Hazardous Materials Supplemental Memorandum

Multnomah County | Earthquake Ready Burnside Bridge Project

Portland, OR

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Earthquake Ready Burnside Bridge Hazardous Materials Supplemental Memorandum

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Acronyms, Initialisms, and Abbreviations

API	Area of Potential Impact
EIS	environmental impact statement
EQRB	Earthquake Ready Burnside Bridge
REC	Recognized Environmental Condition

Executive Summary

Impacts from hazardous materials were assessed for the Refined Long-span Alternative (Four-lane Version) and compared to what is evaluated in the *EQRB Draft Environmental Impact Statement* (Multnomah County 2021b). The impacts from the Refined Long-span Alternative are generally the same as the impacts anticipated for the Draft EIS Preferred Alternative (Long-span Alternative) but may be slightly different in magnitude based on the modified design of the bridge and in-water structures.

Both long-term and short-term impacts identified for the Refined Long-span Alternative are similar as described for the Draft EIS Long-span Alternative.

As described in the Draft EIS, the degree of the potential impacts generally increases as additional infrastructure and construction activities are added for the Build Alternatives. However, the potential impacts are not such that the Refined Long-span Alternative has substantially greater adverse impacts (or beneficial effects) than the Draft EIS Long-span Alternative solely based on hazardous materials in the absence of mitigation strategies.

The primary difference identified for the Refined Long-span Alternative as compared to the Draft EIS Long-span Alternative is associated with acquisition of property to facilitate construction and right-of-way (ROW). As described in the Draft EIS, the acquisition plan included six full and two partial property acquisitions. The ROW acquisition plan for the Refined Long-span Alternative modifies the acquisition of these properties to permanent easements. The modification from full or partial ROW acquisition to permanent easements is not materially different in terms of the expected due diligence required. However, the liability to the Project associated with acquiring property as opposed to permanent easements is considered to be higher; thus, the impact of ROW acquisition for the Refined Long-span Alternative is less than for the Draft EIS Long-span Alternative

Mitigation of construction and operational-related impacts from hazardous materials are similar to those identified for the Draft EIS Long-span Alternative and could be accomplished through implementing proper measures and planning. Such measures could include conducting due diligence before potentially contaminated property is acquired; surveying for and abating hazardous building materials before structures are demolished; appropriately addressing known contamination or other environmental issues in the project footprint; and developing and implementing plans to protect worker health and safety, address contaminated materials discovered during construction, and prevent and control spills and stormwater contamination.

1 Introduction

In support of the Supplemental Draft Environmental Impact Statement (SDEIS) for the Earthquake Ready Burnside Bridge (EQRB) Project, this supplemental technical memorandum has been prepared to evaluate the impacts of potential design refinements to the Draft EIS Preferred Alternative on hazardous materials within the Project's Area of Potential Impact (API). The intent of the design modifications is to reduce the overall cost and improve the affordability of the EQRB Project. This technical memorandum is a

supplement to the Draft EIS technical reports and as such does not repeat all of the information in those reports, but instead focuses on the impacts of the design modification options, how they compare to each other, and how they compare to the version of the Preferred Alternative that was evaluated in the EQRB Draft EIS.

Much of the information included in the Draft EIS and Draft EIS technical reports, including project purpose, relevant regulations, analysis methodology and affected environment, is incorporated by reference because it has not changed, except where noted in this technical memorandum.

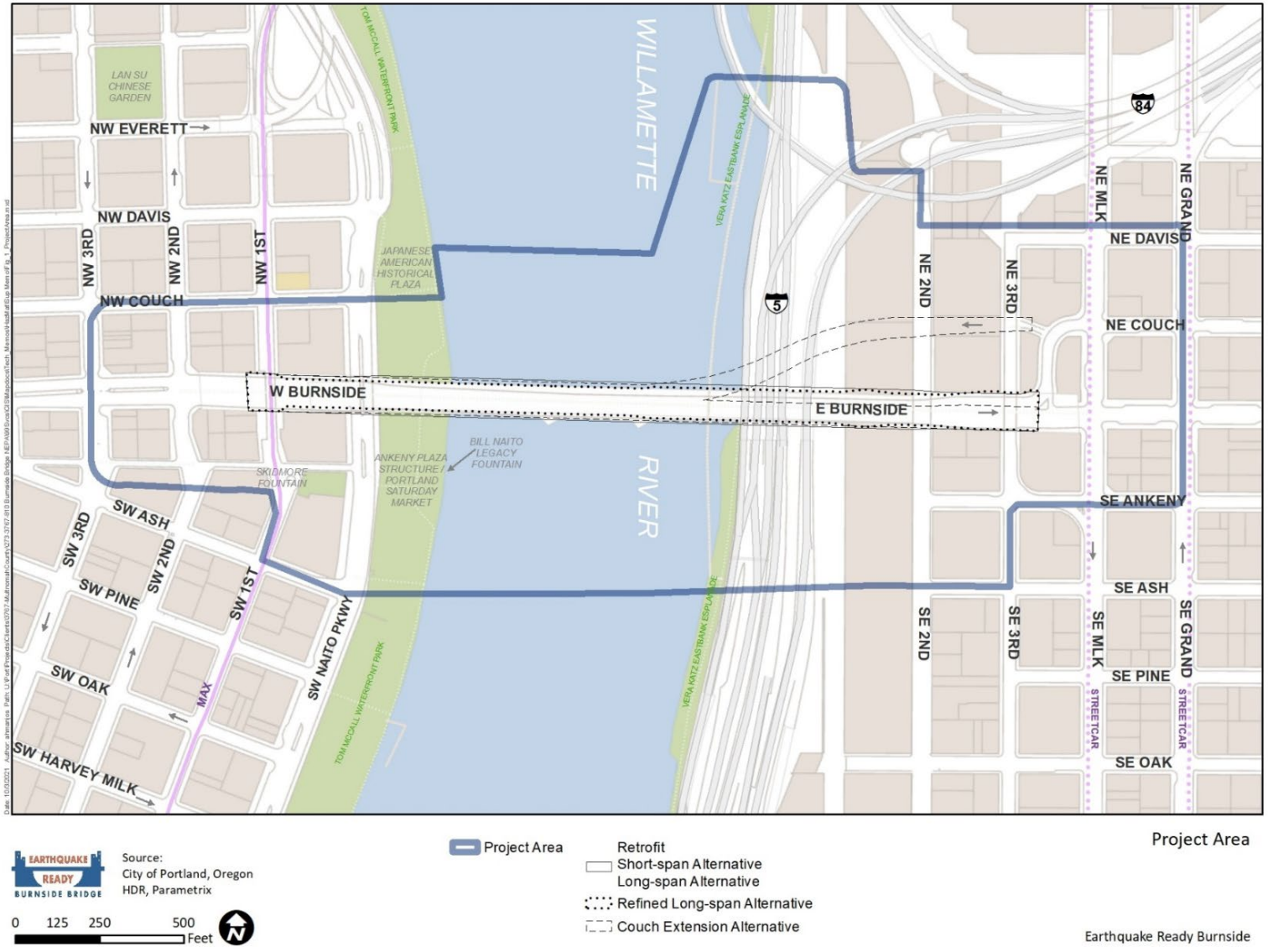
1.1 Project Location

The Project Area is located within the central city of Portland. The Burnside Bridge crosses the Willamette River connecting the west and east sides of the city. The Project Area encompasses a one-block radius around the existing Burnside Bridge and W/E Burnside Street, from NW/SW 3rd Avenue on the west side of the river and NE/SE Grand Avenue on the east side. Several neighborhoods surround the area including Old Town/Chinatown, Downtown, Kerns, and Buckman. Figure 1 shows the Project Area.

1.2 Project Purpose

The primary purpose of the Project is to build a seismically resilient Burnside Street lifeline crossing over the Willamette River that will remain fully operational and accessible for vehicles and other modes of transportation following a major Cascadia Subduction Zone earthquake. The Burnside Bridge will provide a reliable crossing for emergency response, evacuation, and economic recovery after an earthquake. Additionally, the bridge will provide a long-term safe crossing with low-maintenance needs.

Figure 1. Project Area



2 Project Alternatives

This technical memorandum evaluates potential design refinements to the Draft EIS Preferred Alternative. All of the Project Alternatives evaluated in the Draft EIS are summarized in Chapter 2 of the Draft EIS and described in detail in the *EQRB Description of Alternatives Report* (Multnomah County 2021a). Briefly, the Draft EIS evaluated a No Build Alternative and four Build Alternatives. One of the Build Alternatives, the Long-span Alternative, was identified as the Preferred Alternative. The potential refinements evaluated in this technical memorandum are collectively referred to as the Refined Long-span Alternative (Four-lane Version) or the Refined Long-span. The Refined Long-span includes Project elements that were studied in the Draft EIS but have been modified as well as new options that were not studied in the Draft EIS. These refinements and new options are intended to provide lower cost and, in some cases, lower impact designs and ideas that could be adopted to reduce the cost of the Draft EIS Preferred Alternative while still achieving seismic resiliency. The potential design refinements, and how they differ from the Draft EIS Long span Alternative, are described below.

- Bridge width – The total width of the bridge over the river would be approximately 82 to 93 feet (the range varies depending on the bridge type and segment). For comparison, the Draft EIS Replacement Alternatives were approximately 110 to 120 feet wide over the river. The refined bridge width would accommodate approximately 78 feet for vehicle lanes, bike lanes, and pedestrians, which is comparable to the existing bridge.
    - The refined bridge design would accommodate four vehicle lanes (rather than five as evaluated in the Draft EIS). The following lane configuration options are being evaluated:
        - Lane Option 1 (Balanced) – Two westbound lanes (general-purpose) plus two eastbound lanes (one general-purpose and one bus-only lane)
        - Lane Option 2 (Eastbound Focus) – One westbound lane (general-purpose) plus three eastbound lanes (two general purpose and one bus only)
        - Lane Option 3 (Reversible Lane) – One westbound lane (general-purpose) plus two eastbound lanes (one general-purpose and one bus-only) plus one reversible lane (westbound AM peak and eastbound PM peak)
        - Lane Option 4 (General Purpose with Bus Priority) – Two westbound general-purpose lanes plus two eastbound general-purpose lanes, plus bus priority access (e.g., queue bypass) at each end of the bridge.
    - The width of the vehicle lanes would be, at minimum, 10 feet and could vary depending on how the total bridge width is allocated between the different modes.
    - The total width of the bicycle lanes and pedestrian sidewalks would be approximately 28 to 34 feet. This is wider than the existing bridge but narrower than what was proposed in the Draft EIS for the replacement alternatives. Physical barriers between vehicle lanes and the bicycle lanes would be in addition to the above dimensions.

- The refined bridge would allow narrower in-water piers, due to less weight needing to be transferred to the in-water supports.

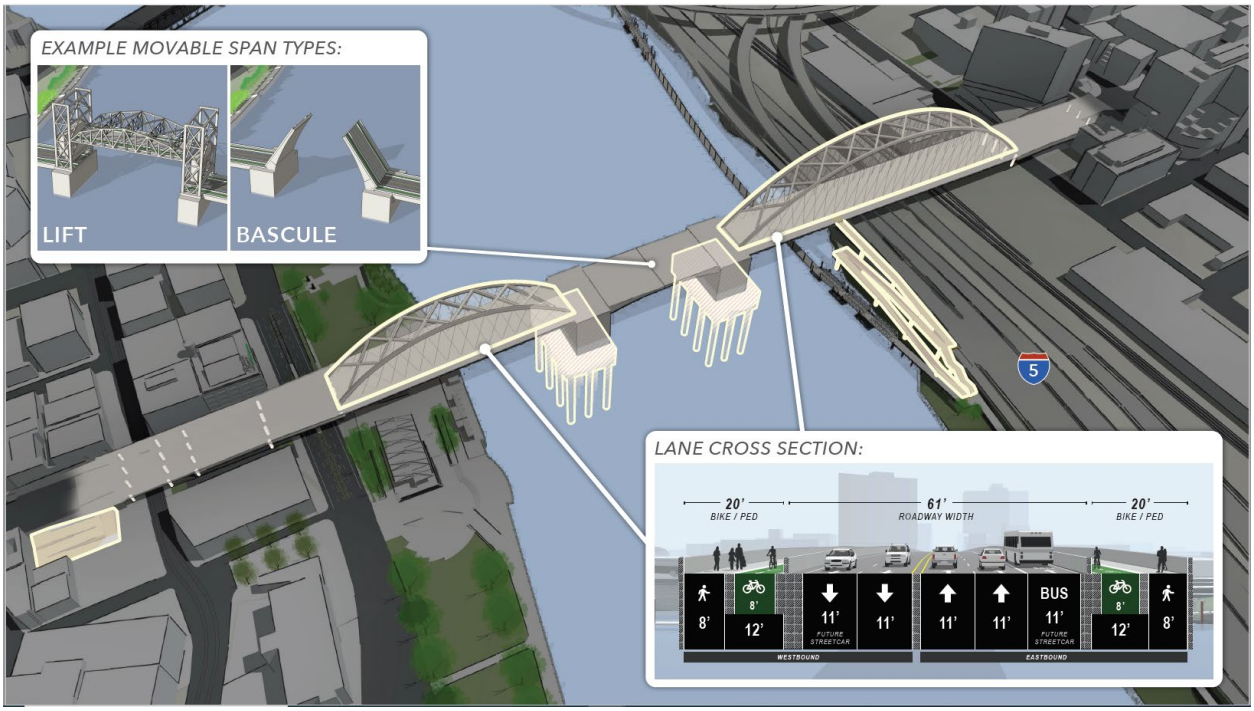
- Other design refinements being evaluated:
  - West approach – This memorandum evaluates a refined girder bridge type for the approach over the west channel of the river, Tom McCall Waterfront Park, and Naito Parkway. Compared to the cable-stayed and tied-arch options evaluated in the Draft EIS, this option would not only reduce costs but also avoid an adverse effect to the Skidmore/Old Town National Historic Landmark District. It would have two sets of columns in Tom McCall Waterfront Park compared to just one with the Draft EIS tied-arch option and five with the existing bridge.

  - East approach – This memorandum evaluates a potential span length change for the east approach tied-arch option that would minimize the risks and reduce costs associated with placing a pier and foundation in the geologic hazard zone that extends from the river to about E 2nd Avenue. The refined tied-arch option would be about 720 to 820 feet long and approximately 150 feet tall (the Draft EIS Long-span Alternative was the same height and 740 feet long). The refined alternative would place the eastern pier of the tied-arch span either on the east side of 2nd Avenue (Option 1) or just west of 2nd Avenue (Option 2). Increasing the length of the tied-arch span would also reduce the length and depth of the subsequent girder span to the east.

  - Americans with Disabilities Act (ADA) access – This memorandum evaluates a refined approach for providing direct ADA access between the bridge and the Eastbank Esplanade, as well as between the bridge and W 1st Avenue and the Skidmore Fountain MAX station. The Draft EIS evaluated multiple ramp, stair, and elevator options for these locations. This SDEIS memo evaluates a refined option that would provide enhanced ADA access at both locations using both elevators and stairs. These facilities would also provide pedestrian and potentially bicycle access. For the west end, there is also the potential for replacing the existing stairs with improved sidewalk access from the west end of the bridge to 1st Avenue.

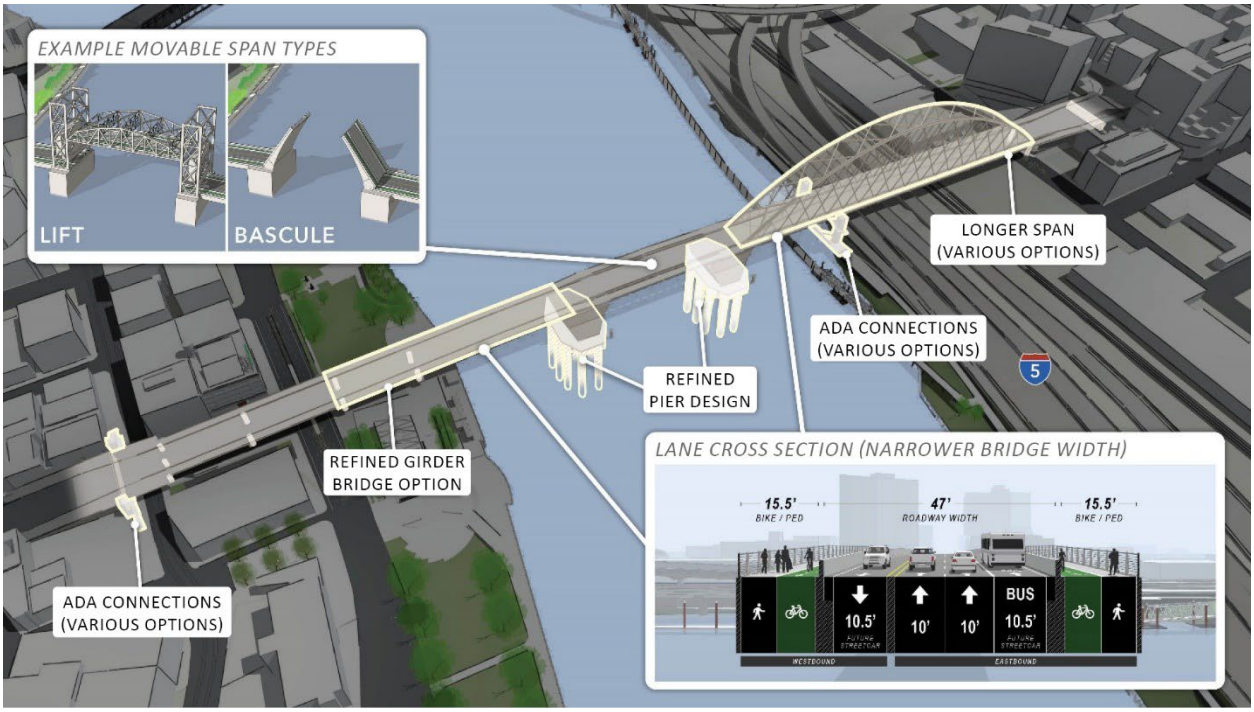
Figure 3 highlights the elements of the Draft EIS Long-span Alternative that have been modified to create the Refined Long-span Alternative, as described above. Figure 2 shows the Draft EIS Long-span Alternative and Figure 3 shows the Refined Long-span Alternative. Both figures include the tied-arch option for the east approach and the bascule option for the center movable span, but the east span could also be a cable-stayed bridge and the movable span could be a vertical lift bridge. For the west approach, the Draft EIS Long-span Alternative shows the tied-arch option while the Refined Long-span Alternative shows the refined girder bridge. The Refined Long-span Alternative image shows just one of the four possible lane configuration options being studied. All four configuration options, as well as many more graphics of the Refined Long-span Alternative, and how it compares to the Draft EIS Long-span Alternative, can be found in Chapter 2 of the *EQRB Supplemental Draft Environmental Impact Statement* (Multnomah County 2022b). Figure 3 also shows just one of the possible ways to allocate the bridge width between vehicle lanes, bicycle lanes and sidewalks; the total width of the bicycle and pedestrian facilities could range from approximately 28 to 34 feet.

Figure 2. Draft EIS Long-Span Alternative



Note: The Draft EIS Long-span Alternative included multiple bridge types for both the east and west approaches. This figure shows only the tied arch option.

Figure 3. Refined Long-Span Alternative



Notes: The Refined Long-span Alternative evaluated in this SDEIS includes both cable-stayed and tied- arch options for the east span. This figure shows only the tied- arch option. The Draft EIS studied, and SDEIS further studies, a bascule option and vertical lift option for the center movable span. The inset shows both options but the main figure shows the bascule option. This figure also shows just one of the lane configuration options considered in the SDEIS.

- Construction assumptions:
  - Construction duration – The expected duration of project construction is 4.5 to 5.5 years, dependent upon the design option. See Table 1 for more information regarding construction impact extent and closure timeframes.
  - Construction area – Compared to the Draft EIS Long-span Alternative, the main refinement is that the construction area would be smaller for the west approach south of the bridge, including a smaller area within Tom McCall Waterfront Park south of the bridge.
  - Construction access and staging – The construction access and staging is expected to be the same as that described in the Draft EIS.
  - Vegetation – The Refined Long-span Alternative would remove slightly fewer trees and vegetation impacts than the Draft EIS Long-span Alternative, primarily within Tom McCall Waterfront Park south of the bridge.
  - In-water work activity – The in-water work would be similar to that described in the Draft EIS, except that the replacement bridge in-water foundations would consist of a perched footing cap and a group of drilled shafts. Whereas the Draft EIS discusses the use of cofferdams to isolate in water work, the Refined Long-span Alternative proposes to use a temporary caisson lowered to an elevation about mid height of the water column to construct footing caps, avoiding additional disturbance of the riverbed that would needed for a cofferdam. Additionally, the existing Pier 4 would be fully removed, Pier 1 would be partially removed below the mudline and Piers 2 and 3 removed to below the mudline. Existing in water piles would be removed, subject to the design option advanced
  - Temporary freeway, rail, street, and trail closures – Temporary closures are expected to be the same as those described in the Draft EIS.
  - Access for pedestrians and vehicles to businesses, residences, and public services – Access is expected to be the same as that described in the Draft EIS.
  - On-street parking impacts – On-street parking impacts are expected to be the same as those described in the Draft EIS.
  - Property acquisitions and relocations – Property acquisitions and relocations are similar to those listed in the Draft EIS, except that they have been modified to reflect a narrower set of bridge design options.
  - Temporary use of Governor Tom McCall Waterfront Park – The park area that would be temporarily closed for construction has changed since the Draft EIS. On the north side of the bridge, the closure area has been reduced to avoid removing 10 cherry trees and a berm that are part of the Japanese American Historical Plaza; this change would apply to all of the build alternatives. On the south side of the bridge, the park closure area has also been reduced to include only the area north of the Tom McCall Waterfront Park trellis; this revision applies only to the Refined Long-span Alternative.

Table 1. Construction Impacts, Closure Extents, and Timeframes by Build Alternative

Facility Impacted	Draft EIS Long-Span Alternative	Refined Long-Span Alternative
Gov. Tom McCall Waterfront Park	4.5-year closure within boundary of potential construction impacts	Same; Smaller closure area south of the bridge
Willamette River Greenway Trail	Portion of trail within Tom McCall Waterfront Park closed for same duration as park; detours in place for construction duration	Same
Japanese American Historical Plaza	Southern portion of plaza would be closed for same duration as Tom McCall Waterfront Park	Same
Ankeny Plaza Structure	Closure for duration of construction but no impacts to Ankeny Plaza structure	Plaza Structure would not be closed during construction or impacted
Bill Naito Legacy Fountain	No closure of fountain and associated hardscape	Same
Vera Katz Eastbank Esplanade	18 months (this could extend to 3.5 to 4.5 years if project builds ramps rather than elevators and stairs for the ADA/bicycle/pedestrian connection); detours in place for construction duration	Same
Burnside Skatepark	4-month full closure	Same
River Crossing on Burnside Street	4- to 5-year closure	Same
Saturday Market Location	4.5-year closure or use of alternative location	Same
Skidmore Fountain MAX Station	Approximately 5 weeks	Same
Navigation Channel/Willamette River Water Trail	Intermittent closures; 2 to 10 closures; each closure up to 3 weeks	Same
Overall Construction Duration	**4.5 to 5.5 years**	**Same**

3 Definitions

The following terminology is used when discussing geographic areas in the EIS:

- **Project Area** – The area within which improvements associated with the Project Alternatives would occur and the area needed to construct these improvements. The Project Area includes the area needed to construct all permanent infrastructure, including adjacent parcels where modifications are required for associated work such as utility realignments or upgrades. For the EQRB Project, the Project Area includes approximately a one-block radius around the existing Burnside Bridge and W/E Burnside Street, from NW/SW 3rd Avenue on the west side of the river and NE/SE Grand Avenue on the east side.
- **Area of Potential Impact (API)** – This is the geographic boundary within which physical impacts to the environment could occur with the Project Alternatives. The API is resource-specific and differs depending on the environmental topic being

addressed. For all topics, the API will encompass the Project Area, and for some topics, the geographic extent of the API will be the same as that for the Project Area; for other topics (such as for transportation effects) the API will be substantially larger to account for impacts that could occur outside of the Project Area. The API for hazardous materials is shown on Figure 4.

- **Project vicinity** – The environs surrounding the Project Area. The project vicinity does not have a distinct geographic boundary but is used in general discussion to denote the larger area, inclusive of the Old Town/Chinatown, Downtown, Kerns, and Buckman neighborhoods.

4 Relevant Regulations

There are no differences in regulations with the Refined Long-span Alternative.

5 Analysis Methodology

The analysis methodology is the same as was used in the Draft EIS.

6 Affected Environment

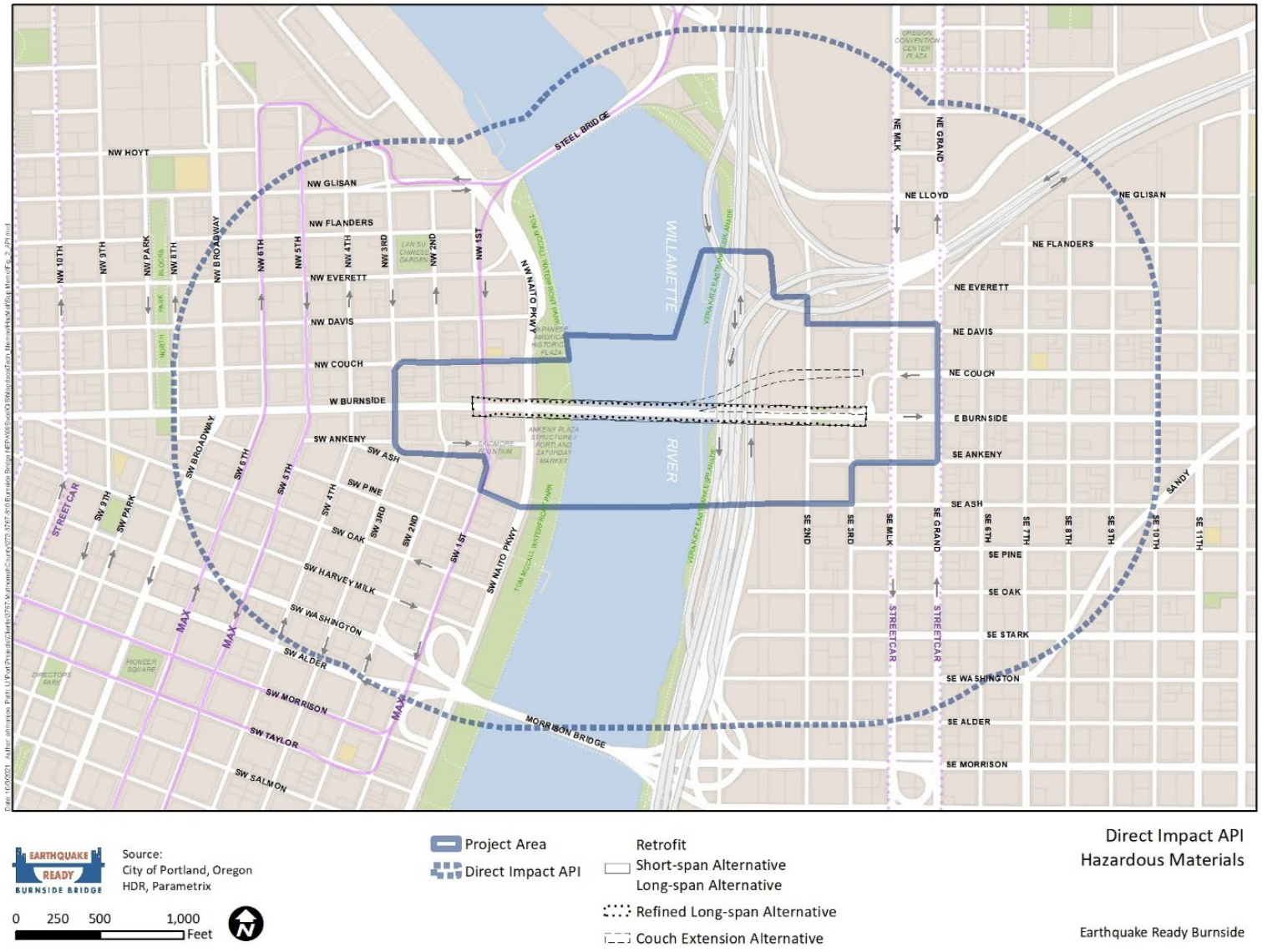
The affected environment for the Refined Long-span Alternative is the same as what was evaluated in the Draft EIS.

7 Impacts from the Design Modifications and Comparison to Draft EIS Alternatives

This section describes the impacts as they relate to hazardous materials for the Refined Long-span Alternative and compares those to the No-Build and Draft EIS Long-Span Alternatives. A detailed evaluation of the impacts related to the No-Build and Draft EIS Long-span Alternatives are described in the *EQRB Hazardous Materials Technical Report* (Multnomah County 2021c).

The impact analysis described below is consistent with that contained in the *EQRB Hazardous Materials Technical Report*. The hazardous materials impact analysis included pre-earthquake impacts, post-earthquake impacts, and construction impacts, which are described below in Sections 7.2, 7.3, and 7.4, respectively.

Figure 4. Direct Impact API



7.1 Right-of-Way Acquisition

One of the primary factors affecting the evaluation of hazardous materials on the various alternatives is the potential for acquisition of ROW or other property. The potential acquisition properties were identified for each of the alternatives evaluated in the *EQRB Hazardous Materials Technical Report*. The Draft EIS Long-span Alternative has eight fee acquisition areas (six full acquisitions and two partial acquisitions), as well as one permanent easement and multiple temporary construction easements.

However, all full and partial permanent acquisitions are now being acquired as permanent easements for bridge improvements per County direction. Therefore, the nature of acquisition of ROW is different for both Refined Long-span Alternative options (tied arch and cable-stayed options) as compared to the Draft EIS Long-span Alternative. However, the acquisitions for both Refined Long-span Alternative options are the same. Table 2 is a ROW acquisition summary for the Draft EIS Long-span Alternative and the Refined Long-span Alternative tied-arch and cable-stayed options for comparison.

Table 2. ROW Acquisition Summary

Alternative	Fee Full and Partial Acquisitions	Easements	TCEs	Business Displaced Permanent (Temporary)
Draft EIS Long-Span	8	1	17	6 (0)
Refined Long-Span – Tied-Arch	0	12	19	5 (1)
Refined Long-Span – Cable-Stayed	0	12	19	5 (1)

TCE = temporary construction easement

The ROW acquisitions for the Refined Long-span Alternative are shown on Figure 5 and Figure 6. For reference in the impact analysis, Figure 7 includes the locations of previously identified priority hazardous materials sites as described in the Draft EIS.

Figure 5. Property Impacts – Refined Long-Span Alternative, West Bridgehead

Figure 6. Property Impacts – Refined Long-Span Alternative, East Bridgehead

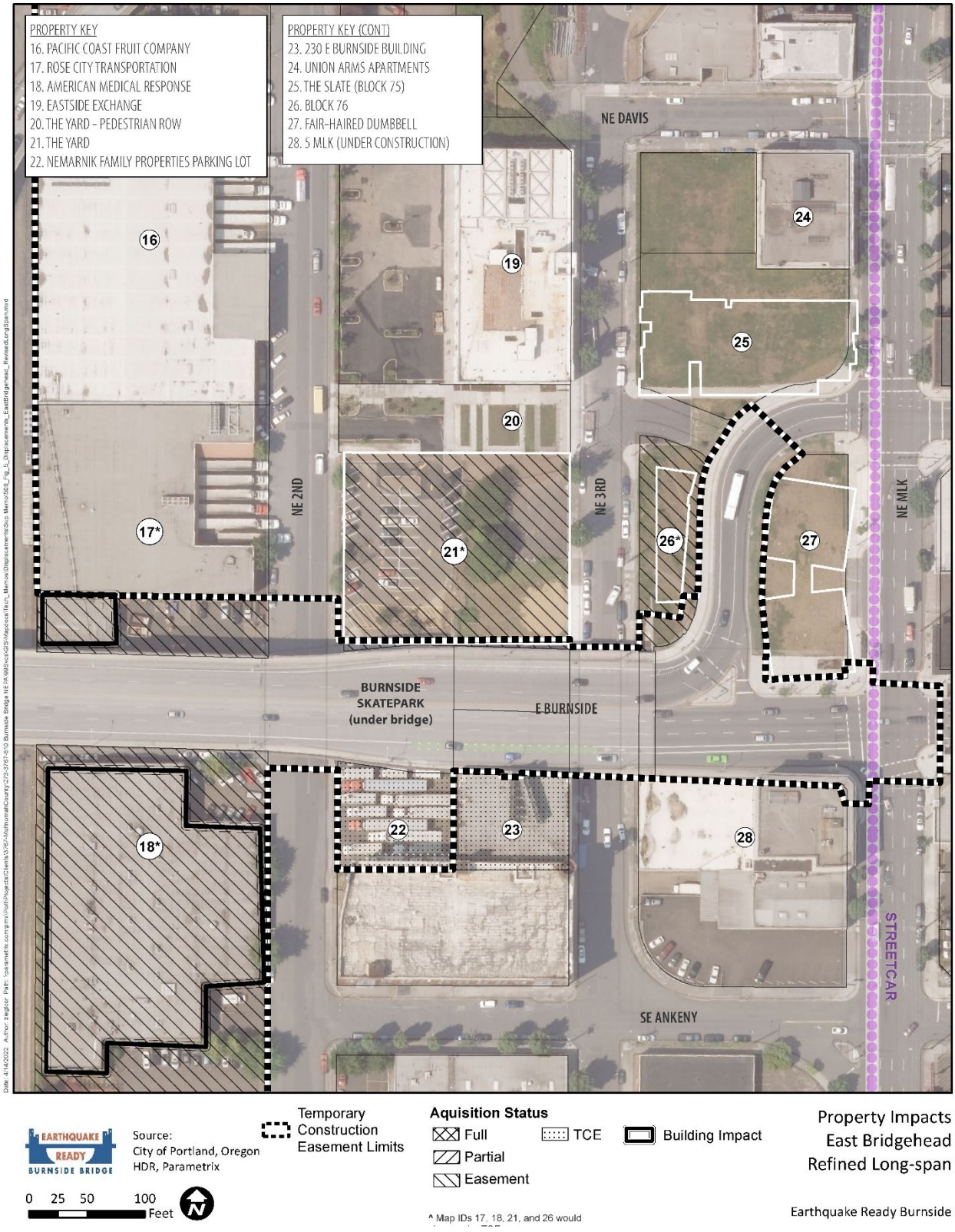


Figure 7. Highest Ranking Hazardous Material Sites

7.2 Pre-Earthquake Impacts

As described in the *EQRB Hazardous Materials Technical Report*, with respect to hazardous materials, direct and indirect long-term impacts could occur in three general categories: (1) property acquisition, (2) effects to the environment from operation, and (3) effects to operation from hazardous materials. These potential impacts are assessed qualitatively for the Refined Long-span Alternative based on the current understanding of the natural and built environments.

7.2.1 Direct Impacts

Long-term impacts for the Refined Long-span Alternative are not substantially different than that described for the Draft EIS Long-span Alternative. As it relates to impacts from hazardous materials, the primary changes for the Refined Long-span Alternative are a narrower bridge structure which results in narrower in-water piers and foundations, and a potential difference in the number of columns in Waterfront Park, neither of which are deemed to present substantial differences to the hazardous materials analysis presented in the Draft EIS. Any differences in impacts are outlined below.

As shown on Figure 7, no priority hazardous materials sites would be acquired as part of the Refined Long-span Alternative. The potential negative and beneficial impacts are primarily the same as those described for the Draft EIS Long-Span Alternative. Ground improvements are expected to be similar to those for the Draft EIS Long-span Alternative; thus, impacts associated with encountering hazardous materials in the subsurface during construction (including at unknown or legacy sites) are expected to be similar. Two hazardous materials sites (Towne Storage and Portland Gas Works Gas Holder tank site) are very near temporary construction easements and could be impacted by ground improvements. The risk of impact for legacy sites for the Refined Long-span Alternative is similar to the Draft EIS Long-Span Alternative due to similar necessary ground improvements.

Operation of the Refined Long-span Alternative above ground and its roadway elements is not expected to affect existing hazardous materials in the soil and/or groundwater. However, the operation of new facilities installed underground, such as utilities, could have impacts on future cleanup efforts. New pipelines, duct banks, or conduits could physically impede the cleanup of soil or groundwater, requiring that either the contamination be left in place or that the cleanup operation take extra measures to protect and support the utilities. It is expected that the Refined Long-span Alternative would require similar new utilities and associated infrastructure that could be impacted as compared to the Draft EIS Long-span Alternative.

Potential adverse impacts due to existing sediment contamination were also identified. The Refined Long-span Alternative includes construction of in-water piers and bridge footings near the shoreline, which, based on preliminary design, suggest that they may be narrower than those identified for the Draft EIS Long-span Alternative. However, the changes do not appear to be of a nature that would substantially change the potential impacts. In the absence of mitigation, in-water and near-shoreline work activities could negatively impact surface-water conditions and downriver sediment through re-deposition (although these may be considered short-term or construction impacts).

Long-term impacts from sediments could occur through releases of contaminants due to scouring and changes in river dynamics associated with the constructed piers. Scouring is discussed in the *EQRB Hydraulic Impact Analysis Technical Report* (Multnomah County 2021d) and the EQRB *Hydraulic Impact Analysis Supplemental Memorandum* (Multnomah County 2022a).

Stormwater quality can be diminished by runoff over roadways and bridges that carry automobiles. Long-term operation and maintenance of a stormwater conveyance system and treatment facilities is necessary to meet discharge and water quality regulatory standards. Long-term evaluation of the effectiveness and performance of the treatment systems would be conducted to ensure that the systems are functioning as intended. Presumably, the Refined Long-span Alternative has the potential to provide a beneficial effect due to a potential for higher level of stormwater control and treatment through design, installation, and construction of new facilities, as compared to the No-Build Alternative. The narrower bridge structure of the Refined Long-span Alternative is not anticipated to significantly affect the potential stormwater impacts compared to the Draft EIS Long-span Alternative. However, the reduction of imperious surface of the narrower bridge may have a slight reduction in stormwater volume generated during storm events. Additional information related to stormwater can be found in the *EQRB Stormwater Technical Report* (Multnomah County 2021e).

7.2.2 Indirect Impacts

Operation of the roadway under the Refined Long-span Alternative could result in the release of hazardous substances or petroleum products into the environment from accidental spills, similar to those described for the No-Build Alternative and Draft EIS Long-span Alternative. The potential for spills could be reduced through the development of emergency response plans and best management practices, which could be incorporated as part of the Project. No significant long-term indirect effects are anticipated.

7.3 Post-Earthquake Impacts

No significantly different impacts associated with the Refined Long-span Alternative were identified for post-earthquake conditions when compared to the Draft EIS Long-span Alternative. However, there would be a potential benefit to the Refined Long-span Alternative in comparison to the No-Build Alternative related to having an earthquake-ready structure in place. The new structure could minimize the release of hazardous materials that would be associated with a failed bridge structure. The new bridge could also reduce potential vehicle accidents, leaks, and spills during an earthquake event, as compared to those that could occur under the No-Build Alternative.

7.4 Construction Impacts

Three general categories of construction impacts were examined for the Refined Long-span Alternative: (1) liability to the purchaser in acquiring property, (2) effects on the environment and resources from construction in areas where hazardous materials exist, and (3) effects on construction from hazardous materials. The construction impacts are compared to the No-Build and Draft EIS Long-span Alternatives.

7.4.1 Property Acquisition Liability for Temporary Structure

Tax lots identified for potential acquisition are included on Figure 5 and Figure 6. As shown, no full or partial property acquisitions are anticipated for the Refined Long-span Alternative, although a number of permanent and temporary construction easements would need to be obtained. As described in the *EQRB Hazardous Materials Technical Report* (Multnomah County 2021c), the Draft EIS Long-span Alternative includes a total of eight properties for acquisition (six full and two partial). The ROW acquisition plan for the Refined Long-span Alternative modifies the acquisition of these properties to permanent easements. The modification from full or partial ROW acquisition to permanent easements is not materially different in terms of the expected due diligence required. However, the liability to the Project associated with acquiring property as opposed to permanent easements is considered to be higher; thus, the impact of ROW acquisition for the Refined Long-span Alternative is less than for the Draft EIS Long-span Alternative.

Acquisition of property where recognized environmental conditions (RECs) have been identified can result in potential liability for the purchaser. In Oregon, the standard for liability for remedial actions (cleanup) of a property is pursuant to Oregon Revised Statute (ORS) 465.255. This statute states that “the owner/operator is strictly liable for those remedial action costs incurred by the state or any other person that are attributable to or associated with a facility and for damages for injury to or destruction of any natural resources caused by a release.” This statute extends to limit the State’s legal liability of an acquired facility or property through condemnation. Liability issues can include (1) restriction in current or future property use; (2) incurring costs for cleanup; (3) schedule delays; (4) worker and public safety; and (5) increased resource agency oversight. Thus, the legal status impact of a permanent easement is less than acquisition of the property and full ownership.

In terms of environmental due diligence, the change from full or partial acquisition to permanent easement could be similar between the Refined Long-span Alternative and the Draft EIS Long-span Alternative. It is expected that as a public agency (County), environmental due diligence would be conducted on the property slated for permanent easement similar to full or partial acquisition. Conducting *all appropriate inquiries* into the previous ownership and uses of the property prior to a property transaction is a means of safeguarding and managing the potential liability issues. In this way, RECs are disclosed prior to placement of an easement, and potential issues can be mitigated prior to the start of construction activities. Inquiry could result in responsibility for cleanup by the owner/operator and/or reduction in the property’s value.

7.4.2 Effects on the Environment from Construction

Environmental media—soils, sediments, surface water, stormwater, and groundwater—can be adversely affected by the exacerbation of existing contamination or the release of hazardous substances during construction activities. Effects from hazardous materials may cause a risk to human health or the environment, raise liability issues, increase Project costs, and/or cause schedule delays.

The degree to which existing contamination can migrate into the environment depends on the type, intensity, and duration of construction activities and the nature and extent of

the contamination. Types of construction activities for the Refined Long-span Alternative could include, but are not limited to, excavation, utility line trenching on approaches, reconstruction or installation of new stormwater infrastructure, reconstruction of piers for bridge and foundations, and focused demolition. The type, intensity, and duration of these activities would be further defined during the design phase and contractor procurement. It is expected that these activities are not materially different than for the Draft EIS Long-span Alternative; thus, the impacts are similar.

Documented contaminants at identified hazardous materials sites within the Project Area include petroleum hydrocarbons and associated compounds and pollutant metals. Unidentified contamination from historical land use likely exists within the Project Area, primarily in the bridge approach areas. Contaminants that are encountered during construction can migrate into the environment along a variety of pathways. Shallow soil contamination can migrate downward into subsurface soils and/or groundwater through drag-down from excavation, utility work, and/or infiltration of stormwater. Groundwater impacts can be exacerbated from dewatering activities. Impacted stormwater can migrate to surface water and sediments. It is expected that the conditions for the Refined Long-span Alternative are not materially different than for the Draft EIS Long-span Alternative; thus, the impacts would be similar.

Sediment contamination is not fully defined in the Project Area, but could include petroleum compounds, metals, pesticides, and other chemicals. Impacted sediments can be re-suspended into the water column and/or re-deposited due to in-water construction activities. The Refined Long-span Alternative includes in-water piers and footings, which are described as narrower than for the Draft EIS Long-span Alternative. However, in general terms, the reduction of the project footprint would not result in significantly different outcomes. In the absence of mitigation, in-water and near-shoreline work activities could negatively impact surface water conditions and downriver sediment through re-deposition. Over-water activities such as demolition and construction could also adversely affect surface water quality. It is expected that the conditions for the Refined Long-span Alternative are not materially different than for the Draft EIS Long-span Alternative; thus, the impacts would be similar.

Alternatively, hazardous substances or petroleum products have the potential to be released into the environment during construction activities. Construction equipment can release petroleum products into the environment from the improper transfer of fuel or from spills. Other pollutants such as paints, acids for cleaning masonry, solvents, raw concrete, paving, and concrete-curing compounds are present at construction sites and may enter the environment if not managed correctly. It is expected that the conditions for the Refined Long-span Alternative are not materially different than for the Draft EIS Long-span Alternative; thus, the impacts would be similar.

Demolition of structures can also have adverse impacts on the environment. This includes any focused demolition on the bridge and associated structures that may be necessary as part of the Refined Long-span Alternative. In addition, demolition of structures or buildings required for construction should also be considered. The existing bridge and other associated structures that contain lead and/or asbestos-containing materials would need to have proper abatement conducted prior to any demolition, renovation, or repair activities. Wastes that contain lead and asbestos-containing materials are managed and disposed of as non-hazardous wastes under 40 CFR

Part 261. Abatement must follow state guidelines and be conducted by licensed abatement firms. Abatement materials must be properly disposed of at authorized solid waste facilities. Lead has the potential to be a hazardous waste if it fails the Toxicity Characteristic Leaching Procedure (EPA 1992). Asbestos is treated as an industrial waste and requires special packaging and handling pursuant OAR 340-248, WAC 269-65, and 40 CFR Part 61 Subpart M. It should be noted that abatement of hazardous materials can be considered a beneficial impact as it removes the material and properly contains and isolates it accordingly through appropriate disposal. It is expected that the conditions for the Refined Long-span Alternative are not materially different than for the Draft EIS Long-span Alternative; thus, the impacts would be similar.

7.4.3 Potential Effects on Construction Activities

Adverse effects to worker safety and public health from hazardous materials during construction can occur if not correctly mitigated. Potential exposure routes include dermal contact and ingestion of contaminated soil and water and inhalation of contaminated vapors or particulates. Exposure is typically greatest during excavation work, demolition, or application of materials that contain hazardous substances. Potential receptors include construction workers, excavation workers, and the traveling public. Health effects depend on the type of contaminants, duration, dosage, exposure route, and age of those exposed.

Waste can be generated during construction activities when contaminated materials are encountered or generated by construction and demolition. Waste can consist of contaminated soils, sediments, water, and/or building materials.

Non-hazardous wastes are those categorized as not hazardous waste and are exempted from or do not apply to Resource Conservation Recovery Act (RCRA) Subtitle C regulations. They are typically called “solid waste.” Non-hazardous wastes likely to be encountered are fill, debris, soil, wood, and lead-based paint associated with bridge structures. Non-hazardous wastes require management in accordance with applicable federal and state regulations. Characterizing, managing, storing, and disposing of non-hazardous waste would likely be a common component of Project construction.

A solid waste that is dangerous and/or potentially harmful to human health is considered a hazardous waste. Hazardous waste can have characteristics of toxicity, corrosivity, reactivity, and/or ignitability that are governed by RCRA Subtitle C regulations. Universal wastes include batteries, pesticides, and mercury-containing light bulbs. In addition, wastes that contain polychlorinated biphenyls are managed under the Toxic Substance Control Act and under 40 CFR Part 761. Characterizing, managing, storing, and disposing of hazardous waste would likely be a small component of Project construction, but could be present in buildings or structures slated for demolition. However, if not mitigated correctly, hazardous wastes can increase Project costs and cause schedule delays and are a source of liability to the Project.

It is expected that the conditions for the Refined Long-span Alternative are not materially different than for the Draft EIS Long-span Alternative; thus, the impacts would be similar.

8 Potential Mitigation

Mitigation will be required, as discussed in the Draft EIS, and is not materially different for the Refined Long-span Alternative as compared to the Draft EIS Long-span Alternative.

Mitigation of construction-related impacts from hazardous materials could be accomplished through implementing proper measures and planning. Such measures could include conducting due diligence before potentially contaminated property is acquired; surveying for and abating hazardous building materials before structures are demolished; appropriately addressing known contamination or other environmental issues in the project footprint; and developing and implementing plans to protect worker health and safety, address contaminated materials discovered during construction, and prevent and control spills and stormwater contamination.

Mitigation of operational impacts from hazardous materials could be accomplished by implementing measures and planning. Such measures could include training and informing maintenance personnel regarding hazardous materials and hazardous materials–related conditions that would exist or could be encountered during maintenance work. These measures could also include developing protocols for maintenance work regarding spill response and agency notification.

For a more detailed discussion of mitigation strategies, refer to the *EQRB Hazardous Materials Technical Report* (Multnomah County 2021c).

9 Agency Coordination

No additional agency coordination was conducted for this memo.

10 Preparers

Name	Professional Affiliation	Education	Years of Experience
Kelly Carini	Parametrix	Environmental Science	6
Rick Wadsworth	Parametrix	Environmental Engineering	24

11 References

Multnomah County.

2021a. EQRB Description of Alternatives. Project Library | Multnomah County (multco.us)

2021b. EQRB Draft Environmental Impact Statement. Project Library | Multnomah County (multco.us).

2021c. EQRB Hazardous Materials Technical Report. Project Library | Multnomah County (multco.us).

2021d. EQRB Hydraulic Impact Analysis Technical Report. Project Library | Multnomah County (multco.us).

2021e. EQRB Stormwater Technical Report. Project Library | Multnomah County (multco.us).

2022a. EQRB Hydraulic Impact Analysis Supplemental Memorandum. Project Library | Multnomah County (multco.us).

2022b. EQRB Supplemental Draft Environmental Impact Statement. Project Library | Multnomah County (multco.us).