AECOM Environment

Prepared for:
The BNSF Railway Company

Prepared by:
AECOM
Seattle, WA
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June 22, 2012

2011 Remediation – As-Built Completion Report

BNSF Former Maintenance and Fueling Facility
Skykomish, Washington

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FINAL 2011 Remediation – As-Built Completion Report

BNSF Former Maintenance and Fueling Facility Skykomish, Washington

Prepared by Eric Storkerson, Project Specialist

Reviewed by Greg Chase, Site Construction Manager

Approved by Winston Chen, P.E., Engineer of Record

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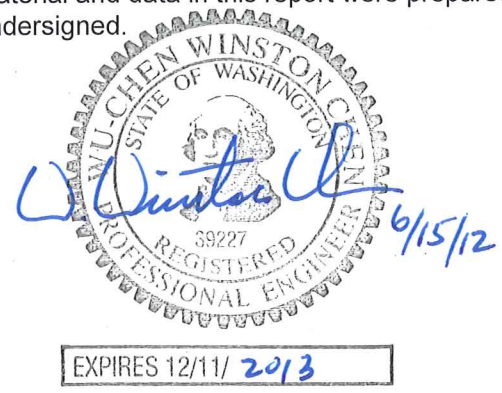
Construction Completion Report
2011 Remediation
BNSF Former Maintenance and Fueling Facility
Skykomish, Washington

Based on direct observations made by AECOM Environment (AECOM), materials testing, laboratory testing and other construction documentation described in this report, it is the opinion of the undersigned that the portion of the Skykomish Remediation completed in 2011 has been constructed in substantial compliance with the scope of work presented in the *Cleanup Action Plan* (CAP), *2010 Engineering Design Report* (EDR), and *2010 Construction Plans and Specifications* (CPS). The work carried out in 2011 described herein was completed, and the material and data in this report were prepared, under supervision and direction of the undersigned.



AECOM Environment

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1.0 Introduction

This 2011 As-Built Completion Report (As-Built Report) was prepared pursuant to WAC 173-340-400 requirements, and describes 2011 remediation construction activities completed for the BNSF Railway Company (BNSF) Former Maintenance and Fueling Facility located in Skykomish, Washington (site). Figure 1 shows the site location. Site remediation activities are being completed in accordance with the Cleanup Action Plan (CAP; Ecology; 2007a). BNSF entered into a Consent Decree (CD; Ecology 2007b; *State of WA v. BNSF Railway Company*, King County Case No. 07-2-33672-9SEA) with Washington State Department of Ecology (Ecology) to implement the CAP. The overall cleanup approach is described in the *Master Engineering Design Report* (RETEC 2008).

The remediation activities described in this As-Built Report were performed from January 1, 2011 through December 31, 2011. Table 1-1 summarizes the activities that were planned for 2011, as originally described in the *2010 Engineering Design Report* (EDR; AECOM 2010a) and *2010 Compliance Monitoring Plan Update* (CMP; AECOM 2010b). The table summarizes the status of each activity including: 1) work completed in 2011, and 2) work initiated in 2011 and scheduled to be completed after 2011. The table also summarizes the types of compliance monitoring that were completed for each activity, as well as other relevant construction activities that were not described in the 2010 EDR, but were completed during 2011 consistent with the CAP and Master EDR.

Table 1-1 2011 Remediation Activity Summary

Activity***	Status		Compliance Monitoring Performed		
	Completed in 2011	To be Completed After 2011	Protection	Performance	Confirmation
1. Air Sparging System Operation[1]	X			X	
2. Bridge Area Excavation and Remediation[2]	X		X	X	
3. Construction Water Treatment System Operation	X		X	X	
4. Robinson and Scisco Drainage Restoration	X		X		
5. FMCE Final Grading	X		X		
6. HCC System Operation	X			X	
7. Levee West End Excavation and Remediation	X		X	X	
8. Railyard Zone (RYZ) Excavation (TPH and Metals) and Private Party (Scisco and Austin) TPH Excavation	X		X	X	
9. School Remediation		X[3]	X	X	
10. Schoolyard Excavation		X[3]	X	X	
11. Stormwater Pond Perimeter Fence Installation	X				

Activity***	Status		Compliance Monitoring Performed		
	Completed in 2011	To be Completed After 2011	Protection	Performance	Confirmation
12. Air, Noise, Weather, and Mitigation Monitoring	X		X	X	
13. Routine Groundwater Monitoring[4]	X			X	
14. Final Town ROW Restoration: Utilities, Roadways, Storm Sewer, and Landscaping, etc.[5]		X	X		
15. Depot Relocation	X				

Notes:

1. System was operated in 2011 and will be operated in 2012 and beyond, if necessary.
2. Excavation upland of the bridge abutment and ordinary high water mark (OHWM) was completed in 2010. Additional excavation below the OHWM was completed in 2011.
3. Contingent upon the School granting access to the property.
4. Routine Groundwater Monitoring encompasses all quarterly and semi-annual groundwater monitoring activities described in the *2010 Groundwater Monitoring Plan* to evaluate overall groundwater quality at the site. It does not include groundwater monitoring activities intended to evaluate HCC system performance.
5. Final town restoration east of Sixth Street and portions of West River Drive was completed in 2011. Remaining final town restoration includes areas west of and including Sixth Street. This work will be completed after 2011.

*** Excavation and remediation activities, as listed in this table, include all associated preparation, access agreements, building relocation, engineering design, excavation, mitigation, traffic control, restoration, utility construction, etc., unless otherwise noted.

1.1 Report Organization

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

- **Section 1.0 – Introduction**
- **Section 2.0 – Project Management and Organization.** This section describes the roles and responsibilities of BNSF, AECOM, the general contractor and their consultants and subcontractors in the completion of the 2011 remediation activities.
- **Section 3.0 – Permitting.** This section describes the permitting activities that were conducted for the 2011 remediation.
- **Section 4.0 – Site Preparation.** This section describes the general site preparation activities that were completed prior to the start of construction.
- **Section 5.0 – Construction Activities.** This section describes the 2011 remediation construction activities, including: 1) activities described in the 2010 EDR, *2010 Construction Plans and Specifications* (CPS; AECOM 2010c) and FMCE SDR that were completed in 2011; 2) additional activities that were completed, but not described in these documents; 3) related compliance monitoring activities.
- **Section 6.0 – Work to be Completed After 2011.** This section describes the remaining remediation activities described in the CPS that will begin or will be completed after 2011.
- **Section 7.0 – Summary and Conclusions**
- Section 8.0 – 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 for BNSF with contractors, the Town of Skykomish (Town) and local stakeholders. Ecology provided regulatory oversight of the project. Brief descriptions of the roles of each contractor, subcontractor, consultant, and company in the 2011 remediation are provided below.

2.1 Primary General Contractor

- Strider Construction Company (Strider) was responsible for implementation of the CPS, execution of the project contract documents and requirements, and development and implementation of the *2011 Technical Execution Plan* (TEP; Strider 2011). Strider provided a Construction Manager and Superintendent who were responsible for on-site management and coordination for the duration of the project. Strider generally performed excavation, backfilling and grading of remediation areas, loading of excavated materials for disposal, restoration, and infrastructure reconstruction.

2.1.1 Subcontractors to Strider

- Clear Water Compliance Services, Inc. (CWCS) – Temporary construction water treatment system (CWTS) installation and operation
- Economy Fencing – Stormwater Pond perimeter fence installation
- Fremont Analytical – Chemical analyses of discharge water from the temporary construction water treatment system
- GeoTest Services, Inc. – Soil compaction testing
- Inca Engineers (Inca) – Land surveying
- Lakeside Industries, Monroe Division – Street paving
- Marine Vacuum Service, Inc. (MARVAC) – Oil recovery
- McCandlish Electric, Inc. – HCC system maintenance and site-wide electrical work
- National Construction Rentals – Temporary site security fencing
- Nickel Bros. House Moving, Ltd. – Structure moving
- P&G – Depot Park, Bridge Area, Levee West End landscaping and irrigation installation
- S&S Concrete Construction Inc. – Concrete curb, gutter and sidewalk construction

2.2 Consultants and Contractors to AECOM

- Cascade Drilling – Well modifications
- Frontier Communications (Frontier; formerly Verizon Communications) – Communications utilities design and construction
- Major Drilling – Well installation and decommissioning
- SWCA Consultants (SWCA; formerly Northwest Archeological Associates Inc.) – Archeological Monitoring and Discovery Plan development and implementation

- Puget Sound Energy (PSE) – Electrical utilities infrastructure design and construction
- True North Land Survey, Inc. – Piezometer and monitoring well surveying

2.3 Consultants to the Town

- Gray and Osborne, Inc. (G&O) – Town sanitary sewer system design
- KPG – Review of Town right-of-way restoration plans

2.4 Consultants and Contractors to BNSF

- AECOM – Engineer of Record; CPS development; remediation oversight; compliance monitoring; and BNSF liaison with contractors, Town, and local stakeholders
- Farallon Consulting – Design Engineer for Skykomish School work.
- EnviroIssues – Public outreach
- TestAmerica – Chemical analysis of soil samples and National Pollutant Discharge Elimination System (NPDES) permit water samples
- Pace Analytical Services, Inc. (Pace) – Chemical analyses of routine groundwater monitoring samples
- Rabanco/Allied Waste – Impacted soil disposal facility

3.0 Permitting

The following permits (issued by the listed agencies) were obtained by BNSF prior to the commencement of the 2011 remediation work:

- *NPDES permit* – Ecology
- *Clearing and grading permit* – Town
- *Nationwide 38 permit* – USACE (lead agency). This permit was required for Bridge Area and Levee West End excavation below the Ordinary High Water Mark (OHWM). It was applied for via the Joint Aquatic Resources Permit Application (JARPA), which was submitted to USACE, Ecology, Washington State Department of Natural Resources, U.S. Fish and Wildlife Service (USFWS) and WDFW
- *Clean Water Act Section 404 Permits to Discharge Dredged or Fill Material (in-water excavation permit)* – U.S. Army Corps of Engineers (USACE)
- *Bridge permit* – Washington State Department of Transportation (WSDOT). This permit was issued for construction activities around the bridge abutment, levee and bridge pier. Prior to the Bridge Area remediation, AECOM submitted a technical memorandum to WSDOT describing the proposed excavation and restoration of the Bridge Area, and a traffic control strategy. Impacts to bridge traffic, and mitigation methods were described in the permit.

Copies of all the above-listed permits are included in Appendix A.

3.1 NPDES Permit

CWTS system discharges during the 2011 remediation were performed in accordance with the project NPDES permit (Permit No. WA-003212-3; Ecology 2011).

The NPDES permit was originally issued on May 4, 2006 and authorized discharge of excavation dewatering water and industrial stormwater resulting from levee remediation activities to Outfall 1. Four modifications to the NPDES permit have been authorized since the issuance of the permit.

- Modification 1 (issued August 15, 2006) increased the stringency of some of the permit conditions and set the criteria that allowed flexibility to BNSF in choosing between two approved chitosan products for water treatment.
- Modification 2 (issued June 30, 2008) authorized CWTS discharge at Outfall 2 (Sixth Street outfall), HCC system discharge at Outfall 3 (3rd Street outfall), and HCC system effluent injection to groundwater wells IW-1 and IW-2.
- Modification 3 (issued June 23, 2010) increased the allowable summer seasonal CWTS Outfall 2 discharge flow rate.
- Modification 4 (issued June 21, 2011) renewed the existing permit.

Per the NPDES permit requirements, BNSF prepared and implemented the updated *2011 Stormwater Pollution and Prevention Plan* (SWPPP; AECOM 2011).

BNSF submitted monthly discharge monitoring reports to Ecology. CWTS operation is described in Section 4.0. HCC system operation, including railyard subsurface injection to support hydraulic containment at the east side of the HCC barrier wall and to flush free product toward the recovery wells between the central and west gates is described in Section 5.0.

4.0 Site Preparation

4.1 Pre-Construction Meeting, Weekly Construction Meetings and Stakeholder Meetings

A pre-construction meeting was held in Skykomish on June 15, 2011. Meeting attendees included representatives of Strider, AECOM, and BNSF. The key items discussed in the meeting were:

- Roles and responsibilities
- Communication protocol
- Site health and safety
- Weekly construction meetings
- Project contacts
- Submittal procedure
- Anticipated construction schedule

Weekly on-site construction meetings were held to review construction activity status and to address any construction issues related to the CPS and the project contract. Meeting attendees included representatives of BNSF, AECOM, EnviroIssues, Strider, and select subcontractors. The meeting agenda generally included the following:

- Health and safety concerns
- Construction status
- Discussion of construction issues
- Review of three-week look ahead project schedule
- Submittal status and delivery schedule
- Review of contract modifications
- Project financial performance
- Public outreach concerns

Bi-weekly on-site stakeholder meetings and conference calls were also held during the construction season following the weekly construction meetings. The attendees included representatives of AECOM, Ecology, EnviroIssues, and the Town. At the stakeholder meetings, AECOM provided updates on the project schedule and planned construction activities, and responded to any Ecology and/or Town construction-related questions.

4.2 Monitoring Well Decommissioning, Installation and Modification

4.2.1 Decommissioning of Existing Monitoring Wells

In support of 2011 construction, three monitoring wells located within the excavation area, MW-28, 5-W-20, and 5-W-42 were decommissioned by Major Drilling (a Washington State licensed well driller). The wells were decommissioned in accordance with WAC 173-160-381, using either chipping-in-place or over-drilling methods. It is planned that MW-28 will be replaced, but as wells 5-W-20 and 5-W-42 were right next to one another, only one replacement well is necessary. The anticipated

replacement schedule is June or July of 2012. The monitoring well 1C-W-2 was damaged when the Town installed a sanitary sewer line. Since the well's installation in 2001, no detected concentrations of standard NWTPH-Dx have been reported. This includes 13 rounds of groundwater sampling events. Based on the repeated non-detects and the placement of the end well, EW-2A, located approximately 450 feet east of Third Street along the Railroad Avenue corridor, it is not planned to reinstall 1C-W-2.This well is currently buried and AECOM is awaiting a variance from Ecology to work around the sewer line and perform final decommissioning.

Well locations are shown on Figure 2. Copies of the well decommissioning reports are included in Appendix B.

4.2.2 Installation of New Monitoring Well

Monitoring well EW-2A was installed at the east of the HCC barrier wall in 2011 by Major Drilling. The well location is shown on Figure 2. A copy of the well installation report is included in Appendix B. Further detail of this activity is explained in Section 5.4.

4.2.3 Monitoring Well Modifications

In addition to well decommissioning and installations, eleven active monitoring wells were modified. Each well riser was raised to match final restoration grades. Wells GW-1, GW-2, GW-3, and 1A-W-4 are located in roadways where permanent paving occurred. Wells EW-1, 2A-W-41, 2A-W-42, and GW-4 are located in landscaping areas south of Railroad Avenue. Wells 2A-W-40, 1B-W-23, and 1C-W-7 are located in sidewalks where permanent sidewalks were installed. At each well, the monument was chipped out and removed, an extension was added to the well casing, and a new monument installed and set to final grade. The wells were then re-surveyed. Cascade Drilling performed the modifications with AECOM oversight. The well locations are shown in Figure 2.

4.3 Temporary Facilities and Controls

Strider and their subcontractors provided the following 2011 remediation temporary facilities and controls. The locations of these facilities, where appropriate, are shown on Figure 3.

4.3.1 Construction Trailers

Strider provided jobsite trailers with electricity, HVAC, first aid kits, fire extinguishers, eyewash kits, printer, scanner, fax machines, and telephone lines with high-speed internet access. The trailers were used by Strider, AECOM, and McCandlish Electric as field offices. Strider also provided a number of portable restrooms for on-site personnel and visitors.

4.3.2 Soil Handling Facility (SHF)

Prior to stockpiling impacted material in 2011, Strider repaired portions of the Soil Handling Facility (SHF) asphalt surface and high density polyethylene (HDPE) liner beneath the asphalt surface that were damaged during 2010 construction and the 2010-2011 winter off-season. In areas where the HDPE liner was damaged, a new piece of HDPE liner was installed directly over the damaged liner with at least 12 inches additional length in all directions. After the new liner was installed, a compacted asphalt layer was constructed on top of the repaired liner. All directions detailing the repair of the SHF are shown on Detail Number 3/C-102 on Drawing C-107 of the 2009 CPS and written in the 2009 specifications (Section 01500 – 1.12).

4.3.3 Temporary Traffic Control

4.3.3.1 Railroad Crossing

The Fifth Street public crossing was used by Strider as the sole access to the SHF during construction. When necessary, a railroad flagger provided by BNSF was stationed at the Fifth Street public crossing to alert construction personnel of train traffic. BNSF railroad protocol required this railroad flagger whenever construction activities would encroach upon the railroad tracks with the potential of fouling the track. Construction activities would stop during train traffic, as directed by the BNSF flagger, and would then commence only when given permission to do so by the flagger.

4.3.3.2 Temporary Roads and Detours

Strider developed a temporary traffic control plan (TCP), as part of the 2011 TEP. The TCP described temporary road lane adjustments, detours, and road closures designed to maximize pedestrian and driver safety, while minimizing delays during construction.

Temporary detours were made during construction to accommodate different construction activities and were updated when field conditions changed or required modifications.

Temporary traffic signage was placed strategically to alert and warn drivers and pedestrians. Information concerning temporary roads, closures, and detours was communicated to the Town and Ecology through the bi-weekly stakeholder meetings prior to the closures and detours.

4.3.4 Temporary Erosion and Sediment Controls (TESCs)

Silt fencing was installed in applicable areas at the excavation boundaries to control sediment and silt runoff. Sediment filter socks/inserts were installed in catch basins located in areas that were affected by the remediation activities. A certified TESC inspector from Strider inspected these measures in accordance with the SWPPP. Repair and replacement of these controls was made if it was determined that the control was not functioning as planned as determined by the TESC inspection. The TESC inspection reports are included in Appendix C.

4.3.5 Biological Opinion Compliance and Turbidity Monitoring and Mitigation Planning

The 2011 remediation activities were completed in accordance with the special conditions described in the Biological Opinions (BO) prepared by the National Marine Fisheries Services (NMFS; Reference #: 2010/ 01872, October 7, 2010), and the U.S. Fish and Wildlife Service (USFWS; Reference #:13410-2010-F-0362, March 15, 2011) as part of the Nationwide 38 permit. These conditions included project timing and scope, fish exclusion measures, and water quality monitoring and reporting. Turbidity monitoring and mitigation was completed by AECOM and Strider in accordance with the Turbidity Monitoring and Mitigation Plan (TMMP). The TMMP incorporated information described in the 2010 CMP and the Nationwide 38 permit requirements. The TMMP was included in Section F of the TEP, which was submitted to Ecology for review and comment prior to construction. Biological Opinion compliance is described in Section 5.12. TMMP implementation is described in Section 5.13.

4.3.6 Construction Water Treatment System (CWTS) Facility

The CWTS was installed by CWCS on the railyard west of the SHF prior to the commencement of construction activities. The approximate location of the CWTS is shown on Figure 3. The CWTS was operated from June 27, 2011 to September 22, 2011. The CWTS treated water removed from the active excavation areas and stormwater runoff collected within the SHF. The CWTS was operated

and maintained in accordance with the *Operations and Maintenance Manual for Water Treatment System (*AECOM 2010d) and monitored in accordance with the NPDES permit requirements.

A total of 783,150 gallons of water was treated and discharged from the CWTS between June 30, 2011 and September 21, 2011. NPDES permit-required CWTS monitoring was performed by CWCS and NPDES samples were analyzed by Fremont Analytical in Seattle, Washington. CWCS prepared weekly water treatment system operations reports, which are included in Appendix D. Data from these reports were included in the BNSF monthly discharge monitoring reports (DMRs) which were submitted to Ecology. All CWTS discharges in the 2011 remediation were in compliance with the NPDES permit requirements.

The CWCS began the CWTS demobilization on September 23, 2011. A temporary storage system consisting of three 20,000-gallon Baker tanks was used to handle SHF runoff during and after the CWTS demobilization. MARVAC assembled the Baker tanks on the RYZ service road and Strider reassembled the SHF sump pump to transfer impacted water into the tanks. MARVAC pumped out the tanks on an as-needed basis and disposed of the impacted water off-site at its licensed wastewater treatment facility. A total of 290,800 gallons of water/oil mix was pumped and removed by MARVAC from the tanks and disposed of off-site.

4.3.7 Clearing and Grubbing

A designated clean overburden storage area was prepared in 2008 by clearing, grubbing, and rough-grading a section of the railyard as shown on Figure 3. In 2011, all clean overburden from the Levee West End, Bridge Area and Schoolyard were temporarily stored in this designated area. Additionally, all foliage, trees, shrubs, and organic debris removed from these areas were stockpiled in the clean overburden storage area for eventual chipping and onsite or offsite recycling/reuse.

4.4 Surveying

True North conducted an initial land survey of the site in November 2007. The 2007 survey covered most of the remediation areas planned for 2008 and beyond. Additional surveying data was appended to the initial survey during the 2011 period, as requested by AECOM. The survey control points established by True North were used by Strider's surveyor, Inca, for locating the construction areas and site features. Strider utilized the survey-grade global positioning system (known as a Total Station) to locate site features in the field.

Further surveying will be performed, as needed, when the school remediation and final restoration is completed west of Sixth Street.

4.5 Structure Relocation

4.5.1 Pre-Move Inspection

The only building that was moved and placed at its permanent location during the 2011 construction activities was the Depot. Nickel Brothers completed a pre-move inspection to evaluate the rigging that was kept under the structure since its initial move during the 2008 construction season. As required in the CPS, Strider performed a pre-move video survey in 2008 to document the pre-existing interior and exterior conditions of the building.

4.5.2 Depot Relocation

The Depot was moved by Nickel Brothers on November 4, 2011 from its temporary location on East Railroad Avenue to its permanent location on the railyard west of the SHF. The structure relocation

work was completed in accordance with the requirements described in the Master EDR, TEP, and CPS. See Section 5.5.3 for further details. The design and construction of the new foundation for the Depot was not part of the 2011 scope of work. Per agreement with BNSF, the Town of Skykomish will construct a foundation for the Depot; consequently no building permits were sought by BNSF or obtained through the Town.

4.6 Archeological Monitoring

Archaeological monitoring was conducted during the remediation work at the Levee West End and Schoolyard in accordance with the *Archaeological Resources Monitoring and Discovery Plan* (ARMDP; NWAA 2010). Archaeological monitoring was performed prior to any excavation activities. Monitoring results will be provided in a forthcoming SWCA report, which is scheduled to be finalized in mid-2012. Artifacts recovered from private properties will be returned to their respective property owners. Artifacts recovered from BNSF and public properties (e.g. Town right-of-way [ROW]) will be curated at the Burke Museum or Town of Skykomish Historical Society.

5.0 Construction Activities

The 2011 remediation scope of work included the following activities described in the 2010 EDR and/or CPS:

1. Operation of HCC treatment systems installed in 2008/2009 and ancillary activities such as maintenance and routine sampling
2. Levee West End remediation
3. Partial Schoolyard remediation
4. Bridge Area remediation
5. RYZ remediation
6. Final infrastructure restoration at the following areas:
   - Levee West End and West River Drive
   - East side of Sixth street
   - All of Railroad Avenue from the east side of Sixth Street to the extents of 2008 remediation construction.
   - Fifth Street south of the bridge to the railroad crossing
   - All of East River Drive
   - All of Fourth Street
   - South end of Third Street adjacent to the Verizon building.

Final infrastructure restoration included landscaping of public and private properties, utilities installation (electrical power, telecommunications, street lights, stormwater sewers, and portable water), construction of concrete sidewalks, curbs & gutters, and final asphalt paving.

BNSF conducted performance, protection, and mitigation monitoring to confirm that human health and the environment were adequately protected during construction. This section describes each of these activities in detail. Each remediation area (i.e. Levee West End, Bridge Area, RYZ, etc.) is described separately. Monitoring activities are described by area, where appropriate, and separately where they are not area-specific.

BNSF submitted weekly progress reports to Ecology as required by the CD. AECOM documented activities in daily construction reports, which are included in Appendix E. Photographs showing the construction activities are included in Appendix F and are identified by the following construction phases:

- Phase 1 – Levee West End remediation
- Phase 2 – West End of Schoolyard excavation
- Phase 3 – Bridge Area remediation
- Phase 4 – RYZ TPH excavation
- Phase 5 – RYZ metals excavations

The following subsections describe the 2011 construction activities summarized above.

5.1 Soil Sample Overview

The 2011 soil sampling included: 1) soil sampling to characterize overburden in areas not sampled in previous construction seasons; 2) below vertical delineation limit (VDL) sampling to support excavation; and 3) excavation performance sampling to determine whether the remediation level (RL) and/or cleanup level (CUL) had been achieved.

5.1.1 Soil Characterization

Table 5-1 was adapted from Table 1 of the CAP (as amended in 2010) and summarizes the applicable RLs and CULs.

Table 5-1 Soil and Sediment Remediation and Cleanup Level Concentrations

	Level Type	Chemical	Concentration	Point of Compliance per the CAP	Applicability to the 2011 Remediation
Environmental Medium: Soil	Remediation	Petroleum	3,400 mg/kg NWTPH-Dx	Off the portion of the railyard owned by BNSF to any depth, except within 25 feet south of the OHWM of the Skykomish River.	Bridge Area, Levee West End, Schoolyard and privately owned property excavations below 2 feet bgs
	Remediation	Petroleum	1,870 mg/kg NWTPH-Dx	Soil within 2 feet of the surface	Bridge Area and Levee West End upland of the 25-foot buffer zone, Schoolyard and privately owned property excavations
	Cleanup	Petroleum	22 mg/kg NWTPH-Dx	Soil within 25 feet of the OHWM to depth of 4 feet	Bridge Area and Levee West End
	Remediation	Petroleum	40.9 mg/kg NWTPH-Dx	Skykomish River Sediment riverward of the OHWM, to a depth of 10 feet.	Bridge Area and Levee West End
	Cleanup	Arsenic and Lead	20 mg/kg Arsenic (EPA 6020) 250 mg/kg Lead (EPA 6020)	Soil within 2 feet of the surface	RYZ metals excavations

5.2 Excavation Overview

Excavations were completed in several phases to facilitate soil handling, temporary storage, soil load-out and Nationwide 38 permit conditions. Excavation performance sampling and backfilling was typically completed for each phase before proceeding to the next phase.

The excavations were performed in the following sequence:

- **Phase 1:** Levee West End
- **Phase 2:** West end of schoolyard
- **Phase 3:** Bridge Area, including in-water excavation and cofferdam construction.
- **Phase 4:** RYZ TPH excavations
- **Phase 5:** RYZ metals excavations

5.2.1 Backfill Materials

Backfill materials used in the excavation areas were specified in the CPS. The contractor submitted the testing results for each borrow source material for review and approval prior to importing the materials to the site to demonstrate that the proposed material met the project specifications. The contractor submittals and AECOM responses to these submittals are included in Appendix G.

5.3 Remediation Areas

5.3.1 Levee West End

The Levee West End remediation is described in the 2010 CPS. The excavation extents (both planned and actual) of the Levee West End remediation are shown on Figure 4. All excavation was completed upland of the buffer zone boundary.

5.3.1.1 Overburden Pre-Characterization

The Levee West End excavation and pre-characterization of overburden was conducted in accordance with the procedures described in the *2010 Sampling and Analysis Plan* (SAP)which is 2010 CMP Appendix D. The clean overburden soil was removed from within the excavation area, transported to and temporarily stockpiled in the designated clean soil storage area and later reused on-site where possible. The impacted overburden soil was excavated and transported to the SHF for off-site disposal. A sampling grid plan shown in Figure 4 was developed for the excavation and pre-characterization of overburden. Analytical results are summarized in Table 5-2.

5.3.1.2 Below VDL Excavation

After the overburden was removed and temporarily stockpiled in the designated storage area, the impacted soils below the VDL within the excavation area were excavated and transported to the SHF for off-site disposal. Performance sampling was completed as described in the SAP using the sampling grid shown in Figure 4. Analytical results are summarized in Table 5-3.

5.3.1.3 Petroleum Hydrocarbon-Impacted Soil Excavation beyond Planned Excavation Limits

Two additional excavations were conducted beyond the planned Levee West End excavation limits at grid cells B1 and B2 to remove impacted soils.

Grid Cell B1

Only a small part of grid cell B1 upland of the buffer zone boundary was excavated. Performance sampling (sample EXV11-WL-B1-WW) results indicated that grid cell B1 west wall NWTPH-Dx concentrations exceeded the 3,400 mg/kg RL. Additional soil was removed from the B1 west excavation sidewall. This excavation increased the sidewall slope, but did not expand the excavation footprint or encroach on the adjacent private property. Performance sampling (sample EXV11-WL-B1-WW') confirmed that the NWTPH-Dx concentration at the expanded excavation sidewall was below the RL.

Grid Cell B2

Performance sampling (sample EXV11-WL-B2-NW) results indicated that grid cell B2 north wall NWTPH-Dx concentrations exceeded the 3,400 mg/kg RL. The excavation was extended north to near the buffer zone boundary. Additional soil was removed from the B2 north excavation sidewall without expanding the excavation into the buffer zone. Performance sampling (sample EXV11-WL-B2-NW'), completed several feet south of the buffer zone, confirmed that the NWTPH-Dx concentrations fell below the RL.

5.3.1.4 **Grid Cells Not Sampled**

Grid Cell E3

Overburden sampling, as well as sidewall and bottom performance sampling were not completed for grid cell E3. As shown on Figure 4, this cell is located at the Levee West End excavation south boundary. This cell was not excavated because a guy wire from a nearby telephone/power pole was embedded into the ground within the grid cell. With consultation from PSE, it was determined that excavating grid cell E3 would de-stabilize the pole and compromise active overhead wires being held by that pole. Sidewall samples from adjacent grid cells, such as EXV11-WL-E4-WW (a sample into the east sidewall of cell E3) and EXV11-WL-D3-SW (a sample into the north sidewall of cell E3), determined that grid cell E3 did not contain NWTPH-Dx concentrations above the 3,400 mg/kg RL. Both sidewall samples were non-detect for NWTPH-Dx (<27 mg/kg diesel and <54 mg/kg oil for EXV11-WL-D3-SW and <32 mg/kg diesel and <64 mg/kg oil for EXV11-WL-E4-WW).

Grid Cell C1

This cell was effectively combined with cell B1. The B1 sidewall sampling results are therefore representative of soil quality in C1.

Grid Cells B6 and C6

These cells consisted entirely of clean backfill that was placed during the 2006-2007 levee remediation, and were therefore not sampled.

Grid Cells F5, F6, F7, and F8

Only partial side-slope excavations were completed in these cells. The side-slopes extended into cells E5, E6, E7, and E8. Sidewall samples were collected from these E-row cells.

5.3.1.5 **Archaeological Monitoring, Protection and Documentation**

Archaeological monitoring, protection, and documentation were performed in this excavation area in accordance with the ARMDP. Findings in this area will be included in the SWCA report.

5.3.1.6 Backfilling and Grading

The Levee West End excavation was backfilled to the final grade in accordance with the CPS and private property access agreements. Representative project photos for the Levee West End excavation are in Appendix F under Phase 1 (Levee West End).

5.3.2 Schoolyard

The Schoolyard is described in the 2010 CPS. The excavation extents (both planned and actual) of the Schoolyard remediation are shown on Figure 4. Excavation was completed in Schoolyard grid cells in columns 7 and 8 only. The remainder of the planned Schoolyard excavation area could not be completed in 2011 because access could not be obtained. In order to adequately excavate the planned area, a large wood fence located along the eastern boundary of the Schoolyard was dismantled and removed. This fence was re-constructed using new materials after the excavation was complete.

5.3.2.1 Overburden Pre-Characterization

The Schoolyard overburden pre-characterization and below VDL excavation were performed in accordance with the procedures described in the SAP. The sampling grid shown in Figure 4 was developed for the overburden pre-characterization and below VDL excavation. Analytical results are summarized in Table 5-2.

5.3.2.2 Below VDL Excavation

After the overburden was removed and temporarily stockpiled in the designated area, the impacted soils below the VDL within the excavation area were excavated and transported to the SHF for off-site disposal. Performance sampling was completed as described in the SAP using the sampling grid. Analytical results are summarized in Table 5-3.

5.3.2.3 Petroleum Hydrocarbon-Impacted Soil Excavation beyond the Planned Excavation Limits

Performance sampling (samples EXV11-WL-D8-EW and EXV11-WL-E8-EW) results indicated that grid cell D8 and E8 east wall NWTPH-Dx concentrations exceeded the 3,400 mg/kg RL. Additional excavation could not be completed due to the lack of an access agreement. The excavation sidewall was lined with a plastic liner before the excavation was backfilled.

5.3.2.4 Grid Cells Not Sampled

Grid Cell C7

These cells consisted entirely of clean backfill that was placed during the 2006-2007 levee remediation, and was therefore not sampled.

Grid Cells C9, D9, E9, and F9

These cells will be sampled after they are excavated in entirety.

5.3.2.5 Archaeological Monitoring, Protection and Documentation

Archaeological monitoring, protection, and documentation were performed in this excavation area in accordance with the ARMDP. The findings will be described in the SWCA report.

5.3.2.6 **Backfilling and Grading**

The Schoolyard excavation was backfilled to the final grade in accordance with the CPS.

Representative project photos for the west Schoolyard excavation are in Appendix F under Phase 2 (Schoolyard).

5.3.3 Bridge Area

The Bridge Area included the buffer zone (within 25 feet of the OHWM) and in-water (below the OHWM) excavation areas in the vicinity of the bridge pier and abutment by the Skykomish River.

The excavation limits (both planned and actual) are shown in Figure 5.

The following activities were performed in accordance with the TEP and Nationwide 38 permit prior to in-water excavation:

- Replacement of petroleum-based hydraulic fluids with non-petroleum hydraulic fluids for in-river construction equipment
- Installation of a triple redundant emergency oil recovery system to mitigate any accidental oil releases. The first level was a collection point approximately 160 feet downstream of the cofferdams and consisted of containment booms that were placed to channel, capture and recover any floating oil and prevent it from moving farther downstream. The second level was another deployment of containment booms located approximately 600 feet downstream of the cofferdams and organized in the same manner as the level one system. The third level was a collection point of containment booms located approximately one-half mile downstream of the cofferdams. This third and final level of containment booms were not deployed, but were on-standby at the riverbank. In the event of a major oil release these booms would be deployed with a boat that was stationed on-site.
- Completion of a drill to verify the efficacy of the recovery system.
- Installation of a current deflection structure (rock barb). This feature was placed in the Skykomish River to divert river current and energy away from the work area. The structure consisted of large boulders placed upstream of the work area and angled in such a way so as to create a static or minimal flow condition in the excavation area. This feature aided construction of the cofferdams and minimized turbidity during construction.
- Construction of inner and outer cofferdams. The locations and orientations of the cofferdams are depicted in Figure 5. Each cofferdam was constructed of three vertical layers of Flexible Intermediate Bulk Containers (FIBC) bags filled with aggregates specified to match pre-existing river gravels as close as possible. The bottom layer held three rows of FIBC bags, the middle layer contained two rows of FIBC bags, and the top layer held one row of FIBC bags. After the bags were placed, a layer of plastic was placed over the cofferdams to prevent water from running between the sacks and act as a current inhibitor. Finally, a turbidity curtain and oil boom was placed in-between the two cofferdams to act as an additional safeguard to mitigate potential oil and turbidity releases.
- Mitigation activities required by the BOs, and as described in Section 5.12.

Representative project photos for the in-river work are in Appendix F under Phase 3 (Bridge Area).

Overburden sampling in Bridge Area upland and buffer zone excavation areas was completed during the 2010 construction season; therefore, no overburden sampling was performed in 2011. The sampling results are described in the *2010 Remediation As-Built Completion Report* (AECOM 2011).

5.3.3.1 Below VDL Excavation

Below VDL excavation performance sampling was completed using the grid shown in Figure 5 and as described in the SAP. Analytical results are summarized in Table 5-3.

5.3.3.2 Additional Excavation beyond the Planned Limits

Grid cells S10 and V11 are located, in part, in the buffer zone. Performance sampling (samples EXV11-Bridge-S10-B and EXV13-Bridge-V13-EW) results indicated that S10 bottom and V13 sidewall NWTPH-Dx concentrations were above the 22 mg/kg CUL. The excavations were extended accordingly. Performance sampling (samples EXV11-Bridge-S10-B' and EXV11-Bridge-V13-EW') confirmed that the NWTPH-Dx concentrations at the expanded excavation bottoms and sidewall, as appropriate, were below the 22 mg/kg CUL.

Grid cell V11 is located in the waterward of the OHWM. Performance sampling (sample EXV11-Bridge-V11-B) results indicated that V11 bottom NWTPH-Dx concentrations were above the 40.9 mg/kg RL. Additional sediment was removed from the excavation bottom. Performance sampling (sample EXV11-Bridge- V11-B') confirmed that the NWTPH-Dx concentrations at the expanded excavation bottoms and sidewall, as appropriate, were below the 40.9 mg/kg RL.

5.3.3.3 Grid Cells Not Sampled

Grid Cells R9, R10, R11, S11, S12, S13, S14, T13, T14, U14, and V14

These cells consisted entirely of clean backfill that was placed during the 2010 bridge area excavation, and were therefore not sampled.

Grid Cells T8, U8, and V8

Only partial side-slope excavations were completed in these cells. The side-slopes extended into cells T9, U9, and V9. Samples were collected from these column 9 cells.

5.3.3.4 Archaeological Monitoring, Protection and Documentation

Archeological monitoring was not required for this excavation area.

5.3.3.5 Backfilling and Grading

The Bridge Area excavation was backfilled to the final grade in accordance with the CPS.

Representative project photos for the Bridge Area and in-water backfilling and grading are in Appendix F under Phase 3 (Bridge Area).

5.3.4 Railyard Zone Excavation

The RYZ remediation consisted of excavating three metals-impacted areas (designated M1 , M2 and M3 on Figures 6 through 8) to a depth of 2 feet below ground surface (bgs), and three TPH-impacted soil areas (designated T1, T2 and T3 on Figures 6 through 8). The RYZ metals-impacted areas were located in: 1) the gravel parking area by the construction trailers (M1); 2) an area stretching from the gravel parking area eastward through the SHF, south of the train-tracks (M2); and 3) in two areas in-between the train-tracks along haul roads (M3).

The RYZ TPH-impacted excavation areas included: 1) an opportunistic dig area (T1); 2) the free product area located at the east end of the RYZ (T2); and 3) the free product area located at the RYZ-FMCE boundary along the "truck haul" route (T3). The excavation limits (both planned and actual) for all RYZ excavations and the associated sampling gridlines are shown in Figures 6 through 8.

The SHF was reconfigured in order to excavate some of the impacted soils. The perimeter ecology blocks were moved to a new perimeter and the SHF sump pump was moved to a new location. The reconfigured SHF is depicted in Figure 3.

5.3.4.1 **Metals Excavation Performance Monitoring**

Metals excavation performance sampling was completed using the sampling grid shown in Figures 6 through 8, and as described in the SAP. Where necessary, grid cells were over-excavated to remove additional soil with lead and/or arsenic concentrations exceeding CULs where no obstructions were present (e.g., railroad tracks, buildings). Over-excavation was not completed in areas where obstructions occurred and advancement became impossible. Excavated areas were backfilled to final grade. Analytical results are summarized in Table 5-4.

Representative project photos for the RYZ metals excavation are in Appendix F under Phase 5 (RYZ Metals).

5.3.4.2 **Metals Grids Not Excavated and/or Sampled**

The excavated RYZ metals-impacted soil was stockpiled in the area of grid cells G31, G32, H31, H32, and I31 (M1 area) during the 2011 construction. The soil stockpile currently remains on site and is covered with polyethylene sheeting. The grid cells underneath the stockpile were not excavated in 2011, but are anticipated to be excavated during the summer of 2012, after the soil stockpile has been removed from the area.

The BNSF operations trailer is located in grid cells F8, F9 and F10, as shown in Figure 6. These cells have not been excavated in 2011, but are anticipated to be excavated during the summer of 2012, after the trailer has been removed from the area.

5.3.4.3 **TPH Excavation Performance Monitoring**

Opportunistic Dig (T1)

The CD and CAP require an "opportunistic dig" that would remove a minimum of 7,500 cubic yards of TPH-impacted soil from the RYZ. Approximately 1,840 cubic yards of this opportunistic dig soil was excavated in 2007 and 2008 as documented in the *2008 Skykomish Remediation – As-Built Completion Report* (AECOM 2009). An additional 6,245 cubic yards of opportunistic TPH-impacted soil was removed from the RYZ in 2011 as described in Figure 10. The total quantity removed is 585 cubic yards more than the 7,500 cubic yards required by the CD and CAP. Since this was a bulk soil removal based on cubic yards removed and not an RL, no soil samples were collected. Excavation limits were instead determined based on visual impacts, property boundaries, physical structures, and train tracks. The opportunistic dig excavation and its associated contour lines are shown in Figures 6 and 7.

Free Product Areas (T2)

In addition to the opportunistic dig, an additional 1,100 cubic yards of LNAPL-impacted soil was scheduled to be excavated from an area in the eastern portion of the SHF. This excavation was a bulk soil removal where the boundaries were based on cubic yards removed and not laboratory analyses. Therefore, no soil samples were collected. This was a scheduled excavation and was not part of the

opportunistic dig. In total, 1,635 cubic yards of soil was excavated; this is 535 cubic yards more than planned. The excavation and its associated contour lines are shown in Figure 7.

Representative project photos for the RYZ TPH excavations are in Appendix F under Phase 4 (RYZ TPH).

5.3.4.4 Archaeological Monitoring, Protection and Documentation

Archeological monitoring was not required in this excavation area.

5.3.4.5 Backfilling and Grading

BNSF property excavation within the RYZ was backfilled in accordance with the CPS.

5.3.5 Austin, Robinson and Scisco Properties

5.3.5.1 Free Product Removal (T3)

As described in the *2010 Skykomish Remediation As-Built Completion Report* Section 5.2.5.2, the free product area located at the RYZ-FMCE boundary was excavated during the 2010 construction season. In 2011, additional excavation was performed to remove the remaining TPH-impacted soil in this area. The 2011 excavation was completed on parts of the Austin and Scisco properties located within the RYZ and FMCE, as shown on Figures 6 and 7.

Performance sampling (samples EXV11-RYZE-J16-B', EXV11-RYZE-J16-WW', EXV11-RYZE-J16-SW', EXV11-RYZE-J17-B', EXV11-RYZE-J17-SW', EXV11-RYZE-J18-B', EXV11-RYZE-J18-EW and EXV11-RYZE-J18-SW') confirmed that the NWTPH-Dx concentrations at the excavation bottoms and sidewalls were all below the 3,400 mg/kg RL. Analytical results are summarized in Table 5-3.

After the performance sampling, the excavation on the Austin and Scisco properties was backfilled in accordance with the CPS and all access agreement requirements.

5.3.5.2 Scisco and Robinson Properties Drainage Restoration

During the winter of 2010-2011, the owners of Scisco and Robinson properties reported water ponding in their backyards. Upon inspection by AECOM and Strider, it was determined that the ponding occurred in the portions of the properties that were not part of the 2010 FMCE remediation area.

To enhance surface drainage, the FMCE backfill on the Scisco property was reshaped on May 27, 2011 by pulling back the backfill towards the west to widen the drainage path, and the grate of Catch Basin #7 (CB #7) was adjusted and lowered by approximately 2 inches (storm pipe invert elevations remain the same).

An active drainage system was constructed to enhance stormwater drainage on the Robinson property. Three yard drains were installed in the southwest corner of the parcel and the drains were piped to CB #7. A swale was constructed near the north property line to promote active surface drainage to CB #7 on December 2, 2011. Hydroseeding was reapplied to the Austin property on November 29, 2011 to complete the final grading restoration work activities.

Representative project photos for the Scisco and Austin TPH excavation and the Scisco, Robinson and Austin drainage modifications are in Appendix F under Robinson Drainage Revision and Phase 4 (RYZ TPH).

5.3.5.3 Archaeological Monitoring, Protection and Documentation

Archeological monitoring was not required in this excavation area.

5.4 HCC Operation

The HCC system construction was largely completed in 2008 and is described in the *2008 Skykomish Remediation – As-Built Completion Report* (AECOM 2009). End well EW-1, four gate wells (GW-1 through GW-4), two recovery wells (RW-7 and RW-8), and related appurtenances were installed and the system went on line in 2009.The east end of the HCC barrier wall was extended in 2010. In order to properly evaluate groundwater conditions around the east end extension, an end well EW-2A was installed by Major Drilling east of the HCC barrier wall on May 26, 2011. The well location is shown on Figure 2. A copy of the well log is included in Appendix B. The HCC system operated from January 1 to December 31, 2011, as described in the *Draft 2011 Annual Hydraulic Control and Containment System Operations Report* (AECOM 2012a).

5.5 Air Sparging System Operation

The air sparging system has been in operation since 2009 and operated from January 1 to December 31, 2011, as described in the *Draft 2011 Annual Air Sparging System Report* (AECOM 2012b).

5.6 Site Restoration

5.6.1 General Site Restoration

Site restoration was completed in accordance with the CPS, the WSDOT Bridge permit and the Nationwide 38 permit. All private properties that were impacted in the 2011 remediation area were fully restored and returned to the property owners in accordance with the access agreement conditions. Within the Town ROW property, public utilities (i.e., potable water, electrical, telecommunications, storm and sanitary sewer) were fully restored as described in section 5.0. All general site restoration activities are depicted in the as-built drawings included in Appendix H. The scope of the 2011 site restoration included the following:

- Backfilling and grading of the excavated areas
- Constructing part of a stormwater sewer system
- Installing water main components
- Constructing new septic holding tanks and related appurtenances for the Sky River Inn properties
- Moving the Depot to its new location in the RYZ
- Restoring Depot Park and Railroad Avenue ROW landscaping
- Restoring electrical and telecommunications utilities services
- Paving roads east of Sixth Street with full curb, gutter, and sidewalks as described in Section 5.0

Representative project photos for final town restoration are in Appendix F under Site Surface Restoration, Site Utility Restoration, and Depot Park.

5.6.2 Underground Utilities

As there were no buildings moving back to the Sky River Inn properties, the utilities restoration for the Sky River Inn property essentially involved converting the pre-existing above-ground overhead electrical power and phone lines to underground utilities on East River Drive. The underground utilities restoration involved construction of the joint utility trench (JUT) in the public ROW, installation of conduit from the JUT to the graded and restored property as required in the access agreement. Inspections were performed and approved by the Washington Department of Labor and Industries. Water and Town sewer were installed per CPS and access agreement requirements. Frontier Communications installed conduit from the JUT to the property boundary and restored the telecommunications connection to pre-existing conditions as required in the access agreement.

5.6.3 Depot Relocation

The Depot was the only building moved during the 2011 construction season. Since the Town of Skykomish will construct the foundation of the Depot, no building permits were sought by BNSF or obtained through the Town.

5.6.4 Stormwater Pond Perimeter Fence Installation

BNSF constructed a 4-foot high chain-link fence around the perimeter of the FMCE stormwater pond, which was constructed in 2010. The proposed fence specifications and location (revised CPS drawings C-269 ALT and C-304) were submitted to and approved by the Town prior to construction. No-trespassing warning signs were installed at several locations on the fence. Representative project photos for the stormwater pond fence construction are in Appendix F under Stormwater Pond Fence.

5.7 Laboratory Analysis, Reporting and Data Validation

Overburden pre-characterization samples, the NWTPH-Dx excavation performance samples and metals excavation performance samples were analyzed by the TestAmerica laboratory in Tacoma, Washington. Preliminary (unvalidated) laboratory reports were posted on the virtual project manager (VPM) website within 24 hours of receipt. The VPM website is a comprehensive web portal where all pertinent data are placed for Ecology review.

Excavation backfilling was completed based, in part, on unvalidated data. After backfilling was complete, AECOM reviewed all preliminary data to ensure that the QA/QC criteria established in the 2010 SAP were satisfied, and completed a Level III data evaluation of all preliminary laboratory results using standard EPA-approved procedures. Copies of the data validation reports are included in Appendix I. The laboratory reports for the overburden and performance samples are included in Appendix J.

5.8 Overburden and Impacted Materials Stockpiling

The soils that were temporarily stockpiled on-site during the construction season included the pre-characterized clean overburden and the excavated TPH and metals impacted soils. The pre-characterized clean overburden was stockpiled in the designated “clean stockpile area” adjacent to the HCC remediation building; the TPH and metals impacted soils were stockpiled in the SHF.

5.8.1 Clean Overburden Material Stockpile

As described in sections 5.1 and 5.3, some of the overburden in the remediation areas was pre-characterized prior to the excavation of impacted materials. The clean overburden was hauled to the clean stockpile area in off-road trucks. The trucks were decontaminated at the on-site decontamination area prior to hauling any clean material. As part of the site SWPPP, silt fence was

installed around the stockpile area and weekly TESC inspections were conducted to ensure the stockpiled material was fully contained within the designated area. Clean overburden was re-used as backfill material only in publically-owned areas upland of the buffer zone. Clean overburden was not used for backfill in the schoolyard or private properties

5.8.2 Impacted Material Stockpile

All the following impacted soils excavated during the 2011 construction season were transported to the SHF using off-road dump trucks and temporarily stockpiled in the SHF in anticipation of off-site disposal.

- Overburden with NWTPH-Dx concentrations at or above 1,870 mg/kg, and/or the overburden containing visible staining, burn-zone material or other debris unsuitable as backfill
- Upland soils from the Levee West End and Bridge Area excavated below the VDL
- Soil and sediment excavated from the in-river and buffer zones
- TPH-impacted and shallow metals-impacted soils excavated from the RYZ.
- TPH-impacted soils excavated from the School property and private properties.

At the end of the 2011 construction season after termination of off-site disposal rail transportation, two separate soil stockpiles remained on site in the SHF area (i.e., TPH-impacted soil stockpile and metals-impacted soil stockpile). These stockpiles will be disposed of in future arrangements. Both stockpiles have been covered with polyethylene sheeting and held down by sand bags since December 1, 2011. The approximate locations of the stockpiles are shown on Figures 3 (TPH) and 9 (metals). The TPH-impacted soil stockpile is located within the boundaries of the SHF, while the metals-impacted soil stockpile is located immediately east of the SHF. Note that the metals-impacted soil has been stockpiled directly on top of the remaining planned metals-impacted zone. The underlying metals-impacted soil is expected to be excavated during the off-site disposal of the stockpile.

Representative project photos for the soil stockpiles are in Appendix F under SHF Photos.

5.9 Stockpiled Impacted Soils Handling and Disposal

The impacted soils in the SHF were loaded directly onto railcars and transported off-site to the Rabanco subtitle D waste disposal facility in Roosevelt, Washington. When the stockpiled soils contained free liquid water in excess of that allowed for railcars, the soils were gravity drained to facilitate drying. In the event that the soils could not be drained in a timely manner, the contractor installed liners in the railcars prior to loading the soils. Any water drained from the stockpile was collected and pumped to the on-site CWTS for treatment.

The impacted soils were loaded onto the railcars using a front end loader with an on-board scale. Prior to use at the site, the on-board scale was calibrated with an Ecology block whose weight was determined by a certified scale in Gold Bar, Washington. The scale provided soil load-out weight and assisted Strider in meeting weight limitations of the railcars. Railcar loading activities were typically performed two days per week. An average of 2,271 tons per week of impacted soils was transported offsite to the Rabanco disposal facility over the 2011 construction period. The total quantity of impacted soil removed from the site for the 2011 construction season was 43,144 tons. This quantity does not reflect the remaining stockpiled soils to be removed.

Due to the lack of available railcars, inclement weather and subsequent extension of the construction schedule beyond the anticipated construction season, hauling of impacted material using railcars was suspended on November 27, 2011. As of December 31, 2011, approximately 2,000 tons of TPH-impacted soil and 3,000 tons of metals-impacted soil currently remain on-site. The stockpiles have been covered with polyethylene sheeting to avoid stormwater comes in contact with the stockpiled material. Off-site rail transportation disposal of these stockpiled soils is anticipated to occur in the summer of 2012.

5.10 Oil Recovery

The free product oil encountered during excavation was recovered by MARVAC. MARVAC also provided oil control during excavation and backfill to prevent re-contamination of clean soils. Containment booms and water hoses were used to direct, isolate, and control oil subsequently preventing the floating oil from re-contaminating clean soils and backfill. Floating oil was collected from the excavation area using a Vactor truck. The floating free product mixture collected in the Vactor truck was pumped into an on-site Baker tanks. An oil/water separator installed in the Baker tank separated the floating oil and water in the tank. The collected oil was transported to MARVAC's oil recycling facility in South Seattle for reprocessing. The remaining water in the tanks was delivered to the on-site CWTS for treatment, and discharged per the NPDES permit. Approximately 9,900 gallons of oil were recovered and sent to their recycling facility. Disposal records were provided in Strider's daily construction reports.

5.11 Bird Control

Mylar tape was installed on the temporary perimeter construction fencing to keep waterfowl and other birds from flying into the open excavations and coming in contact with floating Bunker C or diesel. 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.

5.12 Biological Opinion Compliance

The Endangered Species Act (ESA) compliance requires that special conditions, including project timing and scope, fish exclusion measures and water quality monitoring and reporting, be implemented as outlined in the BO prepared by the National Marine Fisheries Services (NMFS; Reference #: 2010/ 01872, October 7, 2010), and the U.S. Fish and Wildlife Service (USFWS; Reference #:13410-2010-F-0362, March 15, 2011).

The special conditions in the BO are described in the November 8, 2011 AECOM letter to USACE (Appendix K). This letter further describes specific compliance activities that were performed in order meet these special conditions when construction work was performed below the OHWM in the Skykomish River. The compliance activities included fish exclusion measures, best management practices and water quality monitoring. The letter states that all work was completed in compliance with Nationwide 38 permit and BO requirements.

5.13 Surface Water and Turbidity Monitoring and Mitigation

Surface water and turbidity were monitoring to demonstrate that any excavation activities did not result in an exceedance of applicable water quality standards. Surface water and turbidity monitoring were performed in accordance with the TMMP during the 2011 construction season. As described in Section 4.3.5, the TMMP incorporated information described in the 2010 CMP and the Nationwide 38 permit requirements. Monitoring activities for different remediation areas are described below.

5.13.1 RYZ, West Schoolyard, Austin and Scisco Property Excavations

The monitoring activities performed during the excavations of the RYZ, west end of Schoolyard, Austin, and Scisco properties were daily visual observations of the Skykomish River for any turbidity impacts related to the excavations. Weekly turbidity sampling was also performed as part of the monitoring. More specifically, the visual monitoring was performed by inspecting the riverbank from the 3rd Street outfall westward to the Sixth Street stormwater outfall located north of the Shawver residence. Weekly turbidity sampling was performed at locations adjacent to and downstream of the Fifth Street Bridge.

Monitoring data for these excavations are summarized in Table 5-5. As shown, no turbidity exceedances occurred and no mitigation was necessary during these excavation activities.

5.13.2 Levee West End Remediation

The monitoring activities performed during the West Levee excavation included daily visual observations of the river and daily turbidity sampling 300 feet upstream and 300 feet downstream of the construction area. Since no turbidity exceedances occurred during the entire daily monitoring period, the additional permit-specified conditional sampling at 600 feet downstream of the construction area described in the Nationwide 38 permit was not performed. After the completion of the Levee West End remediation, AECOM submitted a letter documenting the monitoring activities and results to USACE on November 8, 2011 (Appendix K).

5.13.3 Bridge Area Remediation

The monitoring activities performed during the Bridge Area remediation included visual observations and background turbidity sampling each day (300 feet upstream and 300 feet downstream of the construction area); and conditional sampling 600 feet downstream of the construction area on an as-needed basis. During the in-river excavation, when measured turbidity reached the permit threshold level, turbidity sampling at 600 feet downstream was also performed. As shown in the turbidity monitoring readings in Table 5-6, none of the turbidity readings at the 600 feet downstream exceeded the maximum allowable level. When the elevated turbidity conditions occurred in the work zone, mitigations included temporarily stopping work and or performing alternate tasks until the conditions improved. Bridge Area monitoring activities are further described and data are summarized in the November 8, 2011 AECOM letter to USACE on (Appendix K).

5.14 Archaeological Monitoring, Protection and Documentation

Archeological monitoring was performed by SWCA from June 22, 2011 to June 29, 2011, in accordance with the ARMDP. Artifacts will be handled and reporting will be completed as described in Section 4.6.

5.15 Field Compaction Testing

Field density testing of the backfill materials was conducted by Geo Test Services, Inc. of Bellingham, Washington. A representative of Geo Test Services was on site to observe the backfilling operation and field verify the densities of the compacted backfill materials. A copy of the compaction reports is included in Appendix L. As shown, all the compaction achieved greater than or equal to 95% maximum dry density (ASTM D-1557), as specified in the CPS.

5.16 Protection Monitoring

5.16.1 Air Monitoring

Air monitoring was performed by AECOM in accordance with the *Air and Noise Monitoring Plan (*AMP), which is Appendix C of the 2010 CMP, and documented in weekly Air and Noise Monitoring reports. These reports were posted on the VPM website for Ecology and BNSF to view. During the 2011 construction season, no exceedances were observed, and therefore, no mitigation efforts were necessary. To insure dust control during construction, Strider provided a water truck and routinely watered all roadways used by their construction vehicles as a proactive measure to reduce airborne dust. Copies of the air monitoring reports are included in Appendix M.

5.16.2 Noise Monitoring

Noise monitoring was performed by AECOM in accordance with the AMP. Noise monitoring data were posted to the VPM. Copies of these data are included in Appendix M. There were no Action Level exceedances during the 2011 construction season, and therefore, no mitigation efforts were necessary.

5.16.3 Weather Monitoring

Weather monitoring was performed in accordance with the AMP and the NPDES permit. A weather station was set up on the roof of the HCC treatment building and a data logger was set up in the AECOM trailer. Weather data, including temperature, wind direction and speed, and precipitation were collected continuously and downloaded periodically from the station wirelessly to the data logger. These data are included in Appendix N.

6.0 Work to Be Completed After 2011

This section describes remediation activities which were described in the NWDZ and 2010 CPS, but were either not completed during the 2011 construction season or were re-scheduled for future years. Table 6-1 summarizes these activities and indicates the construction year during which they are likely to be completed. As-built report addenda will describe completion of these activities.

6.1 HCC Operation

The HCC system is operated on a 24-hour basis, 7 days a week. At this time, there are no anticipated completion and shutdown dates for HCC activities. The 2012 annual HCC system operations will cover the period from January 1 to December 31, 2012 and its report is scheduled to be submitted in draft form in 2013.

6.2 Air Sparging System Operation

The air sparging system is operated on a 24-hour basis, 7 days a week. At this time, there are no anticipated completion or shutdown dates. The annual air sparging system operations will cover the period from January 1, 2011 to December 31, 2012 and its report is scheduled to be submitted in draft form in 2013.

6.3 RYZ Metals-Impacted Soil Excavation

The majority of the RYZ metals-impacted areas have been completed in 2010 and 2011. Due to access, the remaining areas to be excavated include:

- In the west end of the RYZ where excavations were performed in 2010, as shown in Figure 13 of the *2010 As-Built Completion Report*.
- Under the BNSF operations trailer (location shown on Figure 6) in the RYZ.
- Under the current location of the metals soil stockpile adjacent to the SHF.

Each of the above areas is shown on Figure 9.

6.4 School Remediation

During the 2011 construction season, the west end of the schoolyard was excavated in conjunction with the Levee West End upland area, as shown in Figure 4. Grid cells located in columns 9 through 15 were not excavated because there was not an executed access agreement for this part of the schoolyard property. This remaining un-excavated area is shown on Figure 9.

Remediation alternatives submitted by BNSF for impacts underneath the school are currently being evaluated by the Skykomish School District. Access agreement negotiations for the School Property are ongoing and the remediation schedule has not yet been determined.

6.5 Utility and Town Restoration

Final Town ROW restoration was completed east of the east side of Sixth Street during the 2011 construction season. Permanent storm sewer, water, electrical utilities, permanent roadways, sidewalks, and landscaping were installed east of Sixth Street. Final restoration from Sixth Street westward is anticipated to be completed after the school remediation.

Remaining areas for final restoration are shown on Figure 9.

Table 6-1 Schedule of future work

Activity	Work Summary	Year to be Completed	
		2012	2013
HCC System Operation	System compliance monitoring, operations and maintenance.	X[1]	X[1]
Air Sparging System Operation	System compliance monitoring, operations and maintenance.	X[2]	X[2]
RYZ Metals Excavation	Complete metals excavations that started in 2010 and continued in 2011.	X	
School Remediation	Complete excavation and restoration of the west side of the schoolyard.		X[3]
Utility and Town Restoration	Complete final Town ROW restoration for Sixth Street after School Remediation.		X[4]

Notes:

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

1. System will be operated in 2012 and beyond.
2. System will be operated in 2012 and beyond if necessary based on performance monitoring.
3. Contingent upon the School granting access to the property.
4. Contingent upon completion of the school remediation.

7.0 Summary and Conclusions

During the period starting January 1, 2011 and ending December 31, 2011, personnel from AECOM oversaw the remediation activities at the Former BNSF Maintenance and Fueling Facility in Skykomish, Washington on behalf of BNSF.

Some of the approximate quantities pertinent to 2011 Skykomish remediation activities include the following:

- 9,900 gallons of oil was recovered during excavation activities and delivered to a recycling facility.
- 43,144 tons of impacted soil was excavated and transported to the Rabanco Subtitle D landfill in Roosevelt, Washington for disposal. Approximately 5,000 tons remain on-site for transportation and off-site disposal which is anticipated to occur after 2011.
- 783,150 gallons of construction water were treated at the on-site CWTS and discharged per the NPDES permit.
- 290,800 gallons of SHF stormwater run-off was collected and transported off-site for treatment.

The Levee West End and Bridge Area in-water remediation was completed in 2011. A kayak ramp was installed immediately west of the bridge.

Soil remediation was completed on the west end of the playground at the School Property in 2011; however, much of the playground property remains unremediated. BNSF is in active negotiations with the Skykomish School District to obtain access for the remaining School Property Remediation (i.e., schoolyard and School Building). Consequently the construction schedule is undetermined at this time.

Metals-impacted soils were excavated from most of the areas in the RYZ. The remaining remediation areas are expected to be completed in a future construction season.

TPH-impacted soils were excavated from several areas in the RYZ. TPH-impacted excavations were completed and those areas were backfilled and restored.

Residual TPH-impacted soil on the Scisco and Austin properties was removed.

The public ROW and private properties within the NWDZ (Robinson, Scisco, Austin, Sky River Inn and Shawver) were restored and returned to the property owners in accordance with their respective access agreements.

Final remaining underground utilities were installed per the CPS, including the Town sanitary sewer system consisting of new septic tanks and piping, a JUT that undergrounded consolidated electrical, cable and telephone services. The as-built drawings are provided in Appendix H.

The planned 2011 work was substantially completed with the exception of the School and some RYZ shallow metals excavations on the rail yard as noted earlier in this report. Work completed in 2012 or later will be described in addenda to this report.

8.0 References

AECOM 2012a, *Draft 2011 Annual Hydraulic Control and Containment System Operations Report*. Prepared for the BNSF Railway Company by AECOM Environment. Seattle, Washington. February 17, 2012.

AECOM 2012b, *Draft 2011 Annual Air Sparging System Report*. Prepared for the BNSF Railway Company by AECOM Environment. Seattle, Washington. February 3, 2012.

AECOM 2011. *2011 Stormwater Pollution Prevention Plan* . Prepared for the BNSF Railway Company by ENSR Corporation, Seattle, WA. May 10, 2011.

AECOM 2010a, 2010 *Engineering Design Report*, Prepared for AECOM Environment by Northwest Archaeological Associates, Inc. Seattle, Washington. May 3, 2010.

AECOM 2010b, *2010 Compliance Monitoring Plan Update*, Prepared for the BNSF Railway Company by AECOM Environment. Seattle, Washington. June 28, 2010.

AECOM 2010c, *2010 Construction Plans and Specifications*, Prepared for the BNSF Railway Company by AECOM Environment. Seattle, Washington. March 29, 2010.

AECOM 2010d. O*perations and Maintenance Manual for Water Treatment System*. Prepared for the BNSF Railway Company by ENSR Corporation, Seattle, WA. April 2010.

AECOM 2009. 2008 Skykomish Remediation As-Built Completion Report. Skykomish, Washington. Prepared for the BNSF Railway Company by AECOM Environment. Seattle, Washington. August 2009.

Ecology 2011, *NPDES permit (Permit No. WA-003212-3)*, Prepared for BNSF Railway Company by the Washington State Department of Ecology, Bellevue, Washington. June 21, 2011.

Ecology 2007a, *Cleanup Action Plan for BNSF Former Maintenance and Fueling Facility, Skykomish, Washington*. Prepared for BNSF Railway Company by Washington State Department of Ecology. October 2007.

Ecology 2007b, *Consent Decree,* BNSF Former Maintenance and Fueling Facility, State of Washington King County Superior Court. Skykomish, Washington. October, 2007.

NWAA 2010. *Archaeological Resources Monitoring and Discovery Plan*. Prepared for AECOM Environment by Northwest Archaeological Associates, Inc. Seattle, Washington. February 2010.

RETEC 2008, *Master Engineering Design Report; BNSF Former Maintenance and Fueling Facility, Skykomish, Washington*. Prepared for the BNSF Railway Company by the RETEC Group, Inc, Seattle, Washington. January 2008.

Strider 2011, *2011 Technical Execution Plan*, Prepared for BNSF Railway Company by Strider Construction Co, Inc, Bellingham, Washington. June 17, 2011.

Tables

Table 5-2 2011 Overburden Soil Sample Results

Sample Name	Excavation Area	Location In Grid	Approximate Sample Depth (ft bgs)	Date Collected	Time Collected	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Total TPH-Dx (Diesel + Oil) (mg/kg) RL=1,870mg/kg
OVBN11-WL-B3-2.50	West Levee	center	2.50	6/22/11	11:12	6/23/11	<24	<48	ND
OVBN11-WL-B3-5.00	West Levee	center	5.00	6/22/11	11:15	6/23/11	<25	<49	ND
OVBN11-WL-B4-2.50	West Levee	center	2.50	6/22/11	11:38	6/23/11	<25	<50	ND
OVBN11-WL-B4-5.00	West Levee	center	5.00	6/22/11	11:40	6/23/11	<28	<56	ND
OVBN11-WL-B5-2.50	West Levee	center	2.50	6/22/11	12:10	6/23/11	<25	<50	ND
OVBN11-WL-B6-2.50	Not sampled due to outfall backflow valve vault obstruction.								
OVBN11-WL-C2-2.50	West Levee	center	2.50	6/22/11	10:50	6/23/11	<24	<47	ND
OVBN11-WL-C3-2.50	West Levee	center	2.50	6/22/11	11:20	6/23/11	<26	<52	ND
OVBN11-WL-C4-2.50	West Levee	center	2.50	6/22/11	11:45	6/23/11	<26	<52	ND
OVBN11-WL-C5-2.50	West Levee	center	2.50	6/22/11	12:20	6/23/11	<25	<50	ND
OVBN11-WL-C6-2.50	West Levee	center	2.50	6/22/11	12:45	6/23/11	<24	<49	ND
OVBN11-WL-C7-2.50	West Levee	center	2.50	6/28/11	10:20	6/29/11	<26	<52	ND
OVBN11-WL-C8-2.50	West Levee	center	2.50	6/28/11	10:15	6/29/11	<26	<52	ND
OVBN11-WL-D2-2.50	West Levee	center	2.50	6/22/11	11:00	6/23/11	<25	<51	ND
OVBN11-WL-D3-2.50	West Levee	center	2.50	6/22/11	11:30	6/23/11	<24	<48	ND
OVBN11-WL-D4-2.50	West Levee	center	2.50	6/22/11	11:55	6/23/11	<24	<48	ND
OVBN11-WL-D5-2.50	West Levee	center	2.50	6/22/11	12:30	6/23/11	<24	<49	ND
OVBN11-WL-D6-2.50	West Levee	center	2.50	6/22/11	12:50	6/23/11	<24	<49	ND
OVBN11-WL-D7-2.50	West Levee	center	2.50	6/28/11	9:55	6/29/11	<25	<50	ND
OVBN11-WL-D8-2.50	West Levee	center	2.50	6/28/11	10:10	6/29/11	<25	<50	ND
OVBN11-WL-E2-2.50	West Levee	center	2.50	6/22/11	11:05	6/23/11	<25	<50	ND
OVBN11-WL-E3-2.50	Not sampled due to telephone pole guy wires obstruction.								
OVBN11-WL-E4-2.50	West Levee	center	2.50	6/22/11	12:00	6/23/11	<24	<48	ND
OVBN11-WL-E5-2.50	West Levee	center	2.50	6/22/11	12:35	6/23/11	<28	<55	ND
OVBN11-WL-E6-2.50	West Levee	center	2.50	6/22/11	12:58	6/23/11	<26	<51	ND
OVBN11-WL-E7-2.50	West Levee	center	2.50	6/28/11	9:50	6/29/11	<24	<49	ND
OVBN11-WL-E8-2.50	West Levee	center	2.50	6/28/11	10:05	6/29/11	<27	<55	ND
OVBN11-WL-F7-2.50	West Levee	center	2.50	6/28/11	9:36	6/29/11	<25	<50	ND
OVBN11-WL-F8-2.50	West Levee	center	2.50	6/28/11	10:00	6/29/11	<31	<62	ND
Duplicates									
OVBN11-WL-Z1-062211 (dup of WL-D3-2.50)	West Levee	center	2.50	6/22/11	listed at 14:30	6/23/11	<24	<47	ND

Sample Result in mg/kg : Sample results exceeding CULs.

Table 5-3 2011 Excavation Performance Soil Sample Results

Sample Name	Excavation Area	Location In Grid	Approximate Sample Depth (ft bgs)	Date Collected	Time Collected	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Total TPH-Dx (Diesel + Oil) (mg/kg) RL=3,400mg/kg for upland, 22mg/kg for buffer zone and 40.9mg/kg for in-water
EXV11-Bridge-S9-B	Bridge Excavation (buffer zone)	bottom	4	8/25/11	10:45	8/26/11	<3.3	<6.6	ND
EXV11-Bridge-S10-B	Bridge Excavation (buffer zone)	bottom	4	8/25/11	10:40	8/26/11	9.7	14	**23.7**
EXV11-Bridge-S10-B'	Bridge Excavation (buffer zone)	bottom	4	8/26/11	10:50	8/27/11	<3.0	<6.0	ND
EXV11-Bridge-T9-B	Bridge Excavation (in-water)	bottom	5	8/24/11	17:00	8/26/11	<3.3	<6.7	ND
EXV11-Bridge-T10-B	Bridge Excavation (in-water)	bottom	5	8/24/11	16:45	8/26/11	<3.2	<6.3	ND
EXV11-Bridge-T11-B	Bridge Excavation (buffer zone)	bottom	4	8/23/11	13:10	8/24/11	<3.3	<6.6	ND
EXV11-Bridge-T12-B	Bridge Excavation (buffer zone)	bottom	4	8/22/11	14:40	8/23/11	<3.4	<6.7	ND
EXV11-Bridge-U9-B	Bridge Excavation (in-water)	bottom	5	8/24/11	14:45	8/26/11	<3.3	<6.5	ND
EXV11-Bridge-U10-B	Bridge Excavation (in-water)	bottom	5	8/24/11	14:40	8/26/11	<3.4	<6.7	ND
EXV11-Bridge-U11-B	Bridge Excavation (in-water)	bottom	5	8/23/11	11:15	8/24/11	<3.3	<6.6	ND
EXV11-Bridge-U12-B	Bridge Excavation (buffer zone)	bottom	3	8/22/11	12:50	8/23/11	<2.9	<5.8	ND
EXV11-Bridge-U13-B	Bridge Excavation (upland)	bottom	3	8/24/11	10:20	8/25/11	<3.4	<6.8	ND
EXV11-Bridge-U13-EW	Bridge Excavation (upland)	east wall	5	8/24/11	11:30	8/25/11	<2.7	<5.4	ND
EXV11-Bridge-V9-B	Bridge Excavation (in-water)	bottom	5	8/23/11	11:10	8/24/11	<3.6	<7.3	ND
EXV11-Bridge-V10-B	Bridge Excavation (in-water)	bottom	5	8/23/11	11:00	8/24/11	<3.1	<6.2	ND
EXV11-Bridge-V11-B	Bridge Excavation (in-water)	bottom	3	8/22/11	12:20	8/23/11	26	64	**90**
EXV11-Bridge-V11-B'	Bridge Excavation (in-water)	bottom	3	8/23/11	13:50	8/24/11	<3.3	<6.7	ND
EXV11-Bridge-V12-B	Bridge Excavation (in-water)	bottom	3	8/23/11	14:50	8/24/11	<3.2	<6.4	ND
EXV11-Bridge-V13-B	Bridge Excavation (buffer zone)	bottom	3	8/24/11	11:30	8/25/11	<3.2	<6.4	ND
EXV11-Bridge-V13-EW	Bridge Excavation (buffer zone)	east wall	5	8/24/11	12:45	8/26/11	16	63	**79**
EXV11-Bridge-V13-EW'	Bridge Excavation (buffer zone)	east wall	5	8/26/11	8:15	8/27/11	<2.9	<5.8	ND
EXV11-RYZE-J16-B'	East Railyard	bottom	12	11/7/11	14:10	11/9/11	<34	<68	ND
EXV11-RYZE-J16-WW'	East Railyard	west wall	6	11/7/11	14:15	11/9/11	<25	<50	ND
EXV11-RYZE-J16-SW'	East Railyard	south wall	6	11/7/11	14:30	11/9/11	<26	<51	ND
EXV11-RYZE-J17-B'	East Railyard	bottom	12	11/7/11	9:45	11/9/11	<34	<69	ND
EXV11-RYZE-J17-SW'	East Railyard	south wall	6	11/7/11	9:50	11/9/11	<25	<49	ND
EXV11-RYZE-J18-B'	East Railyard	bottom	12	11/2/11	15:30	11/4/11	<32	<63	ND
EXV11-RYZE-J18-EW	East Railyard	east wall	6	11/2/11	15:40	11/4/11	<25	<49	ND
EXV11-RYZE-J18-SW'	East Railyard	south wall	6	11/2/11	15:50	11/4/11	<25	<51	ND
EXV11-TH-#1	Truck Haul Route Pothole	south wall	8	9/15/11	8:00	9/19/11	14,000	20,000	**34,000**
EXV11-TH-#2	Truck Haul Route Pothole	south wall	8	9/15/11	9:10	9/19/11	11,000	13,000	**24,000**

Table 5-3 2011 Excavation Performance Soil Sample Results

Sample Name	Excavation Area	Location In Grid	Approximate Sample Depth (ft bgs)	Date Collected	Time Collected	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Total TPH-Dx (Diesel + Oil) (mg/kg) RL=3,400mg/kg for upland, 22mg/kg for buffer zone and 40.9mg/kg for in-water
EXV11-WL-B1-WW	Levee West End (upland)	west wall	8	6/29/11	14:17	7/1/11	16,000	19,000	**35,000**
EXV11-WL-B1-WW'	Levee West End (upland)	west wall	7	7/7/11	14:30	7/8/11	37	64	101
EXV11-WL-B2-B	Levee West End (upland)	bottom	12	6/29/11	14:55	7/1/11	<32	<64	ND
EXV11-WL-B2-NW	Levee West End (upland)	north wall	8	6/29/11	14:15	7/1/11	19,000	23,000	**42,000**
EXV11-WL-B2-NW'	Levee West End (upland)	north wall	6	7/7/11	15:00	7/8/11	370	570	940
EXV11-WL-B3-B	Levee West End (upland)	bottom	12	6/30/11	9:35	7/1/11	<34	<68	ND
EXV11-WL-B3-NW	Levee West End (upland)	north wall	6	7/7/11	15:40	7/8/11	670	1,000	1,670
EXV11-WL-B4-B	Levee West End (upland)	bottom	12	6/30/11	16:00	7/2/11	<31	<63	ND
EXV11-WL-B4-NW	Levee West End (upland)	north wall	6	7/7/11	15:55	7/8/11	30	150	180
EXV11-WL-B5-B	Levee West End (upland)	bottom	12	7/1/11	7:40	7/2/11	<33	<65	ND
EXV11-WL-B5-NW	Levee West End (upland)	north wall	6	7/7/11	16:15	7/8/11	<27	<55	ND
EXV11-WL-C2-B	Levee West End (upland)	bottom	12	6/29/11	14:52	7/1/11	<30	<60	ND
EXV11-WL-C2-WW	Levee West End (upland)	west wall	8	6/29/11	14:20	7/1/11	58	95	153
EXV11-WL-C3-B	Levee West End (upland)	bottom	12	6/29/11	14:55	7/1/11	<32	<65	ND
EXV11-WL-C4-B	Levee West End (upland)	bottom	12	6/30/11	16:45	7/2/11	<32	<65	ND
EXV11-WL-C5-B	Levee West End (upland)	bottom	12	7/1/11	7:50	7/2/11	<32	<64	ND
EXV11-WL-C8-EW	Levee West End (upland)	east wall	6	7/6/11	14:30	7/8/11	<26	<53	ND
EXV11-WL-D2-B	Levee West End (upland)	bottom	12	6/29/11	14:50	7/1/11	<31	<62	ND
EXV11-WL-D2-WW	Levee West End (upland)	west wall	8	6/29/11	13:36	7/1/11	<26	<52	ND
EXV11-WL-D3-B	Levee West End (upland)	bottom	12	6/29/11	14:50	7/1/11	<33	<66	ND
EXV11-WL-D3-SW	Levee West End (upland)	south wall	8	6/29/11	14:30	7/1/11	<27	<54	ND
EXV11-WL-D4-B	Levee West End (upland)	bottom	12	6/30/11	12:05	7/1/11	<33	<66	ND
EXV11-WL-D5-B	Levee West End (upland)	bottom	12	7/5/11	8:00	7/6/11	<34	<67	ND
EXV11-WL-D6-B	Levee West End (upland)	bottom	12	7/5/11	12:00	7/6/11	<32	<63	ND
EXV11-WL-D8-EW	Levee West End (upland)	east wall	8	7/5/11	13:45	7/6/11	2,400	5,500	**7,900**

Table 5-3 2011 Excavation Performance Soil Sample Results

Sample Name	Excavation Area	Location In Grid	Approximate Sample Depth (ft bgs)	Date Collected	Time Collected	Date Results	Diesel (mg/kg)	Oil (mg/kg)	Total TPH-Dx (Diesel + Oil) (mg/kg) RL=3,400mg/kg for upland, 22mg/kg for buffer zone and 40.9mg/kg for in-water
EXV11-WL-E2-SW	Levee West End (upland)	south wall	8	6/29/11	13:30	7/1/11	<26	<51	ND
EXV11-WL-E3-B	No sample collected due to a power pole and guy wire obstruction								
EXV11-WL-E3-SW	No sample collected due to a power pole and guy wire obstruction								
EXV11-WL-E4-B	Levee West End (upland)	bottom	12	6/30/11	12:00	7/1/11	<33	<66	ND
EXV11-WL-E4-WW	Levee West End (upland)	west wall	8	6/30/11	10:40	7/1/11	<32	<64	ND
EXV11-WL-E4-SW	Levee West End (upland)	south wall	7	7/7/11	10:40	7/8/11	52	99	151
EXV11-WL-E5-B	Levee West End (upland)	bottom	12	7/5/11	8:04	7/6/11	<32	<63	ND
EXV11-WL-E5-SW	Levee West End (upland)	south wall	7	7/1/11	8:15	7/2/11	<28	<55	ND
EXV11-WL-E6-B	Levee West End (upland)	bottom	12	7/5/11	10:05	7/6/11	<32	<65	ND
EXV11-WL-E6-SW	Levee West End (upland)	south wall	7	7/1/11	8:40	7/2/11	<25	<50	ND
EXV11-WL-E7-B	Levee West End (upland)	bottom	12	7/5/11	14:30	7/6/11	<31	<63	ND
EXV11-WL-E7-SW	Levee West End (upland)	south wall	7	7/1/11	8:50	7/2/11	<25	<50	ND
EXV11-WL-E8-B	Levee West End (upland)	bottom	12	7/5/11	16:00	7/8/11	<34	<68	ND
EXV11-WL-E8-EW	Levee West End (upland)	east wall	7	7/5/11	13:15	7/6/11	10,000	14,000	**24,000**
EXV11-WL-E8-SW	Levee West End (upland)	south wall	7	7/1/11	9:10	7/2/11	<25	<50	ND
EXV11-WL-F8-EW	Levee West End (upland)	east wall	7	7/5/11	13:30	7/6/11	<29	<58	ND
DUPLICATES									
EXV11-Z1-062911 (duplicate of WL-E2-SW)	West Levee (upland)	south wall	8	6/29/11	Listed at 5:00 pm	7/1/11	<25	<50	ND
EXV11-Z1-070111 (duplicate of WL-C5-B)	West Levee (upland)	bottom	12	7/1/11	Listed at 10:30 am	7/2/11	<33	<66	ND
EXV11-Z1-082411 (duplicate of Bridge-T9-B)	Bridge Excavation (in-water)	bottom	5	8/24/11	Listed at 5:10 pm	8/26/11	<3.4	<6.7	ND
EXV11-Z1-091511 (duplicate of TH-#1)	Truck Haul Route	south wall	8	9/15/11	Listed at 9:00 am	9/19/11	11,000	16,000	**27,000**

Sample Result in mg/kg : Sample results exceed CUL or RL.

Table 5-4 2011 Metals Performance Soil Sample Results

Sample Name	Excavation Area	Location In Grid	Approximate Sample Depth (ft bgs)	Date Collected	Time Collected	Date Results	Arsenic (mg/kg) CUL=20mg/kg	Lead (mg/kg) CUL=250mg/kg
ME11-RYZE-A8-WW	East Railyard	west wall	1	11/3/11	13:55	11/7/11	9.8	61
ME11-RYZE-A8-NW	East Railyard	north wall	1	11/3/11	14:00	11/7/11	11	49
ME11-RYZE-A9-NW	East Railyard	north wall	1	11/3/11	14:05	11/7/11	15	27
ME11-RYZE-A10-NW	East Railyard	north wall	1	11/3/11	14:10	11/7/11	8.9	33
ME11-RYZE-A11-NW	East Railyard	north wall	1	11/3/11	14:15	11/7/11	8.8	100
ME11-RYZE-A12-NW	East Railyard	north wall	1	11/3/11	16:00	11/7/11	3.5	22
ME11-RYZE-A13-NW	East Railyard	north wall	1	11/3/11	16:05	11/7/11	8.3	83
ME11-RYZE-A14-NW	East Railyard	north wall	1	11/4/11	13:50	11/8/11	12	110
ME11-RYZE-A15-NW	East Railyard	north wall	1	11/4/11	13:55	11/8/11	6.4	53
ME11-RYZE-A16-NW	East Railyard	north wall	1	11/4/11	14:00	11/8/11	7.0	43
ME11-RYZE-A17-NW	East Railyard	north wall	1	11/4/11	14:05	11/8/11	5.2	13
ME11-RYZE-A18-NW	East Railyard	north wall	1	11/4/11	14:10	11/8/11	17	90
ME11-RYZE-A18-EW	East Railyard	east wall	1	11/4/11	14:15	11/8/11	**27**	6.6
ME11-RYZE-A19-EW	East Railyard	east wall	1	11/10/11	10:00	11/15/11	4.6	5.1
ME11-RYZE-C3-EW	East Railyard	east wall	1	11/9/11	16:10	11/11/11	5.8	**300**
ME11-RYZE-C3-EW'	East Railyard	east wall	1	11/16/11	16:00	11/21/11	4.1	10
ME11-RYZE-C4-WW	East Railyard	west wall	1	10/12/11	16:20	10/17/11	11	**1,000**
ME11-RYZE-C4-WW'	East Railyard	west wall	1	10/24/11	17:00	10/26/11	3.7	11
ME11-RYZE-C13-EW	East Railyard	east wall	1	10/24/11	10:50	10/26/11	3.1	3.0
ME11-RYZE-C24-WW	East Railyard	west wall	1	10/25/11	10:00	10/27/11	2.2	63
ME11-RYZE-D3-SW	East Railyard	south wall	1	11/9/11	16:30	11/11/11	6.2	190
ME11-RYZE-D3-EW	East Railyard	east wall	1	11/9/11	16:20	11/11/11	5.7	19
ME11-RYZE-D4-WW	East Railyard	west wall	underground concrete obstruction. No sample.					
ME11-RYZE-D14-NW	East Railyard	north wall	1	10/24/11	10:55	10/26/11	3.9	4.2
ME11-RYZE-D15-NW	East Railyard	north wall	1	10/24/11	11:00	10/26/11	4.2	8.8
ME11-RYZE-D16-EW	East Railyard	east wall	1	10/24/11	11:02	10/26/11	4.4	110
ME11-RYZE-D24-WW	East Railyard	west wall	1	10/25/11	10:05	10/27/11	5.6	10

Table 5-4 2011 Metals Performance Soil Sample Results

Sample Name	Excavation Area	Location In Grid	Approximate Sample Depth (ft bgs)	Date Collected	Time Collected	Date Results	Arsenic (mg/kg) CUL=20mg/kg	Lead (mg/kg) CUL=250mg/kg
ME11-RYZE-E4-WW	East Railyard	west wall	underground concrete obstruction. No sample.					
ME11-RYZE-E5-SW	East Railyard	south wall	1	10/12/11	16:10	10/17/11	7.7	7.6
ME11-RYZE-E32-EW	East Railyard	east wall	1	11/9/11	12:40	11/11/11	6.8	**290**
ME11-RYZE-E32-EW'	East Railyard	east wall	1	11/16/11	16:10	11/21/11	4.3	170
ME11-RYZE-F5-SW	East Railyard	south wall	1	10/12/11	14:20	10/17/11	**78**	69
ME11-RYZE-F5-SW'	East Railyard	south wall	1	10/24/11	16:45	10/26/11	7.0	9.8
ME11-RYZE-F5-WW	East Railyard	west wall	1	10/12/11	14:50	10/17/11	7.7	47
ME11-RYZE-F32-EW	East Railyard	east wall	1	11/9/11	12:45	11/11/11	4.1	130
ME11-RYZE-G6-SW	East Railyard	south wall	1	10/12/11	14:10	10/17/11	5.0	46
ME11-RYZE-G7-SW	East Railyard	south wall	1	10/12/11	14:00	10/17/11	4.7	14
ME11-RYZE-G8-SW	East Railyard	south wall	1	10/12/11	13:30	10/17/11	5.0	18
ME11-RYZE-G9-SW	East Railyard	south wall	1	10/12/11	13:15	10/17/11	7.6	98
ME11-RYZE-H10-SW	East Railyard	south wall	1	10/12/11	13:00	10/17/11	7.6	3.5
ME11-RYZE-J28-SW	East Railyard	south wall	1	11/9/11	10:25	11/11/11	3.3	94
ME11-RYZE-J29-SW	East Railyard	south wall	1	11/9/11	10:30	11/11/11	2.9	82
ME11-RYZE-K27-SW	East Railyard	south wall	1	11/9/11	10:20	11/11/11	3.4	130
ME11-RYZE-I30-SW	East Railyard	south wall	1	11/9/11	10:35	11/11/11	5.0	**260**
ME11-RYZE-I30-SW'	East Railyard	south wall	1	11/16/11	16:15	11/21/11	1.8	51
ME11-RYZE-Z1-102411 (Duplicate for C4-WW')	East Railyard	west wall	1	10/24/11	17:05	10/26/11	4.2	7.2
ME11-RYZE-Z1-110411 (Duplicate for A18-EW)	East Railyard	east wall	1	11/4/11	14:20	11/8/11	**22**	7
ME11-RYZE-Z1-110911 (Duplicate for J29-SW)	East Railyard	south wall	1	11/9/11	10:18	11/11/11	2.4	83

Sample Result in mg/kg : Sample results exceeding CULs.

Table 5-5 2011 Skykomish Turbidity Readings

Skykomish Location: Skykomish River (upstream background reading)

Date	Turbidity (NTU)	Date	Turbidity (NTU)
1/5/2011	1.35	8/30/2011	0.55
1/10/2011	1.18	9/7/2011	0.85
1/26/2011	1.75	9/13/2011	1.15
2/1/2011	2.76	9/22/2011	1.32
2/8/2011	3.16	9/30/2011	1.56
2/15/2011	1.16	10/5/2011	1.77
2/21/2011	1.38	10/11/2011	1.46
2/27/2011	1.91	10/18/2011	1.79
3/16/2011	1.66	10/25/2011	2.23
3/20/2011	1.35	11/1/2011	2.35
3/27/2011	1.45	11/7/2011	1.53
4/3/2011	2.21	11/15/2011	1.13
4/10/2011	2.45	11/23/2011	0.74
4/17/2011	1.65	11/30/2011	0.65
4/24/2011	1.95	12/6/2011	0.50
5/1/2011	1.65	12/13/2012	0.82
5/8/2011	1.42	12/19/2012	1.13
5/15/2011	1.18	12/28/2012	1.25
5/26/2011	3.85		
6/2/2011	1.87		
6/9/2011	1.88		
6/15/2011	2.93		
6/22/2011	1.98		
6/28/2011	2.30		
7/1/2011	4.20		
7/5/2011	3.00		
7/6/2011	2.70		
7/7/2011	2.20		
7/13/2011	2.90		
7/20/2011	2.21		
7/26/2011	1.95		
8/2/2011	0.95		
8/9/2011	1.20		
8/16/2011	0.35		
8/23/2011	0.70		

Table 5-6 In-River Construction Activities Turbidity Readings

Construction Year: 2011

Date	Time	Work Activity	Turbidity Locations									Notes
			1) Up-stream (Background) Reading (NTU) (300' upstream)			2) Impact Zone Reading (NTU)	3) Down-stream Reading (NTU) (Compliance Point - 300' downstream)			4) Down-stream Reading (NTU) (600' downstream)			
7/1/11	10:45	West Levee Excavation	4.2			17	3.5			-			
	13:15		5.5			160	3.4			-			
	15:15		4.8			100	3.3			-			
7/2/11	9:15	West Levee Excavation	4.1			4.4	4.0			-			
7/5/11	15:30	West Levee Excavation	3.0			14	2.9			-			
7/6/11	7:40	West Levee Excavation	2.7			3.1	2.8			-			
7/7/11	9:00	West Levee Excavation	2.2			23	2.4			-			
	16:00		2.6			2.2	2.4			-			
7/14/11	10:30	West Levee Excavation	2.8			210	2.7			-			
	14:30		3.2			80	2.7			-			
	16:30		2.9			3	2.7			-			
8/15/11	9:20	Bridge Barb	0.50	0.40	0.35	-	-			-			
	8:42		-			0.15	0.05	0.80	0.00	-			
	9:15		-			-	4.50	4.10	3.8	-			Barb installed from 8:45 to 9:37.
	10:00	Bridge Cofferdam Install	-			-	2.40	2.30	1.9	-			Smoothing substrates for cofferdam install.
	10:39		-			-	18.00	21.00	13.00	6.90	7.90	7.70	Visible turbidity plume for 45 minutes. Recovery plume installation at point of collection. Smoothing substrates for cofferdam install.
	11:00		-			-	5.80	5.90	6.00	-			Stacking cofferdam bags.
	12:42		-			-	7.90	5.40	3.70	-			Stacking cofferdam bags.
	3:10		-			-	3.00	2.20	2.80	-			
	16:25		-			-	3.50	4.00	3.40	-			Placing bags on substrates
	18:30		0.85	0.77	0.81	-	4.25	3.85	3.70	-			End of day after work is complete.
8/16/11	7:10	Bridge Cofferdam Install	0.62	0.65	0.70	0.45	0.25	0.25	0.50	-			
	7:40		-			-	4.60	4.60	4.75	-			
	8:10		-			-	8.30	8.50	8.70	1.18	1.20	1.27	Excavator was smoothing bottom, creating temporary turbidity. At 10:20, product was observed within cofferdam. Work was stopped until 13:00 to clean up product.
	11:00		-			-	4.00	4.25	4.40	-			
	13:30		-			-	5.75	5.80	5.88	0.60	0.75	0.75	
	15:00		-			-	7.10	7.22	7.25	0.80	0.80	0.80	
	19:40		0.33	0.35	0.40	-	2.20	2.50	2.50	-			End of day after work is complete.
8/17/11	7:35	Bridge Cofferdam Install	0.40	0.42	0.50	1.50	0.78	0.90	0.92	-			
	10:30		-			-	0.75	0.82	0.90	-			
	14:00		-			-	0.85	0.85	0.87	-			
	16:00		-			-	12	14	16	6.0	6.4	7.0	Constructing down-gradient end of outer cofferdam.
8/18/11	7:30	Bridge Cofferdam Install	0.76			1.00	0.55			-			
	8:00		-			-	3.15			-			
	8:30		-			-	4.20			-			
	11:30		-			-	4.90			-			
	14:30		-			-	14.8			4.8			Constructing inner cofferdam.
	17:30		-			-	6.6			4.4			" "
	19:30		0.85			-	4.2			-			End of day after work is complete.
8/19/11	7:30	Bridge Cofferdam Install	0.55			0.54	0.40			-			
	8:00		-			-	1.15			-			
	8:30		-			-	4.00			-			
	11:30		-			-	7.25			3.10			Completing inner cofferdam.
	14:30		-			-	3.07			-			
	18:00		-			-	1.28			-			End of day after work is complete.

Table 5-6 In-River Construction Activities Turbidity Readings

Construction Year: 2011

Date	Time	Work Activity	Turbidity Locations				Notes
			1) Up-stream (Background) Reading (NTU) (300' upstream)	2) Impact Zone Reading (NTU)	3) Down-stream Reading (NTU) (Compliance Point - 300' downstream)	4) Down-stream Reading (NTU) (600' downstream)	
8/20/11	7:15	Setup Dewatering at Bridge Excavation	0.45	0.65	0.50	-	
	7:45		-	-	2.8	-	
	8:15		-	-	3.1	-	
	11:30		-	-	3.5	-	
	14:30		-	-	3.7	-	
	17:30		0.62	-	3.5	-	End of day after work is complete.
8/21/11	7:30	Setup Water Bypass Across Bridge	0.68	0.77	0.82	-	
	8:00		-	-	0.76	-	
	8:30		-	-	0.77	-	
	12:00		0.75	-	0.9	-	End of day after work is complete.
8/22/11	7:15	Bridge Excavation	0.70	0.75	0.66	-	
	7:45		-	-	0.85	-	
	8:15		-	-	0.92	-	
	13:00		-	-	0.75	-	
	17:00		0.80	-	0.95	-	End of day after work is complete.
8/23/11	7:15	Bridge Excavation	0.70	0.68	0.65	-	
	7:45		-	-	0.75	-	
	8:15		-	-	0.75	-	
	11:30		-	-	1.4	-	
	14:30		-	-	2.3	-	
	16:30		0.80	-	3.1	-	End of day after work is complete.
8/24/11	7:45	Bridge Excavation	1.2	0.88	0.92	-	
	8:15		-	-	1.00	-	
	8:35		-	-	1.00	-	
	11:40		-	-	0.96	-	
	15:00		-	-	1.15	-	
	18:30		0.85	-	0.8	-	End of day after work is complete.
8/25/11	7:30	Bridge Excavation	0.71	0.75	0.60	-	
	8:00		-	-	0.72	-	
	8:30		-	-	0.95	-	
	11:30		-	-	1.25	-	
	14:30		-	-	1.2	-	
	18:30		0.85	-	1.0	-	End of day after work is complete.
8/26/11	7:15	Bridge Excavation	0.61	0.75	0.72	-	
	7:45		-	-	0.81	-	
	8:10		-	-	1.04	-	
	11:30		-	-	1.00	-	
	14:00		-	-	1.20	-	
	18:00		0.75	-	1.30	-	End of day after work is complete.
8/27/11	7:30	Bridge Excavation Backfill	0.70	0.80	0.92	-	
	8:00		-	-	1.05	-	
	8:30		-	-	1.10	-	
	11:30		-	-	1.15	-	
	15:00		1.00	-	1.25	-	End of day after work is complete.
8/29/11	7:30	Bridge Excavation Backfill	0.80	0.65	0.70	-	
	8:00		-	-	0.77	-	
	8:30		-	-	0.75	-	
	11:30		-	-	1.15	-	
	14:30		-	-	1.10	-	
	17:30		0.95	-	1.00	-	End of day after work is complete.

Table 5-6 In-River Construction Activities Turbidity Readings

Construction Year: 2011

Date	Time	Work Activity	Turbidity Locations									Notes
			1) Up-stream (Background) Reading (NTU) (300' upstream)			2) Impact Zone Reading (NTU)	3) Down-stream Reading (NTU) (Compliance Point - 300' downstream)			4) Down-stream Reading (NTU) (600' downstream)			
8/30/11	7:15	Bridge Excavation Backfill		0.55		0.52		0.40			-		
	7:45			-		-		0.44			-		
	8:15			-		-		0.50			-		
	11:00			-		-		0.55			-		
	15:30			0.52		-		0.50			-		End of day after work is complete.
8/31/11	7:15	Cofferdam Removal		0.48		0.42		0.40			-		
	7:45			-		-		0.40			-		
	8:15			-		-		0.42			-		
	11:30			-		-		0.64			-		
	14:30			-		-		0.60			-		
	17:30			0.50		-		0.50			-		End of day after work is complete.
9/1/11	7:30	Cofferdam Removal		0.45		0.65		0.40			-		
	8:00			-		-		0.50			-		
	8:30			-		-		0.56			-		
	11:30			-		-		3.76			-		
	16:00			-		-	17	19	19	10	10	17	
	17:15		0.85	0.90	1.00	-	40	43	50	15	17	20	End of day after work is complete.
9/2/11	7:20	Cofferdam Removal		0.62		0.50		0.50			-		
	7:50			-		-		0.50			-		
	8:20			-		-		0.65			-		
	11:00			-		-		11.5			3.4		
	13:45			-		-		38.7			1.25		End of day after work is complete.
9/6/11	7:20	Cofferdam Removal		0.38		0.40		0.30			-		
	8:00			-		-		0.35			-		
	8:30			-		-	8.8	9.5	10	3.4	3.4	3.7	
	9:45			-		-		11			4.5		
	10:30			-		-		36			11		
	11:30			-		-		17			4.9		
	13:00			-		-		4.9			0.4		
	16:00			-		-	7.3	8.5	10	0.45	1.4	1.6	
	17:30			-		-		2.6			-		End of day after work is complete.
9/7/11	7:30	Bridge Excavation Restoration		0.85		-		2.6			-		
	9:30			-		-		0.95			-		
	11:15			-		-		8.3		0.25	0.30	0.35	Rock barb removal.
	12:00			-		-	4.3	5.3	6.0		-		
	13:00			-		-	4.7	5.3	6.9	5.7	6.5	6.9	
	17:20		0.20	0.25	0.50	-	0.15	0.4	1.2		-		End of day after work is complete.

Figures

Appendices A – N
(Note: All appendices are provided on the attached CD.)

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