Prepared for:
BNSF Railway Company
Seattle, Washington

2008 Skykomish Remediation – As-Built Completion Report

Former Maintenance and Fueling Facility

AECOM, Inc.
August 2009
Document No.: 01140-222-0500

AECOM

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Construction Completion Report
2008 Remediation
Skykomish Washington

Based on direct observations made by AECOM Environment (AECOM) personnel (formerly The ENSR Corporation, Inc.), materials testing, laboratory testing and other construction documentation described in this report, it is the opinion of the undersigned that the portion of the 2008 Skykomish remediation completed in 2008 has been constructed in substantial compliance with the scope of work presented in the *Cleanup Action Plan*, *2008 Engineering Design Report* and *Plans and Specifications for the 2008 Remediation.* The work carried out in 2008 described herein was completed, and the material and data in this report were prepared, under supervision and direction of the undersigned.

AECOM Environment.

8/5/09

EXPIRES 12/11/2010

Michael G. Byers, P.E.
Project Manager

AECOM

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1.0 Introduction

This document presents the 2008 As-Built Completion Report (As-Built report) completed for the BNSF Railway Company's (BNSF) Former Maintenance and Fueling Facility located in Skykomish, Washington. Figure 1-1 shows the project location. The 2008 Skykomish remediation included work in the Northwest and Northeast Developed Zones (NWDZ and NEDZ) as originally shown on Figure 5 of the Cleanup Action Plan (CAP). BNSF entered into a Consent Decree (CD; Ecology, 2007a; *State of WA v. BNSF Railway Company*, King County Case No. 07-2-33672-9SEA) with Ecology to implement the CAP. The overall cleanup approach is described in the *Master Engineering Design Report* (ENSR, 2008a),

The remediation construction activities described in this as-built report were performed from May 5, 2008 through December 31, 2008. Table 1-1 (below) summarizes the remediation activities that were planned for 2008, as originally described in the *2008 Engineering Design Report* (EDR) (ENSR, 2007a), and *2008 Compliance Monitoring Plan* (CMP) (ENSR, 2008a). The table provides the status of each activity: work completed in 2008, work initiated in 2008 and scheduled to be completed in 2009, and work scheduled to begin in 2009. The table also summarizes the types of compliance monitoring that was completed for each activity. The order of the activities presented in the table follows that presented in the 2008 CMP. The table also presents other relevant construction activities that were not described in the 2008 EDR, but were completed during 2008 consistent with the CAP and Master EDR.

Table 1-1 2008 Remediation Activity Summary

Activity	Status			Compliance Monitoring Performed		
	Completed 2008	Scheduled to be Completed 2009	Scheduled to Begin 2009	Protection	Performance	Confirmation
1. Building Relocation	X			X	X	
2. Utility Crossing Construction	X			X	X	
3. Hydraulic Control and Containment (HCC) and Railroad Avenue Excavation	X			X	X	X
4. HCC Construction and Operation		X			X	
5. Construction Water Treatment System (CWTS) Installation and Operation	X			X	X	
6. Air Sparging (AS) System Construction		X		X	X	
7. AS System Operation			X	X	X	
8. Remediation Building Construction	X			X		
9. Section Building Demolition/New Construction[1]				X	X	
10. Private Property Excavation[2]	X			X	X	
11. Utilities Construction[3]		X		X	X	

[1] Section building demolition and reconstruction has been deferred to a subsequent construction season.

[2] A previously undiscovered band of petroleum impacted material was discovered beneath the southwest corner of the Cascadia Inn during the 2008 remediation excavation. This area was backfilled upon completion of the 2008 planned excavation. After backfilling, borings were completed beneath the Cascadia Inn and soil samples were collected in order to evaluate the extents of these impacts. Boring and laboratory analytical data is currently being reviewed and a work plan for this area will be included in the 2010 EDR.

A lead impact in the shallow soils along the Javier's northern property boundary was discovered during the metals excavation in 2008. An investigation of this area is currently scheduled for the 2009 construction season. Details of this investigation are described in the 2009 CMP.

[3] Water and sewer piping installations were completed in 2008. The joint utility trench and underground electrical components and permanent street lights are anticipated to be completed in 2009.

Activity	Status			Compliance Monitoring Performed		
	Completed 2008	Scheduled to be Completed 2009	Scheduled to Begin 2009	Protection	Performance	Confirmation
12. Restoration		X		X	X	
13. Church and Adjacent Properties Metals Investigation/ Excavation		X		X	X	
14. Stockpile Characterization	X			X	X	
15. Mitigation	X				X	
16. Routine Groundwater Monitoring		X			X	
Additional Activities						
17. Limited Impacted Soil Excavation on the Railyard	X				X	
18. Trenching and Telecom Conduit Installation on the Railyard.	X			X	X	
19. Soil Excavation for Lift Station Construction	X			X	X	
20. Modification of the Cascadia Inn's Septic Drainfield[4]	X					
21. Asbestos Inspection and Abatement	X					

[4] A modification was made to the Cascadia Inn's drainfield at the beginning of the 2008 remediation that reduced its overall size in order to accommodate the excavation of impacted soil west of the Cascadia Inn. In September 2008, during excavation of impacted soil west of the Cascadia Inn, a previously undiscovered band of impacted soil was found that extended below the recently modified drainfield. As a result, the recently modified drainfield was removed to allow access to this impacted soil. The drainfield will be repaired in 2009.

1.1 Report Organization

This As-Built report is organized into the following sections:

- **Section 1 – Introduction**
- **Section 2 – Project Management and Organization.** This section describes the roles and responsibilities of BNSF, AECOM, consultants, companies, and contractors in completing the 2008 remediation activities
- **Section 3 – Permitting.** This section describes the permitting activities that were necessary to complete the 2008 remediation activities
- **Section 4 – Site Preparation.** This section describes the general site preparation activities that were completed prior to starting remediation activities
- **Section 5 – Construction Activities.** This section describes the 2008 remediation activities, including 1) activities described in the 2008 EDR; 2) additional activities which were completed, but not previously described in the 2008 EDR; and 3) related compliance monitoring
- **Section 6 – Work to be Completed after 2008.** This section describes remediation activities which were described in the *Construction Plans and Specifications for the 2008 Remediation* (CPS) (ENSR, 2008b), but were not completed during the 2008 construction season and will be addressed in 2009 or 2010
- **Section 7 – Summary and Conclusions**
- **Section 8 – References.**

2.0 Project Management and Organization

AECOM was retained by BNSF as the Engineer for the project. AECOM prepared the CPS, oversaw the remediation activities, and served as a liaison between BNSF, contractors, the Town, and local stakeholders. State of Washington Department of Ecology (Ecology) provided regulatory oversight. Brief descriptions of each contractor's, subcontractor's, consultant's, and/or company's role in the 2008 remediation are provided below.

2.1 Primary General Contractor

- **Strider Construction Company (Strider) –** Excavation, backfill and grading of excavation area, loading of excavated materials for disposal, and infrastructure reconstruction

2.1.1 Subcontractors to Strider

- **Nickel Bros. House Moving, Ltd. –** Structure moving
- **Marine Vacuum Service, Inc. (MARVAC) –** Oil recovery
- **General Construction Company –** Sheetpile installation and extraction
- **Campbell Crane and Rigging Services, Inc. –** HCC backup treatment gate lifting
- **Clear Creek Systems, Inc. –** Construction water treatment system (CWTS) operation
- **McCandlish Electric, Inc. –** HCC remediation building and site-wide electrical wiring
- **Boart Longyear –** Piezometer and air sparging well installation
- **Cuz Concrete & Septic Services, Inc. –** Septic tank pumping
- **GeoTest Services, Inc. –** Compaction testing of backfill material
- **Inca Surveying –** Initial site control and layout surveying
- **Bobby Wolford Trucking and Demo., Inc. –** Clearing and grubbing debris removal
- **Hayward Baker Inc. –** Permeation grouting
- **Tacoma Pump and Drilling, Inc. –** Installation of recovery wells and piezometers
- **Tunnel Systems, Inc. –** Utility crossing installation beneath the main rail lines.

2.2 Subconsultants to AECOM

- **Argus Pacific (Argus) –** Air and Noise Monitoring Plan development and implementation
- **KPG Inc. –** Civil engineering design of roadways, storm sewer system, water lines, support for McEvoy and Whistling Post restoration, and landscaping design of Town park
- **Gray and Osborne, Inc. –** Civil engineering design of sanitary sewer
- **Snyder Hartung Kane Strauss (SHKS) Architects –** Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) surveys of historic buildings and structural surveys of relocated buildings
- **Jacobs Associates –** Geotechnical engineering, sheetpile and MSE wall design, vibration monitoring, construction oversight for sheetpile installation and grouting

- **Northwest Archaeological Associates Inc. (NWAA) –** Prepared Archaeological Monitoring and Discovery Plan and conducted on-site archaeological monitoring during excavation and structure moving activities.

2.3 Contractors to AECOM

- **Green Earthworks Construction, Inc. –** Railyard excavation
- **Boart Longyear –** Well abandonment
- **Concrete Technologies Corp. –** Hydraulic control and containment (HCC) backup treatment gate construction
- **True North Land Surveying, Inc. –** Site wide pre-construction survey
- **NVL Laboratories –** Pre-move hazardous materials assessment of temporarily relocated structures.

2.4 Contractors to BNSF

- **EMR, Inc. –** Hazardous materials assessment of asbestos/concrete water line and asbestos materials beneath the Depot
- **IRS Environmental –** Abatement of asbestos/concrete water line and asbestos materials beneath Depot.
- **Securitas –** 24-hour site security
- **Test America –** National Pollutant Discharge Elimination System (NPDES) analytical testing, overburden and metals soil sample analysis
- **Rabanco/Allied Waste –** Impacted soil disposal
- **Friedman and Bruya, Inc. –** On-site soil analytical testing
- **EnviroIssues –** Public outreach for overall project.

3.0 Permitting

The 2008 remediation work performed by BNSF obtained or applied for the following permits:

- NPDES permit
- King County permit for septic drainfield
- Clearing and grading permit
- Building permits.

Copies of all permits have been included in Appendix A.

In addition to the permits described above, BNSF was required to satisfy the substantive Town building permit requirements for the HCC remediation building.

3.1 NPDES Discharge

Discharge from the CWTS was authorized under the NPDES permit (Permit No. WA-003212-3) originally issued May 4, 2006 and most recently modified on June 30, 2008 (Ecology, 2008).

BNSF satisfied the requirements of the NPDES permit including the preparation and implementation of a *Stormwater Pollution Prevention Plan* (SWPPP) and *Operations and Maintenance Manual for Water Treatment System* (ENSR, 2008c); discharge monitoring and monthly preparation of and submittal of Discharge Monitoring Reports (DMR) to Ecology.

More detail about the operation of the CWTS is discussed in Section 4.3.7.

4.0 Site Preparation

Site preparation activities performed prior to excavation included:

- Pre-construction and weekly meetings
- Well abandonment
- Temporary facilities and controls including:
  - Construction fencing
  - Job trailers
  - Sound wall
  - Soil handling facility (SHF)
  - Traffic control crossings and roads
  - Temporary erosion and sedimentation controls (TESC)
  - CWTS
  - Clearing and grubbing
- Cascadia Inn septic drainfield modification
- Salvaging depot park features
- Surveying
- Hazardous materials analysis and asbestos abatement
- Temporary utility relocations
- Structure relocation.

Each of these activities is discussed below. The temporary features are shown on Figure 4-1.

4.1 Pre-Construction and Weekly Meetings

A pre-construction meeting with Strider and AECOM was held on June 12, 2008. This meeting was held to discuss the contractor's approach to the work, submittal procedure, weekly meetings, communication, and the anticipated construction schedule. Weekly contractor meetings were also held to discuss current construction activities and to communicate information about upcoming work. Meetings took place in onsite trailers. In addition, weekly Stakeholder meetings were held with Ecology, EnviroIssues, and Town personnel after the weekly contractor meetings.

4.2 Well Abandonment

A total of 16 monitoring wells located within the footprint of the 2008 excavation area were abandoned prior to excavation activities. Additionally, one other well located outside the excavation area was also abandoned (see Figure 4-2). Wells not extending below the planned excavation bottom were abandoned by filling the well casings with bentonite chips to within 5 feet of the ground surface. Groundwater monitoring wells extending below the planned excavation bottom were overdrilled using a hollow stem auger rig. The overdrilled borehole was then sealed with bentonite chips. Groundwater monitoring well 2A-W-22, shown on Figure 4-2, was not overdrilled to total depth due to a boulder obstruction at 15 feet below ground surface (bgs). The remaining 5 feet of well was chipped in place. Boart Longyear abandoned the wells in accordance with WAC 173-160-381. Well abandonment forms are located in Appendix B.

Surface completions of two monitoring wells were modified outside the excavation boundary to facilitate activities associated with the 2008 remediation. Monitoring wells MW-16 and MW-17 surface completions were modified from above ground completions to flush mount completions. Monitoring well MW-16 is located south of the railroad tracks along the alignment of the temporary public crossing road. This monitoring well was modified to allow two lanes of traffic to flow smoothly along the temporary access road. Monitoring well MW-17 is located within the soil handling area. This well was modified to facilitate loading of impacted soil. All monitoring well modification actions were completed by a licensed well driller from Boart Longyear and activities were overseen by AECOM personnel. These surface completions were described in the weekly progress reports to Ecology.

Monitoring well MW-35 was destroyed during construction activities associated with installation of sewer laterals along 3rd Street. Measures were taken to avoid the destruction however, the soils around the well were too loose and sloughed into the trench exposing and breaking the well pipe. The monitoring well will be relocated by a surveyor and abandoned per WAC 173-160-460(2)(e) if possible.

MW-38 was accidentally destroyed by personnel from Callen Construction Company, the company building the lift station for the Town. The well was destroyed during trenching for the installation of the sanitary sewer piping that runs to the Town lift station at the west end of Railroad Avenue. The location of MW-38 is shown on Figure 4-2. A replacement well will be installed by the Town in the near future.

4.3 Temporary Facilities and Controls

Temporary facilities and controls for the 2008 remediation were provided by Strider and their subcontractors.

4.3.1 Construction Fencing

Temporary construction fencing was installed according to plan around the perimeter of active excavation areas and the clean overburden stockpile area. Silt fencing was incorporated into the temporary construction fencing around the clean overburden stockpile area to prevent sediments from leaving the stockpile area.

4.3.2 Job Trailers

Job site trailers with electricity, first aid kits, fire extinguishers, printer/scanner/fax machines, and telephone lines with high-speed internet access were provided by Strider. Strider also provided a number of portable restrooms to be used by all on-site personnel.

4.3.3 Sound Wall

A hay-bale sound wall was constructed along the construction fencing at the southern boundary of the SHF, to provide privacy and sound dampening for the residences south of the SHF along Old Cascade Highway. The sound wall was constructed on May 30, 2008 and was later extended July 10, 2008. The wall is approximately ten feet high, 244.5 feet long, and is covered in plastic to protect it from rain. The sound wall was left in place after 2008 construction activities were completed.

4.3.4 Soil Handling Facility

The asphalt on the SHF that had been damaged during the 2006 remediation work was repaired by removing the damaged asphalt and installing new asphalt in its place. In most cases, the underlying high density poly-ethylene (HDPE) liner was not damaged and new asphalt was simply laid on top of it and then compacted. In areas where the HDPE liner was damaged, a new piece of liner was cut to fit the damaged section such that it overlapped the existing liner by at least a foot. New asphalt was then placed on top of the repaired liner and then compacted.

At the conclusion of the 2006 remediation activities, the sump at west end of the SHF was opened by removing the ecology blocks and the asphalt berm, to prevent the accumulation of rainwater when the SHF was not being used. Prior to stockpiling impacted soils, Strider repaired the sump by replacing the ecology blocks and the asphalt berm.

In addition to repairing the damaged portions of the SHF's asphalt and underlying HDPE liner, Strider also constructed an impacted soil dumping ramp at the east end of the soil handling facility. The ramp was constructed so the off-road trucks, used for transporting impacted soil, could deliver soil without having to drive through the SHF and thus require vehicle decontamination with each load. The location of the unloading ramp is shown on Figure 4-1. Strider's soil management plan was detailed in their *Technical Execution Plan* (TEP) included in Strider's submittals in Appendix C.

A wheel wash/decontamination (DECON) pad was established at the west end of the SHF. The location of the DECON pad is shown on Figure 4-1. The DECON pad was located on an already asphalted portion of the existing SHF. Prior to using it for equipment decontamination, Strider added asphalt berms, a sump, and piping to an on-site decontamination water storage tank. Each of these additions ensured that equipment decontamination water would be retained and managed separately from impacted soil stockpile runoff. Strider also provided a decontamination trailer that included a sink where construction personnel could wash their hands. This trailer was also used to store personal protective equipment.

4.3.5 Temporary Traffic Control

4.3.5.1 Railroad Crossings

Temporary asphalted railroad crossings were constructed across the railroad tracks for the 2008 remediation activities. A public crossing was constructed west of 5th Street and was used by public vehicles and pedestrians while the 5th Street crossing was closed. While the 5th Street crossing was closed, a flagger from Strider was stationed at the public crossing from 0630 to 2200, seven days a week, to prevent vehicles and pedestrians from being struck by trains while crossing the tracks. After 2200 each day, gates on the north and south sides of the public crossing were closed and locked to prevent cars and pedestrians from crossing the tracks when a flagger was not present.

Two additional asphalted crossings were constructed east of 5th Street to provide construction vehicles with short routes to the SHF and clean overburden stockpile. This configuration minimized contact between construction equipment and the public during operations. The locations of the temporary construction crossings are shown in Figure 4-1.

4.3.5.2 Temporary Roads

A temporary one-lane road along the north side of Railroad Avenue, from 4th Street to 2nd Street, was constructed within the town right-of-way to provide access to residents at the east end of town. Integrated portable traffic signals were used to control traffic on this road 24 hours per day, 7 days per week. The approximate location of this road was shown on drawings C-101 and C-102 from Revision 2 of the CPS.

A temporary road between the HCC sheetpile wall alignment and the main rail lines was put into service September 3, 2008 to provide access to the Cascadia Inn and residents of the east end of town when the temporary road from 4th Street to 2nd Street was excavated. This temporary road had construction fencing, Jersey barriers and integrated traffic signals to help control traffic. The approximate location of the temporary HCC road is shown on Figure 4-1.

4.3.6 Temporary Erosion and Sediment Controls (TESCs)

Approximately 1,400 linear feet of silt fence was installed around the perimeter of the clean overburden stockpile area and selected areas around the excavation area. Sediment socks were also installed in catch basins in areas that were affected by remediation activities and areas along truck routes in town. Strider and AECOM personnel regularly inspected these TESC measures in accordance with the SWPPP prepared in accordance with the NPDES permit. Strider performed repairs to the silt fence and other sediment control measures as needed. Strider's TESC inspection reports were included in Strider's daily construction reports.

4.3.7 Construction Water Treatment System (CWTS)

The temporary CWTS was constructed on the railyard at the west end of the soil handling facility (Figure 4-1) at the beginning of the 2008 remediation. Discharge under the NPDES permit began August 9, 2008. The CWTS was operated and maintained by personnel from Clear Creek Systems, Inc. (CCSI). The CWTS provided continuous treatment of water pumped from the excavation areas as well as stormwater runoff collected on the SHF. The CWTS was operated in accordance with the NPDES permit and the processes outlined in the *Operations and Maintenance Manual for Water Treatment System* (ENSR, 2008c). The following two subsections follow up on the compliance monitoring activities initially discussed in Section 5.5 of the 2008 CMP.

4.3.7.1 Soil

The CWTS was constructed northwest of the SHF on an existing level gravel area. No excavation was required for the placement of this system, so none of the stockpile sampling discussed in Section 5.5 of the 2008 CMP occurred.

4.3.7.2 System Monitoring

Discharge for the CWTS was limited to 673 gallons per minute from June 1 to September 30 and 269 gallons per minute from October 1 to May 30. The treatment train for the CTWS consisted of gravity separation and oil recovery, chitosan-enhanced flocculation, woven filters, sand filtration and activated carbon adsorption.

Weekly and monthly NPDES performance monitoring samples were collected before, between and after activated carbon treatment. The NPDES performance monitoring sample results were submitted to Ecology's Water Quality Program in the form of DMRs. DMRs for water treatment facility operations beginning August 2008 and continuing through December 2008 are included in Appendix D.

The carbon that had been in service since August in the CWTS was swapped out for fresh carbon in November 2008 after receiving laboratory analytical results that indicated the CWTS may have been discharging water with NWTPH-Dx concentrations above the NPDES discharge limit. More complete information about this is detailed in two letters sent to Ecology's site manager. These letters are included in Appendix E.

A third letter was sent to Ecology's site manager on November 17, 2008 regarding increasing the CWTS's discharge flow rate above the NPDES discharge limit in order to manage stormwater from storm events that occurred on November 7, 8 and 12. This letter is also included in Appendix E.

4.3.8 Clearing and Grubbing

The clean overburden stockpile area was cleared, grubbed, and rough-graded prior to stockpiling clean overburden removed from the excavation area. Some concrete footings from a historic railroad structure were present near the north boundary and were left in place at the request of the Town.

The stumps and other woody debris removed from this area were hauled off-site by Bobby Wolford Trucking and Demo, Inc. Disposal records were included in Strider's daily construction reports.

Topsoil from grassy areas along Railroad Avenue and adjacent properties was removed and sent to the clean overburden stockpile area for storage and use at a later date.

Asphalt roads and concrete building foundations, slabs, and walkways located within the excavation area were demolished and recycled or disposed of at a construction demolition waste landfill. Disposal information was provided in Strider's daily construction reports.

4.4 Cascadia Inn Drainfield Modification

The planned 2008 excavation cut across a portion of the Cascadia Inn's existing septic drainfield, so the design included a provision that the drainfield be modified prior to excavation. This modification was made under approved plans and permits from the King County Health Department. The design and permit documents for this modification are included in Appendix F.

In September 2008, during excavation of impacted soil below the excavation Vertical Delineation Limit (VDL) located west of the Cascadia Inn, a previously undiscovered band of impacted soil was found. The impacted soil appeared to extend east below the Cascadia Inn's drainfield and it was decided that an attempt to remove this impacted soil should be made while it was at its most accessible state. As a result of this decision, the newly modified drainfield had to be removed along with the impacted soil beneath it. This necessitated direct pumping of the holding tanks at the Cascadia Inn. The pump out and disposal operation will continue until a new drainfield is constructed west of the Cascadia Inn in 2009. The Cascadia Inn will remain on this independent drainfield until the Cascadia Inn is tied into the Town's effluent collection system. The Town's effluent collection system is currently under construction and is anticipated to be completed in the summer of 2009.

4.5 Salvaging Depot Park Features

Park features such as the information kiosk, flag pole, and park benches were salvaged so they could be put back in place upon site restoration. Prior to moving the information kiosk, a rigid wood support frame was constructed to provide for its safe handling and storage. The kiosk was stored at the east end of Railroad Avenue during remediation activities. These items will be returned to their original locations during restoration of the park in 2009.

A United States Coast and Geodetic Survey bench mark designated as Z58 was discovered during salvage operations in the park. Notifications were made to the US Coast and Geodetic Survey office and arrangements were made by that office to have the bench mark successfully relocated. This relocation was completed prior to disturbance in this area.

4.6 Surveying

A site survey including topographic contours, town features, and property boundaries was completed by True North Land Surveying (True North) in November 2007. True North also established survey control points outside the 2008 excavation area. At the start of the 2008 remediation activities, Inca Surveying (Inca) used True North's control points to establish clearing limits, temporary building locations and the baseline survey of the railroad tracks and monitoring points along Railroad Avenue for settlement monitoring purposes. Strider's own surveyor performed the routine settlement monitoring along the main rail lines and along Railroad Avenue once the initial survey control for the settlement monitoring was set up by Inca.

Strider's surveyor also used the control points established by True North to calculate excavated quantities and locations of new site features like sewer lines and storm drains. Strider was responsible for survey control of the remediation activities, including proper location of all new site features. Strider utilized survey-grade global positioning system components to locate features in the field.

A final and comprehensive as-built survey of the 2008–2010 permanent restoration features will be conducted upon completion of the remediation activities in the NWDZ. A survey of the 2008 permanent restoration features was deferred because the final roadway surfaces and curbs and gutters were deferred until the 2009 and 2010 remediation activities in the NWDZ are completed. The final survey will include such things as the elevations and locations of these final roadway surfaces and any relocated structures.

4.7 Hazardous Materials Analysis and Asbestos Abatement

IRS Environmental and EMR Incorporated performed asbestos abatement on the portion of the Town asbestos/concrete water line buried within the excavation area on the north side of Railroad Avenue. IRS

Environmental wrapped the pipe for safe handling and disposal and sent it to a state-approved asbestos disposal facility. EMR Incorporated oversaw the abatement of the water line and prepared the final abatement report. The abatement report is included in Appendix G.

EMR's and IRS's abatement measures for the asbestos-containing materials, discovered beneath the Depot during structure moving activities, are described in Section 4.9.4.

4.8 Temporary Utility Relocations

Underground water and overhead electrical and communications utilities within the excavation footprint were temporarily relocated to allow for continuous service during the 2008 remediation activities.

4.8.1 Temporary Water Bypass Line

An 8-inch aboveground temporary water bypass line was constructed in accordance with the CPS around the north side of the excavation to provide potable water services to residents during excavation of Railroad Avenue. The water line was installed by certified drinking water installation personnel from Strider and tested for microbial content prior to coming online. The microbial testing records are included in Appendix A.

Installation of the temporary water bypass line also required that the emergency fire suppression systems for the Skykomish Hotel and the Cascadia Inn be connected to this line. Skykomish's Fire Chief inspected and gave verbal approval for the temporary fire suppression system connections at both buildings after tie-in was completed.

Town residents were notified of planned water outages that were associated with the connection to and disconnection from the temporary water bypass line. The homes and businesses along Railroad Avenue, temporarily placed on the water bypass line, were returned to the newly constructed water main in 2008.

4.8.2 Overhead Utilities

Electrical and communications utilities services were removed from parts of the 2008 excavation area and from the temporarily relocated structures (described in Section 4.10). When necessary, the services were reconfigured prior to removal to ensure uninterrupted service to nearby remaining properties.

Town residents were notified ahead of time of planned power and communication outages, which were associated with the reconfiguration of the overhead power lines.

4.9 Structure Relocation

Structures located within the excavation area were temporarily relocated during cleanup activities. Structure relocation consisted of the temporary relocation of the Whistling Post Tavern, the McEvoy house, and the Depot. All structure relocation requirements were completed as outlined in Section 4.1.7.1 of the Master EDR (ENSR, 2008d), the Building Relocation Monitoring Plan of the CPS, the contractor TEP and the 2008 CMP. With the exception of the Depot, the buildings were returned to their lots upon completion of the 2008 construction activities. The Depot was left in its temporary location while a new permanent location is being determined.

4.9.1 Pre-Move Inspection

Pre-move inspections of all structures to be relocated were performed by a licensed contractor from Nickel Brothers in order to obtain information necessary to prepare the individual rigging plans for each structure (Appendix C). A pre-move structural inspection was also conducted by Michael Wright, a licensed structural engineer, in order to determine the suitability for lifting and temporary relocation of each of the buildings (Appendix H). Pre-move inspections also included a video survey, collected by Strider, which documented the interior and exterior pre-move conditions for each of the relocated buildings. SHKS personnel fulfilled the substantive requirements of HABS/HAER inspections of all major components of the buildings, and documented any damage through photographs, sketches, and notes taken prior to the move.

4.9.2 Structural Monitoring

Strider personnel inspected the temporarily stored structures on a bi-weekly basis for settling and microfungal growth. Temporary dehumidifiers, fans, and heaters were installed in the buildings while in storage to inhibit mold and mildew growth. Strider's bi-weekly inspections documented indoor temperatures and humidity and any observed settling, microfungal growth or other observations. Buildings were periodically left open during working hours to allow venting and air circulation. The bi-weekly inspection logs are included in Strider's daily construction reports. Nickel Brothers also conducted bimonthly inspections of the stored structures. Additional supports were added as identified during their inspections.

4.9.3 Archaeological Monitoring

Archaeological monitoring was conducted in accordance with the Archaeological Resources Monitoring and Discovery Plan (MDP) (NWAA, 2008) prepared by NWAA and an archaeological monitor was on-site during all structure moving activities. The results of the archaeological monitoring are detailed in the *Results of Archaeological Monitoring, 2008 Remediation in Skykomish, King County, Washington* report prepared by NWAA. This report is included in Appendix I.

4.9.4 Lead and Asbestos Surveys and Abatement

Lead and asbestos surveys were carried out on all the buildings to be relocated in order to identify any hazardous materials the structure relocation workers may encounter. On May 1, 2008, personnel from NVL laboratories (NVL) performed hazardous material surveys in the work areas (crawl spaces, interiors and exteriors) for each of the structures to be relocated. During these surveys, some lead-containing exterior paints were identified but no asbestos-containing materials were found. Based on these surveys, it was determined that no abatement activities were necessary at that time. The survey reports are provided in Appendix G.

Some asbestos-containing material was found below the Depot in June after the area around the base of the Depot had been excavated and the crawl space beneath the Depot made more accessible. EMR Incorporated was called to the site and confirmed the presence of the asbestos-containing material. The asbestos-containing material was safely removed by a certified abatement contractor (IRS Environmental) and disposed of in a state-approved asbestos disposal facility. The disposal documentation is included in Appendix G.

5.0 Construction Activities

The 2008 remediation was implemented in accordance with the Washington Administration Code (WAC) 173-340-400 – Implementation of the Cleanup Action. The 2008 remediation consisted of the activities described in the 2008 EDR, including: the construction of a utility crossing beneath the main rail lines, the excavation of impacted soils in the NWDZ and NEDZ, the partial construction of an HCC system, the partial construction of an AS system, the partial restoration of Town and private properties, the excavation of shallow metals-impacted soils on four private properties, and protection monitoring to confirm that human health and the environment were adequately protected during construction. In addition to the above activities, some additional work was performed, including the excavation of surface soils from the Town lift station construction area, trenching for the installation of a telecommunications conduit and the excavation of petroleum impacted soils on the railyard. This section describes each of these activities in detail.

BNSF submitted weekly progress reports to Ecology as required in the CD. AECOM documented daily activities in daily construction reports, which are in Appendix J. Photographs showing the construction activities are presented in Appendix K.

5.1 Utility Crossing Construction

Tunnel Systems, Inc. completed the jacking of the 36-inch diameter casing beneath the east/west mainline rail tracks on July 15, 2008. The final elevation of the south invert is 6.96 inches lower than the plan elevation and the actual slope of the pipe is 0.2%. The AECOM design team analyzed whether these as-built conditions were satisfactory and concluded that utility crossing bore casing is acceptable as constructed.

5.1.1 Stockpile Characterization

No stockpile characterization was carried out for the soil removed during the utility crossing construction. Soil excavated as part of the utility crossing construction was sent directly to the impacted soil stockpile for off-site disposal at Rabanco's Subtitle D Facility in Roosevelt, Washington.

5.1.2 Vibration and Settlement Monitoring

Vibration and settlement monitoring was carried out in accordance with the *Vibration and Settlement Monitoring Plan* prepared by Jacobs Associates (Jacobs Associates, 2008). A summary of the vibration and settlement monitoring activities is discussed in Section 5.3.7.

5.2 HCC and Railroad Avenue Excavation

The following sections describe the performance monitoring for the HCC and Railroad Avenue excavations, including soil sampling to pre-characterize overburden and excavation performance sampling to evaluate whether the excavation Remediation Levels (RL) have been achieved, cultural resource monitoring, groundwater monitoring to demonstrate the effectiveness of temporary barrier systems; NEDZ excavation, surface water monitoring to demonstrate that excavation activities do not result in an exceedance of applicable water quality standards for turbidity in the Skykomish River; and backfilling and compaction testing. Table 5-1 was adapted from Table 1 of the *Cleanup Action Plan* (CAP) (Ecology, 2007a) and summarizes the Cleanup Levels (CUL) and RLs for soil excavation. The excavation limits are shown on Figure 5-1.

Table 5-1 Soil Remediation and Cleanup Level Concentrations

Environmental Medium: Soil	Level Type	Chemical	Concentration	Point of Compliance per the CAP	Applicability to the 2008 Remediation
	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.	NEDZ excavation below 2 feet bgs.
	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.	NWDZ excavation below 2 feet bgs.
	Remediation	Petroleum	1,870 mg/kg NWTPH-Dx	Soil within two feet of the surface.	NEDZ and NWDZ excavation.
	Cleanup	Arsenic	20 mg/kg	Throughout the site to a depth of 15 feet.	NEDZ, NWDZ and RYZ excavation
	Cleanup	Lead	250 mg/kg	Throughout the site to a depth of 15 feet.	NEDZ, NWDZ and RYZ excavation

5.2.1 Overburden Excavation

Overburden from within the 2008 excavation area was pre-characterized in accordance with the procedures outlined in the 2008 SAP (ENSR, 2008e). The 30-foot by 30-foot overburden sampling grid, an updated Figure 4-1 from the SAP (Appendix L), was laid out over the excavation area using a tape measure and surveyor's measuring wheel. The grid lines were indicated on the perimeter fencing using painted surveyor's lathes. Soil samples were collected from the approximate center of each of the grids.

In grids where the VDL or bottom of the excavation was less than or equal to 5 feet bgs, samples were collected halfway between the VDL and the ground surface. In grids where the VDL was located below 5 feet bgs, samples were collected at 2.5 feet bgs and at a depth halfway between 5 feet bgs and the VDL. The shallower samples represented the top 5 feet of excavated soil. The deeper samples represented the soil between 5 feet bgs and the VDL. All samples were analyzed for petroleum hydrocarbons using the NWTPH-Dx method without silica gel cleanup.

If the laboratory sampling results representing the top material contained petroleum hydrocarbon concentrations equal to or above 1,870 mg/kg, then all the soil in that grid, down to the VDL, was excavated and sent the SHF for offsite disposal. If laboratory sampling results representing only the deeper material had petroleum hydrocarbon concentrations equal to or above 1,870 mg/kg, then the soil in the upper 5 feet of that particular grid was excavated and sent to the clean overburden stockpile area for reuse and the material

between 5 feet bgs and the VDL was excavated and sent to the SHF for disposal. The exception to this overburden handling procedure occurred in grids A1, A2, A3, A4, A8 and B8. In these grids, if the laboratory sample, representing only the top material had petroleum hydrocarbon concentrations equal to or above 1,870 mg/kg then the top section of overburden was sent to the impacted soil stockpile and the deeper section was sent to the clean overburden stockpile. It was decided after excavating these cells that if the laboratory sample representing the top section of overburden material had petroleum hydrocarbon concentrations at or above 1,870 mg/kg, then all the material in the grid, down to the VDL would be removed. This change to the overburden handling procedure was approved by Ecology. Overburden containing burn zone material, buried trash, visual staining, or other debris was deemed unsuitable for backfill and was also sent to the SHF for offsite disposal. The updated Figure 4-1 the SAP has been modified to show whether excavated overburden was sent to the clean overburden stockpile area or the impacted soil stockpile.

Information collected from Strider's surveys of the excavation area, before and after overburden removal, was used to calculate the volume of material sent to the clean overburden stockpile area (20,870 cubic yards) and the amount of material sent to the SHF for disposal (3,636 cubic yards).

Level III data validation using standard EPA-approved procedures was performed, and the analytical results were determined to be usable. The data validation report is included in Appendix M. A summary of the data is shown in Table 5-2. The laboratory reports are included in Appendix N.

5.2.2 Stockpiling

Stockpiling activities included stockpiling of clean overburden soil in the clean overburden stockpile area and stockpiling excavated materials for off-site disposal in the SHF.

5.2.2.1 Stockpiling Clean Overburden Material

Overburden material from overburden sampling grids (updated SAP Figure 4-1) with petroleum hydrocarbon concentrations below 1,870 mg/kg NWTPH-Dx were hauled to the clean stockpile area in off-road trucks. Strider's off-road trucks were decontaminated at the on-site DECON area prior to hauling any impacted material.

5.2.2.2 Stockpiling Excavated Material for Off-Site Disposal

Overburden material with petroleum hydrocarbon concentrations at or above 1,870 mg/kg NWTPH-Dx, containing visible staining, burn-zone material or other debris unsuitable for backfill and all material below the VDL were direct loaded into off-road dump trucks for transportation to the SHF for off-site disposal. Excavated soil was adequately profiled prior to construction so additional sampling of the material was not required. Additional materials, such as soil excavated for the Town lift station construction (Section 5.15.1), soil excavated for the telecom conduit installation (Section 5.15.2) were stockpiled separately in the SHF until they could be sampled and profiled. After Rabanco's review of the sampling analytical results and approval from them for the disposal of these additional materials, these additional soils were added to the larger stockpile for disposal at Rabanco's Subtitle D facility in Roosevelt, Washington.

5.2.3 Cultural Monitoring, Protection and Documentation

Archaeological monitoring was performed from June 10 to November 6, 2008, in accordance with the MDP. The summary of the archaeological monitoring activities are presented in the *Results of Archaeological Monitoring, 2008 Remediation in Skykomish, King County, Washington* prepared by NWAA. This report is included in Appendix I. Recovered artifacts found on private properties have been returned to the property owners. Recovered artifacts found in public rights-of-way have been returned to the Town of Skykomish Historical Society.

5.2.4 Below VDL Excavation

5.2.4.1 Soil

Excavation performance sampling was performed in accordance with the 2008 SAP. Prior to the commencement of the excavation performance sampling, the 25-foot by 25-foot confirmation sampling grid shown in updated Figure 4-2 (Appendix L) was surveyed by Strider's surveyor over the entire excavation area. The grid lines were indicated on the perimeter fencing using painted surveyor's lathes. Updated Figure 4-2, provided in Appendix L has been updated to show the actual excavation extents, and to show which grids weren't sampled as a result of changes to the original excavation limits.

Tracked excavation equipment was used to complete the excavation to the vertical and horizontal extents shown on the revised construction plans drawing C-202 Revision 2, which is included in Appendix O. Equipment dedicated to handling impacted material was used to avoid cross contamination with clean equipment. In the event that equipment was needed to handle clean material, the equipment was decontaminated at the DECON station at the SHF.

At least one discrete grab sample was collected from the bottom of each grid location, except as noted below. At least one discrete grab sample was collected from sidewalls in sidewall grids that were not adjacent to future excavations. Samples were then sent to the on-site mobile laboratory for analysis.

Analytical results collected from the excavation area were compared to the NWDZ RL of 3,400 mg/kg NWTPH-Dx or the NEDZ RL of 30,000 mg/kg NWTPH-Dx. If the NWTPH-Dx concentration was below the applicable RL and the requirement of no flowing or accumulating product was met, then the grid from which the sample was collected was designated as "clean" and approval for backfilling was given to Strider. If the NWTPH-Dx concentration was above the appropriate RL, then the grid from which the sample was collected was designated as "impacted." Impacted grids were excavated a minimum of 1 additional foot, measured as vertical distance in feet bgs in excavation bottoms and as lateral distances in sidewalls, and re-sampled until the grid could be designated clean or until no further excavation was possible due to overlying structures that would have been undermined if excavation had continued. If a cell was re-excavated, a new confirmation sample was collected from the grid, and a letter was added to the end of the sample ID to indicate that there was more than one sample for that grid. For example, upon re-excavation, the new confirmation samples were called CONF-C30A, CONF-C30B, and so forth. The final excavation bottom and sides were directly surveyed by Strider's surveyor.

Below VDL excavation, west of column 32 on Figure 5-2/5-3, targeted material exceeding the NWDZ RL of 3,400 mg/kg NWTPH-Dx. Below VDL excavation, east of column 31 on Figures 5-2 and 5-3, targeted material exceeding the NEDZ RL of 30,000 mg/kg NWTPH-Dx.

Information collected from Strider's surveys of the excavation area, before and after below VDL excavation was used to calculate the volume of below VDL material excavated. Approximately 24,722 of in-place cubic yards of below VDL material was removed during the 2008 Skykomish Remediation.

HDPE sheeting or geotextile fabric was placed on the excavation slopes adjacent to where future excavations will occur. Construction plan drawing C-202 Rev. 2 shows where the sheeting or fabric was placed. A geotextile fabric was also placed on the excavation slope immediately west of the Cascadia Inn. This fabric was placed there as a marker for future excavation activities west of the Cascadia Inn.

Laboratory Analysis, Reporting and Data Validation

Confirmation samples were analyzed for NWTPH-Dx without silica gel cleanup by Friedman and Bruya's on-site laboratory in order to meet the turn-around times necessary to meet the project schedule. Within 24 hours of the receipt of the analytical lab reports, AECOM posted the results on the Virtual Project Manager (VPM) website for Ecology and other interested parties to review.

The data provided to Ecology for approval of backfilling were subsequently reviewed to ensure that the QA/QC criteria established in the SAP were satisfied. Level III data validation using standard EPA-approved

procedures was performed, and the analytical results were determined to be usable. The data validation report is included in Appendix M. A summary table of the confirmation sampling results data is presented in Table 5-2. Sample grid locations are identified on Figures 5-2 and 5-3. The laboratory reports are included in Appendix N.

Grids Not Sampled

Performance samples were not collected from grids A3 and A4 (around the Far West HCC gate), A7 and A8 (around the West HCC gate), A27, A28 and A29 (around the Center HCC gate), and A/B1, C1/2/3, A2, B2, B3, B4 A5, B5 and C4/5 (west end grids) because the Railroad Avenue excavation prism was modified based on a change to the construction method for the Far West, West, and Center HCC gates. The gates were constructed using sheetpile "cells" instead of by completing sloped excavations, as shown on drawing C-202 - Revision 1, of the construction plans. Instead of sampling the grids around the Far West, West, and Center HCC gates, the bottoms of the cells were sampled instead. The bottoms of the cells were divided into two (Far West and West HCC gates) and three (Center HCC gate) equal sections and excavation performance samples were collected from the approximate centers of each of these equal-sized cell sections. Grids H22, H23, H24, H25, I25, I26 and I27 were also not sampled as they were located north of the sheetpile wall in the vicinity of 4th Street.

Failed Sidewall Confirmation Samples

During below VDL excavation, two areas outside the original excavation limits were discovered to have petroleum hydrocarbon impacts above the site specific NWDZ soil RL of 3,400 mg/kg NWTPH-Dx. These two areas are the north sidewall of grid C6 and east sidewalls of grids C30, D29, E29, and F29 around the Cascadia Inn. The excavation was expanded in these two areas in an attempt to remove these impacted soils. The excavation was expanded by steepening excavation sidewalls to the maximum extent possible and by expanding the excavation as in the case of the soils around the Cascadia. In both of these cases, the additional excavation efforts were unable to remove all of the impacted soils without undermining the overlying structures, so follow-up in future years will be necessary.

The soil along the north sidewall of grid C6 was added to the NWDZ excavation that will occur in 2009-2010. Horizontal borings were conducted on the south and west sides of the Cascadia in November 2008 to delineate the extents of the impacted material that still remained at the conclusion of the below VDL excavation. A remediation plan for this area is being developed and will be described in the 2010 EDR.

Disposal of Soil

Soil excavated from the removal areas was transported in off-road dump trucks to the SHF on the railyard. The soil arrived at the handling facility containing varying degrees of moisture – some was wet and saturated and some was nearly dry. Wet and saturated soil was allowed to drain and dry at the SHF before being loaded into railcars, so that it passed the paint filter test. All soil transported from the site to the waste disposal facility was transported by railcar.

Soil was loaded into railcars using a loader with an on-board scale so that weight limits were not exceeded. Trains were loaded and left the site generally five days per week. With a full complement of cars, approximately 1,000 tons of soil left the site each weekday to be delivered to Rabanco's Subtitle D facility. There were several occasions during the summer when rail car delivery was disrupted due to rail system limitations.

5.2.4.2 Oil Recovery

Oil control and removal was conducted by MARVAC. Oil recovery was achieved primarily by using high pressure water to direct floating product towards MARVAC's vacuum truck hose, which removed the floating oil/water mixture from the excavation areas. The floating oil/water mixture collected in MARVAC's vacuum truck was pumped into on-site open-topped Baker tanks. In the tanks, gravity separation of the oil and water occurred allowing the oil floating on the water surface to be pumped off and taken to a disposal/recycling facility. The remaining water in the tanks was sent to the WTF for treatment and discharge to the river.

Approximately 11,500 gallons of oil was recovered and sent to the disposal/recycling facility. Disposal records were provided in Strider's daily construction reports.

At times when smaller amounts of product were present, in addition to the product recovery method described above, floating product was removed from the excavation with absorbent pads. MARVAC tried used a floating drum skimmer in the excavation area but found that using high-pressure water and their vacuum truck was more successful at removing the floating oil.

5.2.4.3 Bird Control Measures

Mylar tape was installed at regular intervals along the perimeter fencing to keep waterfowl and other birds from flying into the open excavation and coming in contact with floating product. The Mylar tape provided a visible and audible deterrent to the birds. In addition to the Mylar tape, several 18-inch owl predator decoys were placed and moved throughout the excavation during times when open water was present.

5.2.4.4 Groundwater Monitoring

Groundwater monitoring at the NEDZ Conditional Point of Compliance (CPOC) groundwater monitoring well was conducted upon completion of the NEDZ excavation to demonstrate the effectiveness of the excavation at achieving the groundwater CUL of 208 µg/L and no visible LNAPL or sheen. Laboratory analytical results indicated that the groundwater NWTPH-Dx concentration at this groundwater monitoring point was below the 208 µg/L CUL and field notes indicated that no visible LNAPL or sheen was present.

The groundwater monitoring described in Section 5.3.2 of the 2008 CMP did not occur because the backfill monitoring wells described in that section were not installed in 2008. These wells will be installed in 2009 and the monitoring data collected at these wells in future groundwater monitoring events will be described in a forthcoming Groundwater Monitoring Report.

5.2.4.5 Surface Water Monitoring

Visual surface water monitoring of the South Fork Skykomish River for turbidity impacts resulting from construction activities was conducted according to the requirements outlined in the 2008 CMP. No surface water turbidity impacts were observed during the 2008 construction season.

5.2.5 Backfill Material

Stabilization aggregate was imported from the Cadman rock quarry in Gold Bar, Washington and used as backfill between the backfill VDL and the bottom of the excavation.

Backfill material for the zone above the backfill VDL was a combination of clean overburden material, imported structural fill aggregate and crushed aggregate base course imported from the Cadman rock quarry in Gold Bar.

The sieve analyses and chemical characteristics for these backfill materials are provided in the contractor submittals (Appendix C).

5.2.6 Compaction Testing

Compaction testing of the backfill materials was carried out by GeoTest Services, Inc. of Bellingham, Washington. Compaction testing was carried out in accordance with the project specifications. Compaction testing results showed compliance with the construction plans and specifications. The compaction testing results are included in Appendix P.

5.3 HCC Construction and Operation

The HCC system consists of three main parts: 1) the HCC barrier; 2) recovery and injection wells to collect and manage fluids; and 3) a water treatment system located in the remediation building on BNSF property. The locations of the HCC system components are shown on Figure 5-1. The 1,123-foot long HCC barrier, installed

in 2008, consists of interlocking Z-shaped steel sheetpiles and four passive flow-through backup treatment gates. The barrier extends vertically from the ground surface and is keyed approximately 2 feet into the underlying silt layer. The exception to this is in areas where the sheetpiles were unable to reach the underlying silt layer due to obstructions (boulders and large cobbles) located along the HCC alignment. In these areas, permeation grouting was carried out to create an impermeable groundwater barrier in the area around and below the obstructions, thereby effectively extending the HCC barrier down to the underlying silt layer. Six groundwater recovery wells and two injection wells were installed upgradient of the treatment gates. An HCC system remediation equipment building was constructed to house equipment used to treat impacted groundwater recovered upgradient of the treatment gates. The location of the HCC system remediation building and ancillary components are shown on Figure 5-1.

The sheetpile barrier construction consisted of pre-excavation of the HCC alignment, sealing the sheetpile joints, driving the sheets, installing tieback anchors to support the sheets during excavation, and grouting areas of the HCC alignment where the sheetpiles could not be driven to full penetration depth. The backup treatment gate installation consisted of constructing sheetpile cells around the gate locations, excavating the cells, preparing the foundation of the cells for the gates, and then lowering the pre-fabricated gates into place.

In November and December of 2008, the electrical wiring, mechanical equipment installation, and piping connections for the water treatment and air sparging equipment were completed although the HCC water treatment equipment was not energized in 2008. Consequently, the commissioning and operation of the permanent HCC building and its equipment will be covered in the 2009 As-Built Report.

5.3.1 Pre-Excavation

The first attempt at sheetpile driving began with the temporary sheets at the utility crossing location using a vibratory hammer. No pre-excavation (pre-ex) had taken place prior to attempting to drive these sheets and hard driving conditions were immediately encountered. An excavator was brought over in an attempt to remove the cobbles or boulders preventing the sheets from being driven, but removing the obstructions was unsuccessful. In addition to the hard driving conditions, another complication that occurred during this first driving attempt was soil sloughing between the temporary sheets and the mainline tracks. Based on these field conditions, AECOM decided that moving the temporary sheets, in-line with the permanent HCC barrier sheets, would reduce the likelihood of impacts to the railroad tracks and accelerate the project schedule by reducing the number of sheets that had to be driven. Ecology was notified of this decision and gave approval to move the temporary sheets. Once the decision to move the temporary sheetpiles to the north had been made, pre-ex began along the HCC alignment and then sheetpile driving commenced at the west end.

Two excavators were used for the pre-ex. One excavator removed the soils along the HCC alignment and the second excavator, using a special 4-inch screening bucket, sifted out the larger materials. The smaller sifted materials and overburden were then used for backfilling. The pre-ex was carried out to approximately 12 feet below the excavation VDL to remove the hard driving soils. A trench box was used to keep the pre-ex trench open and the slope above the trench supported. Soils removed during pre-ex were sent to the impacted soil stockpile for off-site disposal.

5.3.2 Sheetpile Driving

The sheetpile driving was carried out by General Construction Company (GCC). A vibratory hammer and an impact hammer were used to drive the sheets. GCC used a 125-ton and an 80-ton crane to position the sheets and lift the hammers for driving.

The sheetpile joints were treated with a joint sealant prior to being driven. GCC personnel received training from a representative from the sealant manufacturer on proper application procedures at the beginning of the 2008 remediation.

Driving sheetpile initially began with the vibratory hammer. If no hard driving conditions were encountered, then the sheetpile was driven to full depth with the vibratory hammer. If hard driving conditions were

encountered that prevented the sheetpiles from reaching their planned depth, the vibratory hammer was removed and the impact hammer was used. If using both hammers failed to reach the planned depth, high piles were recorded and permeation-grouted at a later date.

Construction of the HCC barrier required the driving of 309 temporary and permanent sheetpiles along the HCC alignment: those without driving tips and those with driving tips respectively. The sheetpiles are numbered from 1 to 309 from west to east, with each sheetpile being approximately 3.77 feet wide. Table 5-3 summarizes the HCC pile tip elevations and stationing. The stationing on Figure 5-1 shows the stationing for the sheetpile.

5.3.3 Tieback Anchors

On July 17, 2008 AECOM received a verbal Request for Information (RFI) from GCC requesting a change from the specified 15-degree angle for tieback drilling to an increased angle of 21 degrees. Jacobs Associates, AECOM's geotechnical consultant reviewed and analyzed this request and determined that changing the angle of installation to 21 degrees would require increasing the total bonded length of the tieback by 1 foot. General Construction misinterpreted this requirement. Subsequently, tieback anchors 35, 37, 39, 41, 43, 45, and 47 were installed 1 foot short of the required length as determined by Jacobs Associates. Upon learning of this non-conformance, GCC returned to the plan specification angle of 15 degrees and continued installing tieback anchors. The geotechnical consultant analyzed this non-conformance and determined that the anchors, even though they were short, were still within acceptable structural limits for the design.

All of the tie-back anchors successfully supported the HCC barrier during excavation and the majority of the anchors were de-tensioned prior to backfilling. Some of the tie-back anchors were not de-tensioned before backfilling was completed in the area around them.

5.3.4 Sheetpile Cell Construction

Sheetpile cells at the far west, west and center treatment gate locations were constructed to facilitate the installation of the backup treatment vaults. A sheetpile cell was not necessary at the east treatment gate location because of its shallow depth. The sheetpile cells reduced the volume of soil that had to be excavated for the placement of the vaults and because the cells were capable of being dewatered, construction for the vault foundations and vault placement were both made easier.

The initial engineering calculations and design for the cells, prepared by Jacobs Associates, indicated that no horizontal bracing was needed to prevent deflection of the cell sheets during excavation. It was assumed that groundwater would be present inside the cells during excavation, which would provide a counterforce to the soil pressures on the outside of the cells. The need for horizontal bracing became evident, however, when the far west cell was first excavated. The cell's sheetpiles prevented groundwater from entering the vault, which caused the west side of the cell to be pushed in by the exterior soil forces. To prevent any additional deflection of the cell's sheetpiles, the cell was backfilled and an I-beam waler support system was installed on the outside perimeter to provide horizontal bracing. I-beam waler supports were also added around the inner perimeters of the west cell and center cell prior to their excavation. Crossbeams spanning the west cell and center cell were also installed to provide additional support.

5.3.5 Backup Treatment Gate Construction and Installation

The four backup treatment gates were composed of ten pre-cast concrete vaults constructed at Concrete Technologies Corp in Tacoma, Washington. Two were installed at each the far west gate and west gate, and three were installed at each the center gate and east gate locations. Due to the weight of each of the pre-fabricated vaults, a 500-ton crane operated by Campbell Crane was brought on-site for gate placements. The gates were not filled with carbon and granolithic in 2008. The approved final shop drawings for the vaults are included in Appendix Q.

The excavation for the gate cells extended down to the underlying silt deposits. Concrete was tremmied into the deep excavation to fill the void between the silt and the bottom of the vaults. The tremmied concrete was

purposefully left approximately 1 foot short of the bottom of the vault elevation so that a flat concrete heaving surface and finally a wet grout slurry would be installed just prior to placing the concrete vaults into place. This process resulted in a very good seal between the bottom of the vaults and the underlying silt.

5.3.6 Permeation Grouting

It was anticipated that the sheetpiles may not penetrate to the required depth due to the nature of the alluvial deposits (boulders and large cobbles) located along the HCC alignment. As anticipated, obstructions were encountered that were too large or too deep to be removed. The purpose of the permeation grouting was to create an impermeable groundwater barrier below the HCC sheetpile wall in areas where the sheetpiles did not penetrate into the silt layer at design depth. A technical description of the permeation grouting operation in 2008 is contained in the Jacobs Associates *Skykomish 2008 Permeation Grouting Summary Memo*. The permeation grouting summary memo, grouting logs, tables and as-built figures, all produced by Jacobs Associates are provided in the contractor's submittals in Appendix C. It was the opinion of Jacobs Associates, that the permeation grouting operation successfully extended the grout cutoff from the sheetpiles to the silt layer and created a barrier to groundwater.

5.3.7 Vibration and Settlement Monitoring

5.3.7.1 Vibration Monitoring

Construction activities required installing a utility casing beneath the rail lines, and the installation of sheetpile for the HCC wall and temporary excavation shoring. Sheetpile was driven into place using vibratory and impact hammers. The compaction of backfill with a vibratory roller was also used during backfilling operations. All of these activities had the potential to create vibrations that could have potential impacts to buildings on the perimeter of the excavation prism. Vibration monitoring was performed by Jacobs Associates from June 19, 2008 to October 13, 2008 in accordance with the *Vibration and Settlement Monitoring Plan*. The purpose of the monitoring was to evaluate potential impacts to the main rail lines and local buildings, including Maloney's General Store, the Skykomish Hotel, and the Cascadia Inn, and to adjust construction activities to reduce those impacts.

Monitoring consisted of placing sensors (geophones) at prescribed locations (next to at-risk structures). The geophones were used to record vertical, horizontal, and transverse ground velocities over time as inches-per-second. As part of the monitoring plan, action limits were established at 0.50 inches/second. A geotechnical professional from Jacobs Associates downloaded and reviewed the monitoring results, and notified AECOM construction management staff if sheetpile driving, utility crossing construction, or compaction activities had caused any ground velocities above the warning action limits. Vibration monitoring data show that with only a few exceptions, the vibration action limits were not exceeded. Jacobs Associates' geotechnical consultant concluded that in instances when the vibration monitoring action limits were exceeded, they were a result of someone disturbing the monitoring equipment itself or from vibratory compaction of backfill materials along Railroad Avenue. These disturbances caused the action limit to be exceeded for only short durations, which were unlikely to cause structural damage to the wood-frame buildings along Railroad Avenue. The vibration monitoring data can be found in Appendix R.

5.3.7.2 Settlement Monitoring

Jacobs Associates conducted settlement monitoring in accordance with the *Vibration and Settlement Monitoring Plan* during the following remediation activities:

- Overburden removal
- Pre-excavation in support of the HCC sheetpile wall installation.
- Removal of impacted material in the planned excavation prism
- Construction of the utility crossing beneath BNSF's mainline track.

The settlement monitoring plan initially established 20 monitoring points. This was later expanded to 93 monitoring points, which included additional monitoring points that were required for pre-excavation of the HCC wall installation, the utility crossing construction, and the monitoring of potential settlement at the Skykomish hotel. Baseline elevations were established for the monitoring points by surveyors from Inca Surveying and then verified by Strider's surveyor using Strider's surveying equipment. A geotechnical professional from Jacobs Associates was onsite to observe site conditions and review the results of the monitoring during excavation operations. There was no settlement observed of the mainline tracks or buildings during the 2008 construction season.

5.3.8 Mechanically Stabilized Earth Wall and Other Excavation Support

It became evident quickly that successful sheetpile installation first required that pre-excavation be completed to remove oversized cobbles and boulders from the sheetpile alignment. Safe slopes to facilitate the pre-excavation trenches pushed the shoring wall alignment on the north side of the excavation to the south far enough so that an excavation to the bottom of the planned excavation limit could be completed with sheetpiles. This, however, required that a shoring system be put in place so that excavation in subsequent years would have minimal impacts on surface improvements completed over the 2008 excavation area.

It was decided that constructing a Mechanically Stabilized Earth (MSE) wall on the north side of Railroad Avenue, instead of the planned sheetpiles, would be effective at supporting future excavation efforts north of the 2008 excavation area. An MSE wall and a sheetpile wall were both constructed behind the Whistling Post to provide excavation support for future excavations north of there.

MSE walls were constructed from S-01 to S-05 and from S-05 to S-12, as shown on drawing C-202 (Rev. 2) of the CPS. A typical cross-section of the MSE wall is also shown on this plan sheet. In addition to the previously described MSE walls, another MSE wall was constructed west of the Cascadia Inn after completing the additional excavation in that area to remove impacted soils beneath their septic drainfield. The locations of all the MSE walls are shown on Figures 5-2 and 5-3.

5.3.9 HCC Operation

5.3.9.1 Groundwater

The groundwater monitoring described in Section 5.4 of the 2008 CMP did not occur because the monitoring wells listed in that section were not installed in 2008. These wells will be installed in 2009 and the monitoring data collected at these wells in future groundwater monitoring events will be described in a forthcoming groundwater monitoring report.

5.3.9.2 System Monitoring

The HCC water treatment system was not brought on-line in 2008. Accordingly, none of the system monitoring described in Section 5.4.2 of the 2008 CMP occurred in 2008.

Piezometer wells located at the east end of the HCC barrier and on the upgradient side of the HCC barrier were installed in 2008 by Boart Longyear. These well installation logs are located in Appendix S. Piezometers located on the downgradient side of the HCC barrier were installed in new backfill during backfilling operations. There are no well installation logs for the downgradient piezometers.

5.4 Air Sparging (AS) System Construction

Sixteen air sparging and three vapor monitoring wells, and one air sparging piping vault were installed in the NEDZ as part of a remediation measure to treat the diesel impacted soils in that area. The locations of the wells and vault are shown on Figure 5-4. The wells were installed with a Spider Sonic drilling machine operated by Boart Longyear. The air sparging well installation bore logs are included in Appendix S. Soil and well cuttings generated during system construction were stockpiled in the SHF and disposed of off-site without further characterization.

5.5 Air Sparging System Operation

The air sparging system was not energized in 2008. Operation performance monitoring activities, detailed in Section 5.7 of the 2008 CMP, will be described in future groundwater monitoring reports and in the Annual AS System Report.

5.6 Remediation Building Construction

Construction of the remediation building consisted of:

- Site grading for the building footprint
- Pouring the foundation
- Erecting the building
- Installing water treatment and air sparging equipment.

Strider constructed the pole barn building on railroad property north of Old Cascade Highway to house the HCC and air sparging system equipment. The building meets the substantive requirements of the Town building codes. Surface soils in this area were graded prior to the construction of the remediation building with no soil being sent off-site for disposal. The location of the building is shown on Figure 5-1. The foundation inspection record is included in Appendix A. Building equipment schematics are included in Appendix T.

5.7 Section Building Demolition/New Construction

Section building demolition and construction did not occur in the 2008 construction season.

5.8 Private Property Excavation

Private property excavation was completed at the same time as the HCC and Railroad Avenue excavations previously detailed in Section 5.2 of this report. Details about the performance monitoring activities for the private property excavation are therefore previously summarized in Section 5.2.

5.9 Utilities Construction

The following list summarizes restoration activities that were completed during 2008:

- New storm and sanitary sewers installed along Railroad Avenue in accordance with the CPS
- Public water lines installed along Railroad Avenue in accordance with the CPS.

No utilities were constructed outside the 2008 excavation limits.

5.10 Restoration

Reconstruction and restoration operations were initiated upon completion of excavation. This included:

- Construction of an MSE wall to support future on-site shoring and excavation requirements
- Installation of an 8-inch ductile iron water main
- Backfilling and compaction of excavation areas
- Construction of a stormwater sewer system
- Construction of new building foundations for the temporarily relocated McEvoy house and Whistling Post Tavern
- Construction of new septic systems

- Moving the buildings back to their new foundations, and
- Restoring and reconnecting the utilities.

Existing roads within the excavation area were temporarily paved with Asphalt Treated Base (ATB).

The original drainfields for the relocated structures were replaced with a sewage collection system designed by Gray & Osborne for the Town of Skykomish. This system consists of individual septic tanks and sewer lines. The septic tanks are designed to collect and trap solid wastes while the sewer lines are designed to convey the liquid waste fraction from the businesses and houses along Railroad Avenue and 4th Street to the new Town lift station located at the west end of Railroad Avenue. The McEvoy house and the Whistling Post tavern were tied into the new sewer lines in 2008. BNSF elected to repair the Cascadia Inn drainfield in 2009. The Cascadia Inn will be tied into the Town's effluent collection system when it is completed and the system is brought on-line. The liquid wastes collected at the lift station were periodically pumped out for disposal. The pump out and disposal operation is an interim measure, as the lift station will ultimately pump wastes to the new Town treatment system located at the Skykomish airport. This new treatment facility is currently under construction and is anticipated to be completed in the summer of 2009.

Restoration activities that have been scheduled to be completed after December 31, 2008 include:

- Residential sidewalks and driveways
- Permanent sidewalks, curbs, and final paving of streets
- Topsoil placement and landscaping on the Whistling Post and Town park (topsoil was placed on the McEvoy property in 2008)
- The installation of the joint utility trench (JUT)
- Ongoing restoration work with the McEvoy House
- Installation of permanent street lighting fixtures.

5.10.1 Structure Restoration

Following remediation activities, the Whistling Post Tavern and McEvoy house were returned to their lots on newly constructed concrete foundations. At the request of the owner, the Whistling Post Tavern was placed on its new foundation, 10 feet west of its original location. As previously mentioned, the Depot was left at its temporary storage location while a new permanent location is being determined.

Structure restoration activities that took place in 2008 included the following:

- Construction of new concrete foundations. Foundations were constructed to current applicable codes including adequate venting area for a flood-prone area. Foundations were inspected by a town appointed inspector. The building permits for the new structure foundations are included in Appendix A.
- Dry rot repair and selected siding replacement.
- Attachment of the structures to the new foundations.
- Installation of water lines from the streets.
- Installation of new septic tanks.
- Installation of lateral septic lines from new tanks to the new 4-inch sanitary sewer main in Railroad Avenue to accommodate future city-wide septic effluent collection.
- Strider performed repairs on rotten rim and floor joists where they were in contact with the new foundation for the Whistling Post Tavern.

Restoration of all ancillary appurtenances, such as driveways, walkways, etc. is expected to occur in 2009.

5.11 Church and Adjacent Properties Metals Investigation/Excavation

A remedial design investigation conducted in April 2008 identified lead and arsenic soil concentrations above site CULs in the shallow soils behind the church. The lead and arsenic CULs are summarized in Table 5-1. On October 16, 2008 the impacted soils on the church property exceeding the site CULs were removed and sent to Rabanco's Subtitle D disposal facility. This excavation was guided by an X-ray fluorescence (XRF) instrument, which uses X-rays to measure metals concentrations in soils. At the completion of this first stage of the excavation, bottom and sidewall confirmation samples were collected on the church property and sent to Test America in Bothell, Washington for analysis. Sample analysis showed that while the collected bottom samples had achieved the CULs, sidewall samples leading to the Javier property to the north and the Sladek property to the east were above the CULs for either lead or arsenic.

Composite samples of the top foot of soil were then collected from six grids on the Javier, Sladek, and Elrod properties (the Elrod property is northeast of the Church property) in an attempt to delineate the extents of the metals impacts on the Javier and Sladek properties and to see if the metals impacts existed on the Elrod property as well. The results of this investigation showed metals-impacted soils on the Elrod property and metals impacts extending further into the Sladek and Javier properties.

The metals excavation was expanded to these adjacent properties on November 6 and again on November 26, again guided by the XRF instrument. Soil samples were collected at the excavation limits to determine if excavation CULs had been met after each of these excavations. Based on the sampling results, the excavation was extended and additional performance samples were collected three more times on November 26, December 2, and December 4. These last three excavations and sampling events occurred without the use of the XRF unit, because the XRF unit was no longer able to provide accurate soil concentration measurements due to the higher moisture content of the soil resulting from recent rains.

At the conclusion of the 2008 metals impacted soil excavations, all grids returned bottom and sidewall analytical results below the CULs for lead and arsenic. The final metals excavation limits are shown on Figure 5-5. The only exception to this was at the northern excavation limit in Grid 15. The final sidewall sample collected there showed a lead soil concentration above the CUL. An investigation is currently planned to take place during the 2009 construction season. Details about the investigation/excavation are described in the 2009 CMP.

Level III data validation using standard EPA-approved procedures was performed, and the analytical results were determined to be usable. The data validation report is included in Appendix M. A summary of the data is included in Table 5-4. The laboratory reports are included in Appendix N.

Soil excavated on October 16 from the church property was stockpiled and characterized for disposal purposes in accordance with Section 5.14 of the 2008 CMP. The soil analytical results for the stockpile sampling are summarized in Table 5-5. The laboratory reports are included in Appendix N.

5.12 Stockpile Characterization

Stockpile characterization was conducted to profile soils for disposal purposes during the 2008 remediation. The soils that required characterization for disposal purposes were: soil excavated for the Town lift station construction, described in Section 5.16.1; soil excavated for the installation of the Telecom conduit on the railyard, described in Section 5.16.2; and soils excavated during the metals excavation, previously described in Section 5.11. Stockpiles were sampled in accordance with Section 4.1.5.1 of the 2008 SAP. Stockpiles analyses were coordinated with personnel from Rabanco in order to establish adequate soil disposal profiles. The laboratory analytical results are summarized in Table 5-5. The laboratory analytical reports are included in Appendix N. No overburden was stockpiled for characterization, as this material was pre-characterized as described in Section 4.1.1 of the SAP. Likewise, below excavation VDL material was not stockpiled for characterization as an adequate disposal profile already existed for this material with the disposal facility.

5.13 Additional Activities

5.13.1 Lift Station

Constructing the Town lift station at the west end of Railroad Avenue put Callen Construction personnel at risk of being exposed to lead, arsenic or petroleum hydrocarbons resulting from historic railroad activities. To reduce the risk, the top 2 feet of soil was removed by Strider personnel from that area and excavation performance samples were taken by AECOM personnel at the excavation limits. The total excavation area measured approximately 68 feet by 42 feet. The area was then divided in half so that there were two sections measuring 34 feet by 42 feet and excavation performance grab samples were taken from the bottom centers of each half and at the sidewall centers of each half to confirm that the soil RLs, summarized in Table 5-1, were met at the excavation limits. The laboratory results show that the lead, arsenic, and petroleum hydrocarbon soil concentrations were below RLs in the performance samples collected at the excavation limits. The laboratory reports are included in Appendix N, and summarized in Table 5-2.

5.13.2 Telecom Trench

At the Railroad's request and pursuant to BNSF's access agreement with the Town, Strider installed underground conduit in a trench running from the Railroad's telecommunications building, located just west of the SHF, to a utility pole approximately 200 feet to the west of the telecommunications building. Because there had been historic releases of lead, arsenic, PCBs, and petroleum hydrocarbons to the shallow soils in this area, Strider used a garden hose connected to the water truck to keep the soils in the trench wet so that little or no dust could be created. Personnel handling this material also wore disposable gloves and dust masks while handling this soil. The location of the telecom trench is shown on Figure 4-1.

The excavated soil was loaded directly into a dump truck and stockpiled separately in the SHF. AECOM collected a composite stockpile sample from this stockpile and submitted it to Test America for analysis. Lab results showed that lead, arsenic, PCBs, and petroleum hydrocarbon concentrations were below disposal criteria set by the disposal facility. Rabanco reviewed the lab results and approved the material to be added to the impacted soil stockpile. The laboratory results are attached in Appendix N and summarized in Table 5-5.

5.13.3 Railyard Excavation

Some shallow petroleum impacted soils on the railyard were removed in May 2008 after notifying Ecology of BNSF's intent to remove these soils during a period of engine track maintenance. The area was backfilled upon completion of the excavation. This work was part of BNSF's obligation under Section 4.1.6 of the CAP to remove 7,500 cubic yards off soil from the Railyard Zone. A memo describing this excavation is included in Appendix U.

5.14 Protection Monitoring

5.14.1 Air Monitoring

Air monitoring was performed in accordance with the *Skykomish Air and Noise Monitoring Plan* (AMP) (Argus Pacific, 2008). Each week's monitoring results were detailed in the weekly Air and Noise Monitoring reports produced by Argus. In these reports, Argus tabulated and summarized the air monitoring data and submitted it in weekly reports to AECOM. AECOM subsequently uploaded the reports to the VPM website for Ecology, BNSF and other interested parties to view.

5.14.2 Noise Monitoring

Noise monitoring was performed in accordance with the AMP. Each week's monitoring results were detailed in the weekly Air and Noise Monitoring reports produced by Argus. In these reports, Argus tabulated and summarized the noise monitoring data and submitted it in weekly reports to AECOM. AECOM subsequently uploaded the reports to the VPM website for Ecology, BNSF and other interested parties to view.

5.14.3 Weather Monitoring

Monitoring of weather conditions was performed in accordance with the AMP and the NPDES permit. A weather station was set up on the roof of the BNSF house, immediately southwest of the 5th Street Bridge. Weather data including temperature, wind direction and speed, and precipitation were monitored continuously and downloaded periodically from the station. These data are included in Appendix V.

6.0 Work To Be Completed After 2008

This section summarizes the remediation activities which were described in the 2008 CPS, but could not be completed during the 2008 construction season. Table 6-1 summarizes these activities and indicates the construction year during which they are likely to be completed. Future as-built reports will describe completion of these activities.

6.1 HCC System Construction and Operation

Construction and installation of the HCC system components listed below was not completed during the 2008 construction season.

- **Recovery Wells (RW) and skimmers –** RW-7 and RW-8 were not constructed and product recovery skimmer construction in RW-03, RW-04, RW-05, RW-07 and RW-08 was not completed
- **Injection Wells –** Final piping connections within the injection well vaults were not completed
- **Water treatment equipment –** Final electrical wiring and programmable logic controllers installation within the remediation building was not completed
- **Piezometers –** The piezometers located along the HCC alignment and associated appurtenances were not installed
- **Backup treatment gates –** Carbon and granulithic material was not placed in the backup treatment gates
- **Groundwater Monitoring Wells –** HCC downgradient groundwater monitoring wells 5A-W-43, 5A-W-44, 2A-W-40, 2A-W-41, 2A-W-42, 1C-W-7, 1B-W-23, 5-W-45, 1A-W-36, 1A-W-37, HCC Gate Wells (GW) GW-1, GW-2, GW-3, and GW-4, HCC End Wells (EW) EW-1 and EW-2 were not installed.

These system components will be installed and HCC operation will begin in 2009.

6.2 AS System Construction and Operation

Piping installation within the vault was not completed during the 2008 construction season. This installation will be completed and AS system operation will begin in 2009.

AS system well 1C-W-8 was not installed. This well will be installed in 2009.

6.3 Private Property Excavation

The private property excavation was not completed during the 2008 construction season. As described in Section 4.4, a previously undiscovered band of petroleum impacted material was found beneath the southwest corner of the Cascadia Inn during the 2008 remediation excavation. This area was backfilled upon completion of the planned 2008 excavation. After backfilling, borings were placed and soil samples were collected beneath the Cascadia Inn to evaluate the impacted soil extents. Boring and laboratory analytical data are currently being reviewed. A remediation plan to address this area will be included in the 2010 EDR.

6.4 Restoration

6.4.1 2008 Utilities Construction

JUT construction and permanent street light installation were not completed during the 2008 construction season. These activities will be completed in 2009.

6.4.2 Right-of-Way (ROW) Restoration

Curbs, gutter, and roadway surface construction was not completed during the 2008 construction season. These activities will be completed in 2010.

6.4.3 McEvoy House Restoration

McEvoy house restoration was not completed during the 2008 construction season. These activities will be completed in 2009.

6.4.4 Relocation of the Depot

Depot relocation was not completed during the 2008 construction season. A permanent location for the Depot is currently being negotiated between the Town and BNSF. It is possible that the Depot will not be permanently relocated until the completion of the remediation activities in 2011.

6.5 Church and Adjacent Properties Metals Investigation/Excavation

Soil with lead concentrations exceeding the CUL was found at the northern Javier property boundary during the 2008 metals investigation/excavation. Additional investigation of this area is currently scheduled for the 2009 construction season. Details of this investigation are described in the 2009 CMP (AECOM, 2009).

Table 6-1 Work Not Completed in 2008

Activity	Work Summary	Year to be Completed		
		2009	2010	2011
HCC System Construction and Operation	Well and piezometer construction; wiring, gate media; system start-up	X		
AS System Construction and Operation	Piping; well installation; system start-up	X		
Private Property Excavation	Potential Cascadia Inn excavation		X	
2008 Utilities Construction	JUT construction and street light installation	X		
ROW Restoration	Curb, gutter, and roadway surface construction		X	
McEvoy House Restoration	Restoration completion	X		
Depot Relocation	Placement at permanent location			X
Metals Investigation	Investigation and possible excavation at northern property boundary	X		

Note: The schedule presented in Table 6-1 is preliminary and may change.

7.0 Summary and Conclusions

From the period starting May 5, 2008 and ending December 31, 2008, personnel from AECOM Environment oversaw the 2008 remediation activities at the Former BNSF Maintenance and Fueling Facility in Skykomish, Washington on behalf of BNSF.

Approximately 11,500 gallons of oil was recovered during excavation activities and approximately 28,000 cubic yards of impacted soil was excavated and disposed of off-site. The impacted soil was removed from the site, transported to and placed in Rabanco's Subtitle D landfill in Roosevelt, Washington. Analytical results from performance sampling of the extents of the excavation demonstrate that the soil remediation objectives were achieved for the excavation area grids.

Metals impacted soils were removed from four town properties. Groundwater sampling at the NEDZ CPOC groundwater monitoring well at the conclusion of NEDZ excavation demonstrated the effectiveness of the excavation at achieving the groundwater CUL of 208 µg/L and no visible LNAPL or sheen.

Construction of the HCC system was substantially completed in 2008 and included a 1,123-foot long HCC barrier installed along the northern boundary of the railyard and a remediation equipment building constructed to house the HCC system's water treatment equipment. An air sparging system was also substantially constructed to address residual diesel impacts in the NEDZ. A 36-inch utility casing was also installed beneath the main rail lines to convey HCC and air sparging piping and conduit back to the remediation building.

The project was substantially complete in 2008, but some restoration activities still remain to be completed in 2009 or 2010. The installation of underground utility conduits and the installation and connection of ancillary HCC equipment and wiring were also not completed in 2008. Work completed in 2009 will be described in the 2009 Completion Report.

The work described in this report was completed in substantial compliance with the 2008 EDR, the 2008 CMP, and the 2008 CPS.

8.0 References

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Ecology, 2007b. *Environmental Impact Statement*. Prepared for BNSF Railway Company by the Washington State Department of Ecology. Bellevue, Washington. October 17, 2007.

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Jacobs Associates, 2008. *Vibration and Settlement Monitoring Plan – BNSF Skykomish Remediation*. March 2008.

NWAA, 2008. *Archaeological Resources Monitoring and Discovery Plan*. Prepared for The ENSR Corporation, Inc. by Northwest Archaeological Associates, Inc. Seattle, Washington. March 25, 2008.

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
SKY-OVBN-A1-2.5	6/19/2008	BRF0275	6/20/2008	1910 J	6300 J	8210	
SKY-OVBN-A1-5.5	6/19/2008	BRF0275	6/20/2008	1.055	2.1	3.155	
SKY-OVBN-A2-2.5	6/19/2008	BRF0275	6/19/2008	7820 J	16300 J	24120	
SKY-OVBN-A2-5.5	6/19/2008	BRF0275	6/20/2008	28.7	54.8	83.5	
SKY-OVBN-A3-2.5	6/19/2008	BRF0275	6/19/2008	825 J	3910	4735	
SKY-OVBN-A3-6.0	6/19/2008	BRF0275	6/19/2008	140 J	687	827	
SKY-OVBN-A4-2.5	6/19/2008	BRF0275	6/19/2008	1510 J	6500	8010	
SKY-OVBN-A4-6.0	6/19/2008	BRF0275	6/19/2008	18.0 J	40.8	58.8	
Sky-OVBN-A5-2.5	6/9/2008	BRF0119	6/10/2008	205 J	570	775	
Sky-OVBN-A5-6.5	6/9/2008	BRF0119	6/11/2008	319 J	1230	1549	
Sky-OVBN-A6-2.5	6/9/2008	BRF0119	6/11/2008	337 J	1160	1497	
Sky-OVBN-A6-6.0	6/9/2008	BRF0119	6/11/2008	207 J	864	1071	
Sky-OVBN-A7-2.5	6/9/2008	BRF0119	6/11/2008	56.8 J	272	328.8	
Sky-OVBN-A7-6.0	6/9/2008	BRF0119	6/11/2008	30.2 J	116	146.2	
Sky-OVBN-A8-2.5	6/9/2008	BRF0119	6/11/2008	190 J	1830	2020	
Sky-OVBN-A8-6.0	6/9/2008	BRF0119	6/11/2008	7.58 J	30.3	37.88	
SKY-OVBN-A9-2.5	6/10/2008	BRF0139	6/13/2008	96.2 J	1080	1176.2	
SKY-OVBN-A9-6.5	6/10/2008	BRF0139	6/13/2008	16.4 J	114	130.4	
SKY-OVBN-A10-2.5	6/10/2008	BRF0139	6/13/2008	543 J	2540	3083	
SKY-OVBN-A10-6.5	6/10/2008	BRF0139	6/13/2008	64.4 J	395	459.4	
SKY-OVBN-A11-2.5	6/13/2008	BRF0206	6/17/2008	58.2 J	270	328.2	
SKY-OVBN-A11-6.5	6/13/2008	BRF0206	6/17/2008	118 J	363	481	
SKY-OVBN-A12-2.5	6/10/2008	BRF0139	6/12/2008	53.9 J	288	341.9	
SKY-OVBN-A12-6.5	6/10/2008	BRF0139	6/12/2008	37.9 J	153	190.9	
SKY-OVBN-A13-6.5	6/10/2008	BRF0139	6/12/2008	445 J	1830	2275	
SKY-OVBN-AB-2.5	6/10/2008	BRF0139	6/12/2008	1.82 J	9.40 J	11.22	
SKY-OVBN-DUP02-6/10/	6/10/2008	BRF0139	6/12/2008	5.05 J	32.2	37.25	Duplicate of SKY-OVBN-AB-2.5
SKY-OVBN-A14-2.5	6/10/2008	BRF0139	6/13/2008	0.855	1.705	2.56	
SKY-OVBN-A14-6.5	6/10/2008	BRF0139	6/13/2008	202 J	727	929	
SKY-OVBN-A15-1.5	6/10/2008	BRF0139	6/13/2008	10.3 J	15.9 J	26.2	
SKY-OVBN-A15-2.5	6/10/2008	BRF0139	6/12/2008	0.88	4.74 J	5.62	
SKY-OVBN-A15-6.0	6/10/2008	BRF0139	6/13/2008	32800	37700	70500	
SKY-OVBN-A15-6.5	6/10/2008	BRF0139	6/13/2008	0.83	1.65	2.48	
SKY-OVBN-DUP03-6/10/	6/10/2008	BRF0139	6/13/2008	4.21 J	6.00 J	10.21	Duplicate of SKY-OVBN-A15-1.5
SKY-OVBN-A16-2.5	6/11/2008	BRF0162	6/12/2008	5.54 J	10.0 J	15.54	
SKY-OVBN-A16-6.5	6/11/2008	BRF0162	6/13/2008	2.48 J	1.695	4.175	
SKY-OVBN-A17-2.5	6/24/2008	BRF0327	6/25/2008	187 J	912	1099	
SKY-OVBN-A17-6.5	6/24/2008	BRF0327	6/25/2008	2.33 J	11.6 J	13.93	
SKY-OVBN-A18-2.5	6/24/2008	BRF0327	6/25/2008	18.9 J	74.4	93.3	
SKY-OVBN-A18-6.5	6/24/2008	BRF0327	6/25/2008	5.15	4.66 J	9.81	
SKY-OVBN-A19-2.5	6/24/2008	BRF0327	6/25/2008	45.7 J	230	275.7	
SKY-OVBN-A19-7.0	6/24/2008	BRF0327	6/25/2008	4.00 J	17.0 J	21	

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
SKY-OVBN-A20-2.5	6/24/2008	BRF0327	6/25/2008	27.7	42.8	70.5	
SKY-OVBN-A20-7.0	6/24/2008	BRF0327	6/25/2008	3.39 J	13.8 J	17.19	
SKY-OVBN-A21-2.5	6/24/2008	BRF0327	6/25/2008	0.795	1.595	2.39	
SKY-OVBN-A21-7.0	6/24/2008	BRF0327	6/25/2008	11.6 J	21.4 J	33	
SKY-OVBN-A21ZA-7.0	6/24/2008	BRF0327	6/25/2008	12.1 J	22.2 J	34.3	Duplicate of SKY-OVBN-A21-7.0
SKY-OVBN-A22-2.5	6/24/2008	BRF0327	6/25/2008	36.7 J	102	138.7	
SKY-OVBN-A22-7.0	6/24/2008	BRF0327	6/25/2008	4.87 J	13.1 J	17.97	
SKY-OVBN-A23-2.5	6/24/2008	BRF0327	6/25/2008	274 J	1330	1604	
SKY-OVBN-A23-7.0	6/24/2008	BRF0327	6/25/2008	150 J	644	794	
SKY-OVBN-A24-2.5	6/24/2008	BRF0327	6/25/2008	47.2 J	241	288.2	
SKY-OVBN-A24-7.0	6/24/2008	BRF0327	6/25/2008	25.9 J	418	443.9	
SKY-OVBN-A25-2.5	6/13/2008	BRF0206	6/17/2008	2.93 J	1.725	4.655	
SKY-OVBN-A21-7.0	6/13/2008	BRF0206	6/17/2008	0.815	1.63	2.445	
SKY-OVBN-DUP05-06/13	6/13/2008	BRF0206	6/17/2008	0.835	1.665	2.5	Duplicate of SKY-OVBN-A21-7.0
SKY-OVBN-A26-2.5	6/13/2008	BRF0206	6/17/2008	11.2 J	37.0 J	48.2	
SKY-OVBN-A26-6.5	6/13/2008	BRF0206	6/17/2008	50.9 J	153	203.9	
SKY-OVBN-A27-2.5	6/13/2008	BRF0206	6/17/2008	16	44.9	60.9	
SKY-OVBN-A27-6.5	6/13/2008	BRF0206	6/17/2008	0.835	4.31 J	5.145	
SKY-OVBN-A28-2.5	6/13/2008	BRF0206	6/17/2008	7.03 J	20.8 J	27.83	
SKY-OVBN-A28-6.5	6/13/2008	BRF0206	6/17/2008	9.40 J	48.6	58	
SKY-OVBN-A29-2.5	6/13/2008	BRF0206	6/17/2008	21.9 J	78.7	100.6	
SKY-OVBN-A29-6.5	6/13/2008	BRF0206	6/16/2008	0.84	1.675	2.515	
SKY-OVBN-A30-2.5	6/13/2008	BRF0206	6/17/2008	45.7	103	148.7	
SKY-OVBN-A30-6.5	6/13/2008	BRF0206	6/17/2008	0.86	6.82 J	7.68	
SKY-OVBN-A31-2.5	6/12/2008	BRF0181	6/14/2008	12.3 J	47.5	59.8	
SKY-OVBN-A31-7.0	6/12/2008	BRF0181	6/14/2008	5.01 J	29.3	34.31	
SKY-OVBN-A32-2.5	6/12/2008	BRF0181	6/14/2008	15.2 J	50	65.2	
SKY-OVBN-A32-7.0	6/12/2008	BRF0181	6/14/2008	0.82	1.635	2.455	
SKY-OVBN-A33-2.5	6/12/2008	BRF0181	6/14/2008	13.3 J	64.2	77.5	
SKY-OVBN-A33-6.5	6/12/2008	BRF0181	6/14/2008	0.825	1.65	2.475	
SKY-OVBN-A34-2.5	6/12/2008	BRF0181	6/14/2008	3.80 J	10.2 J	14	
SKY-OVBN-A34-6.5	6/12/2008	BRF0181	6/14/2008	18.4	55.6	74	
SKY-OVBN-A35-2.5	6/12/2008	BRF0181	6/14/2008	5.38 J	1.775	7.155	
SKY-OVBN-A35-6.5	6/12/2008	BRF0181	6/14/2008	3.61 J	1.9	5.51	
SKY-OVBN-A36-2.5	6/12/2008	BRF0181	6/14/2008	2.83 J	1.855	4.685	
SKY-OVBN-A36-4.0	6/12/2008	BRF0206	6/17/2008	12.9 J	46.9	59.8	
SKY-OVBN-A36-6.5	6/12/2008	BRF0181	6/14/2008	15.0 J	65.6	80.6	
SKY-OVBN-DUP09-06120	6/12/2008	BRF0181	6/14/2008	20.8 J	102	122.8	Duplicate of SKY-OVBN-A36-6.5
SKY-OVBN-A37-2.5	6/12/2008	BRF0181	6/14/2008	13.1 J	51.8	64.9	
SKY-OVBN-A37-5.5	6/12/2008	BRF0181	6/14/2008	23.4	28.0 J	51.4	
SKY-OVBN-A38-2.5	6/12/2008	BRF0181	6/14/2008	2.84 J	4.90 J	7.74	
SKY-OVBN-A38-7.0	6/12/2008	BRF0181	6/14/2008	6.60 J	15.3 J	21.9	

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
SKY-OVBN-A39-2.5	6/12/2008	BRF0181	6/14/2008	2.22 J	5.37 J	7.59	
SKY-OVBN-A39-5.5	6/12/2008	BRF0181	6/14/2008	3.03 J	4.07 J	7.1	
SKY-OVBN-A40-2.5	6/12/2008	BRF0181	6/13/2008	20.2 J	60.9	81.1	
SKY-OVBN-A40-5.5	6/12/2008	BRF0181	6/13/2008	0.83	1.66	2.49	
SKY-OVBN-B1-2.5	6/19/2008	BRF0275	6/20/2008	39.2 J	180	219.2	
SKY-OVBN-B2-2.5	6/19/2008	BRF0275	6/20/2008	43.1 J	276	319.1	
SKY-OVBN-B3-2.5	6/19/2008	BRF0275	6/20/2008	21.7 J	161	182.7	
SKY-OVBN-B3-5.5	6/19/2008	BRF0275	6/20/2008	4.29 J	12.3 J	16.59	
SKY-OVBN-B4-2.5	6/19/2008	BRF0275	6/20/2008	9.64 J	47.3	56.94	
SKY-OVBN-B4-5.5	6/19/2008	BRF0275	6/20/2008	2.20 J	1.65	3.85	
Sky-OVBN-B5-2.5	6/9/2008	BRF0119	6/10/2008	49.2 J	307	356.2	
Sky-OVBN-B5-5.5	6/9/2008	BRF0119	6/10/2008	20.3 J	264	284.3	
Sky-OVBN-B6-2.5	6/9/2008	BRF0119	6/11/2008	70.7 J	911	981.7	
Sky-OVBN-B6-5.5	6/9/2008	BRF0119	6/11/2008	6.86 J	48.4	55.26	
Sky-OVBN-B7-2.5	6/9/2008	BRF0119	6/11/2008	29.4 J	341	370.4	
Sky-OVBN-B7-5.5	6/9/2008	BRF0119	6/11/2008	7.39 J	53.7	61.09	
Sky-OVBN-B8-2.5	6/9/2008	BRF0119	6/10/2008	577	2000	2577	
Sky-OVBN-B8-5.5	6/9/2008	BRF0119	6/11/2008	17.1 J	137	154.1	
Sky-OVBN-B9-2.5	6/9/2008	BRF0119	6/10/2008	2.41 J	4.26 J	6.67	
Sky-OVBN-B9-6.0	6/9/2008	BRF0119	6/11/2008	6.09 J	19.3 J	25.39	
Sky-OVBN-DUP01	6/9/2008	BRF0119	6/11/2008	6.33 J	22.8 J	29.13	Duplicate of Sky-OVBN-B9-6.0
SKY-OVBN-B10-2.5	6/10/2008	BRF0139	6/13/2008	64.6 J	583	647.6	
SKY-OVBN-B10-6.0	6/10/2008	BRF0139	6/13/2008	34.4 J	122	156.4	
SKY-OVBN-11Z-6.0	6/13/2008	BRF0206	6/17/2008	392 J	1130	1522	Duplicate of SKY-OVBN-B11-6.0
SKY-OVBN-B11-2.5	6/13/2008	BRF0206	6/17/2008	2.43 J	2.03	4.46	
SKY-OVBN-B11-6.0	6/13/2008	BRF0206	6/17/2008	593 J	1700	2293	
SKY-OVBN-B12-2.5	6/13/2008	BRF0206	6/17/2008	202 J	385	587	
SKY-OVBN-B12-6.0	6/13/2008	BRF0206	6/17/2008	508 J	1820	2328	
SKY-OVBN-B13-2.5	6/10/2008	BRF0139	6/12/2008	11.2 J	59	70.2	
SKY-OVBN-B13-6.5	6/10/2008	BRF0139	6/12/2008	643	2280	2923	
SKY-OVBN-B14-2.5	6/10/2008	BRF0139	6/12/2008	30.1 J	131	161.1	
SKY-OVBN-B14-6.5	6/10/2008	BRF0139	6/12/2008	411 J	1490	1901	
SKY-OVBN-B15-2.5	6/10/2008	BRF0139	6/13/2008	1.76 J	1.72	3.48	
SKY-OVBN-B15-6.5	6/10/2008	BRF0139	6/13/2008	3.90 J	18.0 J	21.9	
SKY-OVBN-B16-2.5	6/11/2008	BRF0162	6/13/2008	25.6 J	86.7	112.3	
SKY-OVBN-B16-6.5	6/11/2008	BRF0162	6/13/2008	16.6 J	65.5	82.1	
SKY-OVBN-B17-2.5	6/13/2008	BRF0206	6/17/2008	13.2 J	35.1	48.3	
SKY-OVBN-B17-6.5	6/13/2008	BRF0206	6/17/2008	22.7 J	97.8	120.5	
SKY-OVBN-B18-2.5	6/11/2008	BRF0162	6/13/2008	4.89 J	7.58 J	12.47	
SKY-OVBN-B18-6.5	6/11/2008	BRF0162	6/13/2008	2.79 J	1.655	4.445	
SKY-OVBN-B19-2.5	6/11/2008	BRF0162	6/13/2008	2.43 J	1.645	4.075	
SKY-OVBN-B19-6.5	6/11/2008	BRF0162	6/13/2008	20.2 J	56.6	76.8	

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
SKY-OVBN-B20-2.5	6/11/2008	BRF0162	6/13/2008	2.64 J	3.98 J	6.62	
SKY-OVBN-B20-7.0	6/11/2008	BRF0162	6/13/2008	2.51 J	1.615	4.125	
SKY-OVBN-21Z-7.0	6/16/2008	BRF0225	6/18/2008	1.85 J	1.625	3.475	Duplicate of SKY-OVBN-B21-7.0
SKY-OVBN-B21-2.5	6/16/2008	BRF0225	6/17/2008	4.75 J	37	41.75	
SKY-OVBN-B21-7.0	6/16/2008	BRF0225	6/18/2008	0.825	1.64	2.465	
SKY-OVBN-B22-2.5	6/16/2008	BRF0225	6/18/2008	0.815	1.625	2.44	
SKY-OVBN-B22-7.0	6/16/2008	BRF0225	6/18/2008	0.82	1.63	2.45	
SKY-OVBN-B23-2.5	6/16/2008	BRF0225	6/18/2008	0.815	1.625	2.44	
SKY-OVBN-B23-7.0	6/16/2008	BRF0225	6/18/2008	0.835	1.665	2.5	
SKY-OVBN-B24-2.5	6/16/2008	BRF0225	6/18/2008	2.71 J	7.23 J	9.94	
SKY-OVBN-B24-6.5	6/16/2008	BRF0225	6/18/2008	2.17 J	1.655	3.825	
SKY-OVBN-B25-2.5	6/13/2008	BRF0206	6/17/2008	2.24 J	1.63	3.87	
SKY-OVBN-B25-6.5	6/13/2008	BRF0206	6/17/2008	3.15 J	4.88 J	8.03	
SKY-OVBN-DUP06-06/13	6/13/2008	BRF0206	6/17/2008	36.8 J	56.9 J	93.7	Duplicate of SKY-OVBN-B25-6.5
SKY-OVBN-B26-2.5	6/13/2008	BRF0206	6/17/2008	0.84	3.87 J	4.71	
SKY-OVBN-B26-6.5	6/13/2008	BRF0206	6/17/2008	4.57 J	12.1 J	16.67	
SKY-OVBN-B27-2.5	6/13/2008	BRF0206	6/17/2008	1.81 J	1.625	3.435	
SKY-OVBN-B27-6.5	6/13/2008	BRF0206	6/17/2008	7.96 J	31.2	39.16	
SKY-OVBN-28Z-2.5	6/13/2008	BRF0206	6/17/2008	16.1 J	47.5	63.6	Duplicate of SKY-OVBN-B28-2.5
SKY-OVBN-B28-2.5	6/13/2008	BRF0206	6/17/2008	23.9 J	69.9	93.8	
SKY-OVBN-B28-7.0	6/13/2008	BRF0206	6/17/2008	25.9 J	138	163.9	
SKY-OVBN-29Z-6.0	6/13/2008	BRF0206	6/16/2008	325	131	456	Duplicate of SKY-OVBN-B29-6.0
SKY-OVBN-B29-2.5	6/13/2008	BRF0206	6/16/2008	26.8 J	138	164.8	
SKY-OVBN-B29-6.0	6/13/2008	BRF0206	6/17/2008	365	126	491	
SKY-OVBN-B30-2.5	6/13/2008	BRF0206	6/17/2008	5.26 J	19.7 J	24.96	
SKY-OVBN-B30-7.0	6/13/2008	BRF0206	6/17/2008	15.4 J	124	139.4	
SKY-OVBN-B31-2.5	6/12/2008	BRF0181	6/14/2008	7.51 J	40.9	48.41	
SKY-OVBN-B31-6.0	6/12/2008	BRF0181	6/14/2008	3.08 J	18.4 J	21.48	
SKY-OVBN-B32-2.5	6/12/2008	BRF0181	6/14/2008	9.30 J	40.7	50	
SKY-OVBN-B32-6.5	6/12/2008	BRF0181	6/14/2008	8.51 J	33.4	41.91	
SKY-OVBN-B33-2.5	6/12/2008	BRF0181	6/14/2008	21.8 J	121	142.8	
SKY-OVBN-B33-6.5	6/12/2008	BRF0181	6/14/2008	31.5 J	245	276.5	
SKY-OVBN-B34-2.5	6/12/2008	BRF0181	6/14/2008	37.4 J	233	270.4	
SKY-OVBN-B34-7.0	6/12/2008	BRF0181	6/14/2008	4.50 J	16.5 J	21	
SKY-OVBN-B35-2.5	6/12/2008	BRF0181	6/13/2008	10.7 J	64.9	75.6	
SKY-OVBN-B35-6.0	6/12/2008	BRF0181	6/13/2008	6370	1020 J	7390	
SKY-OVBN-B36-2.5	6/12/2008	BRF0181	6/14/2008	5.36 J	14.6 J	19.96	
SKY-OVBN-B36-6.0	6/12/2008	BRF0181	6/14/2008	2.74 J	7.17 J	9.91	
SKY-OVBN-B37-2.5	6/12/2008	BRF0181	6/14/2008	17	24.1 J	41.1	
SKY-OVBN-B38-2.5	6/12/2008	BRF0181	6/14/2008	10.8 J	25.7 J	36.5	
SKY-OVBN-B38-6.5	6/12/2008	BRF0181	6/14/2008	9.00 J	26.5 J	35.5	
SKY-OVBN-B39-2.5	6/12/2008	BRF0181	6/14/2008	16.7 J	31.8	48.5	

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
SKY-OVBN-B39-6.0	6/12/2008	BRF0181	6/14/2008	2.83 J	7.89 J	10.72	
SKY-OVBN-B40-2.5	6/12/2008	BRF0181	6/14/2008	11.7 J	60.7	72.4	
SKY-OVBN-B40-5.5	6/12/2008	BRF0181	6/14/2008	6.59 J	34.6	41.19	
Sky-OVBN-C-5-2.5	6/9/2008	BRF0119	6/10/2008	118 J	1140	1258	
Sky-OVBN-C-5-5.5	6/9/2008	BRF0119	6/10/2008	31.6 J	195	226.6	
Sky-OVBN-C6-2.5	6/9/2008	BRF0119	6/11/2008	239 J	548 J	787	
Sky-OVBN-C6-6.0	6/9/2008	BRF0119	6/11/2008	24.6 J	55.4	80	
Sky-OVBN-C7-2.5	6/9/2008	BRF0119	6/11/2008	198 J	1020	1218	
Sky-OVBN-C7-5.5	6/9/2008	BRF0119	6/11/2008	151 J	492	643	
Sky-OVBN-C8-2.5	6/9/2008	BRF0119	6/10/2008	83.2 J	287	370.2	
Sky-OVBN-C8-6.0	6/9/2008	BRF0119	6/10/2008	64.8 J	305	369.8	
Sky-OVBN-C9-2.5	6/9/2008	BRF0119	6/11/2008	10.3 J	40.5	50.8	
Sky-OVBN-C9-5.5	6/9/2008	BRF0119	6/11/2008	6.62 J	26.3	32.92	
SKY-OVBN-C10-2.5	6/10/2008	BRF0139	6/13/2008	196 J	1650	1846	
SKY-OVBN-C10-5.5	6/10/2008	BRF0139	6/13/2008	17.1 J	22.2 J	39.3	
SKY-OVBN-C11-2.5	6/13/2008	BRF0206	6/17/2008	162 J	609 J	771	
SKY-OVBN-C11-5.5	6/13/2008	BRF0206	6/17/2008	387 J	1320	1707	
SKY-OVBN-C12-2.5	6/13/2008	BRF0206	6/17/2008	5.85 J	12.2 J	18.05	
SKY-OVBN-C12-5.5	6/13/2008	BRF0206	6/17/2008	348 J	1210	1558	
SKY-OVBN-C13-2.5	6/10/2008	BRF0139	6/12/2008	287 J	1180 J	1467	
SKY-OVBN-C13-6.0	6/10/2008	BRF0139	6/12/2008	468 J	1660	2128	
SKY-OVBN-C14-2.5	6/10/2008	BRF0139	6/11/2008	246 J	880	1126	
SKY-OVBN-C14-6.5	6/10/2008	BRF0139	6/11/2008	15.1 J	51.4	66.5	
SKY-OVBN-C15-2.5	6/10/2008	BRF0139	6/12/2008	4.96 J	10.6 J	15.56	
SKY-OVBN-C15-6.5	6/10/2008	BRF0139	6/12/2008	10.0 J	33	43	
SKY-OVBN-C16-2.5	6/10/2008	BRF0139	6/12/2008	4.88 J	13.2 J	18.08	
SKY-OVBN-C16-6.5	6/10/2008	BRF0139	6/12/2008	1.95 J	1.645	3.595	
SKY-OVBN-C17-2.5	6/10/2008	BRF0139	6/12/2008	79.4 J	410	489.4	
SKY-OVBN-C17-6.5	6/10/2008	BRF0139	6/12/2008	19.0 J	59.6	78.6	
SKY-OVBN-C18-2.5	6/11/2008	BRF0162	6/13/2008	2.16 J	1.665	3.825	
SKY-OVBN-C18-6.5	6/11/2008	BRF0162	6/13/2008	15.5 J	42.1	57.6	
SKY-OVBN-19Z-7.0	6/16/2008	BRF0225	6/19/2008	175 J	603	778	Duplicate of SKY-OVBN-C19-7.0
SKY-OVBN-C19-2.5	6/16/2008	BRF0225	6/18/2008	35.0 J	109	144	
SKY-OVBN-C19-7.0	6/16/2008	BRF0225	6/18/2008	198 J	615	813	
SKY-OVBN-C20-2.5	6/11/2008	BRF0162	6/13/2008	1.96 J	1.625	3.585	
SKY-OVBN-C20-7.0	6/11/2008	BRF0162	6/13/2008	160 J	824	984	
SKY-OVBN-C25-2.5	7/7/2008	S080707	7/7/2008	52	120	172	
SKY-OVBN-C25-6.5	7/7/2008	S080707	7/7/2008	26	1.1	27.1	
SKY-OVBN-C26-2.5	7/7/2008	S080707	7/7/2008	44	68	112	
SKY-OVBN-C33-2.5	7/7/2008	S080707	7/7/2008	36	200	236	
SKY-OVBN-C33-6.0	7/7/2008	S080707	7/7/2008	1.2	1.1	2.3	
Center Vault-Center	9/6/2008	S080906	9/6/2008	1.2	1.1	2.3	

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
Center Vault-West	9/6/2008	S080906	9/6/2008	1.2	1.1	2.3	
Center Vault-East	9/6/2008	S080906	9/6/2008	1.2	1.1	2.3	
Conf-16A	8/11/2008	S080811	8/11/2008	1.2	1.1	2.3	
Conf-41A	8/28/2008	S080828	8/28/2008	1.2	1.1	2.3	
Conf-A13	8/8/2008	S080808	8/8/2008	40	25	65	
Conf-A14	8/8/2008	S080808	8/8/2008	1.2	1.1	2.3	
Conf-A15	8/8/2008	S080808	8/8/2008	1.2	1.1	2.3	
Conf-A17	8/11/2008	S080811	8/11/2008	1.2	1.1	2.3	
Conf-A18	8/11/2008	S080811	8/13/2008	14	27	41	
Conf-A19	8/11/2008	S080811	8/13/2008	1.2	1.1	2.3	
Conf-A20	8/12/2008	S080812	8/12/2008	1.2	1.1	2.3	
Conf-A21	8/12/2008	S080812	8/12/2008	220	150	370	
Conf-A22	8/12/2008	S080812	8/12/2008	1.2	1.1	2.3	
Conf-A23	8/13/2008	S080813	8/13/2008	53	34	87	
Conf-A25	9/5/2008	S080905	9/6/2008	1.2	1.1	2.3	
Conf-A26	9/5/2008	S080905	9/5/2008	1.2	1.1	2.3	
Conf-A30	9/8/2008	S080908	9/8/2008	1.2	1.1	2.3	
Conf-A31	9/8/2008	S080908	9/8/2008	2200 J	720 J	2920	
Conf-A32	9/9/2008	S080909	9/9/2008	2800	400	3200	
Conf-A33	9/9/2008	S080909	9/9/2008	2200	690	2890	
Conf-A34	9/9/2008	S080909	9/9/2008	1100 J	300 J	1400	
Conf-A35	9/9/2008	S080909	9/10/2008	1900 J	330 J	2230	
Conf-A36	9/9/2008	S080909	9/10/2008	670	100	770	
Conf-A37	9/9/2008	S080909	9/9/2008	50	1.1	51.1	
Conf-A38	9/9/2008	S080909	9/10/2008	680	510	1190	
Conf-A39	9/9/2008	S080909	9/10/2008	670	360	1030	
Conf-A40	9/10/2008	S080910	9/11/2008	45	1.1	46.1	
Conf-A42	8/28/2008	S080828	8/28/2008	560	86	646	
Conf-A43	8/28/2008	S080828	8/28/2008	1800	370	2170	
Conf-A44	8/28/2008	S080828	8/28/2008	180	68	248	
Conf-A45	9/12/2008	S080912	9/12/2008	14	1.1	15.1	
Conf-A46	9/12/2008	S080912	9/12/2008	1.2	1.1	2.3	
Conf-A47	9/13/2008	S080913	9/13/2008	1.2	1.1	2.3	
Conf-A48-Bottom	9/13/2008	S080913	9/13/2008	1.2	1.1	2.3	
Conf-A48-Sidewall	9/13/2008	S080913	9/13/2008	390	330	720	
Conf-B12	8/8/2008	S080808	8/8/2008	1.2	1.1	2.3	
Conf-B13	8/8/2008	S080808	8/8/2008	1.2	1.1	2.3	
Conf-B14	8/8/2008	S080808	8/8/2008	1.2	1.1	2.3	
Conf-B15	8/11/2008	S080811	8/11/2008	16	1.1	17.1	
Conf-B16	8/11/2008	S080811	8/11/2008	1.2	1.1	2.3	
Conf-B17	8/11/2008	S080811	8/11/2008	110	60	170	
Conf-B18	8/11/2008	S080811	8/13/2008	27	35	62	

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
Conf-B19	8/12/2008	S080812	8/12/2008	1.2	1.1	2.3	
Conf-B20	8/12/2008	S080812	8/12/2008	1.2	1.1	2.3	
Conf-B21	8/12/2008	S080812	8/12/2008	1.2	1.1	2.3	
Conf-B22	8/12/2008	S080812	8/12/2008	1.2	1.1	2.3	
Conf-B23	8/13/2008	S080813	8/13/2008	14	1.1	15.1	
Conf-B24	9/5/2008	S080905	9/5/2008	1.2	1.1	2.3	
Conf-B25	9/5/2008	S080905	9/5/2008	11	1.1	12.1	
Conf-B26	9/5/2008	S080905	9/5/2008	1.2	1.1	2.3	
Conf-B27	9/6/2008	S080906	9/6/2008	1.2	1.1	2.3	
Conf-B28	9/8/2008	S080908	9/8/2008	91	41	132	
Conf-B29	9/8/2008	S080908	9/8/2008	10	1.1	11.1	
Conf-B30	9/8/2008	S080908	9/8/2008	19	1.1	20.1	
Conf-B31	9/8/2008	S080908	9/8/2008	3400 J	470 J	3870	
Conf-B31A	9/9/2008	S080909	9/9/2008	32	1.1	33.1	
Conf-B32	9/9/2008	S080909	9/9/2008	3900 J	360 J	4260	
Conf-B33	9/9/2008	S080909	9/9/2008	29000	3200	32200	
Conf-B33A	9/10/2008	S080910	9/11/2008	1400	240	1640	
Conf-34Z	9/9/2008	S080909	9/9/2008	5600 J	510 J	6110	Duplicate of Conf-B34
Conf-B34	9/9/2008	S080909	9/9/2008	5300 J	570 J	5870	
Conf-B35	9/9/2008	S080909	9/10/2008	9200 J	840 J	10040	
Conf-B36	9/9/2008	S080909	9/10/2008	130	44	174	
Conf-B37	9/10/2008	S080910	9/10/2008	45	29	74	
Conf-B38	9/10/2008	S080910	9/10/2008	140	91	231	
Conf-B39	9/10/2008	S080910	9/11/2008	47	1.1	48.1	
Conf-B40	9/10/2008	S080910	9/11/2008	61	1.1	62.1	
Conf-B41	8/28/2008	S080828	8/28/2008	11	1.1	12.1	
Conf-B42	8/28/2008	S080828	8/28/2008	13000 J	790 J	13790	
Conf-B42A	8/28/2008	S080828	8/28/2008	7900 J	380 J	8280	
Conf-B42B	8/28/2008	S080828	8/28/2008	68	1.1	69.1	
Conf-B43	8/28/2008	S080828	8/28/2008	4400 J	410 J	4810	
Conf-B43A	8/28/2008	S080828	8/28/2008	100	1.1	101.1	
Conf-44Z	8/28/2008	S080828	8/28/2008	310	49	359	Duplicate of Conf-B44
Conf-B44	8/28/2008	S080828	8/28/2008	340	58	398	
Conf-B44 Sidewall	9/12/2008	S080912	9/12/2008	200	100	300	
Conf-B44-Bottom	9/12/2008	S080912	9/12/2008	570	160	730	
Conf-B45 Bottom	9/12/2008	S080912	9/12/2008	1.2	1.1	2.3	
Conf-B45-Sidewall	9/12/2008	S080912	9/12/2008	1300	55	1355	
Conf-B46 Bottom	9/12/2008	S080912	9/12/2008	1.2	1.1	2.3	
Conf-B46 Sidewall	9/12/2008	S080912	9/12/2008	1.2	1.1	2.3	
Conf-B47-Bottom	9/13/2008	S080913	9/13/2008	1.2	1.1	2.3	
Conf-B47-Sidewall	9/13/2008	S080913	9/13/2008	1.2	1.1	2.3	
Conf-48Z	9/13/2008	S080913	9/13/2008	1.2	1.1	2.3	Duplicate of Conf-B48-Bottom

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
Conf-B48-Bottom	9/13/2008	S080913	9/13/2008	1.2	1.1	2.3	
Conf-B48-Sidewall	9/13/2008	S080913	9/13/2008	11	1.1	12.1	
Conf-C12	8/8/2008	S080808	8/8/2008	2000	1500	3500	
Conf-C12A	8/8/2008	S080808	8/8/2008	390	270	660	
Conf-C13	8/8/2008	S080808	8/8/2008	560	430	990	
Conf-C14	8/8/2008	S080808	8/8/2008	1.2	1.1	2.3	
Conf-C15	8/11/2008	S080811	8/11/2008	180	160	340	
Conf-C16	8/11/2008	S080811	8/11/2008	1.2	1.1	2.3	
Conf-C17	8/11/2008	S080811	8/11/2008	96	71	167	
Conf-C18	8/11/2008	S080811	8/12/2008	10	1.1	11.1	
Conf-C19	8/12/2008	S080812	8/12/2008	11	1.1	12.1	
Conf-C20	8/12/2008	S080812	8/12/2008	1.2	1.1	2.3	
Conf-C21	8/12/2008	S080812	8/12/2008	1.2	1.1	2.3	
Conf-C22	8/12/2008	S080812	8/12/2008	1.2	1.1	2.3	
Conf-C23	8/13/2008	S080813	8/13/2008	92	48	140	
Conf-C24	8/14/2008	S080814	8/14/2008	1.2	1.1	2.3	
Conf-C25	9/5/2008	S080905	9/6/2008	1.2	1.1	2.3	
Conf-26Z-1	9/5/2008	S080905	9/5/2008	1.2	1.1	2.3	Duplicate of Conf-C26
Conf-C26	9/5/2008	S080905	9/6/2008	1.2	1.1	2.3	
Conf-C27	9/6/2008	S080906	9/6/2008	1.2	1.1	2.3	
Conf-C28	9/8/2008	S080908	9/8/2008	1.2	1.1	2.3	
Conf-C29	9/8/2008	S080908	9/8/2008	20	1.1	21.1	
Conf-C30 Bottom	9/8/2008	S080908	9/8/2008	1.2	1.1	2.3	
Conf-C30 Sidewall	9/8/2008	S080908	9/8/2008	12000 J	6900 J	18900	
Conf-C30A	9/9/2008	S080909	9/9/2008	8200 J	1200 J	9400	
Conf-C30A Orange	9/9/2008	S080909	9/9/2008	2600 J	960 J	3560	
Conf-C31 A Bottom	9/9/2008	S080909	9/9/2008	1.2	1.1	2.3	
Conf-C31 A Sidewall	9/9/2008	S080909	9/9/2008	9800 J	1200 J	11000	
Conf-C31 Bottom	9/8/2008	S080908	9/8/2008	4800	640	5440	
Conf-C31 Sidewall	9/8/2008	S080908	9/8/2008	14000 J	2000 J	16000	
Conf-C31B Sidewall	9/9/2008	S080909	9/9/2008	860 J	460 J	1320	
Conf-C32 Bottom	9/9/2008	S080909	9/9/2008	4300 J	530 J	4830	
Conf-C32 Sidewall	9/9/2008	S080909	9/9/2008	14000 J	2200 J	16200	
Conf-C33 Bottom	9/9/2008	S080909	9/9/2008	21	1.1	22.1	
Conf-C33 Sidewal	9/9/2008	S080909	9/9/2008	1.2	1.1	2.3	
Conf-C34 Bottom	9/9/2008	S080909	9/9/2008	1.2	1.1	2.3	
Conf-C34 Sidewall	9/9/2008	S080909	9/9/2008	1.2	1.1	2.3	
Conf-C35 Bottom	9/9/2008	S080909	9/10/2008	9200 J	1000 J	10200	
Conf-C35 Sidewall	9/9/2008	S080909	9/9/2008	1.2	1.1	2.3	
Conf-C36 Bottom	9/9/2008	S080909	9/10/2008	22	35	57	
Conf-C36 Sidewall	9/9/2008	S080909	9/10/2008	1.2	1.1	2.3	
Conf-C37	9/10/2008	S080910	9/10/2008	71	28	99	

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
Conf-C37 Sidewall	9/23/2008	S080923	9/23/2008	14	32 J	46	
Conf-C37Z	9/23/2008	S080923	9/23/2008	18	72 J	90	Duplicate of Conf-C37 Sidewall
Conf-C38 Bottom	9/23/2008	S080923	9/23/2008	1.2	1.1	2.3	
Conf-C38 Sidewall	9/9/2008	S080909	9/9/2008	19000 J	14000 J	33000	
Conf-C38A Sidewall	9/23/2008	S080923	9/23/2008	1.2	1.1	2.3	
Conf-C39-Bottom	9/10/2008	S080910	9/11/2008	61	34	95	
Conf-C39-Sidewall	9/10/2008	S080910	9/11/2008	51	30	81	
Conf-C40-Bottom	9/10/2008	S080910	9/11/2008	350	290	640	
Conf-C40-Sidewall	9/10/2008	S080910	9/11/2008	15	35	50	
Conf-C41-Bottom	9/24/2008	S080924	9/24/2008	4400	450	4850	
Conf-C41-Sidewall West	9/24/2008	S080924	9/24/2008	20	1.1	21.1	
Conf-C42	9/24/2008	S080924	9/24/2008	6000 J	490 J	6490	
Conf-C43A-Sidewall	9/24/2008	S080924	9/24/2008	11000 J	830 J	11830	
Conf-C43-Bottom	9/24/2008	S080924	9/24/2008	17000	800	17800	
Conf-C43-Sidewall	9/24/2008	S080924	9/24/2008	29000	1200	30200	
Conf-D22	8/13/2008	S080813	8/13/2008	89	34	123	
Conf-D23	8/13/2008	S080813	8/13/2008	1.2	1.1	2.3	
Conf-D24	8/14/2008	S080814	8/14/2008	1.2	1.1	2.3	
Conf-D25	9/12/2008	S080912	9/12/2008	15	1.1	16.1	
Conf-26Z-3	9/12/2008	S080912	9/12/2008	12	1.1	13.1	Duplicate of Conf-D26
Conf-D26	9/12/2008	S080912	9/12/2008	1.2	1.1	2.3	
Conf-D27	9/11/2008	S080911	9/12/2008	310	230	540	
Conf-DZ	9/11/2008	S080911	9/12/2008	230	160	390	Duplicate of Conf-D27
Conf-D28	9/11/2008	S080911	9/11/2008	1.2	1.1	2.3	
Conf-D29-Bottom	9/11/2008	S080911	9/12/2008	6200	3000	9200	
Conf-D29-Sidewall	9/11/2008	S080911	9/12/2008	6400	3500	9900	
Conf-D29A-Bottom	9/22/2008	S080922	9/22/2008	1.2	1.1	2.3	
Conf-D29A-Sidewall	9/22/2008	S080922	9/22/2008	4900 J	5900 J	10800	
Conf-41Z	9/24/2008	S080924	9/24/2008	19000 J	2400 J	21400	Duplicate of Conf-D41-North Sidewall
Conf-D41-Bottom	9/24/2008	S080924	9/24/2008	7400	450	7850	
Conf-D41-North Sidewall	9/24/2008	S080924	9/24/2008	14000 J	1600 J	15600	
Conf-D41-West Sidewall	9/24/2008	S080924	9/24/2008	16	1.1	17.1	
Conf-D42-Bottom	9/24/2008	S080924	9/24/2008	5100 J	420 J	5520	
Conf-D42-North Sidewall	9/24/2008	S080924	9/24/2008	18000 J	1500 J	19500	
Conf-D43-Bottom	9/24/2008	S080924	9/24/2008	2300	190	2490	
Conf-D43-East Sidewall	9/24/2008	S080924	9/24/2008	5000 J	530 J	5530	
Conf-D43-North Sidewalll	9/24/2008	S080924	9/24/2008	11000 J	550 J	11550	
Conf-E22	8/13/2008	S080813	8/13/2008	1.2	1.1	2.3	
Conf-E23	8/13/2008	S080813	8/13/2008	1.2	1.1	2.3	
Conf-E24	8/14/2008	S080814	8/14/2008	1.2	1.1	2.3	
Conf-E25	9/11/2008	S080911	9/12/2008	110	82	192	
Conf-26Z-2	9/11/2008	S080911	9/12/2008	21	1.1	22.1	Duplicate of Conf-E26

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
Conf-E26	9/11/2008	S080911	9/12/2008	18	1.1	19.1	
Conf-E26	9/10/2008	S080910	9/11/2008	49	1.1	50.1	
Conf-E27	9/11/2008	S080911	9/12/2008	13	1.1	14.1	
Conf-E28	9/11/2008	S080911	9/11/2008	10	1.1	11.1	
Conf-E29-Bottom	9/11/2008	S080911	9/11/2008	19	1.1	20.1	
Conf-E29-Sidewall	9/11/2008	S080911	9/12/2008	4700 J	2600 J	7300	
Conf-E29A-Sidewall	9/22/2008	S080922	9/22/2008	4800 J	5100 J	9900	
Conf-F22	8/13/2008	S080813	8/13/2008	24	1.1	25.1	
Conf-F23	8/14/2008	S080814	8/14/2008	1.2	1.1	2.3	
Conf-F24	8/14/2008	S080814	8/14/2008	390	220	610	
Conf-F25	9/10/2008	S080910	9/10/2008	1.2	1.1	2.3	
Conf-F26	9/10/2008	S080910	9/11/2008	50	1.1	51.1	
Conf-F27	9/11/2008	S080911	9/11/2008	21	1.1	22.1	
Conf-F28	9/11/2008	S080911	9/11/2008	110	95	205	
Conf-F29-Bottom	9/11/2008	S080911	9/12/2008	1500	720	2220	
Conf-F29-Sidewall	9/11/2008	S080911	9/12/2008	7400	3700	11100	
Conf-F29A-Sidewall	9/22/2008	S080922	9/22/2008	6900 J	5100 J	12000	
Conf-G22	8/13/2008	S080813	8/13/2008	1.2	1.1	2.3	
Conf-G23	8/14/2008	S080814	8/14/2008	1.2	1.1	2.3	
Conf-G24	8/14/2008	S080814	8/14/2008	1.2	1.1	2.3	
Conf-G25	9/10/2008	S080910	9/10/2008	190	37	227	
Conf-G26	9/10/2008	S080910	9/10/2008	57	33	90	
Conf-G27	9/11/2008	S080911	9/11/2008	2700	3100	5800	
Conf-G27A	9/11/2008	S080911	9/11/2008	1.2	1.1	2.3	
Conf-G28-1	9/25/2008	S080925	9/25/2008	220	1.1	221.1	
Conf-G28-2	9/25/2008	S080925	9/25/2008	170	1.1	171.1	
Conf-G28-Bottom	9/11/2008	S080911	9/11/2008	58	56	114	
Conf-G28-Sidewall	9/11/2008	S080911	9/12/2008	4900 J	3800 J	8700	
Conf-G28A-Bottom	9/22/2008	S080922	9/22/2008	1.2	1.1	2.3	
Conf-G28A-East	9/22/2008	S080922	9/22/2008	82	1.1	83.1	
Conf-G28A-F/G	9/22/2008	S080922	9/22/2008	4000	140	4140	
Conf-G28A-Sidewall	9/22/2008	S080922	9/22/2008	10	1.1	11.1	
Conf-H26	9/10/2008	S080910	9/10/2008	180	140	320	
Conf-27Z	9/10/2008	S080910	9/11/2008	1200 J	620 J	1820	Duplicate of Conf-H27
Conf-H27	9/10/2008	S080910	9/10/2008	1200 J	590 J	1790	
Conf-H28-Bottom	9/11/2008	S080911	9/11/2008	130	110	240	
Conf-H28-Sidewall	9/11/2008	S080911	9/11/2008	13	38	51	
SKY-OVBN-D18-2.5	6/16/2008	BRF0225	6/18/2008	17.8 J	41.9 J	59.7	
SKY-OVBN-D18-6.5	6/16/2008	BRF0225	6/18/2008	0.84	1.675	2.515	
SKY-OVBN-D19-2.5	6/10/2008	BRF0139	6/11/2008	4.73 J	18.9 J	23.63	
SKY-OVBN-D19-7.0	6/10/2008	BRF0139	6/11/2008	0.84	1.67	2.51	
SKY-OVBN-D20-2.5	7/2/2008	S080702	7/2/2008	19	1.1	20.1	

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
SKY-OVBN-D20-6.5	7/2/2008	S080702	7/2/2008	1.2	1.1	2.3	
SKY-OVBN-E18-2.5	6/16/2008	BRF0225	6/18/2008	0.825	8.13 J	8.955	
SKY-OVBN-E18-6.5	6/16/2008	BRF0225	6/18/2008	0.835	1.66	2.495	
SKY-OVBN-E19-2.5	6/16/2008	BRF0225	6/18/2008	4.77 J	11.6 J	16.37	
SKY-OVBN-E19-6.5	6/16/2008	BRF0225	6/18/2008	0.835	1.67	2.505	
SKY-OVBN-E20-2.5	7/2/2008	S080702	7/2/2008	17	1.1	18.1	
SKY-OVBN-E20-6.5	7/2/2008	S080702	7/2/2008	12	1.1	13.1	
SKY-OVBN-E21-2.5	7/2/2008	S080702	7/3/2008	16	130	146	
SKY-OVBN-E21-7.0	7/2/2008	S080702	7/3/2008	1.2	1.1	2.3	
SKY-OVBN-21ZB-7.0	7/2/2008	S080702	7/3/2008	1.2	1.1	2.3	Duplicate of SKY-OVBN-E21-7.0
SKY-OVBN-F18-2.5	6/16/2008	BRF0225	6/18/2008	8.93 J	33.1	42.03	
SKY-OVBN-F18-6.5	6/16/2008	BRF0225	6/18/2008	1.73 J	9.45 J	11.18	
SKY-OVBN-F19-2.5	6/12/2008	BRF0181	6/13/2008	88.5 J	442	530.5	
SKY-OVBN-F19-6.5	6/16/2008	BRF0225	6/18/2008	0.845	1.68	2.525	
SKY-OVBN-F20-2.5	7/2/2008	S080702	7/2/2008	27	29	56	
SKY-OVBN-F20-6.5	7/2/2008	S080702	7/3/2008	33	1.1	34.1	
SKY-OVBN-F21-2.5	7/2/2008	S080702	7/3/2008	28	38 J	66	
SKY-OVBN-F21-7.0	7/2/2008	S080702	7/3/2008	12	39	51	
FWV-East	8/25/2008	S080825	8/25/2008	1.2	1.1	2.3	
SKY-OVBN-C21-2.5	7/2/2008	S080702	7/3/2008	13	26	39	
SKY-OVBN-C21-7.0	7/2/2008	S080702	7/3/2008	1.2	1.1	2.3	
SKY-OVBN-C22-2.5	7/7/2008	S080707	7/9/2008	65	210	275	
SKY-OVBN-C22-7.0	7/7/2008	S080707	7/9/2008	46	130	176	
SKY-OVBN-C23-2.5	7/7/2008	S080707	7/8/2008	1.2	1.1	2.3	
SKY-OVBN-C23-7.0	7/7/2008	S080707	7/8/2008	1.2	1.1	2.3	
SKY-OVBN-C26-6.5	7/7/2008	S080707	7/7/2008	12	1.1	13.1	
SKY-OVBN-C27-2.5	7/7/2008	S080707	7/7/2008	56	120	176	
SKY-OVBN-C27-6.5	7/7/2008	S080707	7/7/2008	17	1.1	18.1	
SKY-OVBN-C28-2.5	7/7/2008	S080707	7/8/2008	44	67	111	
SKY-OVBN-C28-6.5	7/7/2008	S080707	7/8/2008	1.2	1.1	2.3	
SKY-OVBN-C29-2.5	7/7/2008	S080707	7/8/2008	220	490	710	
SKY-OVBN-C29-6.0	7/7/2008	S080707	7/8/2008	1.2	1.1	2.3	
SKY-OVBN-C29-6.5	7/7/2008	S080707	7/8/2008	1.2	1.1	2.3	
SKY-OVBN-C30-2.5	7/7/2008	S080707	7/8/2008	1.2	1.1	2.3	
SKY-OVBN-C30-6.0	7/7/2008	S080707	7/9/2008	1.2	1.1	2.3	
SKY-OVBN-C302-2.5	7/7/2008	S080707	7/8/2008	32	48	80	
SKY-OVBN-C31-2.5	7/7/2008	S080707	7/9/2008	310	79	389	
SKY-OVBN-C31-6.0	7/7/2008	S080707	7/9/2008	60	32	92	
SKY-OVBN-C32-2.5	7/7/2008	S080707	7/9/2008	27	1.1	28.1	
SKY-OVBN-C32-6.0	7/7/2008	S080707	7/9/2008	11	1.1	12.1	
SKY-OVBN-C34-2.5	7/23/2008	S080723	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-C34-6.0	7/23/2008	S080723	7/23/2008	1.2	1.1	2.3	

Table 5-2 Overburden and Soil Performance Sampling Results

Sample Name	Date Sampled	SDG	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Totaled Diesel & Oil	Notes
SKY-OVBN-C35-2.5	7/23/2008	S080723	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-C35-6.0	7/23/2008	S080723	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-36Z-6.0	7/23/2008	S080723	7/23/2008	1.2	1.1	2.3	Duplicate of SKY-OVBN-C36-6.0
SKY-OVBN-C36-2.5	7/23/2008	S080723	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-C36-6.0	7/23/2008	S080723	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-D21-2.5	7/2/2008	S080702	7/3/2008	27	118	145	
SKY-OVBN-D21-7.0	7/2/2008	S080702	7/3/2008	1.2	1.1	2.3	
SKY-OVBN-D22-2.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-D22-7.0	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-23Z-6.5	7/22/2008	S080722	7/22/2008	1.2 J	1.1	2.3	Duplicate of SKY-OVBN-D23-6.5
SKY-OVBN-D23-2.5	7/22/2008	S080722	7/22/2008	31	1.1	32.1	
SKY-OVBN-D23-6.5	7/22/2008	S080722	7/23/2008	28 J	1.1	29.1	
SKY-OVBN-D24-2.5	7/22/2008	S080722	8/4/2008	17	1.1	18.1	
SKY-OVBN-D24-6.5	7/22/2008	S080722	7/22/2008	1.2	1.1	2.3	
SKY-OVBN-D34-2.5	7/23/2008	S080723	7/23/2008	18	27	45	
SKY-OVBN-D35-2.5	7/23/2008	S080723	7/24/2008	1.2	1.1	2.3	
SKY-OVBN-D36-2.5	7/23/2008	S080723	7/24/2008	1.2	1.1	2.3	
SKY-OVBN-E22-2.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-E22-7.0	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-E23-2.5	7/22/2008	S080722	7/22/2008	1.2	1.1	2.3	
SKY-OVBN-E23-6.5	7/22/2008	S080722	7/22/2008	1.2	1.1	2.3	
SKY-OVBN-E24-2.5	7/22/2008	S080722	7/22/2008	1.2	1.1	2.3	
SKY-OVBN-E24-6.5	7/22/2008	S080722	7/22/2008	1.2	1.1	2.3	
SKY-OVBN-F22-2.5	7/22/2008	S080722	7/23/2008	45	78	123	
SKY-OVBN-F22-7.0	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-F23-2.5	7/22/2008	S080722	7/22/2008	1.2	1.1	2.3	
SKY-OVBN-F23-6.5	7/22/2008	S080722	7/22/2008	1.2	1.1	2.3	
SKY-OVBN-F24-2.5	7/22/2008	S080722	7/22/2008	1.2	1.1	2.3	
SKY-OVBN-F24-5.5	7/22/2008	S080722	7/22/2008	1.2	1.1	2.3	
SKY-OVBN-G21-2.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-G21-6.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-G22-2.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-G22-7.0	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-G23-2.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-G23-5.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-H21-2.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-H21-6.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-H22-2.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
SKY-OVBN-H22-6.5	7/22/2008	S080722	7/23/2008	1.2	1.1	2.3	
West1	9/2/2008	S080902	9/2/2008	1.2	1.1	2.3	
WestVault-EAst	9/2/2008	S080902	9/2/2008	1.2	1.1	2.3	
West-Vault-West	9/2/2008	S080902	9/2/2008	1.2	1.1	2.3	

Table 5-3
2008 SKYKOMISH REMEDIATION PROJECT
HCC PILE TIP ELEVATIONS

PILE #	STA	TYPE	LENGTH	TIP	DESIGN TIP	CUT-OFF
HCC 1	10+96	Temp	35	895.0	896.0	929.1
HCC 2	10+92	Temp	35	908.0	896.0	929.1
HCC 3	10+88.5	Temp	35	895.0	896.0	929.1
HCC 4	10+88.5	Temp	35	896.0	896.0	929.1
HCC 5	10+81	Temp	35	896.0	896.0	929.1
HCC 6	10+77	Temp	35	896.0	896.0	929.2
HCC 7	10+74	Temp	35	895.5	896.0	929.2
HCC 8	10+70	Temp	35	896.0	896.0	929.2
HCC 9	10+66	Temp	35	896.0	896.0	929.2
HCC 10	10+62	Temp	35	894.0	896.0	929.2
HCC 11	10+59	Temp	35	891.0	896.0	929.3
HCC 12	10+55	Temp	35	896.0	896.0	929.3
HCC 13	10+51	Temp	35	896.5	896.0	929.3
HCC 14	10+47	Perm	30	917.5	903.0	927.2
HCC 15	10+43	Perm	30	917.0	903.0	927.3
HCC 16	10+39	Perm	30	916.5	903.0	927.3
HCC 17	10+36	Perm	30	902.0	903.0	927.3
HCC 18	10+32	Perm	30	902.0	903.0	927.3
HCC 19	10+28	Perm	30	902.0	903.0	927.4
HCC 20	10+24	Perm	30	902.0	903.0	927.4
HCC 21	10+20	Perm	30	903.0	903.0	927.4
HCC 22	10+16	Perm	30	903.0	903.0	927.4
HCC 23	10+13	Perm	30	902.0	903.0	927.5
HCC 24	10+09	Perm	30	903.0	903.0	927.5
HCC 25	10+05	Perm	30	903.0	903.0	927.5
HCC 26	10+01	Perm	30	902.0	903.0	927.5
HCC 27	9+98	Perm	30	902.0	903.0	927.6
HCC 28	9+94	Perm	30	905.5	903.0	929.6
HCC 29	9+90	Temp	35	901.5	896.0	929.6
HCC 30	9+86	Temp	35	898.0	896.0	929.6
HCC 31	9+82	Temp	35	895.5	896.0	929.7
HCC 32	9+78	Temp	35	895.5	896.0	929.7
HCC 33	9+75	Temp	35	895.5	896.0	929.7
HCC 34	9+71	Temp	35	895.0	896.0	929.7
HCC 35	9+67	Temp	35	895.5	896.0	929.7
HCC 36	9+64	Temp	35	895.5	896.0	929.8
HCC 37	9+60	Temp	35	895.5	896.0	929.8
HCC 38	9+56	Temp	35	895.0	896.0	929.8
HCC 39	9+52	Temp	35	895.0	896.0	929.8
HCC 40	9+48	Temp	35	895.0	903.0	929.8
HCC 41	9+44	Perm	30	902.0	903.0	927.8
HCC 42	9+41	Perm	30	902.5	903.0	927.8
HCC 43	9+37	Perm	30	902.5	903.0	927.9
HCC 44	9+33	Perm	30	902.5	903.0	927.9
HCC 45	9+29	Perm	30	902.0	903.0	927.9
HCC 46	9+25	Perm	30	902.0	903.0	927.9
HCC 47	9+22	Perm	30	902.0	903.0	927.9
HCC 48	9+17	Perm	30	913.0	903.0	928.0
HCC 49	9+14	Perm	30	901.0	903.0	928.0
HCC 50	9+10	Perm	30	902.0	903.0	928.0
HCC 51	9+06	Perm	30	902.0	903.0	928.0
HCC 52	9+02	Perm	30	902.0	903.0	928.0
HCC 53	8+89	Perm	30	902.0	903.0	928.1
HCC 54	8+94	Perm	30	904.0	898.0	928.1

Table 5-3
2008 SKYKOMISH REMEDIATION PROJECT
HCC PILE TIP ELEVATIONS

PILE #	STA	TYPE	LENGTH	TIP	DESIGN TIP	CUT-OFF
HCC 55	8+90	Perm	35	913.5	898.0	928.1
HCC 56	8+87	Perm	35	896.5	898.0	928.1
HCC 57	8+84	Perm	35	897.0	898.0	928.1
HCC 58	8+80	Perm	35	898.0	898.0	928.2
HCC 59	8+76	Perm	35	902.0	898.0	928.2
HCC 60	8+72	Perm	35	913.0	898.0	928.2
HCC 61	8+68	Perm	35	896.5	898.0	928.2
HCC 62	8+64	Perm	35	897.0	898.0	928.2
HCC 63	8+60	Perm	35	896.0	898.0	928.3
HCC 64	8+57	Perm	35	895.0	898.0	928.3
HCC 65	8+53	Perm	35	895.5	898.0	928.3
HCC 66	8+49	Perm	35	895.0	898.0	928.3
HCC 67	8+45	Perm	35	896.0	898.0	928.3
HCC 68	8+42	Perm	35	896.0	898.0	928.4
HCC 69	8+38	Perm	35	896.0	898.0	928.4
HCC 70	8+34	Perm	35	896.0	898.0	928.4
HCC 71	8+30	Perm	35	895.0	898.0	928.4
HCC 72	8+26	Perm	35	895.0	898.0	928.4
HCC 73	8+22	Perm	35	895.5	898.0	928.5
HCC 74	8+18	Perm	35	896.5	898.0	928.5
HCC 75	8+14	Perm	35	896.5	898.0	928.5
HCC 76	8+10	Perm	35	896.5	898.0	928.5
HCC 77	8+06	Perm	35	896.0	898.0	928.5
HCC 78	8+02	Perm	35	896.0	898.0	928.6
HCC 79	7+99	Perm	35	898.5	903.0	928.6
HCC 80	7+96	Perm	30	898.5	903.2	928.6
HCC 81	7+92	Perm	30	901.5	903.3	928.6
HCC 82	7+88	Perm	30	900.5	903.5	928.6
HCC 83	7+84	Perm	30	902.5	903.6	928.7
HCC 84	7+80	Perm	30	902.5	903.8	928.7
HCC 85	7+76	Perm	30	902.5	904.0	928.7
HCC 86	7+72	Perm	30	902.5	904.1	928.7
HCC 87	7+68	Perm	30	903.0	904.3	928.7
HCC 88	7+65	Perm	30	902.0	904.4	928.8
HCC 89	7+61	Perm	30	902.0	904.6	928.8
HCC 90	7+58	Perm	30	903.0	904.7	928.8
HCC 91	7+54	Perm	30	903.5	904.8	928.8
HCC 92	7+50	Perm	30	903.0	905.0	928.8
HCC 93	7+46	Perm	30	903.0	905.0	928.9
HCC 94	7+42	Perm	30	903.0	905.0	928.9
HCC 95	7+39	Perm	30	903.0	905.0	928.9
HCC 96	7+35	Perm	30	903.0	905.0	928.9
HCC 97	7+31	Perm	30	903.0	905.0	928.9
HCC 98	7+28	Perm	30	903.0	905.0	929.0
HCC 99	7+24	Perm	30	903.0	905.0	929.0
HCC 100	7+20	Perm	30	903.0	905.0	929.0
HCC 101	7+16	Perm	30	903.0	905.0	929.0
HCC 102	7+14	Perm	30	903.0	905.0	929.0
HCC 103	7+10	Perm	30	903.0	905.0	929.1
HCC 104	7+06	Perm	30	903.0	905.0	929.1
HCC 105	7+02	Perm	30	903.5	905.0	929.1
HCC 106	6+98	Perm	30	904.5	905.0	929.1
HCC 107	6+94	Perm	30	904.0	905.1	929.1

Table 5-3
2008 SKYKOMISH REMEDIATION PROJECT
HCC PILE TIP ELEVATIONS

PILE #	STA	TYPE	LENGTH	TIP	DESIGN TIP	CUT-OFF
HCC 108	6+90	Perm	30	904.0	905.2	929.2
HCC 109	6+86	Perm	30	904.0	905.3	929.2
HCC 110	6+84	Perm	30	904.5	905.3	929.2
HCC 111	6+79	Perm	30	904.5	905.4	929.2
HCC 112	6+75	Perm	30	904.5	905.5	929.2
HCC 113	6+71	Perm	30	904.0	905.6	929.3
HCC 114	6+67	Perm	30	904.0	905.7	929.3
HCC 115	6+64	Perm	30	904.0	905.7	929.3
HCC 116	6+60	Perm	30	904.0	905.8	929.3
HCC 117	6+56	Perm	30	904.0	905.9	929.3
HCC 118	6+52	Perm	30	904.0	906.0	929.4
HCC 119	6+48	Perm	30	904.0	906.0	929.4
HCC 120	6+44	Perm	30	904.0	906.0	929.4
HCC 121	6+41	Perm	30	903.0	906.0	929.4
HCC 122	6+37	Perm	30	904.5	906.0	929.4
HCC 123	6+33	Perm	30	904.0	906.0	929.5
HCC 124	6+30	Perm	30	904.5	906.0	929.5
HCC 125	6+26	Perm	30	904.5	906.0	929.5
HCC 126	6+22	Perm	30	904.5	906.0	929.5
HCC 127	6+18	Perm	30	904.5	906.0	929.5
HCC 128	6+14	Perm	30	904.5	906.0	929.6
HCC 129	6+11	Perm	30	904.5	906.0	929.6
HCC 130	6+07	Perm	30	904.5	906.0	929.6
HCC 131	6+04	Perm	30	904.5	906.0	929.6
HCC 132	6+00	Perm	30	904.5	906.0	929.6
HCC 133	5+96	Perm	30	904.5	906.1	929.7
HCC 134	5+92	Perm	30	904.5	906.2	929.7
HCC 135	5+88	Perm	30	904.5	906.2	929.7
HCC 136	5+84	Perm	30	904.5	906.3	929.7
HCC 137	5+80	Perm	30	904.5	906.4	929.7
HCC 138	5+76	Perm	30	904.5	906.5	929.8
HCC 139	5+72	Perm	30	904.5	906.6	929.8
HCC 140	5+68	Perm	30	904.5	906.6	929.8
HCC 141	5+64	Perm	30	904.5	906.7	929.8
HCC 142	5+60	Perm	30	904.5	906.8	929.8
HCC 143	5+56	Perm	30	904.5	906.9	929.9
HCC 144	5+53	Perm	30	904.5	906.9	929.9
HCC 145	5+50	Perm	30	904.5	907.0	929.9
HCC 146	5+47	Perm	30	904.5	907.1	929.9
HCC 147	5+43	Perm	30	904.5	907.1	929.9
HCC 148	5+40	Perm	30	905.0	907.2	930.0
HCC 149	5+36	Perm	30	905.0	907.3	930.0
HCC 150	5+33	Perm	30	905.0	907.3	930.0
HCC 151	5+29	Perm	30	905.0	907.4	930.0
HCC 152	5+25	Perm	30	905.0	907.5	930.0
HCC 153	5+21	Perm	30	905.0	907.6	930.1
HCC 154	5+18	Perm	30	905.0	907.6	930.1
HCC 155	5+14	Perm	30	905.0	907.7	930.1
HCC 156	5+10	Perm	30	905.0	907.8	930.1
HCC 157	5+07	Perm	30	905.0	907.9	930.1
HCC 158	5+03	Perm	30	901.0	907.9	930.2
HCC 159	4+99	Perm	30	901.0	908.0	930.2
HCC 160	4+95	Perm	30	905.0	908.0	930.2

Table 5-3
2008 SKYKOMISH REMEDIATION PROJECT
HCC PILE TIP ELEVATIONS

PILE #	STA	TYPE	LENGTH	TIP	DESIGN TIP	CUT-OFF
HCC 161	4+91	Perm	30	906.0	908.0	930.2
HCC 162	4+87	Perm	30	906.5	908.0	930.2
HCC 163	4+84	Perm	30	906.5	908.0	930.3
HCC 164	4+80	Perm	30	906.5	908.0	930.3
HCC 165	4+76	Temp	35	901.5	908.0	932.2
HCC 166	4+72	Temp	35	901.5	903.0	932.3
HCC 167	4+68	Temp	35	901.5	903.0	932.3
HCC 168	4+64	Temp	35	901.5	903.0	932.3
HCC 169	4+60	Temp	35	901.5	903.0	932.3
HCC 170	4+56	Temp	35	901.5	903.0	932.3
HCC 171	4+52	Temp	35	901.5	903.0	932.4
HCC 172	4+48	Temp	35	901.5	903.0	932.4
HCC 173	4+44	Temp	35	901.5	903.0	932.4
HCC 174	4+40	Temp	35	901.5	903.0	932.4
HCC 175	4+36	Temp	35	901.5	903.0	932.4
HCC 176	4+32	Temp	35	901.5	903.0	932.4
HCC 177	4+28	Temp	35	901.5	903.0	932.5
HCC 178	4+25	Temp	35	901.5	903.0	932.5
HCC 179	4+22	Temp	35	901.5	903.0	932.5
HCC 180	4+18	Temp	35	901.5	903.0	932.5
HCC 181	4+15	Temp	35	901.5	903.0	932.5
HCC 182	4+12	Temp	35	901.5	903.0	932.6
HCC 183	4+08	Perm	25	909.0	911.0	930.5
HCC 184	4+05	Perm	25	908.5	911.0	930.5
HCC 185	4+01	Perm	25	909.0	911.0	930.6
HCC 186	3+98	Perm	25	909.0	911.0	930.6
HCC 187	3+94	Perm	25	909.0	911.0	930.6
HCC 188	3+90	Perm	25	909.0	911.0	930.6
HCC 189	3+87	Perm	25	909.0	911.0	930.6
HCC 190	3+83	Perm	25	907.5	911.0	930.7
HCC 191	3+80	Perm	25	908.5	911.0	930.7
HCC 192	3+76	Perm	25	908.5	911.0	930.7
HCC 193	3+72	Perm	25	909.0	911.0	930.7
HCC 194	3+69	Perm	25	909.0	911.0	930.7
HCC 195	3+65	Perm	25	909.0	911.0	930.8
HCC 196	3+62	Perm	25	909.0	911.0	930.8
HCC 197	3+58	Perm	25	909.0	911.0	930.8
HCC 198	3+55	Perm	25	909.0	911.0	930.8
HCC 199	3+51	Perm	25	909.0	911.0	930.8
HCC 200	3+48	Perm	25	909.0	911.0	930.9
HCC 201	3+44	Perm	25	909.0	911.1	930.9
HCC 202	3+40	Perm	25	909.0	911.2	930.9
HCC 203	3+37	Perm	25	909.0	911.3	930.9
HCC 204	3+33	Perm	25	909.0	911.3	930.9
HCC 205	3+29	Perm	25	909.0	911.4	931.0
HCC 206	3+26	Perm	25	909.0	911.5	931.0
HCC 207	3+22	Perm	25	909.0	911.6	931.0
HCC 208	3+18	Perm	25	909.0	911.6	931.0
HCC 209	3+14	Perm	25	909.0	911.7	931.0
HCC 210	3+11	Perm	25	909.0	911.8	931.1
HCC 211	3+07	Perm	25	909.0	911.9	931.1
HCC 212	3+03	Perm	25	909.0	911.9	931.1
HCC 213	3+00	Perm	25	910.0	912.0	931.1

Table 5-3
2008 SKYKOMISH REMEDIATION PROJECT
HCC PILE TIP ELEVATIONS

PILE #	STA	TYPE	LENGTH	TIP	DESIGN TIP	CUT-OFF
HCC 214	2+96	Perm	25	910.0	912.0	931.1
HCC 215	2+92	Perm	25	910.0	912.0	931.2
HCC 216	2+89	Perm	25	910.0	912.0	931.2
HCC 217	2+86	Perm	25	910.0	912.0	931.2
HCC 218	2+82	Perm	25	910.0	912.0	931.2
HCC 219	2+78	Perm	25	910.0	912.0	931.2
HCC 220	2+74	Perm	25	910.0	912.0	931.3
HCC 221	2+70	Perm	25	910.0	912.0	931.3
HCC 222	2+66	Perm	25	910.0	912.0	931.3
HCC 223	2+62	Perm	25	910.0	912.0	931.3
HCC 224	2+59	Perm	25	910.0	912.0	931.3
HCC 225	2+56	Perm	25	910.0	912.0	931.4
HCC 226	2+52	Perm	25	910.0	912.0	931.4
HCC 227	2+48	Perm	25	910.0	912.0	931.4
HCC 228	2+44	Perm	25	910.0	912.0	931.4
HCC 229	2+41	Perm	25	910.0	912.0	931.4
HCC 230	2+37	Perm	25	910.0	912.0	931.5
HCC 231	2+33	Perm	25	910.0	912.0	931.5
HCC 232	2+29	Perm	25	910.0	912.0	931.5
HCC 233	2+26	Perm	25	910.0	912.0	931.5
HCC 234	2+23	Perm	25	910.0	912.0	931.5
HCC 235	2+19	Perm	25	910.0	912.0	931.6
HCC 236	2+15	Perm	25	910.0	912.0	931.6
HCC 237	2+11	Perm	25	910.0	912.0	931.6
HCC 238	2+08	Perm	25	910.0	912.0	931.6
HCC 239	2+04	Perm	25	910.0	912.0	931.6
HCC 240	2+00	Perm	25	910.5	912.0	931.7
HCC 241	1+96	Perm	25	910.5	912.0	931.7
HCC 242	1+92	Perm	25	910.5	912.0	931.7
HCC 243	1+89	Perm	25	910.5	912.0	931.7
HCC 244	1+86	Perm	25	910.5	912.0	931.7
HCC 245	1+83	Perm	25	910.5	912.0	931.8
HCC 246	1+79	Perm	25	910.5	912.0	931.8
HCC 247	1+75	Perm	25	910.5	912.0	931.8
HCC 248	1+72	Perm	25	910.5	912.0	931.8
HCC 249	1+68	Perm	25	910.5	912.0	931.8
HCC 250	1+65	Perm	25	910.0	912.0	931.9
HCC 251	1+62	Perm	25	910.0	912.0	931.9
HCC 252	1+58	Perm	25	910.0	912.0	931.9
HCC 253	1+54	Perm	25	910.0	912.0	931.9
HCC 254	1+51	Perm	25	910.0	912.0	931.9
HCC 255	1+47	Perm	25	910.0	912.0	932.0
HCC 256	1+44	Perm	25	910.0	912.0	932.0
HCC 257	1+40	Perm	25	910.0	912.0	932.0
HCC 258	1+37	Perm	25	910.0	912.0	932.0
HCC 259	1+33	Perm	25	910.0	912.0	932.0
HCC 260	1+29	Perm	25	910.0	912.0	932.1
HCC 261	1+25	Perm	25	910.0	912.0	932.1
HCC 262	1+21	Perm	25	910.0	912.0	932.1
HCC 263	1+18	Perm	25	910.0	912.0	932.1
HCC 264	1+14	Perm	25	910.0	912.0	932.1
HCC 265	1+10	Perm	25	910.0	912.0	932.2
HCC 266	1+07	Perm	25	910.0	912.0	932.2

Table 5-3
2008 SKYKOMISH REMEDIATION PROJECT
HCC PILE TIP ELEVATIONS

PILE #	STA	TYPE	LENGTH	TIP	DESIGN TIP	CUT-OFF
HCC 267	1+04	Perm	25	910.0	912.0	932.2
HCC 268	1+01	Perm	25	910.0	912.0	932.2
HCC 269	0+98	Perm	25	910.0	912.0	932.2
HCC 270	0+94	Perm	25	920.0	912.0	932.3
HCC 271	0+90	Perm	25	920.0	912.0	932.3
HCC 272	0+87	Perm	25	911.0	912.0	932.3
HCC 273	0+84	Perm	25	909.0	912.0	932.3
HCC 274	0+80	Perm	25	921.5	912.0	932.3
HCC 275	0+76	Perm	25	921.5	912.0	932.4
HCC 276	0+73	Perm	25	919.0	912.0	932.4
HCC 277	0+69	Perm	25	910.0	912.0	932.4
HCC 278	0+65	Perm	25	910.0	912.0	932.4
HCC 279	0+62	Perm	25	910.0	912.0	932.4
HCC 280	0+58	Perm	25	910.0	912.0	932.5
HCC 281	0+54	Perm	25	910.0	912.0	932.5
HCC 282	0+51	Perm	25	910.0	912.0	934.5
HCC 283	0+48	Perm	25	910.0	912.0	934.5
HCC 284	0+44	Perm	25	910.0	912.0	934.6
HCC 285	0+41	Temp	35	907.5	912.0	934.6
HCC 286	0+38	Temp	35	907.7	912.0	934.6
HCC 287	0+34	Temp	35	907.7	912.0	934.6
HCC 288	0+30	Temp	35	907.7	910.0	934.6
HCC 289	0+26	Temp	35	908.2	910.0	934.7
HCC 290	0+23	Temp	35	908.2	910.0	934.7
HCC 291	0+20	Temp	35	909.0	910.0	934.7
HCC 292	0+16	Temp	35	908.3	910.0	934.7
HCC 293	0+12	Temp	35	908.4	910.0	934.8
HCC 294	0+08	Temp	35	908.2	910.0	934.8
HCC 295	0+05	Temp	35	908.2	910.0	934.8
HCC 296	0+01	Temp	35	908.0	910.0	934.8
HCC 297	0-03	Temp	35	908.2	910.0	934.8
HCC 298	0-07	Temp	35	908.5	910.0	934.9
HCC 299	0-10	Temp	35	908.4	910.0	934.9
HCC 300	0-14	Temp	35	908.3	910.0	934.9
HCC 301	0-18	Temp	35	908.3	910.0	934.9
HCC 302	0-22	Temp	35	908.3	910.0	934.9
HCC 303	0-25	Temp	35	908.3	910.0	934.9
HCC 304	0-29	Temp	35	908.3	910.0	934.9
HCC 305	0-33	Temp	35	909.2	910.0	934.9
HCC 306	0-37	Temp	35	908.3	910.0	934.9
HCC 307	0-41	Temp	35	908.7	910.0	934.9
HCC 308	0-45	Temp	35	907.3	910.0	934.9
HCC 309	0-48	Temp	35	908.3	910.0	934.9

Note:
Rows highlighted in yellow were piles that didn't reach the planned tip elevation and were permeation grouted.

Table 5-4
2008 SKYKOMISH REMEDIATION PROJECT
SOIL METALS DATA

Sample ID	Date Sampled	SDG	Date Results	Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)	Notes
CHURCH-A1-BOTTOM	10/16/2008	BRJ0252	10/19/2008	24	7.97	4.57 J	
CHURCH-A1-SOUTH	10/16/2008	BRJ0252	10/19/2008	9	6.38	61.6 J	
CHURCH-A1-WEST	10/16/2008	BRJ0252	10/19/2008	9	5.53	70.5 J	
CHURCH-A2-BOTTOM	10/16/2008	BRJ0252	10/19/2008	18	4.68	24.3 J	
CHURCH-A2-EAST	10/16/2008	BRJ0252	10/19/2008	9	6.05	36.7 J	
CHURCH-A2-SOUTH	10/16/2008	BRJ0252	10/19/2008	9	9.21	97.9 J	
CHURCH-B1-BOTTOM	10/16/2008	BRJ0252	10/19/2008	24	5.57	22.5 J	
CHURCH-BZ	10/16/2008	BRJ0252	10/19/2008	24	3.69	2.7 J	Duplicate of CHURCH-B1-BOTTOM
CHURCH-B1-NORTH	10/16/2008	BRJ0252	10/19/2008	12	16.8	165 J	
CHURCH-B2-BOTTOM	10/16/2008	BRJ0252	10/19/2008	24	4.6	6.25 J	
CHURCH-B2-EAST	10/16/2008	BRJ0252	10/19/2008	12	15.5	1760 J	
CHURCH-B2-NORTH	10/16/2008	BRJ0252	10/19/2008	12	10.2	299 J	
CHURCH-C-BOTTOM	10/16/2008	BRJ0252	10/19/2008	18	18.3	179 J	
CHURCH-C-NORTH	10/16/2008	BRJ0252	10/19/2008	9	15.2	519 J	
CHURCH-D-BOTTOM	10/16/2008	BRJ0252	10/20/2008	8	8.07	8.99 J	
CHURCH-D-NORTH	10/16/2008	BRJ0252	10/19/2008	4	10.3	150 J	
CHURCH-E-BOTTOM	10/16/2008	BRJ0252	10/20/2008	8	5.71	2.7	
CHURCH-E-NORTH	10/16/2008	BRJ0252	10/19/2008	4	9.86	113 J	
CHURCH-E-WEST	10/16/2008	BRJ0252	10/19/2008	2	5.46	3.75 J	
METALS-1	10/21/2008	BRJ0316	10/23/2008	12	18.7	77.5 J	
METALS-2	10/21/2008	BRJ0316	10/23/2008	12	9.37	150 J	
METALS-Z	10/21/2008	BRJ0316	10/23/2008	12	11.8	178 J	Duplicate of METALS-2
METALS-3	10/21/2008	BRJ0316	10/23/2008	12	13	82.8 J	
METALS-4	10/21/2008	BRJ0316	10/23/2008	12	11.9	386 J	
METALS-5	10/21/2008	BRJ0316	10/23/2008	12	9.32	106 J	
METALS-6	10/21/2008	BRJ0316	10/23/2008	12	13.6	593 J	
METALS-10-B	11/26/2008	BRK0320	11/28/2008	15	15.2	22.2	
METALS-10-E	11/26/2008	BRK0320	11/28/2008	4	18.3	280	
METALS-11-B	11/26/2008	BRK0320	11/28/2008	14	28.9	7.55	
METALS-11-W	11/26/2008	BRK0320	11/28/2008	5	15.5	353	
METALS-12 SIDEWALL	11/26/2008	BRK0320	11/28/2008	3	17	223	
METALS-13 SIDEWALL	11/26/2008	BRK0320	11/28/2008	5	15.8	161	
METALS-15-N	11/26/2008	BRK0320	11/28/2008	5	20	576	
METALS-16-B	11/26/2008	BRK0320	11/28/2008	15	25.7	30.1	
METALS-16-N	11/26/2008	BRK0320	11/28/2008	5	13.3	397	
METALS-1-E	11/26/2008	BRK0320	11/28/2008	4	15.6	323	
METALS-2-B	11/26/2008	BRK0320	11/28/2008	14	33	13.9	
METALS-5-B	11/26/2008	BRK0320	11/28/2008	15	22.6	22.9	
METALS-8 SIDEWALL	11/26/2008	BRK0320	11/28/2008	5	< 9.82	71.3	
METALS-9-B	11/26/2008	BRK0320	11/28/2008	15	< 27.3	62.2	
CHURCH-B-2A EAST	11/6/2008	BRK0058	11/7/2008	6	18	779	

Table 5-4
2008 SKYKOMISH REMEDIATION PROJECT
SOIL METALS DATA

Sample ID	Date Sampled	SDG	Date Results	Depth (inches)	Arsenic (mg/kg)	Lead (mg/kg)	Notes
CHURCH-B-2A NORTH	11/6/2008	BRK0058	11/7/2008	9	11.3	149	
METALS-2-SOUTH	11/6/2008	BRK0058	11/7/2008	6	17.9	764	
METALS-4-B	11/6/2008	BRK0058	11/7/2008	12	14.3	26.9	
METALS-4-E	11/6/2008	BRK0058	11/7/2008	6	13.7	97.6	
METALS-4-N	11/6/2008	BRK0058	11/7/2008	6	16.1	31.6	
METALS-4-S	11/6/2008	BRK0058	11/7/2008	6	13.4	2360	
METALS-4Z	11/6/2008	BRK0058	11/7/2008	6	12.3	913	Duplicate of METALS-4-S
METALS-4-W	11/6/2008	BRK0058	11/7/2008	6	13.8	127	
METALS-6-B	11/6/2008	BRK0058	11/7/2008	12	12	49	
METALS-6-E	11/6/2008	BRK0058	11/7/2008	6	11.3	136	
METALS-6-N	11/6/2008	BRK0058	11/7/2008	6	15.6	545	
METALS-6-S	11/6/2008	BRK0058	11/7/2008	6	12.3	383	
METALS-6-W	11/6/2008	BRK0058	11/7/2008	6	16.4	347	
METALS-11A-B	12/2/2008	BRL0019	12/3/2008	20	22.6	6.21 J	
METALS-11A-W	12/2/2008	BRL0019	12/3/2008	6	12.2	244 J	
METALS-12-B	12/2/2008	BRL0019	12/3/2008	15	20.1	9.88 J	
METALS-13-B	12/2/2008	BRL0019	12/3/2008	15	14.8	4.14 J	
METALS-15A-B	12/2/2008	BRL0019	12/3/2008	23	8.03	3.99 J	
METALS-15A-N	12/2/2008	BRL0019	12/3/2008	6	14.3	442 J	
METALS-15A-W	12/2/2008	BRL0019	12/3/2008	6	6.33	12.9 J	
METALS-16A-B	12/2/2008	BRL0019	12/3/2008	18	5.13	4.44 J	
METALS-16A-E	12/2/2008	BRL0019	12/3/2008	8	11.4	128 J	
METALS-16A-N	12/2/2008	BRL0019	12/3/2008	6	13.7	154 J	
METALS-16Z	12/2/2008	BRL0019	12/3/2008	6	13.4	227 J	Duplicate of METALS-16A-N
METALS-1A-B	12/2/2008	BRL0019	12/3/2008	18	4.02	2.44 J	
METALS-1A-E	12/2/2008	BRL0019	12/3/2008	5.5	14.6	240 J	
METALS-2A-B	12/2/2008	BRL0019	12/3/2008	20	15.5	6.17 J	
METALS-5A-B	12/2/2008	BRL0019	12/3/2008	21	7.88	16.3 J	
METALS-11B-B	12/4/2008	BRL0042	12/5/2008	32	< 5.34	2.44	
METALS-12A-B	12/4/2008	BRL0042	12/5/2008	21	7.42	2.78	

Note: Highlighted values indicate the deepest sample taken within a specific grid

Table 5-5 Soil Stockpile Laboratory Analytical Results

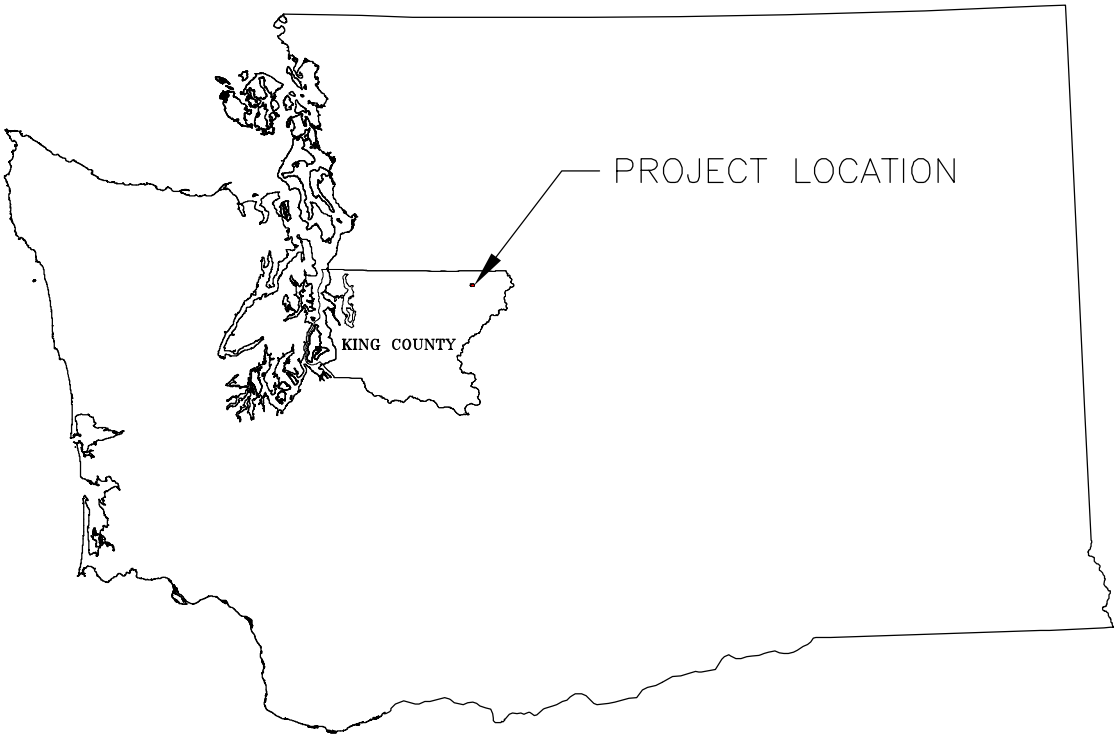
Sample Name	Date Sampled	SDG	Date Results	As TCLP ICP 601 Arsenic (mg/l)	Pb TCLP ICP 601 Lead (mg/l)	pH-9045 pH	SW8082 Aroclor 1016 (mg/kg)	SW8082 Aroclor 1221 (mg/kg)	SW8082 Aroclor 1232 (mg/kg)	SW8082 Aroclor 1242 (mg/kg)
CALLEN STOCKPILE	10/16/2008	BRJ0252	10/18/2008	NA	NA	NA	NA	NA	NA	NA
CALLEN STOCKPILE	10/16/2008	BRJ0252	10/20/2008	< 1	< 1	NA	NA	NA	NA	NA
CHURCH STOCKPILE	10/16/2008	BRJ0252	10/18/2008	NA	NA	NA	NA	NA	NA	NA
CHURCH STOCKPILE	10/16/2008	BRJ0252	10/20/2008	NA	NA	NA	NA	NA	NA	NA
CHURCH STOCKPILE	10/16/2008	BRJ0252	10/21/2008	< 1	< 1	NA	NA	NA	NA	NA
TELECOM SP	7/17/2008	BRG0236	7/21/2008	NA	NA	**7.85**	NA	NA	NA	NA
TELECOM SP	7/17/2008	BRG0236	7/22/2008	< 1	< 1	NA	NA	NA	NA	NA
TELECOM SP	7/17/2008	BRG0236	7/25/2008	NA	NA	NA	< 0.0266	< 0.0531	< 0.0266	< 0.0266

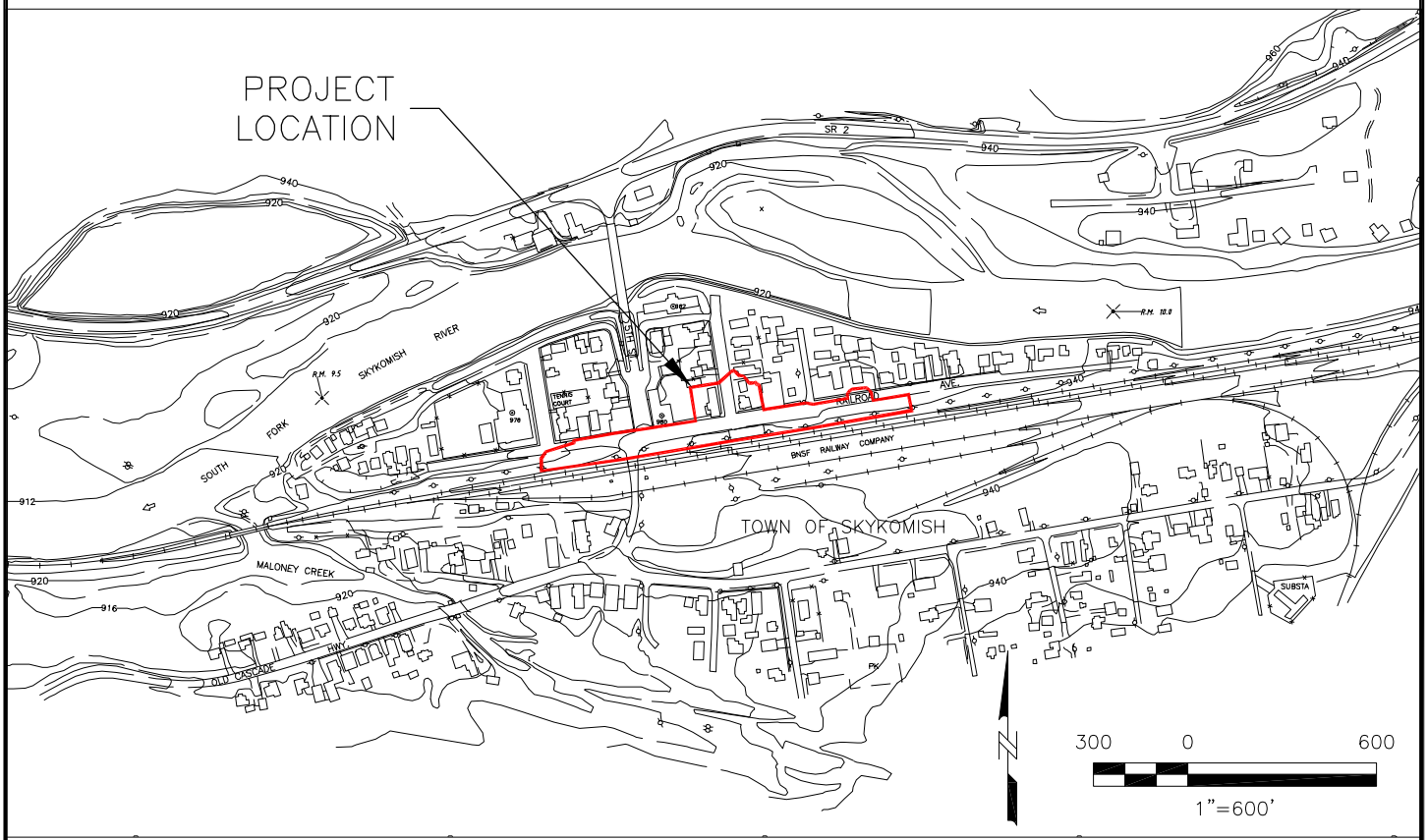
Table 5-5 Soil Stockpile Laboratory Analytical Results

Sample Name	Date Sampled	SDG	Date Results	SW8082 Aroclor 1248 (mg/kg)	SW8082 Aroclor 1254 (mg/kg)	SW8082 Aroclor 1260 (mg/kg)	SW8082 Aroclor 1262 (mg/kg)	SW8082 Aroclor 1268 (mg/kg)	NWTPH-Dx Diesel (mg/kg)	NWTPH-Dx w/SG Diesel (mg/kg)
CALLEN STOCKPILE	10/16/2008	BRJ0252	10/18/2008	NA	NA	NA	NA	NA	NA	< 11.9
CALLEN STOCKPILE	10/16/2008	BRJ0252	10/20/2008	NA	NA	NA	NA	NA	NA	NA
CHURCH STOCKPILE	10/16/2008	BRJ0252	10/18/2008	NA	NA	NA	NA	NA	NA	**15 N**
CHURCH STOCKPILE	10/16/2008	BRJ0252	10/20/2008	NA	NA	NA	NA	NA	NA	NA
CHURCH STOCKPILE	10/16/2008	BRJ0252	10/21/2008	NA	NA	NA	NA	NA	NA	NA
TELECOM SP	7/17/2008	BRG0236	7/21/2008	NA	NA	NA	NA	NA	**73.6 J**	NA
TELECOM SP	7/17/2008	BRG0236	7/22/2008	NA	NA	NA	NA	NA	NA	NA
TELECOM SP	7/17/2008	BRG0236	7/25/2008	< 0.0266	< 0.0266	< 0.0266	< 0.0266	< 0.0266	NA	NA

Table 5-5 Soil Stockpile Laboratory Analytical Results

Sample Name	Date Sampled	SDG	Date Results	NWTPH-Dx Oil (mg/kg)	NWTPH-Dx w/SG Oil (mg/kg)	NWTPH-Dx Totaled Diesel & Oil	NWTPH-Dx w/SG Totaled Diesel & Oil
CALLEN STOCKPILE	10/16/2008	BRJ0252	10/18/2008	NA	< 29.6	NA	20.75
CALLEN STOCKPILE	10/16/2008	BRJ0252	10/20/2008	NA	NA	NA	NA
CHURCH STOCKPILE	10/16/2008	BRJ0252	10/18/2008	NA	< 31.6	**19.03**	NA
CHURCH STOCKPILE	10/16/2008	BRJ0252	10/20/2008	NA	NA	NA	NA
CHURCH STOCKPILE	10/16/2008	BRJ0252	10/21/2008	NA	NA	NA	NA
TELECOM SP	7/17/2008	BRG0236	7/21/2008	**259**	NA	**332.6**	NA
TELECOM SP	7/17/2008	BRG0236	7/22/2008	NA	NA	NA	NA
TELECOM SP	7/17/2008	BRG0236	7/25/2008	NA	NA	NA	NA





AECOM

COMPLETION REPORT 2008 SKYKOMISH REMEDIATION 01140-222-0500			SITE LOCATION MAP
DATE: 3/20/09	DRWN: E.M./SEA		FIGURE 1-1

File: L:\BNSF-Skykomish\2008 remediation\SITE LOCATION-08.dwg Layout: FIG 1-1 User: MarshallE Plotted: Mar 20, 2009 - 2:16pm Xref's:

SOUTH FORK SKYKOMISH RIVER

CONSTRUCTION WATER DISCHARGE LOCATION

SETTLEMENT MONITORING POINTS (TYP.)

HIGH VISIBILITY FENCE

MALONEY'S GENERAL STORE

WHISTLING POST TAVERN TEMPORARY LOCATION

SKYKOMISH HOTEL

COMMUNITY CHURCH

AIR SPARGING PROPERTY

McEVOY HOUSE TEMPORARY LOCATION

DEPOT TEMPORARY LOCATION

GATE

RAILROAD AVENUE

TEMPORARY HCC ROADWAY

TEMPORARY PUBLIC CROSSING AND EMERGENCY VEHICLE CROSSING (OPEN 7AM TO 10PM).

TEMPORARY CONSTRUCTION CROSSING

TEMPORARILY ASPHALTED ROADWAY

CONSTRUCTION WATER TREATMENT SYSTEM

WHEEL WASH/DECONTAMINATION PAD

TELECOM TRENCH AND CONDUIT

GATES

IMPACTED SOIL DUMPING RAMP

PORTABLE EQUIPMENT STORAGE AREA AND CONTRACTOR TRAILERS

SOIL HANDLING FACILITY

TRAFFIC FLOW PATTERN

SOUND WALL

WETLAND AREA

REMEDIATION EQUIPMENT BUILDING

CLEAN OVERBURDEN STOCKPILE AREA

LOCATION OF MOBILE HOME DEMOLISHED IN MAY 2008

N.E. Old Cascade Highway

60 0 120

GRAPHIC SCALE IN FEET

AECOM

BNSF RAILWAY - SKYKOMISH, WA.
2008 SKYKOMISH REMEDIATION
01140-222-0500

TEMPORARY FEATURES

DATE: 3/20/09 | DRWN: E.M./SEA | FIGURE 4-1

File: L:\BNSF-Skykomish\2008 remediation\temp features.dwg Layout: FIGURE 4-1 User: MarshallE Plotted: Mar 31, 2009 - 10:27am Xref's:

SOUTH FORK SKYKOMISH RIVER

2008 EXCAVATION EXTENTS

MW-35
MW-27
MW-34
2A-W-6
2A-W-22
MW-21
1B-W-1
2A-W-2
MW-37
2A-W-1
2A-W-25
MW-20
2A-W-24
5-W-38
5-W-39
5-W-40
MW-19
MW-38
MW-8

Fourth Street
Fifth Street
Sixth Street
Railroad Avenue
Unnamed Street
N.E. Old Cascade Highway
Helen Street
FO

LEGEND

ABANDONED WELLS

DESTROYED WELL

AECOM

75 0 150

SCALE IN FEET

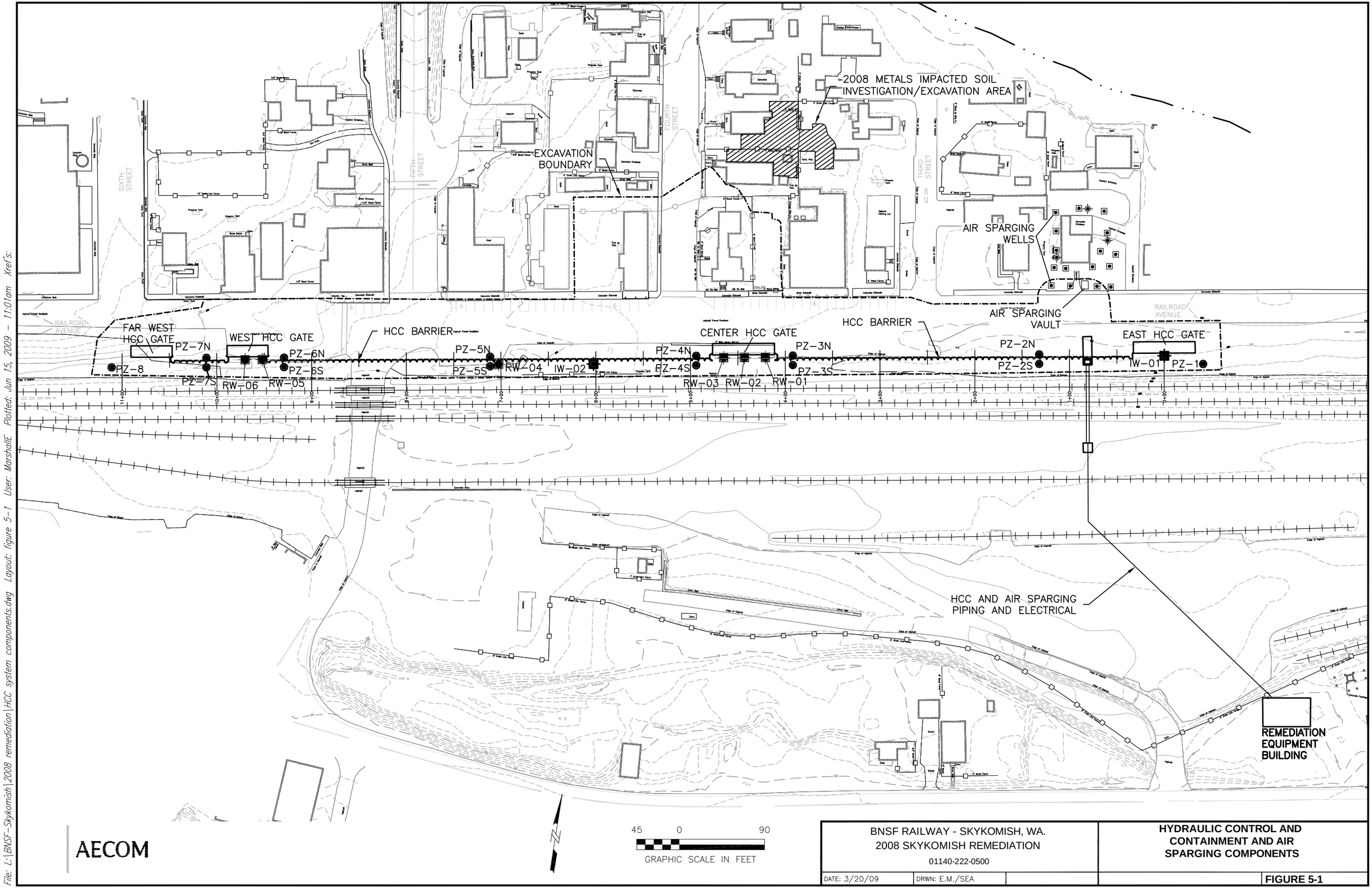
N

BNSF RAILWAY - SKYKOMISH, WA.
2008 SKYKOMISH REMEDIATION
01140-222-0500

WELLS ABANDONED OR DESTROYED IN 2008

DATE: 3/20/09 | DRWN: E.M./SEA | **FIGURE 4-2**

File: L:\BNSF-Skykomish\2008 remediation\wells abandoned 08.dwg Layout: FIGURE 4-2 User: MarshallE Plotted: Mar 31, 2009 - 10:25am Xref's:



File: L:\BNSF-Skykomish\2008 remediation\HCC system components.dwg Layout: figure 5-1 User: MarshallE Plotted: Jun 15, 2009 - 11:01am Xref's:

SIXTH STREET

FIFTH STREET

CONFIRMATION SAMPLING GRID

MATCH LINE

MATCH LINE

Concrete Ring

Concrete Walk

Concrete Walk

Concrete Walk

Conc. Curb

Conc. Curb

10' Chain Link Fence

5.5' Wood Fence

6' Wood Fence

Dirt Path

Conc.

Brick Walk

Brick Driveway

5.5' Wood Fence

Propane Tank

Propane Tank

5' Wood Fence

Conc.

Wood Stairs

Conc.

Conc. Wall

Sign

4.5' Wood Fence

Concrete Sidewalk

Conc. Curb

Column, Typ.

Concrete Sidewalk

Concrete Sidewalk

Deck

Deck

Chain Link Fence

Concrete

4.5' Wood Fence

Conc. Wall

Gravel

Concrete

Edge of Asphalt

Deck

Propane Tank

4.5' Wood Fence

Deck

6' Chain Link Fence

6' Wood Fence

Conc.

Concrete Sidewalk

Sidewalk

Concrete

Concrete Driveway

5' Chain Link Fn.

5' Wood Fence

5' Chain Link Fence

Brick Walk

Deck

Deck

Deck

Sign

Concrete Sidewalk

C

B

A

I

H

G

F

E

D

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 2

930 925 920 915 910 906 909 935 916 917 918

Edge of Ballast

Concrete

Asphalt

Asphalt

LEGEND

- 2008 EXCAVATION LIMIT
- MSE WALL
- SHEET PILE WALL
- SLOPE WITH GEOTEXTILE FABRIC AND MSE WALL
- SLOPE WITH IMPERMEABLE LINER AND MSE WALL
- PLANNED EXCAVATION
- ACTUAL EXCAVATION

NOTE:

CASCADIA MSE WALL ELEVATION BEGINS AT APPROXIMATELY 924.00. TOP OF WALL ELEVATION IS APPROXIMATELY 933.00.

N

40 0 80

GRAPHIC SCALE IN FEET

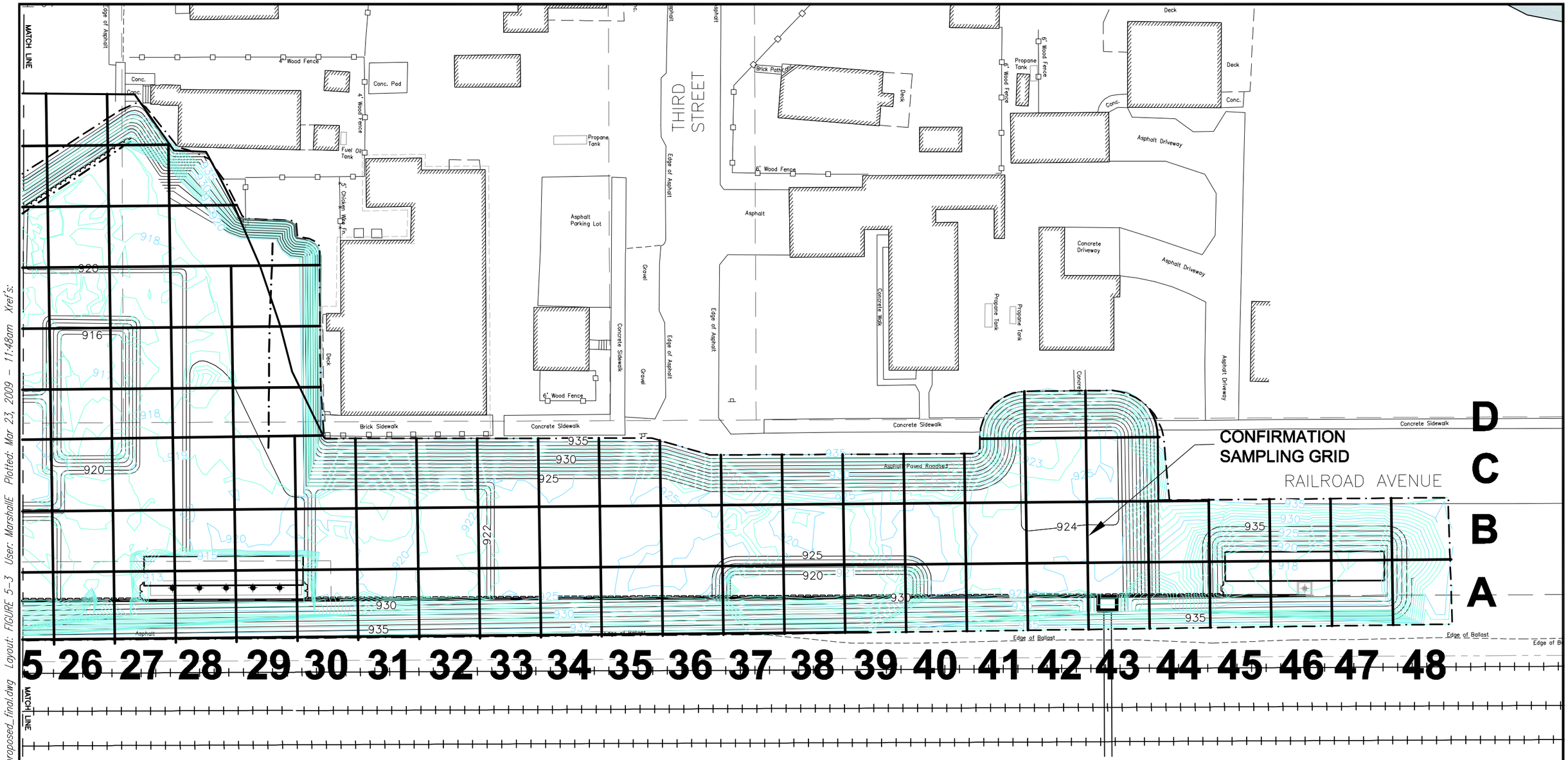
AECOM

BNSF RAILWAY - SKYKOMISH, WA.
2008 SKYKOMISH REMEDIATION
01140-222-0500

DATE: 3/20/09 | DRWN: E.M./SEA

FINAL VS. PLANNED EXCAVATION CONTOURS WEST

FIGURE 5-2



NOTE:

CASCADIA MSE WALL ELEVATION BEGINS AT APPROXIMATELY 924.00. TOP OF WALL ELEVATION IS APPROXIMATELY 933.00.

LEGEND

- 2008 EXCAVATION LIMIT
- MSE WALL
- SHEET PILE WALL
- PLANNED EXCAVATION
- ACTUAL EXCAVATION

AECOM

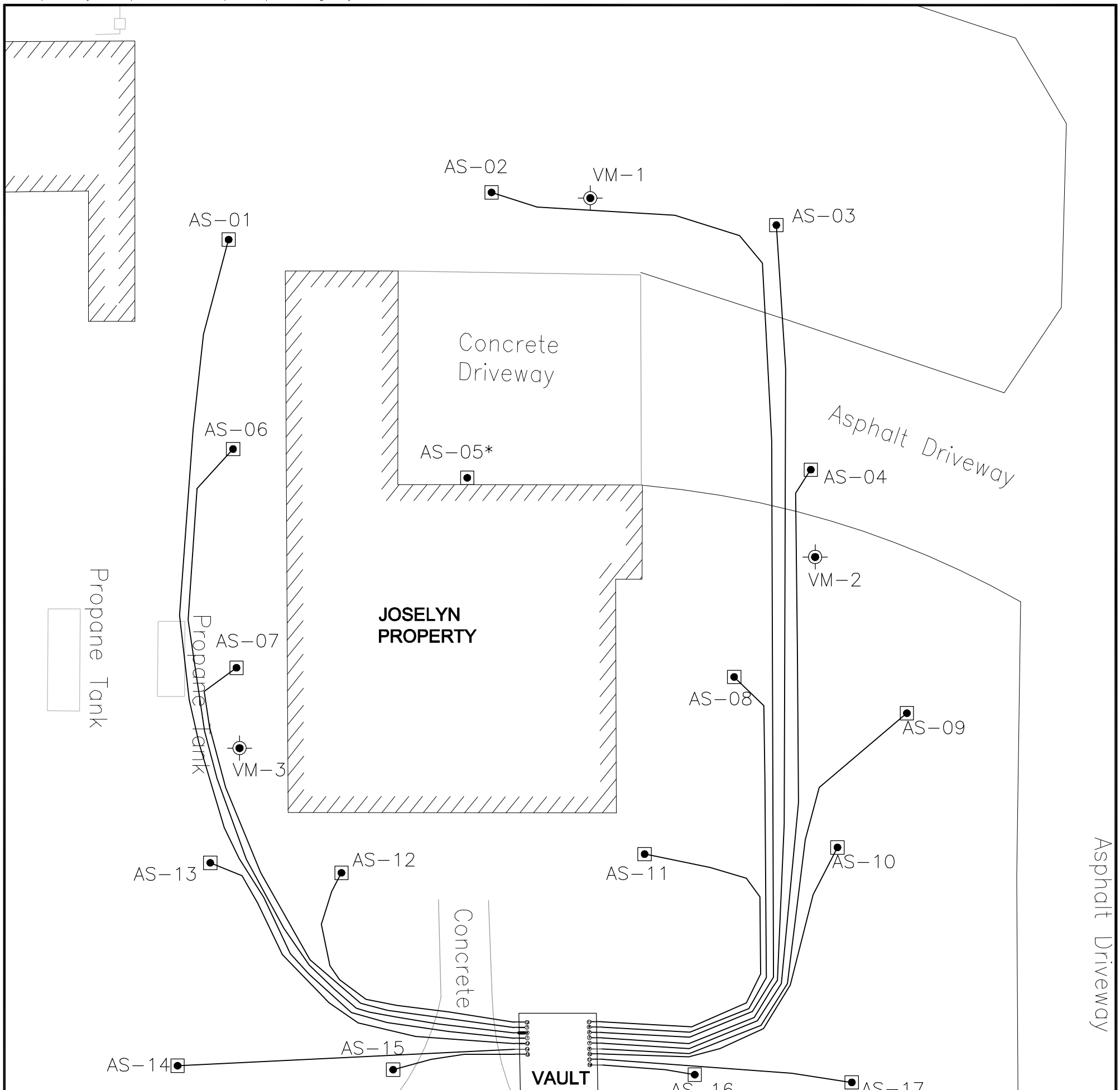
N

40 0 80

GRAPHIC SCALE IN FEET

BNSF RAILWAY - SKYKOMISH, WA. 2008 SKYKOMISH REMEDIATION 01140-222-0500				FINAL VS. PLANNED EXCAVATION CONTOURS EAST
DATE: 3/20/09	DRWN: E.M./SEA			FIGURE 5-3

File: L:\BNSF-Skykomish\2008 remediation\exc_ctrs-proposed_final.dwg Layout: FIGURE 5-3 User: MarshallE Plotted: Mar 23, 2009 - 11:48am Xref's:



WELL ID	EASTING	NORTHING
AS-01	1511243.412	259375.886
AS-02	1511266.946	259384.072
AS-03	1511293.667	259385.22
AS-04	1511300.409	259363.179
AS-06	1511246.881	259356.657
AS-07	1511250.383	259336.557
AS-08	1511296.375	259342.972
AS-09	1511312.817	259342.156
AS-10	1511308.377	259328.775
AS-11	1511290.707	259325.347
AS-12	1511263.048	259319.198
AS-13	1511250.815	259318.205
AS-14	1511250.762	259299.028
AS-15	1511270.683	259301.808
AS-16	1511298.548	259305.755
AS-17	1511313.127	259307.336
VM-1	1511276.13	259384.991
VM-2	1511302.082	259355.206
VM-3	1511251.841	259329.201

TO REMEDIATION BUILDING

LEGEND

AIR SPARGING WELL

VAPOR MONITORING WELL

NOTE:

* AS-05 NOT INSTALLED DUE TO INADEQUATE OVERHEAD CLEARANCE AT PLANNED INSTALLATION POINT.

5 0 10

GRAPHIC SCALE IN FEET

AECOM

BNSF RAILWAY - SKYKOMISH, WA.
2008 SKYKOMISH REMEDIATION
01140-222-0500

AIR SPARGING SYSTEM COMPONENTS

DATE: 3/20/09 | DRWN: E.M./SEA | **FIGURE 5-4**

Gravel

Gravel

Conc.

JAVIER PROPERTY

15

16

9

1

Conc.

ELROD PROPERTY

13

11

2

10

3

4

5

12

INVESTIGATION/
EXCAVATION
GRID DESIGNATOR

CHURCH–E

CHURCH–D

CHURCH–C

CHURCH–B1

CHURCH–B2

6

Conc.

Conc.

Conc. Pad

CHURCH
–A1

CHURCH–A2

8

Concrete Side

CHURCH PROPERTY

SLADEK PROPERTY

LEGEND

PROPERTY LINES

5 0 10

SCALE IN FEET

N

AECOM

BNSF RAILWAY - SKYKOMISH, WA.
2008 SKYKOMISH REMEDIATION
01140-222-0500

2008 METALS IMPACTED SOIL INVESTIGATION / EXCAVATION AREA

DATE: 3/20/09 | DRWN: E.M./SEA

FIGURE 5-5