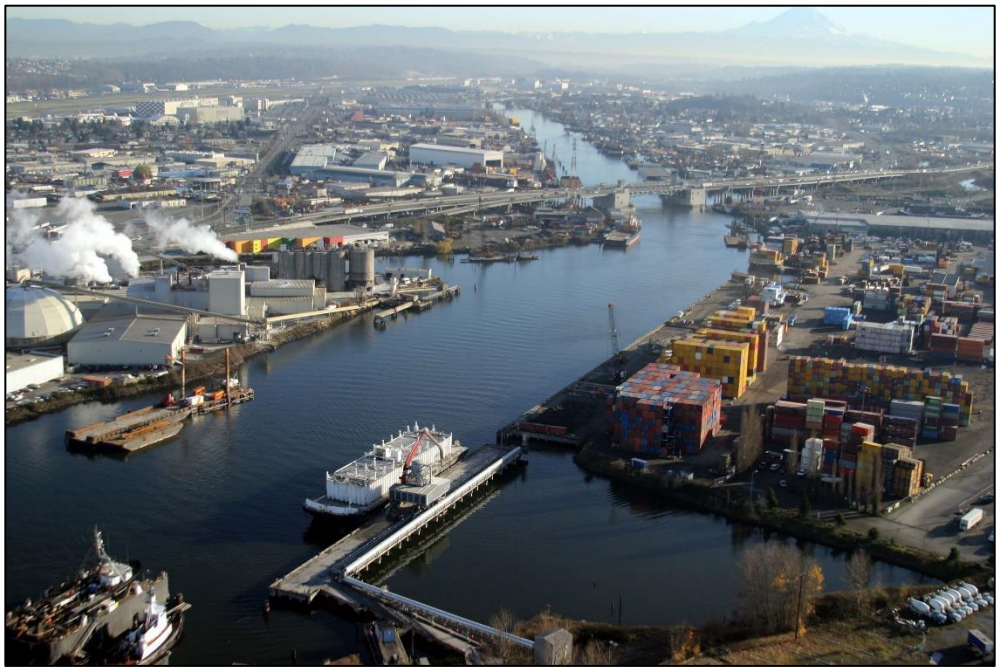
Construction Quality Control Plan

Revision: 06

October 27, 2024



LOWER DUWAMISH WATERWAY

Upper Reach Remedial Action

Contract KC001065

Prepared By:

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1.0 Introduction

This Construction Quality Control Plan (CQCP) outlines the procedures, responsibilities, and documentation required to ensure compliance with project specifications and standards. The plan details the quality control measures for all phases of construction activities, ensuring the highest level of quality and adherence to contract requirements. Pacific Pile & Marine's (PPM) Quality Control System is to provide the necessary supervision, controls, and testing of all items of work, including that of suppliers and subcontractors, that will ensure the compliance with Contract Specifications, regulatory requirements, and design drawings. This includes PPM's furnished equipment, materials, workmanship, construction, finish, functional performance, and identification.

1.1 Project Scope

Construction implementation inspection and engineering support (i.e., compliance with drawings and specifications), including:

- Topographic and bathymetric surveys each construction season
- Demolition and removal of piles and debris and transportation and disposal of these items
- Dredging, excavation, and potential contingency re-dredging
- In-water transport, transload, upland transport, and off-site disposal of dredged/excavated materials
- Material placement, including post-dredge backfilling, residuals management cover (RMC) placement, enhanced natural recovery (ENR) placement, amended cover (area-specific technology) placement, and engineered capping A and B
- Pre- and post-construction structural conditions surveys
- Modification of existing structures, including wall reinforcing and strengthening
- Installation of outfall energy dissipation structures
- Installation of new replacement piling that are used for Tribal fishing
- Environmental controls and monitoring (compliance with environmental protection requirements, including water quality monitoring)
- Establishment and maintenance of project limits and survey controls
- Performance of Air, Noise, and Light monitoring as required

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- Performance of Construction Stormwater Site Inspections
- Implement best management practices (BMPs) that minimize water quality exceedances
- Perform general marine conditions survey on each barge prior to use at the Site and inspections of each barge will be performed prior to transport from the Site

2.0 Construction Quality Management

It is the policy of PPM to adhere strictly to this quality control program and to ensure that this program is met on each and every project we execute.

2.1 Project Organization Quality Control Overview

Section 2 of the Remedial Action Work Plan (RAWP) provides an organizational chart of key Site personnel, roles, and a summary of responsibilities including QC responsibilities. Resumes for key Site personnel can be found in the RAWP Appendix A.

A designation of Contractor Quality Control Officer (QC Officer) and summary of responsibilities is provided in **Attachment 1**.

2.2 Allocation of Resources and Personnel

Management will identify in-house requirements and provide adequate resources and trained personnel as needed to support required QC verification activities.

The PPM Project Engineer will work in coordination with the QC Officer, to perform QC activities. The Project Engineer will provide the QC Officer with all inspection and testing information required for the QC documentation and reporting.

2.3 Control of Project Related Documents

Each document is assigned a project number by the Project Manager and incorporated into the Project Job File. This file contains a complete set of all project-related contract documents, specifications, drawings, etc. and shall be maintained at the project site. Contract documents, drawings, etc. shall be updated as the job progresses to show all approved changes, options, alternates, and all actual deviations from the original Contract documents.

A listing of all drawings, specifications, vendor data, etc. that are to be submitted to the client will be made for review and approval. A copy of all documents returned by the client approved, or approved as noted, shall be maintained in the job file.

Any revisions received will be immediately forwarded to the project site for use while executing the project. Any field changes to the work will be properly noted on the project site set of the drawings. The project site set of the drawings will show the work exactly as the work was built (hereinafter referred to as the "As-Built" set of drawings).

Documents will be kept up-to-date and be available for review by the Project Representative at all times, including but not limited to at each job progress meeting.

2.4 Quality Systems

PPM's staff has established and will maintain and document a QC system as a means of ensuring that the services conform to specified requirements. This QC system includes:

- Documented quality system procedures and instructions to ensure that all activities are performed in accordance with established requirements;

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- Effective management support to ensure compliance and the use of the QC procedures and instructions.

All employees of PPM shall strive to improve the quality of our services to our clients. The QC program is a process of continuous improvement which requires input from everyone in the organization. Everyone in the organization shall comply and endeavor to improve the process where possible.

2.5 Quality Policy and Authority

The quality of all subcontractors and vendors will be the joint responsibility of the QC Officer and the Project Manager. All projects will be executed in a manner that emphasizes safety, quality, schedule, and maximum cost effectiveness.

2.6 Management Review

The established QC policies and procedures will be reviewed by management to ensure continuing suitability and effectiveness. These reviews will include assessment of the results of internal audits and shall assess overall conformance to client's requirements and expectations. Records of such reviews and audits shall be maintained.

Throughout the project any commitment, conflicts, or non-conformance issues not resolved using current established Quality Control Procedures will be brought to the attention of the undersigned for final resolution.

Jim Davidson
Pacific Pile & Marine
Partner & VP of Operations

3.0 QC Procedures

This section details the quality control methods PPM will employ for the successful execution of this project in accordance with the Contract documents.

3.1 Pre-Construction Activities

Pre-construction activities will be performed to:

- Review contract documents, drawings, and specifications.
- Review unique features and considerations of each SMA.
- Develop QC checklists for each Site activity and inspection forms for Site aspects requiring inspection.
- Review of applicable manufacturer's instructions for equipment and materials that will be used at the Site.
- Pre-construction meetings will be held with subcontractors to communicate QC expectations prior to the start of work in each SMA, prior to changes in Site activities, if Site conditions changes, if there is a change in Site working hours (e.g. day shifts to night shifts or vice versa), and any time new personnel start work at the Site.

Prior to the start of each in-water work window, PPM will complete a Construction Season Pre-Construction Survey to document the pre-construction bathymetric and topographic baseline conditions. Each Construction Season Pre-Construction Survey will be used as the basis for

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measurement and payment for work completed within that season. This survey(s) will be conducted by Chris Kemp (Marker Offshore), who is licensed in Washington State. Please see the Survey and Positioning Control Plan for details on surveying quality control. The survey(s) will be supplied to the Project Representative for review prior to acceptance. The pre-construction survey(s) timing will be coordinated with the Project Representative. Since it is anticipated that remedial action implementation will take place over three construction seasons, pre-construction surveys will occur at the beginning of each construction season.

3.2 Construction Activities

Construction activities quality control will be performed to:

- Review contract documents, drawings, and specifications.
- Review pertinent codes and standards.
- Review unique features and considerations of each SMA.
- Review of applicable manufacturer's instructions for equipment and materials that will be used at the Site to ensure compliance with each step in sequence.
    - If manufacturer's instructions conflict with Contract Drawings, clarification from the Project Representative will be requested prior to proceeding.
- Comply with specified standards as minimum quality for the Work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- Ensure Work is performed by persons qualified to produce the Work required at the specified quality.
- Monitor quality control over supplies, manufactures, products, services, Work Site conditions, and workmanship.
- For each Site activity ensure all aspects of the QC checklist has been performed.
- Conduct daily inspections to verify compliance with project specifications, Contract drawings, and shop drawings where applicable, documenting findings in the Daily Construction Report.
- Perform required tests and document results.
- Monitor construction practices to ensure adherence to approved methods and standards and document observations made in the application summary of work section in the Daily Construction Report.
- Comply with any rejection of noncomplying items and perform corrective action, as needed, and identified by the QC Officer and/or Project Representative, see **Section 3.2.10**.

The Project Representative will notify PPM of any noncompliance with any of the foregoing requirements. After receipt of such notice PPM will immediately take corrective action. Any notice, when delivered by the Project Representative or their authorized representative to PPM, will be considered sufficient notice.

The activities which will be conducted in this project are outlined in this section.

3.2.1 Erosion and Sediment Control

PPM will implement erosion and sediment controls as outlined in the Erosion and Sediment Control Plan, and in accordance with Specification Section 31 25 00 (Erosion and Sediment Control). A certified erosion and sediment control lead (CESCL) will perform all Construction Stormwater Site Inspections, see **Section 4.4** for additional details.

3.2.1.1 Section 31 25 00 (Erosion and Sediment Control)

PPM will comply with the following applicable requirement regarding erosion and sediment control:

- City of Seattle Stormwater Code
- King County Surface Water Management Code
- City of Tukwila Municipal Code

PPM will conduct work as outlined in the plans, drawings, and specifications to not lead to violations of the following:

- Local and state water quality standards for stormwater discharge, including but not limited to surface water quality standards, groundwater standards, sediment management standards, and human health-based criteria in the National Toxics Rule (40 Code of Federal Regulations Part 131.36)
- Local and state water quality standards including but not limited to Water Quality Standards for Surface Waters of the State of Washington (Washington Administrative Code Chapter 173-201A)

3.2.2 Dredging

PPM will implement best management practices (BMPs) while conducting dredging, as described in the Dredging and Excavation Plan, and in accordance with Specifications Sections 35 20 23 (Remedial Dredging, Barge Dewatering, and In-Water Transportation), 31 05 10 (Sediment Management Area 5 Bank Construction), and 01 35 43 (Environmental Procedures). See the Dredging and Excavation Plan and Survey and Positioning Control Plan for additional details on means and methods, quality control, documentation, and reporting. Please see the Environmental Mitigation Binder for BMPs associated with water quality, erosion and sediment control, spills, stormwater pollution prevention, water management, air pollution, noise control, light control, and decontamination. The Daily Construction Report will track BMPs implemented, conformance, and deficiencies or corrective actions until resolved and establish a path forward and timeline for each correction action and/or deficiencies that have not been resolved.

3.2.2.1 Section 35 20 23 (Remedial Dredging, Barge Dewatering, and In-Water Transportation)

PPM will comply with the following quality control requirements regarding dredging, barge dewatering, and in-water transportation:

- Conduct real-time monitoring of dredging activities to ensure compliance with dredge elevations and environmental controls.
    - Pre-construction
        - Sensor Installation and Calibration: Install eTrac sensors on the boom, stick, and bucket of the excavator. Program Dredgepack software with measurements from the excavator. Calibrate sensors during installation as their positions do not change.
        - Base Station Setup and Verification: Establish a base station to transmit positioning data to the survey boat and excavator/barges.
        - Use a Rover unit to check the positioning data from the base station against known Project Monuments to ensure accuracy.
        - Pre-con Survey & Dredge TINs: PPM will utilize the pre-construction survey to develop the dredge TINs for each SMA. The dredge prisms will be loaded onto the Hypack positioning system for the operator to utilize during dredging.
    - During construction
        - Daily Checks: Use a calibrated Rover GPS unit to shoot the coordinates of a location within reach of the dredging bucket, the tip of the bucket will then be

placed at the location to verify the Rover GPS coordinates against the position provided by the excavator's computer. Perform these checks at the beginning of each day before starting work to ensure accuracy in navigation and positioning.

- Excavator Survey & Positioning Software: All excavators used for dredging operations at the Site will be equipment with HYPACK's 2024 DREDGEPACK software, see the Dredging and Excavation Plan for additional details. The excavator software will allow each operator to continually monitor the bucket position in real time (including orientation, rotation, and open/close) to a +/- 4-inch accuracy.
- Survey Data & Bucket Maps: PPM will conduct the daily Required Dredging Progress Surveys and associated field data (e.g., bucket maps) to verify that Required Dredge Elevations, Required Dredge Thicknesses, and Side Slopes have been met, see the Survey and Positioning Control Plan for additional details. Marker Offshore, LLC and QC Officer will review the daily data to ensure the accuracy and effectiveness of the dredging and survey systems. The OC Officer will evaluate the daily progress survey versus the bucket maps to verify that dredging was completed in accordance with the plans and specifications. See the RAWP Volume 1 Appendix B for forms.
- Corrective Measures: Through daily evaluation of the progress surveys versus bucket maps the QC Officer will identify any areas where dredging does not meet the specified lines and grades. PPM will recommend corrective dredging or survey measures to the Project Representative to address areas that do not meet the required specifications. Dependent on Site needs recommended measure will involve additional dredging, adjusting dredging techniques, or recalibration of dredge/survey systems. Follow-up surveys will be conducted after corrective actions to verify that the issues have been resolved and the dredged areas now meet the specified lines and grades. All corrective measures taken will be documented and reported in the daily QC reports and final project documentation.

- Verify that dewatering processes meet water quality standards.
    - In addition to having BMPs in place to prevent water quality criteria exceedances, PPM will conduct its own visual observations and implement water quality controls to comply with the Water Quality Protection Plan.
- Maintain detailed logs of in-water transportation activities, ensuring secure and compliant movement of dredged materials.

3.2.3 Clean Material Placement

Clean Material placement quality control will be performed to:

- Ensure all materials conform to project Specification Section 35 37 10 (Material Placement).
- Maintain records of material certifications and test results and submit in accordance with the Master Submittal list.
- Inspect and test materials upon delivery and prior to use.
- Document samples collected and material received in the Daily Construction Report.
- Maintain all bills of lading and submit in accordance with the Master Submittal list and include the bills of lading in the Daily Construction Report.

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Import material testing will be conducted at Enthalpy Analytical, LLC of El Dorado Hills, CA to demonstrate that the source material meets EPA-approved chemistry criteria, in accordance with Specifications Section 35 37 10 (Material Placement). PPM will submit laboratory results and a physical sample of each material type to be the Project Representative for review and approval 21 days in advance of material use at the Work Site, in accordance with Specifications Section 35 37 10 (Material Placement). PPM will perform chemistry testing for one sample for every 10,000 cubic yards of material source Types 1, 1A, 2, and 4 imported to the Work Site; a minimum of two samples from each material type will be tested, and each sample will be approximately 0.5 cubic foot composited from no less than five subsamples for each material and source to be imported. If the source of a material changes PPM will submit a new separate sample for review and acceptance by the Project Representative of the new source proposed for use.

3.2.3.1 Section 35 37 10 (Material Placement)

PPM will comply with the following quality control requirements regarding material placement:

- Material testing on backfill, ENR, and RMC materials to confirm they meet the project specifications.
    - Material will be sampled at a rate of one sample per 10,000 cubic yards with a minimum of two samples per material. The frequency of testing will be increased or decreased at the discretion of the Project Representative based on the results of testing or visual assessment of imported material.
- Monitor and document the placement of materials to meet the specified thicknesses and elevations.
    - See the Material Placement Plan and Survey and Positioning Control Plan for details on methods and procedures for placement of each material, BMPs, Surveying, documentation, and QC.
    - Documentation will be submitted with the Daily Construction Report discussed in **Section 5.1**. Material placement documentation will include at a minimum: quantity placed (approximate and confirmed) for each material type, progress surveys, and supplemental documentation such as bucket maps.
    - The Daily Construction Report will track any deficiencies or corrective actions until resolved and establish a path forward and timeline for each correction action and/or deficiencies that have not been resolved.
- Perform surveys after material placement to verify compliance with project requirements.

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PPM and Marker Offshore will conduct placement progress surveys and post-construction surveys compiling associated field data such as bucket maps and barge displacement/volume estimates to assess compliance with the Targeted Placement Elevation, Targeted Placement Thickness, and Minimum Required Placement Thickness, in accordance with Section 02 21 00 (Site Surveys and Positioning Control). Additionally, PPM will process these surveys to prepare interpretive maps (e.g., isopachs) required to evaluate compliance with the specified criteria. PPM shall meet the material placement acceptance criteria outlined in Table 35 37 10-5 below from Section 35 37 10 (Material Placement).

Table 35 37 10-5
MATERIAL PLACEMENT ACCEPTANCE CRITERIA

PLACEMENT AREA	PLACEMENT CRITERIA	VERTICAL PLACEMENT TOLERANCE OR MAXIMUM OVERPLACEMENT ALLOWANCE	PLACEMENT AREA HORIZONTAL TOLERANCE
Backfill	Targeted Placement Elevation (and grades)	Elevation +/-6 inches from Targeted Placement Elevation (and grades)	95% of backfill surface area shall be backfilled to within the Vertical Placement Tolerance
ENR	9-inch Targeted Placement Thickness	Thickness of +/-3 inch of Vertical Placement Tolerance from Targeted Placement Thickness	Minimum of 50% of surface area equal to or thicker than Targeted Placement Thickness; 95% of ENR surface area shall be at thickness of at least 6 inches
RMC	Required RMC (within the toe of the SMA dredge cut) and Inner and Contingent Outer Perimeter RMCs: 9-inch Targeted Placement Thickness Required RMC (exterior Side Slopes with 3H:1V placement): 24-inch Targeted Placement Thickness	Within the toe of the SMA dredge cut and Inner and Contingent Outer Perimeter RMC: Thickness of +/-3 inches of Vertical Placement Tolerance from Targeted Placement Thickness Exterior Side Slopes: Thickness of +/-6 inches of Vertical Placement Tolerance from Targeted Placement Thickness	Minimum of 50% of RMC surface area equal to or thicker than Targeted Placement Thickness; 95% of RMC surface area shall be at thickness of at least 6 inches within toe of SMA dredge cut and Inner and Contingent Outer Perimeter RMC and thickness of at least 18 inches on exterior Side Slopes
Amended Cover	12-inch Targeted Placement Thickness	Thickness of +/-3 inch of Vertical Placement Tolerance from Targeted Placement Thickness	Minimum of 50% of surface area equal to or thicker than Targeted Placement Thickness; 95% of Amended Cover surface area shall be at thickness of at least 9 inches

PLACEMENT AREA	PLACEMENT CRITERIA	VERTICAL PLACEMENT TOLERANCE OR MAXIMUM OVERPLACEMENT ALLOWANCE	PLACEMENT AREA HORIZONTAL TOLERANCE
Engineered Cap A and B Layers	Capping isolation layer: 12-inch Minimum Required Placement Thickness, with 6-inch Maximum Overplacement Allowance Capping filter layer: 6-inch Minimum Required Placement Thickness with 6-inch Maximum Overplacement Allowance Capping erosion protection layer: 12-inch Minimum Required Placement Thickness with 6-inch Maximum Overplacement Allowance	Minimum Required Placement Thickness with Maximum Overplacement Allowance (per layer)	95% of Engineered Cap surface area shall meet the Minimum Required Placement Thickness

Notes:
Both acceptance criteria (Vertical Placement Tolerance or Maximum Overplacement Allowance, plus placement area horizontal tolerance) shall be met for the material placement to be accepted within each SMA.
The Contractor shall provide supplemental documentation including electronic placement records (i.e., "bucket maps") and weight tickets for verification and acceptance of placement of the Material Type 1 surface layer for Engineered Cap A.
ENR: Enhanced Natural Recovery
NA: not applicable
RMC: Residuals Management Cover
SMA: Sediment Management Area

3.2.3.2 Practice Placement

Practice placement will be conducted by PPM to ensure proposed placement means and methods are adequate and effective in meeting the targeted placement thickness. The practice placement will be conducted with the Hitachi EX 1200-6 excavator positioned on the Lash 4 barge. The Eglon barge will be loaded with import material and rafted alongside the Lash 4 barge. Practice placement will be conducted from PPM's yard at 700 S Riverside. Placement will be conducted at the PPM yard above the waterline on top of two 20' x 10' steel sheets, giving a total practice placement area of 400 sqft. This allows for clear visual observation and measurement of the placed thickness. During the practice placement, PPM will provide stakes every 10' to form a grid that will give visual indication to the thickness of the placed material layer. The Project Representative will observe and verify the placement thickness during the practice placement.

PPM will conduct the practice placement for all operators that will be placing material by grabbing a bucket-full of Type 1 material with the Hitachi EX 1200-6 excavator and placing it onto the designated flat area from a height similar to what will be used in field conditions. Practice placement will be performed with Type 1 material only. If any operators for material placement operations are employed for the Site after practice placement is conducted, an additional practice placement event will be executed with the new operators. PPM will ensure that the placement method replicates the full-scale placement process, including the speed of application, distribution techniques, and equipment operation. Each excavator operator and the superintendent will carefully monitor and adjust the placement process as necessary to achieve the Targeted Placement Thicknesses.

The Project Representative will closely observe the practice placement to ensure that the materials are being placed evenly and to the specified Targeted Placement Thickness. Measurements of the placed material will be taken and recorded for comparison against the Targeted Placement Thicknesses.

PPM will document the entire practice placement process, including the operator(s) name(s), equipment and methods used, the measured thicknesses, any adjustments made, and the final results. A detailed

report of the practice placement will be submitted to the Project Representative for review and acceptance.

3.2.4 Section 31 05 10 (SMA 5 Bank Construction)

PPM has contracted Duwamish Services to perform the SMA 5 work activities required for the excavation, stockpiling, and transportation of sediment to the Duwamish Reload Facility (DRF). Work at SMA 5 will be performed in accordance with Specification Section 31 05 10 (SMA 5 Bank Construction), Section 32 91 00 (Planting Preparation), 35 20 23.01 (Transloading, Transportation, and Disposal), and 35 37 10 (Material Placement). See the Dredging and Excavation Plan, Survey and Positioning Control Plan, and Erosion and Sediment Control Plan for details on excavation methods and procedures, BMPs, QC, and Surveying.

3.2.5 Section 35 20 23.01 (Transloading, Transportation, and Disposal)

PPM has contracted the Waste Management Duwamish Reload Facility for Transportation and Disposal of the Site materials. Work conducted at the Site will be performed in accordance with Specification Section 35 20 23.01 (Transloading, Transportation, and Disposal). See the Transloading, Upland Transportation, Waste Characterization, and Disposal Plan for details on work sequence, proposed equipment, documentation, reporting, and waste management coordination personnel.

3.2.6 Survey

PPM per Specifications Section 02 21 00 Site Surveys and Positioning Control has contracted Chris Kemp who works for Marker Offshore and is a Washington State-licensed professional land surveyor to conduct various bathymetric and topographic surveys during implementation of the upper reach remedial actions.

3.2.6.1 Section 02 21 00 (Site Surveys and Positioning Control)

In accordance with Specifications Section 02 21 00 (Site Surveys and Positioning Control), PPM will use multibeam survey equipment for all surveys. Elevations will be measured to +/-0.25 feet, at a minimum; horizontal positions will be measured to +/-1 foot at the 95% confidence interval, at a minimum.

Project Datum used will be the following:

- Horizontal datum: NAD83 (2011)
- Horizontal Projection: Washington State Plane Coordinate System, North Zone
- Vertical Datum: Mean Lower Low Water (NOAA tide station 9447130, 1983-2001 epoch)
- Units: US Survey Feet

The surveys will reference control monuments where accessible in the project specifications though new control will be set for the project for the duration of construction. The RTK GPS base station will be set at a secure location on PPM property at 700 S Riverside or 582 S Riverside for continuous use for each season. The base station RTK broadcast will control survey, vessel, and dredging RTK positioning and will be installed on a fixed mount with clear sky visibility. A continuously operating and internally recording electronic tide gauge will also be set at PPM's property for quality control each construction season.

Survey quality control will be conducted using industry standards and as outlined in the November 2013 United States Army Corps of Engineers (USACE) EM 1110-2-1003. Survey checks will be conducted prior to survey as needed, with some checks being conducted weekly or after extended periods of non-survey activity, see the Survey and Positioning Control Plan for additional quality control details.

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3.2.7 Demolition

During completion of all structural demolition and modification work, the PPM will be required to follow BMPs and meet any construction conditions imposed by EPA through ARARs compliance. See the Demolition Plan for details on work sequence, methods and procedures for structure and environmental protections, method and procedures for piling and debris demolition, handling and disposal of materials, and quality control. PPM will perform work in accordance with Specifications Sections 02 41 00 (Demolition and Salvage).

3.2.8 Structural Work

3.2.8.1 Section 09 90 62 (Coat of Steel Piles)

PPM will comply with the following quality control requirements for the coating of steel piles:

- The coating inspector will collect samples for each prime and finish coating.
- The coating inspector will inspect and accept the surface preparation prior to the application of a coating.

Qualifications for the coating inspectors are provided in the RAWP.

3.2.8.2 Section 31 62 10 (Steel Pipe Piling)

PPM will comply with the following quality control requirements during the installation of steel pipe piling:

- PPM will host a Pre-Installation Conference prior to the initiation of work.
- Inspection of Welds: Ensure all welding activities meet AWS D1.1 standards.
- Pile Driving Records: Record penetration depths and monitor axial alignment during installation.
- Installation Tolerance: Install piling with a maximum variation of 3 inches off center of any Steel Pipe Piling from the location shown in the accepted submittal package. Steel Pipe Piling shall not be out of plumb more than 0.5%, please see the Structural Work Plan and Survey and Positioning Control Plan for survey details.

See the Structural Work Plan for qualifications and certifications of the proposed welder and installer.

3.2.8.3 Section 32 32 10 (Bulkhead Wall Systems)

PPM will comply with the following quality control requirements during the installation of bulkhead wall:

- The installation will be monitored to verify continuous interlocking of sheet piles
- Existing bulkheads will be monitored for movement as required in Section 31 09 00 (Geotechnical Instrumentation and Condition Inspections)
- Qualify welding procedures and personnel according to AWS D1.1.
- PPM will provide the Project Representative with field monitoring station results that include:
    - Rate of cement grout placement
    - Cement grout delivery system
    - Tremie pipe embedment depth
    - Incidences including the following:
        - Possible cold joint
        - Delays in cement grout placement

- Equipment malfunction
- Restarts
- Loss of tremie seal

Bulkhead installation activities will be summarized in the Daily Construction Report and Weekly Construction Report. See the Structural Work Plan for qualifications and certifications of the proposed welder and installer.

3.2.9 Planting

3.2.9.1 Section 32 91 00 Planting Preparation

PPM will perform planting preparation for the SMA 5 Planting Area in accordance with Specification Section 32 91 00 (Planting Preparation). See the Soil Preparation Plan for details on methods and procedures, stockpiling, surveying, sampling, disposal and BMPs. The Soil Preparation Lead will be present at all times during the execution of this work to ensure that the work is performed according to the plans, specifications, and drawings.

3.2.9.2 Section 32 93 00 Landscaping and Maintenance

PPM will perform planting for the SMA 5 Planting Area in accordance with Specification 32 93 00 (Landscaping and Maintenance). Plantings will be subject to a 1-year maintenance period, all plants that are impaired, dead, or dying will be removed and replaced with new plants during the 1-year maintenance period.

Each plant shipment will have an inspection certificate which will be filed with the Project Representative. The plants will be inspected to confirm that all plans are in vigorous health and free of pests, disease, rot, blight, and/or other pathogenic fungi; disfiguring knots; sun scalds; abrasions of bark; broken tops; torn roots; or other objectionable features. The plants will not be accepted if they have been cut back or pruned from larger sizes to meet the specified sizes of if the plants have cuts over 1/4-inch in diameter that have not healed over. Container grown plants will not be accepted if they are rootbound. Seed mix will be inspected to confirm that it has not become wet, moldy, or otherwise damaged in transit or storage.

PPM will ensure that all planting occurs between October 15 to November 30 or February 15 to March 31, planting outside of these dates will not be done without written approval from the Project Representative. Planting will not be permitted during unsuitable conditions including frozen soil, heavy rains, high water levels, wind velocity that exceeds 30 miles per hour, and ambient temperatures below 35°F and above 80°F. Prior to planting, PPM will confirm the location, size, and spacing of all proposed plants meets the requirements of the specifications and drawings.

3.2.10 Non-Conformance and Corrective Actions

PPM will identify and document non-conformances from approved plans, specifications, and drawings. Non-conformances will be communicated to the Project Representative. The non-conformance section of the Daily Construction Report will identify corrective actions that can be implemented to address deficiencies. Any corrective actions will be identified and communicated with the Project Representative as well as the measures to verify and document post-implementation effectiveness. The Daily Construction Report will track any deficiencies or corrective actions until resolved and establish a path forward and timeline for each correction action and/or deficiencies that have not been resolved.

4.0 Inspection and Testing

PPM will be responsible for inspection and quality control of all its Work and all Work performed by

Subcontractors. The key elements of the inspection program are presented in this section. The following Table is a summary of the inspections required during Site activities.

Table 4-1: Site Inspections to be Performed

Inspection	Associated Specification Section
Pre and Post Construction Structural Conditions Inspection	01 32 33 (Photos and Videos) & 31 09 00 (Geotechnical Instrumentation and Conditions Inspections)
Steel Pipe Piling Inspections	09 90 62 (Coating of Steel Piles)
Daily Environmental Inspections	01 34 43 (Environmental Procedures), to verify water quality projection, stormwater pollution prevention, water management, and spill prevention
Placement Material Inspections	35 37 10 (Material Placement)
Construction Stormwater Site Inspections	31 25 00 (Erosion and Sediment Control)
Barge Inspections	35 10 00 (Navigation Safety and Marine Traffic Control)
Monthly Maintenance Period Inspection	32 91 00 (Planting Preparation)
Construction Season Closeout Inspections	01 70 00 (Closeout Requirements)
Borrow Source Inspections	35 37 10 (Material Placement)

4.1 Inspection Plan

PPM will document and maintain an adequate testing and inspection program and perform such tests and inspections as are necessary or required to ensure that the Work conforms to the requirements of the Contract. PPM will maintain all documentation related to testing and inspection and make such documentation available to the Project Representative at its request.

4.2 Testing Requirements

PPM and its subcontractors will perform quality control inspections of work performed and report results to the QC Officer.

Unless otherwise provided, PPM will make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Project Representative, or with the public authority. PPM will make all arrangements for and cooperate with such inspections, tests, and approvals so as not to delay completion of the Contract Work. PPM will pay for related costs of tests, inspections, and approvals.

PPM will give the Project Representative at least a three (3) day notice of: (1) when the work is ready to be tested and inspected and (2) when and where tests and inspections are to be made. PPM will cooperate with the Project Representative in the performance of any tests and inspections of the Work. PPM has the duty to coordinate all tests and inspections in a manner which does not negatively impact PPM's compliance with the Contract.

Testing of imported material will be conducted as described in **Section 3.2**.

4.3 Field Inspections (Structural)

Prior to initiating construction in the vicinity of an existing structure, PPM will inspect the condition of that existing structure and submit a Pre-Construction Structural Condition Report (as described in

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Specifications Section 31 09 00 [Geotechnical Instrumentation and Conditions Inspections] and 01 32 33 [Photographs and Videos]) to the Project Representative for review. The Pre- and Post- Construction Structural Conditions Inspections will be performed by Sam deMers, PE (AECOM), please see the RAWP for Sam deMers' qualifications. Below is a list of structures within the Site that will require Pre- and Post- Construction Structural Conditions Inspections and Reports when Site activities are performed at the SMAs in close proximity to the structure.

Table 4-2: Site Structures and Locations

Structures Requiring Pre- and Post- Construction Structural Conditions Inspections and Reports	
Structure	SMA Location
STA 203+50 | Structure IM-A (South Park Bridge Main Piers and Fender Piles)	SMA 14
STA 213+50 | Structure IM-B (South Park Marina, South End)	SMA 13
STA 213+50 | Structure IM-C (Ecology Block Wall)	SMA 13
STA 214+50 | Structure IM-D (Public Pier and Viewpoint)	SMA 13
STA 233+00 | Structure IM-E (Wood Wall)	SMA 9
STA 233+50 | Outfall 2077	SMA 9
STA 234+15 | Outfall 2075	SMA 9
STA 234+50 | Structure IM-F (Sheet Pile Wall)	SMA 9
STA 237+00 | Structure IM-G (Sheet Pile Wall)	SMA 7
STA 246+50 | Structure IM-H (Timber and Dolphin Piles)	SMA 6 & 5
STA 251+00 | Structure IM-I (Pier 2, Slip 6)	SMA 4
STA 272+50 | Structure IM-J (Concrete Pier)	SMA 3
STA 293+00| Outfall 2073	SMA 7
STA 307+60 | Structure IM-K (98th Street Bridge)	SMA 2
STA 308+00 | Structure IM-L (Timber Piles)	SMA 2
STA 308+20 | Outfall 2092	SMA 2
STA 308+70 | Outfall 2097	SMA 2
STA 309+50 | Structure IM-M (Timber Piles)	SMA 2
STA 309+60 | Outfall DC16	SMA 2
STA 310+50 | Structure IM-N (Timber Piles)	SMA 1
STA 310+70 | Outfall 2096	SMA 1
STA 311+90 | Outfall 2093	SMA 1

4.4 Construction Stormwater Site Inspections

Construction Stormwater Site Inspections will be performed at the SMA-5 upland area (during periods of use) by a Certified Erosion and Sediment Control Lead (see the RAWP Section 2.3.9 for more details) once a week during period of continuous discharge and within 24 hours of any stormwater discharge from the Site. Repair or maintenance of BMPs identified during the inspections will be completed within 10 days of the inspection. Inspections will be documented on the Construction Stormwater Site

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Inspection Form provided in the Stormwater Pollution Prevention Plan and summarized in the Daily Construction Report.

The DRF and PPM's yards are under their own individual Industrial the Stormwater General Permit (ISGP) and cannot be managed under the separate construction stormwater permit and SWPPP for this Site. Please refer to Appendix E of the RAWP for copies of DRF and PPM's ISGPs. The DRF and PPM Yards will comply with their existing ISGP permits and perform the necessary inspections, BMPs, and reporting. Copies of the ISGP inspections and reporting will be provided to the Project Representative at the time they are submitted to the Department of Ecology.

5.0 Documentation and Reporting

The QC Officer is responsible for maintaining all QC documentation (RAWP Section 2.3.5) and is responsible for generating the Daily Construction Reports (**Section 5.1**), Weekly Construction Reports (**Section 5.2**), QC portions of the Monthly Progress Reports (**Section 5.3**), Monthly Air Pollution Compliance Summary Report (**Section 5.4**), and QC portions of the Annual Construction Season Summary Report (**Section 5.5**). The QC Officer will provide the Project Representative access to quality control records when requested.

5.1 Daily Reports

PPM will submit a Daily Construction Report (DCR) to the Project Representative (per Specifications Section 01 33 00 [Submittals]). The DCR will be reviewed by the Project Representative to ensure that it summarizes the required information and is complete; PPM will be required to revise the DCR if the Project Representative rejects the submitted DCR. PPM's DCR will include, at a minimum (per the specifications):

- Work conditions (e.g., weather, predicted tides, commercial navigation impacts)
- Activities: details of each activity, references to the construction schedule as possible, and location where each activity is taking place
- Summary of tailgate meeting, progress meetings, and QC meetings held with applicable documentation
- Daily progress summary: area(s) cleared and grubbed and any waste disposed of; quantities of sediment dredged, transported, and disposed of; material quantities placed; bucket plots displaying work areas, surveys, field notes, and survey calculations; Sediment Management Areas (SMAs) completion progress; and any delays
- Daily record of air, noise, and light criteria compliance; water quality protection; stormwater pollution prevention; water management; and any actions taken to address these issues during construction
- Daily record of vessel management coordination
- Specific QC activities performed
- Daily progress survey[s] will be attached to the DCR)
- Health and safety summary: safety infractions, near misses, and accidents
- Equipment: arrival at and shipment from the Work Site of each major item of equipment by manufacturer, model, serial number, and capacity; equipment in use and reasons for idle equipment
- Summary of tests conducted that day including testing observed or performed off site

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- Summary of test results received that day
- Construction progress photograph(s)
- Daily record of QC activities for the construction work completed
- Daily record of QC activities for construction work in progress
- Summary of follow-up work performed to ensure compliance with drawings and specifications
- Summary of any deviations from approved plans, specifications, and drawings
- Summary of any deficiencies or corrections noted, corrected, and/or the established path forward and timeline for each correction

5.2 Weekly Construction Report

PPM will submit its Weekly Construction Report (WCR) to the Project Representative (per Specifications Section 01 33 00 [Submittals]). The WCR will summarize the previous week's work, including the information listed in the PPM's DCR. The WCR will also comprise an updated project construction schedule and construction activity look ahead, including identification of any critical issues for the upcoming work week, applicable certificates of compliance and shipment releases, and disposal weight tickets. PPM will not have on-site weight scales.

5.3 Monthly Progress Reports

PPM will submit a Monthly Progress Report with each Application for Payment consistent with King County procedures. The Monthly Progress Report will include an updated construction bar chart, Schedule of Values, cash flow projection and narrative summary. For clarity, the Monthly Progress Report is not the EPA Monthly Progress Report which will be completed by the Project Representative.

The narrative summary will describe how the Project is progressing toward its completion. It will identify milestones completed, major equipment deliveries, and problems arising during the month. The monthly progress report should project the Work anticipated during the coming month, including major deliveries and submittals.

5.4 Monthly Air Pollution Compliance Summary Report

PPM will submit a Monthly Air Pollution Compliance Summary Report within 8 working days after the end of each month. The Monthly Air Pollution Compliance Summary Report will include a brief summary of air monitoring events; a summary of community complaints received and mitigation measure implemented to address complaints, if applicable; and equipment total operating hours and associated engine tier used for each Site activity.

5.5 Annual Construction Season Summary Report

The anticipated construction duration is three construction seasons, using an assumed in-water construction window of October 1 through February 15 of any given year. As described in Specifications Section 01 78 39 (Project Record Documents), PPM will submit an Annual Construction Season Summary Report within 30 calendar days after completion of construction activities and demobilization from the Site, for each Construction Season. For clarity, the Annual Construction Season Summary Report is not the EPA Annual Construction Season Summary Report which will be completed by the Project Representative. The PPM Annual Construction Season Summary Report will include, at a minimum:

- Summary of remediation activities completed, specifying Sediment Management Areas (SMAs) completed within the Construction Season

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- Summary of the area(s) cleared and grubbed that were completed within each Construction Season, including quantities of Cleared and Grubbed Material disposed for composting
- Summary of total volumes dredged (including Dredge Pay Volume, potential Contingency Re-Dredge Pay Volume, and Excessive Dredging volume) and disposed, and surface area completed (% complete)
- Summary of total volumes of material placed (achieving Required Placement Thicknesses, Targeted Placement Elevations, Targeted Placement Thicknesses, and Excessive Over placement), and surface area completed (% complete)
- Summary of removal and disposal Work for Piling and Identified Debris completed within each Construction Season
- Summary of any structural Work activities, such as bulkhead strengthening and reinforcement, Piling replacement, Steel Pipe Piling installation, or installation of outfall energy dissipation structures
- Summary of the environmental activities completed, including representative Work Site photographs, a summary of environmental inspections and monitoring data collected by the Contractor, and environmental management and issues during construction and how these issues were managed
- Summary of environmental compliance in each Construction Season as described in Section 01 35 43 (Environmental Procedures)
- Compilation of Monthly Air Pollution Compliance Summary Reports of equipment engine Tier and hours of usage to comply with green remediation requirements as described in Section 01 35 44 (Green Remediation Requirements)
- Summary of Contractor company staff transportation fleet mix used to comply with green remediation requirements as described in Section 01 35 44 (Green Remediation Requirements)
- Summary of Deviations from the Contract Documents or the Contractor's Remedial Action Work Plan, if any, and corrective actions taken to reconcile the Deviations so that remediation objectives were met
- As-Built Drawings (stamped by a Professional Engineer) for the Work completed in the Construction Season, including the following:
    - As-Built Drawings for all SMAs completed
    - As-Built Drawings for all installed earthwork, bulkhead wall, Steel Pipe Piling, outfall energy dissipation structures, and utilities
- Record Information provided by the PPM shall include the following:
    - Surveys (stamped by a Professional Land Surveyor licensed in Washington State), as described in Section 02 21 00 (Site Surveys and Positioning Control):
        - Construction Season Pre-Construction Survey documenting pre-construction conditions for each Construction Season
        - Construction Season Post-Construction Survey documenting post-construction conditions for completion of dredging and material placement Work elements for each Construction Season
        - Surveys shall be those used for the basis of measurement and payment of the Work, as described in Section 01 29 00 (Measurement and Payment).
    - Pre-Construction and Post-Construction Structural Condition Reports
    - All Daily and Weekly Construction Reports
    - Electronic records from the dredge positioning software (e.g., bucket maps)

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- Summary of weight tickets and Certificates of Disposal generated from the disposal of dredge materials
- Material, Dredge Debris, Identified Debris, and Piling at the Disposal Facility(ies)
- Weight tickets for imported placement materials
- Summary of geotechnical monitoring data
- Health and safety summary: include incidents and follow-up, monitoring results, and changes in Work activities
- Final Master Submittal List for each Construction Season
- All Quality Control Records maintained in PPM's Work Site files
- Any additional data or recordkeeping documents requested by the Project Representative during construction
- Summary of corrective actions implemented by the PPM at the direction of the Project Representative

6.0 Quality Control Meetings

6.1 Pre-Construction Meetings

A pre-construction meeting will be scheduled by the Owner for each construction season and conducted prior to commencement of any work at the Work Site. PPM will propose agenda topics for the pre-construction meeting, in addition to the pre-construction meeting agenda topics identified in Specifications Section 01 31 19 (Contract Meetings). The Owner's CCM, Project Representative, IQAT key personnel, PPM key representatives, and EPA (or designated oversight staff) will be required to attend, as described in Specifications Section 01 31 19 (Contract Meetings).

6.1.1 Pre-Construction Quality Control Meetings

Pre-construction meetings will be held with subcontractors to communicate QC expectations prior to the start of work in each SMA, prior to changes in Site activities, if Site conditions changes, if there is a change in Site working hours (e.g. day shifts to night shifts or vice versa), and any time new personnel start work at the Site.

6.2 Weekly QC Meetings

Weekly progress meeting will be conducted, as described in Specifications Section 01 31 19 (Contract Meetings), to review work progress, schedules, and other matters needing discussion and resolution. The Project Representative will lead these meetings and take meeting notes. Anticipated attendees include the Owner's CCM, Project Representative, IQAT key staff, EPA, and PPM.

6.3 Post-Construction Review

The pre-final inspection meeting will be conducted after all work has been completed and before the PPM demobilizes. The meeting will be attended by the Owner and its QA team, EPA, and PPM. All attendees will review construction completion documentation and assess whether the remedy was constructed in accordance with the approved plans and specifications and any approved changes thereto, and whether the project met construction performance standards.

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7.0 Conclusion

This Quality Control Plan provides a structured approach to managing quality on the project, ensuring that all construction activities meet the required standards and specifications. Regular inspections, testing, and documentation will be carried out to maintain the highest level of quality throughout the project.

8.0 References

Project Specification Sections:

- Section 01 45 00 - Quality Control
- Section 01 78 39 - Project Record Documents
- Section 02 21 00 - Site Surveys and Positioning Control
- Section 02 41 00- Demolition and Salvage
- Section 09 90 62 – Coating of Steel Pipe Piles
- Section 31 25 00 - Erosion and Sedimentation Control
- Section 31 62 10 - Steel Pipe Piling
- Section 32 32 10 - Bulkhead Wall Systems
- Section 32 91 00- Planting Preparation
- Section 33 05 25 - Outfall Energy Dissipation Structures
- Section 35 10 00 - Navigation Safety and Marine Traffic Control
- Section 35 20 23 - Remedial Dredging, Barge Dewatering, and In-Water Transportation
- Section 35 20 23.01- Transloading, Upland Transportation, and Disposal
- Section 35 37 10 - Material Placement

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Attachment A- Designation of Quality Control Officer

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The Quality Control Officer (QC Officer) for this project has been designated as Jeff Denman (AECOM). The QC Officer is responsible for monitoring construction work for compliance with the project plans and specifications, communicating directly with the King County Project Representative on QC matters and PPM's Project Superintendent and reporting to PPM's Project Manager. The QC Officer's responsibilities include but are not limited to:

- Coordination, review, and reporting of monitoring and mitigation measures according to the plans and specifications;
- Implementing the approved CQCP;
- Monitoring site activities for adherence to project specifications, drawings, and field changes approved by the King County Project Representative;
- Performing required inspections specified in the CQCP and project plans and specifications;
- Reviewing testing and inspection results for compliance with QC requirements;
- Revising the CQCP as required and approved by the Project Representative;
- Maintaining QC documentation; and
- Providing QC documentation to PPM's Project Manager.

The QC Officer has the full authority to execute actions necessary for implementing the QC program to ensure compliance with the project plans and specifications.
The QC Officer shall ensure that:

- Pertinent issues of appropriate QC documents are available at locations where operations essential to the effective functioning of the quality system are performed; and
- Obsolete documents are promptly removed from points of issue or use.

Respectfully,

Wilbur Clark
Digitally signed by Wilbur Clark
DN: C=US, E=jc@pacificpile.com, O=Pacific Pile & Marine, CN=Wilbur Clark
Location: Bonney Lake
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