



Construction Quality Assurance Plan

Wetland Excavation and Surface Debris Mitigation

Wisconsin Department of Natural Resources

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Contents

1.	Introduction	1
2.	Responsibility and Authority	1
2.1	Owner	2
2.2	Authority	2
2.3	Construction Contractor	2
2.4	Design Engineer	2
2.5	Construction Quality Assurance Consultant	2
2.6	Construction Quality Assurance Officer	3
2.7	Licensed Land Surveyor	3
2.8	Testing Laboratory	3
2.9	Communication Strategy	3
2.10	Contractual Arrangements	3
3.	Documentation	4
3.1	Report Forms and Recordkeeping Documents	4
3.2	Problem Identification and Corrective Measures	4
3.3	Final Construction Documentation Report	4
4.	Project Meetings	5
4.1	Pre-Construction Meeting	5
4.2	Progress Meetings	5
4.3	Problem Resolution Meeting	5
5.	Earthworks – Material, Inspection, and Testing Requirements	6
5.1	Removal of Existing Vegetation	6
5.2	Excavation	6
5.3	Cover Soil	6
5.3.1	Cover Soil Material Requirements	6
5.3.2	Cover Soil Testing and Submittals	6
5.3.3	Cover Soil Placement	7
5.4	Drainage Sand Material	7
5.4.1	Drainage Sand Material Requirements	7
5.4.2	Drainage Sand Testing and Submittals	7
5.4.3	Drainage Sand Placement	8
5.5	Clay Material	8
5.5.1	Clay Material Requirements	8
5.5.2	Clay Testing and Submittals	8
5.5.3	Clay Placement	9
5.6	Topsoil Material	9
5.6.1	Topsoil Material Requirements	9
5.6.2	Topsoil Testing and Submittals	9
5.6.3	Topsoil Placement	10

Contents (cont'd)

6.	Confirmation Sampling	10
6.1.1	Confirmation Sampling Submittals	10
6.1.2	Confirmation Sampling Requirements	11
7.	Erosion and Sedimentation Controls	11
7.1	Erosion Control Blanket	11
7.1.1	Erosion Control Blanket Material Requirements	11
7.1.2	Erosion Control Blanket Submittals	11
7.1.3	Erosion Control Blanket Placement	11
7.2	Turf Reinforcement Matting	12
7.2.1	Turf Reinforcement Matting Material Requirements	12
7.2.2	Turf Reinforcement Matting Submittals	12
7.2.3	Turf Reinforcement Matting Placement	12
7.3	Slope Breaks	12
7.3.1	Slope Breaks Requirements	12
7.3.2	Slope Breaks Submittals	13
7.3.3	Slope Breaks Placement	13
8.	Remediation Construction	13
8.1	Monitoring Wells	13
8.1.1	Monitoring Well Submittals	13
8.1.2	Monitoring Well Requirements	13
8.1.3	Monitoring Well Installations	14
8.2	Fencing	15
8.2.1	Fencing Submittals	15
8.2.2	Fencing Requirements	15
8.2.3	Fencing Installations	16
9.	Restoration and Establishment of Vegetation	16
9.1	Material Requirements	17
9.1.1	Seed	17
9.1.2	Fertilizer	17
9.1.3	Mulch	17
9.2	Material Placement	17

Table index

Table 1.1	Summary of Construction Quality Assurance Inspections
Table 1.2	Summary of Construction Quality Assurance and Quality Control Tests
Table 1.3	Submittal Summary

Figure index

Figure 2.1 Project Organization Chart

Appendices

Appendix A Forms and Recordkeeping Document

1. Introduction

This Construction Quality Assurance (CQA) Plan has been prepared for the Penta Wood Products Superfund Site (Site) to meet the requirements of the Wisconsin Administrative Rules, and to ensure high quality wetland excavation and surface debris mitigation, and construction of various components associated with the remedial action at the Site. This CQA Plan establishes a program that will verify that work is performed in compliance with all design criteria and specifications in the Final Remedial Design Report and Contract Plans. This CQA Plan has been developed to supplement the specifications contained in the Final Remedial Design Report and will be implemented under direction of a CQA Officer.

Contract work at the Site will generally consist of the following:

- Clearing and grubbing of vegetation,
- Removing portion of existing CAMU fence,
- Installation of temporary soil erosion and sediment controls,
- Topsoil stripping and excavation of onsite borrow soil,
- Excavation of impacted wetland soil/sediment,
- Confirmation sampling of wetland,
- Relocation, placement, and grading of excavated wetland soil/sediment within CAMU,
- Cover material placement within CAMU,
- Fence relocation/extension around CAMU,
- Modification and installation of wells,
- Sawdust area cover placement and grading,
- Wood debris area cover placement and grading, and
- Restoration and vegetation establishment.

This CQA Plan will address the following components of the work:

- Earthworks material, inspection, and testing requirements for cover soil, drainage sand, clay, and topsoil materials,
- Vegetation removals,
- Confirmation sampling,
- Erosion and sedimentation controls,
- Remediation construction including monitoring wells and fencing, and
- Restoration and vegetation establishment.

CQA procedures for all remaining work items are provided in the specifications.

Summaries of the CQA inspections, tests, and submittals are presented following the text in Tables 1.1, 1.2, and 1.3, respectively.

2. Responsibility and Authority

This section contains a general description of the responsibility and authority of the parties involved in the project. All parties involved in the construction project shall comply with the responsibilities presented in this section. An organization chart and lines of communication are provided in Figure 2.1. All parties are responsible for establishment

of procedures and mechanisms for securing qualified resources for their respective roles and responsibilities during construction.

2.1 Owner

The Wisconsin Department of Natural Resources (WDNR) is the Site Owner. All contractors are directly responsible to WDNR. The Owner is responsible for awarding bids; coordinating communication for the project; scheduling and coordinating the work; and the resolution of all CQA issues. The Owner may, for all or for any portion of the work, designate an organization or individual to act as the Owner's Representative. An Owner's Representative is typically a Project/Construction Management Firm or Engineer who would coordinate the Owner's responsibilities. WDNR has designated GHD Services Inc. (GHD) as Owner's Representative.

2.2 Authority

WDNR is the Site Owner and has responsibility for design, construction, and operation of the facility. The Owner is responsible for completion of construction and for construction quality assurance and quality control (QA/QC). WDNR has final authority with respect to all phases of construction associated with this project. Each contractor shall be responsible for the supervision of their employees and the implementation of their own QA/QC program.

2.3 Construction Contractor

This organization will be one party. A Construction Contractor will be hired by the Owner to be responsible for the entire construction project, including hiring and managing subcontractors. WDNR has executed a contract with Rock Leaf Water Environmental LLC (RLW) to be the Construction Contractor. Prior to contract execution, WDNR confirmed that RLW met the following primary qualifications:

- Completed construction of one wetland excavation with contaminated soil/sediment removal project and one grading and clay cover placement project
- Has access to necessary equipment and has organizational and technical competence necessary to do the work
- Has experience within the past three years for working in contaminated environments
- Has established Health and Safety program in accordance with OSHA CFR 1910.120 regulations
- Provided detailed means and methods for completion of portions of the work to meet the construction schedule

2.4 Design Engineer

The Design Engineer is responsible for the project design and will prepare the project contract plans and specifications. The design will meet the Owner's operational and performance requirements for the Site and will comply, at a minimum, with the applicable requirements of Wisconsin Administrative Rules. The Design Engineer is also responsible for review, generation, and approval of all design and/or specification modifications that apply to the design. The Design Engineer shall be a professional with experience in environmental and civil engineering and construction projects. The Design Engineer reports directly to the Owner. The Design Engineer is GHD.

2.5 Construction Quality Assurance Consultant

The Construction Quality Assurance (CQA) Consultant is responsible for the implementation of the CQA Plan for the construction project. The CQA Consultant is GHD. The CQA Consultant will be responsible for construction monitoring to observe compliance with the approved plans and specifications. The CQA Consultant is responsible to observe and document the completion of each component of the construction prior to placement of the subsequent component. The CQA Consultant, at the direction of the Owner, may also be responsible for supplemental waste, soil, and/or geosynthetic material sampling and testing beyond the sampling and testing required of the Construction Contractor. Specific duties of the CQA Consultant include observation of construction materials, documentation of construction conditions, documenting that the construction is performed in substantial conformance with the approved engineering

plans and specifications at the locations observed, and preparation of a construction documentation report that documents the observations and testing associated with the construction.

The CQA Consultant will log and track inspections, testing, and submittals summarized in Tables 1.1, 1.2, and 1.3 with respect to specification requirements throughout the project. All submittals will be sequentially numbered for control. The CQA Consultant will review all Construction Contractor submittals to confirm adequacy, correctness, and completeness prior to acceptance and/or approval. A response to each submittal will be provided to the Construction Contractor with approval, rejection, and/or comments. The CQA Consultant will review monthly payment applications submitted by the Construction Contractor, which will include an accounting of actual quantities and respective unit prices. Current, previous, total, and remaining payment item quantities will be tracked on payment applications. Volume and area quantities will be measured and certified by the independent Licensed Land Surveyor. Increases to the Contract Price will only be authorized through execution of a Contract Directive.

The Construction Contractor is required to maintain all record documents at the Site. The CQA Consultant will manage and store all construction record documents electronically.

2.6 Construction Quality Assurance Officer

The Construction Quality Assurance (CQA) Officer shall be a professional with experience in environmental and civil engineering and construction projects. The CQA Officer is typically an employee of the CQA Consultant. The CQA Officer is responsible for overall coordination of documentation submitted in support of the CQA Plan. The CQA Officer is responsible for implementation of the CQA Plan and confirming that the facility components have been constructed in substantial conformance with the approved engineering plans and specifications. In addition, the CQA Officer will be responsible for assuring training needs are satisfied and recorded. Training for the Construction Contractor and subcontractor to meet the specification requirements will be documented through the submittal review process. The CQA Officer is Tim Ree of GHD.

2.7 Licensed Land Surveyor

The Licensed Land Surveyor shall provide equipment and personnel needed to perform surveying activities as required by the construction project. The Licensed Land Surveyor shall be licensed in the State of Wisconsin. The Licensed Land Surveyor, a subcontractor to RLW, is Bloom Enterprises.

2.8 Testing Laboratory

The Testing Laboratory is responsible for providing soil testing as required in the specifications. The Testing Laboratory shall be authorized in the State of Wisconsin. RLW plans to subcontract with two Testing Laboratories. Kilo Engineering will be responsible for clay, topsoil, and drainage sand testing. Eurofins Environment Testing will be responsible for chemical characterization and confirmation soil analyses.

2.9 Communication Strategy

Figure 2.1 illustrates the lines of communication. The communication strategy requires that the onsite Construction Contractor superintendent and Owner's Representative resident oversight engineer are the primary line of communication during construction. The Owner's Representative project manager will communicate routinely with the Owner project manager routinely during construction. The Construction Contractor and Owner's Representative project manager will communicate as needed during construction, primarily when potential changes may be necessary. The Owner project manager will communicate with the USEPA project manager.

2.10 Contractual Arrangements

Following a public bidding and solicitation process in general accordance with federal funding regulations, The Owner will enter into a contractual arrangement directly with the Construction Contractor. Prior to contract execution, the Owner will confirm Construction Contractor qualifications, project approach, price, and schedule are acceptable. The

Owner will also enter into a contractual arrangement with the Owner's Representative. The contracts include terms and conditions, forms, plans, and specifications. The contract for the Construction Contractor defines the Contract Price and Contract Times.

3. Documentation

3.1 Report Forms and Recordkeeping Documents

The CQA Consultant is responsible to prepare all field report forms, checklists and data sheets to substantiate that the required construction monitoring tasks have been implemented. Report forms will include Daily Observation Reports, Construction Bulletins, and Contract Directives included in Appendix A. Checklists and logs will be used to track required inspections, testing, and submittal summarized in Tables 1.1, 1.2, and 1.3.

All changes to the plans and specifications will be documented on a Construction Bulletin. Only changes that require an associated adjustment to the Contract Price and/or Contract Times will be documented in a Contract Directive executed by the Owner and Construction Contractor.

3.2 Problem Identification and Corrective Measures

A problem is defined as material or workmanship that does not meet the requirements of the approved engineering plans and specifications or any obvious defect in material or workmanship, even if there is conformance with the plans and specifications.

At a minimum, problem identification and corrective measure reports shall include the following information:

1. Introduction of the problem.
2. A description of the problem or deficiency, including additional sketches or photographs, if available, to adequately describe the problem.
3. A discussion of the probable cause of the problem or deficiency.
4. Reference to any test results or retests performed.
5. Detailed description of how and when the problem was identified.
6. Detailed description of measures implemented to resolve the problem and prevent recurrence.

3.3 Final Construction Documentation Report

Upon completion of the construction project, the CQA Consultant will prepare a final construction documentation report to the Owner. At a minimum, the final construction documentation report will contain the following information:

1. A description of the construction project and activities.
2. Record drawings to document elevations and locations of the construction project. All elevations shall be referenced to United States Geologic Survey (USGS) datum.
3. Laboratory samples collected and test results reported by the laboratory.
4. Summary of construction problems/deficiencies that were identified and resolutions of the problems/deficiencies.
5. Documentation that the project's engineering plans and specifications were met.

A certification by the CQA Officer that the construction meets the requirements of the approved engineering plans and specifications.

4. Project Meetings

4.1 Pre-Construction Meeting

After the Owner selects the contractor(s) for the construction project, and prior to initiation of any construction activities, a Preconstruction Meeting is conducted to review the scope of the project. The meeting will be attended by all involved parties as required in the specifications. Issues that are discussed and reviewed at this meeting include but are not limited to the following:

1. Designation of responsible personnel.
2. Lines of authority and communication.
3. Project overview.
4. Pre-mobilization requirements.
5. Health and Safety.
6. Use of the Site for storage, vehicle parking, access routes, and other Site requirements.
7. Owner's requirements.
8. Coordination with other Contractors and Owner.
9. Temporary facilities and controls provided by the Contractor.
10. Temporary utilities and services provided by Owner.
11. Field offices.
12. Survey and Site layout.
13. Security and housekeeping procedures.
14. Procedures for processing field decisions, submittals, substitutions, applications for payments, proposal requests, Field Orders, Work Change Directives, Change Orders, and closeout procedures.
15. Progress schedules.
16. Project meetings.
17. Procedures for testing and inspection.
18. Procedures for maintaining record documents.

The CQA Consultant will document the meeting.

4.2 Progress Meetings

Routine progress meetings are to be held at the jobsite and are attended by the Owner, the contractor(s), and the CQA Consultant. The meetings are conducted to review the construction progress of the previous week, the status of the project schedule, any construction problems/deficiencies and/or corrective actions, anticipated construction problems, and the proposed upcoming construction schedule. The CQA Consultant will track construction progress with respect to Contract Times.

Progress meetings will be held at a minimum weekly during active onsite work, as well as preceding major work items per the requirements of the specifications.

4.3 Problem Resolution Meeting

A problem/deficiency resolution meeting will be held on-site as necessary to review any construction problem that has been identified. The construction problem will be defined and discussed by appropriate parties. The intent of the meeting is to identify, isolate and resolve the construction problem to meet the project plans and specifications. This meeting shall be documented by the CQA Consultant.

5. Earthworks – Material, Inspection, and Testing Requirements

This section of the CQA Plan details the inspection and testing requirements related to the earthworks of the contract including:

- Stripping and disposal of vegetation.
- Excavation of wetland soil and sediment.
- Excavation of borrow soils.
- Installation of final cover materials including cover soil, drainage sand, imported clay, and topsoil.

A Quality Assurance Project Plan (QAPP) related to construction testing and sampling will be provided separately.

5.1 Removal of Existing Vegetation

In preparation for construction work, the Contractor will remove existing trees, shrubs, and other vegetation from construction areas. The cleared vegetation will be placed on the Site in locations that do not interfere with access to Site features.

The CQA Consultant will document and observe removal activities and verify that materials are being stockpiled/disposed in the appropriate locations.

5.2 Excavation

Excavation work will be carried out to remove impacted soil and sediment from the wetland at properties located adjacent to the Site and to provide borrow soils suitable for drainage sand and debris cover soil.

Two classes of excavation will be performed: common borrow soil excavation and wetland excavation. Onsite borrow soil will be excavated and used as a drainage sand layer over the clay and excavated wetland soil/sediment placement area and as cover soil over the debris areas. Wetland excavation work will be performed in the winter to remove impacted soil and sediment from the wetland adjacent to the Site.

The CQA Consultant will document and observe excavation activities and will verify that work is being carried out to the lines, levels, and per the specifications. Material requirements will be discussed in the sections below.

5.3 Cover Soil

Soil is to be excavated from the onsite borrow area and used for debris cover soil and grading purposes over the debris areas. The Contractor will be responsible for providing Cover Soil to the necessary requirements provided in the specifications.

5.3.1 Cover Soil Material Requirements

Cover Soil materials must meet the following requirements:

1. Excavated from the onsite borrow area, sand and/or silt, free of organics, foreign material, and rocks larger than 6 inches.

5.3.2 Cover Soil Testing and Submittals

Contractor will be required to provide the following submittals for review by the CQA consultant:

1. Test results for source testing.

The Contractor will be required to perform source testing for Cover Soil materials per the specifications as follows:

Source Testing

1. One (1) sample per 1,000 cubic yards of excavated cover soil salvaged from Site
 - a. Maximum dry density and optimum moisture content (ASTM D698).
 - b. Moisture content (ASTM D2216).
 - c. Particle size analysis as appropriate to material being tested (ASTM D422 or ASTM C117 and ASTM C136).
 - d. Hydraulic conductivity as appropriate to material being tested (ASTM D2434 or ASTM D5084).

CQA Consultant to verify that all material test results meet the specification requirement.

5.3.3 Cover Soil Placement

Cover Soil will be placed, graded, and compacted by the Contractor in areas according to the plans and specifications. The Contractor will perform the following:

1. Obtain ENGINEER's approval prior to placing fill.
2. Prior to placing fill over existing ground, scarify surface to depth of 6 inches. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
3. Fill areas to contours and elevations with unfrozen materials.
4. Place fill material in continuous layers and compact in maximum 12-inch lifts.
5. Place cover soil in 18-inch-thick layer in designated areas over surface debris.
6. Compact in three passes using 20,000-pound smooth drum vibratory roller.
7. Make grade changes gradual. Blend slop into level areas.

CQA Consultant will observe placement and compaction of Cover Soil materials to verify the requirement of the specifications are met.

5.4 Drainage Sand Material

Soil is to be excavated from the onsite borrow area and used for Drainage Sand over clay in the CAMU area. The Contractor will be responsible for providing Drainage Sand to the necessary requirements provided in the specifications.

5.4.1 Drainage Sand Material Requirements

Drainage Sand materials must meet the following requirements:

1. Excavated from the onsite borrow area, fine to coarse grained sand with silt, free of organics, foreign material, and rocks larger than 3 inches.

5.4.2 Drainage Sand Testing and Submittals

Contractor will be required to provide the following submittals for review by the CQA consultant:

1. Test results for source testing.

The Contractor will be required to perform source testing for Drainage Sand materials per the specifications as follows:

Source Testing

1. One (1) sample per 1,000 cubic yards of excavated drainage sand salvaged from Site
 - a. Classification of soil (ASTM D2487)
 - i. Group Symbol: SC, SM, SW-SC, SP-SM, or SP-SC

- b. Maximum dry density and optimum moisture content (ASTM D698).
- c. Moisture content (ASTM D2216)
- d. Particle size analysis as appropriate to material being tested (ASTM D422 or ASTM C117 and ASTM C136)
 - i. Sieve size percent passing by weight
 - 1. 3/8 inch 100
 - 2. No. 200 2 maximum
- e. Hydraulic conductivity as appropriate to material being tested (ASTM D2434 or ASTM D5084)

CQA Consultant to verify that all material test results meet the specification requirement.

5.4.3 Drainage Sand Placement

Drainage Sand will be placed, graded, and compacted by the Contractor in areas according to the plans and specifications. The Contractor will perform the following:

1. Place sand drainage in 18-inch-thick layer in designated areas over clay to lines and grades shown on Drawings.
2. Fine grade, eliminating rough or low areas. Maintain levels, profiles, and contours of subgrade.
3. Lightly compact or roll placed sand drainage.

CQA Consultant will observe placement and compaction of Drainage Sand materials to verify the requirement of the specifications are met.

5.5 Clay Material

Clay is to be imported and placed over excavated wetland soils/sediments in the CAMU area. The Contractor will be responsible for providing Clay to the necessary requirements provided in the specifications.

5.5.1 Clay Material Requirements

Clay materials must meet the following requirements:

1. Imported clay, free of rocks larger than 2 inches, organic matter, foreign matter, inorganic clays of high plasticity in accordance with ASTM D2487, swelling clays, or very soft clays.

5.5.2 Clay Testing and Submittals

Contractor will be required to provide the following submittals for review by the CQA consultant:

1. Test results for source testing.

The Contractor will be required to perform source testing for Clay materials per the specifications as follows:

Source Testing

1. One (1) sample per 1,000 cubic yards of material
 - a. Classification of Soil (ASTM D2487)
 - i. Group Symbol: CL
 - b. Grain Size (ASTM D422)
 - i. Percent passing No. 200 sieve greater than or equal to 30
 - c. Plasticity Index (ASTM D4318)
 - i. Greater than or equal to 15
 - d. Liquid Limit (ASTM D4318)
 - i. Greater than or equal to 30

- e. Permeability (ASTM D5084)
 - i. Compactable to a density and moisture necessary to achieve an in-place permeability of not more than 1×10^{-6} cm/s
- f. Chemical Characterization: One sample per source

Parameter	Extraction/Preparation (EPA SW-846)	Analysis (EPA SW-846)
Target Compound List Volatile Organic Compounds	5035	8260B
Target Compound List Semi-volatile Organic Compounds	3540C/3550B	8270C
Pesticides	3540C/3550B	8081A
Polychlorinated Biphenyls	3540C/3550B	8082
Herbicides	3540C/3550B	8151A
Target Analyte List Metals	3050B or 3051	6010B/7000 Series
Cyanide	9013	9010 or 9012A

CQA Consultant to verify that all material test results meet the specification requirement.

5.5.3 Clay Placement

Clay will be placed, graded, and compacted by the Contractor in areas according to the plans and specifications. The Contractor will perform the following:

1. Place clay in 24-inch-thick layer in designated area over relocated impacted soil from wetland excavation to lines and grades shown on Drawings.
2. Fine grade, eliminating rough or low areas. Maintain levels, profiles, and contours of subgrade.
3. Compact clay in 12-inch lifts with three passes of 20,000-pound vibratory roller.

CQA Consultant will observe placement and compaction of Clay materials to verify the requirement of the specifications are met.

5.6 Topsoil Material

Topsoil is to be imported and placed over areas where seeding is scheduled. The Contractor will be responsible for providing topsoil to the necessary requirements provided in the specifications.

5.6.1 Topsoil Material Requirements

Topsoil materials must meet the following requirements:

1. Imported friable loam, free of subsoil, roots, grass, weeds, stones, and foreign matter.

5.6.2 Topsoil Testing and Submittals

Contractor will be required to provide the following submittals for review by the CQA consultant:

1. Test results for source testing.

The Contractor will be required to perform source testing for Topsoil materials per the specifications as follows:

Source Testing

1. One (1) sample per 500 cubic yards of material
 - a. pH (ASTM D4972)
 - i. pH range 5.5 to 7.5
 - b. Organic Matter (ASTM D2974)
 - i. Containing 3 percent to 25 percent organic matter
 - c. Grain Size (ASTM D422)
 - d. Nitrogen, phosphorus, and potassium content
 - e. Chemical Characterization: One sample per source

Parameter	Extraction/Preparation (EPA SW-846)	Analysis (EPA SW-846)
Target Compound List Volatile Organic Compounds	5035	8260B
Target Compound List Semi-volatile Organic Compounds	3540C/3550B	8270C
Pesticides	3540C/3550B	8081A
Polychlorinated Biphenyls	3540C/3550B	8082
Herbicides	3540C/3550B	8151A
Target Analyte List Metals	3050B or 3051	6010B/7000 Series
Cyanide	9013	9010 or 9012A

CQA Consultant to verify that all material test results meet the specification requirement.

5.6.3 Topsoil Placement

Topsoil will be placed, graded, and compacted by the Contractor in areas according to the plans and specifications. The Contractor will perform the following:

1. Place topsoil in 6-inch-thick layer in areas where seeding is scheduled.
2. Fine grade, eliminating rough or low areas. Maintain levels, profiles, and contours of subgrade.
3. Remove large stone, roots, grass, weeds, debris, and foreign material while spreading.
4. Lightly compact or roll placed topsoil.
5. Leave stockpile area and the Site clean and raked, ready to receive landscaping.

CQA Consultant will observe placement and compaction of Topsoil materials to verify the requirement of the specifications are met.

6. Confirmation Sampling

Following excavation of wetland soil/sediment, confirmation samples will be collected and compared to USEPA criteria.

6.1.1 Confirmation Sampling Submittals

Contractor shall provide the following submittals:

- a. Submit chemical analytical results for confirmation samples within 24 hours of receiving laboratory results.

6.1.2 Confirmation Sampling Requirements

CQA Consultant will verify that confirmation samples collected are as specified:

1. Wetland excavation sidewall samples will be collected from each 5-foot vertical interval with a maximum 100-foot horizontal spacing.
2. The bottom of the wetland excavation will be sampled at a frequency of one sample per 5,000-square foot area.
3. Samples will be submitted for laboratory analysis of pentachlorophenol (PCP) by EPA SW-846 method 8270C. Concentrations of PCP in material to remain at the Site must meet USEPA criteria of 900 µg/kg.

7. Erosion and Sedimentation Controls

This section of the CQA Plan will address the material requirements and installation of erosion and sedimentation controls at the Site.

7.1 Erosion Control Blanket

Erosion control blanket is to be used to meet general stormwater permit requirements.

7.1.1 Erosion Control Blanket Material Requirements

Erosion control blanket materials must meet the following requirements:

1. WisDOT Class II Type B or C medium duty coconut erosion mat
2. One hundred percent mattress grade coconut fiber mechanically bound and covered on both sides by netting. The coconut fiber shall be homogeneously blended and evenly distributed throughout the blanket.
3. UV stabilized polypropylene netting with mesh openings of approximately 5/8 inch by 5/8 inch.
4. The blanket shall be sewn on approximately 2-inch by centers with UV stabilized polypropylene thread.

7.1.2 Erosion Control Blanket Submittals

Contractor will be required to provide the following submittals for review by the CQA consultant:

1. Product Data.
2. Samples: A representative Sample at least 12 inches by roll width no later than 10 days prior to ordering.
3. Manufacturer's instructions.
4. Daily Field Installation Report.
5. Layout Drawings.

7.1.3 Erosion Control Blanket Placement

Erosion control blankets will be placed by the Contractor in areas according to the plans and specifications. The Contractor will perform the following:

1. Ensure surface is free from exposed rocks and protrusions.
2. Install erosion control blanket according to manufacturer's instructions.
3. Place individual sheets and/or strips side by side without gaps.
4. Lay smooth and free of tension, stress, folds, wrinkles, or creases.

5. Anchor the outside edge of all matting within a 6-inch-deep trench and anchor with staples according to manufacturer's instructions.

CQA Consultant will verify erosion control blankets are installed as specified.

7.2 Turf Reinforcement Matting

Turf reinforcement matting (TRM) is to be used to meet general stormwater permit requirements.

7.2.1 Turf Reinforcement Matting Material Requirements

TRM materials must meet the following requirements:

1. WisDOT Class III Type D heavy duty synthetic turf reinforcement mat.
2. TRM shall be designed for erosion control applications on steep slopes and vegetated waterways. The matrix shall be composed of polypropylene monofilament yarns woven into a uniform configuration of resilient pyramid-like projections. The material shall exhibit very high interlock and reinforcement capacity with soil and root systems.

7.2.2 Turf Reinforcement Matting Submittals

Contractor will be required to provide the following submittals for review by the CQA consultant:

1. Product Data.
2. Samples: A representative Sample at least 12 inches by roll width no later than 10 days prior to ordering.
3. Manufacturer's instructions.
4. Daily Field Installation Report.
5. Layout Drawings.

7.2.3 Turf Reinforcement Matting Placement

TRM will be placed by the Contractor in areas according to the plans and specifications. The Contractor will perform the following:

1. Ensure surface is free from exposed rocks and protrusions.
2. Do not place matting on areas softened by rainfall and which shall not support equipment.
3. Install TRM according to manufacturer's instructions.
4. Place individual sheets and/or strips side by side without gaps.
5. Lay smooth and free of tension, stress, folds, wrinkles, or creases.
6. Anchor the outside edge of all matting within a 6-inch-deep trench and anchor with staples according to manufacturer's instructions.

CQA Consultant will verify TRM are installed as specified.

7.3 Slope Breaks

Slope breaks are to be used to meet general stormwater permit requirements.

7.3.1 Slope Breaks Requirements

Slope breaks must meet the following requirements:

1. Wisconsin Technical Standard 1071.

2. Slope breaks shall consist of Class II biorolls placed perpendicular to slopes with grades of 20:1 (horizontal:vertical) or more at a spacing of not more than 50 feet.

7.3.2 Slope Breaks Submittals

Contractor will be required to provide the following submittals for review by the CQA consultant:

1. Product Data.
2. Samples: A representative Sample at least 12 inches by roll width no later than 10 days prior to ordering.
3. Manufacturer's instructions.
4. Daily Field Installation Report.
5. Layout Drawings.

7.3.3 Slope Breaks Placement

Slope breaks will be installed by the Contractor in areas according to the plans and specifications. The Contractor will perform the following:

1. Ensure surface is free from exposed rocks and protrusions.
2. Install biorolls by trenching into disturbed ground surface 2 inches. Overlap minimum of 24 inches and stake in according to manufacturer's instructions.

CQA Consultant will verify slope breaks are installed as specified.

8. Remediation Construction

This section of the CQA Plan includes remedial construction to be performed including installation/modification of monitoring wells and relocation of existing fencing.

8.1 Monitoring Wells

Following placement of excavated oil/sediment at the CAMU, two wells casing will be extended and a new well will be installed.

8.1.1 Monitoring Well Submittals

Contractor shall provide the following submittals:

1. Product Data: Include for well casing, well screen, riser, silica sand, and grout.
2. Material Safety Data Sheets (MSDSs) as appropriate for any materials brought to the Site.
3. Driller Qualifications:
 - a. Proof of State of Wisconsin license to perform drilling work.
 - b. Resume and proof of State of Wisconsin certification for drill operator.

8.1.2 Monitoring Well Requirements

CQA Consultant will verify that monitoring well materials provided are as specified:

1. Well Riser: ASTM D1785 Schedule 40, PVC, 2-inch ID.

2. Protective Surface Seal: ASTM A53/A53M Schedule 40, carbon steel, 4-inch ID surface casing and a lockable cap welded to a hinge with the hasp welded directly to the side of the surface cavity. Lockable cap of same materials as surface casing, equipped with PVC J-plug, 2-inch ID.
3. Cement: ASTM C150, Type I, Portland cement.
4. Well screen: ASTM D1785 Schedule 80, PVC 2-inch; screen length 20 feet and 0.010-inch slots, threaded and flush coupled joint.
5. Silica sand.
6. Inert, uniformly graded, well rounded, and free of fines.
7. Gradation: containing no more than 10 percent of sand grains finer than screen slot size.
8. Bentonite Grout.
9. Mixture of Volclay or Benseal; ratio of 2.1 pounds of bentonite with 1 US gallon of water to yield a minimum density of 9.4 pounds per US gallon.
10. Bentonite Chips: Chipped sodium montmorillonite furnished in sacks or buckets, free of impurities, from a commercial source; with chip diameter less than 1/5 the width of the annular space into which they are placed.
11. Water: When used in equipment decontamination, drilling, and well construction including cleaning, grouting, or other activities, water shall be clean, potable, and obtained from a source supplied by Contractor.

8.1.3 Monitoring Well Installations

CQA Consultant will observe monitoring well drilling and well installations. CQA inspections and monitoring of installations will be as follows:

1. Verify Site conditions can support drilling equipment.
2. Verify locations have been marked by Engineer, and Engineer has authorized well installation to proceed.
3. Verify specified ground cover is installed at each location prior to drilling (sheeting).
4. Verify drill rig and down-hole equipment has been pre-cleaned and decontaminated appropriately prior to drilling and between boreholes. Ensure all cleaning is performed at equipment decontamination pad.
5. Install monitoring well using Rotasonic drilling methods.
6. Modify two existing monitoring wells to extend risers to final elevation 2 feet above final ground surface.
7. Maintain monitoring well opening and casing free from contaminating materials.
8. Advance borehole using 6-inch OD borehole to 10 feet below groundwater table as directed by Engineer.
9. Attach monitoring well screen and bottom plug to monitoring well riser pipe by threaded flush joint couplers and lower through drill casing to the desired screened interval, as directed by Engineer. Screen interval shall be extended from 10 feet below to 10 feet above groundwater table. Take precautions to prevent damage to threaded joints during installation.
10. Extend riser pipe above grade and cap temporarily to deter entrance of foreign materials during overburden monitoring well completion.
11. Install silica sand pack, bentonite grout seal, and grout in accordance with specifications and drawings.
12. Center a protective surface casing over the riser and extend into the bentonite grout a minimum of 2 feet and stickup 3 feet above ground surface.
13. Weld a locking cap mechanism to the protective casing.
14. Verify Contractor logs agree with CQA logs for depth of drilling and well construction details.
15. Ensure wells are allowed to set for a minimum of 24 hours prior to development.
16. Verify development is performed in accordance with Engineer-approved procedures.
17. Develop wells until representative water, free of drilling fluids, cuttings, or other materials introduced during well installation is obtained.
18. Verify installation of protective surface casing.

19. Verify cuttings and drilling generated waste is collected, containerized, and relocated on the Site as directed by Engineer.

8.2 Fencing

The existing fence along the northeast side of the CAMU will be replaced and extended after completion of the work to provide security around the CAMU and excavated wetland soil/sediment.

8.2.1 Fencing Submittals

Contractor shall provide the following submittals:

1. Product Data: Submit data on fabric, posts, accessories, fittings, and hardware.
2. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.
3. Qualifications:
 - a. Manufacturer specializing in manufacturing products specified in this section with minimum 3 years' experience.
 - b. Installer specializing in performing work of this section with minimum 3 years' experience.

8.2.2 Fencing Requirements

CQA Consultant will verify that fencing materials provided are as specified:

1. Materials and Components: Conform to CLFMI Product Manual.
2. Fabric Size: CLFMI Light Industrial service.
3. Intermediate Posts: Type I round.
4. Terminal, Corner, Rail, Brace, and Gate Posts: Type I round.
5. Concrete: Portland cement.
6. Components:
 - a. Line Posts: 2.38-inch diameter.
 - b. Corner and Terminal Posts: 4.0-inch diameter.
 - c. Gate Posts: 4.0-inch diameter.
 - d. Top and Brace Rail: 1.66-inch diameter, plain end, sleeve coupled.
 - e. Gate Frame: 1.66-inch diameter fabrication.
 - f. Fabric: 1.75-inch diamond mesh interwoven wire, 11 gauge thick, top, and bottom salvage knuckle and closed.
 - g. Tension wire: 6-gauge thick steel, single strand, marcelled, spiralled, or crimped, aluminum-coated tension wire conforming to ASTM A824.
 - h. Tie Wire: Aluminum alloy steel wire.
7. Accessories:
 - a. Caps: Cast steel or pressed steel galvanized; sized to post diameter; set screw retainer.
 - b. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners, and fittings; galvanized steel.
 - c. Gate Hardware: Fork latch with gravity drop man gates. Center gates stop and drop rod double gates; 180-degree gate hinges for each leaf.
8. Gates:
 - a. Factory assembled gates.
 - b. Design gates for operation by one person.

- c. Fabricate to permit 180-degree swing.
 - d. Gates Construction: ASTM F900, with welded corners. Use of corner fittings is not permitted.
9. Finishes:
- a. Components galvanized to ASTM A123/A123M
 - b. Hardware galvanized to ASTM A153/A153M
 - c. Fabric galvanized to ASTM A392
 - d. 2.0 ounces/sq ft coating
10. Maximum variation from plumb: 1/4 inch.
11. Maximum offset from indicated position: 2 inches.

8.2.3 Fencing Installations

CQA Consultant will observe fencing installations. CQA inspections and monitoring of installations will be as follows:

1. Install framework, fabric, accessories, and gates according to ASTM F567.
2. Set corner, gate, and terminal posts plumb, in concrete footings 6 inches below finish grade.
3. Line Post Footing Depth Below Finish Grade: 4 feet.
4. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: 4 feet.
5. Brace each gate and corner post to adjacent line post with horizontal center brace rail. Install brace rail one bay from end and gate posts.
6. Install top rail through line post tops and splice with 6-inch-long rail sleeves.
7. Install center and bottom brace rail on corner gate leaves.
8. Place fabric on outside of posts and rails.
9. Do not stretch fabric until concrete foundation has cured 28 days.
10. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.
11. Position bottom of fabric 2 inches above finished grade.
12. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches o.c.
13. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.
14. Install bottom tension wire stretched taut between terminal posts.
15. Support gates from gate posts. Do not attach hinged side of gate from building wall.
16. Install gate with fabric to match fence. Install three hinges on each gate leaf, latch, and catches.
17. Connect to existing fence at terminal post.
18. Excavate holes for posts to diameter and spacing shown on the Drawings without disturbing underlying materials.
19. Center and align posts. Place concrete around posts and vibrate or tamp for consolidation. Verify vertical and top alignment of posts and make necessary corrections.
20. Extend concrete footing 1 inch above grade, and trowel, forming crown to shed water.
21. Allow footings to cure minimum 7 days before installing fabric and other materials attached to posts.

9. Restoration and Establishment of Vegetation

Disturbed Site areas will require restoration/vegetation establishment unless the plans and specifications indicate an alternative final surface. Vegetation establishment will include application of topsoil, seed, fertilizer, and erosion control

blanket in all disturbed areas. CQA for the topsoil application is included in Section 5.6.3. CQA for the erosion control blanket is included in Section 7.1.3. The CQA Consultant will ensure that the remaining materials (seed, fertilizer, etc.) meet product specifications and are installed in accordance with the specifications.

9.1 Material Requirements

The Contractor will be required to submit seed certificates and fertilizer certificates to verify that products supplied to the Site meet the specifications.

The CQA Consultant shall inspect all material delivered to the Site to ensure materials meet all specification. Details of seed, fertilizer, and mulching requirements are provided in the following sections.

9.1.1 Seed

Seed Mixture requirements are as follows:

1. Seed Mixture No. 20, Table 630-1 of Standard Specifications. Replace perennial ryegrass with blue grama grass in Seed Mixture No. 20.

9.1.2 Fertilizer

Fertilizer requirements are as follows:

1. Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil, as indicated in analysis.

9.1.3 Mulch

Mulch requirements are as follows:

1. Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

9.2 Material Placement

The Contractor shall place all restoration/vegetation establishment materials as follows:

2. Verify that prepared soil base is ready to receive the work.
3. Apply fertilizer at application rate recommended by soil analysis.
4. Do not apply fertilizer at same time or with same machine used to apply seed.
5. Mix fertilizer thoroughly into upper 2 inches of topsoil.
6. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.
7. Apply seed at rate of 3 pounds/1,000 sq ft evenly in two intersecting directions. Rake in lightly.
8. Do not seed areas in excess of that which can be mulched on same day.
9. Planting Season: June through September.
10. Apply water with fine spray immediately after each area has been mulched or covered with erosion controls.
11. Cover seeded areas and slopes where grade is less than 5:1 (horizontal:vertical) or greater with mulch at a rate of 2,000 pounds per acre.
12. Cover seeded slopes where grade is 5:1 (horizontal/vertical) or greater with erosion control blanket. Roll fabric onto slopes without stretching or pulling. Refer to Section 7.1.3.
13. Cover seeded areas within concentrated surface water flow areas with turf reinforcement mat as directed by ENGINEER. Refer to Section 7.2.3.
14. Lay fabric smoothly on surface, bury top end of each section in 6-inch-deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.

15. Secure outside edges and overlaps at 36-intervals intervals with stakes.
16. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
17. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

Tables

Table 1.1

**Summary of Construction Quality Assurance Inspections
Wetland Excavation and Surface Debris Mitigation
Penta Wood Products Superfund Site
Siren, Wisconsin**

Project Specification#	Key Work Task Component to be Inspected	Key Items to be Checked During Inspection	Type of Inspection	Frequency of Inspection	Contractor Submittals to GHD
01 50 00	<u>TEMPORARY FACILITIES AND CONTROLS</u>				
	• Temporary Utilities	• Have temporary utilities been provided as specified (electric, water, internet, portable radios, heat, fire protection)	• Check Specification • Visual	• Periodic during installation	• None
	• Temporary Construction Facilities (Field offices, first aid, sanitary, storage, etc.)	• Have temporary construction facilities been provided as specified? (Engineer field office and shed, Contractor field office and shed, decontamination facilities, first aid facilities, sanitary facilities, drum and bulk waste storage facility, storage/stockpiling areas, equipment mats/decking, and wastewater storage)	• Check Specification • Visual	• Periodic during installation	• Submittals of all facilities for Engineer review
	• Access Roads and Parking	• Have temporary access roads and parking areas been constructed as specified? • Have roads (temporary and permanent) been maintained as necessary?	• Check Specification • Visual • Visual	• Periodic during installation • Periodic during construction	• None • None
	• Temporary Barriers and Enclosures	• Are all necessary barriers to prevent unauthorized access in place and meet specifications? • Is exclusion zone fencing provided as required? • Is the specified security in place throughout the works	• Check Specification • Check specification • Visual • Check specification	• Periodic during construction • During installation • Periodic during construction	• None • None • None
	• Water Control	• Excavations maintained free of water • Site graded accordingly to direct surface and storm water? • Collecting decontamination water, and potentially contaminated water as required?	• Visual • Visual • Visual	• Daily • Daily • Daily	• None • None • None
	• Dewatering	• Are dewatering procedures in place in accordance with specifications	• Visual • Check specification 31 23 16	• Daily	• None
	• Erosion and Sediment Control	• Are erosion and sediment control devices in place in accordance with specifications?	• Visual • Check specification 01 57 13	• Periodic during control	• None
	• Noise Control	• Are methods, means, and facilities in place to minimize noise produced by construction activities?	• Visual	• Periodic during construction	• None
	• Dust and Particulate Control	• Do dust and particulate control measures meet specifications (truck covers, waters, etc.)?	• Visual	• Periodic during control	• None
	• Pollution Control	• Are equipment and procedures in place to prevent soil, water, and atmospheric contamination from toxic substances and pollutants produced by operations?	• Check specifications • Visual	• Periodic during construction	• None
	• Decontamination	• Is decontamination facility constructed as specified? • Has all equipment that has come in contact with potentially contaminated material been decontaminated as specified?	• Check specification • Visual - for mud, dirt, grit, debris, etc. • Review decontamination log	• Periodic during installation • Periodic during construction	• None • None

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Project Specification#	Key Work Task Component to be Inspected	Key Items to be Checked During Inspection	Type of Inspection	Frequency of Inspection	Contractor Submittals to GHD
	• Demobilization and Restoration	• Have temporary facilities and controls been removed accordingly? • Has damage caused by temporary facilities and works been restored per specifications • Have existing facilities used during construction been restored to original and functional condition?	• Visual • Visual • Visual	• Following removal of facilities • During demobilization activities • Following removal of facilities	• None • None • None
01 57 13	<u>TEMPORARY SOIL EROSION AND SEDIMENT CONTROL</u>				
	• Products (silt fence, swales, ditch checks, sediment traps)	• Do temporary control products meet specifications?	• Visual • Compare to specifications	• Upon delivery to site/construction	• Product Data
	• Examination	• Are Site conditions ready to receive work? • Are controls scheduled to be installed appropriately based on the existing drainage patterns?	• Visual • Visual	• Prior to work • Prior to work	• None • None
	• Installation/Maintenance	• Have erosion/sediment control measures been installed per specifications and Contractor SWPPP/Stormwater Permit? • Are control measures performing adequately and being inspected as required?	• Visual • Check specifications/SWPPP • Visual • Confirm Contractor inspections	• Following Installation • Weekly to verify Contractor's daily inspections	• Erosion Control and Stormwater Management Plan • Stormwater Permit • Daily inspection reports
01 70 00	<u>EXECUTION AND CLOSEOUT REQUIREMENTS</u>				
	• Pre-Construction Inspection	• Pre-construction conditions to verify condition of site	• Visual with Contractor	• Prior to construction	• Pre-construction inventory
	• Field Surveying	• Has Pre-construction survey been completed and agreed on by Engineer and Contractor	• Visual • Review survey	• Prior to construction	Topographic survey prepared by Contractor's surveyor
	• Restoration	• Have all disturbed areas been restored per specifications? • Has all damaged pavement been restored per specifications?	• Visual/check specifications • Visual	• During/following restoration • During/following restoration	• None • None
	• Final Cleaning	• Has final cleaning been completed as specified	• Visual	• During/following cleaning	• None
	• Final Decontamination	• Has final decontamination been completed in accordance with section 01 50 00?	• Visual • Review decontamination log	• Following decontamination	• None
	• Removal and Disposal	• Have all surplus materials, debris, litter, and rubbish been disposed of or removed from the Site as specified?	• Visual	• Following construction	• None
	• Protection	• Is all installed work protected, including special protections where specified?	• Visual • Check specifications	• Following construction	• None
31 10 00	<u>SITE CLEARING</u>				
	• Examination	• Pre-construction conditions to verify condition of site. Ensure designated plant life is tagged.	• Visual	• Prior to construction	• None

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Wetland Excavation and Surface Debris Mitigation
Penta Wood Products Superfund Site
Siren, Wisconsin**

Project Specification#	Key Work Task Component to be Inspected	Key Items to be Checked During Inspection	Type of Inspection	Frequency of Inspection	Contractor Submittals to GHD
	• Preparation	• Ensure underground utilities are located and marked in and around construction areas.	• Visual	• Prior to construction	• None
	• Protection	• Ensure that utilities, trees, plant growth, survey control points, and existing structures are protected from damage in accordance with the Drawings	• Visual • Check Drawings	• Prior to and during clearing/grubbing	• None
	• Clearing and Grubbing	• Has clearing and grubbing been completed as specified	• Visual • Check Drawings	• During and following clearing/grubbing	• None
	• Removal	• Has all debris, rock, and extracted plant life been managed onsite or removed from the site as specified?	• Visual	• Following clearing and grubbing	• None
31 23 16	<u>EXCAVATION</u>				
	• Preparation	• Verify survey reference points and intended elevations • Verify utilities have been located, marked, or cleared • Verify structures, utilities, plant life, or facilities to remain are marked and protected	• Visual • Visual • Visual • Refer to Excavation + Soil Management Plan	• Prior to excavation • Prior to excavation • Prior to excavation	• None • Utility clearance documentation • None
		• Verify surface water controls are in place to direct water away from the excavation	• Visual • Check specifications	• Prior to and during excavation	• None
	• Wetland Excavation	• Ensure excavation is completed to grades specified and banks are sloped as shown on the Drawings. • Is the top perimeter of the excavation graded to prevent surface water from draining into the excavation? • Verify excavated soil is stockpiled within the wetland as specified and protected from erosion when not being moved.	• Visual • Check Drawings • Visual • Visual	• During and following excavation • Following excavation • Following excavation	• None • None • None
		• Verify slopes are maintained at a maximum of 1.5:1	• Visual/measurement	• During excavation	• None
	• Confirmation Sampling	• Ensure samples are collected at frequency specified • Ensure samples meet USEPA criteria (900 µg/kg) for all materials to remain at Site.	• Visual/measurement • Check laboratory reports	• During excavation • Following excavation	• None • Laboratory reports
	• Borrow Soil Excavation	• Ensure borrow soil is excavated from specified area, which is sloped and graded as shown on Drawings after excavation	• Visual • Check Drawings	• During and following excavation	• None
		• Ensure borrow soil stockpile is in designated area and protected from erosion	• Visual	• Following excavation	• None
	• Stockpiling	• Ensure stockpiles are located and constructed in accordance with specifications. (1.5:1 maximum slope)	• Visual/measurement	• During excavation	• None
	• Impacted Soil and Cover Soil Placement	• Ensure fill material and cover soil is placed as specified (maximum 12-inch lifts of fill material, 18-inch cover soil layer), compacted as specified, and graded to blend into the existing slope.	• Visual	• During installation	• None

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Project Specification#	Key Work Task Component to be Inspected	Key Items to be Checked During Inspection	Type of Inspection	Frequency of Inspection	Contractor Submittals to GHD
	• Grading	• Have levels, profiles, and contours been graded as shown on the Drawings?	• Visual • Check Drawings	• During installation	• None
	• Clay and Sand Drainage Placement	• Ensure the clay and sand drainage is placed as specified (24-inch thick clay layer, 18-inch thick sand drainage layer) on Drawings, and compacted as specified.	• Visual • Check Drawings	• During installation	• None
	• Topsoil placement	• Ensure topsoil is placed and graded as specified (6-inch thick layer) and is left clean, raked, and ready to be landscaped.	• Visual •	• During installation	• Imported topsoil physical information and chemical analysis results
	• Protection	• Ensure structures, utilities, and other facilities are protected from damage caused by settlement, lateral movement, undermining, washout, and other hazards caused by earth operations.	• Visual	• During work period	• None
31 25 00	<u>EROSION AND SEDIMENTATION CONTROLS</u>				
	• Delivery, Storage, and Handling	• Materials (bioroll,blanket, turf reinforcement mat, etc.) delivered, handled, and stored appropriately to prevent damage and keep clean?	• Visual • Check specifications	• Upon delivery	• None
	• Ambient Conditions	• Weather conditions appropriate for mat placement, and is ground dry?	• Visual	• Prior to installation	• None
	• Products	• Are products provided as specified?	• Visual • Check specifications/product data	• Upon delivery	• Product Data/Samples • Manufacturer Instructions
	• Examination	• Inspect surfaces prior to mat installation and provide Engineer approval in writing	• Visual	• Prior to installation	• None
	• Installation	• Install products according to specifications	• Visual • Check specifications/manufacturer's instructions	• During Installation	• Daily Field Installation Report • Manufacturer's Instructions
	• Field Quality Control	• Inspect in-place materials for tears, overlaps, and consistency.	• Visual	• Following installation	• None
		• Confirm survey data of materials limits	• Visual	• Following installation	• None
	• Maintenance	• Ensure period inspections and as-necessary repairs are completed	• Visual	• Period following installation	• None
32 31 13	<u>CHAIN LINK FENCES AND GATES</u>				
	• Delivery, Storage, and Handling	• Have products been packaged, shipped, and handled in accordance with specifications?	• Visual • Check specifications	• Upon delivery	• None
	• Products	• Are products provided as specified?	• Visual/check specifications	• Upon delivery	• Product Data

Table 1.1

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Wetland Excavation and Surface Debris Mitigation
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Project Specification#	Key Work Task Component to be Inspected	Key Items to be Checked During Inspection	Type of Inspection	Frequency of Inspection	Contractor Submittals to GHD
	• Installation	• Install products according to specifications	• Visual - verify receipt of Engineer approval for liner placement	• Prior to installation	• None
	• Tolerances	• Inspect installed materials for variation from specifications (maximum 1/4 inch variation from plumb, 2 inch offset from indicated position)	• Visual	• Following installation	• None
32 92 19	<u>SEEDING</u>				
	• Delivery, Storage, and Handling	• Ensure seed and fertilizer is delivered and stored in waterproof containers	• Visual	• Upon delivery	• None
	• Products	• Is topsoil supplied, salvaged, or amended such that it meets all specifications? • Do seed mixtures meet specifications and contain necessary tags/certifications? • Is fertilizer dry, free flowing and free from lumps, and amended as necessary based on topsoil analysis	• Visual - check specifications/test results • Check seed tags/certificates • Visual • Check tags, specifications, and certificates	• 3 samples to determine fertilizer requirements (pH, phosphorus, nitrogen, potassium, and organic content) • Upon delivery • Upon delivery	• Test results • Seed certificates • Fertilizer certificates • Topsoil analytical results
	• Examination	• Verify that soil base is ready to be amended and seeded	• Visual	• Prior to fertilization	• None
	• Fertilizing	• Ensure application is performed following smooth raking of topsoil, and is mixed thoroughly into the upper 2-inches of topsoil, and lightly watered	• Visual	• During fertilization	• None
	• Seeding	• Ensure seeding is performed between June 1 - September 30, and that conditions conform to specifications. • Ensure seed is applied at appropriate rate (3 lbs/1000 square feet) and raked in lightly • Ensure seeded areas are firmed using a drag or cultipacker prior to mulching	• Visual • Visual - verify application rate. • Visual	• Prior to seeding • Prior to/during seeding • Following seeding	• None • None • None
	• Seed Protection	• Ensure placement on necessary slopes within 24 hours of seeding.	• Visual	• During installation	• None
	• Maintenance for Seed Establishment	• Ensure maintenance is performed as specified.	• Visual	• During maintenance period	• None
33 24 00	<u>MONITORING WELLS</u>				
	• Qualifications	• Verify driller is licensed in the State of Wisconsin	• Review submitted qualifications	• Prior to work	• Qualification Statements
	• Existing Conditions	• Ensure that subsurface soils and water that could impact site integrity are not released, and that drilling methods do not impair production of aquifers encountered.	• Visual	• Prior to drilling	• None
	• Products	• Verify products are provided as specified (riser, casing, cap, screen, cement, sand, grout, bentonite, etc.)	• Visual • Review specifications/product data	• Upon delivery	• Product data

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Project Specification#	Key Work Task Component to be Inspected	Key Items to be Checked During Inspection	Type of Inspection	Frequency of Inspection	Contractor Submittals to GHD
	<ul style="list-style-type: none"> Examination 	<ul style="list-style-type: none"> Verify Site conditions will support equipment. Ensure locations have been marked. Provide Contractor written verification of locations and approval to proceed with installations Verify utilities have been located and marked/cleared 	<ul style="list-style-type: none"> Visual Check specifications Visual 	<ul style="list-style-type: none"> Prior to installation Prior to intrusive work 	<ul style="list-style-type: none"> None Utility clearance documentation
	<ul style="list-style-type: none"> Preparation 	<ul style="list-style-type: none"> Verify the specified ground cover and absorbent pads are in place prior to drilling Verify that drill rig and down-hole equipment has been decontaminated prior to each location Verify that structures near monitoring wells have been protected to prevent damage 	<ul style="list-style-type: none"> Visual Visual - observe decontamination Visual 	<ul style="list-style-type: none"> Prior to drilling at each location Prior to drilling at each location Prior to drilling at each location 	<ul style="list-style-type: none"> None None None
	<ul style="list-style-type: none"> Well Construction and Modification 	<ul style="list-style-type: none"> Confirm drilling depth of each location. Observe well construction and modification activities, verify that construction is in accordance with specifications and as approved by Engineer Containerize cuttings and solid waste generated and relocate to area on Site approved by Engineer. 	<ul style="list-style-type: none"> Visual/check surface elevation Visual Check specifications Visual 	<ul style="list-style-type: none"> Prior to drilling During drilling/well construction During drilling/well construction 	<ul style="list-style-type: none"> None Well Construction Logs None
	<ul style="list-style-type: none"> Borehole Logging 	<ul style="list-style-type: none"> Verify logging information is accurate 	<ul style="list-style-type: none"> Visual - observe drilling 	<ul style="list-style-type: none"> During drilling/well construction 	<ul style="list-style-type: none"> Well Construction Logs
	<ul style="list-style-type: none"> Well Development 	<ul style="list-style-type: none"> Verify development method with Engineer, development meets specifications, and that development liquid is containerized 	<ul style="list-style-type: none"> Visual Check specifications 	<ul style="list-style-type: none"> During development 	<ul style="list-style-type: none"> None
	<ul style="list-style-type: none"> Waste Handling 	<ul style="list-style-type: none"> Verify cuttings and waste generated are containerized and relocated to an area on Site approved by Engineer 	<ul style="list-style-type: none"> Visual 	<ul style="list-style-type: none"> Following well construction 	<ul style="list-style-type: none"> None

Table 1.2

**Summary of Construction Quality Assurance and Quality Control Tests
Wetland Excavation and Surface Debris Mitigation
Penta Wood Products Superfund Site
Siren, Wisconsin**

Project Specifications Section	Work Task Component to be Tested	Type of Test	Standard	Frequency of Tests per Construction Specifications	Key Acceptance Criteria	Percentage of Test Frequency by Contractor	Percentage of Test Frequency by Supervising Contractor
31 31 13	<u>CHAIN LINK FENCES AND GATES</u>						
	• Source Quality Control	• Standard OIT retained after 90 days	• ASTM D3895	• 1 per formulation	• > 35%	• 100	• 0
		• High Pressure OIT retained after 90 days	• ASTM D5885	• 1 per formulation	• > 60%	• 100	• 0
		• High Pressure OIT retained after 1,600 hours	• ASTM D5885	• 1 per formulation	• > 35%	• 100	• 0
		• Interface Friction Testing	• ASTM D5321-(92)	• 1 sample	• ENGINEER approval	• 100	• 0
	• Installation Quality Control	• Field Shear Testing - trial weld test strips	• ASTM D4437-08	• 3 per day per seaming machine	• -	• 100	• 0
		• Field Peel Testing - trial weld test strips	• ASTM D4437-08	• 3 per day per seaming machine	• -	• 100	• 0
		• Field Shear Testing - destructive seam samples	• ASTM D4437-08	• 1 per 500 lineal feet of seam	• -	• 100	• 0
		• Field Peel Testing - destructive seam samples	• ASTM D4437-08	• 1 per 500 lineal feet of seam	• -	• 100	• 0
		• Lab Shear Testing - destructive seam samples	• ASTM D4437-08	• 1 per 500 lineal feet of seam	• -	• 100	• 0
		• Lab Peel Testing - destructive seam samples	• ASTM D4437-08	• 1 per 500 lineal feet of seam	• -	• 100	• 0
		• Seam testing - pressurized dual seam	• -	• All seams produced by fusion welding	• No leaks	• 100	• 0
		• Seam testing - vacuum box testing	• -	• All extrusion welding seams, and others not tested by pressurized dual seam	• No soap bubbling	• 100	• 0
	32 92 19	<u>SEEDING</u>					
• Quality Control (source testing - topsoil)		• Nitrogen, phosphorus, potassium, and pH	• MNDOT spec 3877.2B	• 3 per off-site source	• Fertilizer needs	• 100	• 0
		• Organic content	• ASTM D2974	• 3 per off-site source	• 3% to 15%	• 100	• 0
• Source Quality Control (topsoil)		• pH	• ASTM D4972	• Minimum 1 test per acre topsoil placement.	• 6.1 to 7.8	• 100	• 0
		• Organic content	• ASTM D2974	• Minimum 1 test per acre topsoil placement.	• 3% to 15%	• 100	• 0
		• Potassium, phosphorus, calcium, and magnesium	• MNDOT spec 3877.2B	• Minimum 1 test per acre topsoil placement.	• Fertilizer needs	• 100	• 0

Table 1.3

**Submittal Summary
Wetland Excavation and Surface Debris Mitigation
Penta Wood Products Superfund Site
Siren, Wisconsin**

Specification Section	Section	Submittal	Submittal Schedule	Submittal Requirements	Comments
01 33 00	<u>SUBMITTAL PROCEDURES</u>				
	1.4.A, B	Progress Schedule	Within 21 days of Notice to Proceed and prior to mobilization to Site	Initial detailed project schedule in Microsoft Project Gantt Chart format. Include horizontal bar chart with major phases as specified.	
	1.4.H / 1.16.A	Submittal Schedule	Within 21 days of Notice to Proceed and prior to mobilization to Site	Separate schedule of submittal dates for shop drawings, product data, samples, factory and field testing dates, and product delivery dates.	
	1.5.B 1.6.A	Construction Quality Reports Proposed Products List	Each work day for previous work day Within 21 days of Notice to Proceed and prior to product arrival to Site	Daily construction quality control activities List of major products proposed for use, manufacturer, trade name, and model number for 10 photographs from differing directions including photographs of each active work area indicating relative progress of works.	
	1.12.A	Construction Photographs	Prior to each weekly meeting		
	1.13.A	Project Organization Chart	Within 21 days of Notice to Proceed and prior to mobilization to Site	Organization chart identifying major positions and names of persons assigned to these positions, including off-site project manager, superintendent, certified industrial hygienist, health and safety officer, testing labs, and subcontractors	
	1.14.A	Progress meeting submittals	At least 24 hours prior to meeting	Updated progress schedule; air sampling and analytical results; transport manifests, trip tickets, and disposal receipts; weekly copies of Site entry and work area logbooks; other relevant information to	
	1.15.A	Site layout	Within 21 days of Notice to Proceed and prior to mobilization to Site	Submit Site layout drawings, showing existing conditions and facilities and construction facilities and temporary controls	
01 35 29.13	<u>HEALTH AND SAFETY</u>				
	1.4.A / 1.7.B	Site-specific Health and Safety Plan	Within 7 days after the date of the Notice to Proceed and prior to mobilization to Site	Site specific health and safety plan that complies with 29 CFR 1910.120 and 1926.65	
	1.7.C	Proof of OSHA Training	Within 7 days after the date of the Notice to Proceed and prior to mobilization to Site	List of Site personnel and proof of applicable OSHA training.	
	1.7.D	Medical Surveillance	Within 7 days after the date of the Notice to Proceed and prior to mobilization to Site	Certification of medical clearance for Site personnel	
	1.7.E	Respirator Fit Test	Within 7 days after the date of the Notice to Proceed and prior to mobilization to Site	Proof of respirator fit testing for Site personnel	
	1.7.F 1.7.G	Air Monitoring Reporting Physical Hazard Control Records	Daily As performed	Daily reports of air monitoring results Records of activities undertaken to control physical hazards including: equipment inspections, training records, LOTO records, inspection results, waste screening, classification, and sampling forms.	
01 40 00	<u>QUALITY REQUIREMENT</u>				
1.7.D	Independent Testing Laboratory	Prior to start of works	Name, address, telephone number, responsible parties of independent testing laboratory.		
01 50 00	<u>TEMPORARY FACILITIES AND CONTROLS</u>				

Table 1.3
Submittal Summary
Wetland Excavation and Surface Debris Mitigation
Penta Wood Products Superfund Site
Siren, Wisconsin

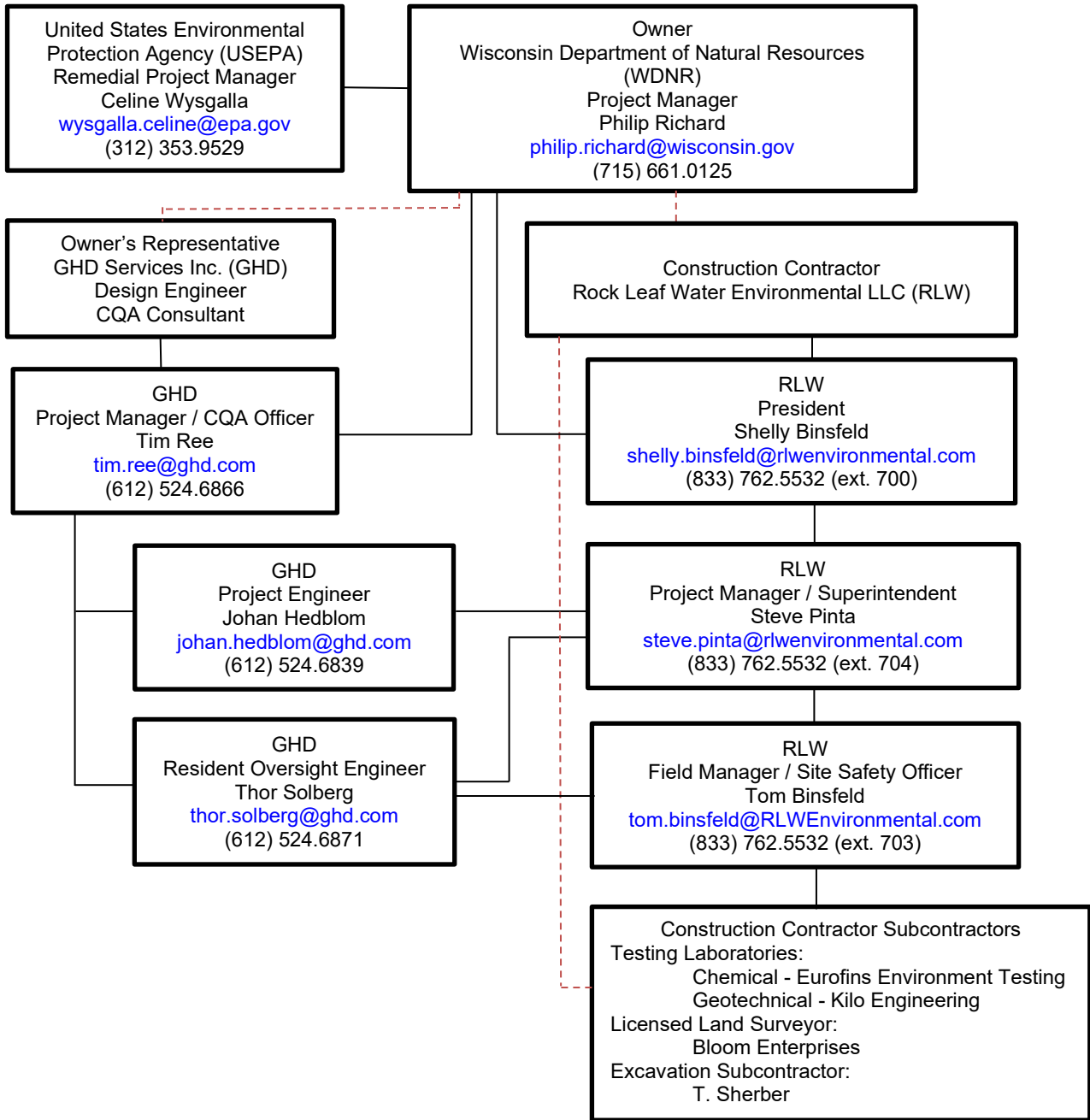
Specification Section	Section	Submittal	Submittal Schedule	Submittal Requirements	Comments
	1.5.B	Engineer's Field Office	Prior to site work	Provision of field office meeting all requirements listed in specifications	
	1.5.C	Contractor's Field Office and Storage Containers	Prior to site work	Provision of contractor field office and storage container(s) meeting minimum requirements in specifications.	
	1.5.D	Equipment Decontamination Facilities	Prior to commencing work involving contact with potentially contaminated materials	Detail of pad size, berm construction, location, equipment, and layout	
	1.5.E	Personnel Decontamination Facilities	Prior to commencing work involving contact with potentially contaminated materials	Detail of shower facilities, PPE dry area, storage areas, potable water, wastewater pumping and piping, PPE disposal	
	1.5.F	Emergency First Aid Facilities	Prior to site work	First aid facility including a minimum of all equipment listed in specification.	
	1.5.G	Sanitary Facilities	Prior to site work	Sanitary facilities in accordance with OSHA 29 CFR 1910.141	
	1.5.H	Storage/Stockpiling Facilities	Prior to intrusive work and delivery of materials to site	Details, layout, and location of storage and stockpile facilities	
	1.5.I	Equipment Mats/Decking	Prior to excavation work	Decking, mats, and timbers for excavation equipment operation within the wetland	
	1.5.J	Wastewater Storage Tanks	Prior to delivery to Site	Leak-proof and pressure tested, secondary	
	1.5.K	Drums	Prior to excavation work	Drums for storage of solid and liquid waste with closeable lids and labels	
01 57 13	<u>TEMPORARY SOIL EROSION AND SEDIMENT CONTROLS</u>				
	1.6.B	Product Data	No later than 21 days prior to pre-installation meeting	Product data for all manufactured products and materials meeting requirements of specifications	
	1.6.C	Erosion Control and Stormwater Management Plan	No later than 21 days prior to pre-installation meeting	Prepare in accordance with the State of Wisconsin requirements. Copy of general stormwater permit for construction activity effective prior to beginning of	
	1.6.D	Inspection Logs	Weekly	Daily inspection logs pertaining to erosion control and stormwater management plan	
	1.6.E	Certifications	Prior to preparation of erosion control and stormwater management	Contractor personnel certifications valid in State of Wisconsin	
01 70 00	<u>EXECUTION AND CLOSEOUT REQUIREMENTS</u>				
	1.4.I	Pre-Construction Survey	Prior to commencing construction activities	Digital copies of Site drawings and certificate signed by the land surveyor, including all items listed in specifications	
	1.5.B	Surveys	With record documents	Digital copies of Site drawings and certificate signed by the land surveyor, including all items listed in specifications	
	1.12	Written Certification	With final Application for Payment	Meeting requirements of specifications	
	1.13	Project Record Documents	At project closeout	Drawings, specifications, change orders, contract modifications, reviewed submittals, manufacturer instructions, waste disposal documentation	
31 23 16	<u>EXCAVATION</u>				
	1.5.B	Earth Support Documentation	Prior to utilization	Required permits for use of sheeting, shoring, trench boxes, or other facilities used for earth support. Additionally include stamped Shop Drawings.	

Table 1.3
Submittal Summary
Wetland Excavation and Surface Debris Mitigation
Penta Wood Products Superfund Site
Siren, Wisconsin

Specification Section	Section	Submittal	Submittal Schedule	Submittal Requirements	Comments
	1.5.C.1	Excavation and Soil Management Plan	Within 7 days of Notice to Proceed and prior to mobilization to Site	Plan discussing compliance with specified requirements, soil excavation and removal, soil characterization and profiling, and transportation and	
	1.5.D	Materials Source	At least 14 days prior to commencing transport of materials to site	Name of proposed imported topsoil source, grain size distribution curves, soil classification; nitrogen, phosphorus, and potassium content; and pH.	
	1.5.E	Analytical Results	At least 7 days prior to commencing transport to Site	Chemical analytical results for imported topsoil material.	
	1.5.F	Schedule of Service Disruptions	At least 3 weeks prior to proposed data of disruption	Planned service disruptions	
	1.7.B	Record Documents	At closeout	Actual excavation elevation contours and limits, soil placement and cover elevation contours and limits, and slope gradients.	
31 25 00	<u>EROSION AND SEDIMENTATION CONTROLS</u>				
	1.6.B	Product Data	10 days prior to ordering	For all applicable data	
	1.6.C	Samples	10 days prior to ordering	12-inch by roll width	
	1.6.D	Manufacturer's Instructions	14 days prior to installation	Manufacturer's instructions	
	1.6.E	Daily Field Installation report	Daily	Quantity of matting placed; roll identifiers; QC tests, layout drawings, observations	
	1.6.F	Layout Drawings	14 days prior to installation	Drawing of the proposed matting placement patterns	
	1.6.G.1	Installer Qualification Statements	At least 14 days prior to installation	Manufacturer's approval letter or license	
	1.6.G.2	Manufacturer Qualification Statements	14 days prior to retaining	List of previous projects totaling 3 million sq ft of installation, and five projects including details	
	1.7.B	Record Documents	At closeout	Layout including panel identifiers	
32 31 13	<u>CHAIN LINK FENCES AND GATES</u>				
	1.5.B	Product Data	Prior to delivery to site	Data on fabric, posts, accessories, fittings, and hardware	
	1.5.C	Shop Drawings	Prior to delivery to site	Plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.	
	1.6.D	Project Record Documents	At closeout	Accurately record actual locations	
32 92 19	<u>SEEDING</u>				
	1.4.B and 1.6.A	Product Data	Prior to delivery to site	Data for seed mix, fertilizer, mulch, accessories	
	1.4.C	Manufacturer Certificates	Prior to delivery to site	Certify products meet or exceed specified	
	2.3.C	Fertilizer Application Recommendations	Prior to delivery to site	Recommendation for fertilizer and lime application rates for specified seed mix as result of topsoil testing	
33 24 00	<u>MONITORING WELLS</u>				
	1.5.B	Product Data	Prior to installations	Data for well casing, screen, riser, silica sand, bentonite, bentonite-cement grout, neat cement, and well caps	
	1.5.C	Material Safety Data Sheets	Prior to delivery of materials	MSDSs for any materials brought to Site	
	1.5.D	Qualification Statements	Prior to drilling	Driller: State of Wisconsin license. Drill Operator: Resume and proof of State of Wisconsin certification	
	1.6.B	Record Documents	At closeout	Indicate actual locations and top of casing elevations of wells, depth, subsoil strata, and drilling difficulties. Include signed copy of drillers log book statements.	

Figures

Figure 2.1
 Project Organization Chart
 Wetland Excavation and Surface Debris Mitigation Remedial Action
 Penta Wood Products Superfund Site
 Siren, Wisconsin



————— Line of Communication
 - - - - - Contract Arrangement

Appendices

Appendix A

Forms and Recordkeeping Document



Daily Observation Report

Contract Name:	[Enter text]	Project No.:	Project Number
Contract No.:	[Enter text]	Consultant:	GHD Limited
Contractor:	[Enter text]	Completed By:	[Enter text]
Date:	[Enter text]	Time In:	[Enter text]
Site:	[Enter text]	Time Out:	[Enter text]

Observations

Weather <input type="checkbox"/> Clear <input type="checkbox"/> Snow <input type="checkbox"/> Rain <input type="checkbox"/> Cold <input type="checkbox"/> Foggy <input type="checkbox"/> Overcast <input type="checkbox"/> _____	Site Conditions: <input type="checkbox"/> Clear <input type="checkbox"/> Dusty <input type="checkbox"/> Muddy <input type="checkbox"/> Snow covered
Temperature Range:	Notes:
Tailgate Safety Meeting Topic: Date: _____ Time: _____ Attendees:	Time Recorded: Working Days: XX OF XX Inclement Weather Challenges Noted? <input type="checkbox"/> Yes <input type="checkbox"/> No Sediment & Erosion Control Checklist: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Report Attached

Work Observed /Activity/ Noted Concerns	Spec/Drawing Reference	Location/Area	Qty/Unit

Contractor Resources							
Personnel	No.	Hr	Activity	Equipment	No.	Hr	Activity
				Subcontractors			
				Manufacturer's Rep.			

Communication
Items Discussed:
1.
2.
3.
4.
Requested Revisions or Interpretations:
1.
2.
Nonconforming Work Reported This Date to CONTRACTOR:
1.
2.
Visitors and Description of Visit:
1.
2.
Attachments and Other Inspections/Observation Reports:
1.
2.

Remarks:

Acknowledgement Signatures:

GHD Representative: [Employee full name] Date: November 22, 2022



Bureau for
Remediation and
Redevelopment

CONSTRUCTION BULLETIN No. _____

Project _____

Contractor _____

This construction bulletin is issued for the purpose of investigating a potential change in the project. You are requested to review the proposed changes and advise the Department and Engineer of any change in contact price (addition deduction or no change) that may result. Your proposal should be submitted in an itemized breakdown form, listing the cost for labor, material and equipment necessary to implement the proposed change.

Return the completed Construction Bulletin consisting of the itemized cost quotation and other documentation to the Oversight Engineer, not later than _____, 20____.

RECEIPT OF THIS CONSTRUCTION BULLETIN IS **NOT** AUTHORIZATION TO PROCEED WITH THE CHANGES PROPOSED. ISSUANCE OF FIELD ORDER OR CONTRACT DIRECTIVES IS REQUIRED.

If the proposed changes are to be made, and involve a change in cost or project time per the Articles of the General Conditions the Department shall prepare a Contract Directive.

Description of Construction Bulletin: _____

Purpose of Change: _____

Change Requested By _____

Date _____



Bureau for
Remediation and
Redevelopment

CONSTRUCTION BULLETIN - PAGE 2

QUOTATION FOR PROPOSED CONSTRUCTION BULLETIN:

Total Cost: _____

Total Contract Time: _____

This quotation is submitted for use in connection with and in response to the request for quotation for Construction Bulletin No. _____ and is valid for 60 days from the date of execution noted below. This is to certify to the best of my knowledge and belief that the cost and pricing data summarized herein are complete, current and accurate as of _____, 20____ and that a financial management capability exists to the fully and accurately account for the financial transactions under this project. I further certify that I understand that the subagreement price may be subject to downward renegotiation and/or recoupment where the above cost and pricing data have been determined, as a result of audit, not to have been complete, current and accurate as of the above date.

CONTRACTOR

Signature _____

Title _____

Date _____

Attachments: (list attached documents that support description)



Bureau for
Remediation and
Redevelopment

CONTRACT DIRECTIVE No. _____

Project _____

Contract No. _____ P.O. No. _____

Contractor _____

Keyword Description _____

Refer to Construction Bulletin Nos. _____

The following modifications to the contract are hereby ordered:
(Use additional pages if required)

Original Contract Amount	\$ _____	Original Duration	_____ Days
Previous Directives	\$ _____	Previous Directives	_____ Days
This Directive	\$ _____	Revised Contract Time	_____ Days
Revised Contract Amount	\$ _____	Revised contract completion date	_____

ENGINEER

Prepared and recommended by _____
Engineer _____ Date _____

DEPARTMENT OF NATURAL RESOURCES

DNR Project Manager/Program Coordinator _____ Date _____

Final Approval by _____
Bureau for Remediation & Redevelopment _____ Date _____

DEPARTMENT OF NATURAL RESOURCES

By _____
Secretary, Department of Natural Resources
(Signature required if applicable) _____ Date _____

STATE OF WISCONSIN

By _____
Governor, State of Wisconsin
(Signature required if applicable) _____ Date _____

CONTRACTOR

Accepted by _____
_____ Date _____



ghd.com

→ The Power of Commitment