B&L Woodwaste Site
Pierce County, Washington

Engineering Design Report (EDR) Addendum 1

Phase 1 Part 1 Remediation Design Report

Barrier Wall and Interceptor Trench

Appendix 1I
Operation, Monitoring, Inspection, and Maintenance Plan

FINAL

B&L Woodwaste Site
Pierce County, Washington

Engineering Design Report (EDR) Addendum 1: Appendix 1I

Operation, Inspection, and Maintenance Plan (OIMP) Phase 1 Part 1 Cleanup Action

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1.0 Introduction

This Landfill Cleanup Action Area (CAA) Operation, Inspection, and Maintenance Plan (Landfill OIMP) addresses the operation, inspection, and maintenance requirements for the barrier wall and the interceptor trench system being constructed under the 2008 Cleanup Action Plan (CAP; Ecology 2008) for the B&L Woodwaste Site (Site). The 2008 CAP is being implemented pursuant to Consent Decree No. 08-210610-7 (Decree) and in accordance with the Scope of Work appended to the Decree. The remedy components addressed by this Landfill OIMP are part of the comprehensive remedy specified in the 2008 CAP and are being implemented as the first step in a multiphase program that is projected for completion in 2012. The remedy components implemented this year for the Landfill CAA will address partial containment of impacted groundwater beneath the B&L Woodwaste Landfill (Landfill). Ongoing monitoring, including water quality and hydraulic monitoring, are addressed in separate plans, as described below. The ongoing monitoring programs will be supplemented by the monitoring program presented in the Landfill OIMP after construction of the Phase 1 Part 1 remedy components has been completed.

The ongoing program for inspection and maintenance of the 1993 remedy components (which include the Landfill cap, cap perimeter stormwater collection system, and the groundwater monitoring well network) are documented in the Interim Compliance Monitoring Plan (ICMP; Floyd|Snider/AMEC 2009. The ICMP was approved by Ecology. The additional operations, maintenance, and inspection for the Phase 1 Part 1 components will be incorporated into the ICMP program upon completion of construction.

Additional operations, monitoring, inspection, and maintenance for other components of the 2008 CAP remedial action will be documented in future Addenda. On completing implementation of all remedy components from the 2008 CAP, a long-term monitoring program will be documented in a comprehensive Operations, Maintenance, Inspection, and Monitoring Plan, which will replace the ICMP and any other monitoring and/or inspection/maintenance plans that have been prepared for the Site.

This Landfill OIMP addresses the operations, inspection, and maintenance of the barrier wall and the interceptor trench system. Operations and maintenance requirements for these remedy components are expected to be minimal; however, operations and maintenance will be necessary for the interceptor trench system, which includes mechanical pumps and controls. The barrier wall and cap extension are passive components that will require periodic inspection to ensure the components are in proper condition; these components would be readily addressed by the ICMP after initial inspections are completed following construction.

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2.0 Interceptor Trench System Operations

The interceptor trench system relies on both passive and active drains to intercept groundwater from the upgradient side of the Landfill and redistribute this water to the infiltration ponds around the downgradient perimeter of the Landfill. The invert of the passive drain system is designed to be at elevation 14 feet. The lift station pumps will be automatically triggered only when water levels exceed a manually-set elevation to control mounding of groundwater upgradient of the Landfill. The performance standard for the interceptor trench system is described in the Phase 1 Part 1 Performance Monitoring Plan. The lift station pumps will be shut down when the lift station water level is below the activation set point or if a high level occurs in the infiltration ponds. The level switches for activation and shutdown of the lift station pumps can be manually adjusted to support proper operation of the system. Each of the two lift stations operates independently of the other, with separate high-pond-level cutoff switches. The design process and instrumentation diagram (P&ID) for the interceptor trench system is included in the final plans and specifications as Drawing P-1 (refer to Addendum 1 Appendix 1F).

Operation of the interceptor trench system consists of setting or adjusting the water-level switch settings to alter pump start and stop levels in each of the two lift stations and to monitor water levels in the lift stations to assess potential plugging in the passive drain lines. For initial operations, the lift station pumps will be activated if the water-level elevation in the lift station reaches 16.5 feet and the pumps will be shut down at a water elevation of 16.0 feet. Additionally, level sensors will be set to stop pumping in each lift station when the water level in the north and west infiltration pond reaches an elevation of 17 feet and 17.5 feet, respectively. The high-level cutoff in the infiltration ponds will prevent pumped groundwater from overtopping the stormwater infiltration ponds and discharging to the adjacent agricultural ditch system. It should be noted that when high-water conditions occur that cause shut down of the lifts' station pumps, only passive transport of groundwater would occur. High-water conditions resulting in shutdown of the lift station pumps are only expected to occur during flood conditions in the vicinity of the Landfill.

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3.0 Inspection and Maintenance Plan

In this section inspection and maintenance elements associated with the barrier wall and interceptor trench system are described below. Only a general overview is presented for inspection and maintenance related to the extended Landfill cap and the barrier wall underlying the cap extension, as details for inspection and maintenance for these components are the same as for the existing Landfill cap and are provided in the ICMP.

Routine inspection and maintenance elements have been added to address the interceptor trench system, which consists of the interceptor trenches, lift stations, infiltration ponds, associated piping and instrumentation, and the performance monitoring network of piezometers. The inspection checklist from the ICMP has been updated to incorporate these elements and is included with this plan as Attachment 1I.1. Upon completing the Phase 1 Part 1 construction, the inspection form in the ICMP will be replaced with Attachment 1I.1 and the ICMP will be revised to incorporate the procedures described below for the interceptor trench system and the piezometers. Reporting requirements for inspection and maintenance will continue as specified in the ICMP.

3.1 BARRIER WALL AND LANDFILL CAP EXTENSION

The existing Landfill cap will be extended to cover the new barrier wall, followed by rebuilding of the drainage ditch and the roadway along the perimeter of the Landfill. The Landfill cap restoration, including the reconstructed stormwater collection ditch and culverts, will be inspected and maintained in general accordance with the procedures established in the ICMP, with the minor modifications noted below.

The reconstructed stormwater collection ditch will be inspected for the condition of the half-pipe and anchor posts. In the event that the half-pipe or anchoring system is damaged, appropriate action will be taken to correct the problem.

The existing procedure for cap inspections will be followed to assess the cap surface for signs of settlement. This inspection will be adequate for the portions of the cap extending above the slurry wall. As noted in the Construction Quality Assurance Plan (Addendum 1, Appendix 1G), any settlement occurring immediately after completing construction will be addressed as part of the construction process. In the event that settlement is observed, appropriate mitigation measures will be implemented in a timely manner, as described in the ICMP.

3.2 INTERCEPTOR TRENCH SYSTEM

Maintenance will be implemented as appropriate based on the results of interceptor system inspections. It is anticipated that regular maintenance will include mechanical/electrical maintenance for the pumps and controls in accordance with manufacturer recommendations, cleaning to remove fouling or sediment accumulation in the lift station sumps and underground lines, and periodic sediment and/or vegetation removal from the infiltration ponds. Inspections

and maintenance will be documented on the appropriate form (Attachment 1I.1) and in the operating log for the Site.

3.2.1 Lift Stations

Lift station inspections will consist of inspecting the ladder rungs and concrete vault for any signs of damage or cracks, the presence and quantity of sediment or fouling, assessment of pump operation, and inspection of function and settings for controls and level switches. Any significant problems noted will be corrected in a timely manner, with the corrective action noted in the site log.

During the first 6 months of operation, lift stations will be inspected monthly during the wet season of October 1 through April 30 to ensure proper operation. Lift stations will thereafter be inspected once every 6 months and immediately after storm events of greater than or equal to 2 inches of rain in 24 hours. Lift stations will be cleaned to remove appreciable accumulated sediment, as identified by inspections. The pumps in both lift stations will be tested annually in early October (prior to the wet season) to ensure proper operation and pumping capacity, with results documented in the Site log. Annual testing will include verifying operation of the level switches in the lift stations and the infiltration ponds.

3.2.2 Subsurface Conveyance Lines

Drainage and discharge pipe cleanouts, cleanout vaults, and outfalls will be annually inspected for damage, the presence of fouling, sediment accumulation, vegetation or other obstructions, using the existing inspection procedures for pipes and culverts. If fouling or other obstructions are creating conditions requiring maintenance, as described in Table A.5 of the ICMP, or otherwise interfering with operations, appropriate action will be taken to remove the obstruction(s) and/or clean out the fouling. Maintenance actions may be implemented directly by project personnel or by subcontractors, as appropriate. For example, a professional pipe cleaning company may be hired to remove the obstruction(s) and fouling material from the conveyance lines due to the specialized equipment needed to complete the work. Corrective action will be documented in the Site log.

3.2.3 Infiltration Ponds

The infiltration ponds must be regularly inspected and maintained as necessary so that they continue to provide infiltration to the area downgradient of the Landfill. The inspections will include observations of vegetation growth and accumulation of sediment in both infiltration ponds. In the event that conditions requiring maintenance as described in Table A.5 of the ICMP are observed, excessive sediment accumulation is observed, or vegetation growth otherwise adversely affects the condition or storage and infiltration functions of the ponds are observed, appropriate action will be taken to correct the problem and restore the infiltration and/or storage capacity of the ponds. Corrective action will be documented in the Site log.

The inlet and discharge outfalls will be inspected as part of pond inspections to check the condition of the inlet, valves, surrounding riprap, and associated walkways. Any problems noted will be corrected and the action taken will be recorded in the Site log.

3.3 PIEZOMETERS

The piezometers installed for performance monitoring of the Landfill CAA remedy will be incorporated into the program for regular monitoring well maintenance as described in the ICMP. As the piezometers are designed similarly to wells, the existing inspection and maintenance program will be applicable to the new piezometers.

3.4 INSPECTION AND MAINTENANCE SCHEDULE

Except where noted above, the inspection and maintenance schedule and frequency for the elements addressing the barrier wall and interceptor trench system will be the same as the existing schedule and frequency provided in Table A.5 of the ICMP. The first inspection event addressing the new remedy components is scheduled to follow 2009 construction activities; this inspection will serve as the baseline for subsequent inspections. Thereafter, the new remedy components will be inspected twice a year, in accordance with the current inspection schedule in the ICMP. Maintenance will be implemented as appropriate based on the results from inspections and manufacturer recommendations for mechanical equipment and controls. Maintenance actions will be documented in the Site log.

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4.0 References

Floyd|Snider/AMEC. 2009. *Appendix A: Interim Compliance Monitoring Plan, Groundwater Remediation Work Plan*. Prepared for B&L Custodial Trust, Olympia, Washington. January.

Washington State Department of Ecology (Ecology). 2008. *Final Cleanup Action Plan B&L Woodwaste Site*. January.

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Pierce County, Washington

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Operation, Inspection, and Maintenance Plan (OIMP)
Phase 1 Part 1 Cleanup Action

Attachment 1I.1
Inspection and Maintenance Checklist

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Attachment 1I.1
Inspection and Maintenance Checklist
Closure Cap, Surface Water Controls, Interceptor Trench System, and Well and Piezometer Networks

Inspected by: _____ Inspection date: _____

I. Perimeter Area (Outside Security Fence)		
1. Perimeter Area Surface		
✓		COMMENT
	Vegetation	
	Erosion	
2. Open Ditches		
	Trash and debris	
	Sediment	
	Vegetation	
	Erosion	
	Other	
3. Stormwater Pipes and Culverts		
	Sediment and debris	
	Vegetation	
	Damage	

4. Secondary Detention Pond		
	Side slopes (erosion)	
	Storage area (sediment)	
	Pond dikes (settlement)	
5. Secondary Detention Pond Control Structure		
	Trash and debris	
	Sediment	
	Damage	

Inspected by: _____ Inspection date: _____

✓		COMMENT
II. Landfill Mound Area		
1. Perimeter Road		
	Condition	
	Settlement	
2. Stormwater Collection Ditch (replacement for "V-Ditch")		
	Trash and debris	
	Sediment	
	Drainage	
	Half-pipe condition	
	Anchor system condition	
3. Lift Stations		
	Ladder rungs	
	Vault condition (cracks)	
	Sediment	
	Iron fouling	
	Pump operation	

	Function and settings for controls and level switches	
4. Interceptor Trench Conveyance Lines (Discharge and Drainage)		
	Sediment and debris	
	Iron fouling	
	Vegetation	
	Damage	
	Cleanout Vault	
5. Northern Detention Pond		
	Side slopes (erosion)	
	Storage area (sediment)	
	Pond dikes (settlement)	
	Vegetation	
6. Northern Detention Pond Control Structures		
	Drainage outfall	
	Discharge outfall	
	Overflow pipe	

	Walkway	
	Stormwater pipes and culverts	
	Trash and debris	
	Sediment	
	Damage	
7. Western Detention Pond		
	Side slopes (erosion)	
	Storage area (sediment)	
	Pond dikes (settlement)	
	Vegetation	
8. Western Detention Pond Control Structures		
	Drainage outfall	
	Discharge outfall	
	Overflow pipe	
	Walkway	
	Trash and debris	
	Sediment	

	Damage	
9. Mound Area Surface		
	Vegetation	
	Erosion	
	Settlement	
	Settlement at barrier wall alignment	
	Slope failure (liner exposure)	
10. Gas Vents		
	Gas vents	
11. Mound Access Road		
	Condition	
	Settlement	

Inspected by: _____ Inspection date: _____

✓		COMMENT
III. Site-wide		
1. Monitoring Wells and Piezometers		
	Wells and piezometers inspected	
	Locks	
	Monument/covers	
	Paint	
	Bollards	

	Well ID tag	
	Well identification number	
	Gripper plug / well caps	
	Vegetation	
	Surface seal	
	Silt accumulation	
	Measuring point	

INSPECTION SUMMARY

INSPECTION SUMMARY, CONTINUED