



July 14, 2016

SR 520 Floating Bridge Decommissioning: Summary of Environmental Approvals, Best Management Practices, and Noncompliance Events

I. Major environmental and permit documents for SR 520's I-5 to Medina: Bridge Replacement and HOV Project, including the Floating Bridge & Landings Project

The SR 520 Program website includes a [table and links](#) to key environmental and permit documents, including the following:

- National Environmental Policy Act:
 - Draft Environmental Impact Statement (EIS), Supplemental Draft EIS, Final EIS, Record of Decision, and Re-evaluations
- Endangered Species Act:
 - Biological Assessments, Biological Opinions, and Formal ESA Reinitiations
- Permits and approvals:
 - General Bridge Permit from the U.S. Coast Guard
 - Clean Water Act Section 404 Individual Permit and Section 10 Individual Permit from the U.S. Army Corps of Engineers
 - Clean Water Act Section 401 Water Quality Certification and WQMPP approval from Ecology
 - Hydraulic Project Approval (HPA) approval from WDFW
 - Local approvals as needed, including Shoreline Master Use Program authorizations from the cities of Seattle and Medina.

II. Best management practices (BMPs)

BMPs in use for all floating bridge construction activities – including demolition

The BMPs that are required and being implemented during the project apply to all in-water and over-water construction activities, including demolition, are presented below:

1. Daily vehicle and construction equipment inspection (e.g., leaks, drips, or maintenance needs).
2. Vehicles are inspected prior to entering any over-water work zone in accordance with the Spill Prevention Control and Countermeasures Plan (SPCCP) that is Appendix C of the Environmental Compliance Plan (ECP). Vehicles and equipment (including cranes) are kept clean of excessive oil and grease build-up.

3. When over-water fueling is necessary, the BMPs and procedures described in the SPCCP are implemented. Temporary land-based fueling stations are used to the extent practicable and are located at least 50 feet away from the shoreline.
4. Eco-friendly lubricants and fuel sources (e.g., vegetable-based hydraulic fluid) are used for in-water construction where practicable.
5. The over-water cranes (located on the work trestle), including the tower crane and crawler crane(s), are a relatively newer fleet of equipment that are well maintained and regularly cleaned. Fueling BMPs, as described in the SPCCP, are implemented during all fueling operations. For crane storage overnight, BMPs, such as diapers and plastic, are placed underneath the crane engines and maintained daily.
6. Temporary construction staging areas are constructed within the upland portion of the site and include spill-containment measures in accordance with the SPCCP and erosion control BMPs presented in the Temporary Erosion and Sediment Control Plan, SWPPP, and the NPDES CSWGP.
7. Spill-containment kits and Visqueen plastic are kept in multiple locations on site and within construction vehicles/barges for easy deployment in the event of a spill.
8. Oil-containment booms to contain and localize any potential spills, and thus minimize pollution and assist in the removal of any spilled oil, are present and available during all construction activities.
9. Absorbent materials are placed under all vehicles and equipment on barges or other over-water structures. Absorbent materials are applied immediately on small spills and are promptly removed and disposed of properly. An adequate supply of spill-cleanup materials, such as absorbent materials, are maintained and available in multiple locations on-site.
10. For significant equipment repairs, off-site equipment repair shops are used to the extent practicable.
11. Tie downs and other methods are used to secure materials to aid in preventing discharges to the lake via wind forces.
12. Over-water work areas and temporary stockpile materials are covered when not in use. Nets, tarps, platforms, scaffolds, blankets, barges, and/or floats are used as necessary to contain and control debris beneath structures being constructed.
13. Curbing, bull rails, or toe boards are installed around the perimeter of work trestles, platforms and barges, as appropriate, to contain potential spills and prevent materials, tools and debris from leaving the over-water structures. These applications are installed with a minimum vertical height appropriate to contain runoff water. All concrete process water, as defined above, is contained and collected for off-site disposal.
14. Weather forecasting is used to schedule concrete pour periods during fair weather conditions and allow for the early implementation of BMPs prior to predicted storm events to avoid and minimize any releases.
15. "Pour Watches" occur during all concrete pour events for health and safety, construction quality control, and release or spill prevention. Pour Watches include inspection of formwork integrity and containment of all concrete process water.

16. Formwork soffit systems have edge forms and containment curbing systems to contain concrete cure water and rainfall on curing concrete, so that the water can be collected and treated.
17. Concrete is poured in the dry or in conditions when rainwater falling on freshly poured uncovered concrete can be contained and collected for off-site disposal. Rainwater falling on freshly poured, uncured concrete is considered high pH stormwater. High pH stormwater is contained, tested and treated as necessary to ensure compliance with the pH and turbidity water quality standards prior to discharge to the lake. Concrete is allowed to cure for at least 7 days before contact with surface water.
18. When not in immediate use, Eco-Pans are covered to prevent rainwater accumulation and minimize the generation of water requiring handling, treatment and disposal, and to minimize the risk of a release of high pH stormwater or concrete process water.
19. Concrete pumps and pipelines are equipped with emergency cut-off valves so that no uncured concrete comes into contact with surface water.
20. When construction activities are occurring on the bridge in work areas where water must be collected and treated (Work Area Stormwater), catch basins are blocked to collect and contain construction waters.
21. Treatment includes pumping the ballast water to a temporary holding tank, allowing the turbidity to settle, and treating for pH via a CO₂ bubbler or other approved BMP designed to reduce pH to within an acceptable discharge limit (6.5 to 8.5 units), as necessary.
22. Barges used for construction are not allowed to ground within the project area.
23. Barges and other floating equipment are operated so that there is minimal suspension of nearshore sediments.

Additional BMPs in place specifically for bridge demolition activities

Besides the above mentioned BMPs, additional BMPs specifically associated with demolition activities are being used:

1. Barges used as containment under demolition operations are equipped with watertight structures to contain water used in dust suppression, and a wall/barrier structure is in place to keep debris from bouncing off the barge into Lake Washington.
2. Barges used for breaking materials down on site are equipped with a watertight containment structure to contain water used in dust suppression during demolition.
3. Barges used for breaking materials down on site are equipped with barrier or fencing as needed to contain debris and keep it from entering Lake Washington.
4. Clamshell buckets must remain under water while side casting lakebed materials to minimize turbidity.
5. Barges are staged near the column-removal area to catch any debris or slurry.
6. For in-water demolition: If turbidity levels exceed the thresholds described in Table I.2 of the WQMPP approved by Ecology, KGM deploys a turbidity curtain around the operation and monitors water quality levels until they return to levels below the threshold.

7. For in-water demolition: The acceptable pH limits for discharge are 6.5 to 8.5 units. If pH levels reach 8.6 units or greater, KGM installs a pump near the discharge point to capture the slurry being generated by the cutting operation. The pump has a fish screen on it. The discharge is pumped into a filter bag which traps the cementitious particles and lets the water filter out. The water is then tested and treated for pH with a CO₂ injector as needed before being discharged to the lake per State Water Code. Any water withdrawn from Lake Washington during in-water work is returned back to the lake as clean water that meets water quality standards.
8. For water used for dust suppression during demolition work above the lake, all water is captured and tested for pH prior to discharge and pumped into storage tanks then taken offsite for disposal. This treated water must meet requirements by King County because it is being discharged to the sanitary sewer for additional wastewater treatment.

In sum, the Ecology-approved WQMPP is designed to achieve no discharge of contaminants or materials that would violate water quality standards during bridge construction and demolition.

Updated BMPs as of 7/12/16

The very nature of BMPs means that continual improvement is sought by the contractor to address questions while work is underway. The following are updated BMPs:

1. **Dust control:** In order to further minimize airborne particles, KGM increases its use of water before, during and after decommissioning activities. KGM applies water to sections of the bridge prior to any demolition activities that could result in dust, continues spraying the affected section during demolition activities, and sprays the material on barges as it is being broken into smaller segments for transport. Where appropriate, a soaker hose also is used.
2. **Process-water containment:** Water used in dust control is being contained already but an improvement to the containment system is being implemented. Currently there is a 4-inch watertight barrier on top of the barges where materials are being broken into smaller segments for transport. KGM is increasing the height of this watertight barrier to 12 inches on these barges.
3. **Material containment:** To contain materials that are being removed from the bridge and onto barges underneath the structure, KGM increases its use of containment curtains from one to three sides whenever possible.
4. **Material containment:** On top of barges that contain materials for breaking into smaller segments, KGM utilizes a 4-foot-high chain link fence on top of the 4-foot-high barrier to secure the materials—for a total of 8-foot-high barriers. This fence is currently wrapped with a material to help contain small rock fragments and provide a visual confirmation that the fencing system is in place. The current fabric is not easy to see from a distance so KGM is painting a stripe on the existing material or wrap the fencing with high-visibility construction fencing (or something similar) so that the containment system is more easily identified.

III. Commitments regarding the Kenmore Navigation Channel

BMPs for avoiding and minimizing sediment disturbance in the Kenmore navigation channel

The following BMPs are in place to ensure that sediment disruptions are minimized by contractor KGM:

1. Crews use the temporary anchorage area in Lake Washington to reduce the number of vessels in the Kenmore navigation channel and thereby limit the number of active propellers in the channel at one time.
2. Vessels are outfitted with GPS equipment, which allows the operator to navigate through the deepest part of the channel.
3. When in the channel and when feasible, vessels will be operated at low speeds, with minimal propeller thrust.
4. Propeller thrust will also be minimized by use of small assist-boats to help larger vessels generate momentum, reducing the main tug power required to maneuver through the channel.
5. Travel routes will be limited along the shoreline. Equipment and vessels will travel close to the shoreline only when it is essential for construction work. Routine travel on the lake will be at least 200 feet from the shoreline.
6. Speeds will be reduced when travelling within 200 feet of the shoreline.
7. All project access will be within the limits of construction.
8. Crews will use the shallowest-draft tug available that can safely maneuver the barge/vessel being towed/pushed.
9. Crews will use the least powerful (HP) tug that can safely maneuver the barge/vessel being towed/pushed.
10. Vessels will stay in the navigation channel – and not deviate course.
11. Vessels will reduce power to minimum upon approach to dock.
12. Crews will use small boat/skiff to control larger vessels into dock (act as bow thruster).

Commitments relating to the Kenmore Navigation Channel that are identified in the NEPA Re-evaluation FB&L Kenmore Yard #2, dated July 16, 2012

- To avoid the potential for congestion that could be caused by the occasional increase in vessel activity, WSDOT proposes to temporarily anchor surplus barges in north Lake Washington (as described above) until there is space available within the Kenmore Navigation Channel. WSDOT would ensure that the barges were outside of the Kenmore Navigation Channel and in an area that did not interfere with the marked seaplane runways.
- Other efforts to avoid or minimize negative effects from these changes would involve communicating with adjacent companies, such as CalPortland and Kenmore Air, to collaboratively schedule the occasional and intermitted periods of increased barge traffic through the Kenmore Navigation Channel, and to reduce or prevent interruption of other vessel activity.

- To reduce the likelihood of propeller wash resulting in turbidity, WSDOT will implement a number of best management practices. One such practice is the use of the above mentioned anchorage area in Lake Washington, which will reduce the number of vessels within the channel and thereby limit the number of active propellers in the channel at one time.
- To reduce the likelihood of propeller wash resulting in turbidity, WSDOT will implement a number of best management practices. Additionally, the vessels are outfitted with GPS position equipment, which allows the operator to navigate through the deepest part of the channel, increasing the clearance between the propeller tip and the bottom sediment and minimizing the potential for propeller wash to create turbid conditions.
- When in the channel and when feasible, WSDOT will operate the vessels at low speeds, with minimal propeller thrust.
- Propeller thrust will also be minimized by the use of small assist boats that help these larger vessels to generate momentum, thereby reducing the main tug power required to maneuver through the channel.

Conditions identified in the amended administrative order issued by Ecology to KGM, dated June 27, 2013:

- The temporary anchorage area in Lake Washington will be used to reduce the number of KGM vessels in the Kenmore Navigation Channel (Channel) and thereby limit the number of active propellers in the Channel at one time.
- KGM will regulate the tempo of vessel operations in the Channel to minimize traffic by even small and shallow-draft vessels.
- KGM will operate vessels in a manner that will not cause visible sediment disturbance in the Channel or in adjacent areas on either side of the Channel.
- When in the Channel, KGM vessels will be operated at 5 knots or below, with minimal propeller thrust.
- KGM vessels will reduce power to minimum upon approach to dock.
- Active propeller wash will be reduced by restricting extended reverse movements of KGM vessels.
- KGM vessels will stay in the Channel, utilize navigation/GPS equipment, operate in the deepest portions of the Channel, and will record the track with position and heading.
- Fuel loads on KGM vessels will be minimized in order to reduce tug draft.
- KGM will record GPS data of KGM vessel movements in the Channel and in adjacent areas on either side of the Channel, retain such data until completion of the 520 Bridge Project and make the data available to Ecology upon request.
- Notification of KGM vessel movement in the Channel will be made to Ecology weekly for the following week.
- A KGM captain may deviate from any of the above conditions if necessary to (1) prevent injury to people or property; (2) comply with applicable Coast Guard regulations; or (3) address and respond to adverse weather conditions.

- If a KGM captain must deviate from any of the above conditions to prevent injury to people, property, or to comply with applicable Coast Guard regulations, and the deviation results in vessel operations outside of the Channel, verbal notification of the event will be made to Ecology immediately, and in no case more than 24 hours after the event. Verbal notification will be made to Ecology's Environmental Report Tracking System at 425-649-7000. Within seven days, KGM will provide Ecology with a written report describing the nature, location and cause of the deviation; the GPS data for the trip during which the deviation occurred and photographs of water conditions resulting from and/or during the deviation; and the steps taken by KGM to reduce, eliminate, and prevent recurrence of such a deviation.

Terms and conditions required for implementing the following reasonable and prudent measure: *Minimize and monitor incidental take caused by degraded surface water quality and exposure to elevated turbidity and sedimentation along and adjacent to the Kenmore Navigation Channel, identified in the USFWS Re-initiation on Nov. 26, 2013:*

- The FHWA shall visually monitor for turbidity and/or sediment disturbance whenever conducting barge and tugboat operations in support of the project along the Kenmore Navigation Channel.
- The FHWA shall not conduct barge and tugboat operations along the Kenmore Navigation Channel at night, unless earlier monitoring has established no significant sediment disturbance or visible turbidity beyond specified limits, or unless corrective actions have been taken.
- The FHWA shall establish and use temporary anchorage in Lake Washington to reduce the number of vessels, and thereby limit the number of active propellers, in the channel at one time.
- The FHWA shall operate vessels at speeds of 5 knots or below when in the channel, and restrict extended reverse movements.
- The FHWA shall use navigation/GPS equipment, operate in the deepest portions of the channel, and record position and heading.
- The FHWA shall minimize fuel loads, as practicable, to reduce tugboat draft.
- If, at any time, visual monitoring detects turbidity and/or sediment disturbance extending more than 300 feet from the source (i.e., the barge and/or tugboat), or a visible plume persisting for more than 1 hour (per event) regardless of physical extent, the FHWA shall take immediate corrective action. The FHWA shall not initiate new trips along the Kenmore Navigation Channel unless and until corrective action is in-place. In the event that these same or similar conditions cannot be avoided with ensuing trips, the FHWA shall provide notice to the Service within 24 hours (Attn: Transportation Planning Branch at the Washington Fish and Wildlife Office, Lacey, Washington; Ryan McReynolds, 360-753-6047; or, Emily Teachout, 360-753-9583).

- The FHWA shall document, and compile and submit to the Service records describing barge and tugboat operations in support of the project along the Kenmore Navigation Channel. The FHWA shall submit an annual report to the Service each calendar year, by March 31 of the following year. The annual report shall include, at a minimum: (1) date and time of individual trips along the Kenmore Navigation Channel; (2) data sheets for individual trips, recording weather conditions, visual signs of ambient turbidity, and observer notes describing any turbidity and/or sediment disturbance resulting from barge and tugboat operations in support of the project; and, (3) a summary of any trips or events requiring corrective action, per Condition 7 (above), and the corresponding actions taken by the FHWA to reduce turbidity and/or sediment disturbance.

Terms and conditions related to the Kenmore Navigation Channel required for implementing the following reasonable and prudent measure: *Minimize incidental take from elevated suspended sediment and contaminants*, identified in the NMFS Re-initiation on Jan. 22, 2014:

- Visually monitor for turbidity during the operation of tugs in the Kenmore Navigation Channel (KNC);
- If visual monitoring reveals increased turbidity in the KNC, continue monitoring to ensure that the plume does not extend more than 150 feet from the edge of the navigation channel; and
- For every calendar year that the project uses the KNC, submit annual reports by March 31 of the following year, which include the dates of tug use in the channel, the total number of tug trips into and out of the channel, and the number of trips where turbidity was visually detected.

IV. Environmental Compliance

What happens if BMPs fail during demolition activities?

In the EIS documents, FHWA and WSDOT disclosed potential effects from construction activities, such as discharge into the water and fugitive dust, and identified measures to keep those effects to a minimum. Through the ESA consultation process, NMFS and USFWS acknowledged unavoidable impacts to listed species may occur associated with project activities, and “incidental take” was quantified and authorized. "Take" is defined as harming, harassing, or killing listed species. Under permits – specifically the Ecology 401 permit – the project is not allowed any unauthorized discharge. WSDOT works closely with KGM reviewing and auditing BMPs and work activities in the field. When a BMP does not appear to be working adequately adaptive practices are implemented by KGM. If a BMP does fail, the project is required to notify permitting agencies of the event, and identify corrective measures and potential future preventative measures.

How do KGM, WSDOT and agencies confirm that the environmental processes and permits have been followed?

Per the design-build contract, KGM is responsible for the overall environmental compliance for the project – such as identifying and managing BMPs to meet permit requirements and tracking and complying with environmental commitments or permit conditions. WSDOT works with KGM to ensure that permit conditions and other environmental commitments are being followed. WSDOT reviews contractor submittals, conducts site inspections, and regularly meets with the contractor to discuss environmental commitments and BMPs. Both KGM and WSDOT have inspectors in the field observing construction activities. Regulatory agencies are also consulted on about construction activities, issue environmental commitment or conditions, and conduct visits to the project site.

Noncompliance events since decommissioning activities began in late April 2016, and corrective actions implemented by the project to address those events

Five noncompliance events have occurred:

1) Incident date: 5/3/2016

Incident description: Lead-based paint flakes blew into the lake during pavement breaking.

Corrective action: KGM shut down demolition immediately upon flakes reaching the water. Crews cleaned up and secured all debris in the area. Additional BMPs: Crews install netting material on the north side of the transition span to catch any windblown paint flakes or debris.

2) Incident date: 5/19/2016

Incident description: Water discharged from barge into the lake.

Corrective action: Crews turned off the hoses to stop the flow of water and made sure no further process water left the work area. They used pumps to remove and transfer the process/rainwater mix into tanks. Additional BMPs: An observer will be on site to monitor water levels in the containment area; pumps and storage tanks will be ready to use when water is being applied; the quantity of water used for dust control will be monitored to ensure it isn't excessive.

3) Incident date: 6/28/2016

Incident description: Concrete debris bounced over the wood rail on the containment barge.

Corrective action: KGM halted work. Additional BMPs: 8-foot-tall fence will be placed around the perimeter of the flexi-floats used for demolition; barges for containing demo debris will have walls of sufficient height to prevent debris from entering the lake; potential use of debris screening as a further adaptive management step; an observer will watch not only for dust and water levels in containment barges/flexi floats, but also for debris falling in the lake, and will have authority to stop work.

4) Incident date: 7/7/2016

Incident description: While pontoons from the old floating bridge were being separated, the underwater containment system for capturing sawed grout got hung up on a pontoon, tipped, and dried grout fell into the lake. The estimated quantity of cured grout that entered the lake was approximately 4.5 ft. by 4.5 ft. by 1.5 inches.

Corrective action: Additional BMPs: KGM is replacing the material used for the underwater grout-containment system with denser, more rigid material, and will have a superintendent or general foreman supervise future pontoon separations.

5) Incident date: 7/12/2016

Incident description: A hydraulic hose snagged during saw-cutting operations and a fitting on the hose broke, discharging hydraulic oil onto the concrete decking. The oil flowed past the containment and into the lake. Approximately 2 cups of hydraulic fluid entered the lake.

Corrective action: Crews stopped work and applied diapers to soak up fluid. Absorbent boom was placed in the lake to contain the fluid and pads were used to absorb the fluid. Additional BMPs: Greater diligence will be applied to prevent snagging of hydraulic hoses. Moving forward, all future saw-cutting activities at that location will be tented using plastic.