STATE OF WASHINGTON

KING COUNTY SUPERIOR COURT

STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY, Plaintiff, v. BNSF Railway Company, Defendant.	NO. _____ CONSENT DECREE RE: BNSF FORMER MAINTENANCE AND FUELING FACILITY, SKYKOMISH, WASHINGTON

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I.

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INTRODUCTION

A. The mutual objective of the State of Washington, Department of Ecology (Ecology) and BNSF Railway Company (BNSF) under this Decree is to provide for remedial action and Natural Resource Damages (NRD) restoration and compensation at a facility (Site) where there has been a release or threatened release of hazardous substances. This Decree requires BNSF to conduct a final cleanup of the Site that is the subject of this Decree, by implementing the Cleanup Action Plan (CAP) attached as Exhibit B, according to the schedule and other requirements identified in this Decree and all exhibits thereto, and to implement NRD restoration and compensation as set forth herein.

Ecology has determined that these actions are necessary to protect human health and the environment.

B. The Complaint in this action is being filed simultaneously with this Decree. An Answer has not been filed, and there has not been a trial on any issue of fact or law in this case. However, the Parties wish to resolve the issues raised by Ecology's Complaint. In addition, the Parties agree that settlement of these matters without litigation is reasonable and in the public interest, and that entry of this Decree is the most appropriate means of resolving these matters.

C. By signing this Decree, the Parties agree to its entry and agree to be bound by its terms.

D. By entering into this Decree, the Parties do not intend to discharge non-settling parties from any liability they may have with respect to matters alleged in the Complaint. The Parties retain the right to seek reimbursement, in whole or in part, from any liable persons for sums expended under this Decree.

E. This Decree shall not be construed as proof of liability or responsibility for any releases of hazardous substances or cost for remedial action or NRD injuries, nor an admission of any facts or conclusions of law; provided, however, that BNSF shall not challenge the authority of the Attorney General and Ecology to enforce this Decree, or the jurisdiction of the

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Court over the subject matter and the Parties, except as provided in Sections II.A (Jurisdiction), XIX.D (Covenant Not to Sue), and XXVI (Implementation of Remedial Action).

F. The Court is fully advised of the reasons for entry of this Decree, and good cause having been shown:

Now, therefore, it is HEREBY ORDERED, ADJUDGED, AND DECREED as follows:

II. JURISDICTION

A. This Court has jurisdiction over the subject matter and over the Parties pursuant to the Model Toxics Control Act (MTCA), Chapter 70.105D RCW, and the Water Pollution Control Act (WPCA), Chapter 90.48 RCW. However, BNSF reserves the right to challenge the application of MTCA and the WPCA as being preempted by federal law, in the particular context and as prescribed in Sections XIV.B (Resolution of Disputes), XIX.D (Covenant Not to Sue), and XXVI (Implementation of Remedial Action) only.

B. Authority is conferred upon the Washington State Attorney General by RCW 70.105D.040(4)(a) to agree to a settlement with any potentially liable person (PLP) if, after public notice and any required hearing, Ecology finds the proposed settlement would lead to a more expeditious cleanup of hazardous substances. RCW 70.105D.040(4)(b) requires that such a settlement be entered as a consent decree issued by a court of competent jurisdiction.

C. Authority is conferred upon Ecology by Chapters 90.48, 90.56 and 70.105D RCW, as the lead state trustee for natural resource damage assessment and restoration, to negotiate with any PLP to perform restoration and enhancement projects as compensation for NRD injuries resulting from the release of hazardous substances.

D. Ecology has determined that a release or threatened release of hazardous substances has occurred at the Site that is the subject of this Decree, including a discharge of oil into the waters of the state resulting in NRD injuries.

E. Ecology has given notice to BNSF of Ecology's determination that BNSF is a PLP for the Site, as required by RCW 70.105D.020(16) and WAC 173-340-500.

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F. The actions to be taken pursuant to this Decree are necessary to protect public health and the environment and to restore natural resources and/or compensate for their injury.

G. This Decree has been subject to public notice and comment. In addition, a public hearing was held on [insert date].

H. Ecology finds that this Decree will lead to a more expeditious cleanup of hazardous substances at the Site in compliance with the cleanup standards established under RCW 70.105D.030(2)(e) and Chapter 173-340 WAC, and more expeditious restoration of natural resources.

I. BNSF has agreed to undertake the actions specified in this Decree and consents to the entry of this Decree under MTCA and the WPCA.

III. PARTIES BOUND

This Decree shall apply to and be binding upon the Parties to this Decree, their successors and assigns. The undersigned representative of each party hereby certifies that he or she is fully authorized to enter into this Decree and to execute and legally bind such party to comply with this Decree. BNSF agrees to undertake all actions required by the terms and conditions of this Decree. No change in ownership or corporate status shall alter BNSF's responsibility under this Decree. BNSF shall provide a copy of this Decree to all agents, contractors, and subcontractors retained to perform work required by this Decree, and shall ensure that all work undertaken by such agents, contractors, and subcontractors complies with this Decree.

IV. DEFINITIONS

Unless otherwise specified herein, all definitions in RCW 70.105D.020 and WAC 173-340-200 shall control the meanings of the terms in this Decree.

A. Site: The Site is referred to as the BNSF Former Maintenance and Fueling Facility or the BNSF Skykomish Site. The Site is generally located in the Town of Skykomish,

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Washington. The Site is generally depicted in the Site Diagram, Exhibit A. The Site constitutes a Facility under RCW 70.105D.020(4).

B. Railyard facility property: Refers to the real property that is depicted with particularity in the Site Diagram, Exhibit A, which is owned and operated by BNSF for mainline and other railroad operations, and which has regulatory significance for cleanup. The railyard facility property is not to be confused with any separate parcels of property BNSF may own in Skykomish, nor with the regulatory definition for a cleanup "facility" or "site."

C. Parties: Refers to Plaintiff, State of Washington, Department of Ecology (Ecology) and the Office of the Attorney General, and Defendant, BNSF Railway Company (BNSF).

D. Consent Decree or Decree: Refers to this Consent Decree and each of the exhibits to this Decree. All exhibits are integral and enforceable parts of this Consent Decree. The terms "Consent Decree" or "Decree" shall include all exhibits to this Consent Decree.

V. FINDINGS OF FACTS

Ecology makes the following findings of fact without any express or implied admissions of such facts by BNSF.

A. BNSF is the current owner and operator of approximately 30 acres of real property located south of and adjacent to Railroad Avenue in Skykomish, Washington (referred to generally as "the railyard facility property" as depicted in Exhibit A and described in Section IV.B.). BNSF owned and operated a maintenance and refueling facility on this property that was at various times referred to as "the BNSF Skykomish Former Maintenance and Fueling Facility," "the Burlington Northern Rail Yard" or 'the Burlington Northern Railway Company Former Maintenance and Fueling Facility."

B. Great Northern Railroad owned and operated the railyard facility property until 1970 when Great Northern Railroad merged with four other railroad companies to become the Burlington Northern Railroad.

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C. In 1996 The Burlington Northern Railroad merged with The Atchison, Topeka and Santa Fe Railway and changed its corporate name to The Burlington Northern and Santa Fe Railway Company.

D. In 2005, The Burlington Northern and Santa Fe Railway Company changed its corporate name to BNSF Railway Company (hereinafter BNSF).

E. The railyard facility property was used to refuel and maintain locomotives from the late 1800s until those operations were discontinued in 1974. During different periods of the 75 years of operation, coal, bunker oil, electricity and diesel fuel were used to power locomotives. *See Final Feasibility Study, Former Maintenance and Fueling Facility, Skykomish Washington,* The RETEC Group, March 15, 2005 (Feasibility Study).

F. From 1974 to the present, the railyard facility property has been used as a base of operations for track maintenance and snow removal crews, among other things. *See id.*

G. Historic railyard operations resulted in discharges of petroleum products on and near the railyard facility property. Petroleum discharges to the Skykomish River and Maloney Creek were first documented in the 1920's.

H. Ecology's Toxics Cleanup Program became aware of the petroleum contamination in 1989 when MTCA was enacted. Ecology listed the Site on the Hazardous Sites List in 1991. The Site was assessed using the Washington Ranking Method pursuant to WAC 173-340-330(2). It was found to be among the sites in Washington State with the highest level of concern and assigned a rank of 1, with a high priority for further investigation.

I. In 1991, Ecology initiated discussions with BNSF and entered into Agreed Order No. 91TC-N213 for a Remedial Investigation and Feasibility Study (RI/FS) in 1993. Under this Order, BNSF submitted a draft RI to Ecology in 1996, a draft FS in 1999, and a Supplemental RI in 2002 due to data gaps in the earlier version and amendments to the MTCA regulations adopted by Ecology in 2001. In 2004 and 2005, Ecology conducted further sampling of soils, sediments, surface and ground water to fill additional data gaps. Further

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investigation work was then conducted by BNSF during preparation of a final draft FS. Taken together, these studies provided Ecology sufficient information to develop a final cleanup plan for the Site. BNSF's final draft feasibility study was submitted on March 15, 2005 and accepted as final by Ecology on August 11, 2005, as it contained information adequate to develop a cleanup action plan for the Site.

J. Investigations found petroleum contamination in the soil, sediments, surface water, and groundwater at the Site. PCBs, lead, and arsenic were found in isolated areas of surface soils at the Site. Dioxins/furans were found in the former Maloney Creek Channel sediments by supplemental investigation sampling done by Ecology in 2004 and 2005. Volatile organics were also detected in air at the Site. The nature and extent of petroleum and petroleum products, lead, arsenic, and PCBs is documented in reports prepared by BNSF's contractors, including: *Remedial Investigation for the Former Maintenance and Fueling Facility in Skykomish, Washington*, The RETEC Group, January 1996 (Remedial Investigation); *Supplemental Remedial Investigation Volumes 1 and 2, BNSF Former Maintenance and Fueling Facility, Skykomish, Washington*, The RETEC Group, July 2002 (Supplemental Remedial Investigation); and, *Final Feasibility Study, Former Maintenance and Fueling Facility, Skykomish, Washington*, The RETEC Group, March 15, 2005 (Feasibility Study).

K. Free petroleum product (also known as Light Non-aqueous Phase Liquid or "LNAPL" as defined in WAC 173-340-200 under the term "NAPL") is present in soil and in groundwater across most of the Site. Dissolved petroleum product is present in groundwater.

L. Free petroleum product and petroleum dissolved in groundwater have seeped into the South Fork of the Skykomish River and caused adverse impacts in sediment benthic organisms living in the Skykomish River.

M. BNSF has performed a number of interim actions over the last ten years, under multiple agreed orders with Ecology. First, under Agreed Order DE 91TC-N213 and

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beginning in 1995, BNSF installed passive oil recovery wells along the South Fork of the Skykomish River to collect free product. Second, under Agreed Order DE 91TC-N213 and beginning in 1996, a dust suppressant (Soil–Sement®) has been applied annually to rail yard soils to minimize wind-blown soil that might contain lead and arsenic. Third, and also in 1996, absorbent booms were installed and maintained along the South Fork of the Skykomish River to capture some of the petroleum seeping into the River. Fourth, in 2001, BNSF installed an underground barrier wall and additional passive oil recovery wells to try to eliminate or reduce petroleum seeping into the River. The underground barrier and additional wells were installed under Agreed Order DE 01TCPNR-2800 and an enhanced boom configuration and maintenance plan was implemented in 2002 as part of this action. However, the barrier wall, passive recovery wells and booms were not effective in eliminating the seeps.

N. In May of 2006, BNSF and Ecology signed Agreed Order No. DE 3279. In the 2006 Agreed Order, Ecology deemed as satisfied the requirements of Agreed Order No. DE 91TC-N213 and Agreed Order No. DE 01TCPNR-2800 except payment of then-outstanding oversight costs, incorporated by reference certain outstanding obligations from the prior orders, and also incorporated another more extensive interim action. Under the 2006 Agreed Order, BNSF removed the underground barrier wall and oil recovery wells and excavated contaminated river sediments and contaminated soil in the river bank and flood levee and under several upland residences. Five residences were temporarily relocated during river, levee and upland area excavation in 2006, and were all replaced afterwards. Over 100,000 tons of contaminated material was shipped off-site by BNSF for disposal at a landfill, and over 30,000 gallons of liquid petroleum product was recovered and sent offsite for recycling.

VI. WORK TO BE PERFORMED

This Decree contains a program designed to protect human health and the environment and to restore natural resources from the known release, or threatened release, of hazardous substances or contaminants at, on, or from the Site.

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A. The Parties intend for all obligations under Agreed Order No. DE 3279 which remain outstanding as of the Effective Date of this Decree, to be incorporated by reference into this Decree. Accordingly, BNSF shall:

1. Meet the following outstanding obligations from Exhibit E (Construction Schedule) of Agreed Order No. DE 3279:

a. June 30, 2007: All work completed, including infrastructure replacement; all construction equipment demobilized (except equipment to be used in further cleanup work);

b. July 31, 2007: Submit draft As-built Report to Ecology for all work completed between January 1, 2007 and June 30, 2007;

2. Continue dust suppression activities at BNSF's railyard facility property until soil with lead and arsenic contamination is removed pursuant to the CAP, Exhibit B;

3. Maintain absorbent booms as necessary to address oil seeps at the Fifth Street bridge abutment in the Skykomish River;

4. Comply with substantive requirements and permit requirements such as habitat mitigation;

5. Restore private and public properties consistent with the *Engineering Design Report – Levee Zone Interim Action for Cleanup* dated May 3, 2006;

6. Conduct groundwater monitoring consistent with the *Groundwater Monitoring Plan* dated May 12, 2005 (GW Plan), including any amendments thereto that are approved by Ecology.

The Parties intend that the above list include any and all outstanding obligations under Agreed Order No. DE 3279. The Parties agree to incorporate any inadvertently omitted obligations into future work plans pursuant to this Decree. The Parties agree that Agreed Order No. DE 3279 no longer has any force or effect.

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B. BNSF will also conduct a final cleanup action at the Site by implementing the CAP, Exhibit B. The cleanup action is to take place in phases according to the schedule presented in Section 6.2 (Schedule) of the CAP, Exhibit B, and all other requirements of this Decree.

C. BNSF shall conduct those actions required by Section XVIII (Natural Resource Damages) in order to fully restore natural resources damaged by the release at the Site and/or fully compensate for their loss.

D. In order to implement the CAP, BNSF will prepare and submit for Ecology's review and approval all documents necessary to conduct the final cleanup action, in multiple phases, such as engineering design reports, compliance monitoring plans, operations and maintenance plans, as-built reports, and periodic review reports. Any such deliverable, once approved by Ecology, becomes an integral and enforceable part of this Decree. The List of Deliverables and Schedule, attached as Exhibit C, details those deliverables that have been identified at the time of entry of this Decree, plus the schedule by which they must be submitted.

E. BNSF agrees not to perform any remedial actions outside the scope of this Decree unless the Parties agree to modify the CAP (including, as necessary, the schedule contained within the CAP), Exhibit B, to cover these actions. Notwithstanding the foregoing, and with advance notice to Ecology, BNSF may excavate contamination in conjunction with railroad operations not related to cleanup, including but not limited to utility work and track maintenance, and may either properly dispose of the contamination offsite pursuant to all applicable state and federal law, or may choose to manage the contamination on BNSF's railyard facility property provided such actions do not interfere with the cleanup action required by this Decree, absent amendment thereto. All work conducted by BNSF under this Decree shall be done in accordance with Chapter 173-340 WAC unless otherwise provided herein.

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VII. DESIGNATED PROJECT COORDINATORS

The remedial project coordinator for Ecology is:

Louise Bardy
Washington State Department of Ecology
3190 160th Avenue Southeast
Bellevue, WA 98008-5452
Telephone: (425) 649-7209
E-Mail: lbar461@ecy.wa.gov

The NRD project coordinator for Ecology is:

Michelle Wilcox
Washington State Department of Ecology
300 Desmond Drive SE
Olympia, WA 98504-7600
Telephone: (360) 407-7466
E-Mail: micw461@ecy.wa.gov

The project coordinator for BNSF is:

Bruce Sheppard
BNSF Railway Company
2454 Occidental Avenue South
Suite 1A
Seattle, WA 98134
Telephone: (206) 625-6035
E-Mail: bruce.sheppard@bnsf.com

Each project coordinator shall be responsible for overseeing the implementation of this Decree. Ecology's project coordinators will be Ecology's designated representative for the Site. To the maximum extent possible, communications between Ecology and BNSF and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Decree shall be directed through the project coordinators. The project coordinators may designate, in writing, working level staff contacts for all or portions of the implementation of the work to be performed required by this Decree.

Any party may change its respective project coordinator(s). Written notification shall be given to the other party at least ten (10) calendar days prior to the change.

VIII. PERFORMANCE

All geologic and hydrogeologic work performed pursuant to this Decree shall be under the supervision and direction of a geologist licensed in the State of Washington or under the direct supervision of an engineer registered in the State of Washington, except as otherwise provided for by Chapters 18.220 and 18.43 RCW.

All engineering work performed pursuant to this Decree shall be under the direct supervision of a professional engineer registered in the State of Washington, except as otherwise provided for by RCW 18.43.130.

All construction work performed pursuant to this Decree shall be under the direct supervision of a professional engineer or a qualified technician under the direct supervision of a professional engineer. The professional engineer must be registered in the State of Washington, except as otherwise provided for by RCW 18.43.130.

Any documents submitted containing geologic, hydrologic or engineering work shall be under the seal of an appropriately licensed professional as required by Chapter 18.220 RCW or RCW 18.43.130.

BNSF shall notify Ecology in writing of the identity of any engineer(s) and geologist(s), contractor(s) and subcontractor(s), and others to be used in carrying out the terms of this Decree, in advance of their involvement at the Site. BNSF has notified Ecology that The RETEC Group, Wilder Construction Company, Test America and EnviroIssues may be used by BNSF in carrying out the terms of this Decree.

IX. ACCESS

Ecology or any Ecology authorized representative shall have full authority to enter and freely move about all property at the Site that BNSF either owns, controls, or has access rights to at all reasonable times for the purposes of, *inter alia*: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Decree; reviewing BNSF's progress in carrying out the terms of this Decree; conducting such tests or collecting such samples as Ecology may deem necessary; using a camera, sound recording, or other

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documentary type equipment to record work done pursuant to this Decree; and verifying the data submitted to Ecology by BNSF. BNSF shall make all reasonable efforts to secure access rights for those properties within the Site not owned or controlled by BNSF where remedial activities or investigations will be performed pursuant to this Decree. BNSF shall follow the Guidelines for Temporary Relocation, attached as Exhibit G, in relocating residents. In conjunction with public meetings held under Section XXVIII (Public Participation), Ecology and BNSF will outline for the community what community members can expect with regard to access needed on individual properties, including how access agreements will be negotiated and any services available to property owners during the process. Ecology or any Ecology authorized representative shall give reasonable notice before entering any Site property owned or controlled by BNSF unless an emergency prevents such notice. All Parties who access the Site pursuant to this Section shall comply with any applicable Health and Safety Plan(s). All Parties who access BNSF's railyard property will be required to complete BNSF's Contractor Safety Training Program (www.contractororientation.com), unless they are personally escorted by someone who has completed the Program. Ecology employees and their representatives shall not be required to sign any liability release or waiver as a condition of Site property access.

X. SAMPLING, DATA SUBMITTAL, AND AVAILABILITY

With respect to the implementation of this Decree, BNSF shall make the results of all sampling, laboratory reports, and/or test results generated by it or on its behalf available to Ecology. Pursuant to WAC 173-340-840(5), all sampling data shall be submitted to Ecology in both printed and electronic formats in accordance with Section XI (Progress Reports), Ecology's Toxics Cleanup Program Policy 840 (Data Submittal Requirements), and/or any subsequent procedures specified by Ecology for data submittal.

If requested by Ecology, BNSF shall allow Ecology and/or its authorized representative to take split or duplicate samples of any samples collected by BNSF pursuant to the

implementation of this Decree. BNSF shall notify Ecology seven (7) days in advance of any sample collection or work activity at the Site. Ecology shall, upon request, allow BNSF and/or its authorized representative to take split or duplicate samples of any samples collected by Ecology pursuant to the implementation of this Decree, provided that doing so does not interfere with Ecology's sampling. Without limitation on Ecology's rights under Section IX (Access), Ecology shall notify BNSF prior to any sample collection activity unless an emergency prevents such notice.

In accordance with WAC 173-340-830(2)(a), all hazardous substance analyses shall be conducted by a laboratory accredited under Chapter 173-50 WAC for the specific analyses to be conducted, unless otherwise approved by Ecology.

XI. PROGRESS REPORTS

BNSF shall submit to Ecology written monthly Progress Reports that describe the actions taken during the previous month to implement the requirements of this Decree. The Progress Reports shall include the following:

A. A list of on-site activities that have taken place during the reporting period;

B. Detailed description of any deviations from required tasks not otherwise documented in project plans or amendment requests;

C. Description of all deviations from the CAP and schedule contained therein, Exhibit B, during the reporting period and any planned deviations in the upcoming month;

D. For any deviations in schedule, a plan for recovering lost time and maintaining compliance with the schedule;

E. All raw data (including laboratory analyses) received by BNSF during the reporting period and an identification of the source of the sample, unless Ecology agrees that submitting raw data is not necessary at that time; and

F. A list of deliverables for the upcoming reporting period if different from the schedule.

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Monthly Progress Reports shall be shall be delivered on or before the 15th day after the end of the reporting period. During periods of construction activity weekly Progress Reports shall be submitted in lieu of monthly reports, as appropriate to the level of project activity, and will be delivered on or before the third business day after the end of the reporting period.

Progress Reports shall be submitted by E-Mail to Ecology's project coordinator. After Ecology has approved Construction Completion Reports required for all phases of the final cleanup action required by Section VI (Work to be Performed), BNSF shall submit Progress Reports on a quarterly basis within thirty days after the end of the reporting period, or as required by the Compliance Monitoring Plan.

XII. RETENTION OF RECORDS

During the pendency of this Decree, and for ten (10) years from the date this Decree is no longer in effect as provided in Section XXIX (Duration of Decree), BNSF shall preserve all records, reports, documents, and underlying data in its possession relevant to the implementation of this Decree and shall insert a similar record retention requirement into all contracts with project contractors and subcontractors. Upon request of Ecology, BNSF shall make all records available to Ecology and allow access for review within a reasonable time. Nothing in this Order is intended by BNSF to waive any right it may have under applicable law to limit disclosure of documents protected by the attorney work-product and/or attorney-client privilege. If BNSF withholds any requested records based on an assertion of privilege, it shall provide Ecology with a privilege log specifying the records withheld and the applicable privilege. No actual data collected on Site pursuant to this Decree shall be considered privileged.

XIII. TRANSFER OF INTEREST IN PROPERTY

No voluntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated by BNSF without provision for

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continued operation and maintenance of any containment system, treatment system, and/or monitoring system installed or implemented pursuant to this Decree.

Prior to BNSF's transfer of any interest in all or any portion of the Site, and during the effective period of this Decree, BNSF shall provide a copy of this Decree to any prospective purchaser, lessee, transferee, assignee, or other successor in said interest; and, at least thirty (30) days prior to any transfer, BNSF shall notify Ecology of said transfer. Upon transfer of any interest, BNSF shall restrict uses and activities to those consistent with this Consent Decree and notify all transferees of the restrictions on the use of the property.

XIV. RESOLUTION OF DISPUTES

A. In the event a dispute arises as to an approval, disapproval, proposed change, or other decision or action by Ecology's project coordinator, or an itemized billing statement under Section XXV (Remedial Action Costs), the Parties shall utilize the dispute resolution procedure set forth below.

1. Upon receipt of Ecology's project coordinator's written decision, or the itemized billing statement, BNSF has fourteen (14) days within which to notify Ecology's project coordinator in writing of its objection to the decision or itemized statement.

2. The Parties' project coordinators shall then confer in an effort to resolve the dispute. If the project coordinators cannot resolve the dispute within fourteen (14) days, Ecology's project coordinator shall issue a written decision.

3. BNSF may then request Ecology management review of the decision. This request shall be submitted in writing to the Manager of the Land and Aquatics Cleanup Section (Section Manager) at Ecology's Headquarters Office within seven (7) days of receipt of Ecology's project coordinator's written decision.

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4. The Section Manager shall conduct a review of the dispute and shall endeavor to issue a written decision regarding the dispute within thirty (30) days of BNSF's request for review.

5. If BNSF finds the Section Manager's decision unacceptable, BNSF may then request final management review of the decision. This request shall be submitted in writing to the Toxics Cleanup Program Manager within seven (7) days of receipt of the Section Manager's decision.

6. Ecology's Toxics Cleanup Program Manager shall conduct a review of the dispute and shall endeavor to issue a written decision regarding the dispute within thirty (30) days of BNSF's request for review of the Regional Section Manager's decision. The Toxics Cleanup Program Manager's decision shall be Ecology's final decision on the disputed matter.

B. If Ecology's final written decision is unacceptable to BNSF, BNSF has the right to submit the dispute to the Court for resolution. The Parties agree that one judge should retain jurisdiction over this case and shall, as necessary, resolve any dispute arising under this Decree. In the event BNSF presents an issue to the Court for review, the Court shall review the action or decision of Ecology on the basis of whether such action or decision was arbitrary and capricious and render a decision based on such standard of review. BNSF additionally reserves the right to challenge any Ecology decision not to grant a schedule extension under Section XVI.B.4 or D.2 (Extension of Schedule), or to apply land use restrictions on BNSF's railyard facility property under Section XXI (Land Use Restrictions), as being preempted by federal law; BNSF agrees the Court shall have jurisdiction to hear the controversy.

C. The Parties agree to only utilize the dispute resolution process in good faith and agree to expedite, to the extent possible, the dispute resolution process whenever it is used. Where either party utilizes the dispute resolution process in bad faith or for purposes of delay, the other party may seek sanctions.

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D. Implementation of these dispute resolution procedures shall not provide a basis for delay of any activities required in this Decree, unless Ecology agrees in writing to a schedule extension or the Court so orders.

E. In the event BNSF prevails in any dispute resolution process, Ecology hereby waives the right to recover any penalties or any costs incurred by or on behalf of Ecology during such dispute resolution process and concerning the issue in dispute.

XV. AMENDMENT OF DECREE

The project coordinators may agree to minor changes to the work to be performed without formally amending this Decree. Minor changes will be documented in writing by Ecology and BNSF.

Substantial changes to the work to be performed shall require formal amendment of this Decree. This Decree may only be formally amended by a written stipulation among the Parties that is entered by the Court, or by order of the Court. Such amendment shall become effective upon entry by the Court. Agreement to amend the Decree shall not be unreasonably withheld by any party.

BNSF shall submit a written request for amendment to Ecology for approval. Ecology shall indicate its approval or disapproval in writing and in a timely manner after the written request for amendment is received. If the amendment to the Decree is a substantial change, Ecology will provide public notice and opportunity for comment. Reasons for the disapproval of a proposed amendment to the Decree shall be stated in writing. If Ecology does not agree to a proposed amendment, the disagreement may be addressed through the dispute resolution procedures described in Section XIV (Resolution of Disputes).

XVI. EXTENSION OF SCHEDULE

A. An extension of schedule shall be granted only when a request for an extension is submitted in a timely fashion, generally at least thirty (30) days prior to expiration of the

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deadline for which the extension is requested, and good cause exists for granting the extension. All extensions shall be requested in writing. The request shall specify:

1. The deadline that is sought to be extended;

2. The length of the extension sought;

3. The reason(s) for the extension; and

4. Any related deadline or schedule that would be affected if the extension were granted.

B. The burden shall be on BNSF to demonstrate to the satisfaction of Ecology that the request for such extension has been submitted in a timely fashion and that good cause exists for granting the extension. Good cause may include, but may not be limited to:

1. Circumstances beyond the reasonable control and despite the due diligence of BNSF including delays caused by unrelated third parties or Ecology, such as (but not limited to) delays by Ecology in reviewing, approving, or modifying documents submitted by BNSF;

2. Acts of God, including fire, flood, blizzard, extreme temperatures, storm, or other unavoidable casualty;

3. Endangerment as described in Section XVII (Endangerment); or

4. Unanticipated circumstances that would cause scheduled cleanup actions, if not rescheduled, to unduly restrict mainline operations or to unreasonably burden interstate commerce.

However, neither increased costs of performance of the terms of this Decree nor changed economic circumstances shall be considered circumstances beyond the reasonable control of BNSF.

C. Ecology shall act upon any written request for extension in a timely fashion. Ecology shall give BNSF written notification of any extensions granted pursuant to this Decree. A requested extension shall not be effective until approved by Ecology or, if required,

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by the Court. Unless the extension is a substantial change, it shall not be necessary to amend this Decree pursuant to Section XV (Amendment of Decree) when a schedule extension is granted.

D. An extension shall only be granted for such period of time as Ecology determines is reasonable under the circumstances. Ecology may grant schedule extensions exceeding ninety (90) days only as a result of:

1. Delays in the issuance of a necessary permit which was applied for in a timely manner;

2. Other circumstances deemed exceptional or extraordinary by Ecology, including circumstances arising under subsection B.4 above;

3. Acts of God, including fire, flood, blizzard, extreme temperatures, storm, or other unavoidable casualty; or

4. Endangerment as described in Section XVII (Endangerment).

XVII. ENDANGERMENT

In the event Ecology determines that any activity being performed at the Site is creating or has the potential to create a danger to human health or the environment, Ecology may direct BNSF to cease such activities for such period of time as it deems necessary to abate the danger. BNSF shall immediately comply with such direction.

In the event BNSF determines that any activity being performed at the Site is creating or has the potential to create a danger to human health or the environment, BNSF may cease such activities. BNSF shall notify Ecology's project coordinator as soon as possible, but no later than twenty-four (24) hours after making such determination or ceasing such activities. Upon Ecology's direction, BNSF shall provide Ecology with documentation of the basis for the determination or cessation of such activities. If Ecology disagrees with BNSF's cessation of activities, it may direct BNSF to resume such activities.

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If Ecology concurs with or orders a work stoppage pursuant to this Section, BNSF's obligations with respect to the ceased activities shall be suspended until Ecology determines the danger is abated, and the time for performance of such activities, as well as the time for any other work dependent upon such activities, shall be extended, in accordance with Section XVI (Extension of Schedule), for such period of time as Ecology determines is reasonable under the circumstances.

Nothing in this Decree shall limit the authority of Ecology, its employees, agents, or contractors to take or require appropriate action in the event of an emergency.

XVIII. NATURAL RESOURCE DAMAGES

A. In addition to implementing the final cleanup remedy for the Site, the CAP, Exhibit B, is designed to restore groundwater and the resources and services it supports, in the Town of Skykomish. This will help restore natural resources and reduce future damages to resources at the Site. BNSF has also restored natural resources and reduced future damages at the Site by cleaning up and enhancing the River bed, bank and levee, completed as an interim action in 2006. This Section requires additional actions be taken to restore and/or compensate fully for the Natural Resource Damage (NRD) injuries at the Site.

B. All funds paid by BNSF to Ecology pursuant to this Section shall be used exclusively for projects and under budgets approved by Ecology to ensure that such projects provide restoration and compensation for NRD injuries. Ecology shall administer disbursements on behalf of the state in consultation with BNSF and other entities identified below.

C. Skykomish Aquatic Habitat Restoration: Within 90 days of the effective date of this Decree, BNSF shall pay Ecology the sum of Two Million Five Hundred Thousand and 00/100 Dollars ($2,500,000.00) to be used exclusively for funding projects that restore, enhance, or protect fish and aquatic habitat in the Skykomish or Snohomish River Watersheds. Although this Decree is entered pursuant to MTCA, Ecology shall administer disbursements on

behalf of the state in consultation with the federal Oil Pollution Act Trustees: The Tulalip Tribes of Washington, the United States Department of Interior (Fish and Wildlife Service), the United States Department of Agriculture (Forest Service), and the United States Department of Commerce (National Oceanic and Atmospheric Administration). Ecology shall work with the Trustees to establish such decision-making procedures regarding expenditures of funds as they deem appropriate. Projects may include those identified in the Snohomish River Basin Plan or the Shared Strategy for Salmon Recovery.

D. Skykomish Water Quality Protection: Within 90 days of the effective date of this Decree, BNSF shall pay Ecology the sum of One Million Five Hundred Thousand and 00/100 Dollars ($1,500,000) to be used exclusively for implementing the Town's *Wastewater Facility Plan* dated June 2007. Of this amount, Seven Hundred Thousand and 00/100 cents ($700,000.00) is dedicated for capital costs of implementing Phase II of the Plan; and Eight Hundred Thousand and 00/100 Dollars ($800,000.00) is dedicated for operation and maintenance of the Town's wastewater system pursuant to the Plan. Implementation of the Plan will enhance, restore and protect water quality by converting the Town from individual septic systems to community sewers with a single wastewater treatment plant. If the Town does not implement the Plan, the funds will be transferred to the Skykomish Recreational and Terrestrial Restoration effort.

E. Skykomish Recreational and Terrestrial Restoration: Within 90 days of the effective date of this Decree, BNSF shall pay Ecology the sum of One Million Five Hundred Thousand and 00/100 Dollars ($1,500,000.00), as adjusted below, to be used exclusively to fund projects in and around the Town of Skykomish for enhancing, restoring or protecting terrestrial and waterfowl habitat, and compensating for lost recreational opportunities. Ecology shall administer disbursements on behalf of the state in consultation with the Town. The Town of Skykomish may propose to Ecology projects to be funded. Before approving any

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proposal, Ecology shall determine that the proposal appropriately either restores injuries to natural resources or compensates for injuries to natural resources or lost services.

1. Of these funds, a credit of Three-Hundred and Fifty Thousand and 00/100 dollars ($350,000) is granted to BNSF for levee improvements already implemented as part of the 2006 interim action.

2. Of these funds, Fifty Thousand and 00/100 Dollars ($50,000.00) must be directly expended by BNSF to fully resolve the turbidity exceedances that occurred in 2006, as prescribed below.

3. Of these funds, Fifty Thousand and 00/100 Dollars ($50,000) will be directly expended by BNSF as in-kind services for the benefit of the Town of Skykomish, to compensate for injuries to natural resources or lost services. Within one year of the effective date of this Decree, BNSF shall submit to Ecology a joint letter from BNSF and the Town of Skykomish on the expenditure of these funds. Ecology shall determine whether the proposal appropriately compensates for injuries to natural resources or lost services. Should this letter not be submitted within this timeframe, or the proposal does not appropriately compensate for injuries to natural resources or lost services, these funds shall be submitted to Ecology within thirty days in accordance with Section XVIII.E.

F. Ecology intends to enter into a separate Interagency Agreement (IAA) with the Town of Skykomish that will set forth how the Water Quality Protection and Skykomish Recreational and Terrestrial Restoration funds shall be used and maintained. The subjects to be addressed in the IAA, include, but are not limited to, specifying the terms and conditions under which funds will be transferred to the Town of Skykomish.

G. Turbidity Mitigation Plan: Within one year of the effective date of this Decree, BNSF shall, in consultation with Ecology, design and implement projects identified in the

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Turbidity Mitigation Plan dated November 2006 with a value of Fifty Thousand and 00/100 Dollars ($50,000.00).

H. Release of Claims: In consideration of BNSF's compliance with the terms and conditions of this Section and this Decree, the State of Washington, through the Department of Ecology and the Attorney General, hereby releases all claims against BNSF relating to NRD injuries resulting from the release or threatened release of hazardous substances covered by this Decree, including but not limited to claims under Chapter 70.105D RCW, Chapter 90.48 RCW, Chapter 90.56 RCW, federal law and the common law relating to NRD injuries resulting from the release or threatened release of hazardous substances covered by this Decree, the discharge of oil to waters of the state covered by this Decree, and turbidity conditions experienced during remedial activities in 2006. Nothing in this section compromises claim(s) by any federal agency or Native American tribe.

XIX. COVENANT NOT TO SUE

A. Covenant Not to Sue: In consideration of BNSF's compliance with the terms and conditions of this Decree, Ecology covenants not to institute legal or administrative actions against BNSF regarding the release or threatened release of hazardous substances covered by this Decree.

This Decree covers only the Site specifically identified in the Site Diagram, Exhibit A, and those hazardous substances that Ecology knows are located at the Site as of the date of entry of this Decree. This Decree does not cover any other hazardous substance or area. Ecology retains all of its authority relative to any substance or area not covered by this Decree.

This Covenant Not to Sue shall have no applicability whatsoever to:

1. Criminal liability; and

2. Any Ecology action, including cost recovery, against PLPs not a party to this Decree.

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If factors not known at the time of entry of the settlement agreement are discovered and present a previously unknown threat to human health or the environment, the Court shall amend this Covenant Not to Sue.

B. Reopeners: Ecology specifically reserves the right to institute legal or administrative action against BNSF to require it to perform additional remedial actions at the Site and to pursue appropriate cost recovery, pursuant to RCW 70.105D.050, under the following circumstances:

1. Upon BNSF's failure to meet the requirements of this Decree, including, but not limited to, failure of the remedial action to meet the cleanup standards identified in the CAP, Exhibit B;

2. Upon Ecology's determination that remedial action beyond the terms of this Decree is necessary to abate an imminent and substantial endangerment to human health or the environment;

3. Upon the availability of new information regarding factors previously unknown to Ecology, including the nature or quantity of hazardous substances at the Site, and Ecology's determination, in light of this information, that further remedial action is necessary at the Site to protect human health or the environment; or

4. Upon Ecology's determination that additional remedial actions are necessary to achieve cleanup standards within the reasonable restoration time frame set forth in the CAP.

This reservation is intended to be consistent with Ecology's authority under MTCA.

C. Ecology further reserves the right to require additional restoration and/or compensation for NRD injuries pursuant to Chapters 70.105D and 90.48 RCW, if BNSF fails to implement the requirements of Section XVIII (Natural Resource Damages) or upon the availability of new information regarding factors previously unknown to Ecology, including

the nature or quantity or hazardous substances at the Site, which affects the extent of natural resource damages at the Site.

D. Except in the case of an emergency, prior to instituting legal or administrative action against BNSF pursuant to this Section, Ecology shall provide BNSF with fifteen (15) calendar days notice of such action.

E. In the event Ecology seeks to reopen the decree under this Section, BNSF reserves its right to challenge the imposition of different or additional cleanup actions as being preempted by federal law. However, if a reopening event occurs, BNSF and Ecology agree to first explore in good faith whether different or additional actions that the Parties agree would not be subject to preemption could be implemented to address the reopening event. Both Parties then reserve their right to all claims and defenses if good faith efforts to agree to different or additional actions do not result in agreement between the Parties. Nevertheless, BNSF agrees the Court shall have jurisdiction to decide the controversy.

XX. CONTRIBUTION PROTECTION

With regard to claims for contribution against BNSF, the Parties agree that BNSF is entitled to protection against claims for contribution for matters addressed in this Decree as provided by RCW 70.105D.040(4)(d).

XXI. LAND USE RESTRICTIONS

BNSF shall record a restrictive covenant on BNSF's railyard facility property if contamination remains on such property following implementation of the cleanup action, as specified in the CAP, Exhibit B. The restrictive covenant shall be enforceable by Ecology and restrict future uses of the property and otherwise meet regulatory requirements, and must be approved by Ecology before being recorded. BNSF will record the restrictive covenant with the office of the King County Auditor within ten (10) days of the completion of all phases of the cleanup action. BNSF shall provide Ecology with a copy of the recorded restrictive covenant within thirty (30) days of the recording date. Restrictions placed on BNSF's railyard

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facility property in the restrictive covenant will be tailored and may be amended after recording so as not to interfere with railroad operations.

Restrictive covenants will also be required for those properties other than BNSF's railyard facility property, if contamination above concentrations protective of direct contact remains on such properties following implementation of the cleanup action, as outlined in the CAP, Exhibit B. Where required, a restrictive covenant shall restrict future uses of the property in question and otherwise meet regulatory requirements, and must be approved by Ecology before being recorded or amended. BNSF will ensure that such restrictive covenants are recorded for those properties in conjunction with the implementation of the cleanup and will provide Ecology with a copy of any such recorded restrictive covenants within thirty (30) days of the recording date.

In addition, and in lieu of requiring restrictive covenants on any properties that will not have contamination remaining above concentrations protective of direct contact following cleanup, permit and/or zoning overlays are to be implemented to ensure the appropriate management of contaminated soils in the impacted area during cleanup, plus appropriate restrictions on groundwater withdrawal both during and after cleanup, as applicable and as outlined in the CAP, Exhibit B. BNSF and Ecology agree to work cooperatively with local jurisdictions as necessary to develop and implement such overlays.

A model restrictive covenant is attached as Exhibit H. This model restrictive covenant will be tailored appropriately for each property in question and be subject to Ecology approval prior to being recorded.

XXII. FINANCIAL ASSURANCES

Pursuant to WAC 173-340-440(11), BNSF shall maintain sufficient and adequate financial assurance mechanisms to cover all costs associated with all work remaining to be completed under this Decree, including but not limited to the operation and maintenance of the

remedial action at the Site, such as institutional controls, compliance monitoring, and corrective measures, as follows:

A. Within sixty (60) days of the effective date of this Decree, BNSF shall submit to Ecology for review and approval an estimate of the costs that it will incur in carrying out the terms of this Decree, including operation and maintenance, and compliance monitoring. Within sixty (60) days after Ecology approves the aforementioned cost estimate, BNSF shall provide proof of financial assurances sufficient to cover all such costs in a form acceptable to Ecology.

B. BNSF shall adjust the financial assurance coverage and provide Ecology's project coordinator with documentation of the updated financial assurance for:

1. Inflation, annually, within thirty (30) days of the anniversary date of the entry of this Decree; or if applicable, the modified anniversary date established in accordance with this Section, or if applicable, ninety (90) days after the close of BNSF's fiscal year if the financial test or corporate guarantee is used; and

2. Changes in cost estimates, within thirty (30) days of issuance of Ecology's written approval of a minor modification or the Court's entry of a formal amendment to the work to be performed under this Decree pursuant to Section XV (Amendment of Decree), when the modification or amendment results in an increase to the cost or expected duration of the remedial action. Any adjustments for inflation since the most recent preceding anniversary date shall be made concurrent with adjustments for changes in cost estimates. Ecology's approval of a modification or the Court's entry of a formal amendment, will revise the anniversary date established under this Section to become the date of issuance of such revision or entry of formal amendment.

C. BNSF shall notify Ecology's project coordinator by certified mail of the commencement of a voluntary or involuntary bankruptcy proceeding that names BNSF as

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debtor, within ten (10) days after commencement of the proceeding. A guarantor of a corporate guarantee must make such a notification if he is named as debtor as required under the terms of the corporate guarantee.

XXIII. INDEMNIFICATION

BNSF agrees to indemnify and save and hold the State of Washington, its employees, and agents harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property to the extent arising from or on account of acts or omissions of BNSF, its officers, employees, agents, or contractors in entering into and implementing this Decree. However, BNSF shall not indemnify the State of Washington nor save nor hold its employees and agents harmless from any claims or causes of action to the extent arising out of the negligent acts or omissions of the State of Washington, or the employees or agents of the State, in entering into or implementing this Decree

XXIV. COMPLIANCE WITH APPLICABLE LAWS

A. All actions carried out by BNSF pursuant to this Decree shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits, except as provided in RCW 70.105D.090. The permits or other federal, state or local requirements that the agency has determined are applicable and that are known at the time of entry of this Decree have been identified in Exhibit D.

B. Pursuant to RCW 70.105D.090(1), BNSF is exempt from the procedural requirements of Chapters 70.94, 70.95, 70.105, 77.55, 90.48, and 90.58 RCW and of any laws requiring or authorizing local government permits or approvals. However, BNSF shall comply with the applicable substantive requirements of such permits or approvals. The exempt permits or approvals and the applicable substantive requirements of those permits or approvals, as they are known at the time of entry of this Decree, have been identified in Exhibit E.

BNSF has a continuing obligation to determine whether additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under

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this Decree. BNSF will evaluate and identify on a yearly basis any additional and applicable substantive requirements, as part of fulfilling its obligation to develop and submit phased EDRs in advance of work for each upcoming year. Ecology agrees to meet with BNSF at least annually to help facilitate this process. In the event either Ecology or BNSF determines that additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for any phase of the work required by this Decree, it shall promptly notify the other party of this determination. BNSF and Ecology shall then jointly consult with such agencies and obtain written documentation from those agencies of the substantive requirements those agencies believe are applicable to the remedial action(s) in question. Ecology shall make the final determination on the additional substantive requirements that are applicable to the work and on how BNSF must meet those requirements. Ecology will approve these requirements in its approval of each phased EDR, as applicable, or will otherwise inform BNSF in writing of these requirements. Once established by Ecology, the additional requirements shall be enforceable requirements of this Decree. Unless such additional requirements substantially change the scope of work for the cleanup required by this Decree, however, the establishment of such requirements will be considered minor modifications to the Decree, and will not require formal amendment with public comment. BNSF shall not begin or continue the remedial action potentially subject to the additional requirements until Ecology makes its final determination.

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

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XXV. REMEDIAL ACTION COSTS

Except as provided in Section XIV.E (Resolution of Disputes), BNSF shall pay to Ecology costs incurred by Ecology pursuant to this Decree and consistent with WAC 173-340-550(2). These costs shall include work performed by Ecology or its contractors for, or on, the Site under Chapter 70.105D RCW, including remedial actions and Decree preparation, negotiation, oversight and administration. These costs shall include work performed both prior to and subsequent to the entry of this Decree, including any outstanding costs associated with Agreed Order No. DE 3279. Ecology's costs shall include costs of direct activities and support costs of direct activities as defined in WAC 173-340-550(2). BNSF shall pay the required amount within ninety (90) days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff, and the amount of time spent by involved staff members on the project. A general description of work performed will be provided upon request. Itemized statements shall be prepared quarterly. Pursuant to WAC 173-340-550(4), failure to pay Ecology's costs within ninety (90) days of receipt of the itemized statement of costs will result in interest charges at the rate of twelve percent (12%) per annum, compounded monthly.

Pursuant to RCW 70.105D.055, Ecology has authority to recover unreimbursed remedial action costs by filing a lien against real property subject to the remedial actions.

XXVI. IMPLEMENTATION OF REMEDIAL ACTION

If Ecology determines that BNSF has failed without good cause to implement the remedial action, in whole or in part, Ecology may, after notice to BNSF, perform any or all portions of the remedial action that remain incomplete. If Ecology performs all or portions of the remedial action because of BNSF's failure to comply with its obligations under this Decree, BNSF shall reimburse Ecology for the costs of doing such work in accordance with Section XXV (Remedial Action Costs), provided that BNSF is not obligated under this Section to reimburse Ecology for costs incurred for work inconsistent with or beyond the scope of this

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Decree. BNSF and Ecology agree to first meet and confer to informally resolve any dispute about performance of the remedial action, before Ecology exercises its option under this Section. If the Parties cannot agree to a resolution, BNSF reserves its right to seek an injunction from the Court to prevent Ecology from performing any cleanup actions on BNSF's railyard facility property that would be preempted under federal law. BNSF agrees the Court shall have jurisdiction to decide the controversy

Except where necessary to abate an emergency situation, BNSF shall not perform any remedial actions at the Site outside those remedial actions required by this Decree, unless Ecology concurs, in writing, with such additional remedial actions pursuant to Section XV (Amendment of Decree).

XXVII. PERIODIC REVIEW

As remedial action, including groundwater monitoring, continues at the Site, the Parties agree to review the progress of remedial action at the Site, and to review the data accumulated as a result of monitoring the Site as often as is necessary and appropriate under the circumstances. At least every five (5) years after the initiation of cleanup action at the Site the Parties shall meet to discuss the status of the Site and the need, if any, for further remedial action at the Site. At least ninety (90) days prior to each periodic review, BNSF shall submit a report to Ecology that documents whether human health and the environment are being protected based on the factors set forth in WAC 173-340-420(4). Ecology reserves the right to require further remedial action at the Site under appropriate circumstances consistent with the terms of this Decree. This provision shall remain in effect for the duration of this Decree, and may remain in effect beyond the completion of the cleanup action consistent with WAC 173-340-420(7).

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XXVIII. PUBLIC PARTICIPATION

The Public Participation Plan for this remedial action is attached as Exhibit F. Ecology shall maintain the responsibility for public participation at the Site. However, BNSF shall cooperate with Ecology to implement the public participation plan, and shall:

A. If agreed to by Ecology, develop appropriate mailing list, prepare drafts of public notices and fact sheets at important stages of the remedial action, such as the submission of work plans, remedial investigation/feasibility study reports, cleanup action plans, and engineering design reports. As appropriate, Ecology will edit, finalize, and distribute such fact sheets and prepare and distribute public notices of Ecology's presentations and meetings.

B. Notify Ecology's project coordinator prior to any of the following if and to the extent they concern the remedial action required by this Decree: the issuance of all press releases; distribution of fact sheets; performance of other planned outreach activities; and major meetings with the interested public and/or local governments. Likewise, Ecology shall notify BNSF prior to the issuance of all press releases and fact sheets, and before major meetings with the interested public and local governments if and to the extent they concern the remedial action required by this Decree. For all press releases, fact sheets, meetings, and other planned outreach efforts by BNSF that do not receive prior Ecology approval, BNSF shall clearly indicate to its audience that the press release, fact sheet, meeting, or other outreach effort was not sponsored or endorsed by Ecology. This section does not apply to communications by BNSF that are required or conducted pursuant to law(s) or regulations other than MTCA or the MTCA Cleanup Regulation, Chapter 173-340 WAC, or communications by BNSF with investors or insurance carriers.

C. When requested by Ecology, participate in public presentations on the progress of the remedial action at the Site. Participation may be through attendance at public meetings to assist in answering questions, or as a presenter.

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D. When requested by Ecology, arrange and/or continue information repositories at the following locations:

1. Skykomish Library
100 Fifth Street
Skykomish, WA 98288
(360) 677-2660

2. Ecology's Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008
(425) 649-7000

At a minimum, copies of all public notices, fact sheets, and press releases; all quality assured monitoring data; remedial actions plans and reports, supplemental remedial planning documents, and all other similar documents relating to performance of the remedial action required by this Decree shall be promptly placed in these repositories.

XXIX. DURATION OF DECREE

The remedial program required pursuant to this Decree shall be maintained and continued until BNSF has received written notification from Ecology that the requirements of this Decree have been satisfactorily completed. This Decree shall remain in effect until dismissed by the Court. When dismissed, Section XIX (Covenant Not to Sue) and Section XX (Contribution Protection) shall survive, in addition to any other sections that explicitly extend beyond the duration of the decree (*e.g.* Section XXVII, Periodic Review).

XXX. CLAIMS AGAINST THE STATE

BNSF hereby agrees that it will not seek to recover any costs accrued in implementing the remedial action required by this Decree from the State of Washington or any of its agencies; and further, that BNSF will make no claim against the State Toxics Control Account or any local Toxics Control Account for any costs incurred in implementing this Decree. Except as provided above, however, BNSF expressly reserves its right to seek to recover any costs incurred in implementing this Decree from any other PLP. This Section does not limit or address funding that may be provided under Chapter 173-322 WAC.

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XXXI. COMMUNITY WASTE WATER SYSTEM

Ecology is pursuing funding for a permanent wastewater treatment system for the Town of Skykomish. Consequently, subject to legislative appropriation, Ecology will provide funding assistance for a community wastewater system for the Town, consistent with the Town's *Wastewater Facility Plan* dated June 2007.

XXXII. EFFECTIVE DATE

This Decree is effective upon the date it is entered by the Court.

XXXIII. WITHDRAWAL OF CONSENT

If the Court withholds or withdraws its consent to this Decree, it shall be null and void at the option of any party and the accompanying Complaint shall be dismissed without costs and without prejudice. In such an event, no party shall be bound by the requirements of this Decree.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

_____
James Pendowski
Program Manager
Toxics Cleanup Program
(360) 407-7177

Date: _____

ROBERT M. McKENNA,
ATTORNEY GENERAL

_____
Kristie E. Carevich, WSBA No. 28018
Assistant Attorney General
(360) 586-6762

Date: _____

BNSF RAILWAY COMPANY

_____
[Name of signatory]
[Title of signatory]
[Telephone]

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

Date: _____

ENTERED this _____ day of _____ 20____.

_____
JUDGE
King County Superior Court

EXHIBIT A

[SITE DIAGRAM]

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
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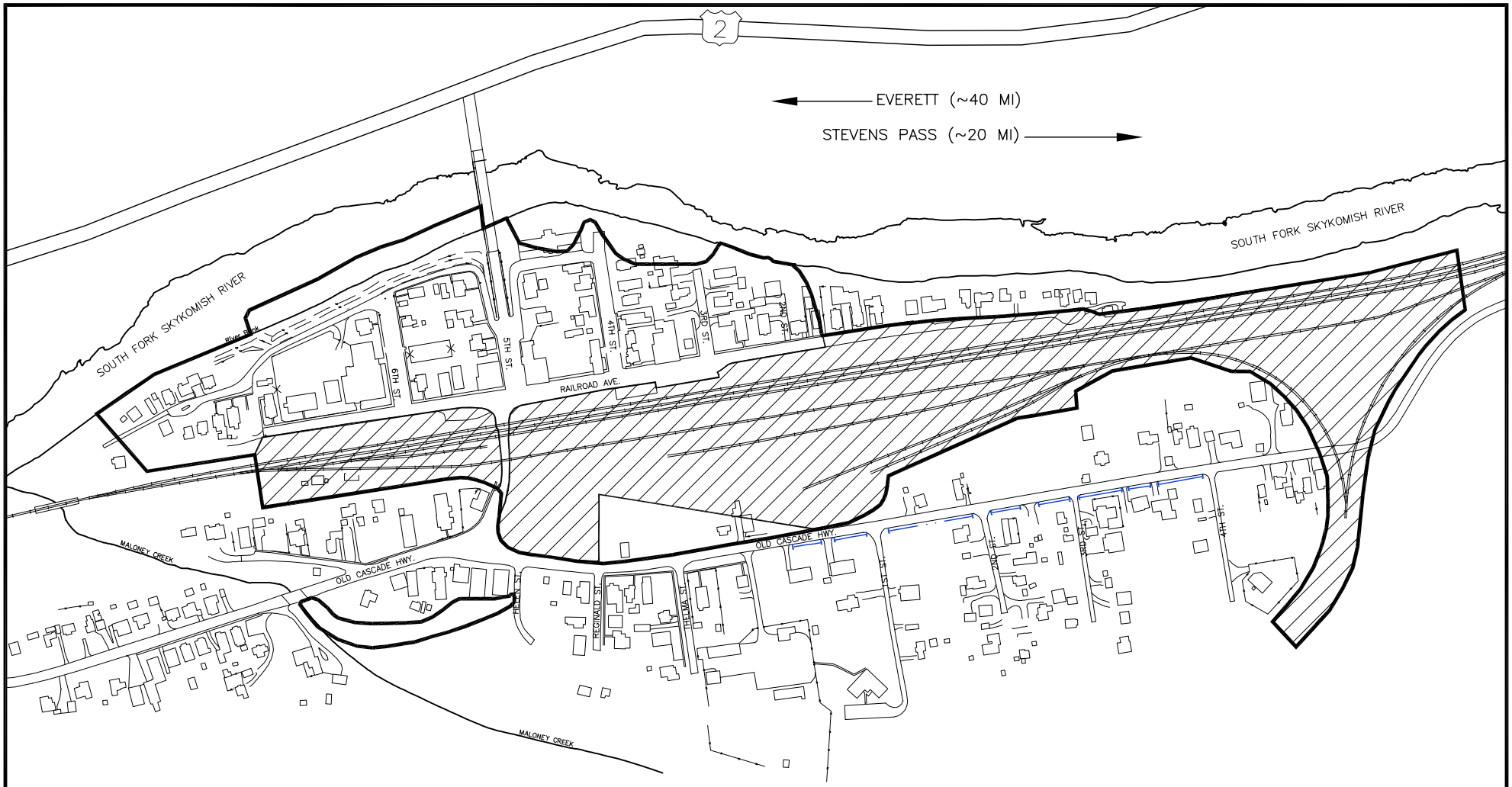
File: H:\16423\ECOLOGY\6-4-07\EXHIBIT-A-RAILYARD.dwg Layout: exhibit A User: emarshall Plotted: Jun 05, 2007 - 11:45am Xref's:



WASHINGTON STATE DEPARTMENT OF ECOLOGY

BNSF RAILWAY SITE
SKYKOMISH, WA

SITE DIAGRAM

DATE: 6/5/07 | DRWN:

EXHIBIT A

EXHIBIT B

[CLEANUP ACTION PLAN]

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Exhibit B

DRAFT CLEANUP ACTION PLAN

for

BNSF Railway
Former Maintenance and Fueling Facility

Skykomish, Washington

by
Washington State Department of Ecology

June 12, 2007

Table of Contents

List of Tables

List of Figures

List of Acronyms and Abbreviations

AKART	All known available and reasonable methods of treatment
APH	A laboratory method for measuring petroleum hydrocarbons in air
BNP	BNSF preferred alternative
BNSF	BNSF Railway Company
CSL	Cleanup Screening Level
Ecology	Washington State Department of Ecology
ECY	Ecology alternative
FMC	Former Maloney Creek
mg/kg	milligrams per kilogram (same as parts per million)
mg/L	milligrams per liter (same as parts per million)
MTCA	Model Toxics Control Act
NAPL	Nonaqueous phase liquid
NEDZ	Northeast Developed Zone
ng/kg	nanograms per kilogram (same as parts per trillion)
NWDZ	Northwest Developed Zone
NWTPH-Dx	A laboratory method for measuring the total petroleum concentration in soil, sediment, and water
OHWM	Ordinary high water mark
PB	Property Boundary, used to preface Feasibility Study Alternatives that used a property boundary point of compliance, as PB1
RCW	Revised Code of Washington
SDZ	South Developed Zone
SQS	Sediment Quality Standards
STD	Standard, refers to the Feasibility Study standard alternative
SW	Surface Water, used to preface Feasibility study Alternatives that use a surface water point of compliance, as SW1
TPH	Total petroleum hydrocarbons
V/E	VPH/EPH laboratory method, a laboratory method for measuring the concentrations of petroleum constituents in soil, sediment, and water
WAC	Washington Administrative Code
µg/L	micrograms per liter (same as parts per billion)

Declarative Statement

Consistent with Chapter 70.105D RCW, "Model Toxics Control Act," as implemented by Chapter 173-340 WAC, "Model Toxics Control Act Cleanup Regulation," it is determined that the selected cleanup actions are protective of human health and the environment, attain federal and state requirements that are applicable or relevant and appropriate, comply with cleanup standards, provide for compliance monitoring, use permanent solutions to the maximum extent practicable, provide for a reasonable restoration time frame, and consider public concerns raised during public comment.

_____

Louise Bardy, Site Manager, Date
Northwest Regional Office

_____

Tim Nord, Manager, Date
Land and Aquatic Cleanup Section
Toxics Cleanup Program

Chapter 1 - Introduction

This cleanup action plan presents the cleanup action to be taken at the BNSF Railway Former Maintenance and Fueling Facility in Skykomish, Washington (BNSF Skykomish Site or Site). The plan was developed using information obtained during Site investigations that began in 1993 and that are ongoing. This information is presented in the Remedial Investigation reports (RETEC, 2002 and 1996), in the Final Feasibility Study report (RETEC, 2005), and the Engineering Design Report – Levee Zone Interim Action for Cleanup (RETEC, 2006).

In addition to meeting cleanup requirements, implementation of the actions called for under this plan will serve to largely restore the natural resources damaged by the release (e.g., restoration of groundwater in the Town of Skykomish, and restoration and enhancement of the river bed, bank and levee completed during the 2006 interim action), and therefore will reduce future damages to resources at the Site.

Chapter 2 - Site Conditions

2.1 Site History

In 1893, train service to Seattle started along the Great Northern Railway, and the Town of Skykomish, Washington, became a center for railroad operations. Skykomish is located on the west side of the Cascade Mountains, approximately 16 miles west of Stevens Pass. It is reached via U.S. Highway 2, which follows the south fork of the Skykomish River. Skykomish was incorporated in 1909. Mining, lumbering, milling, and railroad maintenance and fueling were its economic mainstays until these activities declined at end of the 20th Century. The rail line running through Skykomish was and remains one of the main transcontinental rail transportation corridors. The population of Skykomish is currently just over 200 people. Figure 1 shows the Site location. Figure 2 shows the town street plan.

A maintenance and fueling facility operated in Skykomish from the early 20th Century until 1974. The first known record of petroleum being discharged to the Skykomish River is in 1926, when the Game Commission of King County wrote the General Manager of the Great Northern Railroad, then operating the line, to indicate, "There is a quantity of oil being cast into the Skykomish river at the town of Skykomish, and heretofore it has been charged that it came from your road." (Game Commission for King County, 1926) Correspondence from 1930 indicates discharge was continuing. (Assistant Chief Engineer, 1930, and Burgunder, 1930) (See electronic file BNSF Skykomish 1926 and 1930 letters.pdf)

Over the decades discharge to the environment of Bunker-C and diesel fuel from railyard operations continued. The petroleum flowed downward to the water table, and thence horizontally along the water table under the Town of Skykomish to the south fork of the Skykomish River. Seasonal fluctuation of the water table resulted in petroleum being smeared across the zone of fluctuation. Sediments in the river and Former Maloney Creek (FMC) were contaminated with petroleum. Free product occurs at the groundwater table and in the smear zone, and groundwater contains dissolved petroleum constituents. Soil throughout the Site is contaminated with petroleum.

The railroad is now owned by the BNSF Railway Company (BNSF). BNSF and Ecology have been investigating the Site since 1993. Remedial investigations and feasibility studies and interim actions have been completed. They provide sufficient data and information for Ecology to select a cleanup action.

2.2 Human Health and Environmental Concerns

Contamination at the Site poses several potential threats to human health. Soil contamination poses a potential direct contact threat through ingestion of soil. Petroleum constituents in groundwater pose a human health threat due to the potential for ingesting groundwater as a drinking water supply. Contaminated groundwater also impacts the

Skykomish River, which is used for recreation and can be used for drinking water supply. Petroleum vapors pose a potential human health threat by inhalation.

The primary environmental concern at the Site is the discharge of petroleum to the environment on the railyard and its migration both north to the Skykomish River and south to FMC and other off-railyard areas.

Data collected during Site investigations have roughly estimated the equivalent of approximately two million gallons of petroleum are currently in the subsurface, occurring as free product, nonaqueous phase liquid (NAPL) in soil pore space, sorbed to the soil, and dissolved in the groundwater.

Figure 3 presents a conceptual diagram of exposure pathways at the Site and presents risk-based petroleum cleanup levels associated with each pathway. These risk-based petroleum concentrations represent the concentrations below which the cumulative effects associated with the petroleum and its constituents do not pose unacceptable risk to human health and the environment. The individual petroleum-based hazardous chemicals that have been identified in soil and groundwater at this site include semi-volatiles, such as polynuclear aromatic hydrocarbons (PAHs) and specific carcinogenic PAHs (cPAHs). These individual hazardous chemicals will be removed as part of the total petroleum concentrations being removed during this cleanup and, thus, it is expected that there will no longer be a threat to human health and the environment from these individual petroleum-based hazardous chemicals after cleanup.

Figure 4 summarizes the distribution of petroleum on-site, as defined in the FS (RETEC, 2005).

Human health and environmental concerns at the Site also include arsenic and lead contamination, PCB contamination, and dioxin/furan contamination. Lead and arsenic are present in elevated concentrations on the railyard in shallow surface soils to an approximate depth of 2-3 feet below ground surface. Lead and arsenic are present in isolated surface soils off BNSF's railyard facility property in residential soils at elevated concentrations to an approximate depth of two feet.

PCB was detected on the BNSF's railyard facility property in several locations and exceeded cleanup levels for soil in only one location within surface soils to an approximate depth of 1 foot. The areas of PCB contamination also have lead, arsenic, and petroleum impacts.

Dioxin/furan at concentrations exceeding the MTCA Method B soil level were detected in surface sediments in the portion of FMC on and adjacent to the railyard and to the south behind the Skykomish School Bus Barn and King County fire station. Dioxin/furan contamination in sediments extends to approximately 2 feet below ground surface, and is located within the area of petroleum release. Thus, it is expected that dioxin/furan contaminated sediments will be removed as part of the petroleum remedial actions and handled appropriately.

The Site has been divided into zones to facilitate discussion of cleanup actions. The zones, shown on Figure 5, are:

- Railyard Zone – The Railyard Zone has historically been used for railroad maintenance and fueling activities. Almost all of the Railyard Zone is currently used as a rail transportation corridor. The three tracks on the north side of the Railyard are known collectively as the BNSF mainline. The discharge of Bunker-C and diesel fuel to the environment occurred on BNSF's railyard facility property as a result of maintenance and fueling operations. PCBs were discharged to the environment from transformers associated with an electrical substation formerly on the railyard. Arsenic and lead were discharged to the environment as a result of maintenance activities that used sandblast grit. The Railyard Zone is almost entirely owned by BNSF Railway Company. The Railyard Zone includes three small areas immediately adjacent to the BNSF's railyard facility property: two with surface soil impacted by arsenic and lead, and one with surface and subsurface soil impacted by petroleum.

- Northwest Developed Zone – The Northwest Developed Zone is used for residential and commercial purposes. It has multiple property owners. It is affected by petroleum contamination that consists primarily of Bunker-C. The petroleum composition is extremely resistant to biodegradation at high concentrations. Near surface lead and arsenic contamination is present in isolated areas.

- South Developed Zone – The South Developed Zone is used for residential purposes. It has multiple property owners. It is affected by petroleum contamination that consists of primarily of Bunker-C. The petroleum composition is extremely resistant to biodegradation at high concentrations.

- Northeast Developed Zone –The Northeast Developed Zone is used for residential and commercial purposes. It has multiple property owners. It is affected primarily by diesel. The diesel is more soluble and more biodegradable than the Bunker-C in other zones. Near surface lead contamination is present in isolated areas.

- Levee Zone –The South Fork Skykomish River provides aquatic habitat for endangered and other species, and recreational opportunities. The Levee provides protection against high-velocity flows entering the Town of Skykomish during floods. Both are affected by petroleum contamination that consists primarily of Bunker-C. The petroleum composition is extremely resistant to biodegradation at high concentrations.

- Former Maloney Creek Zone – The Former Maloney Creek channel and associated wetlands provide aquatic habitat for endangered and other

species, storm water detention, and recreational opportunities. The creek and wetlands are affected primarily by Bunker-C contamination. The petroleum composition is extremely resistant to biodegradation at high concentrations. Dioxin/furan contamination is located within the area of petroleum release.

An interim action to clean up the Levee Zone and part of the Northwest Developed Zone was conducted in 2006; free product and soil with TPH exceeding 3,400 mg/kg was removed within the cleanup area.

Chapter 3 - Cleanup Requirements

The Model Toxics Control Act Cleanup Regulation, Chapter 173-340 WAC describes the manner in which cleanup actions are to be selected. The following sections discuss the regulatory considerations that are most pertinent[1] to the BNSF Skykomish Site and specify performance standards that the cleanup must meet. Most of the discussion relates to the petroleum contamination at the Site, since the concentration, volume, and distribution of this contamination drives the selection of cleanup actions at the Site. Metals contamination is shallow and much less in volume than the petroleum contamination. PCB contamination is also limited to shallow soils and is limited to the railyard in the area of the old transformer pads. Dioxin/furan contamination in the FMC Zone is located within the area of petroleum release.

3.1 Ecology Expectations for Cleanup Actions

Ecology has certain expectations for the types of cleanup actions selected for cleanup sites, as laid out in WAC 173-340-370. Those most pertinent to the BNSF Skykomish Site are discussed below.

Ecology expects that treatment technologies will be emphasized at sites containing liquid wastes, areas contaminated with high concentrations of hazardous substances, highly mobile materials, and/or discrete areas of hazardous substances that lend themselves to treatment. WAC 173-340-370(1). At the BNSF Skykomish Site, petroleum contamination is present as free product, as NAPL in soil pore spaces, in high concentrations sorbed to soil and sediment, and dissolved in groundwater. Excavation, active treatment, and product removal are expected to be used to address this high-level contamination.

Ecology expects that, for facilities adjacent to a surface water body, active measures will be taken to prevent/minimize releases to surface water via surface runoff and groundwater discharges in excess of cleanup levels. WAC 173-340-370(6). The BNSF Skykomish Site is adjacent to the Skykomish River and includes a wetland that is the former channel of Maloney Creek. Contaminated groundwater discharges to both of these surface water bodies, and free product discharges to the Skykomish River. At the BNSF Skykomish Site, Ecology expects active measures will be taken to prevent these releases. WAC 173-340-370(6).

Ecology expects that natural attenuation of hazardous substances may be appropriate at sites where: (a) Source control (including removal and/or treatment of hazardous substances) has been conducted to the maximum extent practicable; (b) Leaving contaminants on-site during the restoration time frame does not pose an unacceptable threat to human health or the environment; (c) There is evidence that natural biodegrada-

[1] Cleanup actions at the BNSF Skykomish Site must meet all regulatory requirements whether discussed herein or not.

tion or chemical degradation is occurring and will continue to occur at a reasonable rate at the site; and (d) Appropriate monitoring requirements are conducted to ensure that the natural attenuation process is taking place and that human health and the environment are protected. WAC 173-340-370(7). At the BNSF Skykomish Site Ecology expects that free product and soil and sediment with high concentrations of Bunker-C will be removed by excavation or active treatment. Site investigations indicate that Bunker-C contamination at high concentrations will not degrade by natural attenuation at reasonable rates. Ecology expects that treatment by enhanced bioremediation techniques such as air sparging will be done for soil and groundwater with high concentrations of diesel contamination.

3.2 Minimum Requirements for Cleanup Actions

The MTCA Cleanup Regulation specifies minimum requirements for cleanup actions. WAC 173-340-360(2). All cleanup actions must meet these requirements. Those most pertinent to the BNSF Skykomish Site are discussed below. In considering how best to use agency discretion and best professional judgment in implementing minimum cleanup requirements at specific sites, Ecology gives careful consideration to the regulatory expectations summarized in the preceding section.

The minimum regulatory requirements that every cleanup action must meet are:

- Protect human health and the environment – Cleanup actions that achieve cleanup levels at the applicable point of compliance under Methods A, B, or C (as applicable) and comply with applicable laws are presumed to be protective of human health and the environment. WAC 173-340-702. Cleanup action alternatives that provide for the containment of soils must be demonstrated to be protective of human health and the environment through either qualitative or quantitative risk assessments.

- Comply with cleanup standards and applicable state and federal laws[2] – Cleanup standards are those standards adopted under RCW 70.105D.030(2)(e)[3] and Chapter 173-340 WAC. Establishing cleanup standards requires specification of hazardous substance concentrations that protect human health and the environment ("cleanup levels"), the location on the site where those cleanup levels must be attained ("points of compliance"), and additional regulatory requirements that apply to a cleanup action because of the type of action and/or the location of the site. WAC 173-340-200. These requirements are specified in applicable state and federal laws and are generally established in conjunction with the selection of a specific cleanup action. Cleanup standards for the BNSF Skykomish Site are discussed in §3.4. They include cleanup levels and their

[2] "Applicable state and federal laws" means all legally applicable requirements and those requirements that Ecology determines, based on the criteria in WAC 173-340-710(4), are relevant and appropriate requirements. WAC 173-340-200.
[3] Note that WAC 173-340-200 incorrectly references RCW 70.105D.030(2)(d) on this point.

respective points of compliance, and applicable and relevant and appropriate requirements of state and federal laws. (Cleanup actions at the BNSF Skykomish Site must also meet remediation levels as applicable, plus applicable permit and substantive requirements, discussed in §3.4 and §3.5).

- Provide for compliance monitoring – Each cleanup action must include plans for compliance monitoring to ensure human health and the environment are protected during construction, operation, and maintenance activities; to confirm that the actions have attained cleanup standards, remediation levels, and other performance standards; and to confirm the long-term effectiveness of the action once cleanup standards, remediation levels, and other performance standards have been attained. WAC 173-340-410(1).

There are several other requirements that cleanup actions must meet. Those most pertinent to the BNSF Skykomish Site are:

- Treatment or removal of the source of the release shall be conducted for liquid wastes, areas contaminated with high concentrations of hazardous substances, highly mobile hazardous substances, or hazardous substances that cannot be reliably contained. This includes removal of free product consisting of petroleum and other light nonaqueous phase liquid (LNAPL) from the groundwater using normally accepted engineering practices. WAC 173-340-360(2)(c)(ii)(A).

- Groundwater containment, including barriers or hydraulic control through groundwater pumping, or both, shall be implemented to the maximum extent practicable to avoid lateral and vertical expansion of the groundwater volume affected by the hazardous substance. WAC 173-340-360(2)(c)(ii)(B).

- Provide for a reasonable restoration time frame. WAC 173-340-360(2)(b)(ii)

- Consider public concerns. WAC 173-340-360(2)(b)(iii).

- Use permanent solutions to the maximum extent practicable. WAC 173-340-360(2)(b)(i).

Ecology carefully considered these minimum requirements when selecting the cleanup action for the BNSF Skykomish Site from among the alternatives, technologies, and information presented in the Feasibility Study (RETEC, 2005). The manner in which these regulatory requirements were considered is discussed in Chapter 5.

3.3 Requirements for a Groundwater Conditional Point of Compliance

Ecology is approving use of a conditional point of compliance at the BNSF Skykomish Site pursuant to WAC 173-340-720(8)(c) and (d)(ii). A conditional point of compliance is being established within the Skykomish River and FMC and associated wetlands for protection of sediments at the points where groundwater flows into the River and the

Creek via surface or subsurface seeps. This is called a "surface water point of compliance" for groundwater.

There are several requirements in WAC 173-340-720(d) that must be met in order for Ecology to approve a surface water conditional point of compliance for groundwater. The requirements most pertinent to selecting the cleanup action to be implemented at this Site are as follows:

- It has been demonstrated that it is not practicable to meet the cleanup level at the standard point of compliance, or at a point within the ground water before it enters surface water, within a reasonable restoration time frame.

- Groundwater discharges shall be provided with all known available and reasonable methods of treatment (AKART) before being released into surface waters.

- Groundwater discharges shall not result in violations of site-specific sediment quality values.

- A notice of the proposed conditional point of compliance is to be mailed to the Washington State Department of Natural Resources, and the United States Army Corps of Engineers and the natural resource trustees. The natural resource trustees are the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, the Washington Department of Fish and Wildlife, and the Tulalip Tribe. This notice is in addition to any notice provided under WAC 173-340-600, and is to invite comments on the proposal.

- The affected property owners between the source of contamination and the surface water body must agree in writing to the use of the conditional point of compliance.

Ecology carefully considered these requirements when selecting the cleanup actions for the BNSF Skykomish Site from the alternatives and information presented in the Feasibility Study (RETEC, 2005). The manner in which they were considered is discussed in Chapter 5.

3.4 Cleanup Levels, Remediation Levels, and Points of Compliance

Cleanup levels have been established for petroleum for sediment, surface water, groundwater, soil, and air at the Site. The development of the cleanup levels is discussed in Chapter 5 of the Feasibility Study (RETEC, 2005, see particularly Table 5-1). Figure 2 of this report summarizes the manner in which petroleum cleanup levels were developed and provides other information that was used to develop remediation levels, where appropriate. Petroleum cleanup levels and remediation levels are expressed as

total petroleum hydrocarbons (TPH). The cleanup levels, remediation levels,[4] and their respective points of compliance are summarized below and on Table 1:

Sediment – Skykomish River: The cleanup level for petroleum in surface sediment (top 10 centimeters) and subsurface sediment (below 10 centimeters) is 40.9 mg/kg as measured by the NWTPH-Dx method[5] (40.9 mg/kg NWTPH-Dx). This concentration was determined via site-specific biological assessment. The cleanup level for subsurface sediment was determined by considering the potential for subsurface sediments becoming surface sediment as a result of changing river dynamics. The cleanup level of 40.9 mg/kg NWTPH-Dx applies to sediment within the Skykomish River as defined by the location of the ordinary high water mark (OHWM), and will be used as the performance monitoring standard when excavating sediment. Bioassays will be used to evaluate whether the cleanup remains protective in the long-term. That is, bioassays will be used as the standard during confirmational monitoring to evaluate whether the cleanup remains protective of surface sediments. Bioassay tests to be performed for confirmational sampling are *Hyalella azteca*: 10-day mortality, *Chironomus tentans*: 20-day growth and mortality, and Microtox®: 15-minute reduction in bioluminescence (Ecology, 1995).

Sediment – Former Maloney Creek Zone: The cleanup level for petroleum in surface sediment (top 10 centimeters) and subsurface sediment (below 10 centimeters) is 40.9 mg/kg as measured by the NWTPH-Dx method (40.9 mg/kg NWTPH-Dx). This concentration was determined via site-specific biological assessment. Dioxin/furan contamination is located within the area of petroleum release and will be fully removed with the petroleum contamination. The point of compliance for sediment in FMC is within the creek channel as delineated by the wetland boundary as defined by wetland vegetation or by the OHWM. The cleanup level of 40.9 mg/kg NWTPH-Dx will be used as the performance monitoring standard when excavating sediment. Dioxin/furan removal will be confirmed during performance monitoring. Dioxin/furan-contaminated sediment will need to be evaluated to determine proper disposal requirements. Bioassays will be used to evaluate whether the cleanup remains protective in the long-term. That is, bioassays will be used as the standard during confirmational monitoring to evaluate whether the cleanup remains protective of surface sediments. Bioassay tests to be performed for confirmational sampling are *Hyalella azteca*: 10-day mortality, *Chironomus tentans*: 20-day growth and mortality, and Microtox®: 15-minute reduction in bioluminescence (Ecology, 1995).

[4] A remediation level defines a concentration of a hazardous substance in a particular medium above which a particular cleanup action component must be used. WAC 173-340-200. In practice, a remediation level is a contaminant concentration that is above a cleanup level. When contamination is above the remediation level, more aggressive cleanup actions are taken than for contamination between the remediation level and the cleanup level. For example, soil with contamination above a remediation level may be excavated whereas soil with contamination between the cleanup level and the remediation level may be managed on site.

[5] NWTPH-Dx is a laboratory method for measuring the concentration of petroleum in soil, sediment, and water. When used after a numerical petroleum concentration, it indicates the NWTPH-Dx method is to be used in laboratory measurements relevant to that concentration.

Surface Water – The petroleum cleanup level for surface water is 208 µg/L NWTPH-Dx and absence of sheen or free product. This cleanup level is based upon protection of sediment from recontamination. The point of compliance is the point at which contaminated groundwater is released to the Skykomish River and to the FMC Zone.

Groundwater – The petroleum cleanup level for groundwater is 208 µg/L NWTPH-Dx and absence of sheen or free product. This cleanup level is based upon protection of sediment from recontamination by groundwater flowing through it. The cleanup level point of compliance is at the surface water boundary where contaminated groundwater enters surface water, that is, at the points where groundwater enters the Skykomish River and the FMC Zone. In the NEDZ, contaminated groundwater reaches the Skykomish River in some areas (see Figure 4). In the NEDZ, the groundwater point of compliance is the groundwater concentration contour for 208 µg/L NWTPH-Dx (See Figure 4).

Ecology is also setting a petroleum remediation level for groundwater of 477 µg/L NWTPH-Dx and absence of sheen or free product. This remediation level is protective of drinking water. This remediation level applies at the BNSF's railyard facility property boundary, to ensure that groundwater flowing beyond the BNSF's railyard facility property boundary and to the cleanup level point of compliance meets potable levels and meets the cleanup level of 208 µg/L NWTPH-Dx and absence of sheen or free product at the cleanup level conditional point of compliance. Groundwater beneath both BNSF's railyard facility property and areas off of BNSF's railyard facility property are considered potable groundwater as defined in the MTCA Cleanup Regulation. WAC 173-340-720(2). Ecology is setting the 477 µg/L NWTPH-Dx and absence of sheen or free product remediation level to protect groundwater off BNSF's railyard facility property, in conjunction with the groundwater cleanup level to protect sediment at the surface water boundary.[6] Hydraulic control and containment must be implemented at the BNSF property boundary and operated to ensure groundwater exiting the property boundary meets the remediation level of 477 µg/L NWTPH-Dx and absence of sheen or free product.

Note particularly that the remediation level groundwater point of compliance is at the BNSF's railyard facility property, not the boundary of the Railyard Zone, which includes some property not owned by BNSF.

As discussed further in §4.2, Ecology recognizes that there may be isolated areas off of BNSF's railyard facility property where the 477 µg/L NWTPH-Dx remediation and absence of sheen or free product level may not be achieved in groundwater. Ecology will not require the remediation level be met under and downgradient of such isolated areas, but the cleanup level of 208 µg/L NWTPH-Dx and absence of sheen or free product must

[6] The unique composition of the petroleum at this site has resulted in the concentration of petroleum in groundwater that is protective of sediment (208 µg/L NWTPH-Dx) being lower than the petroleum concentration in groundwater that is protective of drinking water (477 µg/L NWTPH-Dx). For this reason, Ecology is granting a conditional point of compliance for the cleanup level of 208 µg/L NWTPH-Dx at the surface water boundary for sediment protection and also setting a remediation level of 477 µg/L NWTPH-DX for drinking water protection at the BNSF property boundary.

still be met at compliance wells at the cleanup level conditional point of compliance. Even in the event some contamination in areas off of BNSF's railyard facility property acts as a source of contaminants to groundwater, these sources will be small in comparison to the large amounts of high concentration material left under the BNSF mainline and the rest of the railyard. And where met, this remediation level will avoid institutional controls on private property, will restore a large portion – if not all – of the groundwater resource off of BNSF's railyard facility property, and will increase the permanence of cleanup by better ensuring the groundwater cleanup standard can be met.

Soil – The cleanup levels for soil are as follows: For petroleum, 22 mg/kg NWTPH-Dx; for arsenic, 20 mg/kg, for lead, 250 mg/kg, for total PCBs 0.65 mg/kg, and for dioxin/furan, 6.67 ng/kg Total Toxicity Equivalent Concentration. The cleanup level point of compliance for petroleum is throughout the Site since the cleanup level is based upon protection of groundwater. However, as described in §4.2 , an empirical demonstration may be used to show the remediation level selected is protective of groundwater, sediment, and surface water, and therefore effective as the soil cleanup level at this Site. The remediation level selected for petroleum in soil is established at 3,400 mg/kg NWTPH-Dx based on direct contact, air quality, and groundwater protection. The point of compliance for the remediation level of 3,400 mg/kg NWTPH-Dx is throughout the portion of the Site which is off BNSF's railyard facility property except within 25 feet south of the OHWM of the Skykomish River and within 25 feet of the FMC Zone as delineated by wetland vegetation or the OHWM, where the cleanup level of 22 mg/kg NWTPH-Dx must be met to a depth of 4 feet. Below 4 feet and within 25 feet of the FMC Zone the petroleum soil remediation level of 3,400 mg/kg NWTPH-Dx applies. In the NEDZ, soil with petroleum concentrations exceeding a remediation level of 30,000 mg/kg NWTPH-Dx will be used to define soil that must be excavated.[7] Soil in the NEDZ with petroleum concentrations above the remediation level of 3,400 mg/kg NWTPH-Dx will be addressed using air sparging.

Free product and soil with high concentrations of petroleum will remain on BNSF's railyard facility property. Groundwater contamination resulting from free product and high soil concentrations will be managed with a robust and reliable active hydraulic control and containment system incorporating a redundant barrier system, groundwater pumping, and groundwater treatment. The redundant barrier system must be capable of detecting leaks of free product that may occur anywhere along the length of the barrier system. Limited soil excavation will be performed on BNSF's railyard facility property as well. Soil will be excavated in selected areas of free product; these excavations will be based on excavating a specified soil volume. A remediation level for petroleum in soil is established at 1,870 mg/kg NWTPH-Dx to protect soil biota. The point of compliance

[7] When petroleum concentrations in soil at the excavation limits are greater than 30,000 mg/kg NWTPH-Dx or free product is observed to be flowing into or accumulating in an excavation four or more hours after all recoverable free product has been removed using best available technology, more excavation will be required. Hydraulic control and containment will ensure that any free product remaining beyond the excavation limits will be treated or stay on BNSF property.

for the remediation level of 1,870 mg/kg is to a depth of two feet.[8] Soil within two feet of the surface exceeding a petroleum concentration of 1,870 mg/kg occurs only in the Railyard Zone. The specified point of compliance of a depth of 2 feet is appropriate for the soil in the railyard pursuant to WAC 173-340-7490(4). Soil within BNSF's railyard facility property will also be excavated as necessary to meet the requirements for the Former Maloney Creek Zone.

The cleanup level for soil for arsenic is 20 mg/kg; for lead is 250 mg/kg; for total PCBs is 0.65 mg/kg; and for dioxin/furan is 6.67 ng/kg Total Toxicity Equivalent Concentration. The cleanup level point of compliance for arsenic, lead, total PCBs, and dioxin/furan is throughout the Site to a depth of 15 feet below the ground surface. On the Railyard, arsenic and lead will be excavated to a depth of 2 feet; arsenic and lead contamination below 2 feet, if any, will be contained.

Air – The air cleanup level for petroleum vapors is 1,346 $\mu g/m^3$ APH outside of the BNSF railyard facility property boundary and 2,944 $\mu g/m^3$ within the BNSF railyard facility property boundary.[9] These concentrations are the residential (Method B) and industrial (Method C) air cleanup levels, respectively. The point of compliance is indoor and ambient air throughout the Site.[10]

3.5 Applicable Local, State, and Federal laws

Cleanup actions must comply with applicable local, state and federal laws. WAC 360(2)(a)(iii); WAC 173-340-710; RCW 70.105D.090. In certain cases, obtaining a permit is required. In other cases, the cleanup action must comply with the substantive requirements of the law, but are exempt from the procedural requirements of the law. RCW 70.105D.090; WAC 173-340-710(9).

Persons conducting remedial actions have a continuing obligation to determine whether additional permits or approvals are required, or whether substantive requirements for permits or approvals must be met. In the event that either BNSF or Ecology becomes aware of additional permits or approvals or substantive requirements that apply to the remedial action, they shall promptly notify the other party of this knowledge. WAC 173-340-710(9)(e).

[8] The direct contact cleanup level of soil in the vadose zone is 2130 mg/kg V/E. Such soils occur only in the Railyard Zone. Excavation of soil exceeding 1,870 mg/kg NWTPH-Dx will also be protective of direct contact in the Railyard Zone.

[9] APH is a laboratory method for measuring the concentration of petroleum in air. When used after a numerical petroleum concentration, it indicates the APH method is to be used in laboratory measurements relevant to that concentration.

[10] The establishment of the Method C air cleanup level, 2,944 $\mu g /m^3$, is discussed in RETEC, 2007 and ARGUS PACIFIC, 2007.

3.5.1 Required Permits

Cleanup actions at the Site will require the following permits. These are listed in Exhibit D of the Consent Decree. They are:

- Permit for discharge of pollutants pursuant to Section 402 of the Clean Water Act, 33 U.S.C. § 1342. Ecology issued National Pollutant Discharge Elimination System Waste Discharge Permit No. WA-003212-3 on May 4, 2006 for the discharge of industrial storm water and de-watering water resulting from BNSF cleanup activities in Skykomish.
- Permit for the discharge of dredged, excavated or fill material to waters of United States pursuant to Section 404 of the Clean Water Act, 33 U.S.C. § 1344 (which may be incorporated in a U.S. Army Corps of Engineers (USCOE) Nationwide 38 permit).
- Water Quality Certification from the State of Washington pursuant to Section 401 of the Clean Water Act, 33 U.S.C. § 1341(which may be incorporated in a USCOE Nationwide 38 permit).

3.5.2 Substantive Requirements

The applicable substantive requirements of the following exempt permits or approvals (as identified at the time of entry of this Decree) will be more particularly identified during each phase of the cleanup action.

- King County Special Use Permit for Septic Drainfield
- King County Special Use Permit for Levee Cleanup project
- Underground Injection Permit
- Hydraulic Project Application
- Water Discharge for Industrial Waste to Groundwater
- Water Quality Protection Requirements
- Town of Skykomish Requirements.

BNSF has a continuing obligation to determine whether additional permits or approvals addressed in RCW 70.105D.090(1) are required for remedial actions to be conducted under the Consent Decree. BNSF is responsible for a yearly evaluation and identification of any such additional substantive requirements as part of fulfilling its obligation to develop and submit phased Engineering Design Reports (EDR) for each year's work (see §6.2 and Exhibit C of the Consent Decree)

Chapter 4 - Site Remedy

4.1 Cleanup Action

The cleanup action for this Site incorporates different actions targeted to different zones of the Site. The actions to be taken for each zone are interdependent. Achieving cleanup in one zone depends not only upon the actions to be taken in that zone, but also upon the actions to be taken in other zones.

For example, some of the actions specified herein for the Levee Zone and part of the Northwest Developed Zone were completed as an interim action in 2006 under Agreed Order No. DE 3279. In the interim action, petroleum-contaminated sediment and soil within the Levee Zone and part of the Northwest Developed Zone were excavated. Limited areas in the Levee Zone (i.e., the area in the vicinity of the south abutment of the Fifth Street Skykomish Bridge[11]) remain to be addressed as part of final cleanup. The long-term success of the interim action depends upon the remainder of the zones being cleaned up as specified herein. Compliance monitoring will be performed as part of the final cleanup to confirm the success of the interim action in meeting cleanup standards. These monitoring activities will be part of the complete compliance monitoring plan to be implemented at the Site.

Table 2 summarizes the cleanup actions to be taken at the Site. Figure 6 shows a summary map of cleanup actions to be taken at the Site. The following sections discuss the actions for each zone. The extent of cleanup in each zone will be revised as necessary based upon findings of investigations that are described in §6.2.

The cleanup actions require extensive soil excavation which will require backfilling. All backfill soils must come from a source approved by Ecology and must have suitable geotechnical characteristics. The backfill must be washed prior to placement near surface water to minimize turbidity impacts on surface water.

4.1.1 Levee Zone

The Levee Zone includes both the levee west of 5th Avenue along the South Fork of the Skykomish River and the river itself. Contaminated surface sediment and soil have been excavated from the river as part of the earlier interim action referenced above, and described in the *Engineering Design Report – Levee Zone Interim Action for Cleanup* (RETEC, 2006).

The river and levee are being restored as appropriate habitat. Levee reconstruction is being done according to plans developed in consultation with the community. Habitat restoration, enhancement, and reconstruction plans for the levee are described in the

[11] The formal name of the Fifth Street Skykomish Bridge is the John Glick Henry Memorial Bridge.

engineering design report for the levee work. Habitat restoration, enhancement, and reconstruction will be finished as part of the final cleanup actions.

Compliance monitoring is to be conducted as part of the cleanup action, to ensure that excavations remove the soil to the concentrations specified and to assess whether sediment becomes recontaminated over time by migration of contamination remaining on-site. As a contingency, should recontamination of sediments occur above the site-specific sediment cleanup screening level (CSL), as determined by bioassay, BNSF will excavate the contaminated sediments, monitor the sediments to ensure they meet the site-specific sediment quality standards (SQS) within ten years of completion of the initial cleanup action, and will also employ, as necessary, treatment methods at the levee to reduce the petroleum concentrations in groundwater flowing to the river so that sediments will continue to meet the SQS within this timeframe. If recontamination occurs at levels below the CSL but above the SQS, as determined by bioassay, then BNSF will employ, as necessary, treatment methods at the levee to reduce the petroleum concentrations in groundwater flowing to the river to levels that allow sediments to naturally recover, and will monitor the natural recovery of the contaminated sediments, which must meet the SQS within ten years of the completion of the initial cleanup action. Ecology anticipates that reducing petroleum concentrations in groundwater will be accomplished using enhanced bioremediation techniques such as air sparging, and that this will be used as the contingency measure to prevent recontamination of sediment.

Soil and sediment within the Levee Zone are expected to meet cleanup and remediation levels at the completion of the interim action with the exception of the soil and sediment in the vicinity of south abutment of the Fifth Street Bridge, to be addressed later in the cleanup (see §6.2) . Contaminated groundwater will still be entering the Levee Zone at the completion of the interim action. Additional cleanup of groundwater will occur as actions are taken in other zones. Compliance wells to monitor groundwater will be installed in the Levee Zone. See further discussion in §4.1.2 regarding the Northwest Developed Zone (NWDZ).

No institutional controls are expected to be needed within the Levee Zone. Excavation is expected to decrease contamination to concentrations that protect aquatic organisms in the river, that protect drinking water uses, and that are protective of direct contact with the soil.

4.1.2 Northwest Developed Zone (NWDZ)

Free product is to be excavated in the NWDZ, and petroleum-contaminated soil in the NWDZ is to be excavated to the remediation level of 3,400 mg/kg NWTPH-Dx throughout the zone, with the exception of properties where property owners will not allow access and under the Skykomish School. Soil contaminated with lead exceeding the cleanup level of 250 mg/kg and/or arsenic exceeding the cleanup level of 20 mg/kg is to be excavated throughout the zone.

4.1.2.1 Residential and Commercial Properties

Cleanup of residential and commercial properties will require temporary relocation of buildings and structures that are on the property and otherwise disturb the property so that excavation or other cleanup actions can occur. Property owners will be contacted by BNSF well in advance of the time during which cleanup actions will occur. Arrangements for access, cleanup, and property restoration will be made in the manner discussed in §6.1.

After cleanup, protection against vapor intrusion may be required for any building, structure, or enclosed space that remains or is built in the NWDZ over petroleum contamination exceeding 3,400 mg/kg NWTPH-Dx. After excavation is complete in the NWDZ, compliance monitoring of indoor and ambient air will use the air cleanup level of 1,346 μg/m^3 APH as the standard when evaluating monitoring data to assess whether vapor protection measures are required.

Compliance monitoring is to be conducted to ensure that excavations remove the soil to the concentrations specified. Removal of soil exceeding 3,400 mg/kg NWTPH-Dx and control, remediation, and/or isolation of contaminated soil under the school is expected to result in significant decline of groundwater contamination resulting from removal of the soil source contamination.

Groundwater compliance monitoring is to be conducted to assess the decline of groundwater contamination after excavation and control/isolation of contamination under the school have been completed. This assessment may be used to empirically demonstrate that the soil remediation level is in fact protective of groundwater, sediment, and surface water, and therefore effective as the soil cleanup level at this Site. This assessment will thus be used to decide whether additional remedial actions near the levee are necessary to reduce groundwater contamination to below the cleanup level of 208 μg/L NWTPH-Dx. It is expected that excavation to the soil remediation level will reduce groundwater dissolved petroleum concentrations to 208 μg/L NWTPH-Dx at the conditional point of compliance and to 477 μg/L NWTPH-Dx throughout the zone, except for where isolated pockets of contamination may remain under the school or inaccessible properties, if any.

Air-sparging, enhanced bioremediation, or other similar in-place treatment measures may be required at the conditional point of compliance near the levee at any time following completion of the primary cleanup activities described above if the petroleum cleanup level of 208 μg/L NWTPH-Dx is not being met at its conditional point of compliance, or if sheen or free product is observed at the conditional point of compliance.[12] Compliance monitoring data reviews may be conducted at any time. Further contingency cleanup activities will not be required so long as the groundwater cleanup level of 208 μg/L NWTPH-Dx is being met at its conditional point of compliance and no sheen or free product is observed at the conditional point of compliance, soil petroleum contamination

[12] In this and subsequent references to meeting cleanup levels or other cleanup standards, the statistical data evaluation methods, or other methods as appropriate, for assessing whether a cleanup level or other cleanup standard is met will be specified in the compliance monitoring plan.

of less than 3,400 mg/kg NWTPH-Dx will be considered sufficiently contained for the purposes of groundwater, sediment and surface water protection.

Excavation is expected to decrease contamination to concentrations that protect aquatic organisms in the river, that protect drinking water uses, and that are protective of direct contact with the soil. A prohibition on the withdrawal of groundwater will be necessary if the groundwater contamination expectations are not met. This prohibition will be accomplished pursuant to WAC 173-340-440(8)(c) by Public Health – Seattle & King County through its well-permitting process. The prohibition may be removed when compliance monitoring indicates groundwater in compliance wells meets cleanup levels (208 μg/L NWTPH-Dx) and absence of sheen or free product at the point of compliance and remediation levels (477 μg/L) and absence of sheen or free product throughout the NWDZ.

Some property owners will be asked to relocate temporarily to allow for excavation under homes and other buildings. Such property owners will have the choice to relocate or not to relocate. For property owners who elect to move forward with the relocation, a fair and equitable access agreement will be negotiated. The agreement will outline and provide for necessary arrangements and relocation expense. If a property owner agrees in concept to relocate but is unable to reach agreement with BNSF on relocation terms, Ecology will make available mediation services to facilitate agreement being reached. Ecology also plans to make mediation services available in case relocation issues arise during cleanup implementation.

Excavation may consequently not occur under some buildings if current owners choose not to temporarily relocate as necessary.[13] Property owners who choose not to relocate will still be required to provide access to their properties to allow cleanup actions to occur around existing residences or buildings, and must agree to record a restrictive covenant on their property. Access will be subject to fair and equitable terms in an access agreement negotiated with BNSF. If a property owner agrees in concept to provide access but is unable to reach agreement on specific terms with BNSF, Ecology will make available mediation services to facilitate agreement being reached. Ecology also plans to make mediation services available in case access issues arise during cleanup implementation. However, because contamination will remain on such properties, such access will be regulatorily required to allow for cleanup actions that are necessary to contain and control the contamination that will remain, avoid recontamination of adjoining properties to the extent feasible, and ensure the effectiveness and protectiveness of the cleanup. Containment structures are anticipated to be impermeable walls installed in the subsurface inside the perimeter of the property that isolate the contamination under the property and limit its movement; ancillary facilities to capture contamination may also be associated with such installations. Design will be on a case-by-case basis.

[13] All properties owned by BNSF that are not part of BNSF's railyard facility property that require excavation will be excavated.

Restrictive covenants will also be regulatorily required for those properties where the owner chooses not to relocate and free product and/or high level contamination (above 3,400 mg/kg NWTPH-Dx) will remain after cleanup. The restrictive covenant serves as a means to notify future owners of the presence of contamination, of the need to maintain containment structures, and of the restrictions placed on use of the property. Since these properties will not be fully-excavated, restoration will only be to the extent necessary after installation of the containment structures. Moreover, since cleanup of the property will not occur, and because the cleanup construction activities and waste water treatment system construction activities will be closely coordinated, there will be no provision for using any public funding for connecting to the community waste water treatment system for that property. Operation and maintenance of containment structures will be the responsibility of BNSF.

Ecology recognizes that the 477 µg/L NWTPH-Dx remediation level may not be achieved in groundwater under and downgradient of such properties. In such cases Ecology will not require that any additional measures be taken to control or remediate these properties. However, the cleanup level of 208 µg/L NWTPH-Dx and absence of sheen or free product must still be met at compliance wells at the cleanup level conditional point of compliance and as a contingency, air-sparging, enhanced bioremediation, or similar in-place treatment measures will be taken at the levee if necessary.

4.1.2.2 Skykomish Hotel

The Skykomish Hotel is the second largest building in the NWDZ. This DCAP assumes that the hotel will be temporarily moved or supported so that excavation of soil exceeding 3,400 mg/kg NWTPH-Dx beneath the Skykomish Hotel may occur. BNSF will document the feasibility of moving or supporting the hotel.

If moving or supporting the hotel is not feasible, BNSF shall develop alternative options such as in-place treatment with the goal of reaching the soil remediation level of 3,400 mg/kg NWTPH-Dx beneath the hotel to the greatest degree practicable.[14] The remaining accessible portions of the property on which the Skykomish Hotel is located will be excavated to 3,400 mg/kg NWTPH-Dx.

4.1.2.3 School Property

Because of the unique nature of the school's role in the Skykomish community, BNSF and Ecology will conduct early and open communication with the school board regarding development of cleanup plans for the school to minimize and mitigate impacts on the learning environment and the community as a whole.

BNSF will use aggressive treatment to address petroleum contamination beneath the school. The objectives of the treatment are to reduce the amount of petroleum beneath

[14] If development of alternative options is necessary, a work plan shall be prepared for Ecology review and approval which describes the scope of work to be done, including reporting requirements.

the school to the extent technically possible, with the goal of removing separate phase mobile or volatile liquid petroleum components or nonaqueous phase liquid (NAPL). BNSF must include a work plan for treatment beneath the school in the EDR for the work year(s) in which activities associated with the remediation work are to be performed. The work plan must discuss how detailed design of the remediation activities will be performed and provide for Ecology review and approval of the design calculations, plans, and specifications. The work plan will discuss restoration time frame and impacts on school operations and learning environment.

One technology being considered for the school is thermal treatment. This treatment option is discussed below to illustrate the consideration which needs to be given to treatment beneath the school. Other options which may be considered include surfactant flushing and water flushing. If other options are used, they must remove and immobilize oil to at least as great a degree as would be achieved by thermal technology, although possibly taking longer. The decision of which technology will be used will be developed in discussions among BNSF, Ecology, and the School Board and documented in a School Cleanup Alternatives Evaluation Report. Preparation of this report is a requirement for developing cleanup plans for the school. See further discussion of this report under §6.2.

If it is the selected technology, thermal treatment would be done by drilling boreholes in the basement of the school to access the petroleum. The soil would be heated and mobilized petroleum extracted through the boreholes. A recovery trench would be installed on the north and west sides of the school to capture any petroleum that is not extracted through the boreholes. Figure 7 shows a conceptual diagram of the recovery trench design associated with thermal treatment.[15,16]

It is anticipated the entire process would take about a year. During that time, the school's basement, at a minimum, would not be available for classes. If, in the school's estimation, temporary classrooms are needed, BNSF would make accommodations to ensure the school's needs are met in order to minimize any disruption.

BNSF would conduct vapor monitoring in the school's basement during the heating phase of the cleanup and for two years afterward. Monitoring during the heating phase (including collection of baseline data prior to heating) would measure whether the basement meets the air cleanup level of 1,346 $\mu g/m^3$ APH as a result of the heating. Vapor monitoring for the following two years would ensure that vapors from petroleum remaining after the heating phase are not impacting the school. The monitoring frequency would be monthly for the first three months of the thermal treatment; thereafter, the monitoring frequency would be reduced to quarterly, if the vapor concentrations are below the air cleanup level of 1,346 $\mu g/m^3$ APH. If impacts are found,

[15] Monitoring/recovery wells will be located on centers no greater than 10 feet apart unless otherwise approved by Ecology. Such approval will only be given if sufficient information is presented to Ecology for Ecology to determine that a proposed wider spacing will ensure that any free product entering the trench will flow to the monitoring wells prior to penetrating to the downgradient side of the trench.
[16] Surfactant or water flushing will require a trench design incorporating an impermeable barrier and groundwater extraction and treatment similar to that shown on Figure 9.

BNSF would install vapor control measures to reduce the vapor concentrations to safe levels.

BNSF would monitor the wells installed in the downgradient trench as part of confirmational monitoring; this monitoring would be included in the compliance monitoring plan that BNSF would submit to Ecology for review and approval. Observations would be made quarterly for the first two years following thermal treatment. The observation frequency may be reduced after that, depending upon what is observed, with Ecology's approval. The observations would consist of visual observation of water removed from each well with a bailer for petroleum visible as nonaqueous phase liquid. Chemical analyses for these wells may be necessary, and would be included in the confirmational monitoring plan if Ecology determines it is necessary. If petroleum as nonaqueous phase liquid is observed in any well, BNSF would install equipment in the well to recover the nonaqueous phase liquid. Additional monitoring wells would be installed downgradient and observed for the presence of petroleum as nonaqueous phase liquid, and tested for dissolved chemical components. If petroleum as nonaqueous phase liquid is observed in these wells, BNSF would take actions to remove it and stop the migration of petroleum through the trench. BNSF would propose a plan for this contingency in the EDR.

Thermal remediation and monitoring for and removal as necessary of free product in a downgradient interception and recovery trench, and beyond the recovery trench if necessary, is likely to result in the groundwater remediation level of 477 µg/L NWTPH-Dx being met downgradient of the school, and the groundwater cleanup level of 208 µg/L NWTPH-Dx being met at the conditional point of compliance. However, in the event dissolved petroleum concentrations in groundwater still exceed 477 µg/L NWTPH-Dx downgradient from the school after the thermal remediation and associated interception and recovery trench installation has been performed, no additional measures on or at the school property would be required to meet the 477 µg/L NWTPH-Dx dissolved petroleum remediation level on property or downgradient. Instead, as a contingency, treatment methods would be employed at the levee if necessary to ensure that the cleanup level of 208 µg/L NWTPH-Dx and absence of sheen or free product would still be met at and downgradient of compliance wells in the levee. BNSF may elect to perform measures between the school and the levee if BNSF believes they would be more effective.

Even after thermal treatment, contamination would remain beneath the school. A restrictive covenant would be required as an institutional control for the school property to ensure that future generations are aware of the remaining contamination and the need to manage it appropriately if it is exposed by future activities on the property.

4.1.3 Northeast Developed Zone (NEDZ)

Free product and soil with petroleum concentrations exceeding 30,000 mg/kg NWTPH-Dx in the NEDZ is to be excavated. For compliance monitoring purposes, excavation is to continue until petroleum concentrations in soil measured at the excavation limits are

equal to or less than 30,000 mg/kg NWTPH-Dx and there is no evidence of free product flowing into or accumulating in an excavation four or more hours after all recoverable free product has been removed using best available technology. Soil with petroleum contamination above the remediation level of 3,400 mg/kg NWTPH-Dx is to be remediated by enhanced bioremediation techniques such as air sparging. Air sparging is to be conducted so as to reduce soil petroleum concentrations below 3,400 mg/kg NWTPH-Dx and to reduce groundwater petroleum concentrations below 477 µg/L NWTPH-Dx throughout the NEDZ. Soil contaminated with lead exceeding the cleanup level of 250 mg/kg and/or arsenic exceeding the cleanup level of 20 mg/kg is to be excavated throughout the zone.

Excavation of free product will require excavation in Railroad Avenue. Air-sparging wells and associated piping and equipment must be installed in appropriate locations.

Protection against vapor intrusion may be required for any building, structure, or enclosed space that remains or is built in the NEDZ over petroleum contamination exceeding 3,400 mg/kg NWTPH-Dx. Compliance monitoring of indoor and ambient air and the air cleanup level of 1,346 $\mu g/m^3$ APH will be used as the standard when evaluating monitoring data to assess whether vapor protection measures are required. Vapor intrusion protection measures must be taken so long as air-sparging has not yet reduced soil concentrations below 3,400 mg/kg NWTPH-DX or indoor air exceeds the air cleanup level.

Cleanup of residential and commercial properties may require temporary relocation of buildings and structures that are on the property and otherwise disturb the property so that excavation or other cleanup actions can occur. Property owners will be contacted by BNSF well in advance of the time during which cleanup actions will occur. Arrangements for access, cleanup, and property restoration will be made in the manner discussed in §6.1.

Soil compliance monitoring during excavation is to be conducted to ensure that excavation removes all free product and soil exceeding 30,000 mg/kg NWTPH-Dx. If the work identifies free product extending beyond anticipated limits that cannot be removed during the work planned for a given season, BNSF will consult with Ecology and affected property owners to discuss how best to excavate it. At the end of these discussions, Ecology will provide direction to BNSF on how to excavate the unanticipated free product and extend the associated schedule for completion as appropriate to accommodate the work. Additional exploration to assess the extent of free product in the NEDZ is to be performed prior to or during the engineering design phase to minimize the potential for this contingency. If it is determined that any property owners would need to relocate to allow for excavation of free product under buildings, BNSF will follow the same protocol as in the NWDZ and SDZ, and as outlined in §4.1.2.1 and §6.1, to address the situation where owners may choose not to relocate.

Groundwater compliance monitoring is to be conducted during air-sparging to confirm that the rate of decline of groundwater contamination will reduce soil and groundwater

contamination below their respective remediation levels of 3,400 mg/kg and 477 µg/L NWTPH-Dx within a reasonable restoration time frame of 10 years. This assessment may also be used to empirically demonstrate that the soil remediation level of 3,400 mg/kg is in fact protective of groundwater, sediment and surface water, and therefore effective as the soil cleanup level at this Site. Once soil is remediated to 3,400 mg/kg, if the empirical demonstration fails to show this remediation level is protective of groundwater, sediment and surface water, contingent actions at the groundwater conditional point of compliance will be required to ensure the cleanup level of 208 µg/L and absence of sheen or free product is met and will continue to be met at the conditional point of compliance, as part of the final remedy.

Once excavation is complete in the NEDZ, the groundwater petroleum cleanup level of 208 µg/L and absence of sheen or free product is to be met at its conditional point of compliance immediately except where that conditional point of compliance is at the Skykomish River. Where the conditional point of compliance is at the Skykomish River, the cleanup level of 208 µg/L and absence of sheen or free product is to be met within two years of start-up of air-sparging operations. It is expected that six months will be required to optimize the air sparging system. A trend analysis will be completed after one year to evaluate system effectiveness. If this trend analysis determines the system is not performing as intended, additional actions may be required. If the cleanup level of 208 µg/L and absence of sheen or free product is not met, or showing a significant declining trend, within two years at these locations, additional air-sparging wells must be installed and operated as necessary to achieve the cleanup level and absence of sheen or free product in a time frame approved by Ecology.

Groundwater compliance monitoring will also be used to decide whether additional remedial actions are necessary to reduce groundwater contamination to below the cleanup level of 208 µg/L and absence of sheen or free product at the groundwater cleanup level conditional point of compliance. It is expected that air-sparging will reduce groundwater petroleum concentrations to 208 µg/L and absence of sheen or free product at the conditional point of compliance immediately (within 2 years where the conditional point of compliance is at the river) and to 477 µg/L NWTPH-Dx and absence of sheen or free product throughout the NEDZ within a restoration time frame of 10 years. Air-sparging, enhanced bioremediation, or other similar in-place treatment measures at the conditional point of compliance may be required at any time following completion of the primary cleanup activities described above if review of compliance monitoring data indicates the petroleum cleanup level of 208 µg/L and absence of sheen or free product is not being met at its conditional point of compliance. Compliance monitoring data reviews may be conducted at any time.

BNSF and Ecology will review the performance of the air-sparging system annually. This review will be documented in draft and final air-sparging system reports prepared by BNSF that will be submitted to Ecology for review and approval.

Two institutional controls will be needed in the NEDZ during implementation of the cleanup. These are:

- Permit overlay – A permit overlay[17] will be necessary during implementation of the cleanup to ensure correct procedures are followed during property redevelopment if soil is excavated to depths that reach petroleum-contaminated soil. Under the permit overlay, the Town of Skykomish can review grading permit applications for properties within the NEDZ for the potential for grading to expose contaminated soil that may be a direct contact hazard. The review will ensure that, in such a case, the contaminated soil will be handled by the permit applicant in accordance with all applicable laws and regulations. The permit overlay may be removed when compliance monitoring indicates soil concentrations have declined below concentrations protective of direct contact and groundwater.

- Groundwater withdrawal prohibition – Public Health – Seattle & King County will prohibit withdrawal of groundwater during the restoration time frame for enhanced bioremediation to reduce soil and groundwater petroleum concentrations below concentrations that will cause exceedance of drinking water standards (477 μg/L) throughout the zone and the groundwater cleanup level (208 μg/L) at the point of compliance. This prohibition will be accomplished pursuant to WAC 173-340-440(8)(c) through Public Health's well-permitting process. The prohibition may be removed when compliance monitoring indicates groundwater in compliance wells meets cleanup levels (208 μg/L) and absence of sheen or free product at the point of compliance and remediation levels (477 μg/L) and absence of sheen or free product throughout the NEDZ.

In addition, restrictive covenants and a restriction of groundwater use will also be required after implementation of the cleanup action, as applicable. See §4.1.2.1 and §6.1 for more specific discussion on relocation and on institutional control requirements, which are applicable to this zone as well.

4.1.4 South Developed Zone (SDZ)

Petroleum-contaminated soil in the SDZ is to be excavated to the remediation level of 3,400 mg/kg NWTPH-Dx throughout the zone. See also special requirements within 25 feet of the FMC Zone in §4.1.5, which require excavation of soil with petroleum concentrations exceeding 22 mg/kg NWTPH-Dx within 25 feet of the FMC Zone to a depth of 4 feet.

Cleanup of residential and commercial properties will require temporary relocation of buildings and structures that are on the property and otherwise disturb the property so that excavation or other cleanup actions can occur. Property owners will be contacted by

[17] A permit overlay is an set of special permit requirements applied to an area within a larger area subject to more general permit requirements. For example, in towns, all buildings require a building permit. In a contaminated area, special permit conditions may apply that do not apply to the entire town. The area where the special permit conditions apply are said to "overlie" and are in addition to the more general permit conditions that apply to the larger area.

BNSF well in advance of the time during which cleanup actions will occur. Arrangements for access, cleanup, and property restoration will be made in the manner discussed in §6.1.

After cleanup, protection against vapor intrusion may be required for any building, structure, or enclosed space that remains or is built in the SDZ over petroleum contamination exceeding 3,400 mg/kg NWTPH-Dx. Compliance monitoring of indoor or ambient air will use the air cleanup level of 1,346 μg/m^3 APH as the standard when evaluating monitoring data to assess whether vapor protection measures are required.

Groundwater compliance monitoring is to be conducted to assess the decline of groundwater contamination after excavation and control/isolation of contamination under properties where access for excavation cannot be obtained (see below). This assessment may be used to empirically demonstrate that the soil remediation level is in fact protective of groundwater, sediment, and surface water, and therefore effective as the soil cleanup level at this Site. This assessment will thus be used to decide whether additional remedial actions are necessary near the boundary of the FMC zone to reduce groundwater contamination to below the cleanup level of 208 μg/L and absence of sheen or free product at the conditional point of compliance. It is expected that excavation to the soil cleanup level within 25 feet of the FMC Zone and to the remediation level of 3,400 mg/kg NWTPH-Dx will reduce groundwater levels to 208 μg/L and absence of sheen or free product at the south boundary of the FMC Zone and to 477 μg/L NWTPH-Dx and absence of sheen or free product immediately except for where isolated pockets of contamination may remain under inaccessible properties, if any.

Air-sparging, enhanced bioremediation, or similar in place techniques at the conditional point of compliance near the FMC Zone may be required at any time following completion of the primary cleanup activities described above if review of compliance monitoring data indicates the petroleum cleanup level of 208 μg/L and absence of sheen or free product is not being met immediately at the south boundary of the FMC Zone. Compliance monitoring data reviews may be conducted at any time.

Further contingency cleanup activities will not be required. So long as the groundwater cleanup level of 208 μg/L and absence of sheen or free product is being met at its conditional point of compliance, soil petroleum contamination of less than 3,400 mg/kg NWTPH-Dx will be considered sufficiently contained for the purposes of groundwater, sediment and surface water protection.

Excavation is expected to decrease contamination to concentrations that protect aquatic organisms in the FMC, that protect drinking water uses, and that are protective of direct contact with the soil.

In addition, restrictive covenants and a restriction of groundwater use will also be required after implementation of the cleanup action, as applicable. See §4.1.2.1 and §6.1 for more specific discussion on relocation and on institutional control requirements, which are applicable to this zone as well.

4.1.5 Former Maloney Creek (FMC) Zone

The FMC Zone includes the wetland along the former channel of Maloney Creek. The cleanup requirements, which include buffer zones for sediment protection, are as follows:

- Sediment between the OHWM or wetland boundary, less than 4 feet from the bottom of the stream channel, and having petroleum concentrations exceeding 40.9 mg/kg NWTPH-Dx is to be excavated. Ecology has determined that dioxin/furan contamination is located within the area of petroleum release and will be fully removed with the petroleum contamination. Dioxin/furan removal will be confirmed during performance monitoring. Dioxin/furan-contaminated sediment will need to be evaluated to determine proper disposal requirements.

- Sediment between the ordinary high watermark or wetland boundary, greater than 4 feet from the bottom of the stream channel, and having petroleum concentrations exceeding 3,400 mg/kg NWTPH-Dx is to be excavated.

- Soil within a 25-foot lateral buffer zone extending outward from the OHWM or wetland boundary, less than 4 feet from the bottom of the stream channel, and having petroleum concentrations exceeding 22 mg/kg NWTPH-Dx is to be excavated.

- Soil within a 25-foot lateral buffer zone extending outward from the OHWM or wetland boundary, greater than 4 feet from the bottom of the stream channel, and having petroleum concentrations exceeding 3,400 mg/kg NWTPH-Dx is to be excavated.

Figure 8 shows a conceptual sketch of the cleanup requirements for the FMC Zone. The requirements overlap into adjacent zones.

Once confirmation has been obtained that the excavated areas have reached the required standards, the excavated creek areas and adjacent wetlands are to be backfilled and restored as appropriate habitat. This will include replacing excavated creek sediment and upland soils with appropriate clean material and replanting with appropriate vegetation. The restoration is to be consistent with the substantive requirements of the Town's Shoreline Management Program and regulations, and with other applicable laws and regulations such as Section 404 of the Federal Clean Water Act.

Compliance monitoring is to be conducted to ensure that excavations remove the sediment and soil to the concentrations specified. A confirmational monitoring plan will be developed and implemented to assess whether sediment remediation performs according to predictions or is becoming recontaminated over time by migration of contamination remaining on-site. As a contingency, should recontamination of sediments occur above the site-specific sediment cleanup screening level (CSL), as determined by bioassay, BNSF will excavate the contaminated sediments, monitor the sediments to

ensure they meet the site-specific sediment quality standards (SQS) within ten years of completion of the initial cleanup action, and will also employ, as necessary, treatment methods at or adjacent to Former Maloney Creek to reduce the petroleum concentrations in groundwater flowing to the creek so that sediments will continue to meet the SQS within this timeframe. If recontamination occurs at levels below the CSL but above the SQS, as determined by bioassay, then BNSF will employ, as necessary, treatment methods at or adjacent to Former Maloney Creek to reduce the petroleum concentrations in groundwater flowing to the creek to levels that allow sediments to naturally recover, and will monitor the natural recovery of the contaminated sediments, which must meet the SQS within ten years of the completion of the initial cleanup. Ecology anticipates that reducing petroleum concentrations in groundwater will be accomplished using enhanced bioremediation techniques such as air sparging, and that this will be used as the contingency measure to prevent recontamination of sediment.

So long as the groundwater cleanup level of 208 µg/L and absence of sheen or free product is being met at its conditional point of compliance near the FMC Zone, petroleum-contaminated soil remaining after excavation will be considered sufficiently contained for the purposes of groundwater, sediment, and surface water protection.

No institutional controls will be needed within the FMC Zone.

4.1.6 Railyard Zone

All lead and arsenic soil within two feet of the surface with contamination exceeding 250 and 20 mg/kg respectively will be excavated, as well as all PCB contamination exceeding a total PCB concentration of 0.65 mg/kg. All petroleum contamination within two feet of the surface exceeding a concentration of 1,870 mg/kg NWTPH-Dx, the concentration protective of soil biota, will be excavated.

All soil with petroleum concentrations exceeding 3,400 mg/kg NWTPH-DX will be removed from property within the railyard zone which is not part of BNSF's railyard facility property.

Additional requirements for excavation within the Railyard Zone to provide a buffer of clean soil adjacent to Former Maloney Creek are given in §4.1.5.

Petroleum-contaminated soil and free product remaining within the Railyard Zone must be contained at the BNSF's railyard facility property boundary and as much as possible recovered over time. In addition, groundwater leaving BNSF's railyard facility property and flowing under the town and toward the Skykomish River must be remediated to a petroleum concentration equal to or less than 477 µg/L NWTPH-DX and absence of sheen or free product. This will be measured near the BNSF's railyard facility property line. Groundwater entering the FMC Zone from either the Railyard Zone or the SDZ and flowing toward the FMC Zone must be remediated to a petroleum concentration of 208 µg/L NWTPH-DX and absence of sheen or free product. This will be measured at least 25 feet from of the boundary of the FMC Zone. See discussion for FMC Zone, §4.1.5.

BNSF will implement groundwater containment and remediation measures along the north of BNSF's railyard facility property boundary where soil petroleum concentrations exceed 3,400 mg/kg NWTPH-DX and, if necessary, along a line 25 feet north of the FMC and Railyard Zone boundary, with the length to be determined by required hydrogeologic investigations. Free product containment and recovery will be required, and groundwater control/treatment will be employed to the degree necessary to ensure that groundwater flowing off the railyard meets the remediation level or cleanup level (as applicable). Design calculations, plans, and specifications for the hydraulic control and containment system must be included in the Engineering Design Report (EDR) that is submitted for Ecology's review and approval for the year in which the system is to be installed.

Petroleum-contaminated soil associated with the two southern free product areas near the Former Maloney Creek Zone and with the far east free product area are to be excavated in association with installation of the hydraulic control and containment system or to limit the extent of the installation of the hydraulic control and containment system (See Figure 4 for free product area locations).[18]

The hydraulic control and containment system is a critical component of the overall site remedy. A large mass of contamination, including a significant volume for free product, must be contained within BNSF's railyard facility property, contaminant movement must be controlled, free product must be captured, and contaminated groundwater treated to applicable cleanup and remediation levels before it can be re-injected for flushing or exit BNSF's railyard facility property. Free product, in particular, must be prevented from leaving BNSF's facility property boundary due to the combination of a needed short response time and the disruption of such a response if free product migrates off BNSF's facility property into the Town of Skykomish, and the high-consequence of re-contaminating the Town.

BNSF will implement hydraulic control and containment by installing a redundant groundwater barrier in a groundwater interception trench. Figure 9 shows a conceptual sketch of the trench construction. The redundant barrier system must be capable of detecting leaks of free product that may occur anywhere along the length of the barrier system.

BNSF will pump water and associated nonaqueous phase liquid from the trench, treat it, and reintroduce it into the subsurface at appropriate locations to flush petroleum contamination to the trench. The alignment and extent of the physical barrier, trench, pumping system, and flushing system will be designed using standard analytical and numerical modeling techniques (e.g. Modflow). Hydraulic containment will be field verified using a groundwater level gauging program that will be developed during the design, in addition to the groundwater compliance monitoring described below.

[18] Estimated soil volumes are 5,000 cubic yards of petroleum contaminated soil within the two southern plumes and 600 cubic yards of petroleum contaminated soil within the far east plume.

BNSF will pump groundwater to a treatment system where free product is separated and recovered for recycling or disposal. BNSF will treat the groundwater to a petroleum remediation level of 477 µg/L NWTPH-Dx and absence of sheen or free product (or to the cleanup level of 208 µg/L NWTPH-Dx and absence of sheen or free product for water flowing toward the FMC Zone). The treatment system will also provide a means to aerate the water so it has a high dissolved oxygen content. The treated water will then be reintroduced into the railyard subsurface at appropriate locations and by appropriate means in order to flush petroleum contamination toward the hydraulic control and containment system trench. The reintroduction area will be located just north of the extent of the FMC Zone excavation buffer and possibly at other locations as determined during design of the treatment system. Reintroduction of water north of the FMC Zone excavation buffer will create a hydraulic barrier between contamination remaining within the Railyard Zone and the FMC Zone. The reintroduction of treated water will serve as a means to oxygenate and promote biodegradation of soil and groundwater throughout the Railyard Zone. Reintroduction of treated water will comply with the substantive requirements of all applicable laws and regulations. Treated water may also be discharged to surface water consistent with applicable state and local substantive requirements and with applicable federal permits.

The hydraulic control and containment system will be designed to resist seismic forces that may impact the system and emergency procedures will be developed to bring the system back on line rapidly in case of shut-down due to earthquake or other outage.

Design of the hydraulic control and containment system will be documented in a Hydraulic Control and Containment System Special Design Report (see §6.2).

BNSF will install confirmational groundwater monitoring wells downgradient from the trench along the north boundary of BNSF's railyard facility property to verify that petroleum concentrations in groundwater underneath portions of the site immediately adjacent to BNSF's railyard facility property meet the required remediation or cleanup levels, as applicable. BNSF will install a groundwater monitoring well at each end of the trench along the north boundary of BNSF's railyard facility property to assess whether groundwater flowing past the ends of the trench meets the required petroleum remediation level. The groundwater confirmational monitoring program, contingency trigger levels and procedures, and contingent actions specified in this CAP will be included in a groundwater compliance monitoring plan. It is anticipated that contingent actions will include additional monitoring and increased groundwater extraction rates.

BNSF and Ecology will review the performance of the hydraulic control and containment system annually to assess how best to optimize its performance to recover as much petroleum over time as possible. This review will be documented in draft and final annual reports prepared by BNSF that will be submitted to Ecology for review and approval. As part of this review, BNSF will identify additional areas where petroleum-contaminated soil can be excavated from the smear zone or the vadose zone without disrupting rail operations. Preference will be given to excavating the most highly contaminated soil. A minimum of 7,500 cubic yards of petroleum contaminated soil is to

be excavated within 20 years of the effective date of the Consent Decree. This yardage does not include any soil excavated in association with the installation of the hydraulic control and containment system or limiting the extent of the installation of the hydraulic control and containment system. The timing of the smear zone soil removal will be at BNSF's option so as not to interfere with rail operations, but is to be done as soon as possible after Ecology and BNSF agree on the area and volume to be excavated. If the excavation is not to be done in the construction season after the area and volume to be excavated are identified, BNSF is to provide Ecology with a letter stating the operational reasons that excavation cannot proceed and BNSF is to propose a date when excavation can proceed. If all excavation has not been done by the 20th year, Ecology will direct BNSF as to when and where to excavate any volume of smear or vadose zone soil remaining in the 7,500 cubic yard total to be removed in the 20 years after the hydraulic control and containment system becomes operational.

The annual review of hydraulic control and containment system performance will also assess whether additional technologies can be employed to promote the timely removal of petroleum by flushing. Technologies to be considered include pulsing of the flushing water at various points to change flow directions and hence reduce channeling of infiltration water, use of surfactants to reduce surface tension and hence mobilize more free product, and new technologies. The goal of the technologies considered will be to enhance removal of free product and to decrease petroleum soil concentrations. The hydraulic control and containment system must be operated until groundwater standards are met. Enhanced removal of free product and decrease of petroleum soil concentrations may reduce the operating time for the system, currently considered to be indefinite.

Additional investigations are to be performed to define hydrogeologic conditions in the area of FMC prior to or during the engineering design phase. BNSF will propose monitoring requirements and a plan for implementing such hydraulic control and containment as part of the EDR.

Protection against vapor intrusion will be required for any building, structure, or enclosed space that remains or is built in the Railyard Zone over petroleum contamination exceeding 3,400 mg/kg NWTPH-Dx. Compliance monitoring of indoor or ambient air will use the air cleanup level of 1,346 $\mu g/m^3$ APH outside the BNSF facility property boundary and 2,944 $\mu g/m^3$ within the BNSF facility property boundary as the standard when evaluating monitoring data to assess whether vapor protection measures are required.

Compliance monitoring will be conducted to ensure that excavations remove the required amount of contaminated soil, that all required metals and PCB contamination is removed, and that contaminated soil exceeding 1,870 mg/kg NWTPH-Dx that is within two feet of the surface is removed.

Compliance monitoring will be conducted at BNSF's railyard facility property boundary to ensure that no free product is leaving BNSF's railyard facility property and that groundwater leaving BNSF's railyard facility property does not have petroleum

concentrations exceeding 208 µg/L and absence of sheen or free product for groundwater flowing into the FMC Zone and 477 µg/L NWTPH-Dx and absence of sheen or free product elsewhere. Groundwater leaving BNSF's railyard facility property must meet the appropriate cleanup levels and remediation levels immediately after installation of hydraulic control and containment systems. If free product is detected outside of BNSF's railyard facility property at any time, measures to stop its migration and control any future migration are to be taken immediately. Compliance monitoring will be done to evaluate whether the migration has been stopped and controlled. The size and distribution of the free product outside BNSF's railyard facility property boundary will be assessed to evaluate whether additional remedial actions should be taken.

Air-sparging, enhanced bioremediation, or other in-place treatment techniques may be required as additional contingency measures at any time following completion of the primary cleanup activities described above if review of compliance monitoring data indicates the petroleum cleanup and remediation levels are not being met at the conditional points of compliance specified in this CAP. Compliance monitoring data reviews may be conducted by Ecology at any time. Contingency cleanup actions other than or in addition to air-sparging, enhanced bioremediation, or other in-place treatment techniques will require amending this CAP.

So long as the groundwater petroleum cleanup and remediation levels are being met at their conditional points of compliance petroleum, contamination on the railyard will be considered sufficiently contained for the purposes of groundwater, sediment, and surface water protection. Further contingency cleanup activities will not be required.

Cleanup of properties not owned by BNSF will achieve petroleum concentrations protective of direct contact and drinking water uses. Cleanup of residential and commercial properties may require temporary relocation of buildings and structures that are on the property and otherwise disturb the property so that excavation or other cleanup actions can occur. Property owners will be contacted by BNSF well in advance of the time during which cleanup actions will occur. Arrangements for access, cleanup, and property restoration will be made in the manner discussed in §6.1.

No institutional controls will be necessary for properties within the Railyard Zone not owned by BNSF. A restrictive covenant will be required for BNSF's railyard facility property. The covenant must be placed on the property deed that provides notice that contaminated soil remains on BNSF's railyard facility property above concentrations that are protective of direct contact and protective of groundwater. The covenant must provide for maintaining the integrity of all cleanup actions. The covenant must include a prohibition against withdrawal of groundwater from the railyard, except for withdrawal for treatment purposes, because contaminated groundwater will remain beneath the railyard. The groundwater withdrawal prohibition may be removed if compliance monitoring indicates groundwater flowing to Former Maloney Creek meets the cleanup level of 208 µg/L and absence of sheen or free product and groundwater underlying all of BNSF's railyard facility property meets the remediation level of 477 µg/L and absence of sheen or free product.

4.2 Types, Levels, and Amounts of Contamination Remaining On-Site

Figure 10 shows the estimated decline of petroleum on-site with time using the comparative rates developed in the Feasibility Study. This may be compared to similar graphs in the Feasibility Study (RETEC, 2005, Figures 8-1 through 8-10 and 10-11).

High concentrations of petroleum are expected to remain in soil under the Railyard for decades and act as a source of contamination to groundwater under the Railyard that must be contained and treated at BNSF's railyard facility property boundary.

Arsenic, lead, and PCB contaminated soil will be completely removed from the residential/commercial zones and from the upper 2 feet on the Railyard. Arsenic, lead and PCB contaminated soil below a depth of 2 feet on the Railyard (if any), will be contained. Dioxin/furan contaminated sediment will be entirely removed from the Site.

Chapter 5 - Alternatives Considered and Basis for Remedy Selection

5.1 Introduction

The Feasibility Study (RETEC, 2005) divided the Site into six zones and considered several cleanup actions for each zone. These were assembled into eleven different Site-wide alternatives for assessment. The proposed cleanup actions for each alternative considered in the Feasibility Study (RETEC, 2005) are summarized in Table 3.

The alternatives were named according to the proposed groundwater point of compliance. Those proposing a groundwater point of compliance at the point where groundwater enters surface water were given a prefix of SW; those proposing a groundwater point of compliance at BNSF's railyard facility property boundary were given a prefix of PB. A preferred alternative was also developed, which proposed a surface water point of compliance for groundwater. This is BNSF's preferred alternative, and is labeled BNP in this document. A "standard" alternative was developed as well, labeled STD. The STD alternative was the only permanent alternative developed in the Feasibility Study, and is the baseline alternative used when comparing alternatives in the disproportionate cost analysis to assess whether other alternatives are permanent to the maximum extent practicable pursuant to WAC 173-340-360(3)(e).

Although each Site-wide alternative differed from the others in material ways, many elements were common among the several alternatives. Only the proposed cleanup actions in the NWDZ differed across all eleven alternatives. Cleanup actions in other Site zones were the same in two or more of the alternatives.

In addition to the alternatives considered in the Feasibility Study, Ecology developed another alternative, labeled ECY, which used elements from the alternatives considered in the Feasibility Study combined with some additional technologies. The reasons for developing ECY are explained below.

5.2 Proposed Cleanup Technologies

The alternatives presented in the Feasibility Study proposed use of several cleanup technologies to degrees that varied among the alternatives. The MTCA Cleanup regulation has a guide for assessing the relative degree of long-term effectiveness of proposed technologies, stating that,

> "The following types of cleanup action components may be used as a guide, in descending order, when assessing the relative degree of long-term effectiveness: Reuse or recycling; destruction or detoxification; immobilization or solidification; on-site or off-site disposal in an engineered, lined and monitored facility; on-site isolation or containment

> with attendant engineering controls; and institutional controls and monitoring." WAC 173-340-360(3)(f)(iv)

The order is a qualitative sequencing to be considered on a site-specific basis. Ecology's assessment of long-term effectiveness by this general guide must also therefore be tempered by site-specific considerations. At this Site, the technologies proposed in the Feasibility Study vary greatly in the time they take to achieve cleanup, which significantly lessens the usefulness of this guide. Some of the technologies work incompletely and/or over a very long time. In addition, the effectiveness at the BNSF Skykomish Site of some of the proposed technologies is uncertain.

The technologies proposed are discussed below.

Petroleum recovery booms – Petroleum recovery booms are sausage-shaped bundles of absorbent material that float. Their primary use is for emergency response for petroleum spills. They are placed around a petroleum slick on water to contain the petroleum to a limited area while it is being recovered by boats. When water is calm they can be effective, but their effectiveness is lessened or eliminated as winds, waves, and currents increase. At the BNSF Skykomish Site petroleum recovery booms were used for years as interim actions designed to reduce petroleum migration in surface water. They were placed in the Skykomish River adjacent to free product seeps along the bank. Their performance has ranged from only moderately effective to poor. The booms required constant maintenance to change when saturated, and to redeploy in response to changing river conditions. They also had to be removed during high water conditions. Petroleum booms became detached from their anchors during high water and floated down river, and these booms have not been recovered. In addition, petroleum-absorbent pads used to reduce fouling of the booms have floated downriver. Achieving even marginal performance required constant Ecology oversight. The booms were disposed of off-site at a facility permitted to accept such waste. The booms have now been removed pursuant to the 2006 interim action.

Skimmer Wells –A skimmer well is a well with a continuous belt, like a conveyor belt, that runs up and down through a layer of petroleum. The belt picks up the petroleum and is routed through rollers that squeeze the petroleum from the belt into a receptacle. The receptacle is emptied periodically. Skimmers wells rely upon the product to flow directly into the wells. Even when additional hydraulic controls are in place to direct slow moving heavy oils, the equipment has to be optimized to operate when needed and to prevent failure. At the BNSF Skykomish Site, former skimmer well operations required high maintenance and only achieved low rates of product recovery. Since installed in 1996, skimmer wells recovered only a small amount of product. The skimmer wells have had numerous maintenance problems, including flooded vaults and electro-mechanical failures. Ecology does not believe that skimmer wells can remove the remaining quantity of product in a reasonable time frame and does not believe, based on past performance that the wells would be maintained in a satisfactory manner. Petroleum recovered by skimmer wells would be sent off-site to a permitted waste facility. See further discussion under petroleum recovery trenches.

Petroleum recovery trenches – Petroleum recovery trenches are trenches filled with gravel and cobbles. Their purpose is to intercept free product floating on the water table and remove it using skimmer wells installed at intervals along the trench. The Feasibility Study indicates petroleum recovery trenches will recover 20% of the free product in 100 years; 80% of the free product will remain behind indefinitely. This estimate is based on gross assumptions used in the Feasibility Study to compare alternatives. The Feasibility Study did not develop sufficient information to provide useful estimates of actual removal rates, stating:

> "It should be noted that the [rates of contaminant decline] were based on gross assumptions that allow for comparison between alternatives but are not intended to indicate actual degradation rates or timeframes." (RETEC, 2005, p. 10-29, §10.4.5.7)

The successful operation of the trench design proposed in the feasibility study depends upon two factors. The first is the contrast between the hydraulic conductivity of the recovery trench and the surrounding soil. If the hydraulic conductivity of the gravel and cobbles used to backfill the recovery trench is much higher than the surrounding soil, water and free product flowing into the trench will tend to be able to flow laterally to the skimmer wells for removal much faster than out of the trench. This is key to removal of the free product. At the BNSF Skykomish Site, however, this key factor is missing. The surrounding soils in which the recovery trenches are to be installed are mountain river gravels. These gravels have a high hydraulic conductivity, which may approach the hydraulic conductivity of the trench backfill material. Consequently, skimmer wells along the recovery trenches are likely to be ineffective, since the ratio of lateral flow of free product along the trench to flow out of the trench of free product is likely to be too low.

The second factor upon which the success of recovery trenches depends, is the specific gravity of the free product with the specific gravity of water. The specific gravity of the free product found at this Site is about 98% that of water (RETEC, 2005, p. 3.8). That is, the free product floats, but only barely. This means the buoyant forces acting to bring free product to the surface of the water in the trench are relatively small. This is important because the free product is likely not "floating" on the water, but is moving through the gravel with the water as a petroleum-water mix. The low buoyant force, combined with the similar hydraulic conductivities of the trench backfill and the surrounding river gravel, means much of the petroleum is likely to simply flow through and exit the trench, rather than moving to the surface and flowing laterally toward skimmer wells. The viscosity of the free product, which is similar to molasses, will exacerbate this potential. Rather than being effective at removing free product from the entire length of the trench, the skimmer wells are likely to remove free product in the trench in a very limited area only – likely an area not much larger than the diameter of the well itself.

No pilot tests of recovery trenches have been performed at the Site.

The free product recovered from the recovery trenches would be sent off-site, either for recycling or to a permitted waste facility.

Natural attenuation – Natural attenuation is defined in the MTCA cleanup regulation as the variety of physical, chemical or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of hazardous substances in the environment. These processes include: natural biodegradation; dispersion; dilution; sorption; volatilization; and, chemical or biological stabilization, transformation, or destruction of hazardous substances. WAC 173-340-200. Among Ecology's expectations in WAC 173-340-370(7) are that source control (including removal and/or treatment of hazardous substances) has been conducted to the maximum extent practicable before relying on natural attenuation, that contaminants remaining on-site during the restoration time frame do not pose an unacceptable threat to human health or the environment, and that there is evidence that natural biodegradation or chemical degradation is occurring [at a reasonable rate] and will continue to occur at a reasonable rate at the site.

Natural attenuation has been proposed in many of the alternatives. The Feasibility Study assumes that natural attenuation will remove 50% of the mass of Bunker-C and 75% of the mass of diesel in contaminated soil over a period of 100 years. This estimate is based on gross assumptions for comparative purposes; the Feasibility Study did not develop sufficient information to provide useful estimates of actual removal rates (See RETEC, 2005, p. 10-29, §10.4.5.7, quoted above). Natural attenuation is assumed not to act on free product. (RETEC, 2005, Appendix P, p. 4 and associated Excel workbook, Remedial_Alt_Ranking_135_ft_june 20 2005 w stats.xls, worksheet Amt Left[19]).

Natural attenuation is normally used to reduce lower concentration contamination, after more active treatment methods or excavation has been used to remove higher concentration contamination. At the BNSF Skykomish Site, monitored natural attenuation may be appropriate for soil and groundwater after more active treatment methods have been applied. Natural attenuation is not expected to be effective on Bunker-C and diesel until their concentrations have been significantly reduced by more active treatment methods.

Natural attenuation destroys and detoxifies the contamination.

Enhanced bioremediation – Enhanced bioremediation operates in a similar manner to natural attenuation, except that a number of techniques may be used to increase, or enhance the rate at which the attenuation occurs. Air sparging is the enhanced bioremediation technique considered in the Feasibility Study. This technique injects air into the ground through a network of wells connected by manifold piping to a blower. The aeration of the soil and groundwater acts to increase the rate at which natural soil bacteria use the petroleum for energy and excrete waste products that are not hazardous such as carbon dioxide, water, and methane at low concentrations.

[19] The assumed natural attenuation decline rates are embedded in RETEC's spreadsheet calculations.

Enhanced bioremediation has been proposed in many of the alternatives. The Feasibility Study assumes that enhanced bioremediation will remove 50% of the mass of Bunker-C and 75% of the mass of diesel in contaminated soil over a period of 10 years. This estimate is based on gross assumptions for comparative purposes; the Feasibility Study did not develop sufficient information to provide useful estimates of actual removal rates (See RETEC, 2005, p. 10-29, §10.4.5.7, quoted above). Enhanced bioremediation is assumed not to act on free product (RETEC, 2005, Appendix P, p. 4 and associated Excel workbook, Remedial_Alt_Ranking_135_ft_june 20 2005 w stats.xls, worksheet Amt Left[20]).

Enhanced bioremediation destroys and detoxifies the contamination. It is more effective on diesel contamination such as is in the NEDZ and has limited or no effectiveness on Bunker-C contamination, depending upon the concentration.

Excavation – Excavation is proposed in several alternatives for remediating petroleum-contaminated soil. All alternatives use excavation to recover metals-contaminated soil. Alternatives that propose to recover PCB contamination use excavation.

The Feasibility Study states that:

> "Excavation has been determined to be the most effective and practicable remedial technology for addressing the petroleum impacts associated with the Site. Less intrusive *in situ* technologies would be preferable to excavation with respect to having significantly less disruption to the Town. However, such technologies have not been found to be practicable at Skykomish at their current state of development and understanding. As a result, [many alternatives presented in the Feasibility Study include] areas of the Town and railyard that will be excavated, and others that will not be disrupted by excavation, but will contain these contaminants for a long-term future (likely to approach 100 years)." (RETEC, 2005, §10.6, p. 10-37)

The statement that the need for containment of the remaining petroleum (TPH) is likely to approach 100 years conflicts with the Feasibility Study's assumptions that 50% will be remaining after 100 years, and 80% for the free product. Containment and management will likely have to continue for an indefinite period beyond 100 years.

Where contaminated soil is accessible, excavation can recover 100% of the contamination that is to be cleaned up by excavation within the construction season in which excavation occurs. The construction schedule requires excavation in all zones be completed by 2011.

Excavation reuses and recycles a portion of the free product and contaminated soil. Excavations to recover free product result in free product accumulating on the water in the excavation. This free product is skimmed from the surface of the water, along with some of the water. The product is separated from the water in a treatment plant and sent

[20] The assumed enhanced bioremediation decline rates are embedded in RETEC's spreadsheet calculations.

to a recycler. The water is treated to remove dissolved constituents and discharged. Excavation of free product is expected to result in much greater volumes of free product being recycled than the recovery trench technology because the recovery trench technology only recovers 20% of the free product over a 100 year period whereas excavation will recover 100% of the free product during the construction season in which excavation occurs. Interim actions performed in the Levee Zone and adjacent parts of the NWDZ in 2006 indicate that some free product can be recovered during excavation and eventually recycled, and that some contaminated soil excavated for cleanup can be reused as daily cover at landfills.

Petroleum-contaminated soil is anticipated to be sent to a landfill for disposal.[21] While this could initially be characterized as off-site disposal, the soil allows for additional benefits beyond mere disposal. Landfill operations must cover all waste received each day with soil – known as daily cover – to secure the waste against wind and disease vectors (birds and rodents). Petroleum-contaminated soil received at landfills is often used as part of the daily cover – a reuse. This reduces the amount of clean soil the landfill operator must excavate and transport for daily cover operations. Soil with petroleum contamination too great for disposal in landfills is sent to an incinerator, where the petroleum is burned. This is a destruction/detoxification process.

On-Site Containment – Many of the alternatives contain petroleum-contaminated soil on-site at concentrations up to and including those for soil containing free product. These high levels of petroleum contamination would be isolated beneath clean soil. Free product is proposed to be contained by the petroleum recovery trenches discussed earlier, but such trenches do not contain or treat petroleum constituents dissolved in groundwater. As noted, the trenches would recover only 20% of the free product petroleum over 100 years; the rest would remain behind as a significant source of ongoing groundwater contamination. Site studies have indicated flow of free product petroleum to a well would be slow. The petroleum is currently being transported in groundwater and would likely continue to be transported by groundwater as small globules making their way slowly through the soil pores. As noted above, some petroleum is likely to exit the recovery trenches, making containment ineffective.

On-site isolation and containment would be required for an indefinite time, likely well over 100 years.

Institutional Controls – Institutional controls are measures undertaken to limit or prohibit activities that may interfere with the integrity of an interim action or a cleanup action or result in exposure to hazardous substances at a site. They are not active cleanup measures, but rather administrative measures. One example is a deed restriction on property that limits the owner's activities on the property. The Feasibility Study, when discussing BNSF's preferred alternative, notes that,

[21] Petroleum-contaminated soil with dioxin and PCB may require different disposal actions. Such soil is only a small portion of the total amount of petroleum-contaminated soil to be excavated.

> "Institutional controls are used primarily on the railyard where they are more effective and reliable at reducing risk but they will also reduce risk in both the NE and NW Developed Zone by preventing direct contact with soil and ingestion of groundwater." (RETEC, 2005, §10.4.5.3, p. 10-28)

Ecology agrees that institutional controls would be more effective and reliable when applied to BNSF's railyard facility property as opposed to off-railyard properties. Where institutional controls are implemented on properties with a single, large institutional owner, they can be moderately effective and reliable at reducing risk although the reliability declines with time and change of personnel. Institutional controls are markedly less effective and reliable at reducing risk where there are multiple property owners impacted – here, off the railyard and spanning an entire town. Such property owners are not experienced in managing environmental contamination, and consequently the effectiveness of institutional controls rapidly declines – especially in the long run. Many of the alternatives propose managing the highest levels of petroleum contamination with institutional controls placed on individual residential or small-business use properties. Such institutional controls would have to be maintained indefinitely.

In summary, the Feasibility Study proposes several technologies for cleaning up the BNSF Skykomish Site. These technologies vary in reliability and effectiveness. The Feasibility Study combines these technologies into eleven Site-wide alternatives. All of these alternatives except STD use conditional points of compliance.

5.3 Initial Assessment of Feasibility Study Alternatives

As stated in the Feasibility Study, excavation is the most effective and practicable remedial technology for addressing the petroleum contamination at the Site. (RETEC, 2005, Feasibility Study §10.6, p. 10-37). Many of the other technologies rely upon gross assumptions regarding their effectiveness and rates of operation. The Feasibility Study did not develop sufficient information to meet the required burden of proof to demonstrate the effectiveness of many of the proposed technologies (recovery trenches, enhanced bioremediation, natural attenuation containment, off-railyard institutional controls) at addressing petroleum contamination. Ecology therefore carefully evaluated whether each alternative was likely to be effective on the different types and levels of petroleum contamination throughout the Site. This evaluation was completed by first conducting an initial assessment of whether each proposed cleanup alternative met all minimum requirements for cleanup actions required by the MTCA Cleanup Regulation except for the minimum requirement to use permanent solutions to the maximum extent practicable. Those that passed through this initial screening were then included in the determination of which cleanup action uses permanent solutions to the maximum extent practicable as required by WAC 173-340-360(3). Ecology also developed a twelfth alternative, called ECY and described in Chapter 4, from the cleanup components considered in the Feasibility Study and from additional work performed by Ecology. The reasoning for developing ECY is discussed in §5.4.

ECY relies on many of the technologies used in the alternatives developed in the Feasibility Study as well as technologies developed by Ecology. ECY uses enhanced bioremediation and natural attenuation only at lower petroleum concentrations, where these technologies have a greater chance of being effective.

Ecology assessed the cleanup components proposed for each Site cleanup zone in each Site-wide alternative. Table 4 summarizes Ecology's initial assessment of the alternatives presented in the Feasibility Study. An "**X**" was placed in the box for any cleanup component in any zone that failed to meet one or more of the minimum requirements for cleanup actions. Any Site-wide alternative column that contains one or more "**X**'s" means that Site-wide alternative does not meet one or more of the minimum requirements for cleanup actions. The alternative having the fewest number of "**X**"s, PB4, was carried forward to the analysis for determining which alternative is permanent to the maximum extent practicable for comparison purposes. The rest of the alternatives with "**X**'s" were not carried forward into the analysis for determining which alternative is permanent to the maximum extent practicable.

One of the key minimum requirements for cleanup actions is that the action provides for a reasonable restoration time frame. WAC 173-340-360(2)(b)(ii) Figure 11 summarizes the restoration time frames for free product, groundwater, and soil presented in the Feasibility Study. This figure summarizes information presented in Figures 10-8, 10-9, and 10-10 in the Feasibility Study (RETEC, 2005). The times on the figure represent the mid-point of ranges of restoration time frames estimated in the Feasibility Study as follows (RETEC, 2005, p. 10-25):

- 4 years represents a 3 to 5 year range
- 8 years represents a 5 to 10 year range
- 15 years represents a 10 to 20 year range
- 25 years represents a 20 to 30 year range
- Greater than 30 years represents an indefinite time frame.

Levee Zone – An interim action to clean up the levee has already been completed, except for compliance monitoring. The interim action for the levee cleanup excavated sediment, free product, and upland soil at higher concentrations, consistent with PB4 and PB5.

Alternatives SW1, SW2, and PB1 did not propose to excavate free product or high level contamination, but instead relied on enhanced biodegradation with boom maintenance — in effect allowing petroleum to continue to seep into the Skykomish River, and to recover the petroleum with booms. These alternatives fail to meet the minimum requirement of removing free product using normally acceptable engineering practices (here, excavation). These alternatives fail to meet Ecology's expectation that high concentrations of hazardous and highly mobile substances will be treated, and that active measures be taken to prevent/minimize releases to surface water via surface runoff (i.e., the petroleum seeps) and groundwater discharge. These alternatives rely upon an off-property conditional point of compliance, but do not

apply AKART because known and reasonable treatment methods that are practicable can be implemented as proposed in other alternatives. The Feasibility Study indicates the restoration time frame is 8 years for free product, groundwater, and soil, but does not support this assertion. The proposed method of recovering the petroleum with booms has been shown during the Site investigation period to have limited effectiveness. The proposed method of treating groundwater is also likely to be ineffective on the high concentrations of contamination that will be left in place. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternatives SW1, SW2, and PB1 fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on the actions proposed for the levee.

Alternatives SW3 and PB2 propose to remove free product from the levee but leave all other contamination in the Levee, including the highest concentrations of petroleum-contaminated soil short of soil with free product. These alternatives fail to meet Ecology's expectation that high concentrations of hazardous and highly mobile substances will be treated. These alternatives rely upon an off-property conditional point of compliance, but do not use AKART because they fail to remove soil with high petroleum concentrations: Known and reasonable treatment methods that are practicable can be implemented as proposed in other alternatives. The Feasibility Study indicates the restoration time frame is 2 years for free product and 4 years for groundwater and soil, but does not support this assertion. The proposed method of treating groundwater is likely to be ineffective on the high concentrations of contamination that will be left in place. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternatives SW3 and PB2 fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on the actions proposed for the levee.

Former Maloney Creek Zone (FMC) – Alternatives SW1, SW2, SW3, PB1, and PB2 propose to use only natural attenuation in the FMC. These alternatives fail to meet the minimum requirement of removing free product using normally accepted engineering practices. These alternatives fail to meet Ecology's expectation that high concentrations of hazardous and highly mobile substances will be treated, and that source control will be conducted to the maximum extent practicable prior to using natural attenuation. Failure to conduct such source control precludes natural attenuation from being considered an appropriate active cleanup measure. These alternatives fail to meet Ecology's expectation that active measures will be taken to prevent/minimize releases to surface water via groundwater discharge. These alternatives do not use AKART prior to releasing contamination into surface water (the wetland), because known and reasonable treatment methods that are practicable can be implemented as proposed in other alternatives. The Feasibility Study indicates the restoration time frame is 0 years for free product (omitting the free product in the area of well 2-A-B-8 to be excavated by BNP alternative but to remain

behind in these alternatives) and 8 years for groundwater and soil, but does not support this assertion. It has not been demonstrated that a reasonable rate of natural attenuation is occurring or is likely to occur for the high concentrations of Bunker-C contaminated soil in the FMC Zone, and natural attenuation alone is likely to be ineffective to reduce such high petroleum contamination — a consideration factor when assessing the restoration time frame. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternatives SW1, SW2, SW3, PB1, and PB2 fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on the actions proposed for FMC.

Alternatives SW4, PB3, and PB4 propose to use enhanced bioremediation in FMC to treat soil and groundwater sufficiently to achieve a groundwater cleanup level of 208 µg/L NWTPH-Dx. SW4 and PB3 propose to excavate surface sediments to a remediation level of 2000 mg/kg. However, this level is not protective of aquatic life (2000 mg/kg is above concentrations that caused bioassay failures). In addition, these alternatives do not remove free product in the subsurface sediments, and therefore do not meet the minimum requirement to remove free product using normally accepted engineering practices. These alternatives also leave behind high level contamination in soil (in addition to free product) that has not been shown to be amenable to enhanced bioremediation. The Feasibility Study indicates the restoration time frame is 0 years for free product (omitting the free product in the area of well 2-A-B-8 to be excavated by the BNP alternative, but to remain behind in these alternatives) and 4 years for groundwater and soil, but does not support this assertion. Site studies have not demonstrated that the high concentrations of contamination remaining behind in soil and groundwater can be biodegraded at a reasonable rate. The proposed method of treating soil and groundwater is likely to be ineffective on the high concentrations of contamination that will be left in place. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternatives SW4, PB3, and PB4 fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on the actions proposed for FMC.

Alternative BNP proposes to remove free product in FMC in the area of Well 2-A-B-8 and in the former channel, but leave in place higher concentrations of soil (in addition to free product) that has not been shown to be amenable to enhanced bioremediation. Enhanced bioremediation is then proposed to remediate high concentrations of contamination in soil and groundwater remaining behind. A groundwater restoration time frame is given as 2 years, and a soil restoration time frame is given as 4 years, but the proposed method of treating soil and groundwater is likely to be ineffective on the high concentrations of contamination that will be left in place. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternative BNP fails to meet the threshold requirement to protect human

health and the environment, and otherwise fails to meet minimum requirements for cleanup based on the actions proposed in FMC.

Northeast Developed Zone (NEDZ) – Alternatives SW1, SW2, and PB1 propose to use natural attenuation in the NEDZ to reduce petroleum contamination in soil to concentrations that will achieve the groundwater cleanup level of 208 µg/L NWTPH-Dx at the river. These alternatives do not meet the minimum requirement to remove free product using normally accepted engineering practices. These alternatives do not meet the minimum requirement to treat or remove areas that are highly contaminated. These alternatives fail to meet Ecology's expectation that source control will be conducted to the maximum extent practicable prior to using natural attenuation. Failure to conduct such source control precludes natural attenuation from being considered an appropriate active cleanup measure. These alternatives fail to meet Ecology's expectation that active measures will be taken to prevent/minimize releases to surface water via groundwater discharge. These alternatives propose to meet the groundwater cleanup level of 208 µg/L NWTPH-Dx at the river, but contamination has not been shown to reach the river throughout the NEDZ (see e.g. RETEC, 2005, Figures 8-1, 8-2, and 8-5). The Feasibility Study indicates the restoration time frame is 0 years for groundwater, relying upon the conditional point of compliance to leave contaminated groundwater under the NEDZ because the groundwater is to achieve cleanup levels by natural attenuation by the time it reaches the conditional point of compliance. The Feasibility Study indicates the restoration time frame is 15 years for free product and 25 years for soil, but does not support this assertion. It has not been demonstrated that a reasonable rate of natural attenuation is occurring or is likely to occur for the high concentrations of petroleum-contaminated soil in the NEDZ zone, and natural attenuation alone is likely to be ineffective to reduce such high petroleum contamination — a consideration factor when assessing the restoration time frame. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternatives SW1, SW2, and PB1 fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on the actions proposed in the NEDZ.

Alternatives SW3, SW4, PB2 and PB3 propose to use enhanced bioremediation in the NEDZ to reduce petroleum contamination in soil to concentrations that will achieve the groundwater cleanup level of 208 µg/L NWTPH-Dx at the river. These alternatives indicate enhanced bioremediation will be used to reduce free product impacts, but free product will not be excavated. These alternatives therefore do not meet the minimum requirement to remove free product using normally accepted engineering practices. In addition, the enhanced bioremediation wells are to be located only along the hydraulically upgradient side of the NEDZ, at its boundary with the Railyard Zone (See RETEC 2005, Figures 8-3, 8-4, 8-6, and 8-7). Hence, these alternatives propose to use enhanced bioremediation to treat contaminated groundwater exiting the Railyard Zone, but do not propose enhanced bioremediation for contaminated soil and groundwater in the rest of the zone. Soil contamination remaining behind would continue to be a source of contamination to groundwater. Natural attenuation would be relied upon to treat the

soil and groundwater downgradient from the row of enhanced bioremediation wells along the upgradient boundary of the NEDZ.

While the petroleum composition in the NEDZ (diesel rather than Bunker-C) is more amenable to enhanced bioremediation, the Feasibility Study did not support that enhanced bioremediation would be effective on free product. These alternatives also fail to meet Ecology's expectation that source control will be conducted to the maximum extent practicable prior to using natural attenuation. Failure to conduct such source control precludes natural attenuation from being considered an appropriate active cleanup measure. These alternatives rely upon an off-property conditional point of compliance, but do not use AKART because known and reasonable treatment methods that are practicable can be implemented as proposed in other alternatives. Excavation of free product prior to installing enhanced bioremediation wells is considered a known and reasonable treatment method, and is proposed in other alternatives. These alternatives propose to meet the groundwater cleanup level of 208 µg/L NWTPH-Dx at the river, but contaminated groundwater reaches the Skykomish River only in some areas (see Figure 4). The Feasibility Study indicates the restoration time frame is 0 years for groundwater, relying upon the conditional point of compliance to leave contaminated groundwater under the NEDZ, because the groundwater is to achieve cleanup levels by natural attenuation by the time it reaches the conditional point of compliance. The Feasibility Study indicates the restoration time frame is 4 years for free product and 15 years for soil, but does not support this assertion. It has not been demonstrated that enhanced bioremediation at BNSF's railyard facility property boundary combined with natural processes off of BNSF's railyard facility property will reduce the contaminant concentrations present in the NEDZ zone, a consideration factor when assessing the restoration time frame. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternatives SW3, SW4, PB2, and PB3 fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on the actions proposed in the NEDZ.

Alternatives PB4 and BNP propose to use excavation of free product and limited enhanced bioremediation in the NEDZ to reduce petroleum contamination in soil to concentrations that will achieve the groundwater cleanup level of 208 µg/L NWTPH-Dx at the river. These alternatives propose to meet the groundwater cleanup level of 208 µg/L NWTPH-Dx at the river, but contaminated groundwater reaches the Skykomish River only in some areas (see Figure 4). The enhanced bioremediation wells are to be located along the hydraulically upgradient side of the NEDZ, at its boundary with the Railyard Zone (See RETEC 2005, Figures 8-8 and 10-1). Hence, these alternatives propose to use enhanced bioremediation to treat contaminated water exiting the Railyard Zone, but do not propose enhanced bioremediation for contaminated soil and groundwater in the rest of the zone. Soil contamination remaining behind would contaminate groundwater. Natural attenuation would be relied upon to treat the soil and groundwater downgradient from the row of enhanced bioremediation wells along the upgradient boundary of the NEDZ, with the attendant failure to meet minimum cleanup requirements discussed in the preceding paragraph. The Feasibility Study indicates the

free product restoration time frame is 1 year for PB4 and BNP, and 8 years for soil, but does not support the assertion regarding biodegradation rates of soil after free product is excavated. It has not been demonstrated that natural processes will reduce the soil contaminant concentrations remaining in the NEDZ zone at a reasonable rate, a consideration factor when assessing the restoration time frame. The Feasibility Study indicates the groundwater restoration time frame is 8 years for PB4, assuming natural attenuation will reduce the groundwater contamination throughout the NEDZ to below the cleanup level within 8 years even given that petroleum-contaminated soil will remain throughout the site with concentrations up to free product levels. The Feasibility Study indicates the restoration time frame is 0 years for groundwater for BNP, relying upon the conditional point of compliance to leave contaminated groundwater under the NEDZ because the groundwater is to achieve cleanup levels by natural attenuation by the time it reaches the conditional point of compliance. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, Alternatives BNP and PB4 fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on the actions proposed in the NEDZ.

South Developed Zone (SDZ) – Alternatives SW1, SW2, and SW3 propose to remove free product and use natural attenuation in the SDZ to reduce petroleum contamination in soil to concentrations that will achieve the groundwater concentration protective of water in FMC, 208 µg/L NWTPH-Dx. These alternatives do not meet Ecology's requirement to treat or remove areas that are highly contaminated, because highly contaminated soil is to be left behind. These alternatives fail to meet Ecology's expectation that source control will be conducted to the maximum extent practicable prior to using natural attenuation. Failure to conduct such source control precludes natural attenuation from being considered an appropriate active cleanup measure. These alternatives rely upon an off-property conditional point of compliance, but do not use AKART because known and reasonable treatment methods that are practicable can be implemented as proposed in other alternatives. Restoration time frames are given as 1 year for free product, based on excavation; 0 years for groundwater, based upon a groundwater point of compliance at the river; and 15 years for soil. Natural attenuation has not been shown to be effective on soil contaminated with Bunker-C at this Site and is unlikely to be effective at the high concentrations proposed to remain after free product excavation. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternatives SW1, SW2, and SW3 fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on actions proposed in the SEDZ.

Northwest Developed Zone (NWDZ) – Alternatives SW1, SW2, SW3, and BNP propose to leave significant amounts of free product in the NWDZ. This does not meet the minimum requirement to remove free product using normally accepted engineering practices. All but SW1 propose to use natural attenuation without meeting Ecology's expectation that source control will be conducted to the maximum

extent practicable prior to using natural attenuation (and SW1 does not even propose to use natural attenuation). Failure to conduct such source control precludes natural attenuation from being considered an appropriate active cleanup measure. All fail to remove or treat soil with high Bunker-C concentrations, hence failing to meet Ecology's expectations on this point as well. In essence, these alternatives propose to leave free product, and highly contaminated soil and groundwater in the NWDZ to be managed in perpetuity. The restoration time frame for free product and soil contamination is indefinite, likely to exceed 100 years. Ecology does not consider this a reasonable restoration time frame for this Site. The groundwater restoration time frame is given as 0 years, but this depends upon a point of compliance at the river. The proposed alternatives do not meet AKART because known and reasonable treatment methods that are practicable can be implemented as proposed in other alternatives. Hence, these alternatives fail to meet the minimum requirement that AKART be used prior to establishing an off-property point of compliance. The existing barrier wall and skimming system relied upon by SW1 has been proven ineffective at the Site. For alternatives SW2 and BNP, the recovery trenches fail to remove or treat dissolved phase groundwater contamination, and are likely to be ineffective at recovering free product. The remaining high level contamination in the NWDZ will act as a continuing source of contamination to the river under all these alternatives, and natural attenuation is unlikely to be effective on this high level Bunker-C contamination. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternatives SW1, SW2, SW3 and BNP fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on actions proposed in the NWDZ.

Alternative SW4 proposes to excavate all free product, but leave significant amounts of soil with high Bunker-C concentrations in the NWDZ. Natural attenuation is then proposed to reduce petroleum concentrations. This does not meet Ecology's expectation that source control will be conducted to the maximum extent practicable prior to using natural attenuation. Failure to conduct such source control precludes natural attenuation from being considered an appropriate active cleanup measure. Alternative SW4 proposes to leave highly contaminated soil and groundwater in the NWDZ to be managed in perpetuity. The restoration time frame for soil contamination is indefinite, likely to exceed 100 years. The groundwater restoration time frame is given as 0 years, but this depends upon a conditional point of compliance at the river. However, the proposed alternatives do not meet AKART, as required for a conditional point of compliance, because known and reasonable treatment methods that are practicable can be implemented as proposed in other alternatives. The remaining high level contamination in the NWDZ will act as a continuing source of contamination to the river, and natural attenuation is unlikely to be effective on this high level contamination. Consequently, this alternative is likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Considering the foregoing, alternative SW4 fails to meet the threshold

requirement to protect human health and the environment and otherwise fails to meet minimum requirements for cleanup based on actions proposed in the NWDZ.

NWDZ cleanup actions for alternatives PB1, PB2, PB3, and PB4 have similar concerns to those for alternatives SW1, SW2, SW3, and SW4. All either leave free product behind, failing to meet the minimum requirement to remove free product using normally accepted engineering practices, or leave significant amounts of soil with high Bunker-C concentrations behind without sufficiently proven methods for addressing such ongoing sources of contamination. The alternatives propose to use enhanced bioremediation, but this has not been shown to be an effective technique for reducing the high level petroleum concentrations in soil and groundwater at this Site, particularly for the Bunker-C present in the NWDZ. Consequently, these alternatives are likely to be ineffective in achieving cleanup standards within a reasonable restoration timeframe. Restoration time frames for free product, groundwater, and soil are all indefinite for PB1. For PB2 and PB3, the restoration time frame is given as 1 year for free product, as it is to be excavated; for groundwater and soil, the restoration time frames are indefinite. PB4 has a 1 year restoration time frame for free product, as it is to be excavated; for groundwater and soil, the restoration time frames are given as 25 years. The 25-year restoration time frames are not supported by Feasibility Study investigations. Considering the foregoing, alternatives PB1, PB2, PB3, and PB4 fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on actions proposed in the NWDZ.

Railyard Zone – Railyard cleanup actions for alternatives SW1, SW2, SW3, SW4, PB1, PB2, PB3, PB4, and BNP all leave free product and highly contaminated soil on the Railyard indefinitely. They all propose to use various configurations of skimmer wells and recovery trenches and natural attenuation. However, none of these methods have been proven effective. As discussed previously neither the skimmer wells, recovery trenches or enhanced bioremediation have been proven effective as proposed, particularly with respect to the high concentrations of soil contamination proposed to remain in place and act as a source to groundwater. Because the free product containment measures, and groundwater treatment measures, are likely to be ineffective to prevent free product and high level groundwater contamination from migrating into the NWDZ, these actions on the railyard are likely to be ineffective for achieving site cleanup standards within a reasonable restoration timeframe. In addition, alternatives SW1, SW2, SW3, PB1, and PB2 fail to excavate surface petroleum impacts within two feet of the surface, failing to meet the regulatory requirement that contaminated soils must be contained. Considering the foregoing, alternatives SW1, SW2, SW3, SW4, PB1, PB2, PB3, PB4, and BNP fail to meet the threshold requirement to protect human health and the environment, and otherwise fail to meet minimum requirements for cleanup based on the actions proposed for the Railyard.

Summary of Initial Assessment – As summarized on Table 4, all alternatives presented in the Feasibility Study (RETEC, 2005) except PB5 and STD fail to meet

one or more cleanup requirements in several of the cleanup zones. Alternatives failed to meet cleanup requirements because they relied on technologies that are unproven and likely to be ineffective for reducing or eliminating the petroleum contamination at this Site within a reasonable restoration time frame.

The purported reason for this emphasis was to avoid short-term disruption to the town which would be caused by using the most effective and practicable remedial technology for the contamination at this Site — excavation. However, the Feasibility Study did not consider the long-term disruption caused by leaving contamination behind, particularly in off-property areas, which would have to be managed for generations.

In addition, these alternatives over-rely on institutional controls to protect human health and the environment. As discussed above under §5.2, institutional controls are particularly difficult to sustain in areas owned by multiple parties, particularly individual residential properties, small business properties, and properties owned by small local governments, and are likely to become less effective over the long-term. Many of the alternatives leave behind a great deal of high-level contamination that would have to be managed for generations – over a century or in perpetuity. Although Ecology has discretion to select a cleanup action that does rely in part on institutional controls in residential areas, Ecology does not believe the heavy reliance on institutional controls in these alternatives is appropriate at this Site.

Some of the Feasibility Alternatives failed to meet minimum requirements by a wide margin and some less so. Of the failing alternatives, alternative PB4 came the closest to meeting all regulatory requirements. Alternative PB4 failed to meet minimum requirements in the least number of cleanup action components, and the failing components themselves were closer to passing than the components addressing the same environmental issue for other alternatives. Ecology's review of the alternatives also indicated a large "gap" between Alternative PB4 and Alternative PB5. That is, actions in addition to PB4 are available that could be taken, which meet minimum requirements without costing as much as the PB5 alternative. Ecology consequently developed the Ecology alternative (ECY), which is summarized below and presented in Chapter 4, as the selected Site remedy on this basis.

ECY uses the following cleanup components to augment those in PB4 and provides an alternative that meets minimum regulatory requirements:

- In the FMC Zone, ECY excavates contaminated soil and sediment exceeding their respective cleanup levels. This reduces soil and sediment contamination to concentrations that are protective of groundwater. A buffer of soil with petroleum concentrations less than 3,400 mg/kg NWTPH-Dx in adjacent zones provides high likelihood that soil and groundwater petroleum concentrations remaining in these zones are low enough that, if necessary, they can be successfully treated by air-sparging, enhanced bioremediation, or

similar in place techniques at the conditional point of compliance within a reasonable restoration time frame.

- In the NEDZ, ECY excavates free product, as does PB4, but provides for a network of enhanced bioremediation wells in the portion of the zone where soil petroleum concentrations exceed 3,400 mg/kg NWTPH-Dx, instead of just at the hydraulically upgradient side of the zone at the Railyard boundary. It is anticipated that enhanced bioremediation will be able to reduce soil and groundwater petroleum concentrations to target remediation level and cleanup level concentrations, respectively, within a reasonable restoration time frame (10 years). This expectation, and hence the use of enhanced bioremediation for this zone rather than excavation, is based upon the greater biodegradability of the diesel composition of the petroleum in the NEDZ as compared to the Bunker-C composition of the petroleum in the other zones.

- In the NWDZ, ECY excavates soil to 3,400 mg/kg NWTPH-Dx (except under the school and potentially other properties), rather than only to 20,000 mg/kg NWTPH-Dx. This removes free product and high concentration soil that could act as a source to groundwater. It reduces soil contamination to concentrations that are likely to be protective of groundwater and, as a contingency, provides a high likelihood that remaining soil and groundwater petroleum concentrations can be successfully treated by air-sparging, enhanced bioremediation, or similar in place techniques at the conditional point of compliance within a reasonable restoration time frame, if necessary. This has the added advantage that restrictive covenants on individual properties will not be necessary. The additional excavation adds little to the volume that has to be excavated because the soil contamination concentration contours are very close in the NWDZ. (See Figure 4; the 2,000 mg/kg and the 20,000 mg/kg contours are close together in the NWDZ).

- In the Railyard Zone, ECY contains, controls, and treats free product and groundwater contamination with a robust hydraulic control and containment system at the BNSF railyard facility property boundary. Free product and contaminated groundwater will be contained with a redundant barrier system. The redundant barrier system must be capable of detecting leaks of free product that may occur anywhere along the length of the barrier system. The system re-circulates treated water through BNSF's railyard facility property to flush free product and contaminated groundwater to pumping stations where they can be routed to a treatment system. Groundwater flow will be controlled by pumping and re-injection wells. Limited excavation of smear-zone soil is performed in in some free-product areas, and soil is excavated to provide a buffer zone of soil with petroleum concentrations less than the remediation level of 3,400 mg/kg NWTPH-Dx to protect FMC. Soil within two feet of the surface which is contaminated with metals, PCBs, or petroleum is excavated and replaced with clean soil.

Regulatory factors to consider when assessing whether the restoration time frame is reasonable include current and potential future use of the Site, surrounding areas, and associated resources. Alternative ECY recognizes the different uses of BNSF's railyard facility property versus the off-property area. BNSF's railyard facility property is dedicated to rail corridor uses and is owned by a single large corporate owner with an in-house environmental program to oversee its significant nationwide environmental liabilities. In contrast, the off-property area is a small town with multiple small property owners and a small-town local government, which impacts reliability that certain measures like institutional controls will be effective long-term. ECY adopts a cleanup action that will result in minimal long-term disruption to the town and its citizens. ECY avoids generations of Skykomish citizens having to deal with the significant and ongoing involvement that would come with living on highly-contaminated land. Conversely, ECY recognizes that BNSF Railway is much more capable of managing the high levels of contamination underlying BNSF's railyard facility property over a much longer time period.

In the next section, Alternatives ECY, PB5, and STD are assessed to determine which alternative uses cleanup actions that are permanent solutions to the maximum extent practicable using the disproportionate cost analysis test in the MTCA Cleanup Regulation. WAC 173-340-360(3).

PB4 was included in a portion of the analysis for comparison purposes, even though it does not meet all minimum requirements for cleanup actions. This was done because ECY was developed by enhancing cleanup actions in PB4 in order to develop an alternative that met all other minimum requirements.

5.4 Permanence Assessment of Alternatives ECY, PB5, and STD

Alternatives that meet all other minimum requirements for cleanup actions are assessed to determine which of them uses permanent solutions to the maximum extent practicable. WAC 173-340-360(3). This assessment is conducted by performing a disproportionate cost analysis. WAC 173-340-360(3)(e).

To conduct the disproportionate cost analysis the alternatives are ranked from most to least permanent. The most practicable permanent solution is the baseline cleanup action against which the other alternatives are compared. For the BNSF Skykomish Site, this is Alternative STD. Alternatives are compared by evaluating seven cost/benefit criteria: protectiveness, permanence, cost, effectiveness over the long-term, management of short-term risks, technical and administrative implementability, and consideration of public concerns. The regulation gives a general discussion of the types of factors to consider when evaluating each criterion. The relevance of the factors considered varies on a site-by-site basis.

When assessing criteria, the test used to evaluate which should be chosen is as follows:

> "**Test.** Costs are disproportionate to benefits if the incremental costs of the alternative over that of a lower cost alternative exceed the incremental degree of benefits achieved by the alternative over that of the other lower cost alternative." WAC 173-340-360(3)(e)(i).

The term disproportionate means that the degree of exceedance of incremental costs to incremental benefits must be substantial.

The MTCA Cleanup Regulation states,

> "The comparison of benefits and costs may be quantitative, but will often be qualitative and require the use of best professional judgment. In particular, the department has the discretion to favor or disfavor qualitative benefits and use that information in selecting a cleanup action. Where two or more alternatives are equal in benefits, the department shall select the less costly alternative provided the requirements of subsection (2) of this section are met." WAC 173-340-360(3)(3)(ii)(C).

Quantitative measures of costs and benefits, when made, must be made in units that are common among all alternatives so that the comparison can be meaningful. It is best if the units of costs and the units of benefits can be the same, such as dollars. This is rarely possible at environmental cleanup sites. Costs are estimated in dollars, but quantitative measures of benefits are usually only available in terms of mass or volume of contaminant removed or some other physical, non-monetary measure. This is the case at BNSF Skykomish. One quantitative measure of benefits that can be assessed is the measure of amount of contamination on the Site and the rate at which it would decline with time.

Where benefits cannot be quantified in common units they should be assessed qualitatively. The MTCA Regulation allows the agency to use best professional judgment to assess benefits qualitatively, and to use its discretion to favor or disfavor qualitative benefits.

At the BNSF Skykomish Site, quantitative data were developed to assess the amount of contamination on the Site and the rate at which it would decline with time for each of the SW and PB alternatives as well as BNP and STD. (RETEC, 2005, Figures 8-1 through 8-10 and 10-11 and supporting Excel workbook Remedial_Alt_Ranking_135_ft_june 20 2005 w stats.xls, worksheet Amt Left. Quantitative data were developed for cost for these alternatives (RETEC, 2005, Appendix N). The costs are given in Table 3. Similar data were developed by Ecology for Alternative ECY. (See Excel workbook Amount_Removed_10 and 100 years_4 Alts.xls)

The quantitative data were used in addition to qualitative considerations to assess protectiveness, permanence and cost at this Site, as discussed below. At the BNSF Skykomish Site, assessing the amount of contamination removed over time is, in the

agency's qualitative judgment, an appropriate comparison for this site in particular for protectiveness, permanence and cost. As discussed earlier, many of the containment measures proposed have not been proven to be effective to contain the high level contamination proposed to remain on the Site under other alternatives, and institutional controls also present problems in particular at this Site for ensuring the remedy is effective and protective in the long-term.

The other disproportionate cost analysis factors were assessed purely in a qualitative manner.

Ecology considers long-term effectiveness of the cleanup technologies as a significant factor at this Site, and has carefully considered it qualitatively in selecting the alternative to be implemented. Short-term risks and technical and administrative implementability are less important in selecting an alternative for this Site, because each alternative can be more easily modified to reduce short-term risk and improve implementability, but the same is not true for long-term effectiveness. Public concerns are also carefully considered in how the selected remedy will be implemented.

The assessment of the disproportionate cost criteria is as follows.

Cost – Costs to implement each alternative are taken from the cost estimates discussed above. Costs for the alternatives presented in the feasibility study (RETEC, 2005) are summarized in Table 3 (see bottom row, *Total Cost*). The estimated cost of alternative ECY is $44 million.

Amounts removed – The amounts removed for Alternatives PB4, PB5, and STD were taken from the feasibility study (RETEC, 2005, Remedial_Alt_Ranking_135_ft_june 20 2005 w stats.xls, worksheet Amt Left).

The amount of petroleum removed by ECY was estimated: (1) by increasing the amount of petroleum removed from soil by alternative PB4 by the amount removed from the NWDZ by excavating the additional soil with petroleum concentrations between 3,400 and 20,000 mg/kg petroleum concentrations; (2) by increasing the amount of petroleum removed from soil from the NEDZ by air-sparging in 10 years and natural attenuation over the next 90 years; and (3) by increasing the petroleum amount removed by ECY by excavating additional smear zone soil on the Railyard in addition to that excavated in PB4. The air-sparging and natural attenuation effectiveness presented in the feasibility study (RETEC, 2005) were used for the diesel in the NEDZ (75% reduction in 10 years and 75% reduction in 100 years for air-sparging and natural attenuation, respectively). (See Excel workbook Amount_Removed_10 and 100 years_4 Alts.xls, worksheet Adds)

Protectiveness – Protectiveness is evaluated by considering the overall protectiveness of human health and the environment, including the degree to which risk is reduced at a facility and the time to achieve that reduction. For the BNSF Skykomish Site, protectiveness was assessed by plotting the amount of contamination removed from the Site by the most active cleanup activities. The most active cleanup activities will occur

in the first ten years of the cleanup (and most excavation within the first three or four years). Data regarding the amount of petroleum removed from the Site during the first 10 years were plotted against cost. Both the amount removed and the cost were first normalized so that a unitless relative benefit – protectiveness – was compared against a unitless relative cost. The normalization process was done as follows:

Consider that the four alternatives each have an associated cost, C_{PB4}, C_{ECY}, C_{PB5}, C_{STD}. Let COST represent the entire set of the four costs, C_{PB4} … C_{STD}. Then the normalized cost of, say C_{ECY} is:

$$\text{Normalized } C_{ECY} = [C_{ECY} - \text{Min(COST)}]\ 4[\text{Max(COST)} - \text{Min(COST)}]$$

Where Min is the minimum value of COST and Max is the Maximum value of COST.

Consider that the four alternatives each have an associated amount removed, AR_{PB4}, AR_{ECY} , AR_{PB5}, AR_{STD}. Let AMT represent the entire set of the four amounts removed, AR_{PB4} … AR_{STD}. Then the normalized amount removed of, say AR_{ECY} is:

$$\text{Normalized } AR_{ECY} = [AR_{ECY} - \text{Min(AMT)}]\ 4[\text{Max(AMT)} - \text{Min(AMT)}]$$

The cost normalization calculates the fraction cost increase for each alternative compared to the total cost difference between PB4 and STD. Hence, PB4 costs 0.00 times the cost difference between PB4 and STD. STD costs 1.00 times the cost difference between PB4 and STD. The normalization of the amount removed is the same. By doing this, the slope of the line connecting the alternatives can be compared to a 1:1 slope to assess whether the incremental change in cost as a percentage of total cost difference is greater than or less than the incremental change in amount removed as a percentage of total amount removed difference. (See Excel workbook Amount_Removed_10 and 100 years_4 Alts.xls, worksheet Data)

Figure 12 shows the results of this calculation. The "10 Years" line represents Protectiveness of each alternative. A series of lines with a 1:1 slope is included on the graph. Where the slope of the "10 years" curve is shallower than the 1:1 slope, the relative amount removed (benefit) decreases more rapidly than relative cost decreases when moving from more permanent to less permanent alternatives.

The baseline for comparison to assess permanence to the maximum extent practicable is STD, which is the only permanent remedy evaluated in the Feasibility Study. Comparing the next most permanent remedy, PB5, it is apparent that when moving from STD to PB5 the incremental cost decreases much more rapidly than the benefit decreases. That is, the incremental cost of STD over PB5 is much greater than – i.e., is disproportionate to – the incremental benefit gained by choosing STD over PB5. Hence, PB5 is preferred to STD.

Comparing PB5 to ECY, the incremental benefit lost in going from PB5 to ECY is greater than the incremental cost savings. That is the incremental cost of PB5 is less than the incremental benefit of PB5 when compared to ECY. Hence, PB5 is the remedy that is permanent to the maximum extent practicable with regard to Protectiveness.

It should also be noted, for comparative purposes, that the incremental cost of ECY compared to PB4 is about the same as the incremental benefit gained by removing more contamination. Hence, the incremental cost increase is not disproportionate to the incremental benefit increase. This finding is consistent with the distribution of petroleum on-site. Referring to Figure 4, the petroleum distribution in the NWDZ is such that the 3,400 mg/kg concentration contour, which is the limit of excavation for ECY, is close to the 20,000 mg/kg concentration contour, which is the limit of excavation for PB4. Hence, it takes little extra excavation to remove the soil with petroleum concentrations between 3,400 and 20,000 mg/kg. This is more significant than the graph indicates. Removing this concentration range removes all soil with petroleum exceeding the concentration protective of direct contact (3,400 mg/kg NWTPH-Dx) from the NWDZ. This both better protects human health and avoids deed covenants to restrict activities that might result in a direct contact exposure. Avoiding deed covenants that restrict property use is a significant public concern. The additional excavation on the Railyard excavates free product, which removes the greatest amount of petroleum per cubic yard of excavation. Excavation of free product has the benefit of removing the highest concentration and most mobile petroleum on the site.

Moreover, part of the cost increase from PB4 to ECY is due to the installation of a robust hydraulic containment and control system along BNSF's railyard facility property boundary to treat groundwater. The quantitative analysis does not capture this groundwater cleanup (nor the groundwater cleanup to be conducted in the NEDZ), as it considers only the amount of petroleum removed by soil cleanup. Because groundwater becomes contaminated by much smaller masses of petroleum than soil, the mass removed by cleaning up groundwater is not significant when compared to the mass removed by cleaning up soil, especially by excavation. However, the environmental benefit gained is great. The regulation supports protection of off-property potable groundwater resources. The amount of free product which will be recovered by the hydraulic control and containment system is difficult to estimate and also is not included in this quantitative analysis. Its recovery offers significant environmental benefits as it is the source of ongoing soil contamination and contamination dissolved in groundwater. In Ecology's professional qualitative judgment, the benefit gained under ECY from groundwater protection of ECY outweighs the incremental cost when comparing ECY to PB4. This is not surprising; one of the reasons PB4 does not meet minimum requirements (and cannot be selected in any case) is because it fails to adequately treat contaminated groundwater exiting the railyard and hence fails to use all practicable methods of treatment when proposing a conditional point of compliance.

ECY would be selected over PB4 even if PB4 met all other minimum regulatory requirements.

Permanence – Permanence was evaluated in a similar manner, but using the data for amount of contamination removed in 100 years as the benefit. The "100 Years" line on Figure 12 shows PB5 preferred over both STD and ECY. The incremental cost of PB5 declines much more rapidly (slope >> 1) than the incremental benefit lost when compared to STD, so PB5 is preferred over STD. The incremental cost of PB5 declines less rapidly than the incremental benefit lost when compared to ECY (slope << 1), so PB5 is preferred over ECY. Hence, PB5 is the remedy that is permanent to the maximum extent practicable with regard to Protectiveness.

It should also be noted, for comparative purposes, that the incremental benefit of ECY compared to PB4 is greater than the incremental cost. That is, ECY would be selected over PB4 even if PB4 met all other minimum regulatory requirements.

Effectiveness Over the Long Term – While the relative effectiveness of the various cleanup technologies is fairly clear, it is difficult to quantify. Excavation achieves defined results in a definite time frame. Enhanced bioremediation has both uncertain results and an uncertain time frame, and natural attenuation even more so. Both natural attenuation and enhanced bioremediation can be effective at low concentrations, but are unlikely to be effective at high concentrations, although both are more effective on the diesel contamination than on the Bunker-C contamination. Institutional controls to manage contamination remaining on-site over time vary greatly in effectiveness depending upon the type of control and the type of area where controls are applied. Institutional controls such as groundwater restrictions that can be implemented through long-standing government programs are among the more effective such controls, while placing restrictive covenants on multiple residential, small business, and small local government properties are of limited short-term effectiveness and are generally ineffective in the long term. Given such considerations at this Site in particular, Ecology believes that institutional controls to restrict access to soil are likely to be much more effective on BNSF's railyard facility property than on properties in other ownership. Hence, much longer restoration time frames can be considered for BNSF's railyard facility property.

From the standpoint of Alternatives STD, PB5, and ECY, STD achieves a permanent cleanup by excavating all soil exceeding the petroleum cleanup level of 22 mg/kg NWTPH-Dx. However, this includes excavation of a great deal of low concentration soil, soil with concentrations between 22 mg/kg NWTPH-Dx and 2,000 mg/kg NWTPH-Dx. Such concentrations do not pose a risk to residents via direct contact or air inhalation. Instead, the only risk at these levels may be that the soil acts as a continuing source of contamination to groundwater. Yet it is not certain that excavating this soil is necessary to achieve groundwater protection. Groundwater monitoring can be used to assess whether leaving this range of soil concentration behind is protective of groundwater. If it is not, as a contingency, enhanced bioremediation of groundwater will be performed. Enhanced bioremediation of groundwater has a much higher chance of working providing higher concentration soil has been excavated.

Because STD costs $88 million to implement, but may be overly conservative, Ecology believes the choice for the selected remedy is between alternatives PB5 and ECY. Ecology believes not all costs are represented by the cost estimates for the alternatives, $44 million for ECY and $57 million for PB5. The main difference between these two alternatives is that PB5 requires removal of BNSF's mainline tracks and excavation beneath them and ECY does not. BNSF has expressed serious concerns about the impact of PB5 on railroad operations, and this qualitative "cost" is not reflected in the Feasibility Study's cost estimate for PB5. Therefore, Ecology has chosen ECY as the remedy that is permanent to the maximum extent practicable with regard to long-term effectiveness.

Consideration of Short-Term Risks, Implementability, and Public Concerns

In developing ECY, consideration was given to short-term risk, implementability, and public concerns. The following sections discuss how these concerns were incorporated into ECY.

Management of Short-Term Risks and Technical and Administrative Implementability – In the agency's qualitative judgment, short-term risks and technical and administrative implementability are less important in selecting an alternative for this Site, because each alternative can be more easily modified to reduce short-term risk and improve implementability, but the same is not true for long-term effectiveness. Cleanup actions will involve routine construction-type activities. Mitigation measures of associated health and safety risks are well-developed for such construction activities.

There are three primary concerns regarding implementability: (1) Excavation will require moving buildings. Although the techniques for moving buildings are well-established by firms specializing in this industry, moving the school poses much higher risks to the buildings integrity because the school is a masonry building. Therefore, Alternative ECY provides for using other techniques for cleaning up contamination under the school. (2) The three mainline tracks on the Railyard are one of BNSF's primary rail corridors. Closing them would cause disruption to BNSF's business. Therefore, Alternative ECY provides for using remedies for cleaning up contamination under BNSF's railyard facility property that will not close down the BNSF mainline. (3) Administering institutional controls in off-property areas under multiple ownership is one of the more administratively difficult aspects of site cleanup. This is particularly true when the institutional controls must be in place for a long time. Alternative ECY minimizes the need for institutional controls, particularly restrictive covenants, in off-property areas.

One of the primary implementation issues for ECY is the potential for individual property owners to choose not to allow excavation of their property, which will usually entail moving structures and dislocation of the residents for some months. This is not unique to ECY. Many of the alternatives presented in the Feasibility Study, including PB4, PB5, and STD share this concern. As stated in several places above, in such cases, it will be made clear to each property owner that they will have contamination remaining on their property and that it will be their responsibility to manage. When the interim action to

clean up the Levee and portions of the NWDZ was conducted, all property owners allowed excavation to occur on their property. This entailed moving five houses. Ecology believes this concern is valid, but can be dealt with on a case-by-case basis during the design phase of the cleanup.

Consideration of Public Concerns – Ecology has worked extensively with the community, and continues to do so, with the objective of learning what the public concerns are and addressing them. The community of Skykomish is both concerned that their community be cleaned up and about the short-term disruption it will cause. Many comments have been along the lines of, "… just get on with it, but don't impact us more than once." Ecology will continue to consider public concerns by implementing the cleanup in a community-based manner as described in the next chapter. All cleanup work will be discussed with the Town of Skykomish (the local government entity) and in public meetings. Cleanup of individual properties will be discussed with each owner on a one-to-one basis and agreements drawn up for the work to be done, how the homeowner will be compensated for costs associated directly with the cleanup work such as temporary relocation, and how the property will be restored after cleanup is complete.

5.5 Selected Remedy

Ecology's selected remedy for the BNSF Skykomish Site is ECY, presented in Chapter 4. This selection was made after careful review and consideration of all of the remedy selection requirements prescribed in the MTCA Cleanup Regulation, using the information and remedy alternatives presented in the Feasibility Study (RETEC, 2005) as well as of information developed by Ecology independently. It was developed after evaluating the strengths and shortcomings of the remedies presented in the Feasibility Study. Alternative ECY meets minimum regulatory requirements, and provides a better balance among using effective cleanup techniques (such as excavation), short-term and long-term disruption to residents of Skykomish, and cost, than the FS alternatives that meet minimum requirements (PB5 and STD).

The disproportionate cost analyses indicated that PB5 is the remedy that is permanent to the maximum extent practicable with respect to Protectiveness and Permanence. Consideration of the long-term effectiveness of using cleanup technologies presented in the FS at locations on the Site where each technique has the highest chance of being effective at this Site indicates ECY is the remedy that is permanent to the maximum extent practicable with respect to long-term effectiveness.

In Ecology's qualitative judgment, the analysis of Protectiveness and Permanence is informative, but does not capture some considerations better captured in the assessment of long-term effectiveness, as discussed above. Overall, the incremental cost of PB5 with respect to ECY is considered disproportionate to the incremental benefit gained due to BNSF's concerns about the impact of implementing PB5 on rail operations as discussed above.

The estimated cost for ECY is $44 million. This represents a $44 million dollar savings over STD ($88 million). ECY provides most of the benefits of a permanent remedy (STD) at about 50% of the cost.

Chapter 6 - Implementation of the Cleanup Action

6.1 Community-Based Cleanup: Integrating Community Concerns

Ecology, BNSF, and the Town of Skykomish are coordinating to ensure that the cleanup is community-based. In doing so, implementation of the cleanup action will recognize the current and the future socio-economic conditions that exist in the Town of Skykomish as well as those to which the Town aspires. To the degree possible, this cleanup will reflect the values of the Skykomish community and integrate and reflect their vision for their Town both now and in the future. Toward this end, the cleanup will be structured and undertaken in such a manner that furthers this vision and also provides for property owners to be responsible and accountable for their own properties by being provided certain choices for how the cleanup is implemented on their individual properties, as outlined below. Also toward this end, the cleanup will be coordinated with construction of the Skykomish community wastewater system to realize cost savings, efficiencies, and permitting and review of regulatory requirements.

Coupled with the Town's *Vision for Skykomish* (August 2005), and in consideration that the majority of the Town's infrastructure will need to be restored, the State is providing funding for a permanent waste water treatment system for the Town. This effort by the State reflects the unique nature of this Site and the cleanup, the responsibilities of BNSF under the state's cleanup law, and the current socio-economic condition of the Town. Further, this effort imbues a principle of partnership by which the State and the Town will work together to enable the cleanup to be successful and the community and its citizens to move forward.

The community-based cleanup will:

- Require the integration of property-specific cleanup decisions during each phase of cleanup
- Require negotiation of fair and equitable access agreements between property owners and BNSF
- Provide for the temporary relocation of residents and structures prior to and during cleanup
- Enable the construction of the Skykomish community wastewater system with property-specific hookups at no cost to property owners within the cleanup zones.

The community-based cleanup approach was used to develop the communication tools and activities in the Public Participation Plan, Exhibit F of this Consent Decree.

The cleanup decisions by individual property owners will be critical in how this cleanup is undertaken and the future liability for cleanup and management of contamination by property owners and BNSF. Some property owners will be asked to relocate temporarily to allow for excavation under homes and other buildings. Such property owners will have the choice to relocate or not to relocate. For property owners who elect to move

forward with the relocation, each property owner and BNSF will negotiate a fair and equitable access agreement that will outline and provide for necessary arrangements and relocation expense. If a property owner agrees in concept to relocate but is unable to reach agreement with BNSF on relocation terms, Ecology will make available mediation services to facilitate agreement being reached. Ecology also plans to make mediation services available in case relocation issues arise during cleanup implementation.

All residences and commercial buildings that are to be temporarily relocated, as well as any property disturbances made to conduct the cleanup, are to be restored to pre-existing conditions according to agreements made with each property owner. Current building and septic/wastewater code requirements are to be followed during all restoration work. If necessary, prior to the availability of community wastewater system infrastructure, temporary replacement septic systems will be installed by BNSF until the community wastewater system becomes available. Should construction of the collection and conveyance portion of the Town's wastewater system become available, BNSF may reach an agreement with the Town to use this system as an alternative to installing individual temporary systems provided that BNSF is responsible for all associated costs and operations of the temporary system until a fully completed and approved wastewater system is available. Such operations would include effluent conveyance, treatment and disposal.

During restoration work, BNSF shall coordinate the installation of wastewater infrastructure with the Town of Skykomish such that construction of the community wastewater system and connection of remediated properties to the system are done in the least disruptive and most efficient manner. This coordination shall ensure that any temporary septic systems installed prior to completion of the Town's wastewater system can be easily connected to the community system or reconfigured as necessary with minimal disruption and cost to the Town or the property owner.

During restoration of each residential or commercial property upon which there is a pre-existing structure, BNSF shall provide all tanks, sewer lines, pumps, valves, vaults, power lines, electrical panels and connections, and any other residential or commercial appurtenances specified by the Town (including but not limited to grease traps or other pre-treatment facilities for commercial connections) for those pre-existing structures. It is intended that the Town of Skykomish will provide all wastewater collection, conveyance, treatment and disposal facilities downstream of check and shut-off valves on the effluent pipeline. These valves will be located at or near the property boundary as specified by the Town of Skykomish. If the Town determines that it is most-effective or technically advantageous to combine the tanks of more than one property in the public right of way, or to locate a single tank within the public right of way, BNSF will provide all wastewater facilities and equipment located upstream of the check valve between the tank and the community wastewater collection pipeline.

After relocation and upon completion of the cleanup and construction of the Skykomish community wastewater system, the Town will connect the pre-existing structures of each property owner who relocated to the community system free of a connection charge,

subject to terms and conditions established for the community wastewater system by Town ordinance. (The property owner will be required to pay monthly sewer charges and meet other requirements set forth in the sewer code and rate structures established by the Town Council.)

Property owners who choose not to relocate will still be required to provide access to their properties to allow cleanup actions to occur around existing residences or buildings, and must agree to record a restrictive covenant on their property. Access will be subject to fair and equitable terms in an access agreement negotiated with BNSF. If a property owner agrees in concept to provide access but is unable to reach agreement on specific terms with BNSF, Ecology will make available mediation services to facilitate agreement being reached. Ecology also plans to make mediation services available in case access issues arise during cleanup implementation. However, because contamination will remain on such properties, such access will be regulatorily required to allow for cleanup actions that are necessary to contain and control the contamination that will remain, avoid recontamination of adjoining properties to the extent feasible, and ensure the effectiveness and protectiveness of the cleanup. Containment structures are anticipated to be impermeable walls installed in the subsurface inside the perimeter of the property that isolate the contamination under the property and limit its movement; ancillary facilities to capture contamination may also be associated with such installations. Design will be on a case-by-case basis.

Restrictive covenants will also be regulatorily required for those properties where the owner chooses not to relocate and free product and/or high level contamination (above 3400 mg/kg NWTPH-Dx in soil) will remain after cleanup. The restrictive covenant serves as a means to notify future owners of the presence of contamination, of the need to maintain containment structures, and of the restrictions placed on use of the property. Since these properties will not be fully-excavated, restoration will only be to the extent necessary after installation of the containment structures. Moreover, since cleanup of the property will not occur, and because the cleanup construction activities and waste water treatment system construction activities will be closely coordinated, there will be no provision for using any public funding for connecting to the community waste water treatment system for that property. Operation and maintenance of containment structures will be the responsibility of BNSF.

In addition to property owners who are asked to temporarily relocate to make excavation of contaminated soil possible, there may be significant impacts to adjacent properties due to construction activities. Such property owners adjacent to the area of active construction may choose to request temporary relocation from Ecology. Such property owners should contact Ecology and BNSF representatives to discuss their concerns and need to temporarily relocate. Ecology will carefully consider their concerns on a case-by-case basis and direct BNSF to take appropriate measures to mitigate construction impacts on such property owners. Such mitigation may include temporary relocation.

Finally, in order to further the integration of cleanup activities with installation of a community waste water treatment system, BNSF shall grant a reasonable and customary easement for sewage lines through BNSF property, subject to reasonable terms.

6.2 Schedule

Cleanup of the BNSF Skykomish Site will proceed in phases over a number of years. A schedule of due dates for the documents which control the work is presented in Exhibit C of the Consent Decree. The phased cleanup schedule is shown on Figure 13. This figure shows the areas to be cleaned up and the Work Year in which the most active construction in each area will begin. Planning will start the year before, and some construction activities (i.e., landscaping) may occur in the following year. A summary of the activities by Work Year is as follows:

- 2008 – Construction of project-duration soil handling facility on the railyard. Excavation of NWDZ east of Fifth Street. Installation of hydraulic control and containment system along northern railyard boundary. Excavation of portion of NEDZ along Railroad Avenue. Excavation of metals in the NEDZ. Installation of air-sparging system to treat contaminated soil and groundwater in NEDZ.
- 2009 – Excavation of NWDZ between Fifth and Sixth Street. Extension of hydraulic control and containment system along northern railyard boundary and installation of hydraulic control and containment system at FMC, if necessary. Excavation of SDZ, Former Maloney Creek. Excavation of petroleum and metals contaminated soil within 2 feet of the surface on the railyard (may be rescheduled, but will be completed by 2012). Installation of hydraulic control and containment system on BNSF's railyard facility property to protect FMC, if necessary.
- 2010 – Excavation of NWDZ west of Sixth Street and treatment beneath the school. Cleanup around south abutment of Fifth Street Bridge (this work may be moved to 2011 and is subject to coordination with the Washington State Department of Transportation).
- 2011 – Cleanup of the south abutment of the Fifth Street Skykomish Bridge if not performed in 2010. Any work not completed in prior years, dismantling of active cleanup operations.
- 2012 and following – Operation and maintenance of installed systems. Compliance monitoring. Excavation of additional smear and vadose zone soil within BNSF's railyard facility property boundary as necessary to reach a total of 7,500 cubic yards.

A number of follow-on documents are necessary for each phase of work and required by regulation. These include engineering design reports, construction plans and specifications, operation and maintenance plans, permits and substantive permit requirements, compliance monitoring plans; and as-built reports. Figure 14 summarizes the main follow-on documents. The *Groundwater Monitoring Plan* dated May 12, 2005,

will be incorporated into the site-wide compliance monitoring plans. Plans may be combined as appropriate. Each plan is to be submitted to Ecology for review and approval. A detailed list of deliverables and schedule must be developed and approved by Ecology for each phase of the work.

Mitigating measures described in the Final Environmental Impact Statement (Ecology 2007) are to be incorporated in the engineering design report and other follow-on documents, as appropriate.

Investigations to define the distribution of contamination in further detail have been ongoing at the Site during 2007. The results of this work will be summarized in the 2008 Engineering Design Report. This includes the following investigations:

- Former Maloney Creek Zone – This investigation will provide additional data to define the extent of TPH contamination in the former Maloney Creek Zone soil and sediment. In addition, the investigation will include preparation of a detailed topographic survey of the Former Maloney Creek zone including definition of the wetland boundaries and ordinary high water mark.

- South Developed Zone - This investigation will provide additional data to define the extent of soil contamination in the south developed zone.

- Northwest Developed Zone – This investigation will provide additional data to define the north, west and east boundaries of the free product plume and soil with TPH concentrations exceeding the remediation level (3,400 mg/kg NWTPH-Dx). These data will allow the extent of excavation to be more fully defined so that the impacts to properties in that zone can be predicted with more certainty.

- Northeast Developed Zone – This investigation will provide additional data to define the extent of free product and soil exceeding 30,000 mg/kg NWTPH-DX in the Northeast Developed Zone to the north of the railyard; this will better define the area that will require excavation during cleanup. This investigation will also provide additional data to define the extent of soil to the north of the railyard with TPH concentrations above the remediation level (3,400 mg/kg NWTPH-Dx); this will better define the area that will require air sparging.

- Fifth Street Skykomish Bridge South Abutment – This investigation will provide additional data to define the extent of petroleum hydrocarbons in the vicinity of the south bridge abutment. The extent of TPH exceeding the remediation level (3,400 mg/kg NWTPH-Dx) and the cleanup level (22 mg./kg NWTPH-Dx), as appropriate, will be better defined to allow cleanup of the area in the immediate vicinity of the south bridge abutment to be designed. This investigation will be conducted when the river flow is at the seasonal low to allow drilling beneath the bridge.

- Railyard – This investigation will provide additional data to define the extent of lead and arsenic exceeding cleanup levels in soil within two feet of the ground surface on the east side of the railyard (in the 'Y"). Data from this investigation will supplement soil data from the RI and Supplemental RI and be used to assess whether shallow soil will require excavation in the investigation area.

Work plans for the following special design investigations will be included in the Engineering Design Report for 2008 work:

- Hotel Structural Survey – A survey will be conducted to evaluate whether the structural condition of the hotel will permit moving it or supporting it so that work can occur beneath it. A work plan will be submitted which describes the process of selecting a structural survey engineer, the reports to be produced, and follow-on work to be done in either the case the hotel can be moved or supported or the case the hotel cannot be moved or supported. The final report will be due no later than December 31, 2007.

- Hydraulic Control and Containment System – Investigations and studies will be conducted to design the hydraulic control and containment system. The investigations and studies will include, but are not limited to, design, installation, operation, and maintenance of: the groundwater interception trench; the redundant barrier system capable of detecting leaks of free product that may occur anywhere along the length of the barrier system.; groundwater pumping rates and volumes necessary to maintain hydraulic control and containment of both free product and dissolved contamination; water treatment requirements; water re-injection rates, volumes, and locations; surface water discharge rates, volumes, and locations; groundwater elevation and quality monitoring (including free product monitoring); means of optimizing system performance; and any other parameters necessary to fully design, operate, maintain, and assess the performance of the hydraulic control and containment system. The final report will be due no later than December 31, 2007.

- School Alternatives Evaluation Work Plan – An investigation will be required to assess how to clean up contamination beneath the school to the degree technically possible. The results of this investigation will be documented in a School Alternatives Evaluation Report. The report will evaluate means of thermally treating the contamination beneath the school in terms of the requirements for implementing thermal treatment and the impact of such implementation on school operations. The report may consider other technologies in addition to thermal treatment. Other technologies will be compared to thermal treatment in terms of amount of contamination mobilized and removed, the degree of immobilization of contamination remaining after treatment, the time to perform the treatment, the impact of the treatment on school operations, mitigation of impacts on school operations, and any other criteria which arise from discussion among Ecology, the School Board, and BNSF during the development of the work plan for the investigation. Comparative physical testing will be required unless otherwise

approved by Ecology. Comparative physical testing must include testing of thermal treatment unless otherwise approved by Ecology. Comparative physical testing also must be performed on other treatment technologies still under consideration after literature research to provide data to permit comparison of other treatment technologies with thermal treatment. A work plan forcomparative physical testing will be prepared by January 31, 2008. The work plan will include at least two interim deliverables: (1) A technology review report on available information from literature research and accompanying work plan for conducting comparative physical tests to assess and compare the technologies being considered, and (2) A report on the results of comparative physical testing. A final school alternatives evaluation report will be prepared that will provide a basis for deciding which technology will be used. The final report will be due no later than October 31, 2008.

In addition, the following two reports are required:

- FMC Wetlands Special Design Report – This report will specify the design of the wetlands to be constructed after cleanup of FMC. The final report will be due no later than June 30, 2008.

- Bridge Coordination Report – This report will provide sufficient design basis to begin coordination of cleanup around the south abutment of the Fifth Street Bridge with the Washington State Department of Transportation. The final report will be due no later than June 30, 2010.

As noted in Section 4.1, restrictive covenants and groundwater withdrawal restrictions will be required in certain areas and circumstances for the various cleanup zones. The covenants and groundwater withdrawal restrictions are to be developed as part of the Engineering Design Report for each phase of the work.

Each deliverable must be submitted in hard copy and electronic format. Ecology will specify the number of hard copies for each deliverable. In general, electronic submittals will be in Adobe Acrobat, Excel, Access, or AutoCAD format, as appropriate, or as otherwise specified by Ecology. Electronic formats appropriate for use in geographic information systems databases may also be required.

All submittals must follow the requirements of WAC 173-340-840, General Submittal Requirements.

6.3 Financial Assurances

Financial assurances shall be provided in accordance with Section XXII, Financial Assurances of the Consent Decree.

6.4 Overburden Management

Overburden soil is soil above the smear zone. Overburden soil with petroleum concentrations less than the 3,400 mg/kg NWTPH-Dx may be managed on site, but Ecology will leave the final decision to BNSF. However, soil within two feet of final grade must meet the petroleum cleanup level of 1,870 mg/kg NWTPH-Dx. This is to ensure soil petroleum concentrations are protective of soil biota in the near surface. Soil with dioxin/furan concentrations exceeding 6.67 ng/kg Total Toxicity Equivalent Concentration will be sent to an off-site disposal facility permitted to handle such waste. In no case will soil with arsenic concentrations exceeding 20 mg/kg, lead concentrations exceeding 250 mg/kg, PCB concentrations exceeding 0.65 mg/kg, or dioxin/furan concentrations exceeding 6.67 ng/kg Total Toxicity Equivalent Concentration be managed on-site. Calculation of dioxin/furan concentrations is to be done as specified in WAC 173-340-708(8)(d).

BNSF should consider the following in making this decision:

- Adequate sampling will be required to ensure overburden petroleum concentrations do not exceed the specified concentrations before being excavated and stockpiled. A sampling plan must be part of the engineering design documents.
- Overburden to be reused on-site must be kept separated from soil with petroleum concentrations exceeding the specified concentrations. The system for ensuring that mixing does not occur must be robust and a tracking system must be part of the engineering design documents.
- The replacement of overburden soil containing petroleum will add to the mass of petroleum remaining on site and increase the chance that more extensive future actions would be required as a result of confirmational monitoring. There is a risk that these soil concentrations may influence attainment of the groundwater remediation and surface water cleanup levels. Therefore, placement of these soils needs to be tracked.

Chapter 7 - References

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Table 1: Summary of Cleanup Levels, Remediation Levels, and Points of Compliance.

Environmental Medium	Level Type	Chemical	Concen-tration	Point of Compliance
Surface Water	Cleanup	Petroleum	208 µg/L NWTPH-Dx and absence of sheen or free product	The point at which contaminated groundwater is released to the Skykomish River and Former Maloney Creek channel.
Sediment	Cleanup	Petroleum	40.9 mg/kg or "pass" of bioassay	Skykomish River: Sediment riverward of the OHWM, to a depth of 10 feet. Former Maloney Creek: Within the creek channel as delineated by the OHWM or the wetland boundary, to a depth of 4 feet.
Sediment	Cleanup	Dioxin/Furan	To be developed if necessary	Throughout the site to a depth of 15 feet.
Groundwater	Cleanup	Petroleum	208 µg/L NWTPH-Dx and absence of sheen or free product	Surface water boundary where contaminated groundwater enters surface water, that is, at the points where groundwater enters the Skykomish River and Former Maloney Creek. In the NEDZ, contaminated groundwater reaches the Skykomish River only in some areas; in the NEDZ, the groundwater point of compliance is the groundwater concentration contour for 208 µg/L. See Figure 4.
Groundwater	Remediation	Petroleum	477 µg/L NWTPH-Dx and absence of sheen or free product	From BNSF's railyard facility property boundary to the cleanup level point of compliance.
Soil	Cleanup	Petroleum	22 mg/kg NWTPH-Dx	Throughout the site to any depth.
Soil	Remediation	Petroleum	30,000 mg/kg NWTPH-Dx and no evidence of free product flowing into or accumulating in an excavation	Everywhere on site except within BNSF's railyard facility property boundary.
Soil	Remediation	Petroleum	Specified smear and vadose zone soil volume.	Selected areas on BNSF's railyard facility property.
Soil	Remediation	Petroleum	3,400 mg/kg NWTPH-Dx	Off the portion of the railyard owned by BNSF to any depth, except within 25 feet south of the OHWM of the Skykomish River and within 25 feet of the channel of Former Maloney Creek as delineated by the OHWM or the wetland boundary, where the cleanup level of 22 mg/kg NWTPH-Dx must be met to a depth of 4 feet.
Soil	Remediation	Petroleum	1,870 mg/kg NWTPH-Dx	Soil within two feet of the surface within the Railyard Zone.
Soil	Cleanup	Arsenic	20 mg/kg	Throughout the site to a depth of 15 feet.
Soil	Cleanup	Lead	250 mg/kg	Throughout the site to a depth of 15 feet.
Soil	Cleanup	PCB	0.65 mg/kg	Throughout the site to a depth of 15 feet.
Soil	Cleanup	Dioxin/Furan	6.67 ng/kg Total Toxicity Equiva-lent Concentration	Throughout the site to a depth of 15 feet.
Air	Cleanup	Petroleum	1,346 µg/m^3 APH	Indoor and ambient air throughout the site outside of the BNSF facility property boundary.
Air	Cleanup	Petroleum	2,944 µg/m^3 APH	Indoor and ambient air throughout the site within the BNSF facility property boundary.

Table 2: Summary of Cleanup Actions.

	LEVEE	NWDZ	NEDZ	SDZ	FMC	RY
PETROLEUM CUL*	40.9 mg/kg/ bioassay sediment 22 mg/kg soil 208 µg/L GW & SW	22 mg/kg soil 208 µg/L and absence of sheen or free product GW	22 mg/kg soil 208 µg/L and absence of sheen or free product GW	22 mg/kg soil 208 µg/L and absence of sheen or free product GW	40.9 mg/kg/ bioassay sediment 22 mg/kg soil 208 µg/L and absence of sheen or free product GW & SW	22 mg/kg soil 208 µg/L and absence of sheen or free product GW & SW
PETROLEUM REL*	3,400 mg/kg soil below levee more than 25 feet south of OHWM	3,400 mg/kg soil 477 µg/L and absence of sheen or free product GW	30,000 mg/kg NWTPH-Dx and no evidence of free product flowing into or accumulating in an excavation 3,400 mg/kg soil 477 µg/L GW 208 µg/L GW entering FMC Zone.	3,400 mg/kg soil 477 µg/L and absence of sheen or free product GW	3,400 mg/kg soil	Excavate specified volumes of smear and vadose zone soil 1,870 mg/kg soil in top two feet 477 µg/L and absence of sheen or free product GW at BNSF's railyard facility property boundary
CLEANUP ACTION	Remove/ reconstruct levee Habitat restoration	Excavate soil to 3,400 mg/kg, except under school Remove lead* and arsenic* contaminated soils Isolation/control under school, other buildings if necessary Vapor protection Aggressive treatment beneath school	Excavate free product and soil exceeding 30,000 mg/kg NWTPH-Dx Remove lead contaminated soils Air sparge and biovent to 3,400 mg/kg soil, 477 µg/L GW throughout zone, 208 µg/L GW at conditional point of compliance Isolation/control under buildings if necessary Vapor protection	Excavate soil to 3,400 mg/kg, 22 mg/kg within 25 feet of FMC to depth of 10 feet Isolation/control under buildings if necessary Vapor protection	Excavate sediment to 40.9 mg/kg and soil to 22 mg/kg Restore wetland and fish habitat Vapor protection	Groundwater control, containment , and treatment at BNSF's railyard facility property boundary to protect GW beneath town to 477 µg/L and GW entering FMC Zone to 208 µg/L Excavate two southern and far east free product areas in association with hydraulic controls and containment system installation. Excavate soil with petroleum concentrations exceeding 22 mg/kg NWTPH-Dx within 25 feet of FMC to depth of 4 feet and 3,400 mg/kg NWTPH-Dx within 25 feet of FMC below a depth of 4 feet. Excavate metals, PCB, shallow petroleum. Excavate 7,500 cubic yards of smear and vadose zone soil in selected areas within 20 years after effective date of consent decree Vapor protection

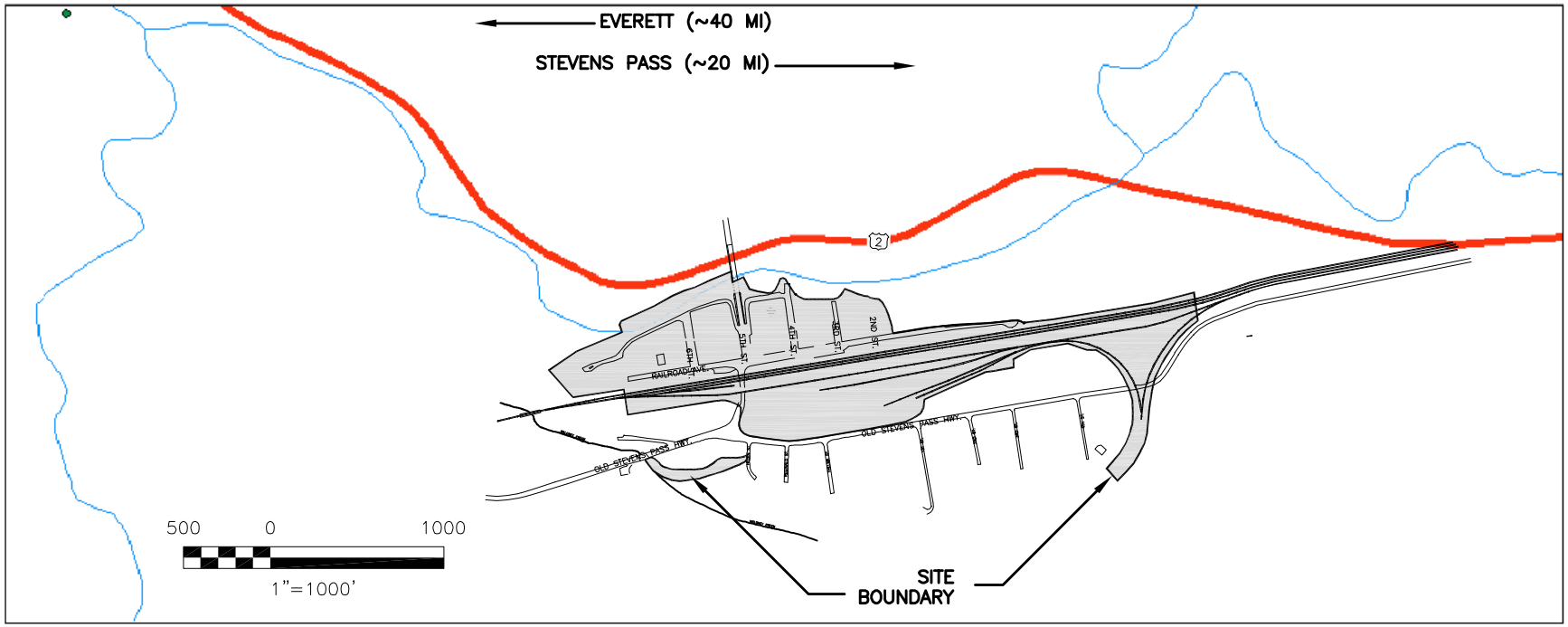
* **CUL** = Cleanup Level; **REL** = Remediation Level; **Arsenic** cleanup level = 20 mg/kg; **Lead** cleanup level = 250 mg/kg; **PCB** cleanup level 0.65 mg/kg; **GW** = Ground water; **SW** = Surface water

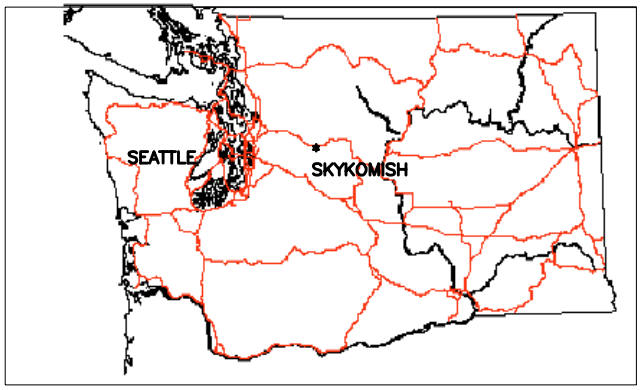
Table 3: Summary of Remedial Alternatives Considered in the Feasibility Study (from RETEC, 2005, Table 8-3)

	SW1	SW2	SW3	SW4	PB1	PB2	PB3	PB4	PB5	STD	BNP
Levee	Boom Maintenance	Boom Maintenance	Excavate to soil RL (free product)	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Boom Maintenance	Excavate to soil RL (free product)	Excavation to soil RL (3,400 mg/kg Dx)/gw CUL	Excavation to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL
	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)			
			Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)		Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove Surface Sediment to CUL (bioassay)
Cost	$1,000,000	$1,000,000	$2,230,000	$4,190,000	$1,000,000	$2,230,000	$4,190,000	$4,190,000	$3,510,000	$3,940,000	$3,390,700
Fmr Maloney Creek	Natural Attenuation to gw RL (477 ug/L EPH/VPH)	Natural Attenuation to gw RL (477 ug/L EPH/VPH)	Natural Attenuation to gw RL (477 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Natural Attenuation to gw CUL (208 ug/L EPH/VPH)	Natural Attenuation to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (free product) at 2-A-B-8 and in former channel
				Remove surface sediment to RL (no damage to wetland trees)			Remove surface sediment to RL (no damage to wetland trees)	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) Remove surface sediment to RL (no damage to wetland trees)
Cost	$420,000	$420,000	$420,000	$1,060,000	$420,000	$420,000	$1,060,000	$1,480,000	$2,160,000	$2,600,000	$1,740,000
NE Developed Zone	Natural Attenuation to gw CUL (208 ug/L EPH/VPH at river)	Natural Attenuation to gw CUL (208 ug/L EPH/VPH at river)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH at river)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH at river)	Natural Attenuation to gw CUL (208 ug/L EPH/VPH at river)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH at river)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH at river)	Excavate to soil RL (free product) plus Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (free product) plus Enhanced Bio to gw CUL (208 ug/L EPH/VPH)
Cost	$420,000	$420,000	$600,000	$600,000	$420,000	$600,000	$600,000	$1,220,000	$3,910,000	$8,910,000	$1,220,000
South Developed Zone	Excavate to soil RL (free product) plus natural attenuation to gw RL (477 ug/L EPH/VPH)	Excavate to soil RL (free product) plus natural attenuation to gw RL (477 ug/L EPH/VPH)	Excavate to soil RL (free product) plus natural attenuation to gw RL (477 ug/L EPH/VPH)	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL
	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs
Cost	$520,000	$520,000	$520,000	$650,000	$650,000	$650,000	$650,000	$650,000	$700,000	$2,830,000	$650,000
NW Developed Zone	Existing Barrier Wall and Skimming System	Free product recovery trenches where accessible plus natural attenuation & inst controls	Excavate to soil RL (free product where accessible) plus natural attenuation & inst controls	Excavate to soil RL (free product) plus natural attenuation & institional controls	Excavate to soil RL (free product were accessible) plus enhanced bio to gw CUL (208 ug/L EPH/VPH) & inst controls	Excavate to soil RL (free product) plus enhanced bio to gw CUL (208 ug/L EPH/VPH) & inst controls	Excavate to soil RL (free product) plus enhanced bio to gw CUL (208 ug/L EPH/VPH) & inst controls	Excavation to soil RL (20,000 mg/kg) plus enhanced bio to gw CUL (208 ug/L EPH/VPH) & inst controls	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (3,400 mg/kg Dx) to 135 feet from the river, free product recovery trenches elsewhere, natural attenuation & inst controls
	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL
				Excavate shallow smear zone where accessible to soil RL (3,400 mg/kg Dx)			Excavate shallow smear zone where accessible to soil RL (3,400 mg/kg Dx)	Excavate shallow smear zone where accessible to soil RL (3,400 mg/kg Dx)			
Cost	$990,000	$4,090,000	$6,780,000	$11,850,000	$7,350,000	$11,700,000	$12,730,000	$24,050,000	$23,830,000	$36,220,000	$9,210,000
Railyard	Free product recovery skimming at property boundary and natural attenuation	Free product recovery trenches at property bdry, skim free product interior areas, and natural attenuation	Free product recovery trenches at property bdry, skim free product interior areas, and natural attenuation	Free product recovery trenches at property bdry, skim free product interior areas, and natural attenuation	Free product recovery trenches at property bdry, skim free product interior areas, and natural attenuation to gw CUL (208 ug/L EPH/VPH)	Free Product Recovery trenches at all plumes, plus enhanced bio at property boundary to gw CUL (208 ug/L EPH/VPH)	Free Product Recovery trenches at all plumes, plus enhanced bio at property boundary to gw CUL (208 ug/L EPH/VPH)	Excav. 2 S'ern, trenches at 2 N/western and eastern free product areas, enhanced bio. at property boundary to gw CUL (208 ug/L EPH/VPH)	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Free product recovery trenches at property boundary and natural attenuation
	Excavate surface metals impacts to RL (CUL to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts (2 feet) to CULs	Excavate surface metals impacts (2 feet) to CULs	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)
Cost	$1,960,000	$3,660,000	$3,660,000	$4,380,000	$3,660,000	$4,130,000	$4,880,000	$4,840,000	$22,430,000	$33,190,000	$3,980,000
Long Term Monitoring	$524,000	$524,000	$524,000	$524,000	$524,000	$524,000	$524,000	$524,000	$524,000	$0	$524,000
TOTAL COST	**$5,834,000**	**$10,634,000**	**$14,734,000**	**$23,254,000**	**$14,024,000**	**$20,254,000**	**$24,634,000**	**$36,954,000**	**$57,064,000**	**$87,690,000**	**$20,714,700**

Table 4: Initial Assessment of Feasibility Study Alternatives (X = Fails to meet one or more minimum requirements)

	SW1	SW2	SW3	SW4	PB1	PB2	PB3	PB4	PB5	STD	BNP
Levee	Boom Maintenance X	Boom Maintenance X	Excavate to soil RL (free product) X	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Boom Maintenance X	Excavate to soil RL (free product) X	Excavation to soil RL (3,400 mg/kg Dx)/gw CUL	Excavation to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL
	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH)			
			Remove surface sediment to CUL (bioassay) X	Remove surface sediment to CUL (bioassay)		Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove Surface Sediment to CUL (bioassay)
Cost	$1,000,000	$1,000,000	$2,230,000	$4,190,000	$1,000,000	$2,230,000	$4,190,000	$4,190,000	$3,510,000	$3,940,000	$3,390,700
Fmr Maloney Creek	Natural Attenuation to gw RL (477 ug/L EPH/VPH) X	Natural Attenuation to gw RL (477 ug/L EPH/VPH) X	Natural Attenuation to gw RL (477 ug/L EPH/VPH) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X	Natural Attenuation to gw CUL (208 ug/L EPH/VPH) X	Natural Attenuation to gw CUL (208 ug/L EPH/VPH) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (free product) at 2-A-B-8 and in former channel
	X	X	X	Remove surface sediment to RL (no damage to wetland trees) X	X	X	Remove surface sediment to RL (no damage to wetland trees) X	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Remove surface sediment to CUL (bioassay)	Enhanced Bio to gw CUL (208 ug/L EPH/VPH) Remove surface sediment to RL (no damage to wetland trees) X
Cost	$420,000	$420,000	$420,000	$1,060,000	$420,000	$420,000	$1,060,000	$1,480,000	$2,160,000	$2,600,000	$1,740,000
NE Developed Zone	Natural Attenuation to gw CUL (208 ug/L EPH/VPH at river) X	Natural Attenuation to gw CUL (208 ug/L EPH/VPH at river) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH at river) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH at river) X	Natural Attenuation to gw CUL (208 ug/L EPH/VPH at river) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH at river) X	Enhanced Bio to gw CUL (208 ug/L EPH/VPH at river) X	Excavate to soil RL (free product) plus Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (free product) plus Enhanced Bio to gw CUL (208 ug/L EPH/VPH) X
Cost	$420,000	$420,000	$600,000	$600,000	$420,000	$600,000	$600,000	$1,220,000	$3,910,000	$8,910,000	$1,220,000
South Developed Zone	Excavate to soil RL (free product) plus natural attenuation to gw RL (477 ug/L EPH/VPH) X	Excavate to soil RL (free product) plus natural attenuation to gw RL (477 ug/L EPH/VPH) X	Excavate to soil RL (free product) plus natural attenuation to gw RL (477 ug/L EPH/VPH) X	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (3,400 mg/kg Dx)/gw CUL
	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs	Excavate surface soil to CULs
Cost	$520,000	$520,000	$520,000	$650,000	$650,000	$650,000	$650,000	$650,000	$700,000	$2,830,000	$650,000
NW Developed Zone	Existing Barrier Wall and Skimming System X	Free product recovery trenches where accessible plus natural attenuation & inst controls X	Excavate to soil RL (free product where accessible) plus natural attenuation & inst controls X	Excavate to soil RL (free product) plus natural attenuation & institional controls X	Excavate to soil RL (free product were accessible) plus enhanced bio to gw CUL (208 ug/L EPH/VPH) & inst controls X	Excavate to soil RL (free product) plus enhanced bio to gw CUL (208 ug/L EPH/VPH) & inst controls X	Excavate to soil RL (free product) plus enhanced bio to gw CUL (208 ug/L EPH/VPH) & inst controls X	Excavation to soil RL (20,000 mg/kg) plus enhanced bio to gw CUL (208 ug/L EPH/VPH) & inst controls X	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Excavate to soil RL (3,400 mg/kg Dx) to 135 feet from the river, free product recovery trenches elsewhere, natural attenuation & inst controls X
	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL	Excavate surface metals to CUL
	X	X	X	Excavate shallow smear zone where accessible to soil RL (3,400 mg/kg Dx)	X	X	Excavate shallow smear zone where accessible to soil RL (3,400 mg/kg Dx)	Excavate shallow smear zone where accessible to soil RL (3,400 mg/kg Dx)			X
Cost	$990,000	$4,090,000	$6,780,000	$11,850,000	$7,350,000	$11,700,000	$12,730,000	$24,050,000	$23,830,000	$36,220,000	$9,210,000
Railyard	Free product recovery skimming at property boundary and natural attenuation X	Free product recovery trenches at property bdry, skim free product interior areas, and natural attenuation X	Free product recovery trenches at property bdry, skim free product interior areas, and natural attenuation X	Free product recovery trenches at property bdry, skim free product interior areas, and natural attenuation X	Free product recovery trenches at property bdry, skim free product interior areas, and natural attenuation to gw CUL (208 ug/L EPH/VPH) X	Free Product Recovery trenches at all plumes, plus enhanced bio at property boundary to gw CUL (208 ug/L EPH/VPH) X	Free Product Recovery trenches at all plumes, plus enhanced bio at property boundary to gw CUL (208 ug/L EPH/VPH) X	Excav. 2 S'ern, trenches at 2 N/western and eastern free product areas, enhanced bio. at property boundary to gw CUL (208 ug/L EPH/VPH) X	Excavate to soil RL (2,000 mg/kg Dx)/gw CUL	Excavate to CUL (22 mg/kg Dx)	Free product recovery trenches at property boundary and natural attenuation X
	Excavate surface metals impacts to RL (CUL to 2 feet) X	Excavate surface metals impacts to RL (CUL to 2 feet) X	Excavate surface metals impacts to RL (CUL to 2 feet) X	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts (2 feet) to CULs X	Excavate surface metals impacts (2 feet) to CULs X	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)	Excavate surface metals impacts to RL (CUL to 2 feet) & TPH to RLs (2,700 mg/kg Dx to 2 feet)
Cost	$1,960,000	$3,660,000	$3,660,000	$4,380,000	$3,660,000	$4,130,000	$4,880,000	$4,840,000	$22,430,000	$33,190,000	$3,980,000
Long Term Monitoring	$524,000	$524,000	$524,000	$524,000	$524,000	$524,000	$524,000	$524,000	$524,000	$0	$524,000
TOTAL COST	$5,834,000	$10,634,000	$14,734,000	$23,254,000	$14,024,000	$20,254,000	$24,634,000	$36,954,000	$57,064,000	$87,690,000	$20,714,700





WASHINGTON STATE DEPARTMENT OF ECOLOGY

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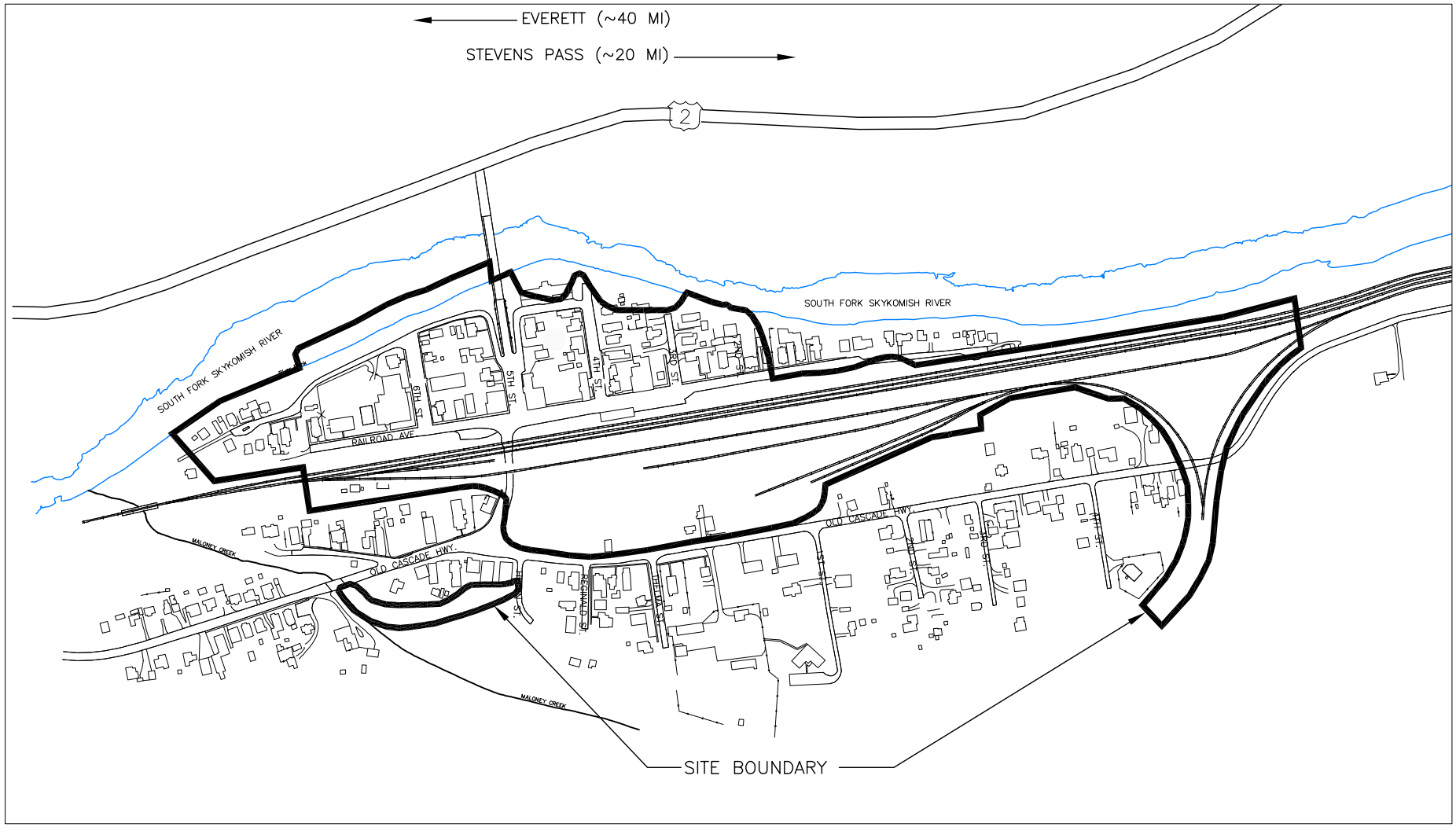
BNSF RAILWAY SITE SKYKOMISH, WA			**SITE LOCATION MAP**
DATE: 6/5/07	DRWN:		**FIGURE 1**



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N

250 0 500

1"=500'

BNSF RAILWAY SITE SKYKOMISH, WA			**TOWN STREET PLAN**
DATE: 6/4/07	DRWN:		**FIGURE 2**

AIR
- **Human health (inhalation), 1346 µg/m3**

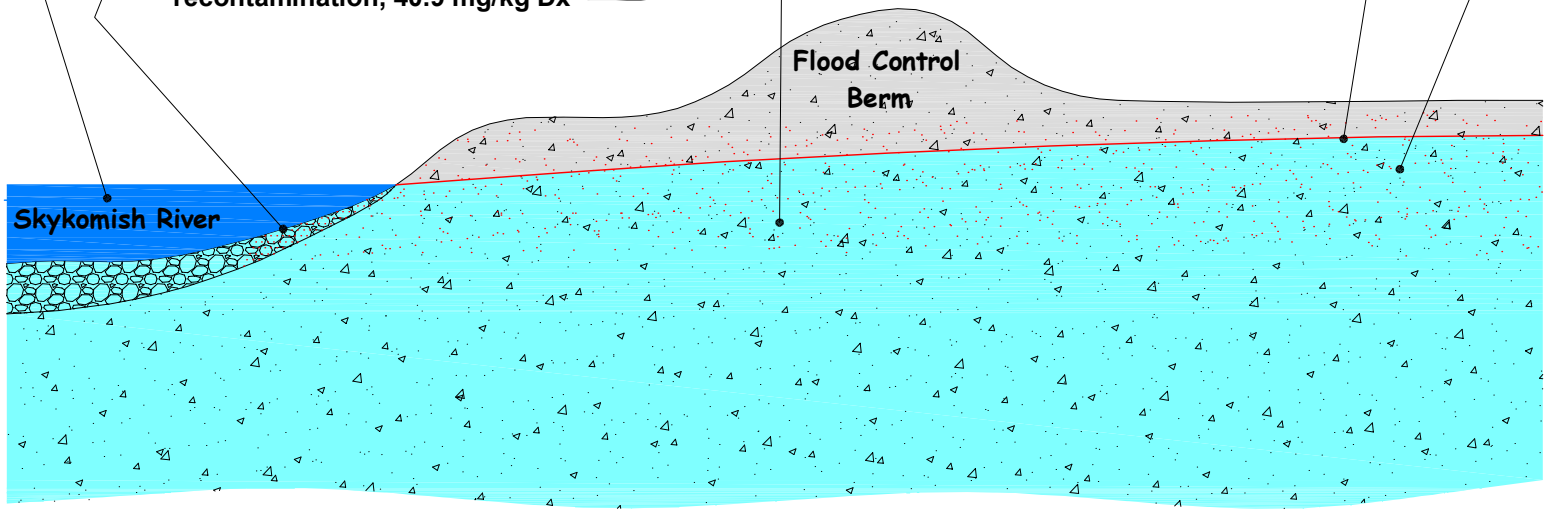
SOIL
- Terrestrial Ecological Evaluation (wildlife), 6000 mg/kg Dx
- Vapors, vadose zone samples, 2906 mg/kg V/E
- Direct contact, smear zone, 2765 mg/kg V/E, 3400 mg/kg Dx
- Direct contact, vadose zone, 2130 mg/kg V/E
- Residual saturation, 2000 mg/kg Dx
- Terrestrial Ecological Evaluation (biota), 1870 mg/kg Dx
- Protect ground water at 700 ug/L, 175 mg/kg V/E
- Protect ground water at 477 ug/L, 77 mg/kg V/E
- **Protect GW, 22 mg/kg V/E**

SURFACE WATER
- Drinking water, SW Method B, 477 ug/L V/E
- Human health (eating fish), BAF, GW Method A, 500 ug/L Dx
- Protect aquatic life, WET test, 700 ug/L Dx
- **Protect sediment, 208 ug/L Dx**

GROUND WATER
- Drinking water, GW Method B, 477 ug/L V/E
- Protect surface water, 700 ug/L Dx
- **Protect sediment quality, 208 ug/L V/E**

SEDIMENT
- **Protect bottom dwelling life, SQS, bioassay for cleanup, for recontamination, 40.9 mg/kg Dx**

FLOATING PRODUCT



Notes: SW = Surface Water, GW = Ground Water, BAF = Bioaccumulation Factor, WET = Whole Effluent Toxicity, SQS = Sediment Quality Standards, Dx = NWTPH-Dx method, V/E = VPH/EPH method

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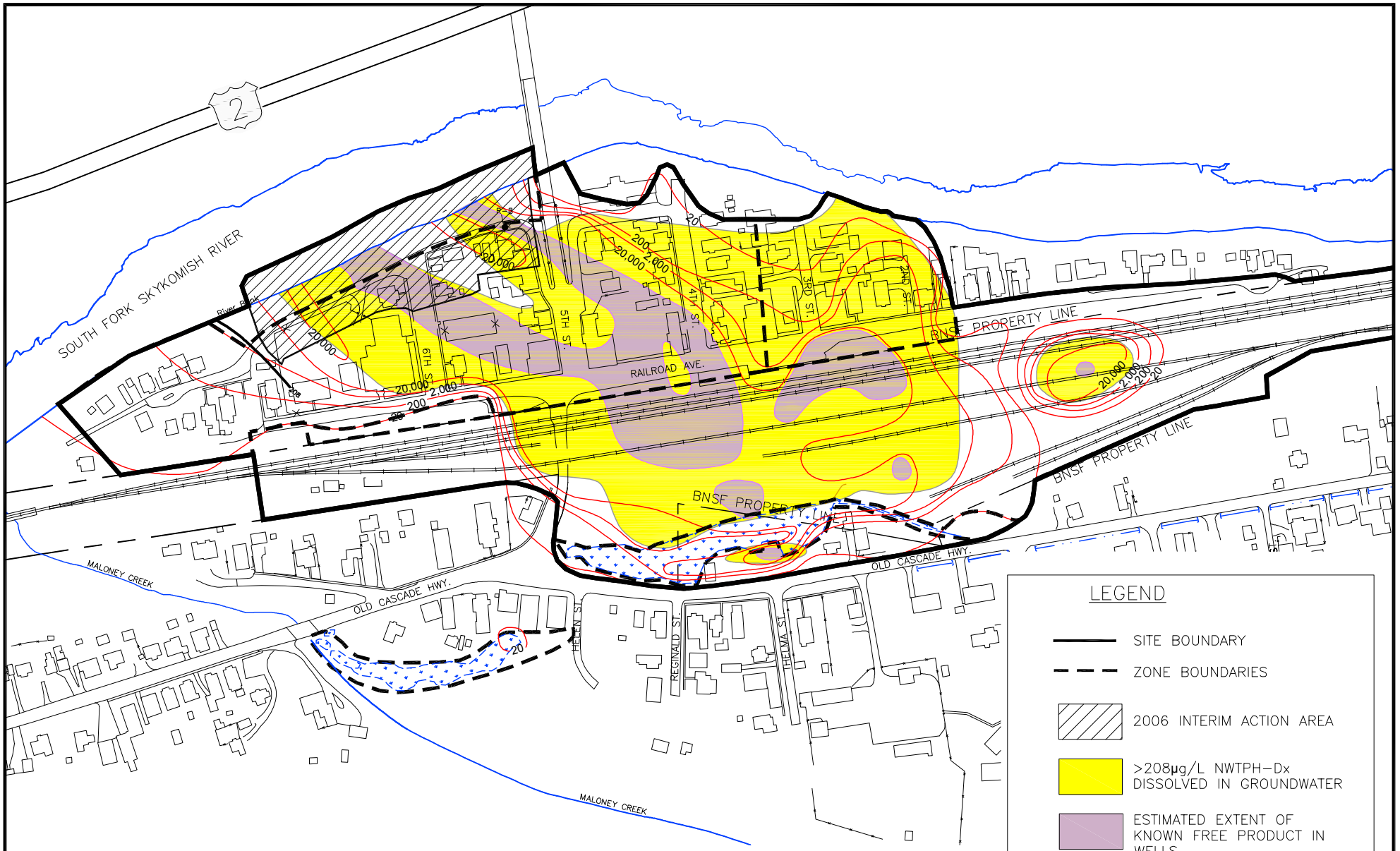
BNSF RAILWAY SITE SKYKOMISH, WA			**CONCEPTUAL SITE DIAGRAM WITH PETROLEUM CLEANUP LEVELS**
DATE: 6/4/07	DRWN:		**FIGURE 3**

File: H:\16423\ECOLOGY\6-4-07\FIG_4-PETROLEUM_DIST.dwg Layout: FIG 4 User: emarshall Plotted: Jun 05, 2007 - 11:38am Xref's:



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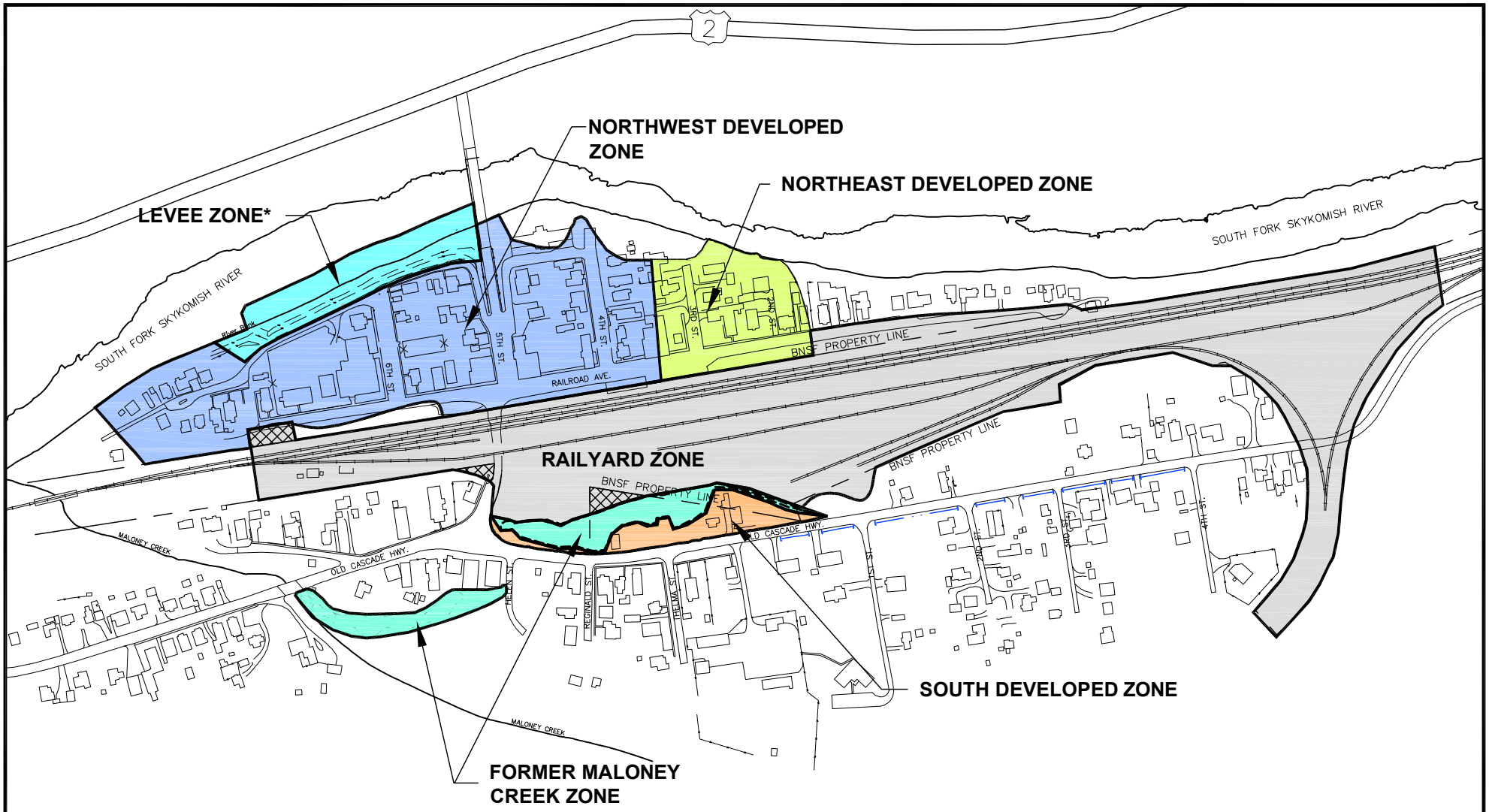
BNSF RAILWAY SITE
SKYKOMISH, WA

SITE PETROLEUM DISTRIBUTION

DATE: 6/5/07 | DRWN:

FIGURE 4

File: H:\16423\ECOLOGY\6-4-07\FIG_5-SITE_ZONES.dwg Layout: FIG 5 User: emarshall Plotted: Jun 05, 2007 - 9:36am Xref's:



SOUTH FORK SKYKOMISH RIVER

MALONEY CREEK

GWCPOC, 208 ug/L

EXC 22

GW RL = 477 ug/L

EXC 3400

Treatment

EDEMO

M

AS

XFP

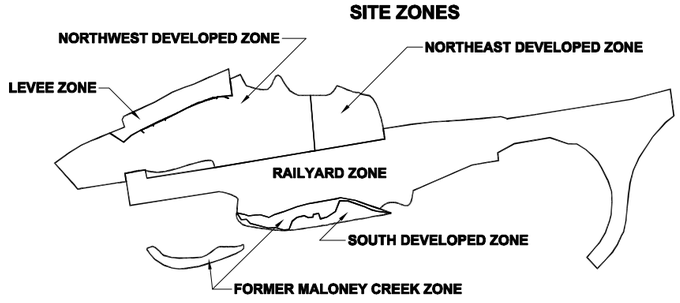
HCC

2' Dig

GWCPOC, 208 ug/L
EXC 22
EXC 3400
GW RL = 477 ug/L

GWCPOC, 208	Groundwater Conditional Point of Compliance, 208 µg/L, to be met in Levee and FMC Zones
HCC	Hydraulic Control and Containment System
XFP	Excavate Free Product
EXC 3400	Excavate soil with petroleum exceeding 3,400 mg/kg
EXC 22	Excavate soil with petroleum exceeding 22 mg/kg
AS	Air Sparge soil with petroleum between 3,400 mg/kg & free product; air sparge groundwater
EDEMO	Empirical Demonstration that leaving soil in place with petroleum between 22 and 3,400 mg/kg is protective of groundwater
M	Excavate surface metals contamination
2' DIG	Excavate petroleum-contaminated soil within 2 feet of the surface where petroleum exceeds 1,870 mg/kg
	Treatment under the school
	Excavate selected areas of contaminated soil on the Railyard

SITE ZONES



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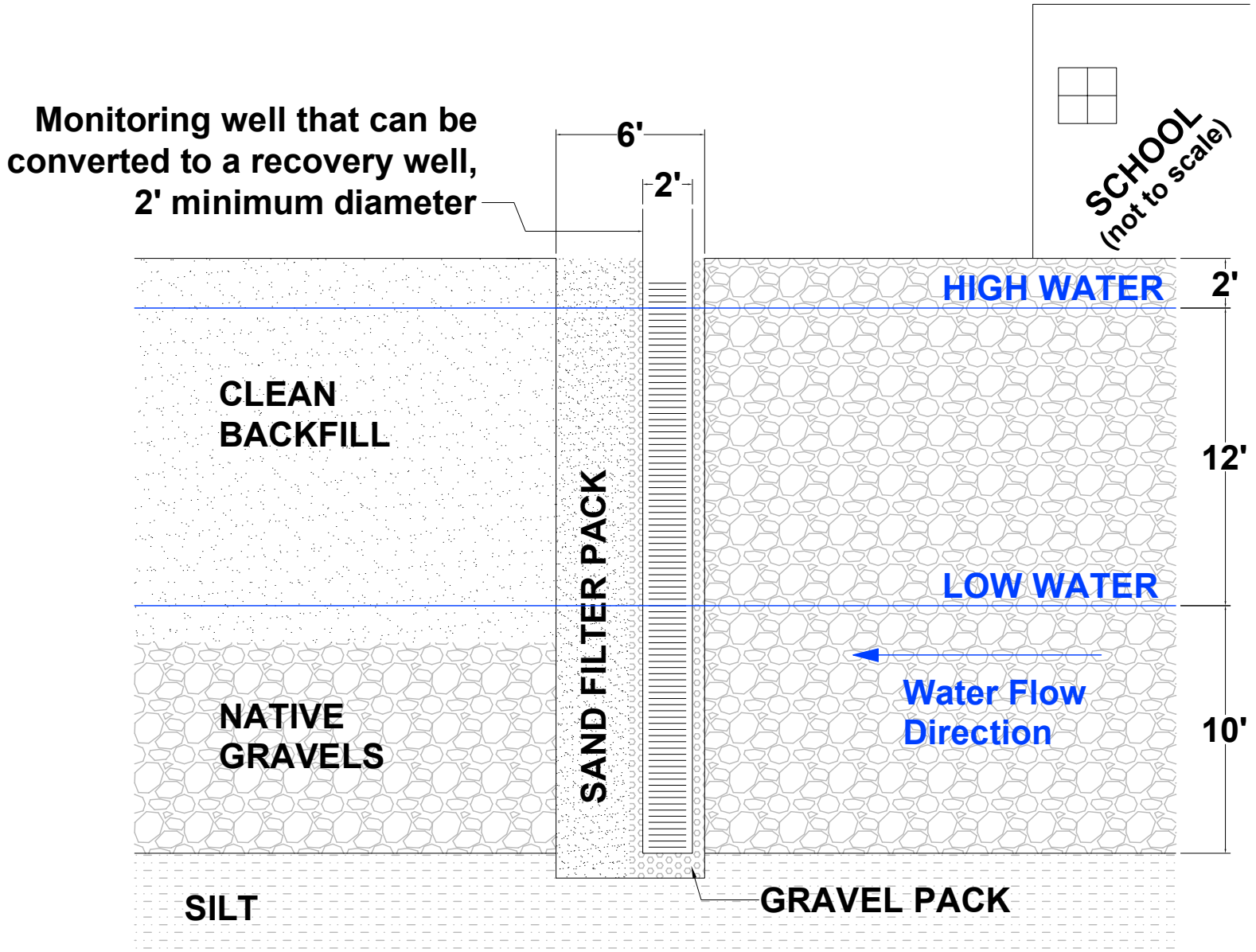
N

100 0 200

1"=200'

Note: Groundwater remediation level of 477 µg/L expected to be met in the SDZ and inside the GWCPOC in the NWDZ and NEDZ (see text for discussion)

BNSF RAILWAY SITE SKYKOMISH, WA			SUMMARY MAP OF CLEANUP ACTIONS
DATE: 6/5/07	DRWN:		FIGURE 6



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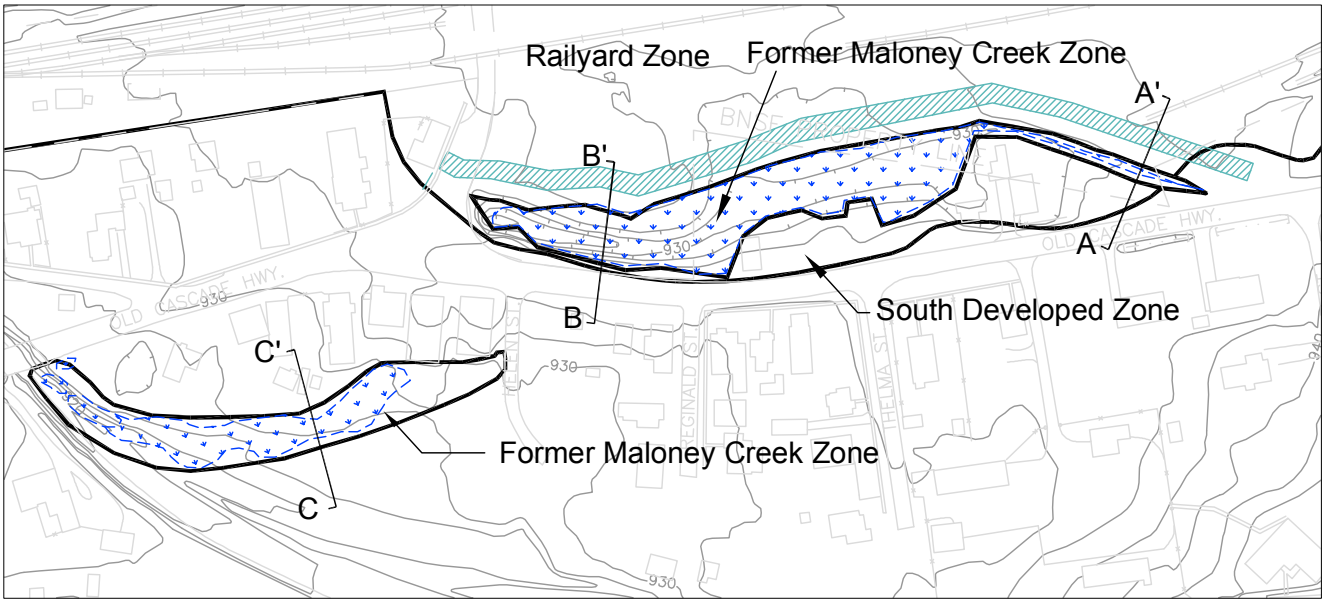
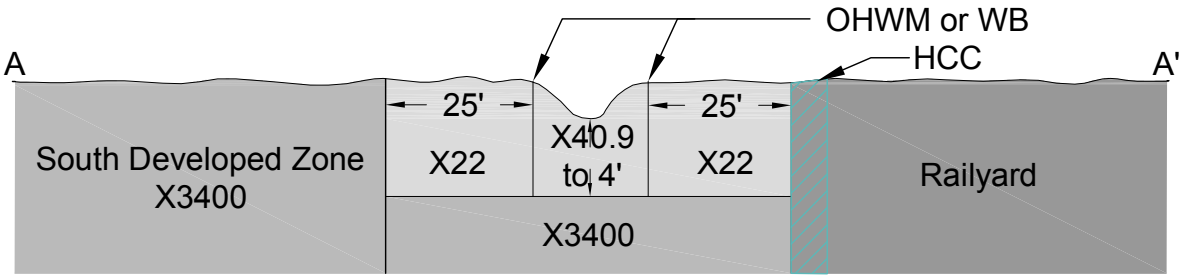
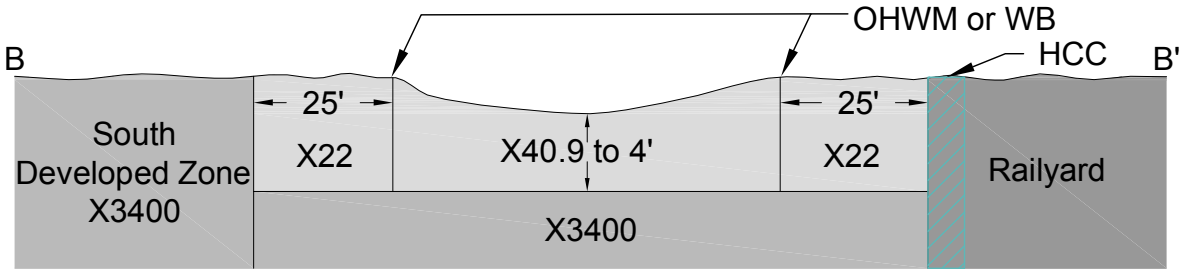
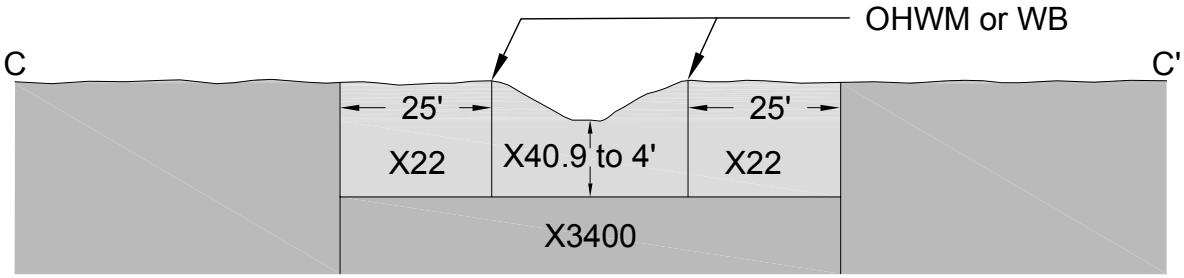
BNSF RAILWAY SITE SKYKOMISH, WA		CONCEPTUAL DIAGRAM OF PETROLEUM MONITORING AND RECOVERY TRENCH DOWNGRADIENT FROM SCHOOL TREATMENT AREA
DATE: 6/5/07	DRWN:	FIGURE 7

Cleanup requirements overlap into adjacent zones









X3400 = Excavate to 3,400 mg/kg NWTPH-Dx
X22 = Excavate to 22 mg/kg NWTPH-Dx
X40.9 = Excavate to 40.9 mg/kg NWTPH-Dx
OHWM or WB = Ordinary High Water Mark or Wetland Boundary
HCC = Hydraulic Control and Containment System

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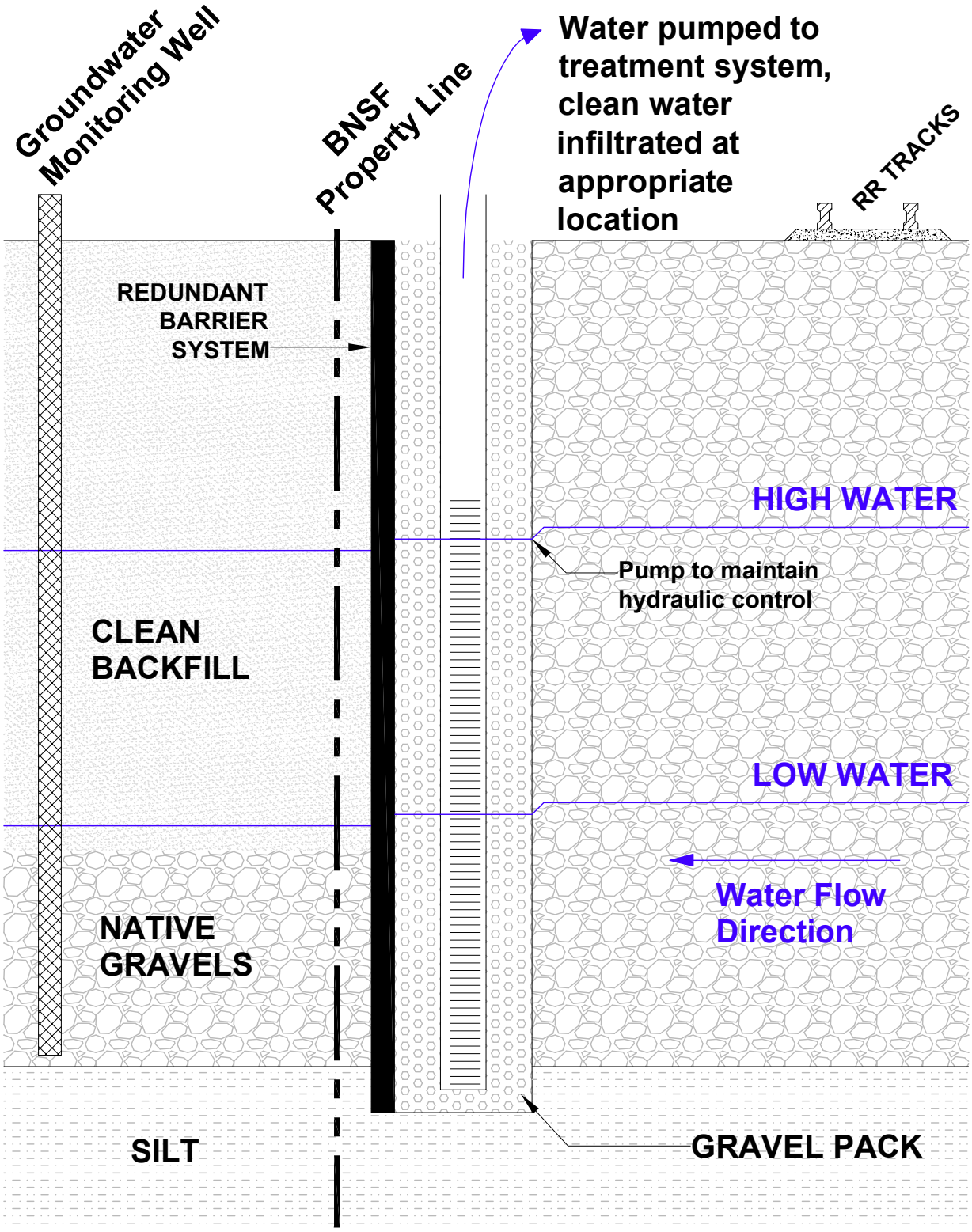
BNSF RAILWAY SITE SKYKOMISH, WA	**FORMER MALONEY CREEK CLEANUP REQUIREMENTS**
DATE: 6/5/07 DRWN:	**FIGURE 8**



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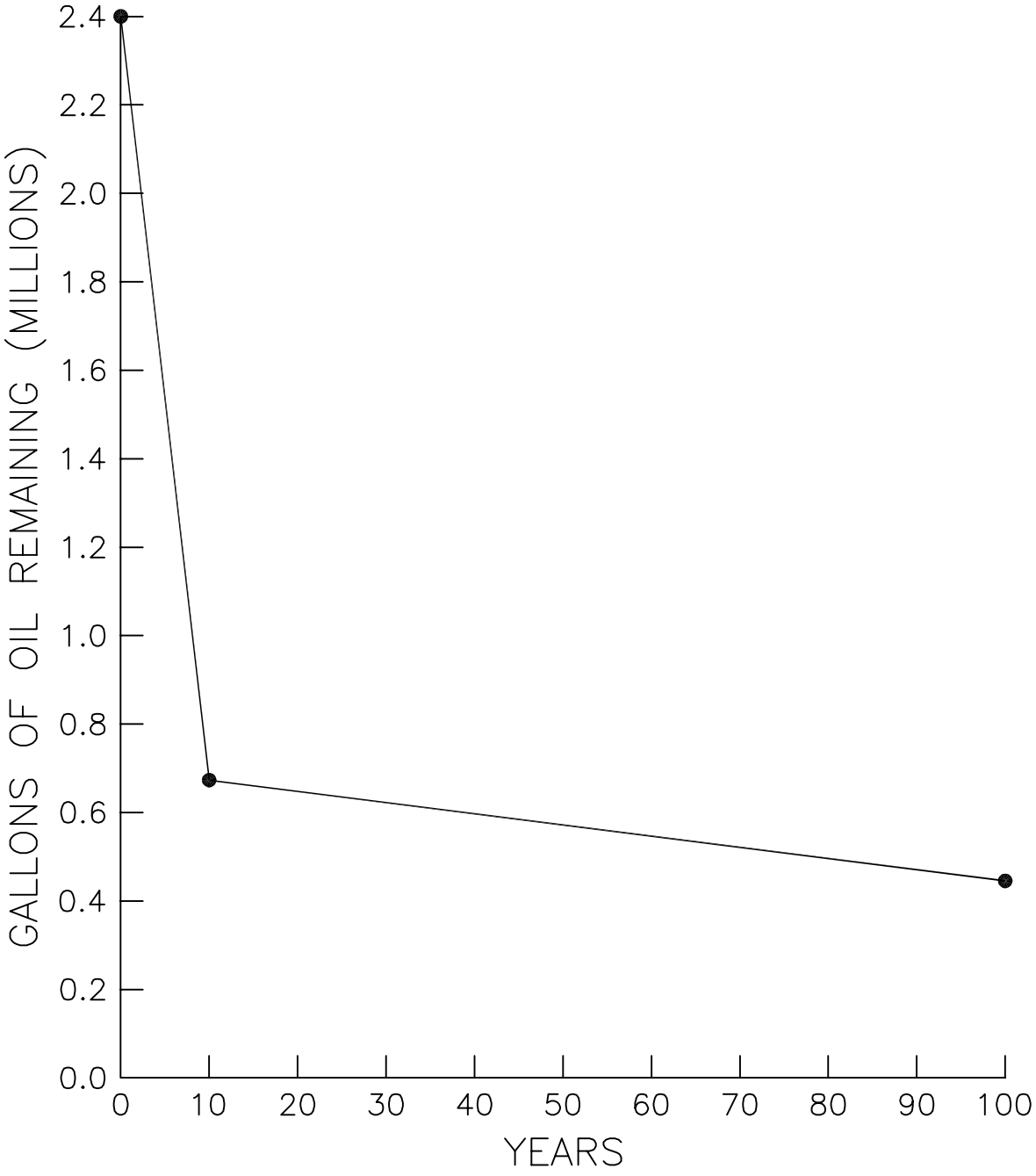
BNSF RAILWAY SITE SKYKOMISH, WA		CONCEPTUAL HYDRAULIC CONTROL AND CONTAINMENT SYSTEM - GROUNDWATER BARRIER TRENCH DESIGN
DATE: 6/5/07	DRWN:	FIGURE 9



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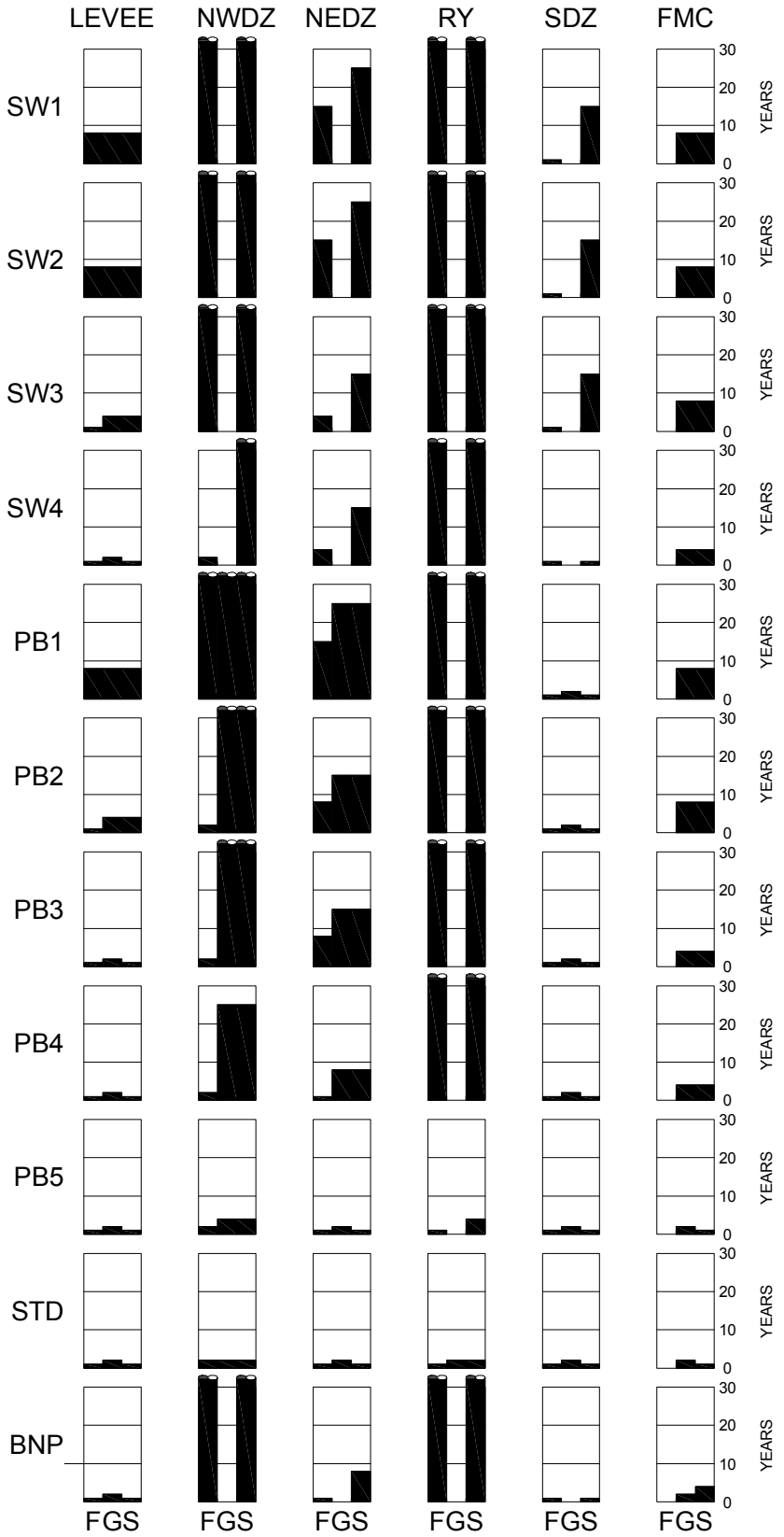
BNSF RAILWAY SITE SKYKOMISH, WA			**AMOUNT OF PETROLEUM REMAINING ON-SITE (ALL ZONES) OVER TIME**
DATE: 6/5/07	DRWN:		**FIGURE 10**



F = Free Product; G = Ground water; S = Soil

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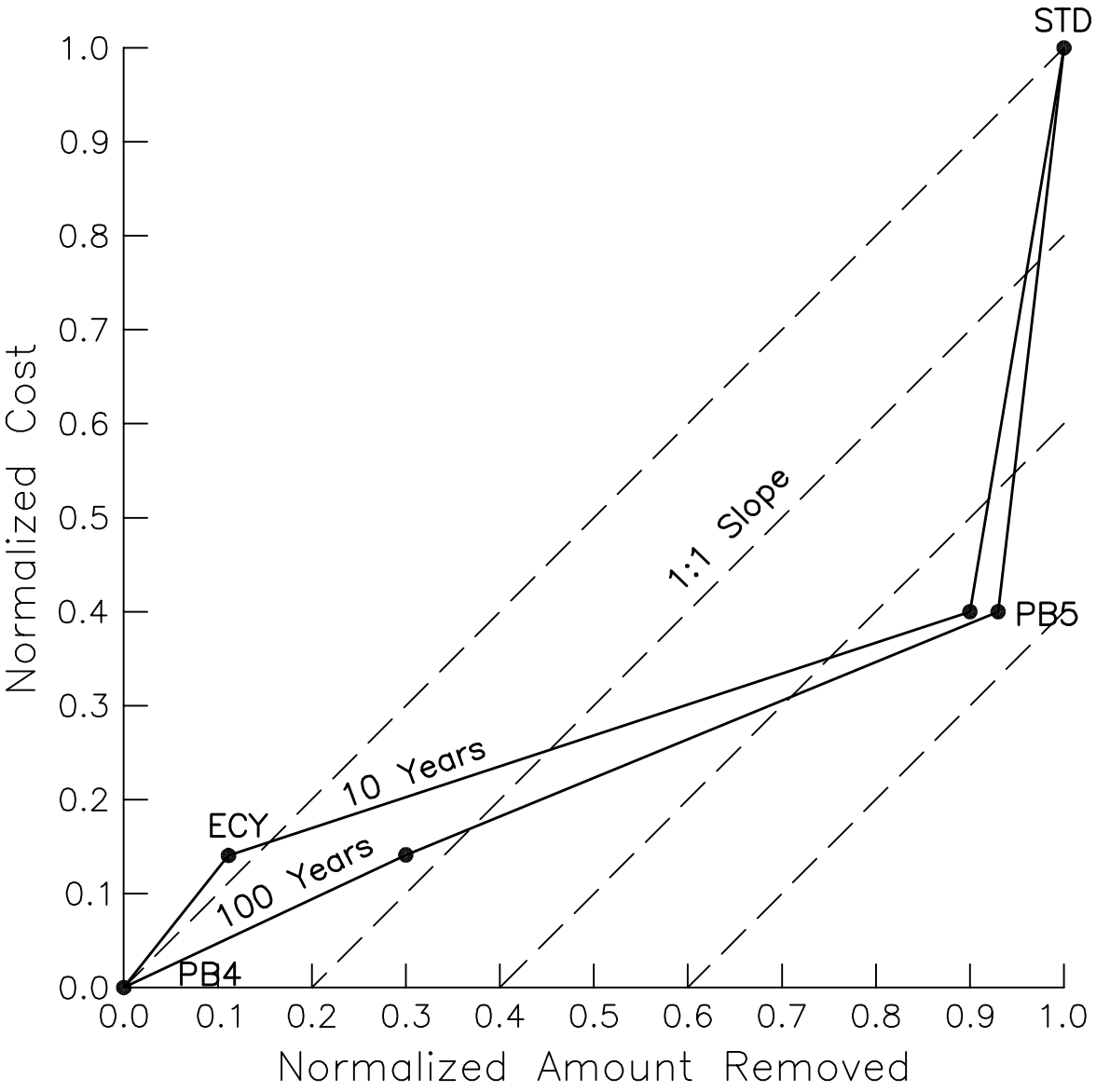
BNSF RAILWAY SITE SKYKOMISH, WA		**FEASIBILITY STUDY** **ALTERNATIVE RESTORATION** **TIME FRAME**
DATE: 6/5/07	DRWN:	**FIGURE 11**



Note: PB4 does not meet minimum regulatory requirements and cannot be selected. It is included for comparison purposes only. The cost increase of ECY relative to PB4 is for the cleanup actions which must be added to those in PB4 to develop an alternative which meets the minimum regulatory requirements. See text for further discussion.

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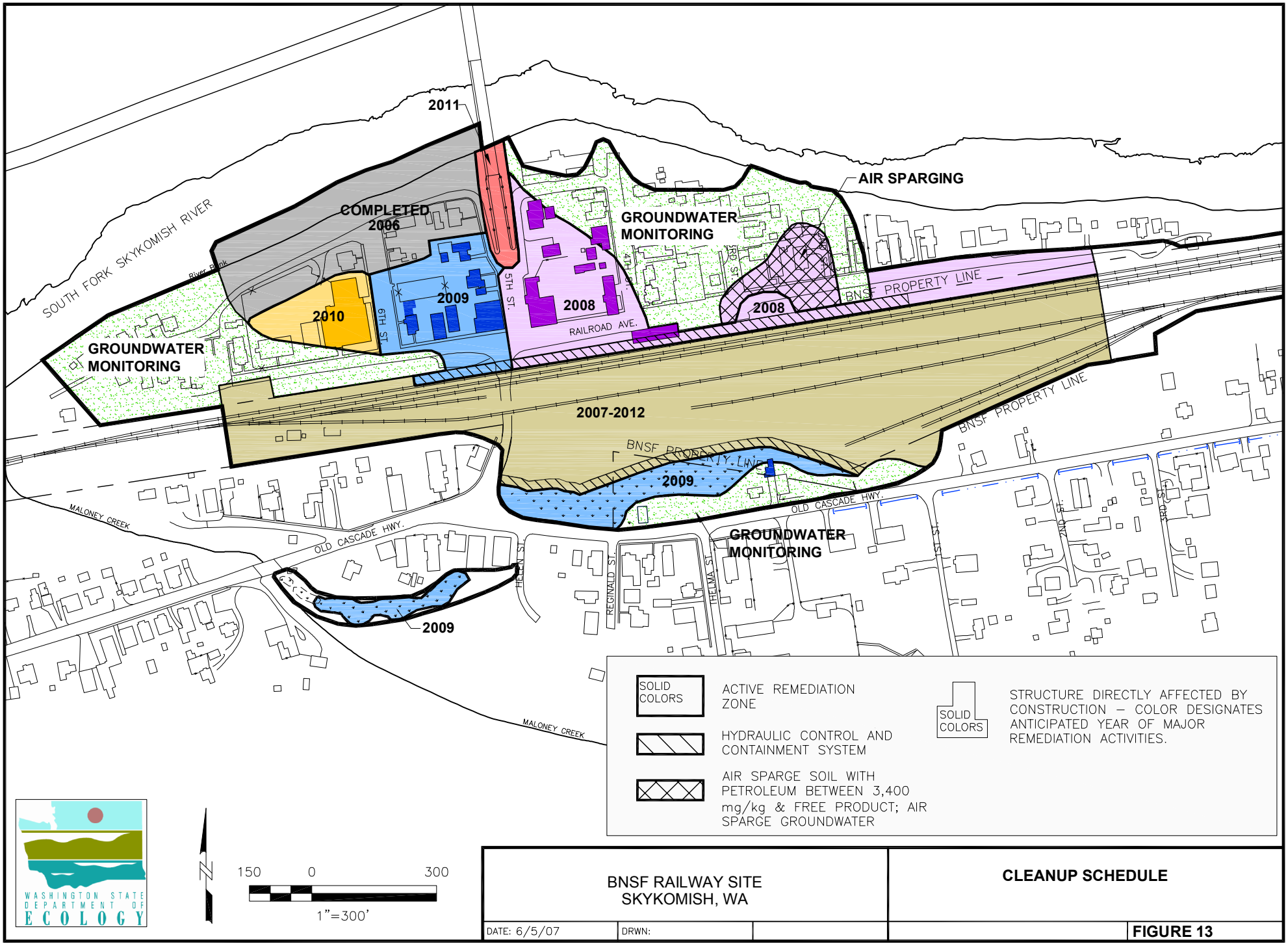
BNSF RAILWAY SITE SKYKOMISH, WA		EVALUATION OF PROTECTIVENESS (10 YEARS) AND PERMANENCE (100 YEARS) FOR ALTERNATIVES ECY, PB5, AND STD
DATE: 6/5/07	DRWN:	FIGURE 12

File: H:\16423\ECOLOGY\6-4-07\FIG_13-SCHEDULE.dwg Layout: FIG 13 User: emarshall Plotted: Jun 05, 2007 - 11:19am Xref's:



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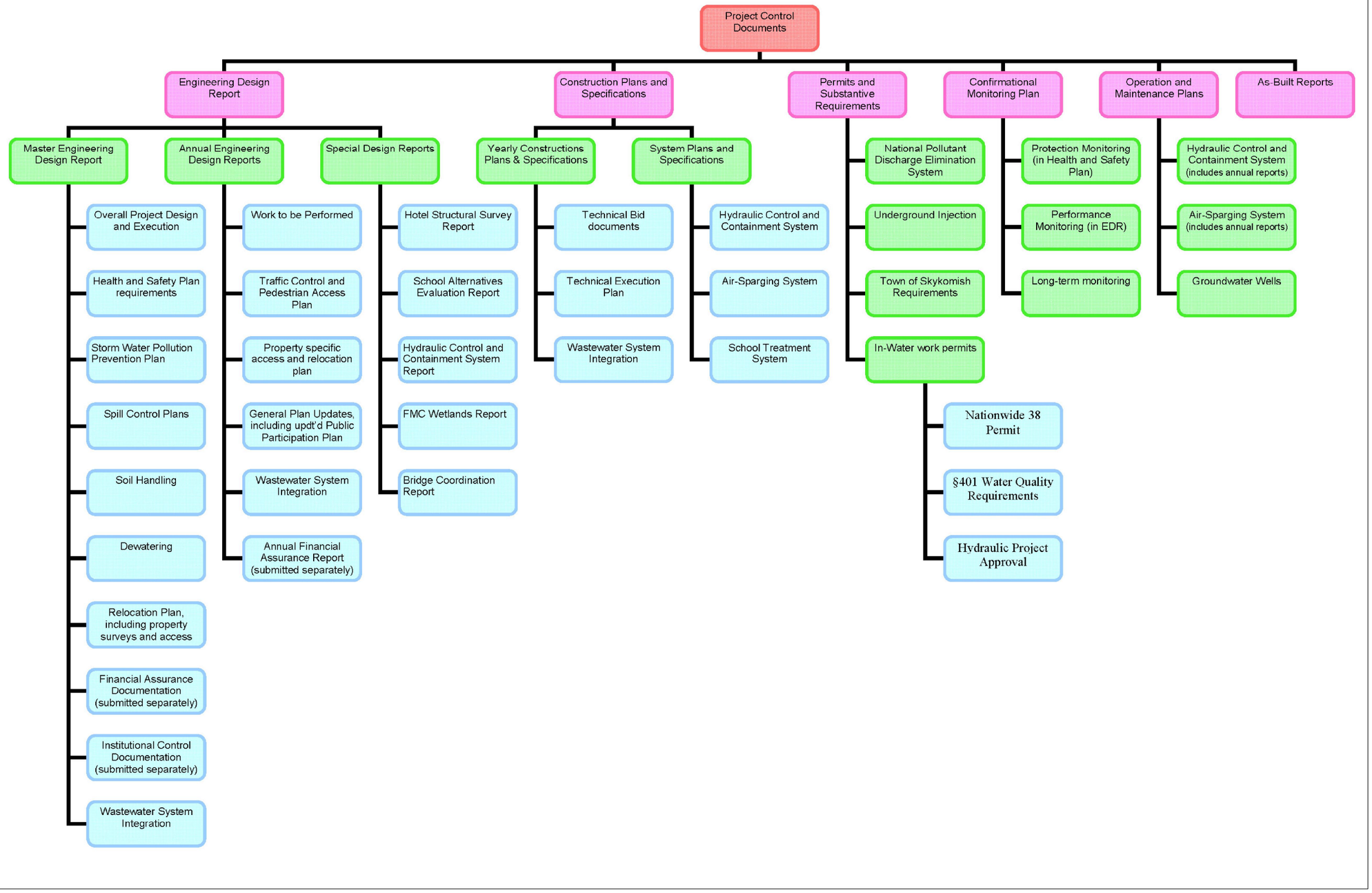
BNSF RAILWAY SITE
SKYKOMISH, WA

CLEANUP SCHEDULE

DATE: 6/5/07 | DRWN:

FIGURE 13



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BNSF RAILWAY SITE SKYKOMISH, WA			PROJECT CONTROL DOCUMENTS	
DATE: 6/5/07	DRWN:			FIGURE 14

EXHIBIT C

[LIST AND SCHEDULE OF DELIVERABLES]

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EXHIBIT C

LIST AND SCHEDULE OF DELIVERABLES

CMP – Compliance Monitoring Plan; CPS – Construction Plans and Specifications;
EDR – Engineering Design Report; O&M – Operations and Maintenance; PPP – Public Participation Plan

Date	Deliverable
2007	
September 15, 2007	Draft Hydraulic Control and Containment System Special Design Report Work Plan
September 30, 2007	Hotel Structural Survey Report
September 30, 2007	Draft School Alternatives Evaluation Work Plan
October 5, 2007 or 14 days after receipt of Ecology's comments	Final Hydraulic Control and Containment System Special Design Report Work Plan
October 22, 2007	Draft Master and Annual EDR for Work Year 2008 (Annual EDR will be the 30% design)
Within 60 days of effective date of consent decree	Financial Assurance Documentation per §XXII(1)
December 5, 2007	Draft Hydraulic Control and Containment System Special Design Report
November 30, 2007	Final School Alternatives Evaluation Work Plan
November 2007	Public Scoping Meeting for 2008 work.
December 31, 2007	Documentation that access agreements necessary for Work Year 2008 have been obtained
2008	
January 2008	Annual schedule review and update
January 15, 2008 or 21 days after receipt of Ecology comments	Final Hydraulic Control and Containment System Special Design Report
January 31, 2008	Draft School Technology Review and Comparative Physical Testing Study Work Plan
Feb. 4, 2008 or 45 days after receipt of Ecology's final comments on Draft EDR	Final Master and Annual EDR, Draft CPS, Draft CMP, and updated PPP for Work Year 2008

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Date	Deliverable
March 15, 2008 or 21 days after receipt of Ecology's final comments on Draft CPS, CMP and PPP	Final CPS, CMP and PPP for Year 2008
March 31, 2008 or 30 days after receipt of Ecology's final comments	Final School Technology Review and Comparative Physical Testing Study Work Plan
March 31, 2008	Institutional Control Documentation
March 31, 2008	Draft As-Built Report for 2007 Work
March 31, 2008	Draft FMC Wetlands Special Design Report
June 30, 2008	Final FMC Wetlands Special Design Report
Within 30 days of anniversary date of consent decree	Annual Financial Assurance Report, per §XXII.B(1)
October 6, 2008	Draft Annual EDR for Work Year 2009 (EDR will be 30% design)
October 2008	Public Scoping Meeting for Work Year 2009.
December 31, 2008	Documentation access agreements necessary for Work Year 2009 have been obtained
December 31, 2008	O&M Plans for systems installed in 2008
2009	
January 2009	Annual schedule review and update
January 2, 2009	Draft Annual Hydraulic Control and Containment System Report
January 2, 2009	Draft Annual Air-Sparging System Report
Feb. 2, 2009 or 20 days after receipt of Ecology's final comments	Final Annual EDR, Draft CPS, updated CMP, and updated PPP for Work Year 2009
March 15, 2009	Final CPS, CMP and PPP for Work Year 2009
March 31, 2009 or 20 days after receipt of Ecology's final comments	Final Hydraulic Control and Containment System Report
March 31, 2009 or 20 days after receipt of Ecology's final comments	Final Air-Sparging System Report
March 31, 2009	Draft As-Built Report for 2008 work

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Date	Deliverable
Within 30 days of anniversary date of consent decree	Annual Financial Assurance Report, per §XXII.B(1)
April 1, 2009	Draft School Comparative Physical Testing Study Report
May 1, 2009	Final School Comparative Physical Testing Study Report
June 1, 2009	Draft School Alternatives Evaluation Report
June 30, 2009 or 30 days after receipt of Ecology's final comments	Final As-Built Report for 2008 work
July 1, 2009	Final School Alternatives Evaluation Report
October 5, 2009	Draft Annual EDR for Work Year 2010 (EDR will be 30% design)
October 2009	Public Scoping Meeting for 2010 Work
December 31, 2009	Documentation access agreements necessary for Work Year 2010 have been obtained
December 31, 2009	O&M Plans for systems installed in 2009
2010	
January 2010	Annual schedule review and update
January 2, 2010	Draft Annual Hydraulic Control and Containment System Report
January 2, 2010	Draft Annual Air-Sparging System Report
Feb. 1, 2010 or 20 days after receipt of Ecology's final comments	Final Annual EDR, Draft CPS, updated CMP and updated PPP for Work Year 2010
March 31, 2010 or 20 days after receipt of Ecology's final comments	Final Annual Hydraulic Control and Containment System Report
March 31, 2010 or 20 days after receipt of Ecology's final comments	Final Annual Air-Sparging System Report
March 31, 2010	Draft As-Built Report for 2009 work
March 31, 2010	Draft Bridge Coordination Report
March 31, 2010	Final CPS, CMP and PPP for Year 2010
June 30, 2010	Final Bridge Coordination Report
Within 30 days of anniversary date of consent decree	Annual Financial Assurance Report, per §XXII.B(1)

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Date	Deliverable
June 30, 2010 or 30 days after receipt of Ecology's final comments	Final As-Built Report for 2009 Work
October 4, 2010	Draft Annual EDR for Work Year 2011 (EDR will be 30% design)
October 2010	Public Scoping Meeting for 2011 Work
December 31, 2010	Documentation access agreements necessary for Work Year 2010 have been obtained
December 31, 2010	O&M Plans for systems installed in 2010
2011	
January 2011	Annual schedule review and update
January 2, 2011	Draft Annual Hydraulic Control and Containment System Report
January 2, 2011	Draft Annual Air-Sparging System Report
January 31, 2011 or 20 days after receipt of Ecology's final comments	Final EDR, Draft CPS, updated CMP, and updated PPP for Work Year 2011
March 30, 2011 or 20 days after receipt of Ecology's final comments	Final Annual Hydraulic Control and Containment System Report
March 30, 2011 or 20 days after receipt of Ecology's final comments	Final Annual Air-Sparging System Report
March 30, 2011	Draft As-Built Report for 2010 work
March 31, 2011	Final CPS, CMP and PPP for Work Year 2011
Within 30 days of anniversary date of consent decree	Annual Financial Assurance Report, per §XXII.B(1)
June 30, 2011 or 30 days after receipt of Ecology's final comments	Final As-Built Report for 2010 Work
October 2011	Public construction completion meeting
December 31, 2011	O&M Plans for systems installed in 2011
December 31, 2011	Draft Long-Term Confirmational Monitoring Plan
2012 and following	
January 2012	Annual schedule review and update

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Date	Deliverable
March 30, 2012 or 20 days after receipt of Ecology's final comments	Final Long-Term Confirmational Monitoring Plan
March 30, 2012	Draft As-Built Report for 2011 work
June 30, 2012 or 30 days after receipt of Ecology's final comments	Final As-Built Report for 2011 work
Annually, by January 2	Draft Annual Hydraulic Control and Containment System Report
Annually, by January 2	Draft Annual Air-Sparging System Report
Annually, by March 30 or 20 days after receipt of Ecology's final comments	Final Annual Hydraulic Control and Containment System Report
Annually, by March 30 or 20 days after receipt of Ecology's final comments	Final Annual Air-Sparging System Report
Annually, Within 30 days of anniversary date of consent decree	Annual Financial Assurance Report, per §XXII.B(1)
At least every 5 years beginning March 2013	Draft Periodic Review Report
60 Days after receipt of Ecology Comments	Final Periodic Review Report
Within 20 years of effective date of consent decree	Excavation of all soil required to be excavated from BNSF's railyard facility property completed.

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EXHIBIT D

Cleanup actions at the Site require the following permits:

- Permit for discharge of pollutants pursuant to Section 402 of the Clean Water Act, 33 U.S.C. § 1342. Ecology has issued National Pollutant Discharge Elimination System Waste Discharge Permit No. WA-003212-3 on May 4, 2006 for the discharge of industrial storm water and de-watering water resulting from BNSF cleanup activities in Skykomish.

- Permit for the discharge of dredged, excavated or fill material to waters of United States pursuant to Section 404 of the Clean Water Act, 33 U.S.C. § 1344 (which may be incorporated in a U.S. Army Corps of Engineers (USCOE) Nationwide 38 permit).

- Water Quality Certification from the State of Washington pursuant to Section 401 of the Clean Water Act, 33 U.S.C. § 1341(which may be incorporated in a USCOE Nationwide 38 permit).

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EXHIBIT E

The applicable substantive requirements of the following exempt permits or approvals (as identified at the time of entry of this Decree) will be more particularly identified as necessary during each phase of the cleanup action.

- King County Board of Health Permit for a Temporary Septic Drainfield (K.C.B.O.H. Title 13)
- Hydraulic Project Approval (RCW 77.55.021)
- State Water Quality Protection Requirements, including requirements for an Underground Injection Permit (Chapter 173-218 WAC) and Discharge of Industrial Wastewater to Groundwater (Chapter 173-216 WAC)
- Stormwater construction requirements
- Town of Skykomish Requirements, as follows and/or as may be later identified:

Town municipal codes and permit requirements that apply to the remedial actions performed by Burlington Northern Santa Fe during the cleanup process are listed below. Included are a sampling of appropriate excerpts from the code and descriptions of requirements.

Chapter 8.05 Noise Regulations
8.05.020 The town of Skykomish hereby adopts the most current King County Noise Ordinance, KCC Title 12, Chapters 12.86 through 12.99 KCC by reference, a copy of which will be kept on file at Skykomish Town Hall.

8.05.030(3) The following sounds may, depending upon location, be public disturbance noises in violation of this chapter:
(h) Sounds originating from construction sites, including but not limited to sounds from construction equipment, power tools and hammering between the hours of 9:00 p.m. and 7:00 a.m. on weekdays and 9:00 p.m. and 9:00 a.m. on weekends;

(i) Sounds originating from residential property relating to temporary projects for the maintenance or repair of homes, grounds and appurtenances, including but not limited to sounds from lawnmowers, power hand tools, snow removal equipment and composters between the hours of 9:00 p.m. and 7:00 a.m. on weekdays and 9:00 p.m. and 9:00 a.m. on weekends.

(4) Exclusion. This chapter shall not apply to the following:
(b) Construction or maintenance activities in the town's right-of-way that have been approved by the mayor or mayor's designee to minimize the impact on adjacent property owners

8.05.050 Variance.
The mayor or mayor’s designee, may, upon written application filed with the town clerk, grant a variance from the provisions of this chapter and authorize the issuance of a special permit for

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an activity when it finds that such a variance is in the public interest, or when it finds the activity will have substantial public participation.

Chapter 12.10 Protection and Preservation of Public Rights-of-Way

12.10.030(2) The town council of Skykomish hereby adopts the most current road standards of King County published by King County department of public works.

12.10.040 Applicability.

(2)(b) Any land development abutting and impacting existing roads shall improve the frontage of those roads in accordance with these standards. The extent of improvements shall be based on an assessment of the impacts of the proposed land development.

(2)(e) Any major disruption of the current road surfaces and right-of-way facilities shall be repaired to the current King County road standards. (Ord. 332 § 4, 2003)

12.10.050 Application, permit and fees.

(1) Any construction, repair, installation or use within, upon, above or below any public rights-of-way within the town of Skykomish shall be covered by a street use agreement issued by the town of Skykomish. This agreement is valid for 60 days from date of issue, unless otherwise specified.

(4) All fees shall be paid in advance of the commencement of work. For a fee schedule see the latest town of Skykomish resolution relating to such fees. (Ord. 332 § 5, 2003)

15.05 Codes adopted.

The following codes are adopted by reference:

(1) The International Building Code, 2003 Edition, published by the International Code Council, and as amended as set forth in Chapter 51-50 WAC, and adopted by the State Building Code Council;

(2) The International Residential Code, 2003 Edition, published by the International Code Council, and as amended as set forth in Chapter 51-51 WAC, and adopted by the State Building Code Council;

(3) The 2003 Edition of the Uniform Plumbing Code, as published by the International Association of Plumbing and Mechanical Officials, as amended and adopted by the State Building Code Council;

(4) The International Mechanical Code, 2003 Edition, published by the International Code Council, and as amended as set forth in Chapter 51-52 WAC, and adopted by the State Building Code Council, except that the standards for handling liquefied petroleum gas installations shall be NFPA 58, "Storage and Handling of Liquefied Petroleum Gases" and ANSI Z223.I/NFPA 54, "National Fuel Gas Code," and excluding Chapter 1, "Administration";

(5) The International Fire Code, 2003 Edition, published by the International Code Council, and as amended as set forth in Chapter 51-54 WAC, and adopted by the State Building Code Council;

(6) The 1997 Edition of the Uniform Code for the Abatement of Dangerous Buildings, as published by the International Conference of Building Officials;

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(7) The 2003 Washington State Energy Code, as amended as set forth in Chapter 51-11 WAC, and adopted by the State Building Code Council;

(8) The 2003 Washington State Ventilation and Indoor Air Quality Code, as amended as set forth in Chapter 51-13 WAC, and as adopted by the State Building Code Council;

(9) The 1997 Edition of the Uniform Administrative Code, as published by the International Conference of Building Officials;

(10) The 2003 International Fuel Gas Code as published by the International Code Council;

(11) The 1997 Uniform Building Code, Table I-A only, as published by the International Conference of Building Officials.

Chapter 15.10 Regulation of Mobile Homes, Trailers, and Motor Homes
15.10.040 Permit required.
All mobile homes must obtain a permit before being placed on property within the town.

15.10.050 Compliance.
All owners of said mobile homes shall comply with the town code regarding septic tanks, electrical and other building or fire codes. No cesspools or dry wells will be permitted. (Ord. 128 § 5, 1977)

15.10.060 Water and garbage accounts.
There shall be a water shutoff provided for each mobile home and the occupants must pay residential rates for water and garbage, and further, that the property and owner shall be responsible for all water and garbage accounts. (Ord. 128 § 6, 1977)

Chapter 15.15 Landmarks Protection and Perpetuation
15.15.020 Design review board.
(1) There is created a town of Skykomish design review board which shall advise town council and operate within the framework of the design guidelines for Skykomish, Washington, Chapter 18.90 SMC

Chapter 18.90 Design Guidelines
18.90.010 Preface.
(3) A formal design review is mandatory for all exterior projects in the historic commercial district, and for all projects affecting landmark properties. For properties in residential use, compliance with the findings of the design review board is voluntary on the part of the applicant. For properties in commercial or public use, and for all landmarks compliance is required.

Clearing and Grading Permits
Clearing and Grading Permits are required for vegetation clearing and earthwork activities including, but not limited to: contouring, excavation, filling, or creation of impervious surfaces that are proposed apart from similar activities included in building permits. (chapter 15.20)

Conditional Use Permits
The Skykomish zoning ordinance identifies allowed *Conditional Uses* in each zoning district if such uses do not introduce incompatible, detrimental, or hazardous conditions at their proposed locations. Conditional Uses are deemed unique due to factors such as size, technological

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processes, equipment, or location with respect to surroundings, streets, existing improvements, or demands on public facilities.

Conditional Uses will be subject to review by the Town resulting in approval of *Conditional Use Permits.* Conditional Use Permit requirements are described in Chapter 18.70 of the Skykomish Municipal Code.

Critical Area Reasonable Use Exceptions
Reasonable Use Exceptions may be granted in cases where strict application of the critical area regulations would deprive a property of privileges enjoyed by other properties with similar characteristics because of special features or constraints unique to the property involved. They are intended only to relieve hardship in special cases and not to avoid compliance with the intent of the regulations. A reasonable use exception may relax the applicable critical regulation requirements with respect to the use of the property. Exceptions address the physical aspects of site improvements and are not intended to circumvent restrictions on land use. Reasonable use exceptions are described in Chapter 16.15 of the Skykomish Municipal Code.

Flood Damage Prevention Permits
Flood Damage Prevention Permits may be granted in cases where development is proposed on property within a flood hazard area as identified in Chapter 16.10 of the Skykomish Municipal Code. These permits may be consolidated with building permits or clearing and grading permits, depending upon the type of development proposed.

Shoreline Conditional Use Permits
Shoreline Conditional Use Permits are required for projects which propose uses that are designated by the SMP as <u>*Conditional*</u> for the Shoreline Environment in which they are proposed. Conditional uses are those which, due to their nature and potential impacts, could not be allowed outright but may be found to be appropriate on a case by case basis. **Only uses designated as conditional uses for a given Shoreline Environment may be so permitted.**

Shorelines within the Town of Skykomish are designated as either Suburban Environment or Rural Environment. The boundaries of these Environments are described and mapped in Chapter 7 of the SMP.

The SMP designates the following as **permitted uses**:

<u>Suburban Environment</u>	<u>Rural Environment</u>
Agriculture	Agriculture
Water Dependent Recreation	Water Dependent Recreation
Water Related Recreation	Single Family Residential
Single Family Residential	Utilities - Primary
Transportation	
Utilities - Primary	

The SMP designates the following as **conditional uses**:

<u>Suburban Environment</u>	<u>Rural Environment</u>
Aquaculture in Man-Made Ponds	Aquaculture in Man-Made Ponds
Flood Hazard Management	Flood Hazard Management

Mining	Mining
Non-Water Related	
Recreation	

Definitions, policies, and regulations for each use are listed in Chapters 1, 2, and 5 of the SMP.

Shoreline Substantial Development Permits
Shoreline Substantial Development Permits are required for any project or activity within the Town's shoreline management jurisdiction including:

Any use or activity consisting of: · Construction or exterior alteration of structures · Dredging · Drilling · Dumping or filling · Removal of sand, gravel, or minerals · Bulkheading · Driving of piles · Placing of obstructions	**Or**: Any project of a permanent or temporary nature which interferes with the normal public use of the surface of the waters overlaying lands subject to the Shoreline Master Program at any state of water level.
Which: Has a total cost or fair market value in excess of two thousand five hundred dollars ($2500).	**Or:** Materially interferes with the normal public use of the waters or shorelines of the Town.

Shoreline Variances
Shoreline Variances are required for any project which proposes to deviate from the performance standards set forth in the SMP. **Variances are granted only in extraordinary cases where strict implementation of the SMP would impose unnecessary hardships on the applicant.** Variances apply only to deviations from performance standards -- requests for types of use other than those permitted outright in the SMP require Conditional Use Permits.

Zoning Variances
Zoning Variances may be granted in cases where strict application of the zoning code would deprive a property of privileges enjoyed by other properties in the same zone because of special features or constraints unique to the property involved. They are intended only to relieve hardship in special cases and not to avoid compliance with the intent of the zoning ordinance. A variance may relax the zoning code's requirements with respect to size, location, height, coverage or other performance standards which regulate structures or signs. Variances address the physical aspects of structures or site improvements and are not intended to circumvent restrictions on use. Zoning variances are described in Chapter 18.65 of the Skykomish Municipal Code.

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EXHIBIT F

[PUBLIC PARTICIPATION PLAN]

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Exhibit F

Draft Public Participation Plan

BNSF Skykomish Cleanup Site
(Former Fueling and Maintenance Facility)
Skykomish, Washington

Prepared by:

Washington State Department of Ecology

With BNSF Railway Company,
Town of Skykomish, and
Skykomish Environmental Coalition

June 2007

Table of Contents

1. Introduction

Cleanup Project Overview

The former railway maintenance and fueling facility in the northeast King County town of Skykomish is owned and operated by the BNSF Railway Company (BNSF). Historic activities since the facility opened in the late 1890s include refueling and maintaining locomotives and operating an electrical substation for electric engines. These activities resulted in the release of petroleum and heavy metals to the surrounding environment. BNSF is conducting a cleanup of the contamination at the site under the oversight of Washington State Department of Ecology (Ecology).

During 2006 and 2007, BNSF performed an interim action under the oversight of Ecology to clean up oil under the levee and in river sediments. Five private residences were moved off the contaminated site near the levee and residents were relocated for the duration of the interim action. Cleanup included construction of cofferdams in the Skykomish River, and the removal of more than 70,000 cubic yards, over 100,000 tons, of contaminated soil. About 23,700 gallons of oil was skimmed from the surface of the water and recycled for industrial use.

While the Levee Interim Action was underway, Ecology and BNSF continued planning for cleanup of the remaining areas of the site. Documents detailing these plans will be presented for public comment in the summer of 2007. The documents include: 1) a Consent Decree, the legal agreement which binds the parties to the agreed upon cleanup actions and is enforced by the courts, with the draft Cleanup Action Plan, this Draft Public Participation Plan, a schedule, and other related documents attached; and 2) a Draft Supplemental Environmental Impact Statement. After the comment period closes and changes based on public comment have been made, the documents will be finalized. Under these plans, cleanup of the remainder of the site will begin in 2008. Active cleanup in the Town will continue through 2011. Site monitoring will continue beyond 2011.

The cleanup of this site is community-based, reflecting the values of the Skykomish community and their vision for the town. Wherever possible, the Skykomish community is encouraged to participate and engage with the cleanup as it progresses to realize their vision for the town. The tools and activities in this plan were developed toward this purpose.

Organization of the Plan

This Public Participation Plan outlines the activities that Ecology, BNSF, the Town of Skykomish (Town), and the Skykomish Environmental Coalition (SEC) will use to engage the Skykomish community during the various phases of cleanup. It is a guiding document for the participants and outlines the public participation tools that will be used throughout the remainder of the cleanup. The appendix to this plan

specifically describes the public participation activities that will take place during the upcoming work in 2007. Additional appendices will be added specifying the appropriate tools to be used and the affected people for each year and phase of work.

The Public Participation Plan also includes a glossary with terms and topics related to the Skykomish cleanup. The definitions in the glossary may help in understanding the cleanup documents that are available for public review and comment.

Roles and Responsibilities

Public participation activities for the cleanup are coordinated among Ecology, BNSF, the Town, and the SEC. Ecology has the responsibility to implement the public participation plan and its activities. BNSF carries out technical studies of the site and assists with public involvement activities.

The Town is working with both Ecology and BNSF to participate in the decision-making process for cleanup and to ensure whenever possible that its vision is implemented through cleanup as described in *Vision for Skykomish* (August 2005). BNSF and Ecology will meet with the Town annually to review plans and schedules for the use of public rights-of-way and for the restoration of public infrastructure affected during each year of the cleanup. In addition, BNSF and Ecology will consult with the Town regarding any restrictive covenants proposed as part of the cleanup for consistency with the Town's current and future land use plans.

The SEC is engaged with the cleanup through a public participation grant from Ecology for a technical consultant to help residents understand and participate in the cleanup.

Goals

Cleanup staff members, which include both Ecology and BNSF, have the following common goals for public participation:

- Providing information and engaging in dialogue for the purpose of educating people so that they can contribute to the cleanup decisions in a meaningful and timely way.
- Receiving comments on cleanup issues and responding to the needs and concerns of the affected community as related to the cleanup.
- Facilitating communication among participants to this plan and coordinating activities under this plan.
- Responding quickly to public concerns during cleanup activities.

Audience

The following is a list of the groups of people considered in the preparation of this plan. Altogether these groups form the stakeholders for this site. This plan focuses on the people who are most affected by the outcome of cleanup

decisions. Information regarding the cleanup is provided to the broader public through the same mailings and media releases intended for the following groups:

- Property owners of land to be cleaned up (including the Town)
- Residents and businesses to be relocated
- Other landowners, residents and businesses in the cleanup area
- Skykomish School District, its employees, its students and their families
- Skykomish and Valley community not directly affected by cleanup activities
- County, state and federal agencies
- The Tulalip Tribes and Snohomish Tribe
- Civic groups
- Elected officials
- Media
- Visitors and tourists
- Other interested parties (i.e., environmental groups, legal groups, people of the State of Washington)

Contacts

Participants to this plan are available to talk with community members regarding activities they are conducting.

- **Ecology**
  Louise Bardy, Site Manager, 425-649-7209 or Susan Lee, Public Involvement, 425-649-4486

- **BNSF Railway Company**
  Bruce Sheppard, BNSF, 206-625-6035 or Angie Thomson, EnviroIssues, 206-269-5041

- **Town of Skykomish**
  Charlotte Mackner, Mayor, 360-677-2388 or Clint Stanovsky, Technical Coordinator, 360-677-2388

- **Skykomish Environmental Coalition (SEC)**
  Michael Moore, 360-677-2410

Other Activities

Other Town activities related to the cleanup will take place concurrent with the cleanup. These are the continued visioning the Skykomish community will engage in as the cleanup progresses and a community waste water treatment facility system that will be installed during cleanup. These activities, though major processes in themselves with public comment periods, are outside the scope of this cleanup and are not included in this public participation plan.

2. Public Participation Tools

The following public participation tools may be used to keep relevant stakeholders meaningfully involved with the cleanup process. The diversity of tools available allows cleanup staff from both Ecology and BNSF to reach as many interested parties as possible, as effectively as possible, ensuring the level of public participation that makes for a successful project. The following describes the various ways of involving interested parties in the project that will be used throughout the remainder of the cleanup. Specific meetings and other events for the current phase of cleanup are listed in the appendix. Additional appendices will be added for each phase of work.

Availability Meetings

Availability meetings are a scheduled time when cleanup staff is available to meet informally with stakeholders. Ecology hosts an availability meeting toward the end of a comment period to receive written comments and to answer questions about cleanup actions as people finalize their comments.

Call Line

BNSF is providing a call line, staffed 24-hours a day, as a way for residents to communicate with the project team during cleanup activities. The call line is free of charge and the number is advertised on cleanup information or notification materials distributed to the public. After receiving a call, cleanup staff works to address reported questions or concerns as quickly as possible. To reach Ecology directly, call Site Manager Louise Bardy at 425-649-7209 during normal business hours.

Community Meetings

Community meetings are an opportunity for Ecology and BNSF to talk about the cleanup plans and to ask for oral comments from the public. They are also forums in which cleanup staff can respond to comments and questions about cleanup progress and future planned cleanup actions. At least one meeting will be held each year to discuss and obtain input on cleanup plans at the 30% design stage. One or more additional community meetings may be held during active cleanup or planning phases of the project, or when an issue arises that prompts Ecology and BNSF to seek further community input.

Property owners asked to relocate during the cleanup will be invited to a public meeting where Ecology and BNSF will provide information on the guidelines for relocation. They will also be provided the opportunity to meet with the building-moving contractor to discuss their concerns prior to relocation.

Individual Meetings

When appropriate, Ecology and BNSF will meet with individual residents, property owners or interested parties to discuss specific issues that are more appropriate in a private forum. These meetings may include discussion of the

relocation process, access to private property, or identification of necessary mitigation measures for the impacts of cleanup.

Information Repositories

Ecology maintains repositories of information regarding the site for the convenience of those interested in the site. Repositories are located in the community and in Ecology offices. All documents available to the public for review, major technical documents, communication documents, and other pertinent information are included in the repositories.

For the duration of this project, these documents may be found in the information repositories for the site at:

- Skykomish Library, 100 5th Street, Skykomish, 360-677-2660
- Department of Ecology, Northwest Regional Office, 3190 160th Avenue SE, Bellevue, WA 98008, 425-649-7190 (By appointment only)
- Ecology's website at: www.ecy.wa.gov/programs/tcp/sites/bnsf_sky/bnsf_sky.html

In addition, the Town maintains site documents at Skykomish Town Hall and the SEC maintains site documents which are available by appointment.

King County Library Skykomish Branch 100 5th St. Skykomish, WA 98288 Phone: 360-677-2660 Hours: Monday and Thursday, 1 – 7 pm, Friday, 1 – 5 pm Saturday, 10 am – 2 pm	**Washington State Department of Ecology** 3190 160th Ave. S.E. Bellevue, WA 98008 Call for an appointment: Sally Perkins Phone: 425-649-7190 Fax: 425-649-4450 E-mail: perk461@ecy.wa.gov Hours: Monday – Thursday, 8 am – 12 pm and 1 – 4 pm
Skykomish Environmental Coalition Skykomish, WA On weekends, call for an appointment: Michael Moore Phone: 360-677-2410 Lorna Goebel Phone: 360-677-2812	**Skykomish Town Hall** 119 4th St. N. Skykomish, WA 98288 Phone: 360-677-2388 Hours: Monday – Friday, 8 am – 3:30 pm

Issue Workshops

Ecology and BNSF may identify particular issues and conduct workshops with groups of people or agencies on specific topics during cleanup preparation to make sure the people most affected by cleanup comment early, often, and meaningfully. In turn, community members or affected residents may raise a specific issue and BNSF and Ecology will respond by organizing an issue workshop to ensure the issue is investigated, discussed and resolved.

Issue workshops with various groups of people or agencies will be documented and responded to as decisions are made. These workshops engage those most affected by cleanup decisions substantively while the decisions are being formed.

Legislative Briefings and Site Tours

Ecology and BNSF may schedule briefings for elected officials and their staff, including tours of the site and the cleanup work. BNSF and Ecology will coordinate these activities with the Mayor and Town government.

Mailings

Mailings to residents and interested parties detailing project information will be distributed to those interested. A mailing list of about 500 interested parties is used to send these mailings, and individuals can request to be removed or added to the mailing list at any time. Call Ecology or BNSF staff listed as contacts in the previous section to be included in the mailing list.

Cleanup staff regularly sends some of the following types of mailings.

- **Newsletter**
  BNSF and Ecology produce a community newsletter that is distributed during active cleanup. This newsletter informs residents and interested parties of cleanup plans and progress, answers residents' questions and announces upcoming community meetings or activities. This newsletter is published monthly or bimonthly during active cleanup and construction.

- **Update Letter**
  Ecology's Site Manager may send periodic letters to the Skykomish community and other interested parties and agencies with updates on the progress of cleanup.

- **Fact Sheet**
  Fact sheets are used to inform people of cleanup actions being considered, formal public comment opportunities, and public meetings. A fact sheet will be mailed within a week of the beginning of any public comment period.

- **Comment Request Flyer**
  After major construction phases, BNSF and Ecology may distribute flyers to the project mailing list asking for comments on construction impacts and effects. Comments received will be reviewed by BNSF and Ecology and, where appropriate, incorporated into planning future phases of work.

Media Releases

Media releases will be issued to newspapers and TV and radio stations in King and Snohomish counties, as necessary, to inform the general public regarding the progress of cleanup. The main newspapers are: The Seattle P-I, The Seattle Times, The Everett Herald, and The Monroe Monitor.

Ecology will send a release to major media in the site area at the beginning of a comment period. The release and follow-up with media are coordinated by the Public Information Officer in the Ecology's Northwest Regional Office, Larry Altose.

Onsite Staffing

Cleanup staff members are frequently present in Skykomish offices and around town, particularly during active cleanup and construction, and planning phases. Onsite staffing allows prompt responses to concerns and questions and keeps staff in contact with residents who both are and are not directly participating in the cleanup process.

Ecology's Information Office is located in the Community Center at 208 Railroad Avenue, Skykomish in 2007 and the years the building is not relocated for cleanup. Hours of operation will vary depending on the work being accomplish in any given year, and will be posted on websites and notices in town as well as an OPEN sign in the yard.

Posted Notices

Because not all Skykomish residents or visitors receive mail about the cleanup, notices of construction events, planning meetings, and other activities are regularly posted in Skykomish. Posted notices are intended to provide current information to residents and visitors and to make it easy for people to stay informed about the cleanup schedule and plans. The following are common forms of posted notices.

- **Weekly Updates**
  During active cleanup, weekly or biweekly notices are posted in Skykomish. These notices can include invitations to meetings, updates on cleanup activities and planning, notification of sampling activities, and other items of interest to the general community. Notices are posted at the Skykomish Community Center bulletin board, library, post office, Town

Hall, and other public venues and appropriate places of business in and around Town.

- **Resident Notification Fliers**
  Prior to construction events that impact local homeowners, specific signs or door hangers are distributed to affected residents. Such events can include planned power outages, traffic route revisions, or changes in parking availability.

- **Large Placards**
  During active cleanup, cleanup staff may post large placards that provide an overview of the cleanup, advertise the cleanup call line, and provide other general information. These placards are freestanding, easy for visitors to locate, and direct people to further information about the cleanup.

Public Comment Periods

The law that governs cleanups, the Model Toxics Control Act (MTCA) Chapter 173-340-600 WAC, specifies the requirements for public review and comment on documents at appropriate times in the cleanup process. Comment periods will be held for major draft cleanup documents, including the consent decree, cleanup action plan, and supplemental environmental impact statement. Comment periods will also be held for major changes to these documents as the cleanup progresses, and for any other document detailing cleanup actions determined by Ecology as appropriate for the level of interest and impact on stakeholders. Comment periods are to extend 30 days, at a minimum.

Public Hearings

Public hearings are held during public comment periods for the Consent Decree to formally receive oral comments. Written comments may be given at the hearing, at any meeting during the public comment period, and by mail or email during the public comment period.

Relocation Arrangements

A number of residents and businesses are being asked to relocate during cleanup. BNSF and Ecology will work with individual property owners throughout the relocation planning to ensure a fair and equitable process. Prior to relocation, Ecology and BNSF will meet with property owners to develop individual agreements for relocation within the established guidelines. Residents will receive a packet of information materials that include details regarding moving personal belongings, plans for relocating buildings, security of relocated buildings, restoration and rebuilding.

SEC Meetings

The Skykomish Environmental Coalition may host community meetings during the public comment period and at key times in the development of plans to provide a forum for community discussion and review of cleanup documents. The SEC will

also provide technical staff to provide analysis and input on the documents under review.

Town Council and School Board Meetings

Town Council and School Board meetings are often attended by Ecology and BNSF representatives. These meetings allow cleanup staff to provide an update on cleanup planning or cleanup activities. They also allow staff to address important issues in a timely way and give information regarding actions or decisions required from either group.

The Town can use their regularly scheduled council meetings to discuss and respond to the cleanup issues with one voice. They can initiate a discussion with Ecology and BNSF, hold a workshop on an important issue or hold a community discussion at a council meeting. The Town considers community comments and may vote on the action that is best for the Town and communicate decisions to Ecology and BNSF in writing.

Similarly, the School Board can use their regularly scheduled board meetings to discuss and respond to cleanup issues that affect the school. They can initiate a discussion of the issues that need decisions regarding their property or other school-related topics. They can hold workshops or additional meetings to discuss important cleanup actions and communicate with Ecology and BNSF in writing about any official votes impacting the cleanup.

Websites

Websites present another avenue for distributing current cleanup information to the public. Websites can provide the most current information about cleanup schedules, cleanup progress, meetings, and other issues. There are several websites used to distribute cleanup information.

- **Skykomish Cleanup Website**
  BNSF maintains a website dedicated to this cleanup. The website is a source of public information and includes the weekly activity updates, site photos, current and past newsletters and posted notices, notice of upcoming events, contact information, formal documents, and links to both the Ecology project website and the Town of Skykomish website. The website can be accessed at:
  http://www.skykomishcleanup.com

- **Ecology Website**
  Current and historical information, legal information, and formal documents regarding the BNSF Skykomish Cleanup Site can be found on Ecology's website at:
  http://www.ecy.wa.gov/programs/tcp/sites/bnsf_sky/bnsf_sky.html

- **Ecology Site Register**
  Ecology's Toxics Cleanup Program Site Register provides information about cleanup efforts to the wider public. The Site Register is a semi-monthly publication that provides information on public meetings, public comment periods, and cleanup reports and updates. The Site Register is available at:
  www.ecy.wa.gov/programs/tcp/pub_inv/pub_inv2.html

- **Public Involvement Calendar**
  Ecology's Public Involvement Calendar is designed to engage the public in Ecology's decision-making process. The calendar highlights such as public hearings, meetings, workshops, and open houses. The calendar is available at:
  http://apps.ecy.wa.gov/pubcalendar/calendar.asp

- **Town of Skykomish**
  The Town also has information regarding the cleanup, the Town Vision Plan, and the Community Wastewater System on its website at:
  http://www.town.skykomish.wa.us

3. Glossary

This glossary* includes terms and topics related to the Skykomish cleanup and may help in understanding the documents that are available for public review.

Agreed Order: An order issued by Ecology under which a Potentially Liable Person (PLP) agrees to perform remedial actions at a site.

Air Sparging: The process of injecting air directly into groundwater to volatilize contaminants and enhance bioremediation. When air is injected, the gaseous contaminants move from the groundwater with the air bubbles and pass into the unsaturated soil, where a soil vapor extraction (SVE) system is usually used to withdraw soil vapors and collect the contaminants. The injection of oxygen to contaminated groundwater also increases bacteria activity, thus increasing the natural processes that break down the contaminants (enhanced bioremediation).

Bunker C: One of several types of heavy fuel oil made from the residual petroleum left over after gasoline, diesel, and other refined products are made from crude oil. The name comes from its historical use to power steamships. Steamships were originally powered by coal which was stored in bins called "bunkers." When the steamships changed to fuel oil, the storage tanks were called bunker tanks and the name for the oils from these tanks became known as bunker oils of differing grades. Bunker-C has a higher density than gasoline or diesel, is much more viscous (i.e., it flows like molasses), and degrades much more slowly when released to the environment.

Cleanup: The implementation of a cleanup action or interim action.

Cleanup Action Plan (CAP): A document prepared by Ecology that selects the cleanup actions to be taken and specifies cleanup standards and other requirements for the cleanup action. The cleanup action plan is based on information and technical analysis generated during the remedial investigation/feasibility study and in consideration of public comments and community concerns.

Cleanup Level (CUL): The concentration of a hazardous substance in soil, water, air, or sediment that is determined to be protective of human health and the environment under specified exposure conditions.

Comment Period: A time period during which the public can review and formally comment on various draft documents describing studies and proposed actions. Ecology then considers the comments received during the comment period prior to finalizing the documents.

DISCLAIMER

The definitions in this glossary are not legal definitions. They provide common terms and additional information for public understanding.

Conditional Point of Compliance: See Point of Compliance.

Consent Decree: A legal agreement entered in court and enforceable in court which formalizes an agreement between the state and a Potentially Liable Person (PLP) on the remedial actions needed at a site.

Contaminant: Any hazardous substance that does not occur naturally or occurs at greater than natural background levels.

Diesel: A light fuel oil made by refining crude oil. Its name comes from its use in the diesel engine, which was invented by Rudolf Diesel in 1892. Diesel has a lower density than bunker-C, is much less viscous (i.e., it flows like water), and degrades much more quickly when released to the environment.

Environmental Impact Statement (EIS): A document required by SEPA which discusses a proposed action and its alternatives, significant adverse environmental impacts, and mitigation measures.

Feasibility Study: A study which develops and evaluates alternative actions for cleaning up a given site.

Free Product: A nonaqueous phase liquid (NAPL) that is present in soil, bedrock, groundwater or surface water as a distinct separate layer. Under the right conditions, if sufficient free product is present, free product is capable of migrating independent of the direction of groundwater or surface water flow.

Groundwater: Water in a saturated zone or layer beneath the surface of the land or below a surface water body.

Hazardous Substance: Any substance or category of substances which presents a threat to human health or the environment if released into the environment. Typical hazardous substances are materials that cause cancer or are poisonous, flammable, explosive, or chemically reactive (like battery acid or Drano).

Hydraulic Control and Containment: The directing of groundwater flow to a treatment facility system, and the preventing of its flow to a protected area. Groundwater flow may be confined by subsurface barriers, such as a wall or recovery trench, or by a group of wells with pumps. Either the same barriers and pumping wells or different ones may be used to direct groundwater to locations where it may be recovered and sent to a treatment plant.

DISCLAIMER
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Information Repository: A file containing current information, technical reports, and reference documents available for public review, and the draft documents available for comment. One or more information repositories are located in convenient public places in the affected community, such as public schools, city halls, or libraries. Ecology's office maintains information repositories for cleanup sites as well.

Model Toxics Control Act (MTCA): Legislation passed by citizens of the State of Washington through an initiative in 1988. Its purpose is to provide for identification, investigation, and cleanup of facilities where hazardous substances have been released into the environment. It provides for public involvement in the decision-making process. The Model Toxics Control Act is Chapter 70.105D of the Revised Code of Washington (RCW).

Model Toxics Control Act Cleanup Regulation: The regulation which provides specific details of how the Model Toxics Control Act is to be implemented. The Regulation is Chapter 173-340 of the Washington Administrative Code (WAC).

Polynuclear Aromatic Hydrocarbons (PAHs): Hydrocarbon molecules composed of two or more fused benzene rings. Carcinogenic PAHs (cPAHs) are polynuclear aromatic hydrocarbon molecules identified as known or probable human carcinogens.

Poly Chlorinated Biphenyls (PCBs): A group of toxic, persistent chemicals. Due to their non-flammability, chemical stability, high boiling point and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including transformers and capacitors for insulating purposes, and in gas pipeline systems as a lubricant. PCBs are a serious threat to public health because they have been proven to cause cancer in animals. In 1977 they were made illegal to produce; however, large amounts still remain in the environment from past uses.

Petroleum Hydrocarbons: Hydrocarbons are chemicals in petroleum that contain only carbon and hydrogen atoms. Hydrocarbons are refined from petroleum because they combust easily.

Point of Compliance: The point of compliance is the location where a cleanup level must be met. There are two types of points of compliance, standard and conditional. If a cleanup level is met at the standard point of compliance, a site is considered clean and no further actions are necessary. Example: For groundwater, the standard point of compliance is throughout the site. If, for technical and economic reasons it is not practical to meet a cleanup level at the standard point of compliance, a conditional point of compliance may be set.

DISCLAIMER

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Meeting the cleanup level at a conditional point of compliance means that some contamination remains on the site that must be contained and managed. Example: For groundwater, a conditional point of compliance may be set at the edge of a river adjacent to the site rather than throughout the site and contamination remaining on site must be contained and managed.

Potentially Liable Person (PLP): Any person (which can be an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity, state government agency, unit of local government, federal government agency, or Indian tribe) potentially responsible for, or contributing to, the contamination problems at a site. Whenever possible, Ecology requires PLPs, through administrative and legal actions, to clean up sites.

Public Notice: At a minimum, adequate notice mailed to all persons who have made a timely request of Ecology and to persons residing in the potentially affected vicinity of the proposed action; mailed to appropriate news media; published in the local (city and county) newspaper of largest circulation; and the opportunity for the interested persons to comment.

Public Participation Plan: A plan prepared to encourage coordinated and effective public involvement designed to the public's needs at a particular site.

Remedial Action: Any action to identify, eliminate or minimize any threat posed by hazardous substances to human health or the environment.

Remedial Investigation: A remedial action that collects, develops, and evaluates sufficient information regarding a site to select a cleanup action.

Remedial Investigation/Feasibility Study: A term often used to refer to the remedial investigation and feasibility study documents (see definitions above).

Remediation Level (REL or RL): A concentration (or other method of identification) of a hazardous substance in soil, water, air, or sediment above which a particular cleanup action component will be required as part of a cleanup action at a site. Other methods of identification include physical appearance or location.

Responsiveness Summary: A summary of oral and written public comments which have been received by Ecology during a comment period on key documents, and Ecology's responses to those comments.

DISCLAIMER
The definitions in this glossary are not legal definitions. They provide common terms and additional information for public understanding.

Risk: The probability that a hazardous substance, when released into the environment, will cause an adverse effect on exposed humans or other living organisms.

Sediments: Settled particles located at the bottom of a lake, river, or in wetlands.

Site: Any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, vessel, or aircraft; or any site or area where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, placed, or otherwise come to be located.

State Environmental Policy Act (SEPA): A state law that directs state and local agencies to consider environmental values along with technical and economic considerations when making decisions on proposals for actions. This law is Chapter 43.21C of the Revised Code of Washington (RCW).

Supplemental Environmental Impact Statement (SEIS): A supplemental EIS adds information and analysis to a previously prepared EIS, but does not duplicate the analysis in the original EIS. A supplemental EIS may be prepared if the lead agency decides that significant issues/impacts were not included in the original EIS.

Thermal Desorption: Thermal desorption removes harmful chemicals from soil by using heat to increase mobility so the contaminants can be collected with special equipment. Adding heat makes chemicals more mobile so that they become gaseous, are more easily dissolved in water, or are less viscous. Thermal desorption is not the same as incineration, which uses heat to destroy the chemicals.

Toxicity: The degree to which a substance at a particular concentration is capable of causing harm to living organisms, including people, plants and animals.

DISCLAIMER
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Appendix A. 2007 Activities

Cleanup Overview

The 2007 phase of cleanup includes: 1) a formal public comment period; 2) planning the details for cleanup work in 2008; and 3) investigations to further define the extent of contamination for more accurate planning.

In June 2007, Ecology will present a Draft Consent Decree with exhibits such as the Draft Cleanup Action Plan and related documents, and a Draft Supplemental EIS. These documents outline the final cleanup plans. There will be a public comment period and formal hearings to allow residents and interested parties to provide comments on these documents.

Following the public comment period, BNSF and Ecology will develop detailed plans for work to be done in 2008. These plans will be presented to the community for input and discussion. Ecology and BNSF are also continuing investigations to further define the extent of contamination for more accurate planning.

Public Participation Tools in 2007

Skykomish residents and other interested parties will need to be informed of and involved with a variety of activities and events throughout this year. Activities for 2007 are primarily associated with the public comment period, planning for cleanup activities for the summer of 2008, and on-going investigations. The key public participation tools are outlined below.

1. Public Comment Period

Public review of documents in 2007 includes public comment from June 12 through July 14, 2007.

The following documents are available for public comment:

- Draft Consent Decree
    - Draft Cleanup Action Plan
    - Draft Public Participation Plan
- Draft Supplemental Environmental Impact Statement

The Consent Decree contains the natural resource damages compensation settlement with BNSF for the site in the amount of $5.5 million. The money will be used to restore, enhance and protect the natural resources and compensate for lost recreational opportunities in and around the Town of Skykomish as well as the Skykomish and Snohomish River watersheds.

The Cleanup Action Plan contains the schedule for work to be accomplished 2007 through 2011 or the years of cleanup within the Town.

The documents may be reviewed at the information repositories, on Ecology's website at http://www.ecy.wa.gov/programs/tcp/sites/bnsf_sky/bnsf_sky.html, and on CDs by request.

Comments will be accepted in writing any time during the public comment period and orally at public hearings. See the planned activities and opportunities to comment during the public comment period below.

Date	Time	Activity	Lead	Location
June 13	6 – 8 pm	Public Meeting Present Documents	Ecology	Skykomish
June 27	6 – 8 pm	Community Meeting	SEC	Skykomish
July 2	6:00 pm	School Board	School	Skykomish
July 9	6:30 pm	Town Council	Town	Skykomish
July 10	6 – 8 pm	Public Meeting/Hearing	Ecology	Skykomish
July 12	10 am – 12 Noon	Public Meeting/Hearing	Ecology	Bellevue
July 14	10 am –12 Noon	Availability Session	Ecology	Skykomish
Ecology Information Office in the Community Center at 208 Railroad Ave., Skykomish will be open Tuesdays and Wednesdays during the month of June.				

Notification of Public Comment Period

Notification of the public comment period is accomplished in a number of ways to reach the intended audiences.

- A fact sheet will be mailed to the site mailing list on June 7.

- Notices will be placed in Ecology's Site Register on June 7, June 21, and July 6.
- Newspaper display ads will be published in the Seattle Times, Seattle PI, Everett Herald and Monroe Monitor June 11-13.
- A notice will be placed in Ecology's SEPA register on June 12.
- Meeting and hearing dates will be placed on Ecology's public involvement calendar from June 7 through July 14.
- A press release will be sent to local newspapers and TV and radio stations on June 7.

Notification of the proposal to use restrictive covenants as part of the draft cleanup action plan is given to the Town with the notification of this public comment period. The Town has the land use planning authority for real property subject to the restrictive covenants. It is the responsibility of the Town to comment during the comment period on whether the proposed restrictive covenants are consistent with any current or future land use plans.

Websites

Information on the public comment period, including links to documents for review and public meeting and hearing dates will be available on the following Ecology websites.

- Ecology BNSF Skykomish Website
  http://www.ecy.wa.gov/programs/tcp/sites/bnsf_sky/bnsf_sky.html
- Ecology Site Register
  http://www.ecy.wa.gov/programs/tcp/pub_inv/pub_inv2.html
- Public Involvement Calendar
  http://apps.ecy.wa.gov/pubcalendar/calendar.asp
- SEPA Register
  http://apps.ecy.wa.gov/sepa/index/asp

Response to Comments

After this formal comment period has concluded, all comments received will be reviewed and incorporated into the documents where appropriate and possible. A response to the comments will be prepared to show how the comments were incorporated.

2. Planning for 2008 Cleanup Activities

In the fall of 2007, BNSF and Ecology will present plans for the cleanup activities in 2008. Community members are encouraged to comment informally on the cleanup plans.

Community Meetings

Community meetings will be held to allow community members and the interested public to participate in planning details for work to be conducted in 2008. Residents will also be able to discuss the upcoming work with BNSF and Ecology to have their questions answered and express any concerns.

Town Council and School Board Meetings

Cleanup staff will attend Town Council and School Board meetings throughout the planning phase. If requested, Ecology and BNSF will attend meetings to provide information on specific topics or issues.

Because of the cleanup decision to not move the school, a large masonry structure, a technology for cleaning up under the school will need to be developed. With the school's unique role in the Skykomish community, Ecology and BNSF will conduct early and open communication with the school board regarding the development of the technology in an effort to minimize and mitigate impacts on the learning environment and the community as a whole.

Mailings

Ecology and BNSF may distribute newsletters or fliers to inform residents of the progress in cleanup planning during the coming year.

3. Investigations

Ecology and BNSF have been conducting investigations to define the distribution of contamination in further detail and will continue until active cleanup within Town begins in 2008. During investigation activities, residents and visitors may need to communicate with cleanup staff. Similarly, cleanup staff may need to keep the community up to date on the investigations. The following tools are particularly useful in this phase of the project.

Community Meetings

Community meetings will be held to present information and update the community regarding the progress of the site investigations.

Town Council and School Board Meetings

Cleanup staff will attend Town Council and School Board meetings throughout the investigations.

Posted Notices

Notices will be posted for residents for residents as needed during the investigations.

Mailings

- Update Letter
  An update letter from Ecology's Site Manager may be produced and distributed at any time.
- Fact Sheet
  An update fact sheet may be produced and distributed at any time.

Websites

The Skykomish Cleanup website, Ecology website, Ecology *Site Register*, and Town of the Skykomish website will all continue to be updated regularly to provide information about the cleanup.

Schedule of Events 2007

Date	Time	Activity	Lead	Audience
On-going		Cleanup: Community group briefings	BNSF/Ecology	Community groups
On-going		Investigations: Sampling and surveying notifications	BNSF	Skykomish community
On-going		Investigation updates	BNSF/Ecology	Skykomish community, Skykomish valley, agencies, elected officials, other interested parties and the general public
June 12 – July 14		**Public Comment Period**	Ecology	Skykomish community, Skykomish valley, agencies, elected officials, other interested parties and the general public
September 1		Responsiveness Summary available	Ecology	Washington State King County Superior Court, Skykomish community, Skykomish valley, agencies, elected officials, other interested parties and the general public
November		Meetings to plan for 2008 cleanup work	Ecology/BNSF	Skykomish community

EXHIBIT G

Guidelines for Temporary Relocation

The following guidelines are meant to serve as general principles for BNSF to follow for communication, reimbursement, and assistance for residents who agree to temporarily relocate:

- Identify and provide comparable temporary housing in or near Skykomish for affected residents for the duration of the project.

- Reimburse eligible affected residents of reasonable out-of-pocket expenses incurred in connection with the temporary relocation, including the cost of moving to and from the temporary housing, the monthly rent and utility costs of the temporary housing, and storage of residents' personal property for the duration of the project.

- In conjunction with providing for the temporary relocation of residential dwellings as outlined in the CAP, Exhibit B, determine appropriate and agreeable options for returning residential dwellings to real estate property, including landscaping plans to return properties to as close to their original condition as possible.

- Provide adequate and timely communications to temporarily displaced residents. Develop a process for reporting and promptly addressing complaints and concerns.

- Payment for eligible claims will be made as soon as possible following a move or receipt of documentation to support the claim. Advance payments will be considered for residents who demonstrate a need.

Refer to the Public Participation Plan (Exhibit F) for a more detailed description of procedures for temporary relocation of residents.

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EXHIBIT H

Model Restrictive Covenant

After Recording Return to:

_____

Department of Ecology
[fill in regional address]

Environmental Covenant

Grantor: **[land owner]**
Grantee: State of Washington, Department of Ecology
Legal: **[fill in brief legal description]**
Tax Parcel Nos.: **[fill in]**
Cross Reference: **[if amendment, recording number of original covenant]**

Grantor, **[land owner]**, hereby binds Grantor, its successors and assigns to the land use restrictions identified herein and grants such other rights under this environmental covenant (hereafter "Covenant") made this _ day of _____, 200__ in favor of the State of Washington Department of Ecology (Ecology). Ecology shall have full right of enforcement of the rights conveyed under this Covenant pursuant to the Model Toxics Control Act, RCW 70.105D.030(g), and the Uniform Environmental Covenant Act, 2007 Wash. Laws ch. 104, sec. 12.

This Declaration of Covenant is made pursuant to RCW 70.105D.030(1)(f) and (g) and WAC 173-340-440 by [NAME OF PROPERTY OWNER], its successors and assigns, and the State of Washington Department of Ecology, its successors and assigns (hereafter "Ecology").

A remedial action (hereafter "Remedial Action") occurred at the property that is the subject of this Covenant. The Remedial Action conducted at the property is described in the following document[s]:

[INSERT THE DATE AND TITLE FOR CLEANUP ACTION PLAN and other documents as applicable].

These documents are on file at Ecology's [Insert Office Location] Office.

This Covenant is required because the Remedial Action resulted in residual concentrations of [SPECIFICALLY LIST SUBSTANCE(S)] which exceed the Model Toxics Control Act Method B Residential Cleanup Level(s) for [SOIL, GROUNDWATER, ETC.] established under WAC 173-340-____.

The undersigned, [NAME OF PROPERTY OWNER], is the fee owner of real property (hereafter "Property") in the County of [NAME OF COUNTY], State of Washington, that is subject to this Covenant. The Property is legally described [AS FOLLOWS: (insert legal description language)] -or- [IN ATTACHMENT A OF THIS COVENANT AND MADE A PART HEREOF BY REFERENCE (attach document containing legal description)].

[NAME OF PROPERTY OWNER] makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereafter "Owner").

Section 1. (This Section must describe with particularity the restrictions to be placed on the property.)

1. If the groundwater contains hazardous substances above drinking water standards (and a prohibition on withdrawal of groundwater will not be accomplished by alternate means under WAC 173-340-440(8)(c)) use the following sentence: "No groundwater may be taken for domestic use from the Property."

2. If contaminated soil remains that is above Method A or B Residential Cleanup Levels describe prohibited activities as follows:

For contaminated soil under a structure use the following sentence: "A portion of the Property contains [SPECIFICALLY LIST SUBSTANCE(S)] contaminated soil located [SPECIFICALLY DESCRIBE WHERE THE SOIL IS LOCATED, I.E., UNDER THE SOUTHEAST PORTION OF BUILDING 10]. The Owner shall not alter, modify, or remove the existing structure[s] in any manner that may result in the release or exposure to the environment of that contaminated soil or create a new exposure pathway without prior written approval from Ecology."

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b. Example language for contaminated soil under a cap: "Any activity on the Property that may result in the release or exposure to the environment of the contaminated soil that was contained as part of the Remedial Action, or create a new exposure pathway, is prohibited. Some examples of activities that are prohibited in the capped areas include: drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, piercing the surface with a rod, spike or similar item, bulldozing or earthwork."

Section 2. Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.

Section 3. Any activity on the Property that may result in the release or exposure to the environment of a hazardous substance that remains on the Property as part of the Remedial Action, or create a new exposure pathway, is prohibited without prior written approval from Ecology.

Section 4. The Owner of the property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.

Section 5. The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions on the use of the Property.

Section 6. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Restrictive Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Section 7. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, and to inspect records that are related to the Remedial Action.

Section 8. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Restrictive Covenant shall no longer limit use of the Property

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or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

Section 9. Neither Ecology nor the Owner intend to include any third party beneficiaries with enforcement rights under this Covenant.

[Insert the following section into the covenant for the railyard facility property: Section 10. By signing this Covenant, the Owner does not intend to affect the scope of existing preemption under the Interstate Commerce Commission Termination Act, 49 U.S.C. § 100501.]

_____

[NAME OF PROPERTY OWNER]

_____

[DATE SIGNED]

[NOTE: The Property Owner must have this restrictive Covenant notarized.]

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