Washington State Ferries

Water Quality Monitoring and Protection Plan (WQMPP)

Seattle Multimodal Terminal at Colman Dock
Elliott Bay
Order Number 14047

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PURPOSE

This Water Quality Monitoring and Protection Plan (WQMPP) is required by the Clean Water Act Section 401 Certification number 14047. The WQMPP is intended to provide specific information on activities that will be performed within and/or over waters of the state, and provide a monitoring schedule for tracking the performance of Best Management Practices (BMPs) used during in-water and over-water work within the project limits of the Seattle Multimodal Terminal at Colman Dock project.

Any changes or additions to the WQMPP must be approved, in writing by Ecology prior to implementing the changes. Approval is not necessary for minor adjustments to BMP's and/or procedures that are needed as the work is being done.

OBJECTIVES

This WQMPP will:

- document the performance of BMPs and procedures used for construction activities within and over waters of the state,
- determine if Water Quality Standards are being met at the edge of the mixing zone distance allowed in the individual 401 certification, and
- help to ensure compliance with the conditions of 401 certification number 14047 while conducting construction activities below the Ordinary High Water Mark (OHWM), for this project identified as construction activities within and over Elliott Bay of Puget Sound below the higher high tide elevation.

The WQMPP includes identification of the appropriate parameters to be monitored, locations, monitoring and sampling procedures, and frequency. It also contains the BMPs and construction procedures that will be used to reduce impacts to waters of the state during specific identified construction activities within and over water. These elements are described in detail and drawings are included, when necessary.

IN-WATER/OVER-WATER ACTIVITY DESCRIPTION

The Seattle Multimodal Terminal at Colman Dock project will preserve the Seattle Ferry Terminal as a regional multimodal transportation hub, providing safe, reliable, and effective service for transit, general and commercial purpose transportation, high occupancy vehicles (vanpools/carpools), pedestrians, and bicyclists. The project area includes Colman Dock (Pier 51/52) and the Pier 48 mitigation site.

WSF proposes to replace the aging and seismically vulnerable components of the Seattle Ferry Terminal at Colman Dock in order to maintain ferry service in the future. WSDOT intends to achieve this by:

- Maintaining the terminal's role as a safe regional transportation hub by designing the project to current codes and regulations, including the Americans with Disabilities Act (ADA);
- Addressing deficiencies in the existing creosote-treated timber dock structures and their associated buildings, and in Slip 3 vehicle and pedestrian bridges and their supporting structures;

- Enhancing the terminal's safety and operational efficiency by minimizing pedestrian and vehicle conflicts; optimizing movement of pedestrians and vehicles through the facility; and improving pedestrian connections with transit services adjacent to the terminal;
- Designing and developing the project to accommodate in-kind replacement of the existing two-slip passenger only ferry (POF) facility in a manner that does not preclude future growth of POF service in the vicinity of Colman Dock; and
- Designing and developing the project in a manner that is both sensitive to the natural environment and fiscally responsible.

The reconfigured facility will preserve the level of vehicle holding available today while enhancing safety. The proposed design retains those elements of the site that are in good condition. As an example, the southern portion of the dock, constructed using concrete and steel piles and structural supports, will be retained. Key elements of the Seattle Ferry Terminal Project include:

- Removing the timber portion of the trestle and constructing a new concrete trestle from Columbia Street northward to Marion Street;
- Replacing the main terminal building;
- Reconfiguring the dock layout to provide safer and more efficient operations;
- Replacing the vehicle transfer span and the overhead loading structures of Slip 3 (including a new bridge seat for Slips 2 and 3);
- Removing two existing timber wingwalls and constructing two new inner steel pile dolphins between Slips 2 and 3 (two main outer floating dolphins remain 'as-is');
- Maintaining a connection to the Marion Street pedestrian overpass; and
- Replacing the POF facility on the southern edge of Colman Dock.

A portion of the existing timber trestle from Marion Street to the north edge of the property will not be rebuilt and that area would become, after demolition, a new area of open water. A section of fill (~13,962 SF) contained behind a bulkhead underneath the northeast section of the timber trestle will also be removed. The overhead pedestrian bridge on Alaskan Way that crosses the Marion Street entrance is planned to be replaced by the City of Seattle after demolition of the viaduct.

The project will maintain the current POF functions on site, and address safety concerns related to pedestrian/vehicle conflicts at Yesler Way. A new covered pier, sized to accommodate POF passenger waiting and connected by a new overhead pedestrian bridge to the terminal building and the Marion Street Overpass, will be constructed along the south side of Colman Dock.

The project will be constructed in phases so that WSF can maintain ferry operations during construction. All construction activities will occur within, over, or immediately adjacent to Elliott Bay in Puget Sound. Most of the work will be performed using crane barges anchored to the sea floor using spuds, and material barges that will be secured to the crane barges with lines, and used to bring supplies to the project site and transport demolition waste away from the site. The construction will take approximately six years, from mid-2017 to 2023. In-water work is subject to a fishery closure window between August 1, 2017 and February 15, 2018; and fishery closures will be determined each construction year by WDFW's most current Hydraulic Project Approval (HPA), unless otherwise authorized by Ecology. Work on top of the trestle (over water work) will be ongoing

throughout each year. In-water elements of the project will take place in phases, over six consecutive in-water work windows.

The project will be working below the OHWM and/or over Elliott Bay of Puget Sound during the following activities:

Hazardous Materials Abatement – Existing information on hazardous materials at the project site was reviewed as part of preparing a Hazardous Materials Discipline Report for the Seattle Multimodal Terminal at Colman Dock Project Environmental Assessment (Herrera 2014) and the Hazardous Materials Technical Memorandum (Herrera 2016), and a detailed Draft Limited Hazardous Materials Survey Report was completed in October 2016 (EHSI 2016). In addition to creosote-treated timbers and piles that will be removed as part of the project, and contaminated sediments that are to be capped with clean sediment, some asbestos that remains from past terminal building renovations will be removed. Asbestos-containing materials were found in the main terminal building, vessel vender storage building, vehicle passenger attendant crew (VPAC) building, below the timber trestles including Pier 48, and in the overhead loading walkways, re-entry booth, and sprinkler riser buildings. Lead-based paint was also detected at several locations, and fluorescent lighting assumed to contain mercury and possibly PCBs were inventoried. Five oil-filled transformers on the site were assumed to also contain PCBs. Hazardous materials will be removed and contained in a manner compliant with all applicable laws, and will not be allowed to enter surface waters.

Starting in May 2018 under Phase 2, the northwest corner of the existing terminal building and the existing VPAC building will be demolished. Abatement will occur in this area to remove and properly dispose of identified hazardous building materials, and selective demolition will be performed to remove and salvage as much as possible from inside the building. This will be followed by demolition of the structure using large equipment from the trestle deck. Most or all of the terminal building and VPAC building demolition will occur at night in consideration of WSF operations, passenger and vehicle safety, and construction efficiency.

After construction of the first third of the new terminal building is completed in February 2019, Phase 3 abatement and demolition of the remainder of the old building will proceed. Any materials to be salvaged will be removed first along with abatement activities inside the building, as needed. Similar to Phase 2, demolition will be performed at night using large equipment operating on the trestle deck.

The contractor will provide and maintain the materials and equipment necessary to ensure at all times there is sufficient capacity for the temporary storage and proper segregation of generated wastes. Equipment used to handle contaminated waste streams including containment, temporary storage, and transport, are properly decontaminated before handling any uncontaminated wastes. Standard BMPs will be used to prevent and control spills of hazardous materials and to protect the environment when stockpiling, transporting, or disposing of contaminated materials. No structural material may enter Elliott Bay during ferry terminal demolition activities. A boat will be available on site at all times and incidental debris from demolition activities will be removed from the water. Waste handling,

containment, testing, storage, treatment and disposal operations will be documented according to all applicable State and Federal requirements.

Demolition of Concrete and Metal Structures Including Trestle and Pile Caps – Phase 1 demolition of the North Trestle and a small section of Pier 50 at the South Trestle will begin on or about August 1, 2017. At the North Trestle, the existing elevated walkway will be removed and crews will saw-cut and remove the concrete trestle and pile caps, and shear existing piles off at the mud line. The work will be supported by multiple marine barges for cranes and demolition materials. Concrete pile caps will also be removed from the North Trestle during Phase 2.

Remaining demolition work during Phase 3 starting in June 2019 will be performed by barge-mounted and land-based equipment, including the Slip 2 bridge seat and piling. Phase 3 saw-cutting and removal of the existing concrete North Trestle and concrete piles starting in June 2020 will be supported by land-based cranes. Trestle demolition can begin in June each year; however, pile demolition cannot start until August 1.

Concrete slurry and debris will not be allowed to enter Elliott Bay (waters of the state). All saw-cut debris will be captured and fully contained for proper disposal. An industrial vacuum will be used to vacuum all saw cut cooling water and associated slurry created in the concrete cutting process. All slurry and cooling water will be stored in 55-gallon drums or other sealed containers, and will be removed from the site for proper disposal. The contractor will place a plastic sheeting-lined skip-box or other watertight catchment on a float below the area being saw-cut to capture any slurry or water that may escape the vacuum, and prevent it from entering the water. Stormwater contacting any concrete waste piles will also be contained and properly disposed. The contractor will develop a Concrete Containment and Disposal Plan with specific protocols for managing concrete material.

Metals that are non-hazardous (e.g., no lead-based paint) will be cut into pieces and lifted by a crane and placed on a barge or in a container for disposal. Debris associated with metals demolition will not be allowed to enter Elliott Bay. Metal cutting will be completed over containment (e.g., filter fabric, plastic sheeting, etc.) to ensure that metals demolition debris is not released into surface water. The contractor will install straw bales, filter fabric, and oil absorbent booms around any opening on the barges where demolition material will be stored, to prevent any discharges to waters of the state. Barges will not be allowed to ground out during in-water construction, will be swept, as necessary, to keep them free of material that could be blown into the water, and stockpile materials will be covered.

Demolition of Creosote-Treated Timbers and Wood – Most of the over-water removal of treated wood will be from the Pier 48 and North Trestle areas. Demolition of the western portion of Pier 48 will occur under Phase 1 during August and September 2017, and demolition of the North Trestle will be performed as part of Phases 2 through 4 starting in June 2018, and ending in 2021. The existing timber dogleg wingwalls will be demolished during Phase 2 and 3. The work will be supported by marine barges for cranes and containment of demolition materials.

Removal of sections of the two outermost bents and decking from Pier 48 will proceed until a minimum of 5,355 square feet of overwater coverage is removed. Following asphalt-concrete pavement removal, the demolition process will likely entail removing the timber decking and timber stringers spanning between adjacent bents. Once the timber decking and stringers are removed, the timber pile caps will be removed.

The North Trestle and Pier 48 timber superstructure will be removed in as large pieces as practical. All timber removed from the pier and trestle areas will be placed on a barge outfitted for spill prevention (e.g. liner, straw bales, etc.) or in debris boxes. A containment boom with a turbidity curtain, oil absorbent boom, spill containment kits, and anything else that might be required to prevent construction debris from reaching the water will be placed in and around work areas during demolition. Booms will be cleaned or replaced as frequently as needed to maintain effective performance, and at a minimum frequency of once daily. Any timber or other debris that does reach the water will be collected and placed on barges for disposal. Treated wood cutting will be completed over containment (e.g., filter fabric, plastic sheeting, etc.) to ensure that sawdust or other demolition debris is not released into surface water. Treated wood will be contained during and after removal to preclude contaminants from entering the aquatic environment. The contractor will install straw bales, filter fabric, and oil absorbent booms around any opening on the barges where demolition material will be stored, to prevent any discharges to waters of the state. Barges will not be allowed to ground out during in-water construction, will be swept, as necessary, to keep them free of material that could be blown into the water, and stockpiled materials will be covered.

Moving and unloading barges and debris boxes more frequently may be necessary for odor control. If it is necessary to spray mist to mitigate fumes and odors from the treated wood and attached marine life, seawater will be used and the spraying will be conducted on the barge where waste waters are contained. The seawater intake would be screened to prevent entrainment of fish and other marine life.

Pile Removal – The project will remove more than 2,000 existing piles, including all creosote-treated piles. In-water pile work can only occur between August 1 and February 15.

- Phase 1 demolition beginning in June 2017 will include vibratory removal of steel piles at the existing passenger-only ferry (POF) slips, and shearing concrete piles at the South Trestle. Vibratory removal of additional timber piles from the western portion of Pier 48 will begin under Phase 1 in August 2017.
- Phase 2 demolition starting in June 2018 will include vibratory or direct pull removal of timber piles from the North Trestle and from Slip 3. Phase 2 will also include vibratory removal of concrete-filled steel piles, encased H piles, steel H piles, steel piles and concrete piles from the Slip 3 area.
- Phase 3 starting in June 2019 will include vibratory removal of timber, concrete-filled steel, and steel piles at the North Trestle. Demolition of the wingwall dogleg extension and removal of the Slip 2 bridge seat will involve the vibratory removal of additional timber piles. A temporary dolphin with steel piles will also be removed.

- Phase 4 starting in June 2021 will include vibratory removal of timber piles, concrete-filled steel piles, and steel piles from the North Trestle.
- Phase 5 starting in June 2022 will include vibratory removal of the remaining timber piles and steel piles from the North Trestle.

Pile removal work will be performed using land-based and barge-mounted cranes, and supporting barges for stockpiling and transport of waste materials. Piles will be removed using vibratory methods, or by direct pull, and piles will be cut off at or below the mudline when necessary. Every attempt will be made to keep extraction equipment out of the water, above the water line, to prevent creosote release into the water that could occur if a wood pile is pinched by extraction equipment below the water line. Piles will not be broken off by intentionally twisting, bending, or other deformation, to minimize any potential release of creosote into the water. Piles will be vibrated out of the substrate to the extent possible to minimize disturbing or suspending sediments. Pile removal will be performed at a slow and controlled pace to minimize turbidity and the spread of contamination. The crane operator will take measures to reduce turbidity, such as vibrating the pile slightly to break the surface tension between the pile and surrounding sediment, and removing the pile slowly; or if using direct pull, ensuring the removal rate is slow enough to meet water quality standards at the mixing zone. Upon removal from the substrate, the pile shall be moved immediately from the water into the containment barge. The pile shall not be shaken hosed off, stripped or scraped off, left hanging to drip, or any other action intended to clean or remove adhering material from the pile. The contractor shall not "wash" sediments adhered to piling into surface waters. A silt curtain may be used to limit the spread of turbidity and contaminants.

In areas to be capped, WSF proposes to shear most of the timber piles and some concrete piles at the mudline rather than fully remove them with a vibratory hammer. Because of sediment contamination below the mudline, full pile removal would suspend contaminated sediments into the water and allow for settling of attached sediment and pile fragments onto clean cap materials. Shearing will disturb less sediment and minimize the risk of re-contamination during pile removal. As required for pile pulling, pile shearing operations will move the piles immediately from the water into the containment barge, and a silt curtain may be used to limit the spread of turbidity and contaminants. A two-foot thick engineered cap will isolate all sheared pile stubs in the capping area from exposure to marine fish, wildlife and vegetation. The cap will prevent creosote remaining in the sheared portions from leaching up into the environment. Shearing will occur with a hydraulic arm (all hydraulic fluids are vegetable oils) assisted by video. The operator will reach the arm down into the sediment around the pile, cut and lift each pile, and place the piles on barges. Template and temporary piles will be removed with a vibratory hammer.

If piles break or are already broken below the waterline, or are so deteriorated that they cannot be removed using either the vibratory, direct pull or shearing methods, the operator will use a clamshell bucket to pull the piles from below the mudline, or cut two feet below the mudline using a hydraulic saw. No hydraulic jetting devices will be used to move sediment away from piles if they need to be cut below the mudline. To minimize disturbance to bottom sediments and splintering of piling, the contractor will use the minimum size bucket required to pull out piling based on pile depth and substrate. The clamshell bucket will be emptied of piling and

debris on a containment barge before it is lowered into the water. Holes resulting from the pulled piles will be filled with clean sand or gravel to restore the substrate surface.

A containment boom surrounding the work area will be used during creosote-treated pile removal to contain and collect any floating debris and sheen. The floating booms will be equipped with absorbent pads to contain any oil sheens and placed to not interfere with vessel operations. The boom will remain in place until all oily material and floating debris have been collected and all sheens have dissipated. The contractor will also retrieve any debris generated during construction, which will be properly disposed of at an approved upland location.

Removed piles, stubs, and associated sediments will be placed and contained within a straw bale and waterproof sheeting enclosure on the barge or in sealed refuse containers. All barge scupper holes will be sealed and be water tight, with no ability for release to surface water, and watertight steel fencing (i.e., barge rails) will have a minimum height of 4 feet to prevent material from spilling into waters of the State. Sediments spilled on work surfaces will be contained and disposed with the pile debris at an approved upland disposal site. Water left in the containment barge will not be discharged to waters of the state. Any spraying of chemical products to control odors from piles or treated timbers will require prior approval of chemical ingredients by Ecology, and additional water quality protection measures may be required.

Shaft Drilling and New Pile Construction – A total of approximately 515 new piles will be constructed.

- Beginning in August 2017, Phase 1 construction will include vibratory and impact installation of piles at the South Trestle, temporary and permanent piles for the passenger-only ferry, piles at the North Trestle, and several piles for other temporary structures.
- Phase 2 construction beginning in August 2018 will include vibratory and impact installation of piles at the North Trestle and Slip 3, piles for dolphins and the wingwall dogleg extension, and several piles for other temporary structures. Shaft drilling will occur during Phase 2.
- Phase 3 construction beginning in August 2019 will include vibratory and impact installation of piles to support new trestle and Slip 2, plus vibratory installation of piles for the wingwall dogleg extension, and the bridge seat.
- Phase 4 construction beginning in August 2020 will include vibratory and impact installation of piles at the North Trestle.

Drilled shafts will be constructed after installing hollow steel casings six to ten feet in diameter with a vibratory hammer. The material inside the casings will then be excavated using a barge-based auger or clamshell bucket. A friction collar catchment system (i.e., large funnel made of plywood and lined with plastic sheeting) will be affixed to the steel casing after installation. The catchment system will be secured around the casing and extend from the top of the casing to a dedicated spoils barge to prevent drill spoils from spilling into waters of the State. The spoils barge will be equipped with barge rails and secondary containment. After excavation is completed, rebar is then placed in the shaft and concrete poured into the shaft. The contractor is required to ensure that wet concrete does not enter marine waters. The contractor will contain soils and slurry to minimize turbidity. If synthetic

or mineral slurries are used in the drilled shafts, the slurry water (process water) will not be discharged to waters of the state or infiltrated in upland areas. The sediment excavated from within casings and drilling slurry will be contained and disposed at an approved upland location, and Ecology will be notified of the disposal site. The contractor will be required to have a work plan that includes monitoring, equipment inspection, and a response plan for any accidental discharges of drilling fluids or concrete during drilled shaft installation.

New piles will be installed using a combination of methods including a vibratory hammer and/or an impact hammer. In some cases, there could be multiple piles being installed or removed at one time. Foundation piles will be driven with a vibratory hammer to refusal, and then driven to the target tip depth with an impact hammer. A noise attenuation device such as a bubble curtain would be deployed during all steel pile impact driving activities to mitigate underwater noise impacts on fish and marine mammals.

Generally, when done as a standalone operation, pile installation is an activity that creates low levels of turbidity. WSF may request relief from water quality monitoring protocols using instruments and rely upon visual monitoring if sampling data substantiates low levels of turbidity during pile installation.

Installation of Concrete Structures – Each phase of construction involves extensive construction of concrete beams, pile caps, and trestle decking. Predominantly pre-cast panels will be delivered to the site for trestle decking. Watertight forms will be constructed to contain cast-in-place concrete and prevent leaching. The contractor will develop a Concrete Containment and Disposal Plan with specific protocols for managing concrete material, and monitoring concrete pours to ensure that forms are not leaking. Concrete waste and water that has encountered fresh concrete will be prevented from entering Elliott Bay. Impervious materials will be placed over any exposed wet concrete where runoff could enter waters of the state. Forms and impervious materials must remain in place until the concrete is cured for at least 7 days. Any concrete process water or stormwater encountering cast-in-place concrete that is incompletely cured must be contained, with no possible entry to state waters, and tested and disposed at the sanitary sewer under a King County waste discharge approval. Concrete delivery systems situated over water will be inspected daily to prevent any discharges of concrete and/or slurry water into Elliott Bay. Any stockpiles or construction material storage areas will be covered if they have a potential to contaminate stormwater.

Excavation and Habitat Restoration Followed by Sheet Pile Removal – A portion of the existing timber North Trestle from Marion Street to the north edge of the property will not be rebuilt. After demolition, this area will become new open-water marine habitat. Approximately 13,962 square feet of fill soil will be removed with a land-based excavator from behind an existing sheet pile wall in the northeast corner of the area, and placed in trucks for hauling and disposal in an approved upland location. Any waste water from dewatering excavated soils will be contained and disposed to the sanitary sewer system under a Contractor-obtained King County waste discharge approval. Turbid water will not be pumped from the work area and discharged to Elliott Bay. The sheet pile will be left in place during the excavation to help contain turbidity. After fill soil excavation has been completed, the sheet pile will be removed. Construction equipment and techniques (e.g. vibratory or direct

pull) similar to steel pile removal will be used for sheet pile removal to minimize disturbance to or transport of bottom sediments, and a sediment curtain and floating boom will be used as necessary to contain turbidity and any sheen or debris.

Sediment Capping – To contain existing contamination from creosote-treated piles and other sources, WSDOT proposes to place a new sediment cap to the immediate north and to the south of the existing sediment cap and concrete trestle. Cap expansion is designed to prevent direct contact by benthic organisms to the currently exposed contaminated sediment.

The cap may extend up to 5.8 acres. The minimum volume of fill associated with the cap is approximately 17,337 CY (based on minimum thickness) and the maximum cap material volume is approximately 21,825 CY (if more material is placed in response to settlement).

The cap will be placed in phases as areas of the trestle are opened up to exposed open water. A bucket will be used to place capping material in open water areas. However, because of the need to place a cap under some portions of the existing dock and the complex phasing of construction activities in portions of the new dock, some of the cap materials will need to be installed under the trestle using a conveyor system.

A survey of the cap thickness and bathymetry will occur after placement of the cap material and prior to pile installation. If the survey indicates areas requiring additional material to meet the minimum thickness, the material shall be placed utilizing the capping box method prior to pile installation in the area. The Contractor shall adhere to this construction activity sequence for sediment cap installation, and coordinate with WSF and Ecology when circumstances require alteration of the sequence. See Appendix C for description of a short-term alternation of the sediment cap installation sequence during construction Phase 1 to assure minimum thickness.

The cap materials will originate from a gravel pit and will be required to meet sediment cleanup objectives before placement (uncontaminated material, material size requirements). The cap material specifications allow for a minimum amount (less than 5 percent) of fine particles consisting of silt and clay. Fines present in the cap materials will create turbidity during installation. The fine particles will settle very slowly, and will drift outside of the cap area before settling to the sediment surface. The conveyor method will increase the amount of suspension of fines during placement compared to the bucket method.

New piles will be driven through portions of the cap, as the new trestle is constructed. Due to the complex phasing, timber piles located adjacent to portions of the installed cap must remain in place, and be removed during the subsequent phase. WSF will apply BMPs to minimize suspension, such as lowering the bucket to deposit cap materials at the sediment surface and slowing the application rate during open water placement. During cap placement using a bucket, water quality standards will be met at the 150-foot mixing zone compliance point. During conveyor placement of cap materials, increased turbidity will extend beyond the point of compliance for up to two months in three of five in-water work windows. Water quality monitoring experience with other capping projects in tidal waters has shown that a mixing zone of 300 feet will be necessary for sediment cap installation with a conveyor.

The turbidity increase within the 300-foot mixing zone will be for a limited duration and extent as described below. Only a small amount of fines will settle on sediment outside the cap area, and the contractor is required ensure these fines will be free of contamination.

WSF will monitor water quality during all phases of the sediment cap installation as identified by this WQMPP.

For all in-water and over-water construction activities, the contractor will implement turbidity control measures to contain turbidity impacts. Sediment curtains or other possible BMPs (e.g. slowing the pile removal rate, cleaning work surfaces and material storage areas) will be deployed if turbidity monitoring indicates that water quality standards may be exceeded. In some areas piles will be sheared instead of pulled to minimize turbidity, resuspension of contaminated sediments, and potential recontamination of new sediment cap material.

The contractor will be required to prepare a Spill Prevention, Control and Countermeasures (SPCC) Plan to be used for all areas of the site during the duration of the project. The SPCC Plan will be maintained at the site by the contractor and identify construction planning elements, and recognize potential spill sources at the site.

- Staging areas for equipment and vehicle storage, fueling, servicing, and hazardous material storage will be established in locations and in a manner that will prevent contaminants from entering Elliott Bay. Secondary containment and/or absorbent material will be placed under any equipment staged over the water, such as cranes, when the equipment is not in use. The contractor shall regularly check fuel hoses, oil drums, oil or fuel transfer valves, fittings, etc. for drips or leaks, and shall maintain and store materials properly and with secondary containment to prevent spills.
- Lubricants composed of biodegradable base oils such as vegetable oils, synthetic esters, and polyalkylene glycols are recommended for use in equipment operated in or near water. All equipment being used below the OHWM will use only bio-degradable hydraulic fluid. Equipment will be free of external petroleum-based products while used around waters of the state, and accumulations of soil or debris will be removed from the drive mechanisms (wheels, tires, tracks, etc.) and undercarriage before entering Elliott Bay or over-water areas.
- Wash water from wash-down of equipment and work areas will be contained for proper disposal and shall not be released into Elliott Bay. A separate area will be set aside, which does not have any possibility of draining to Elliott Bay, for the wash-out of concrete delivery trucks, pumping equipment, and tools.
- The SPCC Plan shall outline BMPs, response actions in the event of a spill or release, and notification and reporting procedures. The SPCC Plan shall also outline contractor management elements such as personnel responsibilities, project site security, site inspections, and training. The SPCC Plan will describe what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates during construction activities. These items include, but are not limited to, gasoline, diesel fuel, oils, and chemicals. The contractor shall maintain at the job site all applicable spill response equipment and material designated in the SPCC Plan.

WATER QUALITY STANDARDS FOR SURFACE WATERS

The Washington State Department of Ecology establishes surface water quality standards (Chapter 173-201A WAC) as required by the Environmental Protection Agency (EPA). All surface waters of the state have uses designated to them for protection under this chapter. These standards are intended to protect surface waters of the state for beneficial uses. These uses include public health, recreation, and the propagation and protection of fish, shellfish, and wildlife. Surface waters of the state include lakes, rivers, ponds, streams, inland waters, saltwater, wetlands, and all other surface waters and water courses within the jurisdiction of the state of Washington. The discharge of polluting matter to waters of the state is a violation of the Washington State Water Pollution Control Law (Chapter 90.48.080 RCW). This WQMPP is intended to help prevent violation of the law.

The water quality standards' aquatic life use designation for marine waters in Water Resource Inventory Area (WRIA) 8 is "excellent", and the criteria for this designation include:

- Turbidity: Turbidity must not exceed: 5 nephelometric turbidity units (NTU) over background when the background is 50 NTU or less, or a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
- pH: pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5 units.
- Temperature: 1-day maximum temperature of 16°C (60.8°F)
- Dissolved oxygen: 1-day minimum dissolved oxygen of 6.0 mg/L

In addition, general narrative water quality criteria apply to all existing and designated uses for fresh and marine water:

- Toxic, radioactive or deleterious material: must be below concentrations which have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health.
- Aesthetic values: must not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch or taste. For example, the presence of oil or grease must not produce a visible sheen.

MONITORING PLAN

Table 1 outlines the monitoring parameters and schedule for in-water and over water work activities.

- A turbidity background sample must be taken each day prior to taking monitoring samples. Background samples will be collected at a 300 foot radial distance from the active work zone. Monitoring samples will be collected at the point of compliance (150 foot radial distance from the construction work zone) and may also be collected at half the distance to the point of compliance (75 foot radial distance from the construction work zone), as approved by Ecology. Figures 1 through 3 show example turbidity monitoring locations spaced off of the outer edges of work zones for trestle demolition, trestle construction, and demolition and construction activities outside the trestle perimeter. Figure 4 shows example turbidity monitoring locations spaced off of the outer edges of general sediment cap placement activities.
- When using a conveyor to place sediment cap material, monitoring samples will be collected at a temporary mixing zone (300 foot radial distance from the construction work zone), may

also be collected at half the distance to the temporary mixing zone (150 foot radial distance from the construction work zone), and background samples will be collected at a 450 foot radial distance from the active work zone. Figure 5 shows example turbidity monitoring locations spaced off the outer edges of sediment cap placement under the trestle using a conveyor system. The same monitoring protocols will be employed when using the conveyor system to touch up or finish focused areas of the cap thickness in areas where piles have been installed. Turbidity curtain (20 feet in length) will encircle the work area of active conveyor use.

- Figure 6 shows example monitoring locations spaced off the outer edges of the Pier 48 demolition work zone.
- Water quality monitoring plan sheets for each construction phase show these locations in greater detail (Appendix B). Where the work zone is shoreward from the trestle perimeter and the 150 foot radial monitoring distance is under the trestle and not safely accessible for turbidity sampling, visual monitoring will be performed at the edge of the trestle. If visual monitoring indicates a turbidity problem then samples will be collected at the edge of the trestle and an exceedance would trigger requirements for reporting and implementing measures to reduce the turbidity.
- To ensure that compliance samples are collected down-current from the work zone, three samples will be collected from three different locations at the compliance distances. When samples collected at the halfway points show compliance with water quality standards, sampling at the points of compliance will not be necessary.

Table 1 Summary of water quality monitoring locations, frequency, parameters and standards for the Seattle Multimodal Terminal at Colman Dock

In-water or Over-water Activity (Waterbody = Elliott Bay)	Monitoring Point Location	Frequency	Parameters	WQ Standard
Demolition of concrete caps and other concrete structures	At in-water work area or point of compliance	Continuous visual monitoring	Oil and Grease	No visible sheen outside the oil-absorbent boom
Demolition of creosote-treated timber and wood	At in-water work area or point of compliance	Continuous visual monitoring	Oil and Grease	No visible sheen outside the oil-absorbent boom

In-water or Over-water Activity (Waterbody = Elliott Bay)	Monitoring Point Location	Frequency	Parameters	WQ Standard
Creosote Pile Removal	At in-water work area or point of compliance	Intensive monitoring every 4 hrs during the activity, followed by routine daily monitoring if at least six consecutive intensive monitoring events do not exceed turbidity standard	Turbidity at noted frequencies when creosote pile removal is being done	5 NTU over background when background is 50 NTU or less, or a 10% increase in turbidity when background is >50 NTU
	At in-water work area or point of compliance	Continuous visual monitoring	Oil and Grease	No visible sheen outside the oil-absorbent boom
Excavation and Habitat Restoration Behind Sheet Pile in NE Corner	150 ft. radius, 75 ft. radius (half way), and 300 ft. up-current (background)	Intensive monitoring at 30-minute intervals during the first hour and every 4 hrs during the excavation of saturated soils, followed by routine daily monitoring if at least six consecutive intensive monitoring events do not exceed turbidity standard	Turbidity at noted frequencies when excavation is being done	5 NTU over background when background is 50 NTU or less, or a 10% increase in turbidity when background is >50 NTU
	At in-water work area or point of compliance	Continuous visual monitoring	Oil and Grease	No visible sheen outside the oil-absorbent boom
Sheet Pile Removal in NE Corner	150 ft. radius, 75 ft. radius (half way), and 300 ft. up-current (background)	Intensive monitoring every 2 hrs during the activity	Turbidity at noted frequencies when sheet pile removal is being done	5 NTU over background when background is 50 NTU or less, or a 10% increase in turbidity when background is >50 NTU
	At in-water work area or point of compliance	Continuous visual monitoring	Oil and Grease	No visible sheen outside the oil-absorbent boom

In-water or Over-water Activity (Waterbody = Elliott Bay)	Monitoring Point Location	Frequency	Parameters	WQ Standard
Shaft Drilling and New Pile Construction	150 ft. radius, 75 ft. radius (half way), and 300 ft. up-current (background)	Intensive monitoring every 4 hrs during the activity, followed by visual monitoring if at least two consecutive intensive monitoring events do not exceed turbidity standard	Turbidity at noted frequencies when pile work is being done	5 NTU over background when background is 50 NTU or less, or a 10% increase in turbidity when background is >50 NTU
	At in-water work area or point of compliance	Continuous visual monitoring	Oil and Grease	No visible sheen outside the oil-absorbent boom
Sediment Capping	150 ft. radius, 75 ft. radius (half way), and 300 ft. up-current (background)	Intensive monitoring every 2 hrs during the activity, followed by routine daily monitoring if at least six consecutive intensive monitoring events do not exceed turbidity standard	Turbidity at noted frequencies during sediment capping	5 NTU over background when background is 50 NTU or less, or a 10% increase in turbidity when background is >50 NTU
	At in-water work area or point of compliance	Continuous visual monitoring	Oil and Grease	No visible sheen outside the oil-absorbent boom
Sediment Capping with Conveyor	At in-water work area or point of compliance 300 ft. radius, 150 ft. radius (half way), and 450 ft. up-current (background)	Intensive monitoring every 2 hrs during the activity, followed by routine daily monitoring if at least six consecutive intensive monitoring events do not exceed turbidity standard	Turbidity at noted frequencies during sediment capping	5 NTU over background when background is 50 NTU or less, or a 10% increase in turbidity when background is >50 NTU
	At in-water work area or point of compliance	Continuous visual monitoring	Oil and Grease	No visible sheen outside the oil-absorbent boom

SOURCE: NAIP, 2015; ESA, 2016

Coleman Docks . 120069.AA

Figure 1

Example Turbidity Monitoring Locations for Trestle Demolition

SOURCE: NAIP, 2015; ESA, 2016

Coleman Docks . 120069.AA

Figure 2

Example Turbidity Monitoring Locations for Trestle Construction

SOURCE: NAIP, 2015; ESA, 2016

Coleman Docks . 120069.AA

Figure 3

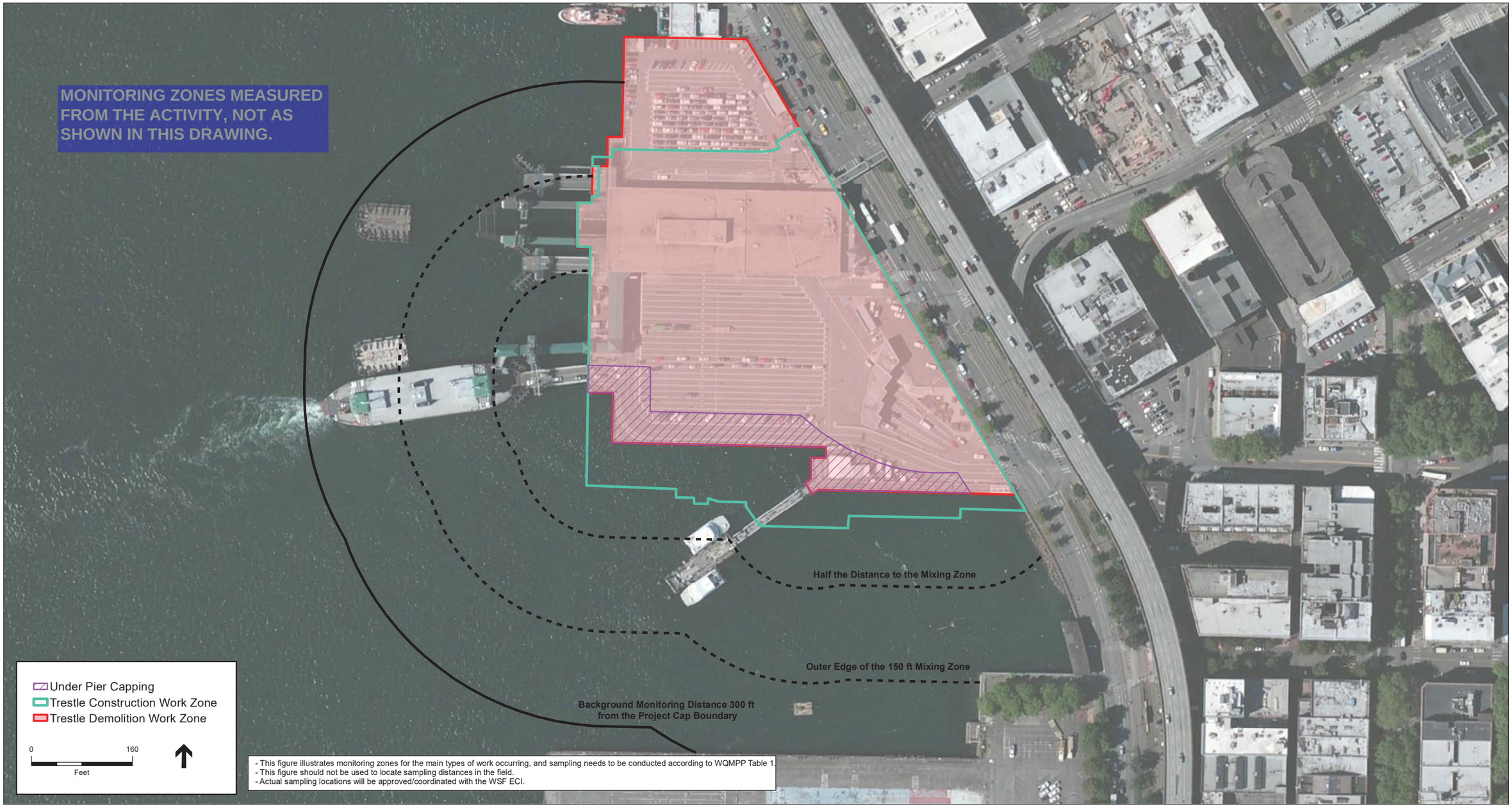
Example Turbidity Monitoring Locations for Demolition and Construction Outside the Trestle Perimeter

SOURCE: NAIP, 2015; ESA, 2016

Coleman Docks . 120069.AA

Figure 4

Example Turbidity Monitoring Locations for General Sediment Cap Placement

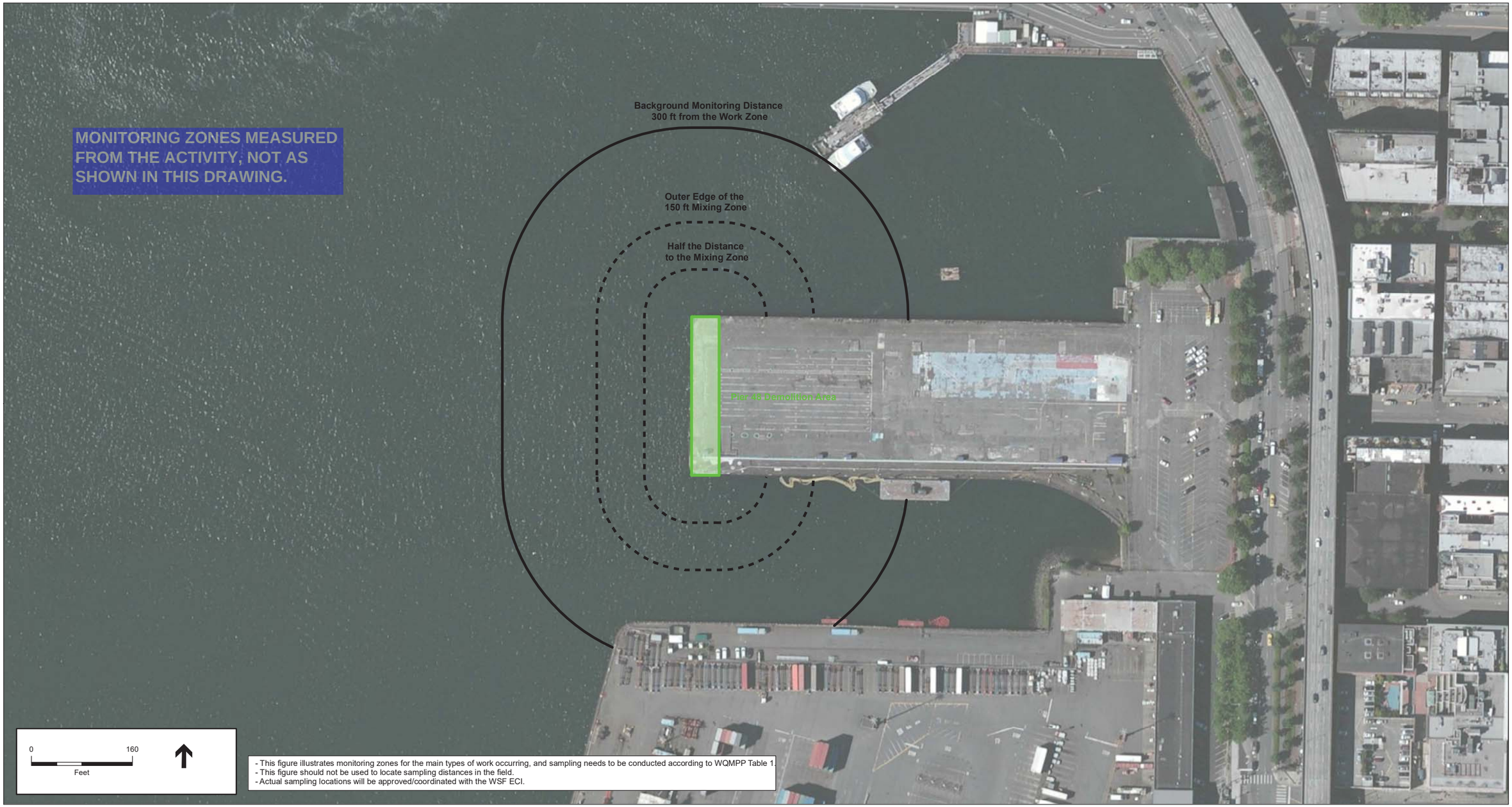


SOURCE: NAIP, 2015; ESA, 2016

Coleman Docks . 120069.AA

Figure 5

Example Turbidity Monitoring Locations for Sediment Cap Placement Using a Conveyer Belt



SOURCE: NAIP, 2015; ESA, 2016

Coleman Docks . 120069.AA

Figure 6

Example Turbidity Monitoring Locations for Pier 48 Demolition

- Background is defined as the biological, chemical, and physical conditions of a waterbody, outside the area of influence of the discharge under consideration; in this case, up-current (i.e. opposite the direction that surface water is flowing) from the construction activity.
- There is no mixing zone for pH, so pH measurements will be collected as close as safely practicable to directly beneath any concrete sawing work.
- Visual monitoring will be conducted continuously through the entire construction activity for all work in or over Elliott Bay. Inspection of in-water and over-water BMPs will be performed at least daily, and concrete pours will be watched to ensure forms are not leaking.

Monitoring Schedule

Intensive sampling will generally be performed once every two to four hours, depending on the construction activity, until monitoring results show that the activity is not causing turbidity exceedances. For construction activities that disturb sediments and have a higher risk of causing increased turbidity (e.g. sediment capping, pile and sheet pile wall removal), routine daily turbidity monitoring will be performed if six consecutive intensive sampling events do not exceed the turbidity standard. Routine daily monitoring will be performed at least 30 minutes after the start of the construction activity. For pile installation, and construction activities that do not disturb sediments and have a lower risk of causing increased turbidity, visual monitoring can be conducted instead of turbidity sampling if at least two consecutive intensive sampling events do not exceed the turbidity standard.

Ferry vessels may disturb bottom sediments and influence turbidity. Because the Department of Homeland Security requires other vessels to stay at least 200 yards from ferries, sampling will not be performed within 200 yards of ferries with engines running at Colman Dock. Sampling personnel will wait and collect samples at least 15 minutes after the ferries have left the dock.

Monitoring Duration

Following approval of the WQMPP by Ecology, grab samples or direct measurements (for turbidity) and visual observations (for oil and grease, and turbidity as appropriate) will be collected for as long as the construction activity that has triggered monitoring is taking place. The sampling duration may be extended if the water quality data demonstrate additional sampling is necessary. Sampling is in addition to the continuous daily visual monitoring of construction activities and inspection of BMPs by WSDOT environmental staff that will continue through project completion.

Contingency Sampling

If there is a visual change in Elliott Bay turbidity beyond the compliance distances due to work activities at any time outside of a scheduled monitoring event or a potential increase in pH, contingency sampling is required. If any concrete slurry enters the water, the pH of the slurry will be measured and the quantity of slurry released will be estimated and recorded. If monitoring confirms that turbidity or pH do not meet water quality standards, then additional samples will be taken to determine the duration and magnitude of the event. If monitoring results show that water quality standards are not being met, WSDOT will modify or stop the activity causing the problem and commence hourly monitoring until standards are met for two consecutive sample periods. Once compliance with water quality standards is achieved, the project shall return to its standard sampling schedule.

Non Compliance

If a spill to waters of the state occurs or monitoring indicates that water quality standards are not achieved, an Environmental Compliance Assurance Procedure (ECAP) report will be filed with the WSDOT environmental office and Ecology's Federal Project Coordinator will be notified immediately by telephone or e-mail. Other immediate notifications would be provided to Ecology's Regional Spill Response Office at (425) 649-7000 and WDFW, including the nature and details of the problem, any actions taken to correct the problem, and proposed changes in operation to prevent further problems. For actual spills to water, the National Response Center will also be immediately called at 1-800-424-8802. In addition to the phone or e-mail notifications, WSDOT will submit a detailed report to Ecology within five (5) days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

SAMPLING

Sampling Personnel

The designated WSF Environmental Compliance Inspector (ECI) or designated Lead will be overseeing the people doing the sampling. The ECI/Lead is the primary 401 Certification point of contact. The contractor will be responsible for supplying appropriately trained sampling personnel for the water quality monitoring.

Sampling Procedures

The ECI Lead or Water Quality Technician will visually inspect below OHWM, and/or over-water BMPs daily within the work week. The daily inspections will consist of making sure the BMPs are installed correctly and functioning as intended.

Any damaged BMP structures or equipment will be immediately repaired. Additional measures needed to prevent exceedance of Water Quality Standards or to comply with the conditions of the 401 Certification will be implemented immediately.

All water quality compliance locations will be sampled one meter below the surface, at mid-depth, and one meter from the bottom. Water samples will be collected and analyzed for the appropriate parameters in the Monitoring Plan above (Table 1) using the equipment and following the sampling guidelines below:

A portable turbidity meter (Hach Model 210QP Portable Turbidimeter or WSDOT approved equivalent) or calibrated sonde turbidity sensor will be used in the field. A representative sample should accurately reflect the true condition of the water source from which the sample was taken. When using a portable turbidity meter, the following procedures will be followed to ensure a representative sample is analyzed:

- Use a clean, large container or bottle sampler (at least 0.5 L) to obtain a grab sample from the specified location and depth;
- Collect sample with care to avoid disturbance of sediments;
- Gently but thoroughly mix the sample before pouring it into the small vial used to read the sample in the turbidimeter; and

- Without allowing the sample to settle, take turbidity reading according to turbidimeter manufacturer's instructions.

A calibration check of the turbidimeter using secondary standards will be carried out regularly (at least once per week). The instrument will be recalibrated using primary standards at least once every 3 months, or more when a calibration check indicates there is a problem. The manufacturer's calibration procedures will be followed. Similarly, manufacturer's calibration procedures will be followed to assure accurate turbidity measurements when using a sonde turbidity sensor.

Measurements of pH will be obtained from any concrete slurry that enters waters of the state. For this project, pH paper (or approved equal) will be used in the field. Several ranges of pH paper will be used, with a total range of 6 to 12. The pH paper will provide readings with a minimum of 0.5 pH unit increments.

Oil and grease monitoring is a continuous visual observation for a visible sheen on the water surface outside oil-absorbent containment booms.

Sampling Locations

Specific sampling locations will be field located immediately before each sampling event, based on the prevailing current direction, and the location of in-water and over-water construction activities during sampling. Samples will be collected from three locations at the compliance distance to ensure that at least one location is down-current from the construction activity. The sampling locations will be named and/or numbered. Data from these locations will be recorded on the attached monitoring form for the duration of the activity that triggers the monitoring. A map showing the sampling locations will be submitted to Ecology with the water quality sampling results.

DOCUMENTATION

Documents Required

All water quality monitoring will be recorded on the monitoring form, attached. These records will be in a form that is accessible by interested individuals upon request, such as the Washington State Department of Ecology's Federal Project Coordinator.

Documents Attached

- Vicinity Map
- Applicable drawings showing example water quality monitoring locations
- Monitoring form to be used reflecting appropriate information such as person doing the monitoring, date, time, weather, activity prompting monitoring, location of monitoring, waterbody, monitoring results and room for comments.

REPORTING

All sample results will be submitted monthly to the Ecology Federal Project Coordinator per Condition A2 (Order #14047). If sample results indicate a violation of water quality standards or if conditions of the 401 Water Quality Certification or the WQMPP are not being followed, notification shall be made immediately to Ecology's Federal Project Coordinator.

Sampling results and notifications shall be sent to:

Marc Hershfield
Ecology Transportation Liaison
(360) 407-7032
Or hema461@ecy.wa.gov

COMMUNICATION PROTOCOL

All communication and correspondence with Ecology will occur with Federal Project Coordinator Marc Hershfield as the primary point of contact. Marsha Tolon of Washington State Ferries will be responsible for providing Ecology with the necessary notifications and results of the water quality monitoring on a monthly basis and at the conclusion of the monitoring period.

CONTACTS

Contact information for parties involved in water quality compliance is listed below. When hired, a WSF Environmental Compliance Inspector (i.e., Pollution Control Inspector) for this project will lead the water quality monitoring and report the results to permitting agencies.

Contractor

	Name	Telephone	Cell Phone
PPM Project Manager	**Hal Hurlen**	**206-331-3873**	**206-856-9987**
H-P Project Manager	**Andrew Powell**	**206-286-6697**	**206-321-0673**
Superintendent	**Ryan Purscelley**	**206-286-6697**	**206-963-8927**
Erosion and Sediment Control Lead (ESCL)	**Bryan Lammers**	**206-406-3749**	**206-406-3749**

WSDOT Construction Engineering Office

	Name	Telephone	Cell Phone
Project Engineer	**John Callahan**	**206-515-3755**	**206-786-4484**
Chief Inspector	**Sam Chi**	**206-515-3649**	**425-770-9197**
Chief Inspector	**Olivier Richer**	**206-515-3746**	**206-650-4383**
Environmental Compliance Inspector	**Jason Stringfield**	**206-515-2817**	**206-498-9218**
Project Inspector	**Mark Weeks**	**206-515-3681**	**206-915-9889**
Environmental Compliance Lead	**Marsha Tolon**	**206-515-3876**	**206-359-0864**

ATTACHMENTS

Appendix A Example Monitoring Results Reporting Form
Appendix B Water Quality Monitoring Plan Sheets
Appendix C Phase 1 Conveyor System Use for Cap Placement Touch Up

WQMPP Appendix A
Monitoring Form for Seattle Multimodal Terminal at Colman Dock
Order Number 14047

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Water Quality Sampling for In-Water and Over Water Work

Date:_____ Project: Seattle Multimodal Terminal at Colman Dock

Name of Person Sampling:_____ Water Body: Elliott Bay

Date of last calibration for Turbidity Meter_____

Date of last calibration for pH Meter_____

Activity Description_____

Activity Start Time _____Activity Stop Time_____

Sample Location	Monitoring Point/Depth	Date & Time	Turbidity	pH	Sheen	Notes (include weather, observations of waterbody, time since last ferry, etc.)

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WQMPP Appendix B
Water Quality Monitoring Plan Sheets

REFER TO PLAN SHEETS IN THE ENVIRONMENTAL COMPIANCE NOTEBOOK

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WQMPP Appendix C
Phase 1 Conveyor System Use for Cap Placement Touch Up

WORK DESCRIPTION AND SCHEDULE

In areas at the south trestle, namely Zone 2, as shown on the figure, placement of sediment capping material will occur to achieve minimum thickness of the cap. Cap installation progress surveys taken in October 2017 indicate areas where the cap needs placement of additional material. However, the construction sequence of cap placement, cap survey, and then pile installation, occurred differently to continue progress of in-water construction activities. Temporary and production pile installation occurred prior to receiving the results of the cap installation progress survey. The Contractor proposes to apply more cap material in open water areas shown within Zone 2 using the conveyor system because it is not practicable or safe to place the material with the box method in areas around the piles.

The conveyor system uses equipment known as the Stone Slinger, which can propel the material with precision to specific locations around the piles. A material barge containing the cap material is positioned next to a work barge containing the Stone Slinger. Working each area shown within Zone 2 one at a time, and moving east to west, the Contractor deploys turbidity curtain of 20-foot depth and then, will place cap material using the Stone Slinger to meet minimum thickness requirements. After work at an area is complete, and any turbidity has subsided to background levels, the Contractor will remove the turbidity curtain and place it around the next area. Water quality sampling using instrument documentation and visual monitoring will occur as outlined in Table 1 of the WQMPP under *Sediment Capping with Conveyor*.

This alternative work sequence to touch up areas of the sediment cap will occur beginning the week of December 6, 2017 and ending December 31, 2017.

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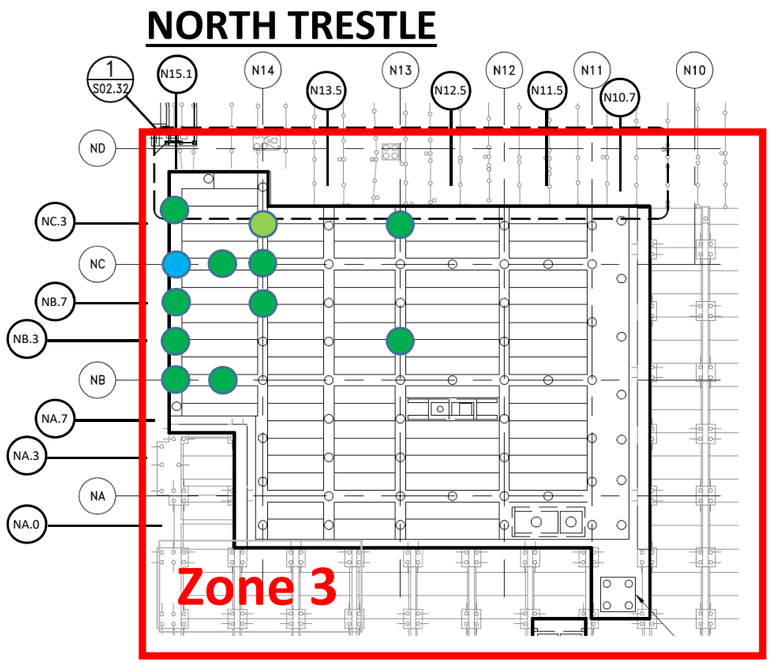
WQMPP Appendix C
Phase 1 Conveyor System Use for Cap Placement Touch Up



	Piles Complete	Piles Remain	Total Piles	% Complete
Total	**86**	**81**	**167**	**51.5%**
North	12	53	65	18.5%
South	74	28	102	72.5%

AREA FOR USE OF THE CONVEYOR SYSTEM "STONE SLINGER" FOR SEDIMENT CAP TOUCH UP.

Restrike to correlate PDA result for driving

Restrike due to insufficient blow-counts corresponding to a lower resistance

Restrike due to stroke height data missing

Actual Glacial Soil vs. Estimated Glacial Soil

- 0+
- 0 to -1
- <-1 to -2
- <-2 to -3
- <-3 to -4
- <-4 to -5
- <-5 to -6
- <-6 and deeper
- Not Observed
- Flagged for Issue

NOTE:

1. SEDIMENT CAP TOUCH UP WORK, USING THE STONE SLINGER WILL OCCUR FROM THE WEEK OF DEC. 4, 2017 AND END BY DEC. 31, 2017.

2. AREAS 1-4, 7 AND 8 MEASURE APPROX. 35 SF, AND AREAS 5 AND 6 MEASURE APPROX. 120 LF X 25 LF.

3. THE NUMBER OF PILE PER ZONE VARIES.

PHASE 1 PILE MAP
11/29/2017