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 1G
Construction Quality Assurance Plan

FINAL

B&L Woodwaste Site
Pierce County, Washington

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

Construction Quality Assurance Plan Phase 1 Part 1 Cleanup Action

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FINAL

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1.0 Introduction

Cleanup actions identified in the 2008 Cleanup Action Plan (CAP) will be implemented at the B&L Woodwaste Site (Site) under a phased program, as described in Consent Decree No. 08 210610 7 and the Scope of Work attached to the Consent Decree. Phase 1 Part 1 of the CAP implementation includes constructing a subsurface barrier wall around the perimeter of the Landfill, building an interceptor trench system, and restoring the Landfill cap (collectively referenced as the Work). The purpose of this Construction Phase 1 Part 1 Quality Assurance Plan (CQAP) is to ensure that work completed for the Phase 1 Part 1 cleanup actions satisfies the design requirements and that reliable, accurate, and verifiable construction data are recorded.

1.1 CONSTRUCTION QUALITY ASSURANCE PLAN OBJECTIVES

Specific objectives of the CQAP are as follows:

- Define project management organization and authorities.
- Define the roles and responsibilities of project team members.
- Define procedures and methods to check performance and work quality.
- Identify corrective actions if performance standards or design criteria are not met.
- Define documentation procedures and requirements.

1.2 ELEMENTS OF CONSTRUCTION QUALITY ASSURANCE PLAN

Contractors have the primary responsibility for the quality of all work performed under their contracts. The Project Plans and Specifications provide contractors with the guidelines for preparing and implementing a quality control (QC) program for their construction and management activities. Oversight of contractor quality control procedures and verification of work quality will be performed by the Resident Engineer. The essential elements of CQAP are listed below:

- Project organization
- Personnel qualifications
- Responsibilities
- Project control
- Verification
- Quality assurance inspections
- Meetings
- Reporting procedures and frequency

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2.0 Project Organization

The Phase 1 Part 1 construction management and oversight will be performed by the Floyd|Snider and AMEC Geomatrix, Inc. (AMEC) project team under contract to the B&L Woodwaste Site Trust (Trust), who is the owner of this Work. These remedy components will be constructed by a Contractor under contract to the Trust.

2.1 MANAGEMENT OF CONSTRUCTION QUALITY

Construction quality is the responsibility of the Contractor and the Resident Engineer provided by the Floyd|Snider/AMEC project team. Managing construction quality involves both QC and quality assurance (QA). QC is performed by the Contractor and consists of inspections and field or laboratory testing that directly monitor and control quality of materials, installation, and/or workmanship. QA is performed by the Resident Engineer and consists of inspections, verifications, audits, and evaluations to provide assurance that the completed construction elements satisfy design requirements. The Contractor shall be responsible for the performance of any subcontractors retained by the Contractor to complete the Work.

2.2 PROJECT QUALITY ASSURANCE TEAM

The project QA team will consist of the Floyd|Snider/AMEC project management team and Resident Engineer. The roles and responsibilities of the team will be established prior to start of construction; specific responsibilities and roles for the QA team are described in the following sections.

2.3 KEY QUALITY ASSURANCE AND QUALITY CONTROL PERSONNEL

2.3.1 Resident Engineer

The Floyd|Snider/AMEC project team will provide a Resident Engineer to supervise and manage the construction activities. The Resident Engineer will observe the construction activities, collect samples, conduct QA inspections and audits, and conduct analyses in accordance with the CQAP and addenda. The Resident Engineer will have the authority to stop work if the proper procedures are not being followed and/or corrective measures for any noncompliant work are not taken in a reasonable period of time.

The Resident Engineer will document the daily activities, and provide weekly and monthly project status reports to the project participants as required.

The Resident Engineer's specific responsibilities include the following:

- Documenting and tracking project scope changes as related to QA functions.
- Reviewing the Contractor's Quality Control Project Plan for consistency with the requirements of the drawings and specifications, and ensuring that performance

standards will be met. The review will examine the appropriateness and the frequency of the tests and inspections.

- Establishing procedures to resolve disputes or misunderstandings during construction.
- Reviewing emergency action and contingency planning.
- In the event that any action during the performance of the construction activities causes or threatens a release that may present an immediate danger to the on-site construction workers, the Resident Engineer will initiate actions to be taken in accordance with the Health and Safety Plan. The Resident Engineer will take directions from the Site Health and Safety Coordinator (SHSC).
- Maintaining a log of observations at the Site, including interactions with all parties results of tests site visits; and questions, concerns, or discussions about conformance with the approved design drawings and specifications.
- Reviewing endpoint activities and procedures for project completion.
- Observing tests used to monitor construction and the frequency of performance of the activities.
- Reviewing sampling activities, frequency of testing, acceptance and rejection criteria, and drawings for implementing corrective measures as addressed in the drawings and specifications.
- Observing the work in progress to determine if the work is generally proceeding in accordance with the drawings and specifications, and preparing daily inspection reports.
- Immediately notifying the authorized representative of the Contractor, the Owner, and the Floyd|Snider/AMEC project management team of observed activities presenting imminent and substantial endangerment to the public health or welfare or environment, and following up with an appraisal of the situation to the Floyd|Snider/AMEC project management team.
- Reporting actions that a contractor takes in interpreting contract documents in a way that may materially affect the work in progress or intent of the drawings and specifications.

2.3.2 Contractor QC Officer

The Contractor will designate an employee as the QC Officer for the project. The QC Officer will be an engineer or technician knowledgeable of standard QA/QC procedures for construction activities on hazardous waste sites. The QC Officer will have successfully met health, safety, and medical monitoring requirements specified in the Health and Safety Plan.

The QC Officer's responsibilities will include:

- implementation of the approved submittals,

- adherence to project specifications, drawings, and field changes approved by the Resident Engineer,
- Insuring that sample collection, sample handling, and laboratory testing conform to the applicable professional standards,
- performing the required inspections as outlined in each applicable specification,
- Maintaining QC documentation including the "Construction Quality Control Daily Report" and providing such documentation to the Resident Engineer.

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3.0 Quality Assurance Program

Throughout the construction work, inspections by the Resident Engineer will be performed to assure that quality construction practices and safe work procedures are employed. The inspections will also verify compliance with environmental and safety requirements. This section outlines the performance QA program.

3.1 QUALITY ASSURANCE/QUALITY CONTROL ENFORCEMENT

If construction deficiency is noted by the QC Officer or Resident Engineer on any segment of the Work, the Contractor shall immediately stop work on the segment. Activities shall not proceed on the affected segment of the Work until the deficiency is corrected to the satisfaction of the QC Officer and Resident Engineer. The specific corrective action will be determined by the Resident Engineer and will be implemented by the Contractor.

3.2 VERIFICATION

The Contractor shall provide QC documentation to the Resident Engineer. In addition, independent sampling and inspections will be periodically performed by the Resident Engineer to verify performance.

3.3 GENERAL QA/QC PROCEDURES

The following list consists of the general QA/QC procedures to be performed by the Contractor and the Resident Engineer during inspection activities.

- Ascertain that applicable or required approvals and permits have been obtained.
- Ensure that Project Documents (design drawings, specifications, and contract) are on-hand, reviewed, and organized for ready reference.
- Verify that project work is performed in accordance with the drawings, specifications, and applicable regulations and standards.
- Review field orders, change orders, and Project Documents for conformance.
- Recognize and report potential problem areas.
- Check that surveying, laboratory services, testing methods, and procedures are arranged, scheduled, and performed in accordance with procedures and/or accepted practice. Verify that all testing equipment used on-site has current calibration documentation.
- Confirm that record drawings are prepared and accurate.
- Check that necessary corrective actions are completed, verified, and recorded.

- Ensure that required forms, records, and other appropriate documents are complete, in order, and properly filed, and that all reports (such as daily, weekly, monthly, special, final, etc.) are completed and distributed.

3.3.1 Material Inspections

The Resident Engineer will inspect and/or measure the products and materials upon delivery to ensure that the products and materials are those specified and to ensure that no damage has occurred during shipping. If damage or incorrect shipping occurs, those products and/or materialswill be replaced by the appropriate material and in good condition.

3.3.2 Field Engineering Inspections

Field engineering includes surveying and locating each Work component on the Site by the Contractor and subcontractors. The QA inspection activities by the Resident Engineer for field engineering includes verification of the correct placement of all project facilities and installations. The dimensions, locations, elevations, and tolerances indicated in the Project Plans and Specifications will be independently confirmed by the Resident Engineer as well as engineering requirements concerning excavation, material placement and compaction, grading, and other construction activities.

3.4 SITE AUDITS

Periodic audits of QA/QC activities will be conducted throughout the construction. Floyd|Snider and AMEC will provide a team to peform the audits. Monthly audits will focus on documentation and compliance with procedures established in this CQAP and Project Documents. Once completed, the results of the audit will be discussed with the Contractor and the Resident Engineer followed by a written report of results.

3.5 PROJECT CLOSEOUT

Project closeout is the process of project completion and includes development and implementation of final punch list items (i.e., items to be completed prior to Contractor demobilization from the Site), and post-construction submittals. Contract closeout is normally accomplished in two phases: substantial completion and final completion. The Contractor shall provide all post-construction submittals, which include, but are not limited to the following:

- Reports of all tests demonstrating satisfactory functions of all operable items; instruction to Owner's personnel for their use; and transfers of all keys, samples, extra materials, and other items as required by Project Documents.
- Submittal of all maintenance, operating information, record drawings, warranties, manuals, and similar information/documents that are required by the Project Documents.
- A schedule for completion of all outstanding work items noted by the Resident Engineer.

- Submittal of certifications as required by Project Documents.
- Delivery of affidavits for the following:
  - Payment of debts and claims
  - Release of liens
  - Consent of surety for final payment
  - Release of waiver of liens
  - Release of claims
  - Other affidavits as may be required by the Project Documents.

Project closeout activities involving the Owner will proceed in parallel with construction closeout activities described herein. Project closeout will include the following:

- Preparation of record drawings to reflect as-constructed conditions for submittal to the Owner.
- Preparation of remedial action report; report will include a brief synopsis of work done and documentation associated with the work (i.e., daily logs, manifests, and certificates of disposal).
- Consolidation of project records.

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4.0 Meetings, Reviews, and Documentation

4.1 MEETINGS

The Resident Engineer will schedule and oversee kickoff and progress meetings.

4.1.1 Kickoff Meeting

Prior to the start of construction, the Resident Engineer, will hold a kickoff meeting. Participants at the meeting will include the Owner, the Floyd|Sninder/AMEC project team, and the Contractor's management and lead field personnel. Representatives from the Washington Department of Ecology may attend the kickoff meeting.

The agenda of the kickoff meeting may include the following:

1. Distribution and discussion of:
    a. the list of major subcontractors and suppliers,
    b. the projected construction schedules.
2. Construction schedule and critical work sequencing.
3. Major equipment deliveries and priorities.
4. Designation of responsible personnel.
5. Procedures and processing of:
    a. field decisions,
    b. proposal requests,
    c. submittals,
    d. Change Orders,
    e. applications for payment.
6. Adequacy of distribution of Contract Documents.
7. Procedures for maintaining Record Documents.
8. Use of premises (office, work, and storage areas).
9. Construction facilities, controls, and construction aids.
10. Temporary rerouting and termination of utilities, access roads, etc.
11. Health and safety overview.
12. Safety and first aid procedures.
13. Fire department alert procedures.
14. Emergency contingency planning.

15. Environmental and stormwater management procedures.
16. Security procedures.
17. Housekeeping procedures.
18. Permits.
19. Handling of potentially contaminated materials (soil and water).
20. Discussion of modifications to the Contractor QC program to ensure that site-specific considerations are addressed.
21. Establishment of criteria to assess QA/QC progress of the project.
22. Review of pertinent design documents, plans, and requirements.
23. Conduct a site reconnaissance to verify that the design criteria, plans, and specifications are understood by the Contractor.

4.1.2 Progress Meeting

Weekly progress meetings will be held by the Resident Engineer. Required attendees at the meeting will include the Resident Engineer and the Contractor's management and lead field personnel.

The agenda at the progress meetings will include the following:

1. Review of the Contractor's progress and schedules and effort to complete the remaining task(s) in a technical and budget-related basis.
2. Review of action items from previous weekly meeting.
3. Identification of potential delays and development of actions to maintain schedules.
4. Establishment of the project schedule for the following 3 weeks.
5. Coordination of work between the Floyd|Snider/AMEC project team and the Contractor.
6. Review and resolution of any QA/QC issues identified in the previous week.
7. Site safety conditions and practices, and conformance with the Site Health and Safety Plan.
8. Administrative and financial issues.
9. Identification action items.

4.2 DOCUMENTATION

Project documentation will include maintaining activity and summary information for all relevant components of the project, including but not limited to, activities, quantities, and technical information. Sample project documentation forms are presented in Attachment 1G.1.

4.2.1 Daily Log

The Resident Engineer will document detailed site activities in a field book. A summary of activities and relevant information will be documented in a daily log. Copies of daily logs will be sent to the Owner the following morning via e-mail. Log entries should be completed using the following guidelines:

- Every day should be reported and every calendar date should be accounted for; if followed by the words “no work” Then the reason for no work should be recorded.
- Note directions given to the Contractor (verbal and written).
- Note weather conditions for each day. Describe unusual weather and its impact on construction.
- Reference phone calls, conversations, and decisions.
- Document site activities, any problems, and their reasons and resolutions.
- Record time and name of Contractor representative to whom field paperwork is delivered, and the contents of the paperwork.
- Note questions of workmanship and whether it was brought to the attention of the Contractor.
- Note material and equipment testing results.
- Record quantities of unit-priced items as agreed with the Contractor.
- Sign and date daily log.

4.2.2 Weekly Log

The weekly log will be completed at the conclusion of each week’s activities by the Resident Engineer. This report provides a weekly summary of construction activities, a projection of the following week’s construction, delivery problems and/or delays, interface problems, changes, and potential claims. The weekly log will be a summary of the daily logs for that week.

4.2.3 Monthly Status Report

The Resident Engineer will prepare a monthly technical and financial status report for submittal to the Owner. The summary of construction activities to be included in the report will be based on review of daily and weekly logs, periodic site visits, and financial summaries.

4.2.4 Meeting Notes

Project meetings will be recorded by the Resident Engineer. An agenda will be prepared and the meeting summary will be documented on the agenda and distributed to all parties. The meeting notes will contain the following information:

- Time

- Location
- Project Number
- Attendees
- Topics discussed, decisions made, or action items list
- Work progress and schedule

4.2.5 Health and Safety Records

Daily Safety Meeting: Daily safety meetings will be organized by the Resident Engineer and attended by all site personnel to review the day's activities and associated health and safety issues and requirements. All attendees shall sign the daily safety meeting form. A copy of the daily safety meeting form will be kept in the project files.

Incident Reports: Any incidents involving personnel or equipment should be reported to the Resident Engineer and documented. The Resident Engineer will be responsible for reporting incidents to the Floyd|Snider/AMEC project team and the Owner.

Emergency Telephone List: An emergency phone list will be prepared at the beginning of the field work. The list will be posted by the telephone in the field office. The list will contain phone numbers for medical emergency support, utility companies, and key project personnel.

4.2.6 Photograph Log

The Resident Engineer will document construction work, specifically including key construction milestones, with photographs and maintain project photograph documentation and files. Photographs will be filed electronically and arranged chronologically. Each photograph should be identified by a date and sequence number. Captions for each photograph should include the date of the photograph and an activity description using the terminology common to the Contract Documents. The photograph log will be used to keep a list of project photographs.

5.0 Quality Assurance Procedures

The QA procedures include daily review of the Contractor's QC and construction records, observation of the Contractor's QC tests and inspections, and spot testing of critical construction criteria, as necessary. Sample forms to be completed to document the technical aspects of the project are included in Attachment 1G.2. Additional forms will be used as needed.

5.1 CONTRACTOR QC REQUIREMENTS

The Contractor shall provide and maintain an effective QC program or inspection system that shall assure that all supplies and services required under the Contract conform to Contract requirements, whether constructed or processed by the Contractor or procured from subcontractors or vendors. The Contractor shall perform or have performed the inspections and tests required to substantiate that supplies and services conform to the requirements of the Project Plans and Specifications. The results of all tests and inspections will be recorded and will be available for review throughout the construction period.

All materials used shall meet or exceed the criteria as indicated on the Project Documents. Any deviation must be preapproved by the Resident Engineer. The Contractor shall be responsible for implementing QC procedures and for maintaining QC and construction records in the on-site workbook or file.

The Contractor shall retain an independent testing laboratory, as specified in the Project Documents. The laboratory shall be independent of the manufacturer, Contractor, and any party involved with the manufacture, design, and/or installation of any of the material used in the Work.

5.2 BARRIER WALL

The Resident Engineer will arrange for the surveyor to locate and stake the barrier wall alignment with station numbers per the design drawings. Any discrepancies noted in the length of the wall will be resolved prior to the start of excavation. Barrier wall installation will be documented by the Resident Engineer.

5.2.1 Barrier Wall Trench

Excavation and backfill soundings shall be taken by the Contractor every 5 feet along the trench centerline using a weighted tape, cable, or other approved device. Soundings shall be measured to the nearest 0.1 foot. The soundings shall measure the following:

- Depth to the top of the silt layer, if present, which shall be identified from examination of bucket cuttings during trench excavation.
- Depth to the bottom of the key excavation, which shall be determined after the bottom of the key excavation has been excavated and cleaned.

- Distance from the toe of the backfill to the toe of the excavation, at least 15 feet.
- Depth to the top of backfill at the end of each day and at the beginning of the next day. Sounding shall monitor the base of the trench for any accumulated sediment immediately prior to backfilling that may indicate side-wall instability or high sediment load within the slurry. Any excess material noted shall be excavated prior to commencing backfill.

5.2.2 Materials

The bentonite used in construction shall be the same as that used in the mix-design or approved equivalent. The Contractor shall submit to the Resident Engineer copies of shipping labels or bills of lading from the manufacturer for each lot of bentonite shipped to certify that the bentonite is of the specified type or an approved equivalent.

Water used in slurry mixing shall be municipal water supplied by the City of Milton. The Contractor shall not change water source during construction without prior approval from the Resident Engineer.

5.2.3 Bentonite Slurry

The Contractor will test and record the bentonite slurry at the batch plant and in the trench. The testing requirements are presented in Table 1G.1. Slurry samples from the trench shall be collected from at least 5 feet below the top of the slurry. The Resident Engineer shall review the test results and resolve any problems with the Contractor.

5.2.4 Backfill

Backfill shall be prepared according to the mix-design. The proportion of bentonite added to the mix shall be calculated and recorded. Backfill shall be tested for slump and select samples collected and submitted to a geotechnical laboratory for confirmation of permeability.

5.3 INTERCEPTION TRENCH SYSTEM

The surveyor shall locate and stake the interception trench alignments and provide a reference elevation for the Contractor. The Resident Engineer shall verify the depth of excavation, piping, and backfill, as well as observe the compaction of the backfill to the design specification. The same requirements apply to the installation of the electrical trench and conduits.

5.3.1 Lift Station

The Contractor shall submit the specification sheets and other relevant information for the lift station and all the instrumentation and pumps to the Resident Engineer at least 10 calendar days prior to installation. Submittals shall include manufacturer's operation and maintenance manual. The Resident Engineer shall confirm and record that the lift station has been installed at the correct location and depth, and that all internal installations meet the design.

5.3.2 Pipe

The Resident Engineer shall inspect the piping, cleanouts, and vault material, pressure testing, and installation depth to verify compliance with the design specifications. The Resident Engineer shall also inspect the material and depth of installation of the electrical conduits and junction boxes.

5.3.3 Electrical Controls and Commissioning

The Contractor shall provide the proposed electrical system specifications, logic, and design drawings to the Resident Engineer for approval at least 10 calendar days prior to procurement. Upon completion of all system installations, the Resident Engineer will test all components of the system to verify proper function of all the items in accordance with the design requirements and logic. Any problems identified shall be corrected to the satisfaction of the Resident Engineer.

5.3.4 Earthwork

The Contractor shall provide moisture density curves for each type of site soil to be compacted. Earthwork construction shall be performed in accordance with the Project Documents and shall be observed by the Resident Engineer. An independent testing company retained by The Contractor shall perform compaction testing with the frequency identified in the design drawings to verify adherence to the design compaction requirements.

Tests and locations shall be identified by elevation and grid coordinates on a drawing of the construction area. The test locations shall be evenly distributed across each lift being tested. Any area appearing to the Resident Engineer to be of questionable quality shall be tested instead of, or in addition to, the area previously planned for testing.

5.4 LANDFILL CAP RESTORATION

5.4.1 Geosynthetics

At least 10 days prior to ordering geosynthetics, the Contractor shall submit the following for the Resident Engineer's approval:

- Manufacturer's name and material type
- Engineering properties as determined by manufacturer's tests
- Manufacturer certification that the material meets the specifications
- A sample of the proposed geosynthetic
- Manufacturer's installation recommendations.

All geosynthetic material shall be stored such that it is protected from damage and prolonged exposure to ultraviolet radiation. The subgrade shall be inspected and approved by the

Resident Engineer prior to installation. No mechanical equipment shall be driven directly on top of the geosynthetic materials and they may not be covered until inspected and approved by the Resident Engineer.

The manufacturer shall provide the Resident Engineer with a QC certificate for each roll of material. The QC certificate shall be signed by a responsible person employed by the manufacturer and shall include all supplied roll numbers and identifications. The Resident Engineer shall confirm that the QC certificates have been provided for all rolls, and that each certificate identifies the roll related to it. The Resident Engineer shall review the QC certificate and verify that the certified roll properties meet the Project Plans and Specifications.

The Contractor shall submit a plan describing the methods for handling and storage of materials prior to installation. The Resident Engineer shall observe that equipment used to unload the rolls does not damage the material, care is taken when unloading the rolls, and that all documentation required by the Project Documents has been received.

Any damaged rolls will be rejected and removed from the job site or stored at a location separate from accepted rolls as designated by the Resident Engineer. All rolls that do not have proper manufacturer's documentation shall also be stored at a separate location until all documentation has been received and approved. Storage space shall be protected by the Contractor from theft, vandalism, damage from vehicles, and similar activities. The Resident Engineer shall verify that the materials are not stored directly on the ground and adequate safeguards are in place to ensure protection against damage from the actions of man, weather, animals, or other means.

5.4.2 Geosynthetic Materials Installation

All geosynthetic materials installations shall be in accordance with the Project Documents and manufacturer's recommendations. In case of conflict between Project Documents and manufacturer's recommendation, the Resident Engineer will resolve the conflict with the manufacturer. Where optional procedures are noted in the test method, the requirements of the Project Documents shall prevail. Prior to installation, the Resident Engineer shall assess that the subgrade has been prepared in accordance with the Project Documents.

The Contractor shall assign an identification number for each panel. The Resident Engineer shall establish a chart showing correspondence between roll numbers, certification reports, and panel numbers and observe all installations. All geomembrane welds and/or glued seals will be leak tested by the Contractor in the presence of the Resident Engineer. Any segment that fails the test shall be patched, and patch welds or glued seals shall be leak tested.

Upon completion of the installation, the Resident Engineer will inspect the placed material and record all defects and disposition of the defects (panel rejected, patch installed, etc.). The Resident Engineer shall observe that the liner is not damaged after placement by equipment, foot traffic, or other means, that the liner is anchored to prevent movement by wind, and that adjacent panels are overlapped in accordance with the Project Documents. Any defects noted will be corrected prior to placement of cover soil.

5.4.3 Soil Cover Placement

Cover soil shall be placed as soon as possible to protect geosynthetic materials from ultraviolet degradation and temperature fluctuations. Soil cover shall be placed with mechanical equipment. However, no mechanical equipment shall be allowed directly on top of the geosynthetic materials; equipment shall be driven on pre-deposited soil material of sufficient thickness to protect the geosynthetics. Cover soil and topsoil, or crushed rock for the road, shall be brought in with earth-carrying equipment, deposited on the previously spread soil cover, then pushed onto the uncovered portion of the geosynthetic materials with low ground-pressure equipment, as approved by the Resident Engineer. Any damage to the geosynthetic materials shall be repaired immediately. The Resident Engineer will inspect soil placement and measure the thickness of the layers to verify compliance with the design.

5.5 PIEZOMETER INSTALLATION

The Resident Engineer will locate the new piezometer locations and log the drilling and piezometer installations. The final location and elevations of the piezometers shall be surveyed.

The Resident Engineer shall observe and document that the Contractor provides the specified assistance and materials for excavating the Landfill cap for piezometer installation, sealing piezometer completions to the Landfill cap liner, and backfilling the excavations.

5.6 DOCUMENTATION

The Resident Engineer shall document that QA requirements have been addressed and satisfied. Documentation shall consist of daily and weekly logs, photographs, design and specification revisions, monthly status reports, record drawings, and a construction report.

The finished project components and elements will be surveyed by the project surveyor, and record drawings will be prepared by the Resident Engineer. The Resident Engineer shall maintain a working set of record drawings where all deviations and changes are daily noted. The record drawings will include dimensions of all field panels, location of each panel to surveyor's plan, identification of all panels and seams, and a summary of all construction activities.

At the completion of the work, the Resident Engineer shall submit a final construction report. This report will assess that the work was performed in compliance with the Project Documents. At a minimum, the final construction report will include laboratory test results, observation and test data sheets, descriptions of significant construction problems and the solutions of these problems, a list of design revisions and the justifications for these changes, and a certification statement signed and sealed by a Professional Engineer registered in the State of Washington.

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B&L Woodwaste Site
Pierce County, Washington

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

Construction Quality Assurance Plan Phase 1 Part 1 Cleanup Action

Table

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Table 1G.1
Soil–Bentonite Wall Quality Control Testing

Property	Requirement	Frequency	Test Method
Initial Bentonite Slurry			
Viscosity	> 40 sec	2 times per shift[1]	API RP 13B-1
Density	> 66 pcf	2 times per shift[1]	API RP 13B-1
Filtrate Loss[2]	< 25 cc	2 times per shift[1]	API RP 13B-1
pH	6.5 to 10	2 times per shift[1]	API RP 13B-1
Hydration Time	Hydrate until viscosity is stable		
In-trench Bentonite Slurry			
Density	66-85 pcf and at least 15 pcf less than S-B backfill density.	2 times per shift [1,3]	API RP 13B-1
Viscosity	> 40 sec	2 times per shift[1,3]	API RP 13B-1
Sand Content	For record	2 times per shift[1,3]	API RP 13B-1
pH	6.5 to 10	2 times per shift[1,3]	API RP 13B-1
Filtrate Loss[2]	< 25 cc	2 times per shift[1,3]	API RP 13B-1
Height of slurry above water table	> 2.0 feet		
Backfill Operations			
Slope Cleaning	Monitor accumulations on backfill slope	1 per shift	
Distance from toe of excavation to toe of backfill	15–50 feet	1 per shift	

Notes:

1 Samples taken near beginning and end of each shift.
2 Test performed at 100 psi for 30 minutes.
3 Trench slurry samples shall be taken from two depths; approximately 2 feet below slurry surface and 2 feet above the bottom of the trench.

Abbreviations:

cc cubic centimenter
pcf pounds per cubic foot
S-B Soil-Bentonite
sec second

B&L Woodwaste Site
Pierce County, Washington

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

Construction Quality Assurance Plan
Phase 1 Part 1 Cleanup Action

Attachment 1G.1
Sample Forms for
Project Documentation

FINAL

Weekly Field Activities Summary
Phase 1 Part 1 Cleanup Action

Week No.: **Dates:** **To:**	**Project No.:** 13488
Project Name: B&L Woodwaste Site	**Date:**
Project Location: Pierce County, Washington	**Field Representative:**

Prepared by: _____

Reviewed by: _____

Daily Quality Control Report
Phase 1 Part 1 Cleanup Action Plan

Project Name: Phase 1 Part 1 Cleanup Action Plan **Project Number:** 13488

B&L Woodwaste Site **Date:** _____

Project Location: Pierce County, Washington

Field Representative: _____

Weather: _____ **Wind:** _____ **Temp:** _____

PERSONNEL:

Name	Company	Time In	Time Out

DESCRIPTION AND LOCATION OF WORK:

DECONTAMINATION PROCEDURES:

CONTRACTORS QUALITY CONTROL:

Daily Quality Control Report
Phase 1 Part 1 Cleanup Action Plan
(continued)

SAMPLING:

Location	Type	Depth	Analyses

MATERIALS RECEIVED ON-SITE:

DESCRIBE MATERIALS STORAGE (Location, Protection):

DISCUSSIONS WITH CONTRACTOR:

Daily Quality Control Report
Phase 1 Part 1 Cleanup Action Plan
(continued)

SAFETY VIOLATIONS & ACCIDENTS OBSERVED AND ACTION TAKEN:

_____

_____

_____

_____

REMARKS (INCLUDE VISITORS):

_____

_____

_____

_____

_____

WORK PERFORMED:

Description	Quantity Today	Total to Date

Signature of Contractor: _____ Date: _____

Signature of Field Representative: _____ Date: _____

Environmental Project Health and Safety Field Meeting Form
Phase 1 Part 1 Cleanup Action

Date: _____ Time: _____ Project No.: 13488._____

Project Name: Phase 1 Part 1 Cleanup Action_____

Location: Pierce County, Washington_____

Meeting Conducted by: _____

TOPICS DISCUSSED

Physical Hazards:_____

Chemical Hazards:_____

Personal Protection:_____

Decontamination: _____

Special Site Considerations:_____

_____

_____

_____

Emergency Information: _____

Hospital Location: _____

Attendees

Name/Company (printed)	Signature

Meeting Conducted by: _____
Signature

Confined Space Entry Permit

(All copies of permit will remain at job site until job is completed.)

Date _____

Location/Description of Confined Space _____ Time _____

Purpose of Entry _____ Expiration _____

Expected Hazards _____

Communications _____

Entry Supervisor _____

Special Requirements Before Entry:	Yes	No		Yes	No
Lockout De-Energize - Test and Verify			Escape Harness Required		
Lines Broken - Capped or Blanked			Tripod Emergency Escape Unit		
Purge - Flush and Vent			Lifelines		
Ventilation			Fire Extinguishers		
Secure Area (Post and Flag)			Lighting (Explosion Proof)		
Breathing Apparatus			Protective Clothing		
Resuscitator - Inhalator			Respirator		

Test Interval _____

Test(s) to be Taken/Acceptable Entry Conditions		Date										
		Tester										
Do Not Enter If Permissible Entry Levels are Exceeded		Time										
	Permissible Entry Level	Am/Pm	M	M	M	M	M	M	M	M	M	M
% of Oxygen	19.5% to 23.5%											
% of L.F.L.* (gas/vapor/mist)	Less than 10%											
Carbon Monoxide	35 ppm (8 hr.)											
Aromatic Hydrocarbon	1 ppm (8 hr.)											
Hydrogen Sulfide	10 ppm (8 hr.)											
Sulfur Dioxide	2 ppm (8 hr.)											
Ammonia	25 ppm (8 hr.)											

* L.F.L. Lower Flammable Level

Name of Gas Tester(s) _____

Note: Continuous/periodic tests shall be established before beginning the job. Any questions pertaining to test requirements should be directed to _____

Testing Instruments Used	Name/Type	Identification No.	Calibration Time	Calibration Reading	Background Measurement

Permit Authorization

I certify that all actions and conditions necessary for safe entry have been performed.

Name (Print)	Signature
Date	Time

Authorized Entrants	Authorized Attendants

Investigation Report for Occupational Accident, Injury, or Illness
Phase 1 Part 1 Cleanup Action

Date of investigation: _____ Conducted by: _____

Event leading to this investigation: _____

Was anyone injured as a result of this incident? ☐ Yes ☐ No

If so, describe the injury: _____

_____

Was a safe work practice violated? ☐ Yes ☐ No

If so, describe: _____

_____

Was an unanticipated unsafe condition encountered? ☐ Yes ☐ No

If so, describe: _____

_____

What corrective action is needed? _____

Person responsible for corrective action: _____

Date received by responsible person: _____

Completion of corrective action:

My signature below certifies that I have completed the corrective action(s) described above.

_____ Signature _____ Date

Will an additional safe work practice be needed? ☐ Yes ☐ No

If so, describe: _____

_____

Was the unsafe condition corrected? ☐ Yes ☐ No

If not, what interim actions have been taken? _____

_____

Does our inspection checklist need modification? ☐ Yes ☐ No

If so, describe: _____

_____ Investigator Printed Name _____ Investigator Signature _____ (Date)

Construction Photo Index
Phase 1 Part 1 Cleanup Action Plan

Date	Photo ID	Photographer	Description	Aspect

Training Records Summary
Phase 1 Part 1 Cleanup Action Plan

Name	Organization	Medical Monitoring Expires	40-Hour HAZWOPER Training Date	8-Hour HAZWOPER Refresher Expires	Respirator Fit Test Expires	Asbestos Supervisor Expires	Asbestos Worker Expires	Lead Awareness Expires	8-Hour Lead Abatement Expires	First Aid Expires	CPR Expires	Confined Space Entry Expires

Visitor Log
Phase 1 Part 1 Cleanup Action Plan

Date	Name	Organization	Purpose of Visit	Time	
				In	Out

NO TRESPASSING

All visitors must sign in at field office

B&L Woodwaste Site
Pierce County, Washington

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

Construction Quality AssurancePlan
Phase 1 Part 1 Cleanup Action

Attachment 1G.2
Sample Forms for
Technical Documentation

FINAL

Field Site Inspection Checklist

Inspections of our field sites will be conducted periodically and as needed to identify potential hazards. Appropriate corrective action will be taken when hazards are identified. The following checklist will be used to facilitate the inspection. A check mark indicates that an item has been inspected and appears to present no hazard in the best judgment of the person conducting the inspection. An N/A indicates that the item is not applicable at the time of inspection. If an unsafe condition exists, corrective action will be documented on the Corrective Action Form that follows the checklists.

PROJECT NAME: B&L Woodwaste Site; Phase 1 Part 1 Cleanup Action Plan _____
_____

PROJECT NUMBER: 13488._____ PROJECT MANAGER: Tina Gary_____

LOCATION: Pierce County, Washington_____

INSPECTION CONDUCTED BY: _____

DATE OF INSPECTION: _____

1. TYPE OF FIELD PROJECT

____ Does field work involve investigating, monitoring, or remediating environmentally released hazardous wastes and thus require compliance with 29 CFR 1910.120 or Cal OSHA 5192 regulations? If yes, complete Sections 2 through 8.

____ Does field work involve being around construction activity, drilling, or heavy equipment? If yes, complete Section 9.

____ Does field work involve any excavation or trenching activities? If yes, complete Section 10.

_____ Does field work involve entering a confined space? If yes, complete Section 11.

_____ Does field work involve potential exposure to excessive noise (for example, indoor drilling, air percussion drilling, pile driving, etc.)? If yes, complete Section 12.

List any specific site hazards not covered above.

_____

_____

_____

_____ Is emergency information (location of nearest emergency medical facility and emergency phone numbers) readily available?

_____ Is a first-aid kit available at the field site?

2. SITE HEALTH AND SAFETY PLAN

_____ Is the site Health and Safety Plan (HASP) available on site?

_____ Does the HASP contain chemical information sheets for contaminants of concern at the site?

_____ Were health and safety briefings held before the start of field work?

_____ Were briefings documented as to content and attendance?

3. TRAINING AND MEDICAL MONITORING

_____ Do all employees working on site have documentation confirming 40-hour training and annual refresher updates?

_____ Do all employees working on site have documentation confirming participation in a periodic medical surveillance program?

_____ Have all employees working on site participated in a respiratory protection program and been fit-tested within the past year?

_____ Is at least one person on site currently certified in first aid/CPR?

_____ Have all employees working on site read the HASP, and do they understand site-specific hazards and requirements for site control, personal protective equipment, decontamination procedures, and emergency procedures?

_____ Is all above outlined documentation also available for all subcontractors working on site?

4. SITE CONTROL

_____ Are site control measures being implemented? Explain _____

_____

_____ Is there a site map available to employees?

_____ Are work zones clearly defined/boundaried?

_____ Are on-site communication systems available?

5. WORK PRACTICES AND PERSONAL PROTECTIVE EQUIPMENT (PPE)

_____ Does the HASP contain appropriate requirements for PPE?

_____ Are the PPE requirements that are outlined in the HASP being followed by all on-site personnel?

_____ Is PPE being properly handled, cleaned, and stored?

_____ Is used PPE being properly decontaminated or disposed of?

_____ Are appropriate work practices being followed by all on-site personnel?

_____ Is drinking water available on site?

6. AIR MONITORING

_____ Is air monitoring being conducted on site?

Purpose: _____

Type: _____

_____ Are the people performing air monitoring properly trained in using the instruments?

_____ Are air monitoring instruments being properly calibrated?

_____ Is information on instrument calibration, background readings, and work site readings being properly recorded in the field notes?

_____ Is air monitoring performed at appropriate times during site work (when new activities are begun, at new locations, at frequent enough intervals, etc.)?

7. DECONTAMINATION

_____ Are appropriate decontamination procedures outlined in the HASP?

_____ Are the decontamination procedures outlined in the HASP being followed?

_____ Are decontamination wastes being handled and disposed of properly?

8. EMERGENCY PROCEDURES

_____ Are emergency procedures outlined in the HASP?

_____ Are on-site personnel familiar with emergency procedures?

_____ Is the route to the nearest medical facility provided in the HASP?

_____ Is there an evacuation meeting place designated and known to on-site personnel?

_____ Are emergency phone numbers readily available?

_____ Is there a first-aid kit and fire extinguisher available on site?

9. PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR DRILLING OR CONSTRUCTION SITES

_____ Are field staff wearing hard hats and work boots?

_____ Is eye protection available and being worn around drilling rigs or other operating equipment?

_____ Is hearing protection available? In use?

_____ Is drinking water available on site?

10. EXCAVATION AND TRENCHING

_____ Does field work require anyone to enter trenches or excavations 5-feet deep or deeper?

_____ If so, has an OSHA permit been obtained, and are requirements of CCR Title 8 Sections 1504, 1539-1547 being met?

_____ Is a copy of the above regulations available at the site? (Note: Use a copy of the regulations to check that field work complies with the regulations.)

_____ Are employees wearing appropriate protective gear such as hard hats, work boots, safety glasses, and earplugs if needed?

11. CONFINED SPACE

_____ Does field work require entering a confined space?

_____ Has a confined space entry plan been developed to address air monitoring, ventilation, and surveillance requirements (CCR Title 8, Article 108)?

_____ Are requirements being met?

12. NOISE

_____ Are noise levels being measured and recorded in field notes?

_____ Are ear protectors available, and are employees properly fitted and instructed in their use?

Inspection Report and Corrective Action Form
Phase 1 Part 1 Cleanup Action

Location	Problem	Corrective Action

Perimeter Air Monitoring Log

PROJECT		Name: B&L Woodwaste Site	Number: 13488.				
PUMP		Manufacturer:	Model:				
Date	Time	Location / Comments	Air Volume (Liters)	Sampling Results			Operator Initials
				PCBs	Lead	Other	

Abbreviation:

PCB Polychlorinated biphenyl

Barrier Wall Excavation Log
Phase 1 Part 1 Cleanup Action

Date	Time	Station	GS elevation	Platform height (ft)	Platform elevation	Top of Key Layer		Bottom of Key	
						depth (ft)	elevation	depth (ft)	elevation

Abbreviations:

GS Ground surface
ft Feet

Trench Sounding Record
Phase 1 Part 1 Cleanup Action Plan

Station	Date	Time	Depth (feet)	Date	Time	Depth (feet)	Comments

Trench Sounding Record
Phase 1 Part 1 Cleanup Action Plan

Station	Date	Time	Depth (feet)	Date	Time	Depth (feet)	Comments

Trench Sounding Record
Phase 1 Part 1 Cleanup Action Plan

Station	Date	Time	Depth (feet)	Date	Time	Depth (feet)	Comments

Trench Sounding Record
Phase 1 Part 1 Cleanup Action Plan

Station	Date	Time	Depth (feet)	Date	Time	Depth (feet)	Comments

Trench Sounding Record
Phase 1 Part 1 Cleanup Action Plan

Station	Date	Time	Depth (feet)	Date	Time	Depth (feet)	Comments

Trench Sounding Record
Phase 1 Part 1 Cleanup Action Plan

Station	Date	Time	Depth (feet)	Date	Time	Depth (feet)	Comments

Trench Sounding Record
Phase 1 Part 1 Cleanup Action Plan

Station	Date	Time	Depth (feet)	Date	Time	Depth (feet)	Comments

Trench Sounding Record
Phase 1 Part 1 Cleanup Action Plan

Station	Date	Time	Depth (feet)	Date	Time	Depth (feet)	Comments

Solid Waste Disposal Tracking
Phase 1 Part 1 Cleanup Action

Shipment Date	Manifest No.	Estimated Weight (Ton)	Source Area	Material	Date Accumulated	Date Disposed	Certificate of Disposal	Actual Weight (Ton)

Waste Characterization Analytical Results
Part 1 Phase 1 Cleanup Action

Sample			Analytical Results (mg/kg)								Comments
Identification	Material	Date									