as soon as the fishery window opened on June 16, 1988. Construction of the cap was finished on August 9, 1988. Under the state consent decree, most of Area A (see Figures 2 and 4) was to receive a cap of at least four feet of Puyallup River sediment, plus four-to-eight feet for habitat enhancement, with the most contaminated area to be filled above the high tide line. Contractor specifications required at least eight feet across Area A. Much of the area received 12 feet or more of cap, with areas up to 20 feet thick. Area B, which was to have at least five feet of river sediments, received a cap up to 12 feet thick. Area C, which was covered with woodchips but did not contain chemical contamination requiring isolation of sediments from marine life, was to receive a cap of two feet in order to provide a new Bay bottom; it received up to four feet of clean material. The Bay bottom in the project area before and after construction is shown in Figures 5 and 6. Cobbles and boulders were placed in the intertidal area as part of the habitat enhancement.

The cap was placed with a downpipe diffuser, attached to a pipeline which carried the clean sediments from the Puyallup River bed. The diffuser reduced the discharge velocity, reducing turbidity and improving the control for placing the sediments. Capping the contaminated sediments involved several steps, illustrated on Figure 4. The cap was generally placed in a series of 2-foot layers, or "lifts," to minimize turbidity, resuspension of sediments, sloughing and erosion. Prior to placing the first lift over the area, a crescent-shaped mound or berm of clean sediments was placed along the southwest boundary of Area A as a preventive measure to contain the contaminated sediments in Area A when the first lift was placed there (this concern did not materialize when the first lift was subsequently placed). This mound simply became part of the overall cap as the lifts were placed and the elevation of the cap rose.

As in the earlier phase, baseline or pre-construction monitoring and construction monitoring were conducted to assure quantity and location of the dredged and deposited materials, uniform coverage, adequate cap thickness, and water quality compliance. Water quality parameters were all well within standards (Progress Report #7, dated July 18, 1988). Core analyses taken from three locations after placement of the first two feet of cap in the most contaminated area gave nondetectable results for all parameters (Progress Report #8, dated August 11, 1988). The final report provided a ten sheet bathymetry analysis detailing the bottom contours of the Problem Area and the Puyallup River pre- and post-capping, and cross sections detailing the cover placement (Progress Report #9, dated September 13, 1988; see Figures 5 and 6 of this Completion Report). By letter on September 21, 1988, Ecology issued its letter of completion and acceptance of remedial construction activities in compliance with the terms of the state consent decree.

Key references for Part III: Progress Reports, including Construction Monitoring, in Part J of the bibliography, principal agency correspondence in 1988 in Part E of the bibliography, and before and after photographs in Part I of the bibliography.

IV. FEDERAL SUPERFUND PROJECT APPROVAL

A. Background on the Federal Superfund Process in Commencement Bay

In October 1981, Commencement Bay was listed as the top priority for action in Washington state on an interim priority list developed by the EPA. Commencement Bay was divided into four areas: Deepwater, Nearshore, Tidelands Industrial, and South Tacoma Channel. On December 30, 1982, the Nearshore and Tidelands Industrial Areas were designated as a discrete project. In early 1983, the EPA and Ecology announced that Ecology would conduct a Remedial Investigation and Feasibility Study (RI/FS) of the contamination in the Nearshore/Tidelands area of Commencement Bay. The RI was initiated in 1984, and the results were published in 1985. The RI concluded that sediments within the study area contained elevated concentrations of metals and organic compounds.

Beginning in 1986, additional field sampling was conducted for the initial phase of the FS. The purpose of the FS was to develop and evaluate the most appropriate remedial strategies for correcting hazards associated with contaminated sediments in the CB/NT Site. The FS was published in December 1988 and identified nine problem areas that were recommended for further action under the federal Superfund program. The FS concluded that correction of contamination problems should take place over a period of several years by several regulatory authorities using a wide variety of existing regulations and implemented according to a performance-based Record of Decision (ROD).

A proposed plan, based on the RI/FS was published for review and comment from February 24 to June 24, 1989. Based on consideration of public comment, EPA selected the remedy for the CB/NT site with the concurrence of Ecology and the Puyallup Tribe of Indians. The ROD was published on September 30, 1989. It addressed eight of the nine problem areas described in the FS, the ASARCO sediments problem area was deferred to a separate operable unit.

The ROD determined that the most appropriate remedy for achieving the CB/NT cleanup objectives was a combination of Source Control/Natural Recovery and Sediment Confinement. The key elements of the selected remedy for the overall CB/NT Site include the following major elements:

- Site use restrictions
- Source control
- Natural recovery
- Sediment remedial action
- Monitoring

In general, the selected remedy includes the appropriate combination of these elements and is implemented in each of the different problem areas independently of one another. The overall remedy includes an 8-year active cleanup phase for source control and sediment remediation and a 10-year natural recovery phase.

Implementation of source control, the first step in the selected remedy, includes application of regulatory mechanisms and remedial technologies including a full range of all known available and reasonable methods of treatment (AKART) to achieve compliance with applicable or relevant and appropriate requirements (ARARs) and to maintain the sediment quality objectives defined in the ROD. Ecology is the lead management agency for source control under a cooperative agreement with EPA. As explained in Section I.C above, EPA has approved Ecology's Source Control Completion Report for the St. Paul Waterway Problem Area.

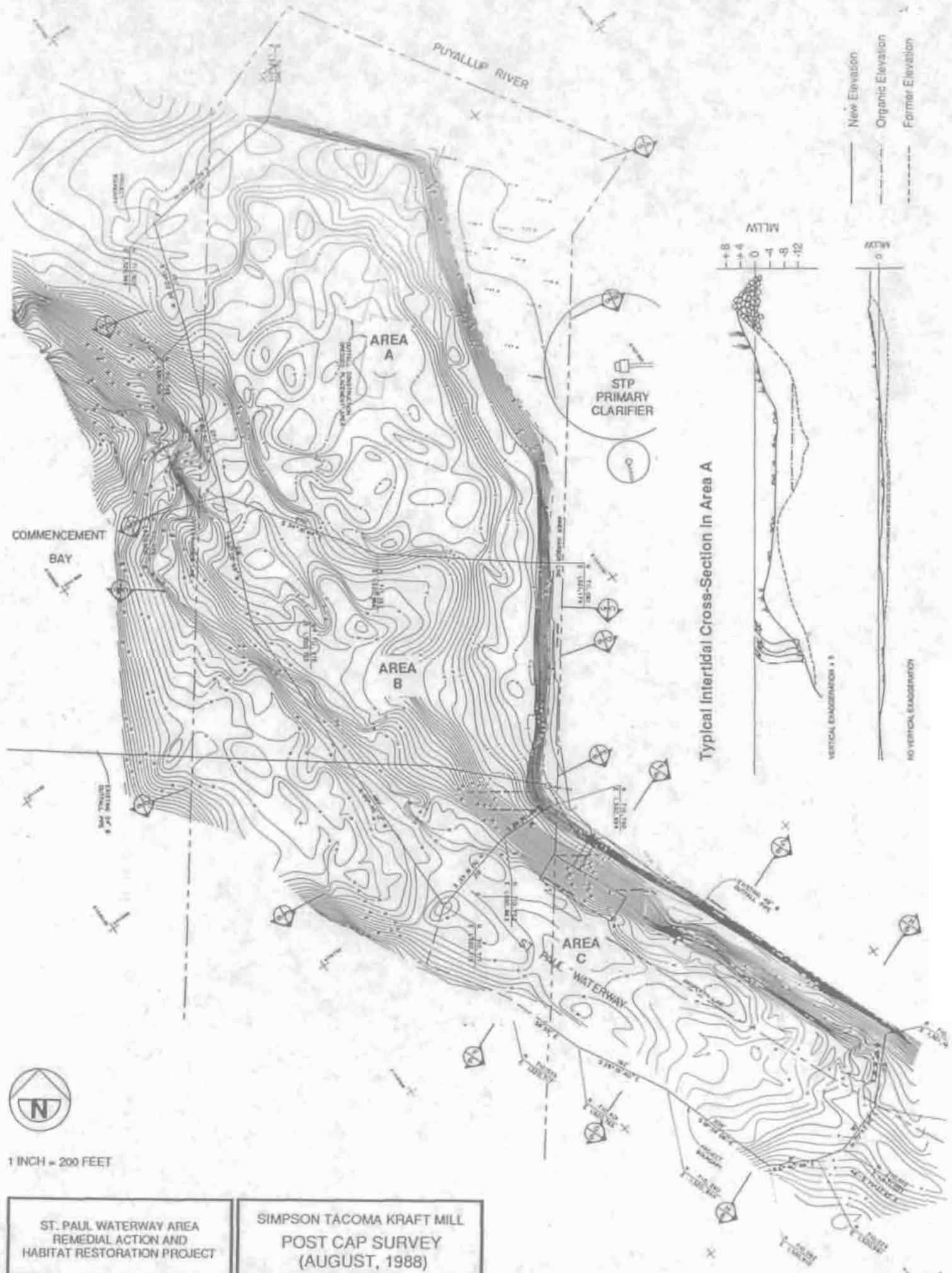
EPA is the lead for sediment remedial action. Under the ROD, each response action will involve one of four options for confinement of contaminated sediments. Sediment cleanup is to achieve acceptable sediment quality in a reasonable time frame. The objectives are defined in terms of biological and chemical tests, using tests developed by the Puget Sound Estuary program. The cleanup objectives identified by the ROD were developed with reference to the 1989 Puget Sound Water Quality Management Plan (PSWQA 1988) and stated the sediment quality goal as "the absence of acute or chronic adverse effects on biological resources or significant human health risk." The attainment of that goal is measured by monitoring for biological effect levels or chemical concentrations.⁵ Habitat function and enhancement of fisheries will also be incorporated into cleanup objectives.

⁵The values set for apparent effect thresholds (AETs) were developed for Puget Sound sediments and used in the planning and approval of this remedial action. See, for example, CB/NT RI (1985); CB/NT FS (1989); CB/NT FS, Development of Sediment Criteria (1986, 1987) and the primary document, Development of Sediment Cleanup Goals (1989); Development of Sediment Quality Values for Puget Sound. Report to Puget Sound Disposal Analysis and Puget Sound Estuary Program. U.S. Environmental Protection Agency, Region X, Seattle, WA (Volume 1, 1986).



Figure 5.

Source: Parametrix, Inc.



1 INCH = 200 FEET

ST. PAUL WATERWAY AREA
REMEDIAL ACTION AND
HABITAT RESTORATION PROJECT

SIMPSON TACOMA KRAFT MILL
POST CAP SURVEY
(AUGUST, 1988)

Figure 6.

Source: Parametrix, Inc.

**B. Completion of the Federal Approvals for the
St. Paul Waterway Problem Area**

Because the CB/NT FS was delayed (it was rescheduled for completion in June 1988), it was not possible to have simultaneous federal and state Superfund approval of the project, as described in the preceding sections of this report. EPA sent a letter to Simpson on December 9, 1987, advising that it could not formally approve or authorize the project because of this delay in the overall Commencement Bay Nearshore/Tideflats study process. EPA encouraged Simpson, Champion and Ecology to move ahead expeditiously, however, noting the coordination between the project planning and the CB/NT RI/FS process. The letter stated:

We understand that Simpson has coordinated its plans and analysis for this project closely with TetraTech, Inc., which is using Superfund monies as the Washington State Department of Ecology's (Ecology) consultant for the performance of the Commencement Bay Nearshore/Tideflats Superfund Remedial Investigation and Feasibility Study. Although the analysis which Simpson has prepared for the project does not appear to be inconsistent with the overall Commencement Bay Feasibility Study thus far, EPA cannot formally approve or authorize your project until the Superfund process is complete.

As noted above, the CB/NT FS was issued in February 1989, and EPA issued the CB/NT ROD on September 30, 1989. The FS and ROD analyzed the documentation and actions taken at the St. Paul Waterway Area to date, including source control and monitoring, and selected capping in place (*in situ* capping) as the preferred alternative. The ROD indicated that revisions in the monitoring plan were necessary to assure the effectiveness of the remedy. EPA began meeting with the federal and non-federal natural resource trustees to review the actions taken to date, including the monitoring data, and to develop proposed revisions in the monitoring plan.

In May 18, 1990, EPA sent a special notice letter under CERCLA Section 122(e) to Simpson, Champion, and DNR inviting negotiations with EPA and the trustees on a proposed federal consent decree, including reimbursement of agency costs and a revised monitoring plan, and on natural resource damage claims. Following negotiations, a federal consent decree was signed by the parties on September 27, 1990, and transmitted to the U.S. Department of Justice. The federal consent decree included a modified monitoring plan, reimbursement of costs, and a natural resource damages settlement. The performance standards and monitoring in the federal consent decree are summarized in Part VII below. The consent decree also required filing and EPA approval of this completion report. The parties agreed to an amendment to the state consent decree to assure consistency.

Formal public comment will also be sought on the federal consent decree. To assist public review, joint notice and comment will be taken on all aspects of the action, including the federal consent decree and its attachments, such as the monitoring plan, completion report, and natural resources settlement documents, and the state consent decree amendment.

Key references for Part IV: CB/NT ROD, Integrated Action Plan and other supporting documents, Ecology Source Control Completion Report, principal agency correspondence in 1989-90 in Part E of the bibliography.

V. POST-CONSTRUCTION MONITORING RESULTS

A. Introduction

The initial post-construction monitoring to assure that physical parameters were met is described in the preceding section. The bathymetry data showed that the addition of approximately 236,000 cubic yards of clean sediment to isolate the contaminated sediments and create healthy habitat resulted in a cap that was thicker than required and met the physical performance standards (Figures 5 and 6; see intertidal cross-section on Fig. 6). The planning documents noted that reshaping of the new Bay bottom would occur because of the amount of fine sediment added to the area and the restoration of natural currents when the old outfall and pilings were removed.

As noted above, the Monitoring and Contingency Plan, which was part of the state consent decree and other approvals, required ongoing monitoring to assure the effectiveness of the remedy. The monitoring included physical, chemical, and biological monitoring. It also established an "early warning" system to anticipate potential problems, and a contingency planning and response process if the sediment and habitat actions did not perform as planned. The plan provided for modifying long-term monitoring requirements based on the results received, including providing for less intensive analysis if monitoring demonstrated continued effectiveness.

In addition to early warning reports, the plan required an annual report on the results of the previous year's monitoring. A draft of the second annual post-construction long-term monitoring report was submitted for agency review in January 1990. The final report, entitled "St. Paul Waterway Area Remedial Action and Habitat Restoration Project Monitoring Report 1988-1989" (Monitoring Report) was issued in June 1990. This report described physical, chemical and biological monitoring in October-November 1988 and in June-August 1989. An additional analysis, entitled "Gas Monitoring Report, St. Paul Waterway Remedial Action and Habitat Restoration Project" (Gas Monitoring Report) was submitted in draft form in February 1990.

The monitoring was conducted by Parametrix, Inc., consultants for Simpson and Champion, in accordance with the methods and procedures in the Monitoring and Contingency Plan adopted in 1987, approval of specific annual monitoring programs by Ecology in coordination with the consulted agencies, and on-site agency oversight and inspection of the monitoring activities. In addition, interested members of the public have been regularly invited to inspect the site and discuss the results of the monitoring. Confirmational monitoring will continue under the revised Monitoring Plan included in the federal consent decree.

B. Physical Monitoring

Monitoring and inspection during construction assured that the cap thickness met or exceeded the remedial action design specifications. The construction monitoring data included in the final monthly progress report serve as the baseline for subsequent monitoring (Figure 6). Post-construction monitoring was conducted to determine the cap's stability and sedimentation rates over a period of about ten months. Cap monitoring consisted of measuring the cap elevation relative to mean lower low water (MLLW) at various intertidal and subtidal locations. A statistically significant decrease in overall cap elevation would indicate that forces such as erosion or wave

action were reducing the cap thickness. Similarly, a net increase in cap elevation would indicate that additional Puyallup River sediment was being added to the cap, as anticipated by the design.

Measurements of cap elevation were taken during five surveys conducted between December 7, 1988 and June 8, 1989, using a standard theodolite with an electronic distance measuring device (EDM). Each survey consisted of measuring elevations along five transects perpendicular to the shoreline (Monitoring Report, Section 2). The data showed no elevation change that appeared to threaten either the new habitat or the cap integrity. The intertidal portion of the cap showed some elevation changes that were anticipated due to settling and wave action. Increases in elevation observed closest to the mouth of the river were also anticipated by the design of the cap. There was no indication of a loss of cap material. The cap thickness remains in excess of the consent decree requirements. Although performance standards are currently met, detailed bathymetry and aerial photography will continue as part of the confirmational monitoring under the revised Monitoring and Contingency Plan included in the federal consent decree.

Because of concern that dredging of the clean sediments from the Puyallup River might leave a depression that could cause an adverse effect on fish, bathymetric surveys were also conducted in the Puyallup River dredge area (borrow area) to determine how fast it was filling in after completion of dredging operations. Bathymetry data showed that the borrow area has essentially returned to pre-dredge conditions, with profiles somewhat flatter than the pre-dredge profiles. No further monitoring is needed.

C. Chemical Monitoring

Chemical monitoring has two main purposes: (1) to serve as an "early warning" if unexpected conditions develop; and (2) to measure performance until biological performance standards are developed. Performance is measured by results from samples that do not have values higher than the lowest apparent effects threshold (LAET).⁶ The early warning role is achieved by monitoring chemicals of concern and triggering the contingency planning process if a sample shows 80% of the LAET for an indicator group of chemicals. As the Monitoring Plan and Monitoring Report explain, an early warning level does not mean that the cap is not working. The approach is intended to verify at the earliest possible time whether a problem really exists and to anticipate the need for response planning before a serious problem might occur.

Sediment cores were collected in November 1988 and September 1989 at five stations, with three replicate cores collected at two of the stations. Metals and organics were analyzed according to the methods and quality control procedures identified by EPA's Contract Laboratory Program (EPA-CLP). Conventional pollutants were analyzed according to methods identified by the Puget Sound Estuary Program protocols (PSEP).

The chemical monitoring performed currently indicates no measurable chemical migration through the cap. All chemical concentrations in the cap are far below the 80% LAET level specified in the Consent Decree. Analysis of sediment samples showed that organic chemical concentrations

⁶The applicable LAET is based on the amphipod, oyster, or benthic AET, whichever is lowest for each chemical. The chemicals and AET values are listed on tables included in the Monitoring Plan. AETs were developed for Puget Sound sediment criteria. See footnote 5.

were generally below analytical detection limits for all organic chemicals at most stations. Organic and metal concentrations in the cap sediment were generally in the same range as those measured in the Puyallup River sediment before using it as cap material.

In 1988, some slightly elevated concentrations well below LAETs were observed in the top and bottom samples from Station C2 with completely clean materials in between. Because this station is near the edge of the cap formed during the first stage of capping, Parametrix and the Companies have concluded that a small quantity of material from the adjacent uncapped area may have mixed with surface material during placement of the second round of capping sediments. Although early warning levels were not exceeded, additional contingency monitoring was conducted in 1989. Three cores were taken at Station C2, but fewer samples showed similar concentrations and none were detected at any of the surface samples. Chemical analysis to date demonstrates that the contaminated sediments are isolated from the Commencement Bay environment (Monitoring Report, Section 3). Although performance standards are currently met, detailed chemical analysis of the cap will continue with some additional areas of analysis as part of the confirmational monitoring under the revised Monitoring and Contingency Plan included in the federal consent decree.

D. Biological Monitoring

A major objective of the project was to restore subtidal habitat and enhance intertidal habitat. Biological analysis of the cap area included a detailed description of the physical environment in the cap and its effect on the organisms inhabiting it, and an examination of the distribution of the organisms found in the cap area. Existing biota was compared with that occurring at two reference sites in order to distinguish between changes that are a part of the development of the cap community and changes resulting from general environmental conditions in Commencement Bay. The long term monitoring activities under the federal consent decree include reviewing these reference areas and locating additional reference areas if possible.

Benthos are organisms that live in or on the bottom of a body of water. Benthos samples were collected in June 1989 from four cap stations and two reference sampling stations. Five replicate samples were obtained at each station and an additional grab was taken to provide a sample for sediment particle size distribution and chemical analysis. Surveyors onshore verified sampling sites and positioning was monitored during all sampling.

The data collected demonstrate that a moderately complex community of polychaetes, mollusks, and crustaceans now lives in the new benthic habitat. This community appears to be a combination of some of the most common and most opportunistic species present in Commencement Bay. About 100 different species were observed with substantial differences in species composition at different sites. As described above, the goal of the habitat design was to produce a variety of conditions by varying contours, producing tidal pools, and adding rock substrate, which has now occurred in the area.

Epibenthos are organisms such as crustacea that live between low water and shallow subtidal areas in Puget Sound and are important food source for fish, such as juvenile salmonids. Epibenthos were sampled to see how successfully the newly created intertidal habitat provided a return to more natural conditions. A reference site at the mouth of the Puyallup River was sampled in 1988 before construction of the new habitat. In 1989, epibenthos were sampled at six stations on the newly created intertidal area and at two depths at the Puyallup River reference station. In general,

the cap stations had a greater abundance and greater diversity of epibenthic organisms than either of the two reference stations. Analysis of the data shows a high degree of dissimilarity among all stations. The intertidal habitat has been populated by four species of marine macrophytes (large attached algae) which covered most of the hard substrate available by the summer of 1989 (Monitoring Report, Sections 4, 5, and 6).

Recognizing the area is in a dynamic state, to date the constructed habitat is achieving the objective of providing varied habitat types for epibenthic organisms, including juvenile salmonid prey species. The newly restored and enhanced habitat is still developing, and the success of the habitat will be more fully assessed when the area has a more established biological community. Biological monitoring will continue with the addition of reference station analysis and benthic analysis as part of the confirmational monitoring under the revised Monitoring and Contingency Plan included in the federal consent decree.

E. Contingency Monitoring Including Gas Monitoring

As anticipated by the *Project Analysis*, gas has been released at discrete locations through the cap sediments. This gas is produced as a result of the decomposition of the large quantities of organic materials in the original sediments now covered by the cap. Because of the observations of gas, contingency monitoring was conducted under the Consent Decree's Monitoring and Contingency Plan at the request of the regulatory agencies, including EPA, NOAA, and Ecology, to determine whether the gases were providing a transport mechanism for chemicals from the contaminated sediments isolated beneath the cap.

Gas and surface sediment samples were collected from three stations on the cap and one reference station in September 1989. Chemical analyses showed that the gases are the products of organic decomposition, consisting primarily of methane and carbon dioxide, in concentrations similar to those observed in other marine sediments in the reference area and reported in the literature. There were no measurable quantities of the chemicals the cap was constructed to isolate. Chemical concentrations in the sediment at the vents were equal to or less than LAETs.

Although standards have been met with the completion of the remedial construction activities, long-term monitoring for potential exposure pathways, including gas vents, will continue as needed as part of the confirmational monitoring under the revised Monitoring and Contingency Plan included in the federal consent decree.

F. Quality Assurance/Quality Control

Although the remedial action was carried out pursuant to a state consent decree to which EPA was not a party, all procedures and protocols were selected in order to comply with EPA and Corps of Engineers quality assurance/quality control requirements. Procedures and protocol followed for monitoring during construction are specified in the Monitoring and Contingency Plan in the state consent decree and in the monthly progress reports. Procedures and protocols followed during post-construction monitoring are specified in the Monitoring Report and Gas Monitoring Report. Procedures and protocols for long-term confirmational monitoring are specified in the revised Monitoring and Contingency Plan in the federal consent decree, which supersedes the various

permits and permit conditions for the project. The state consent decree will also be amended to include the revised plan. Additional post-construction monitoring is described in the next two parts of this report.

Key references for Part V: State Consent Decree including Monitoring Plan, Progress Reports, including Construction Monitoring, in Part J of the bibliography, principal agency correspondence in 1989-90 in Part E of the bibliography, before and after photographs in Part I of the bibliography, confirmational monitoring reports and references cited therein in Part K of the bibliography.

VI. SUMMARY OF OPERATION AND MAINTENANCE

While the actions previously implemented in the St. Paul Waterway Problem Area under the state consent decree implemented and largely accomplished EPA's selected remedy for the cleanup of contaminated sediments in the St. Paul Waterway Problem Area as determined in the CB/NT ROD, revisions in the Monitoring Plan were necessary to ensure consistency of the St. Paul Waterway action with EPA's ROD and with the settlement of natural resource damage claims. These revisions have been incorporated into the monitoring plan.

The St. Paul Waterway Problem Area is now in the long-term confirmational monitoring phase. Operation and maintenance will consist of implementing the revised long-term Monitoring, Reporting and Contingency Plan (Monitoring Plan), dated September 1990, which includes conducting and reporting on the annual monitoring program and, if needed, performing contingency planning or response. The objectives of this monitoring are described below in Part VII on "Protectiveness."

Long-term monitoring has been designed to ensure performance standards are met by detecting any loss of cap integrity and assessing if the natural habitat has been restored relative to reference areas. Physical, chemical, and biological monitoring will be conducted. Ground surveys of bathymetry and intertidal transects will provide the basic physical monitoring data. Benthos, epibenthos, and macrophytes will continue to be the subject of the biological monitoring. Surface and subsurface chemistry of the cap, as well as of gas vents and intertidal seeps, will be monitored, including analyzing samples for LPAH, HPAH, chlorinated benzenes, pesticides, phenols, volatile organics, resin acids, metals and miscellaneous extractables. Values have been established for AETs for each of the selected parameters. Eighty percent of the LAET will continue to be the "early warning" level triggering the need for a contingency planning. Performance standards must be met, as described below in Section VII.C. EPA is the lead agency for oversight of Monitoring Plan and for coordination of the contingency planning process for the sediment remedial action under the federal consent decree and amended state consent decree.

A separate monitoring effort under Ecology's NPDES permit will measure the effectiveness of source control and of the ability of the new outfall to discharge mill effluent without creating environmental contamination. This monitoring is described above in Section I.C and in the Source Control Completion Report.

Key references for Part VI: Federal and State Consent Decrees including Monitoring Plan, principal agency correspondence in 1990 in Part E of the bibliography, confirmational monitoring reports and references cited therein in Part K of the bibliography.

VII. PROTECTIVENESS

A. Summary of Monitoring Results to Date

The sediment quality goal identified in the Commencement Bay Nearshore/Tideflats Record of Decision is stated as "the absence of acute or chronic adverse effects on biological resources or significant human health risk." The ROD also identifies sediment quality objectives to be met in each problem area. The monitoring activities conducted thus far in the St. Paul Waterway Problem Area and summarized in Section V of this report on Post-Construction Monitoring Results confirm the absence of most contaminant parameters in detectable quantities and confirm that standards have been complied with to date. As of this report:

- All measurable contaminants were well below the "early warning" LAETs.
- The cap met and exceeded the thickness required by the design and its integrity has not been impaired by either erosion or diffusion of contaminants from below.
- Benthic and epibenthic communities re-emerged and species abundance and diversity has to date demonstrated "the absence of acute or chronic adverse effects on biological resources."

B. Summary of Long Term Monitoring

The remaining activity to be performed at this problem area is long term monitoring specified by the Monitoring Plan, which has been revised under the federal and state consent decrees. The goals of the sediment remedial action taken by Simpson and Champion are to ensure that:

- Toxic concentrations of previously identified chemicals of concern are isolated from marine biota.
- Cap sediments are not recontaminated with chemicals of concern from the underlying sediments or the mill.
- Contaminated sediments remain isolated for a sufficient period of time to allow the concentrations of chemicals of concern to decrease to an acceptable level (i.e., chemical and microbial activity modify chemical composition of buried sediments over time).
- The natural habitat has been restored to support a productive biological community comparable in species composition and abundance to other relatively noncontaminated estuarine habitats in urban areas.

The following processes will be monitored to assess cap integrity:

- Physical erosion to assure cap depth is sufficient to isolate marine organisms from contaminated sediments. Bathymetric and chemical monitoring can detect these changes.
- Physical mixing to assure that the cap and the underlying contaminated sediments are not being mixed and pose a threat to cap integrity. Chemical monitoring can detect this process.
- Upward diffusion to assure contaminants are not moving through the cap and pose a threat to cap integrity. Chemical monitoring can detect this type of change.
- Surface contamination to assure seeps and vents are not vehicles for recontamination.
- Surface contamination from other sources. For example, potential offsite contaminant sources could affect the remediation site and deposit chemicals of concern. Again, chemical monitoring can detect this process.

As previously noted, Ecology has responsibility for monitoring source control through the NPDES permit for the mill.

C. Summary of Performance Standards

In connection with evaluating long term monitoring data, the federal consent decree specifies performance standards for the sediment remedial action (paragraph 46).

There are three types of performance standards: physical, biological, and chemical.

- The physical standard consists of at least three feet of clean sediment in Areas A and B.
- The biological standard consists of not finding an adverse effects for: benthic infauna abundance (i.e., that mean abundance is less than 50 percent of the reference area); amphipod mortality (i.e., mortality exceeds 25 percent of the reference sample); and larval abnormality (i.e., mean abnormality exceeds 20 percent of the reference sample).
- The chemical standard, which is an interim standard to be used only until reference areas are approved for the biological standard, consists of using the lowest AET (except microtox) from the top two centimeters of the cap as an indicator.

These performance standards are designed to be used in conjunction with each other to evaluate the protectiveness of the remedy at the St. Paul Waterway Problem Area. The performance standards are based on sediment quality objectives in the ROD, specific human health risk assessments, environmental effects tests, and associated interpretative guidelines including the Puget Sound Estuary Program protocols.

D. Periodic Review and Other Requirements

In connection with evaluating long term monitoring data, both the federal and state consent decrees provide for "periodic reviews" at least every five years to verify that performance standards are being met and that the remedy is protective of human health and the environment.

In addition, the federal and state consent decrees contain other protections, such as requiring that: the entry of the consent decree be recorded in the County Auditor's office; EPA and Ecology be notified prior to any property transfers; and provision is made for continuing the obligations under the decree, including monitoring activities.

Key references for Part VII: Federal and State Consent Decrees including Monitoring Plan, principal agency correspondence in 1990 in Part E of the bibliography, confirmational monitoring reports and references cited therein in Part K of the bibliography.

A bibliography of all reports relevant to the completion of this problem area is attached. These documents are available by calling the EPA Region X Superfund Branch, 1200 Sixth Avenue, Seattle, Washington 98101, at (206) 442-2710 and asking for the Superfund Site Manager for the St. Paul Waterway Problem Area.

ATTACHMENT TO SUPERFUND COMPLETION REPORT

BIBLIOGRAPHY

**and
Key Documents Relating to the
Sediment Remedial Action at the
St. Paul Waterway Problem Area
Commencement Bay Nearshore/Tideflats
Tacoma, Washington**

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A. PRINCIPAL PERMITS AND APPROVALS

1. State Environment Policy Act (SEPA) Environment Checklist and Determination of Nonsignificance (DNS), issued by the City of Tacoma as lead agency on August 6, 1987.
2. EPA Letter of Concurrence to the Corps of Engineers (September 11, 1987).
3. Shoreline Substantial Development and Conditional Use Permits (City of Tacoma File No. 141.422, October 13, 1987; Shoreline Conditional Use Permit #590-14-7278, October 20, 1987), approved by City of Tacoma and Washington Department of Ecology (Ecology).
4. NPDES Permit Extension for Outfall (Ecology Order No. DE 87-307 dated November 9, 1987, amending Condition S3 of NPDES Permit WA-000085-0).
5. Ecology Coastal Zone Management Certification and State of Washington Concurrence to Corps of Engineers (November 18, 1987).
6. Ecology Water Quality Certification (November 18, 1987).
7. Hydraulic Project Approval (Washington Department of Fisheries No. B2-11576-03, November 17, 1987) and exchange of correspondence regarding interpretation of conditions (November 25 and December 18, 1987).
8. U.S. Army Corps of Engineers 404/Section X Permit No. 071-OYB-2-011576 and Accompanying Determinations, including NEPA Environmental Assessment and Finding of No Significant Impact, Section 404(b)(1) Evaluation of Alternatives, public interest determination and compliance with other federal laws (December 15, 1987).
9. Ecology Approval of Dredge and Disposal Plan (December 16, 1987).
10. Aquatic Lands Lease No. 22-002658, Material Removal Agreement No. 31-049168, Material Deposition Agreement No. 20-012631 and accompanying exhibits and documents (Washington Department of Natural Resources, December 21, 1987).
11. Consent Decree, State of Washington Department of Ecology v. Simpson Tacoma Kraft Co. and the State of Washington, Department of Natural Resources, Pierce Co. Cause No. 87-2-07673-9 (December 23, 1987), including Amendment No. 1 and related exhibits and pleadings, referred to as the State Consent Decree.
12. Ecology Letter of Completion and Acceptance of Remedial Work (September 21, 1988).
13. Consent Decree, United States of America, on behalf of the United States Environmental Protection Agency, the United States Department of the Interior, and the National Oceanic and Atmospheric Administration, the State of Washington, the Puyallup Tribe of Indians and the Muckleshoot Indian Tribe v. Simpson Tacoma Kraft Company, Champion International Corporation, and Washington State Department of Natural Resources, U.S. District Court, Western Wa. Civil No. _____ (date) and exhibits and related pleadings, referred to as the Federal Consent Decree.

B. PROJECT DOCUMENTS AND SUPPORTING ANALYSES

1. Commencement Bay Nearshore/Tideflats Cooperative Agreement, as amended, Ecology and EPA, 1983.
2. Commencement Bay Nearshore/Tideflats Remedial Investigation, prepared by Tetra Tech, Inc. for Ecology and EPA, 1985.
3. Assessment of Human Health Risk from Ingesting Fish and Crabs from Commencement Bay, Versar, Inc., 1985.
4. Evaluation of Alternative Dredging Methods and Equipment, Disposal Methods and Sites, and Site Control and Treatment Practices for Contaminated Sediments, prepared by U.S. Army Corps of Engineers for Ecology, June 1985.
5. Guidance Manual for Health Risk Assessment of Chemically Contaminated Seafood, prepared by Tetra Tech, Inc. for EPA, June 1986.
6. Development of Sediment Quality Values for Puget Sound, unpublished report to Puget Sound Dredged Disposal Analysis and Puget Sound Estuary Program, prepared by Tetra Tech, Inc. for EPA Region X, Volume 1, 1986.
7. Tacoma Kraft Mill Sediment Investigation, Parametrix, Inc., 1986.
8. Tacoma Kraft Mill Outfall Improvements Predesign Report and Appendices, Parametrix, Inc. 1986.
9. Technical Review: Commencement Bay Nearshore/Tideflat Remedial Investigation, prepared for Simpson Tacoma Kraft Co., B. Hrutfiord, F. Schaumburg and Parametrix, Inc., 1986.
10. Development of Sediment Criteria, draft report, prepared by Tetra Tech, Inc., for Ecology and EPA, February 1987.
11. Project Analysis of the St. Paul Waterway Area Remedial Action and Habitat Restoration Project, Simpson Tacoma Kraft Co. and Parametrix, Inc., July 1987, consisting of Project Overview, SEPA Environmental Checklist and related documents, ten technical appendices with references, including the Focused Feasibility Study for the St. Paul Waterway Area (Appendix IV), as supplemented by Supplemental Information Packets (September and December 1987).
12. Final Outfall Monitoring Plan, Parametrix, Inc., August 1987.
13. Sediment Testing of Potential Cap Material, Puyallup River Channel, Final Report, Parametrix, Inc., September 1987.
14. Report and Recommendation on Shoreline Permits, File No. 141.422, City of Tacoma, Office of the Hearings Examiner, September 28, 1987, including the City of Tacoma Planning Department Staff Report and findings and conclusions incorporated by reference and the shoreline permit file.

15. Transcripts of the Public Hearings held on: (1) September 2, 1987 on the proposed remedy, feasible alternatives, environmental impacts, and permits and approvals for the proposal; and (2) November 30, 1987 on the project and proposed Consent Decree. See Part E below.
16. Commencement Bay Nearshore/Tideflats Feasibility Study, Assessment of Alternatives, draft report, TC-3218-08, prepared by Tetra Tech, Inc. for Ecology and EPA, November 1987.
17. Supplemental Assessment Summary of Puyallup River Channel, Parametrix, Inc. November 1987.
18. Disposal Alternatives Simpson Outfall Dredging and Outfall Dredge Material Placement, Simpson Tacoma Kraft Co., November 1987.
19. Dredge and Disposal Plan for St. Paul Waterway Area Remedial Action and Habitat Restoration Project, Simpson Tacoma Kraft Co., December 1987.
20. Department of the Army Permit Evaluation and Decision Document, including NEPA Environmental Assessment and Finding of No Significant Impact, responses to agency comments, and Section 404(b)(1) Evaluation (Appendix A), U.S. Army Corps of Engineers Permit No. 071 OYB-2-011576 (December 15, 1987).
21. Progress Reports (see Part J), Monitoring Reports (see Part K) , and Other Submittals under the State Consent Decree, including remedial design and construction documents.
22. Parametrix, "Sedimentation Rates Adjacent to Simpson Tacoma Kraft Mill," Draft Report for Simpson and Champion, April 26, 1988.
23. Commencement Bay Nearshore/Tideflats Feasibility Study and appendices and supporting documents, including Health Assessment for CB/NT (July 1988) and Integrated Action Plan for the Washington State Department of Ecology (EPA, Ecology, TetraTech, Inc., et al, December 1988) and Development of Sediment Cleanup Goals (prepared by TetraTech, Inc. for EPA and Ecology, February 1989).
24. Commencement Bay Nearshore/Tideflats Record of Decision, EPA (September 1989).
25. Source Control Completion Report for the St. Paul Waterway (Ecology, 1990) and Sediment Remedial Action Completion Report for the St. Paul Waterway (Simpson, 1991).
26. NRDA Settlement Agreement and Funding and Participation Agreement (use full titles and executed dates when available)
27. EPA, NOAA, and Department of the Interior regulations, guidance, memoranda, and enforcement policies with respect to implementation of CERCLA/SARA and the National Contingency Plan, including but not limited to interim and draft guidance documents on applicable or relevant and appropriate standards, natural resource damages, and drafting of judicial consent decrees and covenants not to sue.
28. Water Pollution Control Act, chapter 90.48 RCW, the Hazardous Waste Management Act, chapter 70.105 RCW, the Hazardous Waste Cleanup Act, chapter 70.105B RCW,

- Washington State Toxics Control Act, S.B. 6085 (chapter 2, laws of 1987, 3rd Ex. Sess.), Model Toxics Control Act (MTCA or Initiative Measure No. 97), Ch. RCW 70.105.D and proposed and final implementing rules, Ch. 173-340 WAC, and Ecology regulations, guidance, memoranda and enforcement policies with respect to these laws.
29. Puget Sound Water Quality Management Plan as amended (initially adopted in 1987), Puget Sound Estuary Program protocols as amended (initially adopted in 1987), and Puget Sound Dredge Disposal Analysis guidelines as amended (initially adopted in 1987).
 30. Federal, state, and local requirements determined to be applicable, relevant and appropriate as referenced in the EPA CB/NT ROD and Project Analysis documents.
 31. Agreement between the Puyallup Tribe of Indians, local Governments in Pierce County, the State of Washington, the United States of America, and certain private property owners (April 27, 1988).
 32. Superfund Memorandum of Agreement between EPA, Ecology, and the Puyallup Tribe of Indians (August 27, 1989).
 33. Memorandum of Agreement among Puyallup Tribe of Indians, Muckleshoot Indian Tribe, Ecology, Fisheries, Wildlife, EPA, NOAA, Interior, FWS, and Bureau of Indian Affairs Regarding Natural Resource Damage Assessment in the Commencement Bay, Washington Environment.

C. PUBLIC NOTICES AND FACT SHEETS

1987

1. April 14 Simpson Press Release announcing project to be proposed and permit applications being prepared (carried in Tacoma News Tribune).
2. July 29-30 Simpson letter and documents requesting comments transmitted to approximately 90 libraries and agency staff with jurisdiction and expertise, citizens and environmental groups. Fact Sheet distributed and available.
3. July 30 Tacoma News Tribune Legal Notice.
4. July 30 Tacoma News Tribune Display Ad in Legal Notice section.
5. August 6 Tacoma News Tribune Legal Notice.
6. August 6 City of Tacoma Public and Agency Notice and SEPA Determination of Nonsignificance and Notice of Appeal Period to adjacent property owners, agencies, and interested organizations and persons.
7. August 9 Tacoma News Tribune Display Ad in main section.

8. August 14 U.S. Army Corps of Engineers Public Notice 071-OYB-2-11576 to agencies and interested organizations and persons.
9. November 12 Ecology Press Release and Joint Press Conference with Simpson announcing Proposed Consent Decree, public hearing and request for comments on decree (carried on three television networks, radio, and Tacoma News Tribune and Seattle newspapers).
10. November 13 Ecology Public Notice and Fact Sheet on Proposed Consent Decree to agencies and interested organizations and persons.
11. November 16 Tacoma News Tribune Display Ad in main section.
12. November 24 Ecology Press Release reminding press and public of hearing date and comment deadline.
13. November 30 Fact Sheets on remedial action plan and Proposed Consent Decree distributed at public hearing.

1991

14. _____ EPA, Ecology, Trustee, PRP Press Release and Joint Press Conference announcing Federal Consent Decree, Natural Resource Damage Settlement and State Consent Decree Amendment No. 1, and public hearing and request for comments on decree
15. _____ Public Notice and Fact Sheet on Federal Consent Decree and related actions to agencies and interested organizations and persons.
16. _____ Tacoma News Tribune Display Ad in main section.
17. _____ Fact Sheets on Consent Decree and related actions distributed at public hearing.

D. PUBLIC HEARING TRANSCRIPTS, EXHIBITS, AND COMMENT LETTERS

1. Public comment letters sent to Tacoma, Ecology, or Simpson in response to August notice and public comment period (1987, in chronological order):

Sierra Club Cascade Chapter, Tatoosh Group
(September 11).
Tacoma-Pierce County Chamber of Commerce
(September 18).
Rep. Art Wang, 22nd Legislative District
(September 18).
Tahoma Audubon Society (September 21).
Helen Engle (September 21).

United Paperworkers International Union, Local No. 586 (September 21).
Rep. Norm Dicks, 6th Congressional District
(September 23).
E.M. Patton (September 28).
United Paperworkers International Union, Local No. 237 (October
5).

2. Transcript of September 22, 1987 Public Hearing at Tacoma City Council Chambers on the proposed remedy, feasible alternatives, environmental impacts, and permits and approvals for the proposal. Presiding officer: David A. Akana, Hearing Examiner pro tem and former attorney-member of the Washington State Environmental Hearings Board. Testimony from:

Richard Gilmur, City of Tacoma Planning Department
Jerry Ficklin, Kenneth Weiner, Donald Weitcamp, on behalf of Simpson Tacoma Kraft Co.
Richard Burkhalter, Department of Ecology
Helen Engle, environmental community

3. List of Exhibits to the September 2,, 1987 Public Hearing (on file with Ecology and City of Tacoma).

4. Public comment letters sent to Ecology or Simpson in response to November notice and comment period (1987, in chronological order):

Letter from 21 members of Congress, state and local public officials, business and union leaders, citizens and environmentalists (November 17).
Washington Environmental Council (November 24).
NOAA ocean assessments division (December 1).
Friends of the Earth (December 7).
Tacoma Public Utilities (December 7).
U.S. Environmental Protection Agency to Ecology (December 7) and to Simpson Tacoma Kraft Co. (December 9).

5. Transcript of November 30, 1987 Public Hearing at Tacoma City Council Chambers on the project and proposed Consent Decree. Presiding officer: Janet Rhodes, Washington State Department of Ecology staff. Testimony from:

Richard Burkhalter, David Bradley, Jay Manning, Department of Ecology
Jerry Ficklin, Kenneth Weiner, on behalf of Simpson Tacoma Kraft Co.
Cheryl Miller, Conservation Chair of Tatoosh Group of the Sierra Club Cascade Chapter and on behalf of the Washington Environmental Council
Scott Morrison, citizen
Bill Tow, citizen
Linda Tanz, citizen and member of the Commencement Bay Superfund Citizens Advisory Committee
Tim Brincefield, U.S. Environmental Protection Agency Region X Superfund branch, community relations
Roxy Giddings, citizen
Helen Engle, National Audubon Society Board of Directors, Past President of Washington Environmental Council, Founding Director of Puget Sound Alliance and other affiliations

Tim Strege, Former Deputy Mayor of Tacoma, on behalf of 21 members of Congress, state and local public officials, business and union leaders, citizens and environmentalists
Sheri Tonn, Sierra Club Conservation Chair, Cascade Chapter, and National Water Chair

6. Documents and attendance lists from public hearings and meetings and meetings with citizens and environmental groups:

1987

April 2 meeting at home of Helen Engle.
April 23 meeting at Tacoma Mountaineers Clubhouse.
May 5 meeting with Commencement Bay Superfund Citizens Advisory Committee at Tacoma-Pierce County Health Department
August 13 meeting at home of Helen Engle.
August 11 public meeting at Tacoma-Pierce County Health Department auditorium.
September 22 public hearing at Tacoma City Council Chambers.
November 5 briefing and meeting on proposed Consent Decree at Katie Downs Restaurant.
November 19 meeting with Commencement Bay Superfund Citizens Advisory Committee at Tacoma-Pierce County Health Dept.
November 30 public hearing at Tacoma City Council Chambers.

1988

September 26 site inspection, report to the community on and celebration of completion of construction at the Mill and on the new beach

1989

Meeting on monitoring results

1990

Spring meetings with Sierra Club and Tahoma Audubon Society members on monitoring results
June 22 meeting at Mill on annual and contingency monitoring, initiation of Federal Consent Decree process and proposed monitoring plan, and natural resource damage issues
October 25 joint meeting of Commencement Bay Citizens Advisory Committee and EPA Comencement Bay Technical Discussion Group
November 12 meeting on proposed settlement at home of Helen Engle

7. Public comment letters sent to EPA in response to notice and public comment period, in chronological order): [to be added prior to entry of Decree]
8. Transcript of _____, 1991 Public Meeting in Tacoma.

9. List of Exhibits to the _____, 1991 Public Meeting: [to be added prior to entry of Decree]
10. Documents and attendance lists from intra- and interagency coordination and consultation meetings, 1987-1990.

E. PRINCIPAL AGENCY CORRESPONDENCE

1. Ecology memorandum (Fenske to Thornton, December 17, 1986).
2. EPA to Simpson (July 29).
3. Ecology and Simpson exchange of correspondence (August 6 and 10).
4. Ecology to Tacoma Planning Dept. (August 19).
5. DNR to Tacoma (August 21).
6. WDF to Tacoma (August 26).
7. Tacoma Dept. of Public Utilities to Tacoma Planning Dept. (August 19).
8. DNR to Ecology (September 1).
9. Tacoma City Engineer to Tacoma Planning Dept. (September 14).
10. EPA to Corps (September 11).
11. FWS to Corps (September 14).
12. NMFS to Corps (September 14).
13. Puyallup Indian Tribe to Corps (September 14).
14. Ecology to NMFS and FWS (September 28).
15. Tacoma Hearings Examiner to Tacoma City Council and Simpson (September 28) and to Ecology and Simpson (October 14).
16. Ecology to Tacoma Hearings Examiner and Simpson (October 20).
17. EPA to Simpson (October 23).
18. Ecology to Corps (November 18, 1987).
19. NOAA ocean assessments division to Ecology (December 1).
20. FWS to Corps (December 2).
21. DNR to Simpson (December 2).
22. NOAA/NMFS to Corps (December 3).
23. EPA to Corps (December 3).
24. DNR to Ecology (December 4).
25. Tacoma Public Utilities Divisions to ecology (December 7).
26. FWS to Simpson (December 7).
27. EPA to Ecology (December 7).
28. EPA to Simpson (December 9).
29. Tacoma to Corps (December 9).
30. Corps to FWS and NOAA/NMFS (December 9).
31. NOAA to Corps (December 14).
32. FWS to Corps (December 15).
33. Ecology to DNR (December 16).
34. WDF and Simpson exchange of correspondence (November 25 and December 18).
35. Ecology to Simpson (December 23).
36. DNR to Ecology (December 23).
37. Simpson/Parametrix to Ecology (December 31).

1988

38. Ecology to Simpson (January 5).
39. Simpson to Ecology (January 6).
40. Ecology to Simpson (January 13).
41. DNR to Dicks et al (January 26).
42. Simpson to Ecology (January 29).
43. Ecology memo to file (April 28).
44. Ecology to Consulted Agencies (March 2).
45. Ecology Commendation Letter to Simpson (March 2).
46. Ecology to Simpson (March 2).
47. Ecology to Tacoma (May 27).
48. Ecology to Simpson (May 31).
49. Simpson to Ecology (August 25).
50. Simpson to Agencies and Interested Persons (September 20).
51. Ecology to Simpson (September 21).
52. Simpson to Ecology (October 12).

1989

53. Simpson/Parametrix to Ecology on epibenthos baseline draft (February 22) [?]
54. Simpson to Ecology 1988 Sediment Monitoring (March 10) [?]
55. NOAA to Ecology (April 6).
56. Ecology to Simpson (April 18).
57. Simpson to Ecology (April 25)
58. EPA General Notice Letter to Simpson, Champion, DNR (April 24)
59. DNR to Ecology (May 3).
60. Simpson to Ecology (June 6) [FIND LETTER]
61. Ecology to Simpson and DNR (June 1).
62. Ecology to Simpson and Consulted Agencies (June 13).
63. DNR to Ecology (June 15).
64. Simpson and Champion FS comments to EPA (June 23).
65. Simpson to EPA (June 29).
66. Champion and DNR GNL Response Letters [FIND]
67. Simpson to Ecology (August 17)
68. Ecology to DNR and Consulted Agencies (August 22).
69. DNR to Ecology (August 29).
70. EPA interagency meeting agenda (October 2).
71. Simpson to Puyallup Tribe (December 4).

1990

72. Simpson to Ecology (January 16).
73. Ecology to Consulted Agencies (January 22).
74. Simpson to Ecology and Consulted Agencies (February 21).
75. Ecology to Consulted Agencies (April 27 - consulted agency meeting).
76. Simpson to Ecology (May 9).
77. EPA Special Notice Letter to Simpson, Champion, DNR (May 18).
78. EPA to Simpson (May 21).
79. Ecology to Simpson (May 21).
80. Ecology to Consulted Agencies (May 22).
81. Champion to EPA (May 30).

82. DNR to EPA (June 4).
83. DNR to Simpson (June 4).
84. EPA to Ecology (June 6).
85. Simpson to DNR (June 11).
86. EPA to PRPs and Trustees (June 14).
87. Simpson, Champion and DNR to EPA (June 15).
88. Simpson to Agencies with Jurisdiction (June 18).
89. EPA to Simpson (June 22).
90. EPA to PRPs and Trustees (June 28).
91. EPA to Tacoma and Rep. Dicks (July 3).
92. EPA to PRPs and Trustees (July 6).
93. Simpson to Trustees (July 11).
94. Simpson, Champion, and DNR to EPA (July 18).
95. DNR to EPA (July 19).
96. EPA to PRPs and Trustees (August 15).
97. Simpson and Champion to EPA (August 20).
98. DNR to EPA (August 20).
99. EPA to Simpson and Champion (August 31).
100. Ecology to EPA (September 26).
101. EPA to Ecology (September 28).
102. Simpson to EPA (September 29).

Abbreviations

Corps	U.S. Army Corps of Engineers
DNR	Wa. Department of Natural Resources
Ecology	Wa. Department of Ecology
EPA	U.S. Environmental Protection Agency
FWS	U.S. Fish & Wildlife Service
NOAA	National Oceanic and Atmospheric Administration
NMFS	National Marine Fisheries Service in NOAA
Simpson	Simpson Tacoma Kraft Company
Tacoma	City of Tacoma
WDF	Wa. Department of Fisheries
Consulted	
Agencies:	All agencies above plus the Puyallup and Muckleshoot Tribes
Trustees:	Consulted Agencies plus the U.S. Department of the Interior (Interior) and Wa. State Department of Wildlife (Wildlife), but not including the Corps, EPA, or Tacoma

F. GENERAL INDEX OF RESPONSES TO AGENCY COMMENT LETTERS

Each number corresponds to the numbered letter in the preceding section. The response is located, if one was appropriate, as indicated below:

1. The public notice was published as reviewed, in accord with the letter.
2. No further response needed (correspondence described the permit process).

3. Project Analysis Supplemental Information Packet (September 1987); Final Monitoring and Contingency Plan (Exhibit D to Consent Decree).
4. Project Analysis Supplemental Information Packets (September and December 1987); DNR Lease and related agreements (December 1987).
5. Project Analysis Supplemental Information Packets (September and December 1987); Puyallup River Dredge Plan and Notes (November 12, 1987); WDF Hydraulic Project Approval (November 17, 1987).
6. Shoreline permit condition E.
7. Final Monitoring and Contingency Plan (Exhibit D to Consent Decree).
8. Shoreline permit condition E.
9. Project Analysis Supplemental Information Packet (September 1987) and Corps Evaluation and Permit (December 1987) (the letter was EPA's concurrence in issuance of the Corps; permit).
10. Final Monitoring and Contingency Plan (Exhibit D to Consent Decree).
11. Project Analysis Supplemental Information Packets (September and December 1987); Corps Evaluation and Permit (December 1987).
12. Project Analysis Supplemental Information Packets (September and December 1987); Corps Evaluation and Permit (December 1987).
13. Project Analysis Supplemental Information Packets (September and December 1987); Corps Evaluation and Permit (December 1987); Final Monitoring and Contingency Plan (Exhibit D to Consent Decree).
14. No response necessary; resulted in final shoreline permit.
15. No response necessary; stated effective date of final shoreline permit.
16. No response necessary; followup letter sent by EPA on December 9, 1987.
17. No response necessary; resulted in final Corps permit (the letter was the State of Washington's concurrence in the issuance of the Corps' permit).
18. Project Analysis Supplemental Information Packets (September and December 1987); Corps Evaluation and Permit (December 1987); Final Monitoring and Contingency Plan (Exhibit D to Consent Decree); Ecology letter to NOAA branch (December 1987).
19. Project Analysis Supplemental Information Packets (September and December 1987); Corps Evaluation and Permit (December 1987).
20. Final Monitoring and Contingency Plan (Exhibit D to Consent Decree).
21. Project Analysis Supplemental Information Packets (September and December 1987); Corps Evaluation and Permit (December 1987).
22. No response necessary; Corps Evaluation and Permit (December 1987).
23. Final Consent Decree (December 1987).
24. No response necessary; no objections or comments letter.
25. No response necessary; FWS made its final determination within the time commitment stated in the letter.
26. Final Consent Decree (December 1987).
27. No response necessary; letter concludes that it is in the interest of Simpson, Champion, and ecology to move ahead expeditiously with the project.
28. No response necessary; Corps Evaluation and Permit (December 1987).
29. No response necessary. FWS and NOAA mad determinations not to elevate through the memorandum of agreement process; resulted in issuance of Corps Evaluation and Permit (December 1987).
30. Project Analysis Supplemental Information Packets (September and December 1987); Corps Evaluation and Permit (December 1987).
31. Project Analysis Supplemental Information Packets (September and December 1987); Corps Evaluation and Permit (December 1987).
32. No response necessary. Ecology designation of its project coordinator and request to DNR to designate a project coordinator.

33. Clarifying correspondence; no response necessary.
34. Clarifying correspondence; no response necessary.

G. SAMPLING OF PRESS CLIPPINGS AND ARTICLES ON PROJECT

(chronological order; does not include notices)

1. "Simpson Enjoys its Cleanup Chores", Tacoma News Tribune (October 12, 1987).
2. "Simpson Cleanup Project," Tahoma Audubon Society, The Towee (November 1987).
3. "State, Simpson Reach Accord on Bay Cleanup," Tacoma News Tribune (November 13, 1987).
4. "Environmentalists Hail Simpson Cleanup Plan," Washington Environmental Council Alert! (December 1987).
5. "Toxic Cleanup Effort Applauded," Seattle Post-Intelligencer, April 5, 1988.
6. "A Super Day for Superfund: Once Toxic Tacoma Shoreline is Back to Like," Seattle Post-Intelligencer, September 27, 1988.
7. "Simpson's Kraft Mill Toasts \$5 Million Tideflats Cleanup" and "Tideflats Mill has a Beach Party," Tacoma News Tribune, September 27, 1988.
8. "Simpson Cleanup Receives Environmental Excellence Award," Tacoma News Tribune.
9. "Landmark Cleanup Completes Construction Phase," Ecology Today (November 3, 1988).
10. "Simpson Co. Offers Rare Success Story," The Olympian (October 8, 1989).
11. "Simpson Kraft Earns Another Cleanup Award," Tacoma News Tribune (November 7, 1989).
12. "Environmental Excellence: Simpson Tacoma Cleanup," Ecology Hazardous Waste Cleanup Program, 1988 Annual Report.
13. "Simpson Receives National Award for Pollution Control," Puget Sound Water Quality Authority Soundwaves (Vol. 4, No. 8, December 1989).

H. SUMMARY OF PROJECT CHRONOLOGY

1981

Commencement Bay receives interim designation by EPA as a federal superfund site.

1983

Final designation of Commencement Bay Nearshore/Tideflats as a federal superfund site.

Ecology and EPA enter into the Commencement Bay Nearshore/Tideflats Cooperative Agreement under Section 104 of CERCLA (federal superfund) establishing the Commencement Bay Superfund Program, with Ecology as lead agency.

1985

Ecology and EPA complete the Commencement Bay Nearshore/Tideflats Remediation Investigation (RI), prepared by their consultants, Tetra Tech, Inc.

Ecology issues a new waste discharge (NPDES) permit for the Tacoma Kraft Mill, requiring the installation of a new outfall for the mill's secondary treatment plant. Ecology also order a study of the contamination described in the Remedial Investigation for the St. Paul Waterway Area, adjacent to the mill.

Champion International acquires the Tacoma Kraft Mill by merger with St. Regis, the owner and operator since 1930.

Simpson Tacoma Kraft Company purchases the Tacoma Kraft Mill from Champion International. Simpson undertakes a comprehensive reacquisition analysis of the mill's environmental status.

Simpson initiates air quality and other improvements at the mill. Under Ecology's direction, Simpson continues implementation of the NPDES permit conditions to design a new outfall and analyze source control and reviews the findings of the Remedial Investigation.

1986

Simpson initiates source control actions with Ecology's encouragement, which, by 1987, removes over 1 million pounds of pollutants from the mill process on an annual basis.

Simpson initiates plans for stormwater control along Puyallup River and a new barge unloading facility for chip spillage control in St. Paul Waterway.

Simpson completes and obtains Ecology's approval of outfall predesign. Ecology and Simpson agree to combine outfall, further source control, and remedial action planning into a comprehensive environmental improvement project.

Discussions with Puyallup Tribe about possible concepts for environmental improvement actions.

1987

Winter

Preliminary planning meetings with Puyallup Tribe, citizens and environmentalists, federal, state, and local agencies and public officials.

First of five coordination meetings with Tetra Tech, Inc. and agency staff on potentially feasible technologies and alternatives, scope of Focused Feasibility Study for the St. Paul Waterway Area, and coordination with the overall Commencement Bay Feasibility Study (FS).

U.S. Army Corps of Engineers' preapplication meeting with agencies with jurisdiction and expertise and tribes.

Spring

Meetings with citizens and environmental groups on preliminary plans, alternatives, environmental impacts, and approval process.

Preapplication consultation meetings with agencies and Puyallup Tribe and continued coordination meetings with Tetra Tech, Inc.

Preparation of analyses on alternatives and environmental impacts for key elements of the proposed action, including sampling of Puyallup River sediments.

Summer

Completion and circulation of single coordinated document ("Project Analysis") to satisfy all applicable requirements. Filing of applications and requests for federal, state, and local agency review and approval.

Coordinated public notices and direct, advance circulation of notices, Fact Sheet, and Project Analysis to interested citizens, groups, and agencies, and libraries.

Briefing and meeting for citizens and environmental groups on application documents and August 11 public meeting in Tacoma on proposal.

Consultation meetings with agencies and Puyallup Tribe and continued coordination meetings with Tetra Tech, Inc.

SEPA appeal period ends without adverse comments or appeals being filed.

Fall

Comment periods end for shoreline and Corps permits. Intensive consultation process among federal, state, and local agencies, tribes, and Simpson to complete the Monitoring and Contingency Plan and resolve other questions or issues.

Two public hearings are held: one in September on the proposed remedy, feasible alternatives, environmental impacts, and permit and approval process; and one in November on the project and proposed Consent Decree.

Washington State Legislature passes and Governor signs a state superfund law in a special one-day session in October (State toxic control act, S.B. 6085). The new law applies to decrees in the process of being negotiated.

Continued consultation on project and briefings with citizens and environmental groups on advance drafts of consent decree and monitoring and contingency plans.

Proposed Consent Decree filed with Pierce County Superior Court on November 6, 1987, the first decree under the new state law. The new law requires 30 days to elapse for comments before entry of a final decree.

Washington Department of Fisheries issues state hydraulics permit. Shoreline permits are approved by City of Tacoma and Ecology; no appeals are filed, and the permits are final. Water quality certification, Coastal Zone Management Program, order extending outfall installation date, and related approvals are issued by Ecology. DNR and Simpson agree on terms of aquatic lands lease and related matters.

1987-88

Winter

Corps issues Section X/404 permit with a lengthy determination and alternatives evaluation and response to agency comments under Section 404(b)(1) of the federal clean water act.

Final Consent Decree and Exhibits, including the DNR lease and related agreement, are executed for filing.

Christmas eve barge malfunction and immediate contingency planning and corrective action, avoiding any release of hazardous substances.

Outfall relocation and site preparation completed by the closure of the fishery window on March 15. New outfall fully operational.

1988

Spring

Meeting with Simpson and Consulted Agencies to assess first phase of construction and monitoring and to prepare for next construction phase.

Upland activities and mobilization.

Summer/Fall

Construction work resumes, with Ecology and interested agencies inspecting and certifying the work as it proceeds.

Completion of remedial construction by mid-August. Ecology issues Letter of Completion and Acceptance of Work on September 13.

Agencies and interested citizens invited to inspect the remedial action and restored beach.

Long term monitoring commences.

1989

Spring

EPA sends General Notice Letter to Simpson, Champion, and DNR.

Summer

EPA issues CB/NT Feasibility Study.

Fall/Winter

EPA issues CB/NT Record of Decision and commences discussions with natural resource trustees regarding St. Paul Waterway Problem Area.

1990

Winter

Ecology, Simpson, and Champion circulate draft 1988-89 Monitoring Report and special gas monitoring report to consulted agencies.

Spring

EPA sends Special Notice Letter to Simpson, Champion, and DNR.

Ecology, Simpson, and Champion meet with consulted agencies and interested members of the public to discuss monitoring results and 1990 monitoring program.

Simpson, Champion, and EPA meet with interested members of the public to discuss monitoring results, 1990 monitoring program, EPA Special Notice Letter and completion of federal approvals, including revised monitoring plan and natural resource damages.

Summer/Fall

EPA, Natural Resource Trustees, Simpson, Champion, and DNR negotiate and execute federal consent decree, revised monitoring plan, natural resource damage settlement, and amendment to state consent decree.

Simpson meets with interested members of the public on federal consent decree and related matters.

Winter

Federal Consent Decree is filed, commencing public comment period.

Draft 1990 Annual Monitoring Report is circulated to agencies and public.

Simpson Remedial Planning and Design Team Leaders

Jim Carraway, Champion International
Jerry Ficklin, Simpson, PRP project manager (now at Ficklin Environmental Services)
Greg Hartman, Ogden Beeman & Associates (now at Hartman Associates)
Ron Larsen, Simpson Engineering
Duane Pearson, Simpson Real Estate
Ted Reeve, Simpson Senior Counsel
Ken Weiner, Preston Thorgrimson Shidler Gates & Ellis for Simpson
Don Weitkamp, Parametrix, Inc.

Agency Review Team Leaders

(alphabetical by agency)

Arlie Winther and Karen Northup, Corps of Engineers
Dave Jamison, DNR
Mark Horton, Ecology Deputy Director
Dick Burkhalter and Fred Fenske, Ecology Industrial Section
Dave Bradley and Meagen White, Ecology Hazardous Waste Section
John Malek, EPA Region X
Curtis Dahlgren, Fisheries (now at Ecology)
Chuck Dunn and John Cooper, FWS
Morgan Bradley, Muckleshoot Tribe
Rob Jones, NOAA/NMFS
Tom Deming, Puyallup Tribe (now at Watershed Dynamics)
Dick Gilmur, City of Tacoma Planning Department

State Consent Decree Working Group

(Agency Review Team also addressed Monitoring and Contingency Plan)

Dave Bradley, Ecology Hazardous Waste Section
John Demeyer, DNR Aquatic Lands Division
Ann Essko, Attorney General's Office, DNR
Jerry Ficklin, Simpson
Jay Manning, Attorney General's Office, Ecology
Ted Reeve, Simpson
Mike Thorp, Heller Ehrman for Champion
Steve Tilley, DNR Aquatic Lands Division
Bob Tobin, Preston Thorgrimson for Simpson
Ken Weiner, Preston Thorgrimson for Simpson

Remedial Construction Team Officials and Principal Contactors

Fred Fenske, Ecology Project Coordinator (now at Simpson)
Greg Bean, Ecology Project Coordinator
Jerry Ficklin, Simpson Project Coordinator
Ron Larsen, Simpson Project Superintendent
Ken Weiner, Preston Thorgrimson for Simpson
Steve Tilley, DNR Project Coordinator
Tom Deming, Puyallup Tribe

Analytical Resources Inc.

General Construction Company
Nehalem River Dredging Company
Ogden Beeman & Associates, Inc.
Parametrix, Inc.
A. H. Powers

Federal Consent Decree Working Group

Chuck Albertson, NOAA General Counsel
Allan Bakalian, EPA Regional Counsel
Kathleen Barrett, Preston Thorgrimson for Simpson
Greg Bean, Ecology Project Coordinator
Ben Bilus, Champion
Morgan Bradley, Muckleshoot Tribe
Jim Carraway, Champion
Lori Cohen, EPA Superfund Site Manager
Craig O'Connor, NOAA General Counsel
Lew Consiglieri, NOAA
Richard DuBey, DuBey law firm for the Puyallup Tribe
Nancy Flickinger, U.S. Department of Justice
Tod Gold, EPA General Counsel
Dave Jamison, DNR Aquatic Lands
Don Kane, FWS
Linda Larsen, Heller Ehrman for Champion
Jay Manning, Attorney General, Ecology
Dave McEntee, Simpson Project Coordinator
Jon McPhee, Preston Thorgrimson for Simpson
Ted Reeve, Simpson Senior Counsel
Barry Stein, Interior Solicitor's Office
Mike Stoner, EPA Superfund
Bill Sullivan, Puyallup Tribe
Christa Thompson, Attorney General, DNR
Mike Thorp, Heller Ehrman for Champion
Ken Weiner, Preston Thorgrimson for Simpson
Don Weitkamp, Parametrix, Inc.

I. PHOTOGRAPHS

1. July 10, 1987 aerial photos.
2. June 5, 1989 aerial photos.

J. PROGRESS REPORTS, INCLUDING CONSTRUCTION MONITORING

Note: Monthly Progress Reports were required during the construction phase. All attachments, including plans, data, and correspondence, are considered part of each Progress Report.

1. First Progress Report, January 16, 1988.
2. Second Progress Report, February 16, 1988.
3. Third Progress Report, March 17, 1988.
4. Fourth Progress Report, including Simpson Dredging and Disposal Monitoring Report, April 15, 1988.
5. Fifth Progress Report, May 19, 1988.
6. Sixth Progress Report, June 20, 1988.
7. Seventh Progress Report, July 18, 1988.
8. Eighth Progress Report, August 11, 1988.
9. Ninth and Final Progress Report, including approved post-construction bathymetry, September 13, 1988.

K. CONFIRMATIONAL MONITORING REPORTS

Note: Two annual monitoring reports and a contingency gas monitoring report have been prepared and reviewed by the consulted agencies to date under the State Consent Decree. A draft of the third annual report will be completed based on 1990 monitoring approximately at the time the Federal Consent Decree is planned to be entered.

It is anticipated that future monitoring reports will be listed in this section -- and relevant correspondence on implementation activities will be listed in the next section -- to keep the administrative record current. Future reports may include, depending on the year: annual monitoring results, annual monitoring program (Table 1 Updates), contingency monitoring if any, and five-year periodic reviews.

Monitoring Reports

1. 1988 Draft Annual Monitoring Report
2. 1988-89 Monitoring Report (Draft, January 1990; Final, June 1990).
3. Gas Monitoring Report (February 1990).

L. PRINCIPAL IMPLEMENTATION CORRESPONDENCE AND DOCUMENTS

[Section reserved for submittals, correspondence, and other materials after the entry of the Federal Consent Decree.]



May 18, 1990

Reply To
Attn Of: HW-113

RE: Allocation of Past Costs Among Problem Areas
Commencement Bay - Nearshore/Tideflats Superfund Site

FROM: Michael Stoner
Superfund Site Manager

THROUGH: Carol Rushin, Chief *CRushin*
Superfund Site Management Section I

Philip G. Millam, Chief *PMillam*
Superfund Branch

TO: Charles E. Findley, Director
Hazardous Waste Division

CRushin
July 5-18-90
Approval

The purpose of this memo is to document the completion of an analysis of past response costs for the Commencement Bay - Nearshore/Tideflats (CB/NT) Superfund site. The analysis has been developed in order to allocate past response costs among the nine CB/NT problem areas identified in the CB/NT Record of Decision (ROD). The analysis covers specific costs incurred by the U.S. Environmental Protection Agency (EPA) during response and investigation activities leading up to completion of the ROD on September 30, 1989. Those costs total \$5,138,197. Recovery of problem-area specific allocations of past costs will be negotiated with separate groups of Potentially Responsible Parties (PRPs) which are currently being identified for each problem area.

The analysis of past response costs is presented in four sections. The first section briefly describes EPA's response activities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, commonly known as Superfund) at the CB/NT site, and the areas of the site covered by this analysis. The second section explains the purpose of this cost analysis and summarizes the development and documentation of relevant EPA response costs. The third section describes the method which was selected to allocate past costs among the nine CB/NT problem areas. The fourth section presents the final results of the analysis (i.e., the past response cost allocation for each problem area).

CB/NT SITE BACKGROUND

As described in the CB/NT ROD, EPA's Superfund response actions in the Commencement Bay area have evolved from area-wide investigations to cleanup strategies which are now focused on more discrete problem areas. The original Commencement Bay site was identified on EPA's Interim Priority List in October 1981 and included four areas: Deepwater, Nearshore, Tideflats Industrial, and the South Tacoma Channel. On September 6, 1983, EPA published and promulgated the first official National Priorities List of hazardous waste sites which identified two separate Commencement Bay sites: the Commencement Bay - Nearshore/ Tideflats (CB/NT) site and the Commencement Bay - South Tacoma Channel site. The Deepwater area was dropped from further consideration under Superfund at that time.

CB/NT Operable Units

Superfund response actions for the CB/NT site have continued to evolve and are currently coordinated under six separate operable units:

- Operable Unit 01 - CB/NT Sediments
- Operable Unit 02 - Asarco Tacoma Smelter
- Operable Unit 03 - Tacoma Tarpits
- Operable Unit 04 - Asarco Off-Property
- Operable Unit 05 - CB/NT Sources
- Operable Unit 06 - Asarco Sediments

Each of these operable units is further described in the CB/NT ROD in relation to EPA's comprehensive remedial response for the entire CB/NT site. However, the selected remedy documented in the ROD is specific to Operable Unit 01 (CB/NT Sediments) and Operable Unit 05 (CB/NT Sources). By convention the site name (i.e., CB/NT) refers to those same operable units and that convention is used in all other sections of this memo. RODs for the other CB/NT operable units either have been or will be developed separately.

CB/NT Record of Decision

The CB/NT ROD was completed and signed by the EPA Regional Administrator on September 30, 1989. It represents the completion of a long and complicated study phase for the CB/NT site. The ROD documents the selected remedy for eight problem areas which are each characterized as a combination of: 1) chemically contaminated marine sediments and 2) a localized drainage basin including the sources of those contaminants. The eight problem areas addressed in the CB/NT ROD are: Head of Hylebos Waterway, Mouth of Hylebos Waterway, Sitcum Waterway, St. Paul Waterway, Middle Waterway, Head of City Waterway, Wheeler-Osgood Waterway, and Mouth of City Waterway.

An additional priority problem area, the Ruston Shoreline, was included in the CB/NT Remedial Investigation and Feasibility Study (RI/FS), and also briefly described in the CB/NT ROD. However, a final decision on the remedy for that problem area was not provided in the ROD. Instead, the Ruston Shoreline was designated as Operable Unit 06 (Asarco Sediments). EPA is currently developing a supplemental FS for Operable Unit 06 which will be submitted for public review and comment later this year.

The CB/NT ROD defines the selected remedy for each problem area in terms of five key elements: 1) site use restrictions, 2) source control, 3) natural recovery, 4) sediment remediation, and 5) monitoring. In general, these elements will be implemented according to a two-step approach: source control followed by sediment remediation. During the cleanup phase, the Washington Department of Ecology (Ecology) will have the lead for source control and EPA will have the lead for sediment remediation. The roles and responsibilities of EPA and Ecology are summarized in the ROD and further described in an EPA Cooperative Agreement entered into with Ecology on June 30, 1989.

Project Implementation

Due to the scope and complexity of the CB/NT site, the ROD provides for flexible implementation of the remedy. In general, however, continuing response actions will proceed on a sequential basis for each problem area, as described in the CB/NT ROD. The timing of sediment remediation in any problem area will be determined according to a number of factors, the most important being the status of source control. Other areas of the CB/NT site, such as the Blair Waterway, and any environmental or public health problems not germane to the goals and objectives of the CB/NT site (i.e., not associated with the marine environment) are not within the scope of activities addressed by the ROD.

Some other important factors in the current site management strategy include the following:

- On April 24, 1989, during the public comment period for the Remedial Investigation/Feasibility Study (RI/FS), EPA issued CERCLA general notice letters to 133 PRPs for the CB/NT site.
- A PRP search is ongoing. It is designed to finalize separate lists of PRPs who may be held liable for past response costs and sediment remediation in each of the nine CB/NT problem areas. EPA will issue CERCLA special notice letters to the identified PRPs for each problem area in order to commence sediment remedial action and recover past costs.
- On April 28, 1989, a Cooperative Agreement between EPA and the Puyallup Tribe of Indians was approved, establishing the

tribe as a supporting agency for remedial activities at the CB/NT site.

- On June 30, 1989, a Cooperative Agreement between EPA and Ecology was approved which establishes Ecology's Urban Bay Action Team (UBAT) as the lead agency team for source control at the site.
- On December 14, 1989, EPA held the first Technical Discussion Group (TDG) meeting in Tacoma, Washington. The TDG has been established to provide a forum for review and discussion of technical and planning information between the regulatory agencies and the affected community. Meetings are scheduled to continue on a quarterly basis.

Since completion of the ROD, EPA efforts have focused on oversight of the Cooperative Agreement with Ecology to ensure implementation of the source control process, coordination with the natural resource trustees during their efforts to assess natural resource damages, continuation of the PRP search for each of the nine problem areas, implementation of several sediment-related projects and issues, and community relations activities intended to coordinate local development projects with ongoing response actions at the CB/NT site.

COST RECOVERY ACTIVITIES

Purpose of Problem-area Specific Cost Allocation

The gradual focusing of attention on specific problem areas within the CB/NT site is typical of the Superfund process, especially during the pre-remedial and RI/FS phases. This process involves sample collection and analysis to determine the nature and extent of contamination, including confirmation of non-problem areas. Cost recovery efforts by EPA necessarily address costs incurred during the investigation of the entire site, despite the fact that some portions of the site may not warrant further remedial action. Similarly, area-wide costs for the CB/NT site, and costs which are directly attributable to non-problem areas, such as the Blair Waterway, have been allocated to those PRPs associated with the nine CB/NT problem areas.

Under CERCLA, all PRPs are jointly and severally liable for response and investigation costs incurred by EPA at the CB/NT site. As stated previously, however, EPA intends to negotiate separately with different groups of PRPs for each problem area. Therefore, despite the joint and several liability scheme of CERCLA, which is applicable for recovery of EPA's response costs on an area-wide basis, it is EPA's intention to hold individual PRPs liable for costs attributable to the specific problem area(s) with which they are associated. Although EPA has therefore performed a cost allocation on a problem-area basis, this analysis is not meant to

be interpreted as an attempt to allocate response costs among specific PRPs. It will be the responsibility of the PRPs within any given problem area to further allocate problem area response costs among individuals for the purpose of settlement with EPA.

Development of Past Response Costs

Past response and investigation costs for the CB/NT site addressed in this analysis have been developed under the direction of the EPA Region 10 Superfund Program Management Section. These costs include EPA costs associated with site-related activities such as pre-remedial investigations, the CB/NT Remedial Investigation and Feasibility Study (RI/FS), the public comment period on the RI/FS, and the development and completion of the CB/NT ROD. The majority of these costs were incurred by EPA during development of the CB/NT RI/FS, which included areas of the site now managed under Operable Unit 01 (CB/NT Sediments), Operable Unit 05 (CB/NT Sources), and Operable Unit 06 (Asarco Sediments). Additional response costs were incurred in association with the original Commencement Bay site. Documentation of the combined response costs for the CB/NT site and for a portion of the original Commencement Bay site which are addressed by this cost analysis are described below.

Past costs for the CB/NT site were developed by the Contract Evidence Audit Team (CEAT-Techlaw) under assignment to the National Enforcement Investigations Center (NEIC). The Contract Evidence Audit Team's Final Cost Recovery Report was completed on March 16, 1990 and is available for public review as part of the CB/NT site file. It is an eight volume report which documents the following types of EPA costs: EPA payroll costs, EPA indirect costs, EPA travel costs, laboratory costs, contractor costs, and cooperative agreement costs. The CB/NT site costs documented in the report total \$4,871,377.

Past EPA response costs for the original Commencement Bay site, which were developed by the Superfund Program Management Section, total \$538,340. However, because the original site was subsequently split into two sites, the CB/NT site and the Commencement Bay - South Tacoma Channel site, the original costs have been divided among those two sites. In some cases costs are clearly associated with one site or the other and have been allocated accordingly. Commencement Bay site costs directly attributable to the CB/NT site total \$36,367. Costs which cannot be directly associated with either site total \$460,906 and have been allocated equally between the two. The original Commencement Bay site costs which have therefore been allocated to the CB/NT site total \$266,820. Documentation of the original Commencement Bay site costs attributable to the CB/NT site is also available for public review in the CB/NT site file.

The past response costs for the CB/NT site addressed in this analysis have been derived by summing the relevant costs listed above for the CB/NT site and for the original Commencement Bay site. The combined total is \$5,138,197.

METHOD OF ALLOCATING COSTS AMONG PROBLEM AREAS

The following method of allocating past response costs among CB/NT problem areas has been selected because it provides the most straightforward and equitable approach for distributing area-wide project costs among the nine specific problem areas. The method utilizes weighting factors to determine the portion of overall site costs attributable to a particular problem area. The weighting factors are developed from numerical data and are used as multipliers to determine the fraction of overall past response costs attributable to each specific problem area. Three specific weighting factors have been selected as cost indicators for different types of response activities within the overall EPA effort required during the CB/NT study phase. Once calculated, the weighting factors provide a means of fairly allocating past response costs for the CB/NT site on a problem-area basis. In this section the weighting factors are described, the reasons for their selection are explained, and the various data from the CB/NT RI/FS and ROD which have been used to calculate each weighting factor are identified.

Identification of Weighting Factors

Past response costs have been allocated to each of the nine CB/NT problem areas based on the following equally weighted factors:

1. Samples.- The number of environmental samples collected from various media directly adjacent to and within the problem area;
2. Sources - The number of major potential sources of contamination identified for each problem area; and
3. Volume - The total volume of sediment exceeding the cleanup goal in the problem area.

Each of these weighting factors can be easily generated from numerical data which exist in the RI/FS and ROD.

Assumptions and Rationale

The use of weighting factors to allocate response costs assumes that there is a positive correlation between the number of direct field measurements (e.g., samples) and response costs associated with a portion of overall project implementation activities (e.g., management, sampling, analytical, and oversight

activities). The assumptions associated with each cost-related weighting factor are described below:

1. Samples - There is a positive correlation between the number of samples collected in any given problem area and overall efforts to characterize the site and develop methodologies for evaluating sediment toxicity. This assumption is reasonable because all aspects of project management clearly increased with the range and complexity of the problem chemicals found in bottom sediments, including the number of samples needed to characterize a particular problem area (i.e., the weighting factor).

2. Sources - Similarly, the number of major potential sources associated with a specific problem area correspond well with the overall project efforts related to source identification, estimation of source loading, and evaluation of the feasibility of source control and the potential for natural recovery.

3. Volume - The RI/FS was complicated by the unusual nature and volume of contaminated marine sediments and the subsequent need to evaluate appropriate remedial alternatives such as: dredging and dredge material transport technologies, large scale treatment systems, and disposal site feasibility and availability. Furthermore, each of these project components was significantly complicated in proportion to the volume of sediments under consideration for remediation.

Although arguments could be made for alternative methods of cost allocation among problem areas, or utilization of different weighting factors, the combination of weighting factors described above provides a reasonable and equitable means of distributing past costs among the nine CB/NT problem areas. Deletion of any of the selected weighting factors would tend to provide a less equitable allocation.

For example, developing a cost breakdown based on only site characterization and source control evaluation would result in a complex problem area such as the Head of Hylebos, which includes both multiple problem chemicals and sources, incurring a larger cost allocation factor than a more simple one such as the St. Paul, which includes limited sources and a relatively homogeneous problem area. This would not adequately consider the fact that the site is characterized, in general, by large volumes of material (i.e., sediments) which are contaminated at relatively low levels.

However, by utilizing a cost allocation factor weighted on volume, the analysis of past response costs takes into account many of the complexities of the project which were necessarily incorporated in the evaluation of remedial alternatives involving contaminated marine sediments. Thus a very large problem area,

such as the one off-shore of the Asarco facility (CB/NT Operable Unit 06), is subject to a proportionately higher cost allocation factor, despite the fact that it is relatively simple in terms of source identification and problem area evaluation. The volume factor therefore takes into account the substantial effort that was required to evaluate remedial alternatives involving extensive environmental impact to contaminated marine sediments.

Calculation of Cost Allocation Factors

The cost allocation factors used in this analysis have been generated from data which is easily retrievable from the RI/FS reports and the ROD.

1. Samples - The number of environmental samples per problem area (i.e., water, biota, suspended particulates and sediments) was generated from the RI/FS database by Tetra Tech, Inc., Ecology's remedial contractor for the project and an EPA TES IV contractor for the project (see Attachment 1).
2. Sources - The number of sources per problem area was computed from the major sources identified in Appendix C of the CB/NT ROD (see Attachment 2). Although source control efforts by Ecology include other properties, only those sources characterized as major were included in RI/FS evaluations regarding source control and the potential for natural recovery.
3. Volume - The volume of contaminated sediments was developed in the CB/NT FS, based on predicted exceedance of the sediment quality objective (Long-Term Goal) for the site (see Attachment 3). The basis for these numbers was confirmed in the CB/NT ROD. Although the Asarco Sediments problem area is still being evaluated in terms of required remediation, EPA's determination of the overall extent of the problem area, as described in the CB/NT FS, will not likely be adjusted in subsequent reports.

In each case, the three weighting factors are derived for a specific problem area by simply calculating the percent of the overall number for each weighting factor which corresponds to the specific problem area of concern. For example, in the ROD the total number of major sources identified for the nine problem areas is 24, and the number of major sources in Middle Waterway is 2. Therefore, the cost-related weighting factor for sources in Middle Waterway is 8.3 percent.

FINAL COST ALLOCATION AMONG CB/NT PROBLEM AREAS

A final allocation of past response costs for the CB/NT site has been developed, based on the cost-related weighting factors described above. The results of that allocation are listed in this

section (see table). The average of the three weighting factors for a specific problem area has been used as a cost-related multiplier (i.e., cost fraction) to determine the portion of overall past response costs attributable to the problem area in question.

The total EPA response costs attributable to the nine CB/NT problem areas is \$5,138,197 through September 30, 1989. Note that all management and field effort costs for non-problem areas, such as the Blair Waterway, are proportionately distributed among problem areas in this cost allocation analysis.

CB/NT COST ALLOCATION PER PROBLEM AREA

<u>Problem Area</u>	<u>Samples^a</u>		<u>Sources^b</u>		<u>Volume^c</u>		<u>Multiplier^d</u>	<u>Cost^e</u>
H of Hylebos	329	20.8%	9	37.5%	381	13.4%	0.239	1,228,029
M of Hylebos	180	11.4%	1	4.2%	786	27.7%	0.144	739,900
Sitcum	155	9.8%	2	8.3%	167	5.9%	0.080	411,056
St. Paul	131	8.3%	1	4.2%	236	8.3%	0.069	354,536
Middle	135	8.5%	2	8.3%	63	2.2%	0.063	323,706
H of City	157	9.9%	6	25.0%	575	20.3%	0.184	945,428
Wheeler-Osgood	63	4.0%	1	4.2%	11	0.4%	0.029	149,008
M of City	131	8.3%	1	4.2%	27	1.0%	0.045	231,219
Ruston Shore	303	19.1%	1	4.2%	588	20.7%	0.147	755,315
TOTAL	1584	100%	24	100%	2834	100%	1.000	5,138,197

a = samples for all environmental media totaled from RI/FS (see Attachment 1)

b = list of major sources per waterway as described in Appendix C of CB/NT ROD (see Attachment 2)

c = volume of sediment exceeding cleanup goal reported in units of 1,000 yd³, as listed in Table 14-2 of CB/NT Feasibility Study (see Attachment 3)

d = average of weighting factors for samples, sources and volume of sediments, converted to a fraction multiplier

e = problem-area specific allocation of past EPA response costs, derived by using multiplier to determine fraction of area-wide cost (i.e., total of \$4,601,377 for CB/NT site and \$266,820 for CB/NT share of original Commencement Bay site)

CONCLUSION

The cost analysis described in this memo provides a reasonable and equitable method of allocating past response costs incurred by EPA among the nine CB/NT problem areas. The costs addressed by this analysis include all past EPA response costs associated with Operable Units 01 (Sediments) and 05 (Sources) of the CB/NT site through September 30, 1989. EPA will negotiate with PRPs in each problem area for recovery of these costs and any additional response costs incurred by the agency from that time forward. In order to facilitate negotiations, this memo and the Final Cost Recovery Report developed for the site will be made available in the CB/NT site file for review upon request.

ATTACHMENT 1
SAMPLE TYPES AND NUMBERS

The number of environmental samples collected from various media during the Remedial Investigation and Feasibility Study for the Commencement Bay - Nearshore/Tideflats site are listed below. Although samples are listed for problem areas and non-problem areas, only the problem area samples were used in the weighting factor calculations.

	Water	Surface Sediment	Biota	Suspended Particulates	Subsurface Sediment	Total Sample #
NON-PROBLEM AREA						
Slair	20	86	203	14	63	386
Commencement Bay	0	3	1	0	0	4
Carr Inlet	0	25	141	0	0	166
Milwaukee	12	23	72	8	14	129
Pualliac River	10	0	0	8	0	18
SUBTOTAL	42	137	417	32	77	705

	Water	Surface Sediment	Biota	Suspended Particulates	Subsurface Sediment	Total Sample #					
PROBLEM WATERWAYS											
Head of City	8	15%	27	8%	70	9%	8	16%	44	11%	157
Mouth of City	10	19%	20	6%	68	9%	8	16%	25	6%	131
Wheeler-Osgood	2	4%	15	5%	0	0%	0	0%	46	11%	63
Head of Hylebas	12	22%	74	23%	135	18%	12	24%	96	23%	329
Mouth of Hylebas	12	22%	52	16%	66	9%	13	27%	37	9%	180
Middle	0	0%	22	7%	69	9%	0	0%	44	11%	135
Ruston-Pt. Defiance	0	0%	54	17%	200	27%	0	0%	49	12%	303
Sitcum	10	19%	26	8%	71	10%	8	16%	40	10%	155
St. Paul	0	0%	30	9%	68	9%	0	0%	33	8%	131
SUBTOTAL	54	100%	320	100%	747	100%	49	100%	414	100%	1584
TOTAL	96		457		1164		81		491		2269

ATTACHMENT 2
MAJOR SOURCES OF CONTAMINATION

The properties listed below were specified as major potential sources of problem chemicals to the Commencement Bay - Nearshore/Tideflats problem areas in the Record of Decision (September 30, 1989).

Head of Hylebos

- | | |
|--------------------------|--------------------------|
| 1. Kaiser Aluminum | 2. Pennwalt Chemical |
| 3. General Metals | 4. 3009 Taylor Way LSY |
| 5. Wasser Winters LSY | 6. Louisiana Pacific LSY |
| 7. Cascade Timber #2 LSY | 8. B&L Landfill |
| 9. Tacoma Boat | |

Mouth of Hylebos

1. Occidental Chemical Corporation

Sitcum

1. Port of Tacoma (Terminal 7)
2. Storm Drain SI-172

St. Paul

1. Simpson Tacoma Kraft

Middle

1. Cooks Marine Specialties
2. Marine Industries N.W

Head of City

- | | |
|-----------------------|--------------------------|
| 1. American Plating | 2. Martinac Shipbuilding |
| 3. Storm Drain CN-237 | 4. Storm Drain CN-237 |
| 5. Storm Drain CI-230 | 6. Tacoma Spur |

Wheeler - Osquod

1. Storm Drain CW-254

Mouth of City

1. D Street Petroleum

Ruston Shoreline

1. Asarco Tacoma Smelter

ATTACHMENT 3
SEDIMENT VOLUMES

The table presented below is excerpted from the Commencement Bay - Nearshore/Tideflats Feasibility Study. It lists the total volume of sediments exceeding the Long-term Cleanup Goal for each of the nine priority problem areas.

TABLE 14-2. SUMMARY OF REMEDIAL SEDIMENT SURFACE AREAS AND VOLUMES^a

Waterway	Long-Term Cleanup Goal ^b		Long-Term Cleanup Goal Plus 10-yr Recovery		Maximum AET ^c	
	Area	Volume	Area	Volume	Area	Volume
Head of Hylebos	381	381	217	217	9	9
Mouth of Hylebos	393	786	115	230	33	66
Sitcum	167 ^d	167 ^d	66 ^d	66 ^d	20	20
St. Paul	118	236	87	174	90	180
Middle	126	63	114	57	47	24
Head of City	230	575	171	426	42	104
Wheeler-Osgood	22	11	22	11	1	1
Mouth of City	27 ^d	27 ^d	0	0	0	0
Ruston-Pt. Defiance Shoreline	1,176	588	1,150	575	618	309
TOTAL	2,640	2,834	1,942	1,756	860	713

^a Areas are reported in units of 1,000 yd². Volumes are reported in units of 1,000 yd³.

^b Sediments with indicator chemical concentrations currently greater than long-term cleanup goals.

^c Sediments with indicator chemical concentrations currently greater than the lower of either the highest AET or the lowest "severe effects" AET.

^d Includes sediment for which biological effects were observed for nonindicator compounds.