

CONTINGENCY REMEDY ANALYSIS FINAL REPORT

WILLAMETTE COVE



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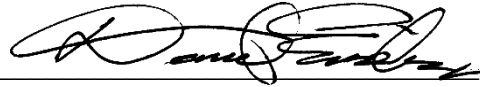
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ACRONYMS AND ABBREVIATIONS

DDT	dichloro-diphenyl-trichloroethane
Act	Oregon Donation Land Claim Act of 1850
DEQ	Department of Environmental Quality (Oregon)
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gas
MFA	Maul Foster & Alongi, Inc.
O&M	operation and maintenance
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PHSS	Portland Harbor Superfund Site
Port	Port of Portland
River	Willamette River
VOC	volatile organic compound
Yakama Nation	The Confederated Tribes and Bands of the Yakama Nation

1 INTRODUCTION

Willamette Cove is a property on the east bank of the Willamette River near the confluence with the Columbia River. In 1996, Metro acquired the Willamette Cove property for future greenspace and trail use. In 2000, Metro, the Port of Portland (Port), and the Oregon Department of Environmental Quality (DEQ) entered into a Voluntary Cleanup Agreement to remediate contamination from past industrial uses on the upland site. Community stakeholders and Tribal governments have also advocated for cleanup of Willamette Cove. In March 2021, DEQ issued its Record of Decision: Selected Remedial Action for Willamette Cove Upland Site, Portland, Oregon (ROD) for the Willamette Cove Upland Site (Site). The ROD requires that highly contaminated soils be removed and disposed of off-site. DEQ recommended that moderately contaminated soils be placed in perpetuity in an engineered on-site consolidation area. The ROD includes a contingency remedy that allows Metro to remove and dispose of all, some, or none of the moderately contaminated soils off-site.

This report first reviews context and history, the ROD, selected remedial action and contingency remedy options, proposed future use, Tribal government responses, and public comments. The report then presents an analysis of risks, costs, and benefits associated with the selected remedial action and contingency remedy options, including construction impacts and costs; human health and ecological trade-offs; and operation, maintenance, and risk over seven generations considering climate change, resiliency factors, and seismic risks.

2 BACKGROUND

2.1 Portland Harbor Superfund Site Context

The Willamette River (River) drains a basin of approximately 11,400 square miles, generally flowing northward through Oregon 309 miles from its headwaters in the Cascade Range to its confluence with the Columbia River (NOAA 2017). The lower portion of the Willamette River flows through Portland and the most urbanized part of the watershed. The lower Willamette River includes the Portland Harbor Superfund Site (PHSS), which was declared by the U.S. Environmental Protection Agency (EPA) in December 2000 due to elevated concentrations of contaminants such as polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dichlorodiphenyltrichloroethane (DDT) and other pesticides, and polychlorinated dibenzo-p-dioxins and furans (EPA 2017, NOAA 2017). The PHSS includes an in-water and upland portion of the lower Willamette River spanning approximately ten miles from the Broadway Bridge to Sauvie Island (EPA 2020). DEQ is the designated lead agency for the upland portion of the PHSS and EPA is the designated lead agency for the in-water portion of the PHSS (EPA et al. 2001). Cleanup of the Willamette Cove Upland Site is overseen by DEQ. Cleanup of the Willamette Cove riverbank, beach, and in-water contamination are conducted under the PHSS in-water actions overseen by EPA (DEQ 2021). The EPA PHSS

Community Involvement Plan notes the important role the Willamette River plays in the community “by providing and supporting ecosystem services such as air quality, energy, food, physical and mental well-being, plants, transportation, water, and wildlife” (EPA 2020).

Culturally and spiritually significant natural resources of the lower Willamette River are vital to Native peoples who have maintained strong ties to the River since time immemorial, including through fishing, hunting, gathering plants and raw materials, exchanging goods, and practicing ceremonial life (CTUIR n.d., CTWSRO n.d., Grand Ronde n.d., Nez Perce Tribe n.d., Siletz Tribe n.d., Yakama Nation Fisheries n.d., Yakama Tribal Council 2016). The lower Willamette River has, and continues to hold, great historical, natural, and cultural resource significance to Tribes (EPA 2020). Among the resources most frequently utilized by Tribes in the area are fish (EPA 2020). Culturally significant species include salmonids, lamprey, smelt, and sturgeon (EPA 2020). Tribal members consume fish and native freshwater mussels at rates that are higher than the consumption rates of non-tribal adults and are disproportionately impacted by fish contamination that restricts the safe consumption of fish and shellfish (EPA 2020). Important First Foods associated with the Willamette River also include native plants such as wapato and camas (CTUIR n.d., CTWSRO n.d., Grand Ronde n.d., Siletz Tribe n.d.).

The Willamette River serves as habitat and a migratory corridor for numerous wildlife species, such as Chinook salmon, coho salmon, steelhead, Pacific lamprey, white sturgeon, bald eagle; osprey; double-crested cormorant, great blue heron, belted kingfisher, mergansers, cliff swallow, spotted sandpiper, mink, river otter, northern red-legged frog, and Pacific tree frog (EPA 2020). The National Marine Fisheries Service has designated the lower Willamette River as critical habitat for Lower Columbia River Chinook salmon, Lower Columbia steelhead, Upper Willamette River Chinook salmon, and Upper Willamette River steelhead. The lower Willamette River is proposed critical habitat for Lower Columbia River Coho salmon (EPA 2020). Aquatic plants provide refuge, nesting, and breeding habitat for wildlife and food for herbivores (EPA 2020). EPA notes, however, that habitat constraints such as muddy water, overwater obstructions blocking sunlight, and extensive bank armoring limit the development of aquatic plant communities in the PHSS (EPA 2020).

2.2 Tribal and Neighborhood Context and History

The lower Willamette River area is located within the ancestral homelands of many Native peoples, including Cayuse, Chinook, Clackamas, Kalapuya, Klickitat, Molala, Nez Perce, Umatilla, Umpqua, Walla Walla, Warm Springs, Wasco, Yakama, and numerous other Tribes and Bands (EPA n.d.). Willamette Cove and the surrounding St. Johns neighborhood are located on the east bank of the Willamette River near its confluence with the Columbia River. The Site is bordered by the BNSF Railway to the east, Union Pacific Railroad to the north, and North Richmond Avenue to the northwest. Road access to the Site is provided by North Edgewater Street from North Willamette Boulevard or by North Richmond Avenue. Willamette Cove is adjacent to the Cathedral Park residential neighborhood, which is situated on the terrace above the vegetated slope to the north. The St. Johns neighborhood is north of Cathedral Park and the University Park neighborhood is east of the Union Pacific Railroad tracks.

After European contact, Native people of what is now known as the Portland area were faced with a series of territorial and then federal policies designed to eliminate and later assimilate Native people (Portland Indian Leaders Roundtable, n.d.). In the late 18th and early 19th centuries, Indigenous populations in Oregon experienced disease, genocide, military conflicts, and forced relocation (Curry-Stevens et al. 2011). The federal Oregon Donation Land Claim Act of 1850 (Act) enshrined earlier land claims by white settlers and granted up to 640 acres of land in the Oregon Territory to white adult males and spouses (Coleman 2017, 2021; Notarianni 2020). The Act served as a racial exclusion law that promoted settler colonialism (Coleman 2021). The Act was introduced by Territorial Delegate Samuel Thurston, who also successfully lobbied Congress to first authorize appointment of a commission to negotiate treaties with Native peoples to extinguish their claims to lands west of the Cascade Mountains “and leave the whole of the most desirable portion open to white settlers” (Coleman 2017, 2021; Robbins 2022). By 1851, white settlers had claimed the entirety of land in the Willamette Valley (Notarianni 2020). Farming by white settlers destroyed many of Native peoples’ food sources and hunting by white settlers wiped out much of the wild game in the Willamette Valley (Notarianni 2020). From 1850 to 1855, upwards of 2.5 million acres of land were granted to white settlers and the European American population tripled, exceeding the population of Native peoples in the region (Coleman 2017, 2021; Notarianni 2020). In the 1850s Tribes began to relocate to reservations (Notarianni 2020). The removal of most Native peoples to reservations and the exclusion of all but white landownership embedded the vision of a white homeland in Oregon in public policy (Millner 2022). Over generations, the profits, power, and political influence from near exclusive white landownership led to a racially stratified society with profound marginalization of nonwhite populations (Millner 2022).

Early Oregon officials also enacted exclusionary and racist policies. The Provisional Government of Oregon, Oregon Territorial Government, and Constitution of Oregon enacted a series of Black exclusion laws that, though generally not enforced, established Oregon as a hostile destination for Blacks and deterred Black settlement (Millner 2022, Nokes 2022). In the 1860s the Oregon Legislature passed laws that would endure until 1951 that prohibited whites from marrying anyone who was Black, Chinese, native Hawai’ian, or Native American (Oregon History Project 2022). These early examples of race-based public policy that benefitted only the white population are critical to understanding later patterns of political, economic, and social inequality in Oregon (Millner, 2022).

Located on the east bank of the Willamette River near the confluence with the Columbia River, St. Johns is named for James John, who moved to the area from Linnton in 1844 and operated a river ferry (PdxHistory.com 2017, St. Johns Neighborhood Association 2021). Early white settlement in the St. Johns area benefited from relatively well drained terraces that sloped gradually up from the River (Abbott 2001). The plat for St. Johns was filed in 1865 and the first post office opened in 1873 (PdxHistory.com 2017). The town was incorporated in 1902, the same year it began to transform due to an extension of the Oregon Railway and Navigation Company from Portland to St. Johns (PdxHistory.com 2017, St. Johns Neighborhood Association 2021). By 1904, St. Johns had become home to mills, lumber companies, a shipbuilding company, and a dry dock (PdxHistory.com 2017). In 1915, St. Johns was annexed into the City of Portland (St. Johns Neighborhood Association 2021).

Continued industrial development attracted workers to Portland and St. Johns. In the early 20th century in Portland, Native Americans pursued work in industries that supported World War I yet

were prohibited from living within city limits until the 1920s (Curry-Stevens et al. 2011). During World War II, Native Americans joined the influx of workers to Portland attracted by shipbuilding industry jobs (Curry-Stevens et al. 2011, Welala Long 2021). In the post-World War II era, the federal government terminated more than 60 Tribes in Oregon, which meant revoking tribal sovereignty and federal trust responsibilities to Native peoples and led many Native families to move to Portland seeking employment opportunities and a new home (Curry-Stevens et al. 2011). Federal relocation policies also continued to contribute to the growth of Portland's Native population (Curry-Stevens et al. 2011). Today Portland has one of the largest Native populations in the United States (EPA n.d.).

In 1941, Henry Kaiser opened the Oregon Shipbuilding Company in St. Johns, soon followed by shipbuilding yards at Swan Island and in Vancouver. From 1940 to 1944, the Portland metropolitan population grew by approximately one-third as World War II employment in Portland peaked at 140,000 defense workers (Abbott 2001). During the same four years, the Black population of Portland grew from approximately 2,000 to 22,000 as shipyard workers were recruited from other states. At the end of the war, the Black population of Portland stabilized at about 12,000 residents as shipyard jobs disappeared (Millner 2022).

The surge in defense workers created demand for housing. Discriminatory housing practices, including redlining and restrictive covenants, also prevented people of color from purchasing property in many parts of the city (Geiling 2015, Millner 2022). Defense worker housing projects were built to accommodate the surge in housing demand, including many on the North Portland peninsula such as Columbia Villa, St. Johns Woods, Parkside Homes, Hudson Homes, and University Homes (LeBlanc 2009). The Vanport temporary housing project located between Portland and the Columbia River was Oregon's second largest city and housed more than 40,000 people at its peak, including a large population of Black, Indigenous, and People of Color (Abbott 2022). Many of the Native Elders in the Portland area today lived in Vanport when they were young (Curry-Stevens et al. 2011). In 1948, the Columbia River flooded Vanport, displacing its 18,500 residents (Abbott 2022). The displacement was compounded by the racism that limited housing opportunities available for relocating residents (Abbott 2022, Geiling 2015; Millner 2022).

The PHSS Community Involvement Plan provides neighborhood characteristics based on 2013–2017 American Community Survey data (EPA 2020):

- The population of the Cathedral Park neighborhood is 30 percent people of color; median household income is \$52,150, and 17 percent of households are below federal poverty level; housing is 45 percent owner-occupied and 55 percent renter-occupied.
- The population of the St. Johns neighborhood is 39.7 percent people of color; median household income is \$61,452, and 16.3 percent of households are below the federal poverty level; housing is 55.4 percent owner-occupied and 44.6 percent renter-occupied. EPA also notes that displacement and relocation have affected many people in St. Johns and that many of the low-income housing projects that have been built are not accessible to transit.

- The University Park neighborhood is 24 percent people of color; median household income is \$66,296, and 21 percent of households are below federal poverty level; housing is 64 percent owner-occupied and 36 percent renter-occupied.

The 2020 State of Housing in Portland report provides a neighborhood profile for the greater St. Johns area, including the St. Johns, and the nearby Cathedral Park, University Park, and Portsmouth neighborhoods. Whereas the report presents a citywide 2018 median income of \$65,740 and a poverty rate of 14.9 percent, the median income of the greater St. Johns area was \$59,815 and the poverty rate was 21.8 percent. As with the citywide data, the median income and poverty rate for the greater St. Johns area includes significant racial and ethnic disparities among white (\$67,615; 17.5%), Hawaiian-Pacific Islander (\$60,000; 54.8 percent), Asian (\$54,074; 45.4%), Hispanic-Latinx (46,807; 29.7 percent), Native American (\$40,000; 55.3% percent), and Black (\$32,617; 36.1%) populations. Racial and ethnic disparities in homeownership and housing affordability were even more pronounced. According to the report, the total homeownership rate in the greater St. Johns area was 55.1 percent in 2018, slightly exceeding the citywide homeownership rate of 53.1 percent. However, whereas the white homeownership rate in the greater St. Johns area was 62.3 percent, the homeownership rate was significantly lower for the Asian (46.8 percent), Native American (36.1 percent), Hispanic-Latinx (34.3 percent), Hawaiian-Pacific Islander (13.9 percent), and Black (13.1 percent) populations. The report also indicates that in the greater St. Johns area, on average, a Hawaiian-Pacific Islander, Asian, Latinx, Native American, or Black Portland household could not afford to purchase a home without becoming cost burdened and spending more than 30 percent of their monthly income on housing; moreover, on average, a Black Portland household could not afford a studio, one-bedroom, two-bedroom, or three-bedroom rental unit in the greater St. Johns area without becoming cost burdened (Portland Housing Bureau 2020).

2.3 Summary of Record of Decision

DEQ's March 2021 ROD summarizes the Site history, previous investigations, interim remedial actions, selected remedial action, remedial action alternatives, and institutional controls for the Site.

2.3.1 Willamette Cove Site History

Between the early 1900s and 1970s the Site was developed for various industrial uses including a cooperage, lumber mill, and dry dock-related activities. Several associated Site features may have contributed to metals, PAHs, PCBs, phenol, formaldehyde, petroleum hydrocarbons, volatile organic compounds (VOCs), and dioxins/furans contamination in Site soil, sediment, and groundwater.

The Port and Metro entered into a Voluntary Agreement with DEQ in 2000 to conduct a remedial investigation/feasibility study and complete necessary source control measures (Metro et al. 2000). A remedial investigation was subsequently conducted between 2001 and 2002 to evaluate the nature and extent of soil and groundwater contamination on the Site. Additional investigations were conducted between 2006 and 2017 to further delineate soil contamination throughout the Site and evaluate groundwater conditions. For the purposes of site investigations, three areas of the Site were designated: East Parcel, Central Parcel, and West Parcel. Selected figures from the ROD are included in Appendix A; the three on-site parcels are shown in Figure 3, the first figure of that appendix.

Between 2004 and 2016 three interim remedial actions were conducted at the Site. The first interim remedial action was performed in 2004 in response to a sheen observed in the water adjacent to the East Parcel. A pocket of non-aqueous phase liquid-impacted soil was identified as the source of the sheen and subsequently excavated and disposed of off-site. The second interim remedial action was performed in 2008 and involved removal of metals-impacted surface soil on the eastern portion of the Central Parcel. The third interim remedial action was performed between 2015 and 2016 in response to elevated concentrations of dioxins/furans in soil identified during sampling in 2014 and 2015. Removal activities were conducted in four areas across the Central Parcel and one area on the eastern portion of the West Parcel.

2.3.2 Proposed Remedial Actions

DEQ's Staff Report: Recommended Remedial Action for Willamette Cove Upland Site, Portland, Oregon (Staff Report) on recommended remedial action for the Site presented the basis for DEQ's proposed cleanup and was subsequently generally adopted in the ROD, with the addition of the contingency remedy option (DEQ 2022). The ROD identified remedial action alternatives to address soil from the top of the riverbank to the property boundary. Soils below the riverbank will be addressed as part of the PHSS in-water work. The ROD identified the following four general remedial action alternatives (DEQ 2021):

- Alternative 1: No action; included for comparison purposes only and is not considered protective by DEQ
- Alternative 2: In-place capping of soil
- Alternative 3: Excavation and off-site disposal and/or on-site consolidation and capping of soil
- Alternative 4: Hybrid of focused excavation and off-site disposal of hot spots, on-site consolidation, and/or capping of soil

Under each of the above general remedial action alternatives, two to four sub-alternatives were identified, for a total of ten remedial action alternatives. The selected remedial action detailed in the ROD was Alternative 4c. Under this alternative, the ROD outlined excavation and off-site disposal of soil hot spots exceeding human health risk levels and non-dioxin/furan (e.g., metals including mercury) hot spot concentrations for ecological health; excavation, consolidation, and capping of approximately 23,000 cubic yards of soil exceeding human health and ecological risk levels; and placement of cover soil over soil that exceeds dioxin/furan ecological risk levels (Figure 28 in Appendix A). Please note that Figure 28 presents an example consolidation area (covering approximately 116,000 square feet) for illustration purposes. The final location and dimensions (e.g., shape) of the consolidation area would be determined during remedial design, including stability considerations and accommodating future park plans to the extent possible.

To address public comments, the ROD incorporated a contingency option into the final remedy to perform additional excavation and off-site disposal to eliminate or greatly reduce the volume of soil to be consolidated and capped on site. Two alternatives in the ROD, Alternative 3a and Alternative

3b, involve removal of contaminated soil and off-site disposal of all excavated soil, with the exception of areas under Alternative 3b where native trees are present and will limit excavation. Based on a preference by Metro and many commenters to retain the native trees, the primary contingency remedy alternative evaluated in this analysis is Alternative 3b (alternative excavation and off-site disposal) (Figure 23 in Appendix A). See Section 4 for additional information.

2.3.3 Institutional Controls

For remedial alternatives where contamination would remain on site (i.e., using engineering controls such as capping), institutional controls will be required to ensure long-term protectiveness through the following mechanisms:

- Implementation of a contaminated media management plan
- Long-term monitoring and maintenance
- Deed restrictions that limit Site uses to passive recreation activities

Alternative 3b would not require institutional controls as soil that is above human health and ecological risk levels would be excavated and disposed of off-site.

2.4 Proposed Future Use

The Site is zoned by the City of Portland for Open Space and is subject to two Greenway overlay zones: River General and River Water Quality (BPS n.d.). The Open Space zone is “intended to preserve and enhance public and private open, natural, and improved park and recreational areas,” serving functions including the following (City of Portland 2021a):

- Providing opportunities for outdoor recreation
- Providing contrasts to the built environment
- Preserving scenic qualities
- Protecting sensitive or fragile environmental areas
- Enhancing and protecting the values and functions of trees and the urban forest
- Preserving the capacity and water quality of the stormwater drainage system
- Providing pedestrian and bicycle transportation connections

The River General overlay zone is intended to allow for uses consistent with the base Open Space zone “which allow for public use and enjoyment of the riverfront, and which enhance the river's natural and scenic qualities” (City of Portland 2021b). The purpose of the River Water Quality overlay zone is to “to protect the functional values of water quality resources by limiting or mitigating the impact of development in the setback” (City of Portland 2021b).

Following identification of Willamette Cove as a greenspace of regional significance in the 1992 Metropolitan Greenspaces Master Plan, Metro Council authorized purchase of the Site in 1996 with funding from the 1995 Open Spaces, Parks, and Streams Bond Measure (Metro Council 2020b). The purchase represented a commitment to restore the regionally significant natural area, extend the North

Portland Greenway, and work with the City of Portland on future master planning for possible recreation use (Metro Council, 2020a). Metro develops regional nature parks, which it describes as “Protected for their scenic, historic, or natural features, Regional Nature Parks are carefully developed and opened to the public as places to connect with nature...In these places, Metro promotes activities like hiking, and quiet enjoyment of nature and wildlife, sharing the story of some of the region’s most unique cultures, landscapes, and natural systems” (Metro 2022a). At the Willamette Cove Site, Metro Council has described its continued efforts to determine passive park uses that harmonize recreational visits with habitat restoration and ecological values (Metro Council 2020a). In 2020, Metro Council approved a resolution (Resolution No. 20-5149) authorizing and directing staff to include Willamette Cove as a parks and nature destination eligible for 2019 Parks and Nature Bond Measure funds (Metro Council 2020b).

Metro plans to initiate a Willamette Cove master planning process in fall 2022 (Metro 2022a). The purpose of the master planning project will be to “consider public access opportunities, address safety and management concerns, and provide natural resource protection,” and a goal will be to “evaluate recreation opportunities while enhancing water quality and fish and wildlife habitat; recreational uses that are compatible with the environmental objectives and values will be encouraged” (Metro 2022a). Metro elaborates (Metro 2022a):

In order to provide people with meaningful connections to nature and create site conservation and management plans that improve the long term health of the natural area, a master plan must be created to meet current and future generation’s needs. A long term vision for the natural area needs to be defined to guide future management of resources (natural and cultural), the visitor experience, and improvements. Specifically for the Willamette Cove Natural Area, this means considering potential site opportunities such as parking, creating a regional trail connection, viewpoints, beach access and making sure that the strategies for maintaining them are in line with interpretation, cultural, scenic, and recreation goals. Visitor experience opportunities shall align with natural resource management and restoration efforts.

The Metro master planning process will facilitate an extensive Tribal government-to-government and community and stakeholder engagement process (Metro 2022a). Metro anticipates the Willamette Cove master plan will be completed and approved in fall 2025 (Metro 2022a).

3 BASELINE EXPLANATION OF COMMUNITY POSITION

3.1 Summary of Tribal Response and Position

The DEQ Staff Report on the recommended remedial action for the Site presented the basis for DEQ’s proposed cleanup and was subsequently generally adopted in the ROD, with the addition of the contingency remedy option (DEQ 2022). Six Tribal governments (including the Confederated

Tribes and Bands of the Yakama Nation [Yakama Nation], the Confederated Tribes of the Grand Ronde Community of Oregon, the Confederated Tribes of Siletz Indians, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Nez Perce Tribe) provided comments to DEQ and Metro in development and review of the ROD.

In response to the DEQ Staff Report selection of Alternative 4c, the Yakama Nation sent a letter to DEQ and Metro Council stating that on-site consolidation and disposal of toxic soil is not appropriate for the Site and urged DEQ and Metro Council “to consider a more permanent and integrated solution to the remaining hazardous contamination that will maximize the upland cleanup’s protection of both the shoreline resources and community safety.” The letter states that the Site is too narrow to adequately set back the consolidation area from the riverfront, and cites related concerns based on risk of flooding, particularly in the context of climate changes, as well as seismic risk. The letter expresses concerns about groundwater-to-surface water contamination. The Yakama Nation recommends habitat mitigation as part of any remedial design (Confederated Tribes and Bands of the Yakama Nation 2020).

On behalf of the Confederated Tribes of the Grand Ronde Community of Oregon, the Confederated Tribes of Siletz Indians, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Nez Perce Tribe (Five Tribes), consultants also provided a comment letter in 2020 to DEQ regarding the Staff Report. The comment letter built upon several prior memoranda submitted on behalf of the Five Tribes that reviewed the draft and revised Groundwater Source Control Evaluation and Alternatives Analysis, the Revised Feasibility Study and Source Control Evaluation, and the Port’s Response to Comments on the Revised Feasibility Study and Source Control Evaluation. The 2020 comment letter on the Staff Report states the Staff Report satisfactorily identifies Site flood risk as a design consideration, citing the section of the staff report that states that capped areas may require additional reinforcement to withstand future flooding. In addition, the comment letter recommends “including a more explicit statement that the consolidation facility will be designed to create an aesthetic fit with the site and its future use.” The letter also expresses the Five Tribes’ continued concern that the East Parcel may present a source of groundwater contamination and expectation that groundwater sampling will be included in pre-design investigation to adequately characterize potential groundwater contamination (IEc 2020).

3.2 Summary of Public Comments, Community Letters, and Public Testimony

Willamette Cove has been the subject of substantial public interest and community conversation. During the public comment period on the recommended cleanup plan, DEQ received more than 180 public comments, including a petition with more than 300 signatures requesting more removal of contaminated soil than proposed in the Staff Report. The comments documented in the ROD summarized the following themes:

- Call for more removal/off-site disposal compared to containing contamination beneath an engineered cap. Comments often refer to a preference for “full cleanup” or “full

removal” of contamination, referring to the physical removal of contaminated soils. In the ROD, DEQ refers to Alternative 3a and Alternative 3b as the “full removal” options. See Section 2.3.2 of this report for additional information.

- Questions about the long-term reliability of containing contamination beneath an engineered cap, and the long-term cost of, and adequacy associated with, ongoing monitoring and maintenance.
- Concern about tree preservation and disruption to the local ecology and community during cleanup activities, including noise, air emissions associated with material transport, and vegetation and habitat quality.
- Desire for public access to the Site when considering future uses, including suggestions for a range of types of park uses.
- Interest in the extent to which the houseless community’s exposure to Site contaminants is factored into the remediation action and how the houseless community’s exposure differs from exposure experienced by other community members.
- General support for the community benefits of remediation and request for rapid cleanup.
- Some support for integrating bioremediation into the cleanup plan, such as mycoremediation (fungi-based technology), provided the technology is proven to be effective. People who supported mycoremediation believed it would be less disruptive than other remediation methods.

Metro received both written and verbal feedback on Resolution No. 20-5149, which addressed whether Willamette Cove was to be included in the eligible areas for the 2019 Parks and Nature Bond Measure funding. The comments to Metro included messages like those received by DEQ about the Site, specifically the call for “full removal” of contaminated areas and concerns about the long-term reliability of capping and potential impacts to natural ecosystems in the area. The comments documented in Metro’s written and verbal testimony for Metro Resolution 20-5149 summarized the following additional themes:

- Desire for safe and public river and waterfront access, with some emphasis on areas for bird-watching as well as passive recreation.
- Call for transparency in Metro and Port agreements regarding past and future decisions for the Site, including requests for the release of communications and references to a confidential agreement between the two entities.
- Concern about contamination affecting human health, particularly groundwater contamination and the failure of an engineered cap due to natural or climate related disasters.
- Desire to accelerate the timeline of the project moving forward, citing the initial purchase purpose and prolonged timeline.

- Call for consideration of equity in input from communities living in or with cultural connections to the area, including Tribal leadership, low-income neighborhoods, those without access to green spaces, and other marginalized communities.

4 CONTINGENCY REMEDY ALTERNATIVE EVALUATION

4.1 Proposed Alternatives

The DEQ-selected Alternative 4c includes placement of an estimated 23,000 cubic yards of moderately impacted soil in an on-site consolidation area. The following sections compare the DEQ-selected remedy to contingency remedy Alternative 3b that would include removal of contaminated soil and off-site disposal of all excavated soil, with the exception of areas where native trees are present and will limit excavation. A contingency remedy option for partial removal and off-site disposal of moderately contaminated soil was also considered. Definable metrics to determine the volume of a partial removal were evaluated but could not be identified; therefore, this alternative is not further considered.

4.1.1 On-Site Consolidation

On-site consolidation represents the DEQ-selected alternative (Alternative 4c). The alternative includes excavation and off-site disposal of approximately 4,000 cubic yards of highly concentrated hot-spot soils and on-site consolidation and capping of approximately 23,000 cubic yards of moderately contaminated soil. Cover soil would be placed over the remainder of the Site to address remaining risk to plants and animals. Selected native trees would be retained with focused excavation around the roots. Soil placed in the consolidation area would have contaminant concentrations above human health and ecological risk levels; however, an engineered cap would prevent human contact.

Soils with lower-level risk to plants and animals would be covered in-place. Cover thickness would be determined based on the level of residual risk; however, a minimum 1-foot of clean topsoil would be placed. Remaining ecological hot spots, if any, would be capped by 3 feet of clean soil or alternative DEQ-approved material to reduce risk to plants and animals

4.1.1.1 Construction Impacts

Articulated haul trucks would be used to transport soil on-site to the consolidation area. Standard trucks and trailers would be used to haul contaminated soil to the landfill, as well as to import clean topsoil. Truck routes would pass through residential and commercial areas in the community. Truck traffic during project construction will result in some amount of noise, dust, traffic, air contaminant emissions, potential odors, and greenhouse gas (GHG) emissions within the community. Increased

traffic in the area creates a risk for motor vehicle, pedestrian, and bicycle accidents. River navigation would not be impeded by the project, as work would be conducted in the upland portion of the Site.

Due to the proximity of the Site to the Willamette River, barges could possibly be used to transport materials from the Site, which would result in reduced noise, dust, traffic, and GHG emissions in community areas compared to truck hauling. A temporary loading dock would need to be constructed to facilitate loading to water-based vessels which would extend the duration of the project for permitting and implementation, increase construction cost, and add noise, dust, and GHG emissions. This option is not likely to be feasible, due to the small disposal volume compared to the cost and impacts of building the temporary loading dock.

4.1.1.2 Greenhouse Gas Emissions

Based on Metro's efforts to reduce GHG emissions (Metro 2020), this analysis assumes that haul trucks for the project will run on renewable diesel. Renewable diesel results in lower emissions of particulate matter, carbon monoxide, total hydrocarbons, nitrogen oxide, and greenhouse gases than petroleum diesel. Renewable diesel can also have up to 85 percent lower life-cycle GHG emissions than petroleum diesel, depending on the materials used to make it (DEQ n.d.). GHG emissions from Alternative 4c would include the combustion of fuels in construction equipment, haul trucks, and/or barges. While emissions for barges are included in the calculations in Appendix B, for the purposes of comparing alternatives, hauling by truck was assumed. For comparison purposes, other smaller sources of construction GHG emissions are assumed to be equal between both alternatives.

Most of the GHG emissions from Alternative 4c result from excavating contaminated soil, moving soil to the on-site consolidation area, hauling the contaminated soil to a landfill, hauling import cap and cover materials, and placing imported materials.

GHG emissions were estimated using estimated travel distances, average haul-truck fuel efficiencies, and GHG emission factors. On-site consolidation using trucks would generate approximately 213 tons of carbon. GHG emission calculations are included in Appendix B.

4.1.2 Off-Site Disposal

This option is assumed to correspond with Alternative 3b of the ROD. It involves complete removal of contaminated soil and off-site disposal of all excavated soil, except for areas where native trees are present that limit excavation. This alternative includes removal and off-site disposal of approximately 45,000 cubic yards of contaminated soil, and placement of one foot of topsoil over the excavation area for vegetation support. Designated native trees would be preserved in this alternative, and low-impact excavation in the dripline would remove the shallow contaminated soil without damaging the trees. Consistent with Alternative 4c, excavated areas would be covered with at least 1-foot clean soil and additional cover material maybe be necessary to effectively reduce risk to plants and animals.

4.1.2.1 Construction Impacts

Standard trucks and trailers would be used to haul contaminated soil to the landfill, as well as to import clean topsoil. This alternative would result in a longer duration of temporary impacts along haul routes in residential and commercial areas compared to on-site consolidation due to additional volume of material to be transported to a landfill. River navigation would not be impeded by the project, as work would be conducted upland of the Willamette River.

As with the on-site consolidation alternative, barges could possibly be used to transport materials which would result in reduced noise, dust, traffic, and GHG emissions in community areas compared to truck hauling. Increased off-site soil disposal volume may increase the viability of barge transportation; however, the overall cost, in-water impact, and timeline of permitting and constructing the temporary loading dock would need to be considered during the project design.

4.1.2.2 Greenhouse Gas Emissions

GHG emissions from Alternative 3b could include the combustion of fuels in construction equipment, haul trucks, and/or barges. For comparison purposes, other smaller sources of construction GHG emissions are assumed to be equal between both alternatives. Most of the GHG emissions from Alternative 3b result from excavating contaminated soil, hauling it to a landfill by truck or and/or barge, importing topsoil, and placing topsoil.

GHG emissions were estimated using assumed travel distances, average haul truck fuel efficiencies, and GHG emission factors. Off-site disposal of all contaminated soil using trucks would result in generation of approximately 386 tons of carbon. GHG emission calculations are included in Appendix B.

4.2 Construction Cost Comparison

For the purposes of this analysis, construction costs for Alternatives 3b and 4c were evaluated, updated as appropriate, and compared. Cost estimates outlined in the ROD account for 30 years of long-term operations including cap inspection and maintenance for Alternative 4c (see Section 4.3.1 for discussion on long-term costs). This analysis adjusted costs based on current (May 2022) cost assumptions for excavation and loading, off-site transportation, and off-site disposal. Related costs, including pre-construction, mobilization, construction contingency, and indirect construction costs were also adjusted accordingly. Construction cost estimates in this report were higher than those presented in the ROD. The increase is partially attributed to time since the previous estimates were prepared, however current economic conditions are also reflected in the adjusted costs.

The ROD and adjusted estimated costs are shown in the table below.

	Alternative 3b	Alternative 4c
ROD Estimated Construction Cost (includes topsoil cover)	\$11.8 million	\$8.1 million
2022 Adjusted Estimated Construction Cost	\$17.5 million	\$9.5 million
NOTE: ROD = record of decision		

Please note that the costs presented in the ROD were based on the feasibility study for the Site. When preparing a feasibility study, one of the balancing factors considered is reasonableness of cost. Cost estimates prepared for a feasibility study are planning-level costs that include a variety of assumptions. Those costs provide a basis for cost comparison between the remedial alternatives and, to the extent feasible, those cost estimates have been updated in this document. Project budgeting should rely on engineering estimates completed after the remedial design is prepared.

Adjusted cost calculations are included in Appendix C.

4.3 Long-Term Operation, Maintenance, and Risk

As described in Section 2.3.3, under remedial action alternatives that involve consolidation and capping and/or in-place capping of contaminated soil, institutional controls will be required to implement long-term operation, monitoring, and maintenance of cap integrity. The risk of future releases of capped residual soil contamination is increased by potential impacts from routine flooding, climate change-exacerbated flooding and sea-level rise, and seismic hazards, including landslides and earthquakes, as described in the sections below.

4.3.1 Long-Term Operation and Maintenance

	Alternative 3b	Alternative 4c
ROD Estimated Long-Term O&M (net present value)	\$230,000	\$685,000
Adjusted Estimated Long-Term O&M (net present value)	\$230,000	\$985,000
NOTES: O&M = operation and maintenance. ROD = record of decision.		

On-site consolidation would require the institutional controls described in Section 2.3.3, due to consolidating and retaining contaminated material on site. Some future Site land use would likely be restricted (e.g., residential development or deep excavation into consolidated soil), particularly in the soil consolidation area. The engineered cap over the consolidation area would be designed to allow full human access for the intended open space Site use. Long-term operation and maintenance (O&M)

would include annual cap inspection and general maintenance (e.g., vegetative maintenance and repair of erosion or settling/low spots). Maintenance for vegetation establishment, including plant replacement, would occur for the initial five years only.

Alternative 3b would not have long-term inspection and maintenance requirements as stated in the ROD. Long-term O&M under Alternative 4c would include annual consolidation area cap inspection and associated maintenance and indirect long-term costs for 140 years. Costs from the ROD were adjusted to account for the 140-year maintenance period and are shown in the table below.

Adjusted long-term O&M cost and net present value calculations are included in Appendix C.

4.3.2 Climate Change Risk

Climate change is expected to affect the timing, frequency, and duration of flood events (City of Portland and Multnomah County 2014). Models project this will manifest in earlier spring peak run-off, less summer run-off, and more snow-dominated basins transitioning to rain-dominated during the peak flows in winter (Melillo et al. 2014). Climate models show an increase in the number of extreme rain event days, and an increase in precipitation on those days, on the North American West Coast between the late 20th century and end of the 21st century (Warner et al. 2015). Models also show the potential for large increases in short-duration (e.g., hourly) rainfall intensity in Portland (Morgan et al. 2021). While observed and ongoing sea-level rise is expected to have minimal impacts on flooding along the lower Willamette River, coastal storm surge resulting from atmospheric river events, often associated with significant winter runoff, could exacerbate flooding impacts experienced from changes to runoff and peak flow patterns (Wherry et al. 2019). These expected effects could impact areas adjacent to the flood fringe, such as the proposed soil consolidation area in Alternative 4c.

4.4 Other Considerations

4.4.1 Ecological Benefits

Baseline ecological risk at the Site was evaluated in the Level II Screening Residual Ecological Risk Assessment (Formation Environmental 2014). The feasibility study established remedial action objectives to provide the framework for developing and evaluating remedial action alternatives (Apex Companies 2019). The stated remedial action objectives for ecological receptors were to prevent exposure of ecological receptors to soil containing contaminants of concern above the receptor-specific screening levels and remove or treat soil with contaminant-of-concern concentrations above the DEQ-defined hot-spot levels to the extent practicable.

Each of the remedial alternatives (except for the No Action alternative) presented in the feasibility study provide an equivalent level of protection to ecological receptors within the bounds of the DEQ process. Alternative 4c and Alternative 3b both meet the objectives of Metro's habitat restoration goals (Metro 2022b). Potential additional ecological benefits from off-site disposal of moderately contaminated soil cannot be quantified within the limits of this analysis.

4.4.2 Seismic Considerations

Willamette Cove has been classified as having very high liquefaction susceptibility and high landslide susceptibility in a seismic event (DOGAMI 2019). The Site is also less than a half mile from the nearest mapped active fault, aged to the middle or late Quaternary period (USGS n.d.). In the event of liquefaction, two axes of spreading could result, one due to the presence of the railroad embankment and one due to the slope of the riverbank. A consolidation area would need to be designed with setbacks from the riverbank, property lines, and railroad embankment to mitigate risk of contaminant release resulting from a significant seismic event. A site-specific geotechnical evaluation would need to be completed to fully understand physical characteristics of the Site for design of an on-site containment area.

5 SUMMARY OF CONTINGENCY ANALYSIS

In March 2021, DEQ issued its ROD for the Site. The ROD requires that highly contaminated soils be removed and disposed of off-site. The DEQ-selected remedy specifies that moderately contaminated soils be placed in perpetuity in an on-site consolidation area (Alternative 4c).

The ROD includes a contingency remedy that allows Metro to remove and dispose of all, some, or none of the moderately contaminated soils off-site. This report presents a summary of the ROD, proposed future use, Tribal government responses, public comments, the DEQ-selected remedial action (Alternative 4c), and a contingency remedy option (Alternative 3b). The following table presents a summary of the information for Alternative 4c and Alternative 3b and a comparison of the two.

Comparison Metric	Alternative 4c (Selected Remedy)	Alternative 3b (Contingency Remedy)	Comparison Result
Future Use	No restrictions on access; Restricted land use (e.g., residential development) for consolidation area	No restrictions on access or Site use	Alternative 3b results in fewer land use restrictions; neither alternative results in future access restrictions.
Construction Impacts to the Community	Temporary increase in traffic, noise, air contaminant emissions, and potential odors (exhaust)	Temporary increase in traffic, noise, air contaminant emissions, and potential odors (exhaust)	Alternative 3b would increase the amount and duration of temporary off-site impacts compared to Alternative 4c due to increased truck traffic for larger off-site disposal volume; greenhouse gas emissions are summarized below.
Ecological Impacts and Benefits	Reduces area of contamination and consolidates excavated soils to a known, defined location on site. Excavated areas will be covered with one foot of clean soil and replanted with native species.	Removes all contaminated soil from the Site except around native tree roots that are inaccessible. Excavated areas will be covered with one foot of clean soil and replanted with native plant species.	Alternative 3b results in lower area of remaining potential ecological impact on the Site (around native tree roots only).
Truck Trips (to export contaminated soil, import clean materials)	Estimated 3,072 off-site truck trips	Estimated 5,420 off-site truck trips	Alternative 3b results in an estimated increase of 2,348 off-site truck trips.
Greenhouse Gas Emissions	Estimated greenhouse gas emissions of 213 tons of carbon	Estimated greenhouse gas emissions of 386 tons of carbon	Alternative 3b results in an estimated increase of 173 tons of carbon compared to Alternative 4c.
Project Construction Cost	\$9.5 million	\$17.5 million	Alternative 3b increases the construction cost by \$8.0 million.
Long-Term O&M Cost	\$985,000	\$230,000	Alternative 3b decreases the long-term cost by \$755,000.
NOTES: O&M = operation and maintenance. Site = Willamette Cove Upland Site.			

The cost estimates in this document are planning-level costs that include a variety of assumptions. Those costs provide a basis for cost comparison between the remedial alternatives. Project budgeting should rely on engineering estimates completed after the remedial design is prepared.

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

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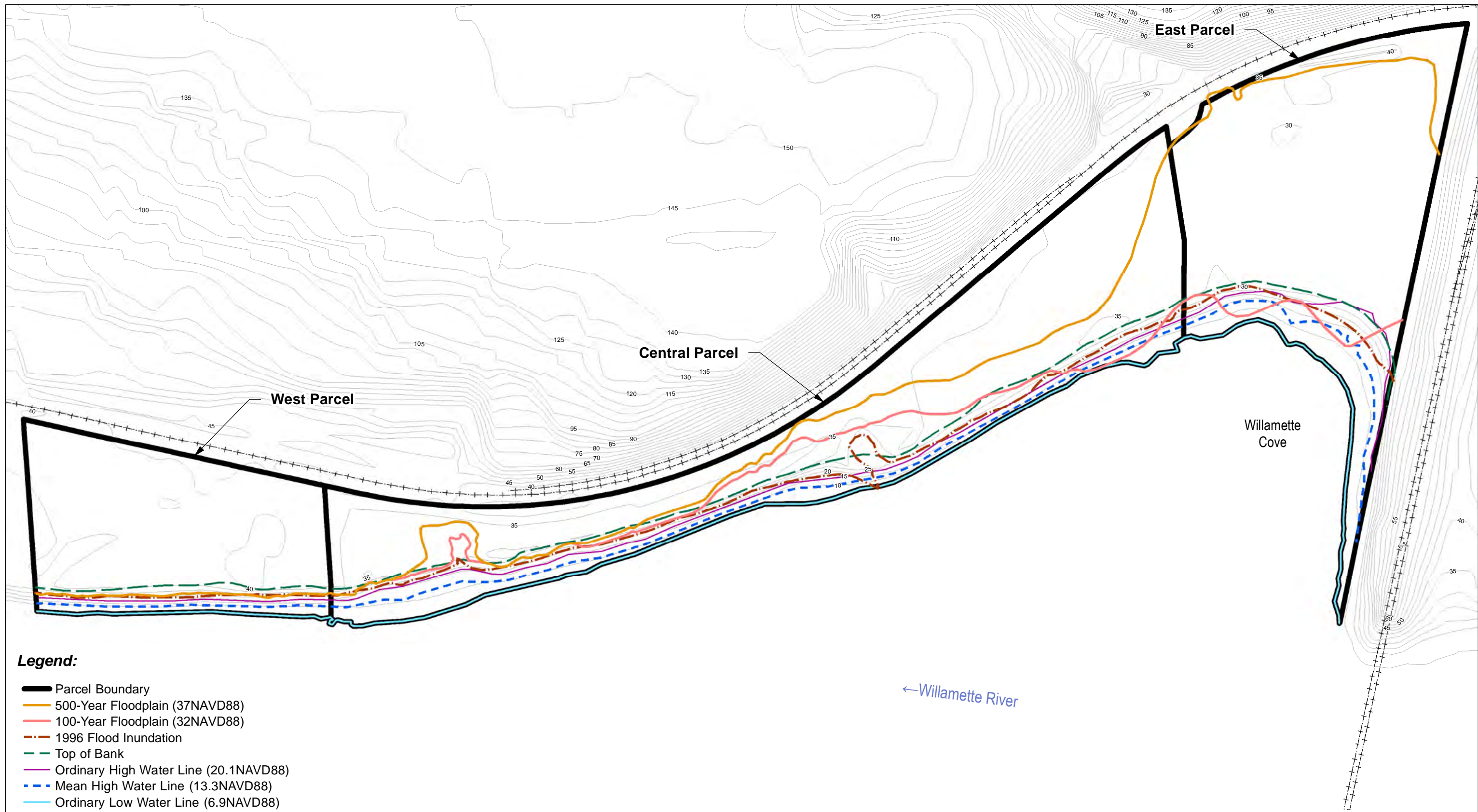
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APPENDIX A

FIGURES FROM FEASIBILITY STUDY

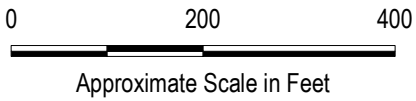




Legend:

- Parcel Boundary
- 500-Year Floodplain (37NAVD88)
- 100-Year Floodplain (32NAVD88)
- 1996 Flood Inundation
- Top of Bank
- Ordinary High Water Line (20.1NAVD88)
- Mean High Water Line (13.3NAVD88)
- Ordinary Low Water Line (6.9NAVD88)

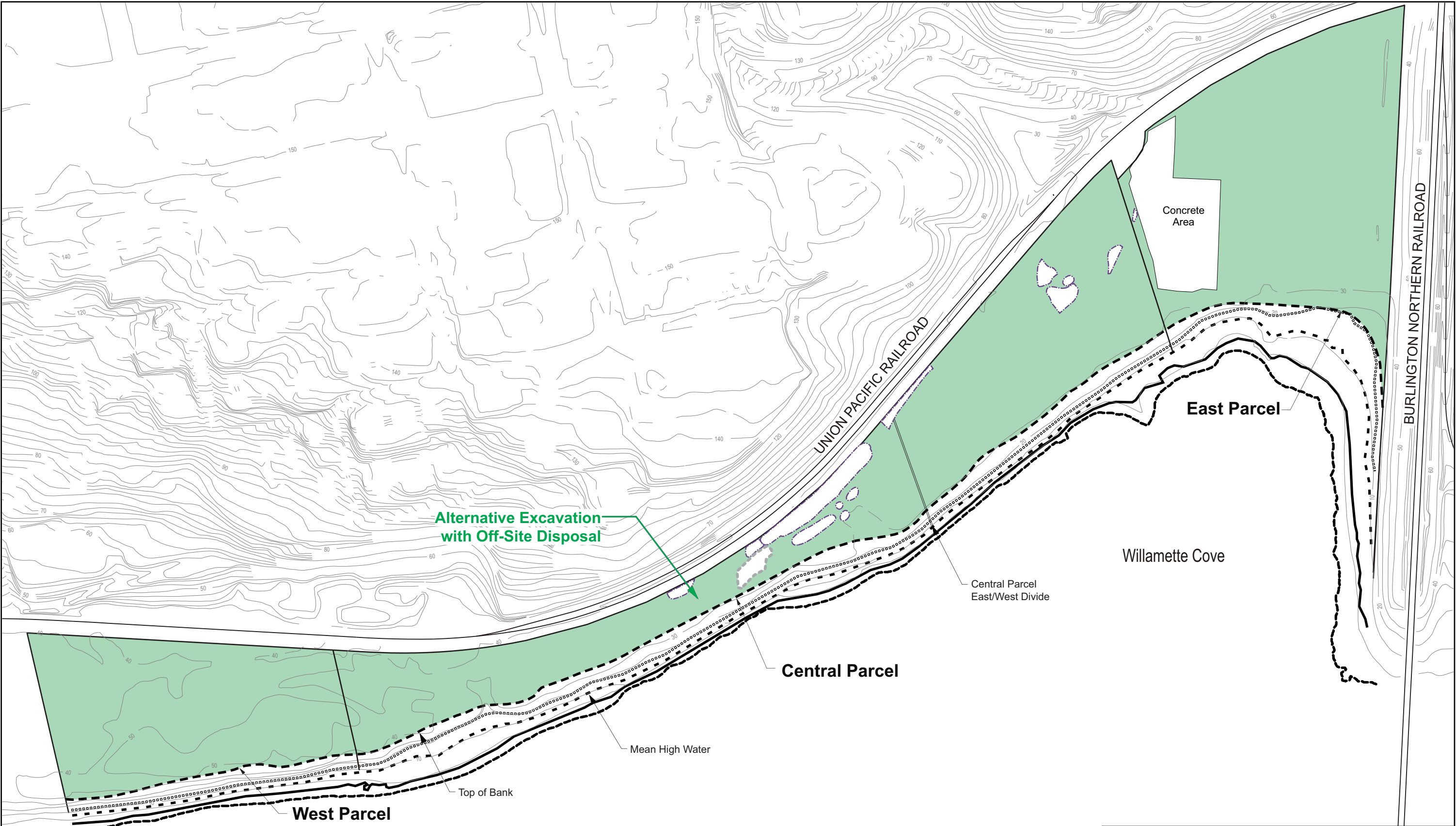
Basemap prepared using spatial data from Metro (2010-2017), Apex, Formation Environmental, and Hart Crowser.
 Coordinate System: NAD83 HARN StatePlane Oregon North FIPS 3601 (Intl Feet).



Site Elevation and Floodplain Map

Willamette Cove Upland
Portland, Oregon

	Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201		Project Number 1056-10	Figure 3
	March 2020			



Legend:

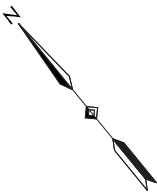
- 2015 Soil Removal Deep Excavation Area
 - 2015 Soil Removal Action Low Impact Excavation Areas Surrounding Designated Native Tree Species
 - Alternative Excavation Area - All soil above human health and ecological risk levels will be excavated and taken off-site, except near native trees where only soil that can be removed without damaging trees will be excavated.
- Note:** Alternative excavation area is approximate. Actual area will be determined by confirmation sampling conducted during remedial action.

- Upper Source Control Screening Boundary (Corresponds to Top of Bank Plus Areas of Potentially Erodible Soil)
- Ordinary High Water Line (20.1NAVD88)
- Mean High Water Line (13.3NAVD88)
- Ordinary Low Water Line (6.9NAVD88)
- Lower Source Control Screening Boundary

0 200 400

Approximate Scale in Feet

Source: Base map prepared from an electronic file provided by Hart Crowser.



**Alternative 3b: Alternative Excavation
with Off-Site Disposal**
Willamette Cove Upland
Portland, Oregon



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

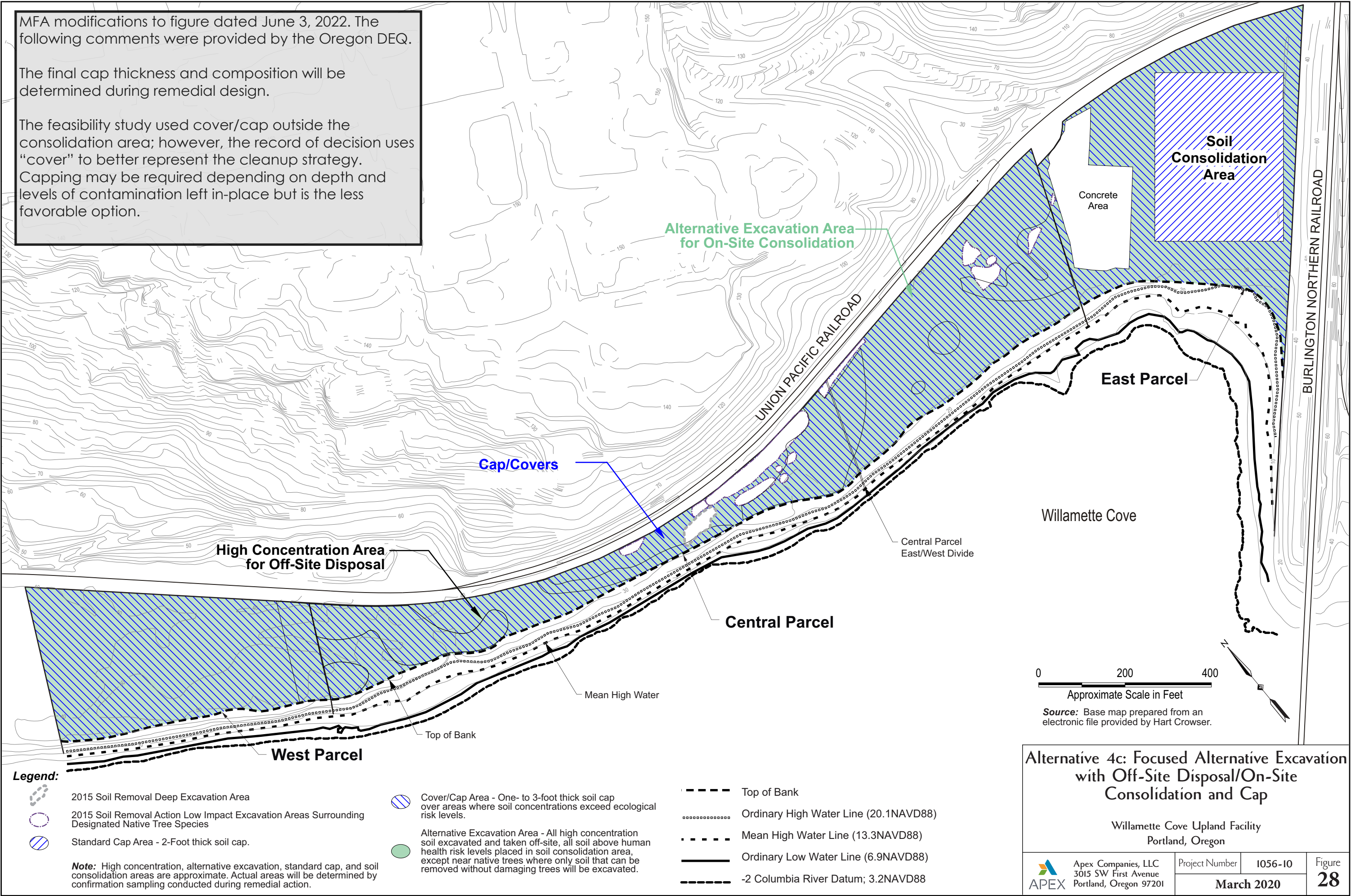
Project Number 1056-10
March 2020

Figure
23

MFA modifications to figure dated June 3, 2022. The following comments were provided by the Oregon DEQ.

The final cap thickness and composition will be determined during remedial design.

The feasibility study used cover/cap outside the consolidation area; however, the record of decision uses "cover" to better represent the cleanup strategy. Capping may be required depending on depth and levels of contamination left in-place but is the less favorable option.



APPENDIX B

GREENHOUSE GAS CALCULATIONS



Table B-1
Alternative 4c Greenhouse Gas Emission Calculations
Willamette Cove Upland Site
Portland, Oregon



Off-Site Disposal by Truck		
Round-trip travel distance from site to Hillsboro WM Landfill	40 miles	(1)
Quantity of soil hauled to Hillsboro WM Landfill	4,600 LCY	(a)
Quantity of soil per truck load	15 LCY	(3)
Number of truck trips	307 trips	(b)
CO₂ Emissions Estimate	44,226 lb CO₂eq	(c)
CH₄ Emissions Estimate	6 lb CO₂eq	(d)
N₂O Emissions Estimate	334 lb CO₂eq	(e)
Off-Site Disposal by Truck GHG Emissions Estimate	44,566 lb CO₂eq	(f)
Off-Site Disposal by Truck GHG Emissions Estimate	22 tons CO₂eq	(g)
Cap Material and Topsoil Import by Truck		
Round-trip travel distance from soil source to site	38 miles	(1)
Quantity of soil imported to the site	41,469 LCY	(2)
Quantity of soil per truck load	15 LCY	(3)
Number of truck trips	2,765 trips	(b)
CO₂ Emissions Estimate	378,407 lb CO₂eq	(c)
CH₄ Emissions Estimate	53 lb CO₂eq	(d)
N₂O Emissions Estimate	2,856 lb CO₂eq	(e)
Soil Import by Truck GHG Emissions Estimate	381,316 lb CO₂eq	(f)
Soil Import by Truck GHG Emissions Estimate	191 tons CO₂eq	(g)
Off-Site Disposal by Barge		
Round-trip barge travel distance	188 miles	(1)
Quantity of soil hauled to landfill	6,987 tons	(2)
Quantity of soil per barge load	1,500 tons	(8)
Number of barge trips	5 trips	(b)
Off-Site Disposal by Barge GHG Emissions Estimate	15,893 lb CO₂eq	(h)
Round-trip truck travel distance from barge off load to landfill	14 miles	(1)
Quantity of soil per truck load	15 CY	(3)
Number of truck trips	307 trips	(b)
CO₂ Emissions Estimate	15,479 lb CO₂eq	(c)
CH₄ Emissions Estimate	2 lb CO₂eq	(d)
N₂O Emissions Estimate	117 lb CO₂eq	(e)
Off-Site Disposal by Truck GHG Emissions Estimate	15,598 lb CO₂eq	(f)
Total Off-Site Disposal by Barge and Truck GHG Emissions Estimate	31,491 lb CO₂eq	(i)
Total Off-Site Disposal by Barge and Truck GHG Emissions Estimate	16 tons CO₂eq	(g)
On-Site Consolidation by Truck		
Average on-site travel distance per load	0.60 miles	(1)
Quantity of soil hauled	22,656 LCY	(2)
Quantity of soil per truck load	32 LCY	(3)
Number of truck trips	708 trips	(b)
CO₂ Emissions Estimate	1,530 lb CO₂eq	(c)
CH₄ Emissions Estimate	0.21 lb CO₂eq	(d)
N₂O Emissions Estimate	12 lb CO₂eq	(e)
Off-Site Disposal by Truck GHG Emissions Estimate	1,542 lb CO₂eq	(f)
Off-Site Disposal by Truck GHG Emissions Estimate	0.77 tons CO₂eq	(g)

Table B-1
Alternative 4c Greenhouse Gas Emission Calculations
Willamette Cove Upland Site
Portland, Oregon



NOTES:

CO₂ = carbon dioxide.

CH₄ = methane.

CY = cubic yards.

g = grams.

gal = gallon.

GHG = greenhouse gases.

kg = kilograms.

⁽¹⁾ Conservative estimate for round-trip distance.

⁽²⁾ DEQ. 2021. *Record of Decision: Selected Remedial Action for Willamette Cove Upland Site, Portland, Oregon*. Oregon Department of Environmental Quality. Northwest Region Office. March.

⁽³⁾ Conservative assumption for average haul truck load capacity. 15 CY for off-site hauling and 32 CY for on-site hauling.

⁽⁴⁾ Conservative assumption for average barge load capacity.

⁽⁵⁾ Conservative assumption for average haul truck fuel efficiency.

⁽⁶⁾ No public data exist for renewable diesel GHG emission factors as it is a newer type of fuel. A study conducted by the National Renewable Energy Laboratory found that, on average, renewable diesel reduced CO₂ emissions by 4.2% compared to petroleum diesel. To be conservative, 4% of the EPA Emission Factors for Greenhouse Gas Inventories diesel emission factor for medium and heavy-duty vehicles 2007–2019 was used.

⁽⁷⁾ Intergovernmental Panel on Climate Change AR5. Emission factor for Cargo Ship - Bulk Carrier - Average. Includes CO₂, CH₄, and N₂O.

⁽⁸⁾ Engineer's estimate of the average barge capacity.

⁽⁹⁾ Code of Federal Regulations, Title 40 Part 98 Subpart A, Table A-1, "Global Warming Potentials."

lb = pounds.

LCY = loose cubic yards.

mpg = miles per gallon.

N₂O = nitrous oxide.

WM = Waste Management.

CALCULATIONS:

^(a) Loose Cubic Yards (LCY) = (bank cubic yards [BCY]) x (1.15 LCY/BCY)

Alternative 4c quantity of soil hauled off-site (BCY) = 4,000 ⁽²⁾

Alternative 3b quantity of soil hauled off-site (BCY) = 45,457 ⁽²⁾

^(b) Number of trips = (quantity of soil hauled [units]) / (quantity of soil per load [units])

^(c) CO₂ emissions estimate (lb CO₂eq) = (travel distance [miles]) x (number of truck trips)

/ (typical haul truck fuel efficiency [mpg]) x (renewable diesel emission factor [kg CO₂/gal]) x (1,000g/kg) / (453.592 g/lb)

Typical haul truck fuel efficiency (mpg) = 6 ⁽⁵⁾

CO₂ emission factor (kg CO₂/gal) = 9.80 ⁽⁶⁾

^(d) CH₄ emissions (lb CO₂eq) = CH₄ emission factor (g/mile) x CH₄ global warming potential x travel distance (miles)

x number of trips / (453.592 g/lb)

CH₄ emission factor (g/mile) = 0.0091 ⁽⁶⁾

CH₄ global warming potential = 25.0 ⁽⁹⁾

^(e) N₂O emissions (lb CO₂eq) = N₂O emission factor (g/mile) x N₂O global warming potential x travel distance (miles)

x number of trips / (453.592 g/lb)

N₂O emission factor (g/mile) = 0.0414 ⁽⁶⁾

N₂O global warming potential = 298 ⁽⁹⁾

^(f) Total GHG emissions estimate (lb CO₂eq) = CO₂ emissions estimate (lb CO₂eq)

+ CH₄ emissions estimate (lb CO₂eq) + N₂O emissions estimate (lb CO₂eq)

^(g) GHG emissions estimate (tons CO₂eq) = GHG emissions estimate (lb CO₂eq) / (2,000 lb/ton)

^(h) Barge GHG emissions estimate (lb CO₂eq) = (travel distance [miles]) x (1.609 km/mile) x (number of barge trips)

x (emission factor [kg CO₂/tonne-km]) x (1,000g/kg) / (453.592 g/lb) / (1.10231 ton/tonne)

Emission factor (kg CO₂eq/tonne-km) = 0.003503 ⁽⁷⁾

⁽ⁱ⁾ Total barge and truck GHG emissions estimate (lb CO₂eq) = (off-site disposal by barge GHG emissions

estimate [lb CO₂eq]) + (off-site disposal by truck GHG emissions estimate [lb CO₂eq])

Table B-2
Alternative 3b Greenhouse Gas Emission Calculations
Willamette Cove Upland Site
Portland, Oregon



Off-Site Disposal by Truck		
Round-trip travel distance from site to Hillsboro WM Landfill	40 miles	(1)
Quantity of soil hauled to Hillsboro WM Landfill	52,276 LCY	(a)
Quantity of soil per truck load	15 LCY	(3)
Number of truck trips	3,486 trips	(b)
CO₂ Emissions Estimate	502,190 lb CO₂eq	(c)
CH₄ Emissions Estimate	70 lb CO₂eq	(d)
N₂O Emissions Estimate	3,790 lb CO₂eq	(e)
Off-Site Disposal by Truck GHG Emissions Estimate	506,050 lb CO₂eq	(f)
Off-Site Disposal by Truck GHG Emissions Estimate	253 tons CO₂eq	(g)
Topsoil Import by Truck		
Round-trip travel distance from soil source to site	38 miles	(1)
Quantity of soil imported to the site	29,000 LCY	(2)
Quantity of soil per truck load	15 LCY	(3)
Number of truck trips	1,934 trips	(b)
CO₂ Emissions Estimate	264,680 lb CO₂eq	(c)
CH₄ Emissions Estimate	37 lb CO₂eq	(d)
N₂O Emissions Estimate	1,998 lb CO₂eq	(e)
Soil Import by Truck GHG Emissions Estimate	266,714 lb CO₂eq	(f)
Soil Import by Truck GHG Emissions Estimate	133 tons CO₂eq	(g)
Off-Site Disposal by Barge		
Round-trip barge travel distance	188 miles	(1)
Quantity of soil hauled to landfill	77,277 tons	(2)
Quantity of soil per barge load	1,500 tons	(8)
Number of barge trips	52 trips	(b)
Off-Site Disposal by Barge GHG Emissions Estimate	165,291 lb CO₂eq	(h)
Round-trip truck travel distance from barge off load to landfill	14 miles	(1)
Quantity of soil per truck load	15 LCY	(3)
Number of truck trips	3,486 trips	(b)
CO₂ Emissions Estimate	175,766 lb CO₂eq	(c)
CH₄ Emissions Estimate	25 lb CO₂eq	(d)
N₂O Emissions Estimate	1,327 lb CO₂eq	(e)
Off-Site Disposal by Truck GHG Emissions Estimate	177,118 lb CO₂eq	(f)
Total Off-Site Disposal by Barge and Truck GHG Emissions Estimate	342,408 lb CO₂eq	(i)
Soil Import by Truck GHG Emissions Estimate	171 tons CO₂eq	(g)
<p>NOTES:</p> <div style="display: flex; justify-content: space-between;"> <div> <p>CO₂ = carbon dioxide.</p> <p>CH₄ = methane.</p> <p>CY = cubic yards.</p> <p>g = grams.</p> <p>gal = gallon.</p> <p>GHG = greenhouse gases.</p> <p>kg = kilograms.</p> <p>⁽¹⁾ Conservative estimate for round-trip distance.</p> <p>⁽²⁾ DEQ. 2021. <i>Record of Decision: Selected Remedial Action for Willamette Cove Upland Site, Portland, Oregon</i>. Oregon Department of Environmental Quality, Northwest Region Office. March.</p> </div> <div> <p>lb = pounds.</p> <p>LCY = loose cubic yards.</p> <p>mpg = miles per gallon.</p> <p>N₂O = nitrous oxide.</p> <p>WM = Waste Management.</p> </div> </div>		

Table B-2
Alternative 3b Greenhouse Gas Emission Calculations
Willamette Cove Upland Site
Portland, Oregon



NOTES (con't):

- ⁽³⁾ Conservative assumption for average haul truck load capacity.
⁽⁴⁾ Conservative assumption for average barge load capacity.
⁽⁵⁾ Conservative assumption for average haul truck fuel efficiency.
⁽⁶⁾ No public data exist for renewable diesel GHG emission factors as it is a newer type of fuel. A study conducted by the National Renewable Energy Laboratory found that, on average, renewable diesel reduced CO₂ emissions by 4.2% compared to petroleum diesel. To be conservative, 4% of the EPA Emission Factors for Greenhouse Gas Inventories diesel emission factor for medium and heavy-duty vehicles 2007–2019 was used.
⁽⁷⁾ Intergovernmental Panel on Climate Change AR5. Emission factor for Cargo Ship - Bulk Carrier - Average. Includes CO₂, CH₄, and N₂O.
⁽⁸⁾ Engineers estimate of the average barge capacity.
⁽⁹⁾ Code of Federal Regulations, Title 40 Part 98 Subpart A, Table A-1, "Global Warming Potentials."

CALCULATIONS:

- ^(a) Loose Cubic Yards (LCY) = (bank cubic yards [BCY]) x (1.15 LCY/BCY)
- | | | |
|---|--------|-----|
| Alternative 4c quantity of soil hauled off-site (BCY) = | 4,000 | (2) |
| Alternative 3b quantity of soil hauled off-site (BCY) = | 45,457 | (2) |
- ^(b) Number of trips = (quantity of soil hauled [units]) / (quantity of soil per load [units])
- ^(c) CO₂ emissions estimate (lb CO₂eq) = (travel distance [miles]) x (number of truck trips)
/ (typical haul truck fuel efficiency [mpg]) x (renewable diesel emission factor [kg CO₂/gal]) x (1,000g/kg) / (453.592 g/lb)
- | | | |
|--|------|-----|
| Typical haul truck fuel efficiency (mpg) = | 6 | (5) |
| Renewable diesel emission factor (kg CO ₂ eq/gal) = | 9.80 | (6) |
- ^(d) CH₄ emissions (lb CO₂eq) = CH₄ emission factor (g/mile) x CH₄ global warming potential x travel distance (miles)
x number of trips / (453.592 g/lb)
- | | | |
|--|--------|-----|
| CH ₄ emission factor (g/mile) = | 0.0091 | (6) |
| CH ₄ global warming potential = | 25.0 | (9) |
- ^(e) N₂O emissions (lb CO₂eq) = N₂O emission factor (g/mile) x N₂O global warming potential x travel distance (miles)
x number of trips / (453.592 g/lb)
- | | | |
|---|--------|-----|
| N ₂ O emission factor (g/mile) = | 0.0414 | (6) |
| N ₂ O global warming potential = | 298 | (9) |
- ^(f) Total GHG emissions estimate (lb CO₂eq) = CO₂ emissions estimate (lb CO₂eq)
+ CH₄ emissions estimate (lb CO₂eq) + N₂O emissions estimate (lb CO₂eq)
- ^(g) GHG emissions estimate (tons CO₂eq) = GHG emission estimate (lb CO₂eq) / (2,000 lb/ton)
- ^(h) Barge GHG emissions estimate (lb CO₂eq) = (travel distance [miles]) x (1.609 km/mile) x (number of barge trips)
x (emission factor [kg CO₂/tonne-km]) x (1,000g/kg) / (453.592 g/lb) / (1.10231 ton/tonne)
- | | | |
|--|----------|-----|
| Emission factor (kg CO ₂ eq/tonne-km) = | 0.003503 | (7) |
|--|----------|-----|
- ⁽ⁱ⁾ Total barge and truck GHG emissions estimate (lb CO₂eq) = (off-site disposal by barge GHG emissions estimate [lb CO₂eq]) + (off-site disposal by truck GHG emissions estimate [lb CO₂eq])

APPENDIX C

ADJUSTED COST ESTIMATES



Adjusted Estimated Cost - Alternative 4c
Willamette Cove Upland Site
Portland, Oregon



Alternative Component	Quantity	Units	Unit Cost	Extension	Notes
Capital					
Pre-Construction					
Pre-Design Sampling, Surveying, Work Plan, Design, Permitting, Procurement/Contracting					
	15%		\$6,773,178	\$1,015,977	Assumes 15% of direct construction cost plus mobilization plus contingency.
Pre-Construction Subtotal				1,016,000	
Direct Construction					
Mobilization	10%		\$4,736,488	\$473,649	Assumes 10% of direct construction cost.
Site Prep					
Utility Locating	8	hr	\$70	\$560	From ROD (DEQ 2021) ⁽¹⁾
Access Road Improvements	1,420	sy	\$24	\$33,597	From ROD (DEQ 2021) ⁽¹⁾
Erosion Control	4,500	lf	\$1.07	\$4,815	From ROD (DEQ 2021) ⁽¹⁾
Construction Entrance	1	LS	\$1,500	\$1,500	From ROD (DEQ 2021) ⁽¹⁾
Erosion Control Maintenance	4	month	\$632	\$2,528	From ROD (DEQ 2021) ⁽¹⁾
Dust Control	70	day	\$280	\$19,600	From ROD (DEQ 2021) ⁽¹⁾
Survey Control	22.4	acre	\$2,200	\$49,280	From ROD (DEQ 2021) ⁽¹⁾
Site Clearing (forested)	9.2	acre	\$9,700	\$89,240	From ROD (DEQ 2021) ⁽¹⁾
Site Clearing (unforested)	10.7	acre	\$950	\$10,165	From ROD (DEQ 2021) ⁽¹⁾
Cap					
Demarcation Layer	12,858	sy	\$2.05	\$26,359	From ROD (DEQ 2021) ⁽¹⁾
Purchase/Deliver Gravel	4,072	ton	\$22	\$89,584	From ROD (DEQ 2021) ⁽¹⁾
Purchase/Deliver Cobbles	12,215	ton	\$30	\$366,450	From ROD (DEQ 2021) ⁽¹⁾
Purchase/Deliver Topsoil	6,858	ton	\$23	\$157,734	From ROD (DEQ 2021) ⁽¹⁾
Place and Compact	12,858	cy	\$6.22	\$79,977	From ROD (DEQ 2021) ⁽¹⁾
Cover/Topsoil					
Purchase/Deliver Topsoil	45,777	ton	\$23	\$1,052,871	From ROD (DEQ 2021) ⁽¹⁾
Purchase/Deliver Activated Carbon	0	lb	\$1.00	\$0	From ROD (DEQ 2021) ⁽¹⁾
Apply Amendment	0	lb	\$0.25	\$0	From ROD (DEQ 2021) ⁽¹⁾
Place and Compact	28,611	cy	\$6.22	\$177,960	From ROD (DEQ 2021) ⁽¹⁾
Excavation					
Soil Excavation/Load (standard)	25,791	cy	\$35	\$902,685	Contractor quote for similar project.
Soil Excavation/Load (alternative)	922	cy	\$161	\$148,442	RSMeans: 312316160020
Chemical Analyses (TCCLP metals)	46	each	\$150	\$6,900	From ROD (DEQ 2021) ⁽¹⁾
Waste Profiling Data Package	20	hr	\$125	\$2,500	From ROD (DEQ 2021) ⁽¹⁾
Transport Off-Site	6,897	ton	\$15	\$103,455	RSMeans: 312323201702/professional judgement
Transport/Place On-Site	22,656	cy	\$8.73	\$197,787	From ROD (DEQ 2021) ⁽¹⁾
Disposal	6,897	ton	\$40	\$275,880	Hillsboro Landfill
Confirmation Soil Sampling/Chemical Analyses	211	each	\$440	\$92,840	From ROD (DEQ 2021) ⁽¹⁾

Adjusted Estimated Cost - Alternative 4c
Willamette Cove Upland Site
Portland, Oregon



Alternative Component	Quantity	Units	Unit Cost	Extension	Notes
Capital					
Site Restoration					
Site Grading	19.9	acre	\$2,150	\$42,785	From ROD (DEQ 2021) ⁽¹⁾
Re-Vegetation (forested)	9.2	acre	\$43,500	\$400,200	From ROD (DEQ 2021) ⁽¹⁾
Re-Vegetation (unforested)	10.7	acre	\$20,000	\$214,000	From ROD (DEQ 2021) ⁽¹⁾
Temporary Irrigation System	19.9	acre	\$6,560	\$130,544	From ROD (DEQ 2021) ⁽¹⁾
First Year of Irrigation	9	month	\$6,250	\$56,250	From ROD (DEQ 2021) ⁽¹⁾
Construction Contingency	30	%	\$5,210,137	\$1,563,041	Percent of direct construction costs plus mobilization.
Direct Construction Subtotal				\$4,736,488	
Direct Construction plus Mobilization Subtotal				\$5,210,137	
Direct Construction plus Mobilization plus Contingency Subtotal				\$6,773,178	
Indirect Construction Costs					
Contractor/OH/Bonding/Insurance, Soil Management Plan/Institutional Controls, Construction Management, Engineering, Agency Oversight, Completion Reporting					
	25	%	\$6,773,178	\$1,693,295	Assumes 25% of direct construction, plus mobilization, plus contingency.
Indirect Construction Subtotal				\$1,694,000	
Capital Cost Subtotal				\$9,484,000	
Long-Term Costs (Net Present Value)					
Cap Annual Inspections	140	year	\$3,800	\$120,874	Adjusted NPV using 3.1% (over 140 years)
Cap Maintenance	140	year	\$7,201	\$229,056	Assume 1% of cap installation cost annually; adjusted NPV using 3.1% (over 140 years)
Plant Inspection and Replacement/Control	5	year	\$30,769	\$141,316	Assume 5% of plant installation cost annually; adjusted NPV using 2.9% (over 5 years)
Indirect Long-Term Costs (Project Management, Agency Oversight, Reporting)	140	year	\$8,354	\$265,731	Assume 20% of long-term costs annually; adjusted NPV using 3.1% (over 140 years)
Contingency	30	%	\$756,977	\$227,093	Percent of long-term costs; percentage same as construction.
Long-Term Subtotal (Net Present Value)				\$985,000	
TOTAL				\$10,469,000	

NOTES:

Gray shaded cells are adjusted values.

cy = cubic yard.

hr = hour.

lf = linear feet.

LS = lump sum.

NPV = net present value.

REFERENCES:

⁽¹⁾ DEQ. 2021. Record of Decision: Selected Remedial Action for Willamette Cove Upland Site, Portland, Oregon. Oregon Department of Environmental Quality. Northwest Region Office. March.

⁽²⁾ The TCLP is described in the Code of Federal Regulations, Title 40, Part 261.

OH = overhead.

ROD = Record of Decision, Portland Harbor Superfund Site.

sy = square yards.

TCLP = Toxicity Characteristic Leaching Procedure.

Adjusted Estimated Cost - Alternative 3b
Willamette Cove Upland Site
Portland, Oregon



Alternative Component	Quantity	Units	Unit Cost	Extension	Notes
Capital					
Pre-Construction					
Pre-Design Sampling, Surveying, Work Plan, Design, Permitting, Procurement/Contracting					
	15	%	\$12,508,087	\$1,876,213	Assumes 15% of direct construction cost, plus mobilization, plus contingency.
Pre-Construction Subtotal				1,877,000	
Direct Construction					
Mobilization	10	%	\$8,422,954	\$842,295	Assumes 10% of direct construction cost.
Site Prep					
Utility Locating	8	hr	\$70	\$560	From ROD (DEQ 2021) ⁽¹⁾
Access Road Improvements	1,420	sy	\$24	\$33,597	From ROD (DEQ 2021) ⁽¹⁾
Erosion Control	4,500	lf	\$1.07	\$4,815	From ROD (DEQ 2021) ⁽¹⁾
Construction Entrance	1	LS	\$1,500	\$1,500	From ROD (DEQ 2021) ⁽¹⁾
Erosion Control Maintenance	3	month	\$632	\$1,896	From ROD (DEQ 2021) ⁽¹⁾
Dust Control	50	day	\$280	\$14,000	From ROD (DEQ 2021) ⁽¹⁾
Survey Control	22.4	acre	\$2,200	\$49,280	From ROD (DEQ 2021) ⁽¹⁾
Site Clearing (forested)	9.2	acre	\$9,700	\$89,240	From ROD (DEQ 2021) ⁽¹⁾
Site Clearing (unforested)	10.7	acre	\$950	\$10,165	From ROD (DEQ 2021) ⁽¹⁾
Cap					
Demarcation Layer	0	sy	\$2.05	\$0	From ROD (DEQ 2021) ⁽¹⁾
Purchase/Deliver Gravel	0	ton	\$22	\$0	From ROD (DEQ 2021) ⁽¹⁾
Purchase/Deliver Cobbles	0	ton	\$30	\$0	From ROD (DEQ 2021) ⁽¹⁾
Purchase/Deliver Topsoil	0	ton	\$23	\$0	From ROD (DEQ 2021) ⁽¹⁾
Place and Compact	0	cy	\$6.22	\$0	From ROD (DEQ 2021) ⁽¹⁾
Cover/Topsoil					
Purchase/Deliver/Place/Compact Topsoil	1	LS	\$1,300,000	\$1,300,000	From ROD text (DEQ 2021) ⁽¹⁾
Excavation					
Soil Excavation/Load (standard)	44,535	cy	\$35	\$1,558,725	Contractor quote for similar project
Soil Excavation/Load (alternative)	922	cy	\$161	\$148,442	RSMeans: 312316160020
Chemical Analyses (TCLP metals) ⁽²⁾	78	each	\$150	\$11,700	From ROD (DEQ 2021) ⁽¹⁾
Waste Profiling Data Package	20	hr	\$125	\$2,500	From ROD (DEQ 2021) ⁽¹⁾
Transport Off-Site	77,277	ton	\$15	\$1,159,155	RSMeans: 312323201702/professional judgement
Transport/Place On-Site	0	cy	\$8.73	\$0	From ROD (DEQ 2021) ⁽¹⁾
Disposal	77,277	ton	\$40	\$3,091,080	Hillsboro Landfill
Confirmation Soil Sampling/Chemical Analyses	233	each	\$440	\$102,520	From ROD (DEQ 2021) ⁽¹⁾
Site Restoration					
Site Grading	19.9	acre	\$2,150	\$42,785	From ROD (DEQ 2021) ⁽¹⁾
Re-Vegetation (forested)	9.2	acre	\$43,500	\$400,200	From ROD (DEQ 2021) ⁽¹⁾

Adjusted Estimated Cost - Alternative 3b
Willamette Cove Upland Site
Portland, Oregon



Alternative Component	Quantity	Units	Unit Cost	Extension	Notes
Capital					
Re-Vegetation (unforested)	10.7	acre	\$20,000	\$214,000	From ROD (DEQ 2021) ⁽¹⁾
Temporary Irrigation System	19.9	acre	\$6,560	\$130,544	From ROD (DEQ 2021) ⁽¹⁾
First Year of Irrigation	9	month	\$6,250	\$56,250	From ROD (DEQ 2021) ⁽¹⁾
Construction Contingency	35	%	\$9,265,250	\$3,242,837	Percent of direct construction costs plus mobilization.
Direct Construction Subtotal				\$8,422,954	
Direct Construction plus Mobilization Subtotal				\$9,265,250	
Direct Construction plus Mobilization plus Contingency Subtotal				\$12,508,087	
Indirect Construction Costs					
Contractor/OH/Bonding/Insurance, Soil Management Plan/Institutional Controls, Construction Management, Engineering, Agency Oversight, Completion Reporting					
	25	%	\$12,508,087	\$3,127,022	Assumes 25% of direct construction plus mobilization plus contingency.
Indirect Construction Subtotal				\$3,128,000	
Capital Cost Subtotal				\$17,514,000	
Long-Term Costs (Net Present Value)					
Cap Annual Inspections	140	year	\$0	\$0	
Cap Maintenance	140	year	\$0	\$0	Assumes 1% of cap installation cost annually.
Plant Inspection and Replacement/Control	5	year	\$30,769	\$141,316	Assumes 5% of plant installation cost annually; adjusted NPV using 2.9% (over 5 years).
Indirect Long-Term Costs (Project Management, Agency Oversight, Reporting)	5	year	\$6,154	\$28,264	Assumes 20% of long-term costs annually; adjusted NPV using 2.9% (over 5 years).
Contingency	35	%	\$169,580	\$59,353	Percent of long-term costs; percentage same as construction.
Long-Term Subtotal (Net Present Value)				\$229,000	
TOTAL				\$17,743,000	

NOTES:

Gray shaded cells are adjusted values.

cy = cubic yard.

hr = hour.

lf = linear feet.

LS = lump sum.

NPV = net present value.

REFERENCES:

⁽¹⁾ DEQ. 2021. *Record of Decision: Selected Remedial Action for Willamette Cove Upland Site, Portland, Oregon*. Oregon Department of Environmental Quality. Northwest Region Office. March.

⁽²⁾ The TCLP is described in the Code of Federal Regulations, Title 40, Part 261.

OH = overhead.

ROD = Record of Decision, Portland Harbor Superfund Site.

sy = square yards.

TCLP = Toxicity Characteristic Leaching Procedure.

APPENDIX D

SECOND REVIEW DRAFT COMMENTS



REVIEW COMMENTS

PROJECT:	Metro Willamette Cove Contingency Remedy	DATE:	6/1/2022
RESPONDER:	Maul Foster & Alongi, Inc.	SHEET:	1 of 7
		PROJECT NO.:	M0075.12.001

Comments received from various stakeholders presented by MFA in matrix format. The matrix was prepared to support a meeting with Metro held on June 1, 2022. Text noted in blue represents responses from Metro (Brian Moore) provided during that meeting.

Comment No.	Review Comments	Author Response
1	METRO: Katie McDonald provided recommendations for restructuring sections of the document.	Added "Portland Harbor Superfund Site Context" section as Section 2.1 and incorporating suggested source material; moved "Tribal and Neighborhood Context and History" section from Section 3.1 to Section 2.2; renumbered other subsections in Section 2 and Section 3.
2	METRO: Paul Slyman request that we double-check this to better understand what Restricted use for consolidation area means.	Summary table updated to indicate no restrictions on access but some restrictions on land use (e.g., residential development).
3	PHCC: Section 3.1: This section should have some information about the environmental impacts associated with historical industrial activity along the lower Willamette. One of the reasons that community members in North Portland don't want a consolidation area at the site is that they already live with significant environmental impacts. This is really one of the main takeaways from community involvement so would help put the community perspectives into context.	"Portland Harbor Superfund Site Context" section added as Section 2.1 includes discussion of environmental impacts associated with Portland Harbor Superfund Site.
4	PHCC: Sections 4.1 and 4.1.1: Would like to see it noted here that the soil proposed to be placed in the consolidation area would have concentrations of contaminants over DEQ risk-based limits for human health.	Added a sentence noting soil placed in the consolidation area would have contaminant concentrations above human health and ecological risk levels; however, an engineered cap would prevent human contact
5	PHCC: Section 4.1.3.1: Is the consolidation area referred to in this section a temporary onsite consolidation area? I thought this option did not require an onsite consolidation area?	Consolidation area is not required. Text has been removed indicating on-site transportation to a consolidation facility.
6	PHCC: Section 4.2: Yikes. Would really like to see the cost calculations. Why did the cost for 4c go up by only 1.4 million while the cost for 3b went up by 5.7 million? Is that all because of transportation costs?	Transportation and excavation costs both increased significantly compared to the FS estimates, and disposal increased by 25%. Additional increases are realized in the percentage dependent costs (mobilization, contingency, etc.)

Comment No.	Review Comments	Author Response
7	PHCC: Section 4.4.1: Even if the ecological benefit of doing the additional removal can't be quantified in this report, can you say anything about what the benefits might look like?	Added language at the direction of Metro indicating that "Both alternatives also meet the goals of Metro's habitat restoration goals."
8	YN: It appears that cost estimates have been updated, which makes the partial remedy appear much less expensive than the complete removal contingency. However, the cost analysis fails to incorporate several long-term maintenance issues. This short-sighted, near-term approach is incomplete and results in inaccurate predictions of future costs. For example: <ul style="list-style-type: none"> •The proximity of the contamination left behind is very close to the river. Long-term maintenance assumes that nothing will ever go wrong, that flooding, earthquakes or other impacts will not occur to require future repairs or removal. It ONLY considers the costs of future annual monitoring. •Climate change has been considered mainly in terms of carbon emissions from the remedy itself, but not in terms of climate resilience of the river system and shoreline communities long-term. 	Metro will address comment in a response letter.
		** Repairs are not included in long-term costs as there is no basis to define the magnitude of repair events. No change proposed to the document.
		Not in the scope of the CR study. Metro will address comment in a response letter.
9	YN: The final table should include evaluation and compliance with the land-use and zoning purposes highlighted in the attachment, as well as ease of integration with the riverbank and offshore cleanup.	Metro will address comment in a response letter.
10	YN: We can't stress enough the importance of optimizing habitat mitigation. It could also be that restoration of this area could offset habitat mitigation or restoration liabilities the City may have, which would further increase the value (financial and otherwise) of the complete removal remedy.	Not in the scope of the CR study. Metro will address comment in a response letter.
11	YN: There are clearly trade-offs to the community in terms of long-term assets vs. short-term disturbance (increase in truck traffic and emissions). This should be explored further with the neighborhoods impacted to evaluate their preferences regarding this trade-off.	Metro indicated that the public comments received to date are sufficient.
12	YN: comment #2b – Metro's purpose of the property purchase	Metro will address comment in a response letter.

Comment No.	Review Comments	Author Response
13	<p>YN: comment #3 – Integration with riverbank and in river cleanup work</p> <p>An integrated plan needs to be developed that allows habitat and community benefits to flow seamlessly from the upstream riparian zone to the subtidal in-water zone. A key aspect of this cleanup/restoration should be removal of hardscape and debris from all three of these areas, in order to meet several of the criteria stated above</p>	<p>Metro will address comment in a response letter. To be included in the remedial design.</p>
14	<p>YN: comment #4 – Flooding</p> <p>The cleanup should plan for flooding and more intensive rainfall, and actively contribute to increasing river and community capacity and resilience toward future climate events.</p>	<p>Metro will address comment in a response letter. To be included in the remedial design.</p>
15	<p>IEc: Section 3.1 Consider moving the sentence beginning “The area is located within the ancestral homelands of many Native peoples...” to the first paragraph of the section. Native peoples’ presence in this place predates the urban geographic features (railroads, etc.) described in this paragraph.</p>	<p>This sentence has been moved to be the opening sentence of the section (now Section 2.2).</p>
16	<p>IEc: Section 3.1 Consider separating the third paragraph into two paragraphs focused on (1) genocidal policies directed at Native peoples and (2) anti-Black and other subsequent racist legislation and policy.</p>	<p>This paragraph has been separated into two paragraphs.</p>
17	<p>IEc: Section 3.1 Consider providing more detail about the effects of the Donation Land Act of 1850 on the displacement of Native peoples from the Willamette River valley.</p>	<p>Added information about the effects of the Act on the displacement of Native peoples from the Willamette River Valley.</p>
18	<p>IEc: Section 3.2, we recommend including a sentence that explains that DEQ’s staff report was the foundation for the Record of Decision (ROD).</p>	<p>Added a sentence: “The DEQ Staff Report on recommended remedial action for the Site presented the basis for DEQ’s proposed cleanup and was subsequently generally adopted in the ROD, with the addition of the Contingency Remedy option” (DEQ 2022).</p>

Comment No.	Review Comments	Author Response
19	<p>IEc: We suggest revising Section 3.2 to acknowledge comments submitted to DEQ on several earlier reports. The existing text could be supplemented with the following text in italics:</p> <p>"Consultants also provided a comment letter to DEQ regarding the staff report on behalf of the Confederated Tribes of the Grand Ronde Community of Oregon, the Confederated Tribes of Siletz Indians, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Nez Perce Tribe (Five Tribes) (IEc 2020). The 2020 comment letter built upon several prior memoranda submitted on behalf of the Five Tribes that reviewed the draft and revised Groundwater Source Control Evaluation and Alternatives Analysis, the Revised Feasibility Study and Source Control Evaluation, and the Port's Response to Comments on the Revised Feasibility Study and Source Control Evaluation. The 2020 comment letter on the staff report states the staff report satisfactorily identifies..."</p>	Incorporated text substantially similar to the suggestion into the report.
20	<p>IEc: In the last paragraph of Section 3.2, we request Metro delete "for passive recreation." Given that the final site design and plans for future use are in development, and not yet final, we recommend using more general language to summarize the Five Tribes' comment regarding an appropriate design and aesthetic fit for any on-site consolidation unit.</p>	Deleted "for passive recreation" as requested.
21	<p>IEc: Following review of the first draft report (MFA 2022b), the Five Tribes recommended Metro define what commenters meant by "full cleanup" in the report. Section 3.3 of the second draft report (MFA 2022a) was revised to state "Comments often refer to a preference for "full cleanup" or "full removal" of contamination, referring to the physical removal of contaminated soils." We remain concerned that these terms are not adequately defined. We recommend the report further refine these terms as "referring to the removal of all contaminated soils, including moderately contaminated soils, for off-site disposal."</p>	<p>Added language in Section 3.2 (previously Section 3.3) stating: "In the ROD, DEQ refers to Alternative 3a and Alternative 3b as the "full removal" options. See Section 2.3.2 of this report for additional information."</p> <p>Added language in Section 2.3.2 stating: "Two alternatives in the ROD, Alternative 3a and Alternative 3b, involve complete removal of contaminated soil and off-site disposal of all excavated soil, with the exception of areas under Alternative 3b where native trees are present and will limit excavation. Based on a preference by Metro and many commenters to retain the native trees, the primary contingency alternative evaluated in this analysis is Alternative 3b (alternative excavation and off-site disposal) (Figure 23 in Appendix A)."</p>

Comment No.	Review Comments	Author Response
22	IEc: Section 4.4.1 states "Additional ecological benefit is derived from off-site disposal of the 23,000 cubic yards of moderately contaminated soil that is otherwise slated for placement in an on-site consolidation cell. This benefit cannot be quantified within the limits of this analysis and the timeline for the remedial design process." The assertion of greater ecological benefit from removing all moderately contaminated soil should be better justified. For instance, is this due to the risk of cap failure? Assuming no cap failure, would the ecological benefits of the two alternatives be equal? Citations to any appropriate references should be included.	Added language at the direction of Metro indicating that "Both alternatives also meet the goals of Metro's habitat restoration goals."
23	IEc: Section 4.4.2, Seismic Considerations, states "A site-specific geotechnical evaluation would need to be completed to fully understand physical characteristics of the site for design of an on-site containment cell." Given the relative importance of the geotechnical characterization, we recommend this work be completed prior to making a decision about the feasibility and siting of an on-site consolidation unit.	Metro will address comment in a response letter. To be included in the remedial design.
24	IEc: The greenhouse gas (GHG) emission calculations provided in Appendix B are for carbon dioxide (CO2) only. We recommend Metro consider including methane (CH4) and nitrous oxide (N2O) in the calculations. The CH4 and N2O emissions factors are available for barges and trucks (USEPA 2022). Incorporating these compounds would provide a more complete picture of GHG emissions. U.S. Environmental Protection Agency (USEPA). 2022. Emissions Factors for Greenhouse Gas Inventories. April 1. Accessed from: https://www.epa.gov/climateleadership/ghg-emission-factors-hub .	The previous emissions estimate included CO2, CH4, and N2O shown as a CO2eq emission factor. The emissions calculations for trucks have been reworked to present CH4 and N2O emission estimates broken out using the USEPA 2022 emission factors. The IPCC AR5 CO2eq emission factor (including CO2, CH4, and N2O) for barge transportation will continue to be used because the USEPA does not have a CO2 emission factor for barges.
25	IEc: Metro uses emissions factors for CO2 from the Intergovernmental Panel on Climate Change (IPCC 2014). We recommend Metro consider using more recently updated emissions factors (e.g., EPA's Emissions Factors for Greenhouse Gas Inventories [USEPA 2022]).	Same response as Comment 24.
26	IEc: The second draft report (MFA 2022a) refers to the on-site consolidation area as a "consolidation unit," "consolidation cell," and a "containment unit." We recommend using standard terminology for consistency.	The ROD refers to a "consolidation area"; text has been revised to use this terminology.
27	DEQ: Cleanup Description. There is slight confusion on the description of the selected remedy (including Sections 2.1.2, 4.1.1, 4.3). The Feasibility Study (Apex, 2019) helped inform the Staff Report that presented the basis for DEQ's proposed cleanup; however, DEQ incorporated moderate modifications/clarifications to the Alternative 4c presented in the FS. The Staff Report was generally adopted as the Record of Decision, with the addition of the contingency option in consideration of public comment and Metro feedback. We have the following clarifications on two elements of the selected remedy, regarding what contaminated soil at minimum needs to go offsite and cap versus covers.	Text has been revised in accordance with the DEQ comment.

Comment No.	Review Comments	Author Response
	<p><u>Metal Ecological Risk Hot Spots.</u> Ecological hot spots for metals are also required to be disposed offsite, in addition to human health hot spots. As stated in the ROD (see Section 1.2: Scope and Role of the Selected Remedial Action):</p> <ol style="list-style-type: none"> 1. Excavation and offsite disposal of all soil exceeding hot spot levels for human health. 2. Excavation and offsite disposal of soil exceeding non-dioxin/furan (e.g., metals including mercury) hot spot levels for ecological health. 	Text has been revised in accordance with the DEQ comment.
	<p><u>Cover versus Cap.</u> We recommend replacing "in-place capping" used in this analysis document with "cover" to be consistent with the ROD. For context, following soil removal/reconsolidation with a reinforced cap, the site would be "covered" with a minimum of 1-foot of clean topsoil. While the FS used the term cover/cap, the ROD uses "cover" to better represent that the majority of the site would be covered with clean soil without long-term requirements, and it is our preference to limit "cap" areas to the extent practical. Moderate levels of ecological risk, if present after excavation activities, may require placement of more than 1-foot soil. If excavation activities cannot reasonably remove ecological hot spots (e.g., for dioxin-furans), these focused areas would be capped with 3 feet of clean soil. Ecological hot spot areas (under 3-feet of clean soil) may require long-term management controls; however, that would be determined at a later date. [Note, the FS also proposed less cover/cap material, than specified in the ROD. The increased cover thickness allows for mixing to reduce risk. The exposure depth considered for ecological risk (to plants and animals) is 3 feet and accounts for burrowing animals]. As per the ROD (Section 1.2):</p> <ol style="list-style-type: none"> 5. Lower-level risk to plants and animals would be covered in-place. Cover thickness would be determined based on the level of residual risk; however, a minimum 1-foot of clean topsoil will be necessary. Remaining ecological hot spots, if any, will be capped by 3 feet of clean soil or alternative DEQ-approved material. 	Text has been revised in accordance with the DEQ comment.
28	DEQ: Construction Impacts. While truck trips were calculated in the FS and for comparison purposes amongst the remedial action alternatives, DEQ preference is barge or alternative method that provides the lowest degree of impact to communities.	MFA and Metro recognize that a barge alternative may be possible but plan to continue to assume truck trips for remedy implementation.
29	DEQ: Summary of Contingency Analysis Table. For Alternative 4c, as noted above excavated areas will be covered with at least 1-foot clean soil and additional cover material maybe be necessary to effectively reduce risk to plants and animals.	Text has been revised in accordance with the DEQ comment.

Comment No.	Review Comments	Author Response
30	<p>DEQ: Construction Cost Comparison. The adjusted estimated cost of Alternative 3b is substantial, approximately a 50% increase versus less than 20% for Alternative 4c. In absence of the adjusted cost calculations (to be provided in the final document), it's unclear what drives the delta from FS estimates to present day. It may be helpful to provide a sentence describing what materials/tasks mostly contributed to the increase.</p>	See the response to Comment 6.
31	<p>DEQ: Figure 28. This figure was taken from the Feasibility Study (and used for the Staff Report/ROD). Please note the following:</p> <ul style="list-style-type: none"> • The consolidation area shown is an "example" and is not representative of the final location and shape. This would be determined in remedial design. While this figure has a footnote generally capturing this, it would have been helpful to emphasize "Example" Soil Consolidation Area in the figure. • The standard cap is not 2-foot soil, which was originally proposed in the FS. DEQ had concerns this would be insufficient and instead required a thicker reinforced cap for the consolidation area (to withstand extreme events). The ROD specifies: Capping of consolidated soil will consist of a demarcation layer and a minimum of 3 feet of clean cover material. The final cap thickness and composition will be determined during remedial design. • As noted above, the FS used cover/cap outside the consolidation area; however, the ROD uses "cover" to better represent the cleanup strategy. Capping may be required depending on depth and levels of contamination left in-place but is the less favorable option. 	<p>References to Figure 28 in the text now include the following caveat from the ROD:</p> <p>"An example consolidation area (covering approximately 116,000 square feet) is presented in Figure 28: Alternative 4c for illustration purposes. The final location and dimensions (e.g., shape) of the consolidation area would be determined during remedial design, including stability considerations and accommodating future park plans to the extent possible."</p> <p>Notes to Figure 28 have been added indicating that:</p> <p>"The final cap thickness and composition will be determined during remedial design."</p> <p>"The FS used cover/cap outside the consolidation area; however, the ROD uses "cover" to better represent the cleanup strategy. Capping may be required depending on depth and levels of contamination left in-place but is the less favorable option."</p>

Mary Matyas

From: Brian Moore <Brian.Moore@oregonmetro.gov>
Sent: Friday, May 20, 2022 12:16 PM
To: Seth Otto; Michael Pickering
Cc: M0075.12 Metro Willamette Cove
Subject: Fw: Will Cove team meeting-- YOUR INPUT
Attachments: DRAFT_MFA 80percent draft review comments kmm 05172022 ps.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: [Metro RFP]

[External Sender - Confirm Sender and Beware of Links and Attachments]

Seth and Michael,

Please find these initial comments regarding the 80% draft. See Paul's note below regarding restricted use. We would like to be more specific when we talk about restricted use so as to reduce the range of what that means in peoples imaginations. Then further below please find Katie's comments about some overall organization with respect to Tribal information. She has also provided a significant amount of text that can be added and word smithed into the voice of the document as necessary. The last set of comments is in the attached 80% draft review word document. These comments are combined comments from Katie and Paul.

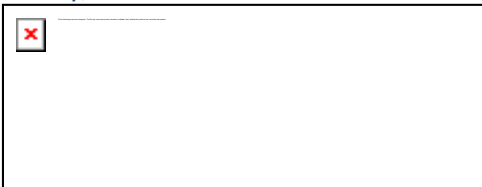
I hope that getting these piecemeal is not too disruptive. Most of this initial set of comments should be able to be adopted directly or close to directly.

If we need to discuss any of these, let me know. It might be better to incorporate what you can and then we can discuss all of the comments in a week or so after I send them. But I am flexible.

Cheers,
Brian

From: Paul Slyman
Sent: Thursday, May 19, 2022 12:46 PM
To: Brian Moore <Brian.Moore@oregonmetro.gov>; Katie McDonald <Katie.McDonald@oregonmetro.gov>
Subject: RE: DRAFT 80% report email to Yakama DRAFT

Hi Brian—I think you addressed these and I appreciate it! Re: the last one:
“Lastly, I think we should double-check this to better understand what Restricted use for consolidation area means.



Paul

Brian Moore
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From: Paul Slyman
Sent: Wednesday, May 18, 2022 6:14 PM
To: Katie McDonald; Brian Moore
Subject: RE: Will Cove team meeting-- YOUR INPUT

Hi Katie and Brian—

I support this reordering and reorganizing. I think continuing to distinguish Tribal Histories, Tribal Impacts, etc is good and an important part of our Tribal engagement work. I have some observations and suggestions (and a few small edits) on the attached. Mostly, I believe it will benefit from a good MFA copy edit to ensure it flows logically.

Hope this is helpful,

Paul

From: Katie McDonald
Sent: Tuesday, May 17, 2022 7:12 PM
To: Paul Slyman <Paul.Slyman@oregonmetro.gov>
Subject: FW: Will Cove team meeting-- YOUR INPUT

Hi Paul,

I'd appreciate your thoughts on all of this and hope these recommendations could be discussed Thursday morning with the team while I'm away to see if they can be included. Please let me know if you'd like to visit about this tomorrow before I'm OOO.

Thanks much,
Katie

From: Katie McDonald
Sent: Tuesday, May 17, 2022 7:10 PM
To: Brian Moore <Brian.Moore@oregonmetro.gov>; Paul Slyman <Paul.Slyman@oregonmetro.gov>; Dan Moeller <Dan.Moeller@oregonmetro.gov>; Katy Weil <Katy.Weil@oregonmetro.gov>; Gary Shepherd <Gary.Shepherd@oregonmetro.gov>
Cc: Susanne Raymond <Susanne.Raymond@oregonmetro.gov>
Subject: RE: Will Cove team meeting-- YOUR INPUT

Hi Brian,

Thanks for sharing this with us. I've done some early review of the 80% draft given I am out of the office later this week and have some initial recommendations for your consideration to: move some existing sections of the draft report around and add new sections of content regarding broader Portland Harbor context which would incorporate/discuss select existing information re: Tribes and PHSS in the document. These recommendations are informed by a recent comment/request from Yakama Nation in their comments on the 30% draft contingency remedy report on April 27, more specifically these sections of the following comment:

“5.Habitat. The report needs to include information on historic and existing conditions of habitat at and surrounding Willamette Cove and the importance of the area to ESA listed and tribally important aquatic species, and the upland area and terrestrial species. It is important to include this information, to set the stage, otherwise the report is solely slanted towards human use, human infrastructure and climate impacts related only to the human use and development of the area. A summary of habitat and the species that rely on the area would keep the potential for future restoration of the area in the front of the reader's mind and better inform future design and mitigation/restoration needs or opportunities.”

I understand from our recent discussions that there is limited ability if any to have MFA be respond to all of the CTBYN comments on how ecological trade-offs, specifically habitat and habitat restoration impacts, are considered in this c-remedy evaluation. My proposed recommendations are only a partial solution and response to Yakama's earlier comments and I believe can be accomplished by having MFA strategically pull in existing text about broader PHSS impacts to Tribes into the report (rather than producing new content or discussion) to help set the stage for Council's consideration of moving to exercise the contingency remedy option or not.

The attached document includes text I've skimmed quickly today from various PHSS publications/reports and copy + pasted into a high level outline of sorts to propose/populate the new section 2 of the report I'm asking everyone here to consider. Where copy + paste wasn't easy I have tried to paraphrase the text and include references so you and MFA can go find and read directly. There are only a handful of sentences in this mostly copy + pasted document that I've written on my own. If we move forward with these recommendations I would greatly appreciate your and MFA's thinking on how to include these PHSS resources/content directly or how to summarize and cite the approach in an appropriate manner. Content in pages 1 and 2 is duplicative of each other in some areas so I don't believe the full new section if we write/incorporate it will be as long as this attachment (was trying to include multiple potential resources to pull from). This is also by no means the full range of content that could be included in this new section so would appreciate the group's thoughts on this as well.

You will also see that I have recommended:

- New sections/moving sections around in the report to change Section 2 to start at introducing Willamette River and Portland Harbor to then progressively dial into the neighborhood context and then the Willamette Cove site specifically all in one section at the top of the report
- An additional paragraph or two of discussion/information from our parks team at the end of section 2 to help set the 'ecological stage or profile' of the upland portion of the site in the report's opening context and discussion

I will send additional comments from my review of the report next week when I am back in the office. If you want to chat through this tomorrow please let me know. Thanks all for your consideration of what I've proposed here and your thoughts on how we can consider including additional information to be responsive to Yakama's specific comments and other helpful content to share the Tribes' perspective/relationship to this assessment and decision generally as well.

Best,
Katie

From: Brian Moore
Sent: Tuesday, May 17, 2022 11:34 AM
To: Paul Slyman <Paul.Slyman@oregonmetro.gov>; Dan Moeller <Dan.Moeller@oregonmetro.gov>; Katie McDonald <Katie.McDonald@oregonmetro.gov>; Katy Weil <Katy.Weil@oregonmetro.gov>
Cc: Susanne Raymond <Susanne.Raymond@oregonmetro.gov>
Subject: Re: Will Cove team meeting-- YOUR INPUT

80% draft document should be on the agenda.

Thanks Paul!

Brian

Brian Moore

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From: Paul Slyman <Paul.Slyman@oregonmetro.gov>
Sent: Tuesday, May 17, 2022 11:09:08 AM
To: Dan Moeller <Dan.Moeller@oregonmetro.gov>; Brian Moore <Brian.Moore@oregonmetro.gov>; Katie McDonald <Katie.McDonald@oregonmetro.gov>; Katy Weil <Katy.Weil@oregonmetro.gov>
Cc: Susanne Raymond <Susanne.Raymond@oregonmetro.gov>
Subject: Will Cove team meeting-- YOUR INPUT

Hi friends—

We have a Will Cove team meeting Thursday morning. Do you have specific items you'd like to see discussed? Would you please let us know by end of day today?

Thanks!

Paul Slyman

he/him/his

GM, Major Projects

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2.1.1 Portland Harbor Superfund Site Context (new recommended section to start section 2 of report)

The Willamette River lies entirely in Northwestern Oregon and is a major tributary of the Columbia River with its main portion stretching over 187 miles. The Willamette River and its tributaries form the largest watershed in the state (the Willamette Basin), covering more than 11,500 square miles. Portland is at the lower end of the drainage basin and is the most urbanized part of the watershed. The lower portion of the Willamette River, which includes the PHSS^[PS1], has remained in largely the same location and shape since it was first surveyed in the 1800s (1)5.

The Portland Harbor Superfund Site includes an in-river and upland portion of the lower Willamette River and spans approximately 10 miles between the City of Portland's Broadway Bridge and Sauvie Island. The lower portion of the Willamette River flows south to north through Portland, separating the east and west downtown portions of the city. The central portion of the Site encompasses numerous neighborhoods, as illustrated in Figure 2.^[PS2] The Willamette River plays an important role in the community by providing and supporting ecosystem services such as air quality, energy, food, physical and mental well-being, plants, transportation, water, and wildlife (listed alphabetically). [\[EPA CIP, 2020\]](#)

Native people have been using the resources of the lower Willamette River since time immemorial. These people are now members of tribes that are still active in the perpetuation of their respective ways of life. Tribal members have used and continue to use Portland Harbor for the natural resources that it provides and for other reasons. Tribes have depended historically on a wide range of resources in the area for sustenance as well as for cultural and religious activities. Tribal culture is intricately linked to natural resources. Historically, people traveled to ~~Portland Harbor~~ the lower Willamette River from near and distant locations. Today, this tradition continues with tribal members coming to Portland Harbor and the lower Willamette River to harvest fish and eels (lamprey), even though many tribal members choose to avoid harvest of contaminated resources^[PS3]. ~~In the past, people were drawn to the lower Willamette River due to the abundance of resources available. These resources supported people that inhabited the area year round as well as those traveling from other areas. Estimates based on Lewis and Clark's observations suggest that the seasonal population was nearly double the local population.~~

^[PS4] https://www.fws.gov/portlandharbor/sites/portland/files/2018-12/201706_FINAL_PEIS.pdf Section 5.5]

For over a century, industries and public entities have released ~~dozens of~~ harmful contaminants into the river leading to present day contamination and pollution ~~impacts~~ to the river and resources. [PHSS factsheet] Releases of contaminants in and adjacent to the PHAA [PS5] have injured natural resources of tribal importance, resulting in the lost use of those resources. [Portland Harbor Final Supplemental Restoration Plan and Environmental Assessment, 2021
https://www.fws.gov/portlandharbor/sites/portland/files/resources/Final_PH_SRP_EA_v2-508_20210304.pdf]

~~For thousands of years, since time immemorial, Native people have used the resources of the lower Willamette River for subsistence as well as cultural and religious activities. Native people living in this region have stewarded the Willamette River Valley for generations. [EPA CIP, 2020]. [PS6]~~

Many tribal and community members have an established history, have homes within the lower Willamette River area, or both. The river and surrounding natural areas provide a place of solitude, comfort, enjoyment and a place to commune with nature. The river is an important aspect of how the residents define themselves, influences how they have built their lives and is part of their vision for future generations. [EPA CIP, 2020]

Culturally- and spiritually-significant natural resources of the lower Willamette River are vital to Native peoples who have maintained strong ties to the River since time immemorial, including through fishing, hunting, gathering plants and raw materials, exchanging goods, and practicing ceremonial life (CTUIR, n.d.; CTWSRO, n.d.; Grand Ronde, n.d.; Nez Perce Tribe, n.d.; Siletz Tribe, n.d.; Yakama Nation Fisheries, n.d.; Yakama Tribal Council, 2016). [KM7] The lower Willamette River has and continues to hold great historical, natural and cultural resource significance to Tribes. [EPA CIP, 2020]

The Willamette River serves as habitat and a migratory corridor for many species of fish and wildlife such as: Chinook and Coho salmon; steelhead, Pacific lamprey; White sturgeon; Bald Eagle, Osprey; Double-crested ~~comerant~~cormorant; Great blue heron; Belted Kingfisher; Mergansers; Mink; River otter; Northern red-legged frog; Pacific tree frog; and other species. [PS8] Both adult and juvenile salmonids are common in the lower Willamette River during various times in the year. Adults are present during their upriver spring migrations, whereas juvenile salmonids can be found in the lower Willamette River year-round.

In addition, the lower Willamette River has been designated by the National Marine Fisheries Service (NMFS) as critical habitat for Lower Columbia River Chinook salmon, Lower Columbia steelhead, Upper Willamette River Chinook salmon, and Upper Willamette River steelhead. The lower River is proposed critical habitat for Lower Columbia River Coho salmon. The NMFS critical habitat designations indicate freshwater

rearing sites and migration corridors are essential to the conservation of the listed salmonid species. [EPA CIP, 2020]

Fish are among the resources most frequently utilized by the Tribes in the Portland Basin and Willamette Valley and provide sustenance and subsistence^[PS9] to tribal communities. Culturally significant species include salmonids, lamprey (eels), eulachon (smelt), sturgeon, resident fish species and native freshwater mussels. [EPA CIP, 2020]

Environmental pollution in the Portland Harbor Superfund Site has disproportionate impacts to Tribes and tribal communities including negative impacts to the availability and quality of critical habitat to support culturally important species and also through bioaccumulation of contaminants in culturally important species and First Foods that subsequently require consumption advisories to restrict consumption to levels safe for human health. In 2004, a fish consumption advisory was issued to ~~warm-warn~~ children and women of childbearing age not to eat resident fish from Portland Harbor due to contamination concerns and risks to human health. [PHSS factsheet]

Pacific lamprey at Willamette Falls are a sole-source fishery for tribal members due to plummeting lamprey populations at other sites where tribal members also traditionally collected these fish. As part of their life cycle, lamprey migrate up the lower Willamette River en route to Willamette Falls approximately 15 miles upstream from Portland Harbor and are exposed to contamination during that journey. Due to this exposure, lamprey harvested at Willamette Falls do not provide the full suite of services they would provide absent the contamination. [Portland Harbor Final Supplemental Restoration Plan and Environmental Assessment, 2021]

^[PS10][https://www.fws.gov/portlandharbor/sites/portland/files/resources/Final PH SRP EA v2-508_20210304.pdf](https://www.fws.gov/portlandharbor/sites/portland/files/resources/Final_PH_SRP_EA_v2-508_20210304.pdf) Juvenile lamprey also migrate through the lower Willamette River en route to the Pacific Ocean. During their outward migration juvenile lamprey burrow in sediments and filter feed at the sediment/water interface thus potentially experiencing substantial and prolonged exposure to contaminated sediments. [Portland Harbor Final Supplemental Restoration Plan and Environmental Assessment, 2021 [https://www.fws.gov/portlandharbor/sites/portland/files/resources/Final PH SRP EA v2-508_20210304.pdf](https://www.fws.gov/portlandharbor/sites/portland/files/resources/Final_PH_SRP_EA_v2-508_20210304.pdf)]

For populations that rely on these resources, the status of the resources provided by the lower Willamette River becomes an environmental justice issue, because many who rely on these resources are from ethnic minority groups. [Portland Harbor Final Supplemental Restoration Plan and Environmental Assessment, 2021

[https://www.fws.gov/portlandharbor/sites/portland/files/resources/Final PH SRP EA v2-508_20210304.pdf](https://www.fws.gov/portlandharbor/sites/portland/files/resources/Final_PH_SRP_EA_v2-508_20210304.pdf)] Tribal-specific losses from contamination in Portland Harbor Superfund Site include the lost use of resources for recreation, subsistence and ceremonial purposes. [https://www.fws.gov/portlandharbor/sites/portland/files/2018-12/201706_FINAL_PEIS.pdf] The Tribes have identified that restoring resources in the

Willamette River is critical to their wellbeing, cultural survival and role as environmental stewards [PHSS tribal factsheets].

2.1.2 Neighborhood Context and History (recommend move current section 3.1 Tribal and Neighborhood Context and History content to this new sub-section in 2, and then Section 3 becomes strictly a section summarizing respective comments/input from Tribes and Community members)^[PS11]

2.1.3 Willamette Cove Site History (rename current section 2.1.1 in 80% draft report from MFA to WC site history)^[PS12]

Recommend adding statement/paragraph from Metro PN staff about species with historic or present use in Willamette Cove upland confirmed by Metro monitoring/surveys and include specific mention and discussion of any threatened or listed species, presence of critical habitat types or culturally important species and First Foods identified in proposed Section 2.1.1 above AND include brief discussion of how upland terrestrial environment at site influences in water habitat/ecosystem function/species/etc.]

Mary Matyas

From: Brian Moore <Brian.Moore@oregonmetro.gov>
Sent: Friday, May 27, 2022 11:21 AM
To: Michael Pickering; M0075.12 Metro Willamette Cove
Cc: Seth Otto
Subject: FW: [External sender]Re: 80% Draft Willamette Cove Contingency Remedy Analysis

Follow Up Flag: Follow up
Flag Status: Flagged

[External Sender - Confirm Sender and Beware of Links and Attachments]

Michael,

Please find the comments from Alex Lopez of PHCC below. This round of comments appears to be quite succinct, based on the comments received from YN and PHCC. However, as you know, we have not been able to fully address all comments to date. I am looking forward to reviewing these along with the others with you next week so we can determine the best way to address them.

Please let me know some times that work for you.

Thank you,

Brian Moore
Program Manager
Metro, Parks & Nature
600 NE Grand Avenue
Portland, OR 97232-2736
503-797-1761
(he/him/his)
www.oregonmetro.gov
<https://www.linkedin.com/in/bmm81>

From: Alex Lopez [mailto:alex@phccoalition.org]
Sent: Thursday, May 26, 2022 9:46 PM
To: Brian Moore <Brian.Moore@oregonmetro.gov>
Cc: Paul Slyman <Paul.Slyman@oregonmetro.gov>; Cassie Cohen <cassie@phccoalition.org>
Subject: [External sender]Re: 80% Draft Willamette Cove Contingency Remedy Analysis

CAUTION: This email originated from an **External source**. Do not open links or attachments unless you know the content is safe.

Hi Brian,

Apologies for not getting these comments to you sooner.

Section 3.1: This section should have some information about the environmental impacts associated with historical industrial activity along the lower Willamette. One of the reasons that community members in North Portland don't want a consolidation area at the site is that they already live with significant environmental impacts. This is really one of the main takeaways from community involvement so would help put the community perspectives into context.

Sections 4.1 and 4.1.1: Would like to see it noted here that the soil proposed to be placed in the consolidation area would have concentrations of contaminants over DEQ risk-based limits for human health.

Section 4.1.3.1: Is the consolidation area referred to in this section a temporary onsite consolidation area? I thought this option did not require an onsite consolidation area?

Section 4.2: Yikes. Would really like to see the cost calculations. Why did the cost for 4c go up by only 1.4 million while the cost for 3b went up by 5.7 million? Is that all because of transportation costs?

Section 4.4.1: Even if the ecological benefit of doing the additional removal can't be quantified in this report, can you say anything about what the benefits might look like?

Please let me know if I can provide any additional information or assistance.

Thank you,

Alex Lopez (he/him), RG, MSW
cell: 503.964.9762

On May 19, 2022, at 11:17 AM, Brian Moore <Brian.Moore@oregonmetro.gov> wrote:

Alex,

Thanks again for sticking with us through the Willamette Cove Contingency Remedy Analysis. Please find the 80% draft document attached. This is the final draft for review. Once you provide comment here, we will incorporate them and note areas where we are not able to incorporate the input as an appendix to the final report. We will then circulate the final report to everyone, but will no longer make changes to the document. If you have comments on the final document, I will incorporate those into a staff report that will accompany this document when it is presented to the Metro Council.

We have incorporated many of your previous comments into the 80% draft. For comments that I feel we have not been able to fully incorporate, I have replied to you directly in a separate email. That said, this is an additional opportunity for you to flag items that you believe need more attention. If you are aware of sources not currently in use that support items that you would like addressed in greater detail, we would very much appreciate information pointing us to those sources.

Thank you for reviewing this document. We would like to have comments back for incorporation into the final draft by Friday May 27.

Thank you,

Brian Moore
Principle Planner
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<https://www.linkedin.com/in/bmm81>

From: Alex Lopez [<mailto:alex@phccoalition.org>]
Sent: Monday, April 25, 2022 9:01 PM
To: Cassie Cohen <cassie@phccoalition.org>
Cc: Brian Moore <Brian.Moore@oregonmetro.gov>; Paul Slyman <Paul.Slyman@oregonmetro.gov>
Subject: [External sender]Re: 30% Draft Willamette Cove Contingency Remedy Analysis

CAUTION: This email originated from an **External source**. Do not open links or attachments unless you know the content is safe.

Hi Everyone,

Here are my comments on the Contingency Remedy Analysis First Review Draft Report:

In the introduction it should state that the “moderately contaminated soils” that would be left in the onsite containment cell under the ROD would still contain contamination above human health risk-based concentrations.

Section 2.1.2 - first paragraph of page 3, third sentence - Is the term “hot spot” here referring to areas of high contaminant concentrations generally or soils that actually meet the regulatory definition of a “hot spot”? Also in the same paragraph, it would be helpful to know the estimated volumes of soil that would be removed under the proposed remedy (not just the 23,000 cu yards left behind).

Second paragraph of page 3 - the contingency remedy gives the responsible parties the option of performing additional off-site soil disposal...

Section 2.1.3 - It would be good to discuss the impact of the institutional controls on the members of the community. It does say that deed restrictions would limit site uses, but what does that actually mean? Would they be able to use the space or would they have to stay on a built trail? Could people enter the water? etc.

Section 2.2 - Can anything more be said about where Metro is in the process of deciding what future use of the property will be?

Section 3.1 - The paragraph about the historical Native American presence on the land doesn't follow through to the present. Add more about the current Urban Native American population and importance of the river to Native communities, even those not near the site.

Also later in the same section, it would be good to present the demographic information relative to Portland in general to show how the surrounding neighborhoods differ from the rest of the city.

Also in this section, information on Black exclusion laws, Vanport, displacement, and redlining are all widely available in many online resources.

In sections 4.1, 4.1.1, 4.1.2, 4.1.3 - there should be information here about the risks to receptors for the different soils (some are hot spots, some are contaminated over limits, some are

contaminated but under risk limits, etc.). The ROD proposes leaving soil that still contains contaminant concentrations over human health risk-based limits. These sections in general need to be fleshed out.

Section 4.2 - include information about greenhouse gas emissions for potential removal by barge.

Section 4.4.1 - doesn't really say much about long-term O&M. Provide information about what that work would entail, potential needs with respect to possible cap failures. Maybe say something about devaluation of the property due to institutional controls and remaining contamination (particularly with ROD remedy).

Section 4.4.3 - This needs a lot more information. What about a CSZ earthquake? Are costs in the ROD reflective of the design needed to withstand a CSZ event? Is it even possible to design a cap that would be resilient in that scenario?

Please let me know if I can provide any additional information.

Thank you,

Alex Lopez (he/him), RG, MSW
Portland Harbor Community Coalition
cell: 503.964.9762
phccoalition.org

<image001.jpg>

On Apr 19, 2022, at 2:33 PM, Cassie Cohen <cassie@phccoalition.org> wrote:

Thank you Brian.

On Tue, Apr 19, 2022 at 12:44 PM Brian Moore <Brian.Moore@oregonmetro.gov> wrote:

Good afternoon Alex and Cassie,

Thank you for your continued interest and willingness to contribute your thoughts and expertise to the development of a report analyzing the Willamette Cove Contingency Remedy. We have previously circulated a scope of work and an outline for this report. Attached is the first draft for your review and comments.

This is expanded from the outline and modified as a result of conversations and thinking this through with the consultant. I believe that your input is reflected to date (in those areas where we have completed). If we have missed the mark or misinterpreted input from you please flag those areas. We are still open to more input. There are a few areas where your input, specifically, would be very meaningful to us. Those locations are called out with indications of additional information needed and from whom.

We would like to get comments back by Monday of next week. That is Monday April 25th, end of the day. The document is not long or difficult to follow at this point, so it is my hope that the rough nature of the draft at this time makes it easier for you to provide the input you would like to see, particularly in the areas where we may be referencing a perspective that is yours. If you have any questions or concerns, I am available to discuss. Feel free to call me or email.

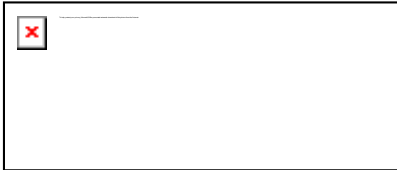
Thank you again and I look forward to receiving your input next week.

Sincerely,

Brian Moore
Program Manager
Metro, Parks & Nature
[600 NE Grand Avenue](#)
[Portland, OR 97232-2736](#)
503-797-1761 (office)
951-452-3002 (cell phone)
(he/him/his)
www.oregonmetro.gov
<https://www.linkedin.com/in/bmm81>

--

Cassie Cohen, Executive Director
Portland Harbor Community Coalition
She/Her/Hers
www.phccoalition.org
cell: 503-816-4342



We are on stolen land--the traditional village sites of the Multnomah, Kathlemet, and Clackamas bands of Chinook, Tualatin Kalapuya, Molalla and many other tribes who made their homes along the Columbia and Willamette Rivers.

<Rd_Willamette Cove CRA - Second Draft.pdf>



Confederated Tribes and Bands
of the Yakama Nation

Established by the
Treaty of June 9, 1855

May 25, 2022

Brian Moore
Program Manager
Metro, Parks & Nature
600 NE Grand Avenue Portland, OR 97232-2736 Brian.Moore@oregonmetro.gov

Re: Portland Harbor – Yakama Nation comments on the Willamette Cove (Upland)
Contingency Remedy Analysis Second Review Draft Report

Dear Brian.

Our consultant, Avocet Consulting, did a brief review and comparison to Yakama Nation comments of the updated May 16, 2022 Contingency Remedy Analysis Second Review Draft Report for Willamette Cove, prepared by MFA for Metro.

It appears that cost estimates have been updated, which makes the partial remedy appear much less expensive than the complete removal contingency. However, the cost analysis fails to incorporate several long-term maintenance issues. This short-sighted, near-term approach is incomplete and results in inaccurate predictions of future costs. For example:

- The proximity of the contamination left behind is very close to the river. Long-term maintenance assumes that nothing will ever go wrong, that flooding, earthquakes or other impacts will not occur to require future repairs or removal. It ONLY considers the costs of future annual monitoring.
- Climate change has been considered mainly in terms of carbon emissions from the remedy itself, but not in terms of climate resilience of the river system and shoreline communities long-term.

The final table should include evaluation and compliance with the land-use and zoning purposes highlighted in the attachment, as well as ease of integration with the riverbank and offshore cleanup.

We can't stress enough the importance of optimizing habitat mitigation. It could also be that restoration of this area could offset habitat mitigation or restoration liabilities the City may have, which would further increase the value (financial and otherwise) of the complete removal remedy.

There are clearly trade-offs to the community in terms of long-term assets vs. short-term disturbance (increase in truck traffic and emissions). This should be explored further with the neighborhoods impacted to evaluate their preferences regarding this trade-off.

Although several Yakama Nation concerns were not addressed, the most critical issues in our previous comments that do not appear to be addressed yet are highlighted in the attached April 27, 2022.

- comment #2b – Metro's purpose of the property purchase
- comment #3 – Integration with riverbank and inriver cleanup work
- comment #4 - Flooding

Please do not hesitate to contact me with questions. I can be reached at 509.985.3561 or shil@yakamafish-nsn.gov.

Sincerely,

Laura Klasner Shira, P.E.

Environmental Engineer

Attachment: 4/27/2022 YN comments



Confederated Tribes and Bands
of the Yakama Nation

Established by the
Treaty of June 9, 1855

April 27, 2022

Brian Moore
Program Manager
Metro, Parks & Nature
600 NE Grand Avenue
Portland, OR 97232-2736
Brian.Moore@oregonmetro.gov

Re: Portland Harbor – Yakama Nation comments on the Willamette Cove (Upland) Contingency Remedy Report

Dear Mr. Moore,

The Yakama Nation submits the following comments on the April 2022, Willamette Cove (Upland) Contingency Remedy Report, prepared by MFA on behalf of the Metro Council. These comments were prepared in collaboration with Dr. Teresa Michelsen of Avocet Consulting and Sherrie Duncan of Sky Environmental.

1. Cost Differential. The cost differential between the two alternatives to be unexpectedly low given the mitigation of risks, reduction in long-term monitoring and maintenance costs, and public use and habitat benefits provided by the more complete removal alternative. This indicates that the more comprehensive removal option should be very seriously considered, as short term additional costs may be significantly offset by reduced long-term costs, increased safety, and increased community and ecological benefits.

2. Purpose of Property Purchase. In analyzing these two alternatives, the Yakama Nation strongly suggests that this report take each of the bullet points and purposes listed below and evaluate how well each alternative meets these goals. When a property is purchased for a specific purpose and has special zoning, any cleanup should be consistent with those previous expenditures of funds and zoning concepts.

- a. The paragraph at the top of page 4, in particular, states the reasons this property was originally purchased by the Metro Council and the source and purpose of the funds that were used: “The purchase represented a commitment to restore the regionally significant natural area, extend the North Portland Greenway, and work with the city of Portland on future master planning for possible

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recreation use (Metro Council, 2020a). Metro Council has also noted its continued efforts to determine passive park uses that harmonize recreational visits with habitat restoration and ecological values (Metro Council, 2020a)."

- b. This commitment is further strengthened by the Open Space zoning for this area, with the following intents: "River General (g) and River Water Quality (q). The OS zone is "intended to preserve and enhance public and private open, natural, and improved park and recreational areas," serving functions including (City of Portland, 2021a):
- Providing opportunities for outdoor recreation
 - Providing contrasts to the built environment
 - Preserving scenic qualities
 - Protecting sensitive or fragile environmental areas
 - Enhancing and protecting the values and functions of trees and the urban forest
 - Preserving the capacity and water quality of the stormwater drainage system
 - Providing pedestrian and bicycle transportation connections
- c. The River General overlay zone is intended to allow for uses consistent with the base OS zone "which allow for public use and enjoyment of the riverfront, and which enhance the river's natural and scenic qualities" (City of Portland, 2021b). The purpose of the River Water Quality zone is to "to protect the functional values of water quality resources by limiting or mitigating the impact of development in the setback" (City of Portland, 2021b).

3. Integration of Upland Cleanup with Riverbank and Inwater Work. The upland, riverbank, and cove cleanup should be integrated with respect to these purposes and zoning concepts. An integrated plan needs to be developed that allows habitat and community benefits to flow seamlessly from the upstream riparian zone to the subtidal in-water zone. A key aspect of this cleanup/restoration should be removal of hardscape and debris from all three of these areas, in order to meet several of the criteria stated above – REGARDLESS of whether it is required by Superfund. If complete removal is considered along with the riverbank and cove cleanups, this provides a golden opportunity to reshape the landscape to a more natural configuration and softscape structural components.

4. Flooding. The cleanup should plan for flooding and more intensive rainfall, and actively contribute to increasing river and community capacity and resilience toward future climate events.

5. Removal of Mature Existing, Habitat. The report should go into greater detail about the trade-offs between maintaining existing habitat in some areas vs. removal, reconfiguration, and restoration. This could indicate a hybrid of the two alternatives that preserves critical habitat in areas that are already consistent with an integrated future land use vision for the property. The report should consider whether replacing one foot of soil realistically provides adequate support for restoration plantings, particularly toward the goal of replacing mature riparian habitat as quickly as possible.

5. Habitat. The report needs to include information on historic and existing conditions of habitat at and surrounding Willamette Cove and the importance of the area to ESA listed and tribally important aquatic species, and the upland area and terrestrial species. It is important to include this information, to set the stage, otherwise the report is solely slanted towards human use, human infrastructure and climate impacts related only to the human use and development of the area. A summary of habitat and the species that rely on the area would keep the potential for future restoration of the area in the front of the reader's mind and better inform future design and mitigation/restoration needs or opportunities. Ultimately, it would be beneficial for

the report to provide a summary on how the proposed alternatives and selected alternative will or will not meet conservation strategies for the area briefly outlined in Metro's Tribal Summit Binder: *"Metro has traditionally integrated national priorities established by federal agencies and conservation organizations through the Endangered Species Act, species recovery plans, working groups and other measures of national priority setting with state and regional priorities established by the Oregon Department of Fish and Wildlife in the Oregon Conservation Strategy and the Portland-Vancouver Area Intertwine Alliance in the Regional Conservation Strategy for the Greater Portland-Vancouver Region; as well as local priorities identified by local jurisdictions, Watershed Councils and other organizations"*. This list should also include the NRDA Restoration Plan.

6. Tribes. The report should also include information on historic and current use/services this area of the Willamette provides to Tribes. This would complement the draft outline for the report has a fairly robust draft section discussing the neighborhood context and history of the area.

7. Visioning. Lastly, we suggest that the parties consider a community event where everyone is invited to draw, write, or otherwise express their vision for the area following cleanup, either in terms of individual components or overall concept. Such events have provided unexpected inspiration to all involved at other cleanup sites owned by public entities and have provided lasting on-the-ground benefits that go well beyond a strictly engineered cleanup. If certain components would be desirable but cannot be integrated into the initial activity, the overall design can be developed to allow for them as future funds and opportunities become available.

Please do not hesitate to contact me with questions. I can be reached at 509.985.3561 or shil@yakamafish-nsn.gov.

Sincerely,



Laura Klasner Shira, P.E.
Environmental Engineer

MEMORANDUM | May 27, 2022

TO Brian Moore, Metro

FROM Jennifer Hart, Adam Stack, Hanna Bliska, and Gail Fricano, Industrial Economics, Inc. (IEc); Peter Shanahan, HydroAnalysis LLC (HALLC);

SUBJECT Five Tribe review of “Contingency Remedy Analysis, Second Review Draft Report, Willamette Cove” dated May 16, 2022

This memorandum, submitted on behalf of the Five Tribes,¹ reviews the *Contingency Remedy Analysis, Second Review Draft Report, Willamette Cove* (second draft report) prepared by Maul Foster & Alongi, Inc. on behalf of Metro (MFA 2022a). The Five Tribes previously reviewed the first draft report (MFA 2022b) and provided informal feedback to Metro by email on April 25, 2022.

SPECIFIC COMMENTS

1. Section 3.1 of the second draft report (MFA 2022a) was expanded to include a significantly more detailed narrative on Tribal history. We provide the following editorial suggestions for consideration:
 - i. Consider moving the sentence beginning “The area is located within the ancestral homelands of many Native peoples...” to the first paragraph of the section. Native peoples’ presence in this place predates the urban geographic features (railroads, etc.) described in this paragraph.
 - ii. Consider separating the third paragraph into two paragraphs focused on (1) genocidal policies directed at Native peoples and (2) anti-Black and other subsequent racist legislation and policy.
 - iii. Consider providing more detail about the effects of the Donation Land Act of 1850 on the displacement of Native peoples from the Willamette River valley.
2. In Section 3.2, we recommend including a sentence that explains that DEQ’s staff report was the foundation for the Record of Decision (ROD).
3. Section 3.2 of the first draft report (MFA 2022b) noted that the Five Tribes provided comments to DEQ on the staff report, citing IEc (2020). The second draft report (MFA 2022a) includes a summary of those comments. We find the summary as drafted to be accurate; however, IEc (2020) cited and summarized comments submitted to DEQ on several earlier reports for Willamette Cove

¹ The five tribes are the Confederated Tribes of the Grand Ronde Community of Oregon, the Nez Perce Tribe, the Confederated Tribes of Siletz Indians, the Confederated Tribes of the Umatilla Indian Reservation, and the Confederated Tribes of the Warm Springs Reservation of Oregon.

source control. We suggest revising Section 3.2 to acknowledge these previous comments. The existing text could be supplemented with the following text in italics:

“Consultants also provided a comment letter to DEQ regarding the staff report on behalf of the Confederated Tribes of the Grand Ronde Community of Oregon, the Confederated Tribes of Siletz Indians, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Nez Perce Tribe (Five Tribes) (IEc 2020). *The 2020 comment letter built upon several prior memoranda submitted on behalf of the Five Tribes that reviewed the draft and revised Groundwater Source Control Evaluation and Alternatives Analysis, the Revised Feasibility Study and Source Control Evaluation, and the Port’s Response to Comments on the Revised Feasibility Study and Source Control Evaluation. The 2020 comment letter on the staff report states the staff report satisfactorily identifies...*”

4. In the last paragraph of Section 3.2, we request Metro delete “for passive recreation.” Given that the final site design and plans for future use are in development, and not yet final, we recommend using more general language to summarize the Five Tribes’ comment regarding an appropriate design and aesthetic fit for any on-site consolidation unit.
5. Following review of the first draft report (MFA 2022b), the Five Tribes recommended Metro define what commenters meant by “full cleanup” in the report. Section 3.3 of the second draft report (MFA 2022a) was revised to state “Comments often refer to a preference for “full cleanup” or “full removal” of contamination, referring to the physical removal of contaminated soils.” We remain concerned that these terms are not adequately defined. We recommend the report further refine these terms as “referring to the removal of all contaminated soils, including moderately contaminated soils, for off-site disposal.”
6. Section 4.4.1 states “Additional ecological benefit is derived from off-site disposal of the 23,000 cubic yards of moderately contaminated soil that is otherwise slated for placement in an on-site consolidation cell. This benefit cannot be quantified within the limits of this analysis and the timeline for the remedial design process.” The assertion of greater ecological benefit from removing all moderately contaminated soil should be better justified. For instance, is this due to the risk of cap failure? Assuming no cap failure, would the ecological benefits of the two alternatives be equal? Citations to any appropriate references should be included.
7. Section 4.4.2, Seismic Considerations, states “A site-specific geotechnical evaluation would need to be completed to fully understand physical characteristics of the site for design of an on-site containment cell.” Given the relative importance of the geotechnical characterization, we recommend this

work be completed prior to making a decision about the feasibility and siting of an on-site consolidation unit.

8. The greenhouse gas (GHG) emission calculations provided in Appendix B are for carbon dioxide (CO₂) only. We recommend Metro consider including methane (CH₄) and nitrous oxide (N₂O) in the calculations. The CH₄ and N₂O emissions factors are available for barges and trucks (USEPA 2022). Incorporating these compounds would provide a more complete picture of GHG emissions.
9. Metro uses emissions factors for CO₂ from the Intergovernmental Panel on Climate Change (IPCC 2014). We recommend Metro consider using more recently updated emissions factors (e.g., EPA's Emissions Factors for Greenhouse Gas Inventories [USEPA 2022]).
10. The second draft report (MFA 2022a) refers to the on-site consolidation area as a "consolidation unit," "consolidation cell," and a "containment unit." We recommend using standard terminology for consistency.

REFERENCES

- Industrial Economics, Inc. (IEC). 2020. Letter to E. McDonnell and D. Lacey, Oregon Department of Environmental Quality, from P. Shanahan, HydroAnalysis, Inc. (HAI), and J. Hart and G. Fricano, Industrial Economics, Inc. (IEC). July 22.
- Intergovernmental Panel on Climate Change (IPCC). 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. Geneva, Switzerland, 151 pp.
- Maul Foster & Alongi (MFA). 2022a. Contingency Remedy Analysis, Second Review Draft Report, Willamette Cove. May 16.
- Maul Foster & Alongi (MFA). 2022b. Contingency Remedy Analysis, First Review Draft Report, Willamette Cove. April 18.
- U.S. Environmental Protection Agency (USEPA). 2022. Emissions Factors for Greenhouse Gas Inventories. April 1. Accessed from: <https://www.epa.gov/climateleadership/ghg-emission-factors-hub>.

Mary Matyas

From: Brian Moore <Brian.Moore@oregonmetro.gov>
Sent: Tuesday, May 31, 2022 9:34 PM
To: Michael Pickering; Seth Otto; Daniel Eisenbeis; M0075.12 Metro Willamette Cove
Subject: Fwd: Metro: Willamette Cove Upland Contingency Remedy Analysis

[External Sender - Confirm Sender and Beware of Links and Attachments]

Please find the comments from DEQ below.

These ought to be quite helpful.

From: MCDONNELL Erin K * DEQ <Erin.K.MCDONNELL@deq.oregon.gov>
Sent: Tuesday, May 31, 2022, 17:58
To: Brian Moore <Brian.Moore@oregonmetro.gov>
Cc: Paul Slyman <Paul.Slyman@oregonmetro.gov>
Subject: [External sender]RE: Metro: Willamette Cove Upland Contingency Remedy Analysis

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Hi Brian,

DEQ has reviewed the *draft* Willamette Cove Upland Contingency Remedy Analysis prepared by Maul Foster Alongi for Metro and dated May 16, 2022. We have the following comments regarding technical accuracy for your consideration.

Cleanup Description. There is slight confusion on the description of the selected remedy (including Sections 2.1.2, 4.1.1, 4.3). The Feasibility Study (Apex, 2019) helped inform the Staff Report that presented the basis for DEQ's proposed cleanup; however, DEQ incorporated moderate modifications/clarifications to the Alternative 4c presented in the FS. The Staff Report was generally adopted as the Record of Decision, with the addition of the contingency option in consideration of public comment and Metro feedback. We have the following clarifications on two elements of the selected remedy, regarding what contaminated soil at minimum needs to go offsite and cap versus covers.

- Metal Ecological Risk Hot Spots. Ecological hot spots for metals are also required to be disposed offsite, in addition to human health hot spots. As stated in the ROD (see Section 1.2: Scope and Role of the Selected Remedial Action):
 1. *Excavation and offsite disposal of all soil exceeding hot spot levels for human health.*
 2. *Excavation and offsite disposal of soil exceeding non-dioxin/furan (e.g., metals including mercury) hot spot levels for ecological health.*
- Cover versus Cap. We recommend replacing "in-place capping" used in this analysis document with "cover" to be consistent with the ROD. For context, following soil removal/reconsolidation with a reinforced cap, the site would be "covered" with a minimum of 1-foot of clean topsoil. While the FS used the term cover/cap, the ROD uses "cover" to better represent that the majority of the site would be covered with clean soil without long-term requirements, and it is our preference to limit "cap" areas to the extent practical. Moderate levels of ecological risk, if present after excavation activities, may require placement of more than 1-foot soil. If excavation activities cannot reasonably remove ecological hot spots (e.g., for dioxin-furans), these focused areas would be capped with 3 feet of clean soil. Ecological hot spot areas (under 3-feet of clean soil) may require long-term management controls; however, that would be determined at a later date. [Note, the FS also proposed less cover/cap material, than specified in the ROD. The increased cover thickness allows for mixing to reduce risk. The exposure

depth considered for ecological risk (to plants and animals) is 3 feet and accounts for burrowing animals]. As per the ROD (Section 1.2):

5. Lower-level risk to plants and animals would be covered in-place. Cover thickness would be determined based on the level of residual risk; however, a minimum 1-foot of clean topsoil will be necessary. Remaining ecological hot spots, if any, will be capped by 3 feet of clean soil or alternative DEQ-approved material.

- Figure 28. See clarifications to Figure 28 below. While this figure was used to generally illustrate Alternative 4c, the ROD text presents the specifics including minor modifications/clarifications.

Construction Impacts. While truck trips were calculated in the FS and for comparison purposes amongst the remedial action alternatives, DEQ preference is barge or alternative method that provides the lowest degree of impact to communities.

Summary of Contingency Analysis Table. For Alternative 4c, as noted above excavated areas will be covered with *at least* 1-foot clean soil and additional cover material maybe be necessary to effectively reduce risk to plants and animals.

Construction Cost Comparison. The adjusted estimated cost of Alternative 3b is substantial, approximately a 50% increase versus less than 20% for Alternative 4c. In absence of the adjusted cost calculations (to be provided in the final document), it's unclear what drives the delta from FS estimates to present day. It may be helpful to provide a sentence describing what materials/tasks mostly contributed to the increase.

Figure 28. This figure was taken from the Feasibility Study (and used for the Staff Report/ROD). Please note the following:

- The consolidation area shown is an “example” and is not representative of the final location and shape. This would be determined in remedial design. While this figure has a footnote generally capturing this, it would have been helpful to emphasize “Example” Soil Consolidation Area in the figure.
- The standard cap is not 2-foot soil, which was originally proposed in the FS. DEQ had concerns this would be insufficient and instead required a thicker reinforced cap for the consolidation area (to withstand extreme events). The ROD specifies: *Capping of consolidated soil will consist of a demarcation layer and a minimum of 3 feet of clean cover material. The final cap thickness and composition will be determined during remedial design.*
- As noted above, the FS used cover/cap outside the consolidation area; however, the ROD uses “cover” to better represent the cleanup strategy. Capping may be required depending on depth and levels of contamination left in-place, but is the less favorable option.

Thank you,
Erin



Erin McDonnell, P.E.
Project Manager/Engineer
Oregon Department of Environmental Quality
Northwest Region Cleanup Program
503.229.6900

From: Brian Moore <Brian.Moore@oregonmetro.gov>
Sent: Thursday, May 19, 2022 11:49 AM
To: MCDONNELL Erin K * DEQ <Erin.K.MCDONNELL@deq.oregon.gov>
Cc: Paul Slyman <Paul.Slyman@oregonmetro.gov>
Subject: RE: Metro: Willamette Cove Upland Contingency Remedy Analysis

Hello Erin,

Please find the 80% draft of our Contingency Remedy Analysis attached. We are sharing this because the Record of Decision indicates that we will go through this process in consultation with DEQ. We request that you take some time to review this final draft and provide comments. We are particularly interested in technical accuracy and proper reflection of the voluntary cleanup program process. Once you provide comment here, we will incorporate them into a final draft. If we are not able to incorporate comments you provide into the document, we will include them in an appendix to the final report. Once complete, we will then circulate the final report to everyone, but will no longer make changes to the document. If you have comments on the final document, I will incorporate those into a staff report that will accompany this document when it is presented to the Metro Council.

Thank you so much for taking a look at this.

Sincerely,

Brian Moore
Program Manager
Metro, Parks & Nature
600 NE Grand Avenue
Portland, OR 97232-2736
503-797-1761
(he/him/his)
www.oregonmetro.gov
<https://www.linkedin.com/in/bmm81>

From: MCDONNELL Erin K * DEQ [<mailto:Erin.K.MCDONNELL@deq.oregon.gov>]
Sent: Wednesday, March 30, 2022 1:42 PM
To: Brian Moore <Brian.Moore@oregonmetro.gov>
Cc: Paul Slyman <Paul.Slyman@oregonmetro.gov>
Subject: [External sender]RE: Metro: Willamette Cove Upland Contingency Remedy Analysis

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Hi Brian,
Thanks for engaging DEQ. I reviewed the outline and do not have any comments.

Much appreciated,
Erin

Erin McDonnell, P.E.
Cleanup Project Manager/Engineer
Oregon DEQ, NWR
503.229.6900

Note that DEQ has changed email addresses to the xxx@deq.oregon.gov format and erin.k.mcdonnell@deq.oregon.gov is my current email.



From: Brian Moore <Brian.Moore@oregonmetro.gov>
Sent: Monday, March 28, 2022 4:36 PM
To: MCDONNELL Erin K * DEQ <Erin.K.MCDONNELL@deq.oregon.gov>
Cc: Paul Slyman <Paul.Slyman@oregonmetro.gov>
Subject: Fw: Metro: Willamette Cove Upland Contingency Remedy Analysis

Hello Erin,

We are working to develop a short outline of our contingency remedy analysis. Our report that will help the Metro Council decide if they wish to follow the DEQ staff recommended remedy or pursue the contingency remedy. This is a 15 minute review kind of opportunity, we are not looking for a deep dive.

If you want to provide comments, feel free to do so by Wednesday and we will work them into the report. Thank you so much for considering this.

Thank you,

Brian Moore
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