Section 3.5

Contamination

This chapter describes the affected environment for contamination and presents the analysis completed to compare and contrast impacts from the alternatives. Mitigation measures for identified impacts and any significant unavoidable adverse impacts are also summarized.

Thresholds of significance utilized in this impact analysis include:

- Release or contamination of soils, groundwater, or surface water that requires removal and disposal.
- Hazardous chemicals or conditions that might result in health or safety impacts or impede future development.

Many different terms may be used to describe contamination at a site. The term hazardous material (or hazardous substance) is typically used to describe chemical contaminants in soils, groundwater, surface water, or other media at a site that have the potential to harm humans, animals, or the environment. Once the hazardous material is excavated or removed from the ground, it is considered a hazardous waste that must then be tested to determine how it would be properly disposed offsite at a licensed landfill or treatment facility. These terms are discussed further in **Section 3.5.3**.

3.5.1 Affected Environment

Primary & Secondary Study Areas

The study area for Contamination is defined as areas within 0.25-mile of the boundaries of the BINMIC and Greater Duwamish MICs that could be directly or indirectly affected by the construction activities or land uses that result from implementation of the industrial and maritime strategy. The secondary study area extends 0.25 miles from the full study area. [9]

Data & Methods

The project team collected data from the following sources to support analysis to identify sites with confirmed or suspected contamination in soil, sediment, and groundwater, and sites where hazardous materials are used or stored; locate historical landfills; and evaluate potential effects of the project alternatives:

- Washington State Department of Ecology (Ecology) Facilities/Sites of Environmental Interest Geodatabase (Ecology 2021).
- Abandoned Landfill Study in the City of Seattle (Seattle-King County Department of Public Health 1984).

The initial list of confirmed or suspected contaminated sites, and sites that use or store hazardous materials within the full study area was developed from the Ecology geodatabase

[9] Maps show the 0.25-mile buffer, but tabular data and text refer to the hazardous sizes inside the primary study area.

that lists all known facilities and sites of environmental interest in Washington State. The geodatabase includes information on:

- State cleanup sites
- Federal Superfund cleanup sites
- Solid waste facilities
- Underground storage tanks and leaking underground storage tanks
- Dairies
- Enforcement actions
- Hazardous waste generators

To focus the analysis on contamination for the EIS, the geodatabase was pared down to include only those sites that fall within two program areas overseen by Ecology: 1) Toxics Cleanup, and 2) Hazardous Waste and Toxics Reduction. The Toxics Cleanup Program tracks sites with confirmed or suspected contamination of soil, sediment, groundwater, or other media, and the Hazardous Waste and Toxics Reduction Program tracks sites where hazardous chemicals are used or stored and where spills to the environment could potentially occur.

The geodatabase was downloaded and then sorted to include those sites located within 0.25-mile of the BINMIC and Greater Duwamish MIC (see **Exhibit 3.5-1** and **Exhibit 3.5-2**). The 0.25-mile distance was selected as the boundary of the secondary study area as an appropriate minimum search distance typically used for environmental site assessments to identify current or historical conditions that could cause soil, groundwater, or other contamination on or adjacent to a property per the American Society of Testing and Materials (ASTM) standard practice ASTM E 1527-13 (ASTM 2013). The 0.25-mile search radius also relates to the maximum distance that groundwater contamination is likely to travel for the majority of sites with groundwater contamination.

Available information regarding historical landfills located within the full study area was reviewed in the 1984 abandoned landfill study (Seattle-King County Department of Public Health 1984).

Current Policy & Regulatory Frameworks

Model Toxics Control Act

The Model Toxics Control Act (MTCA) Cleanup Regulation (Washington Administrative Code [WAC] 173-340-710) is one of several environmental laws in Washington. Known as the state's cleanup law, MTCA authorizes the Washington State Department of Ecology (Ecology) to adopt cleanup standards for soil, groundwater, surface water, and air at sites where hazardous substances are present, and establishes processes for identifying, investigating, and cleaning up these sites. The term "site" in this context generally refers to the property where the hazardous substances are present but can extend onto adjacent properties.

MTCA's main purpose is to prevent the creation of future hazards due to improper disposal of toxic wastes into the state's lands and waters. MTCA Cleanup Regulations apply to all cleanups, whether they're upland cleanups on land or in groundwater, or sediment cleanups in freshwater or marine environments.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), known also as Superfund, is a federal law (40 CFR Parts 300-311, 355, and 373) used to identify sites where hazardous materials threaten the environment and or public health because of leaks, spills, or general mismanagement, and identifies the responsible party. CERCLA authorizes Superfund cleanup responses in two ways: short-term removal and long-term environmental remediation. These actions are conducted only at sites listed on EPA's National Priorities List (NPL). CERCLA powers and responsibilities overlap with the Resource Conservation and Recovery Act (RCRA) (see below), the Clean Water Act, and the Safe Drinking Water Act. CERCLA and RCRA share jurisdiction with respect to hazardous materials, and underground storage tanks containing petroleum products. CERCLA was amended by the Superfund Amendments and Re-authorization Act (SARA) in 1986.

Resource Conservation & Recovery Act & Washington State Dangerous Waste Regulations

The Resource Conservation and Recovery Act (RCRA) is a federal law (40 CFR Parts 239 through 282) that creates the framework for proper management of non-hazardous and hazardous solid waste. Washington State's Dangerous Waste Regulations under WAC 173-303 are based on the federal RCRA law, but Washington's regulations are more protective and include more wastes. Per WAC 173-350-021, solid waste is defined as "all putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials."

During construction on a contaminated site, a cleanup contractor (also referred to as a remediation contractor) would typically screen and classify soils as they are excavated and select one of the following appropriate types of landfills for off-site disposal:

- Inert landfills accept clean soil with no detectable concentrations of contaminants, or clean waste with some organic debris/wood waste and trace amounts of detectable petroleum hydrocarbons, volatile organic compounds, metals, or other contaminants that are below MTCA cleanup levels.
- Subtitle D landfills accept solid waste, including contaminated soils with concentrations of contaminants detected above MTCA cleanup levels (includes hazardous waste but does not include contaminants at concentrations that trigger Washington's Dangerous Waste Regulations)

- Subtitle C landfills accept waste designated as dangerous waste and have special controls such as double liners, double leachate collection and removal systems, and leak detection systems to prevent release of contaminants to the environment.

Seattle Municipal Code 25.09.220 (Environmentally Critical Areas Code) indicates that development on historical landfills is subject to Public Health—Seattle & King County requirements. The code also specifies methane barriers or appropriate ventilation per Title 22, Subtitle I, Building Code, and Public Health—Seattle & King County regulations.

The Title 10 King County Board of Health Solid Waste Regulation governs construction standards and methane controls on historical landfills. Authority is established under RCW Chapter 70.05 and Washington State Administrative Code WAC 173-304, Minimal Functional Standards for Solid Waste Handling, and WAC 173-351, Criteria for Municipal Solid Waste Landfills.

General requirements for complying with federal, state, and local Applicable or Relevant and Appropriate Requirements (ARARs) for cleanup actions under MTCA are listed in WAC 173-340-710-745. A summary of potentially applicable federal, state, and local ARARs identified for cleanup actions and potential soil, groundwater, and surface water contamination at sites within the full study area is included in **Exhibit 3.5-1**.

Exhibit 3.5-1 Federal, State, and Local Arars Potentially Applicable for Cleanup Actions at Contaminated Sites Within the Full Study Area

Regulatory Program or Policies	Lead Agency	Description
The Federal Clean Water Act (33 USC Section 1251)	Ecology	The Federal Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.
The Washington Water Pollution Control Act (Chapter 90.48 RCW; Chapter 173 201A WAC; Chapter 173-200 WAC)	Ecology	The Washington Water Pollution Control Act requires the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington.
Comprehensive Environmental Response, Compensation, and Liability Act and All Appropriate Inquiries (40 CFR Part 312)	Ecology	Commonly known as Superfund, this federal regulation governs cleaning up abandoned or uncontrolled hazardous waste sites.
Sediment Management Standards (Chapter 173-204 WAC)	Ecology	Standards developed for Washington state to reduce and ultimately eliminate adverse effects on biological resources and significant threats to human health from surface sediment contamination.
The Resource Conservation and Recovery Act (40 CFR Parts 239 through 282)	Ecology	RCRA is a federal law that creates the framework for the proper management of hazardous and non-hazardous solid waste.

Regulatory Program or Policies	Lead Agency	Description
Dangerous Waste Regulations (Chapter 173 303 WAC) and the Washington Hazardous Waste Management Act (Chapter 70.105 RCW)	Ecology	The Dangerous Waste Regulations implement the Washington Hazardous Waste Management Act and establish requirements for generators, transporters, and facilities that manage dangerous waste.
Federal and State Clean Air Acts (42 USC 7401 et seq.; 40 CFR 50; RCW 70.94; WAC 173-400, 403)	Puget Sound Clean Air Agency	These federal and state laws regulate air emissions from stationary and mobile sources, including construction sites.
The State Environmental Policy Act (RCW 43.21C; WAC 197-11	Ecology	SEPA ensures environmental values are considered during decision-making by state and local agencies when issuing permits for private projects; constructing public facilities; or adopting regulations, policies, or plans.
The Occupational Safety and Health Act (29 CFR 1910); Washington industrial Safety and Health Act (296-800 WAC)	Washington Department of Labor and Industries	These federal and state rules regulate the safety and health of workers in the workplace, including construction sites.
General Occupational Health Standards (Chapter 296-62 WAC)	Washington Department of Labor and Industries	These rules are designed to protect the health of employees and help to create a healthy workplace by establishing requirements to control health hazards.
Safety Standards for Construction Work (Chapter 296-155 WAC)	Washington Department of Labor and Industries	These safety and health standards help protect workers at construction sites.
Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 WAC)	Ecology	These standards contain requirements for installation, maintenance, and decommissioning of groundwater monitoring wells.
Industrial Waste Discharge to Metropolitan King County Sewer System	King County Industrial Waste Program	This program regulates the discharge of industrial/commercial wastewater, including construction dewatering water, to the King County sanitary sewer system.

Source: Herrera, 2021.

Current Conditions

Full Study Area

A total of 710 Toxics Cleanup sites with confirmed and suspected contamination were identified within the full study area (Ecology 2021). Of these, 159 sites are located in the BINMIC and 551 are located in the Greater Duwamish MIC (see **Exhibit 3.5-2** and **Exhibit 3.5-4**, respectively). These sites have undergone various stages of investigation and cleanup. Some sites are still awaiting cleanup, others have been investigated to determine the nature and extent of contamination, and some sites have been satisfactorily cleaned up to the point where Ecology has issued a No Further Action letter.

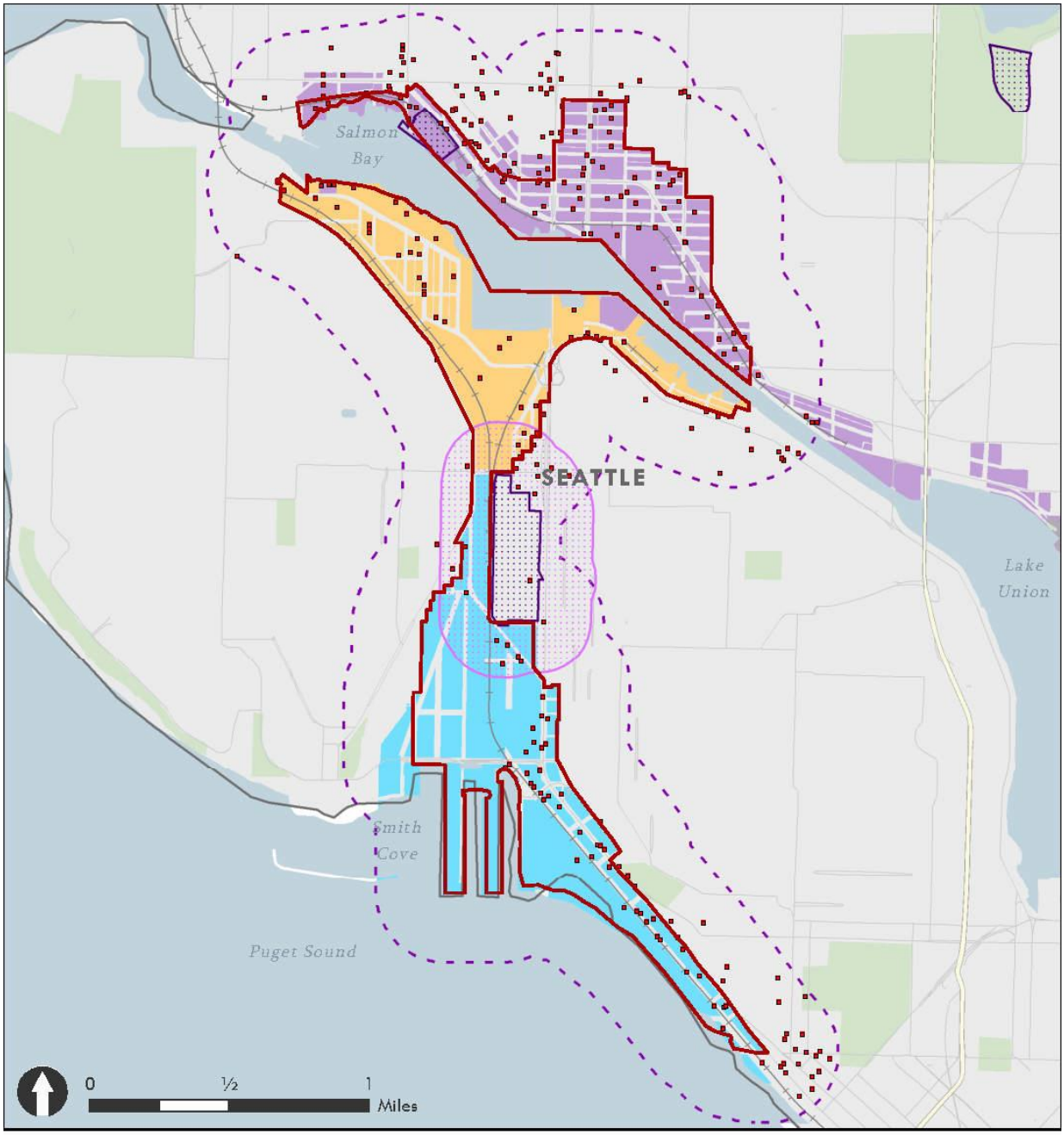
In addition, a total of 1,537 Hazardous Waste and Toxics Reduction sites were identified within the full study area (Ecology 2021). Of these, 276 sites are located in the BINMIC and 1,261 are located in the Greater Duwamish MIC (see **Exhibit 3.5-3** and **Exhibit 3.5-5**, respectively). These sites typically range from well-managed, well-kept facilities with few if any historic spills or enforcement actions by Ecology, to facilities where violations and/or spills to the environment have occurred. Spills, whether documented or not, can cause soil, groundwater, or surface water to become contaminated if not cleaned up properly and promptly.

A total of five historical landfills were identified within the study area. All the landfills have documented soil and/or groundwater contamination as well as potential constraints for construction on or adjacent to the sites due to the poor structural support provided or settlement, and risk of methane intrusion into structures that may require mitigation. Three landfills have prescribed 1,000-foot methane buffers.

Four federal Superfund sites were identified within the study area, all within the Greater Duwamish MIC. These sites have undergone various stages of investigation and cleanup. Three sites have had cleanup mostly completed or completed and are undergoing long-term monitoring to ensure the cleanup activities are protective to human health and the environment. One site has been investigated to determine the nature and extent of contamination and has had five Early Action Area (EAA) cleanups. The remaining areas are the subject of phased design and cleanup actions.

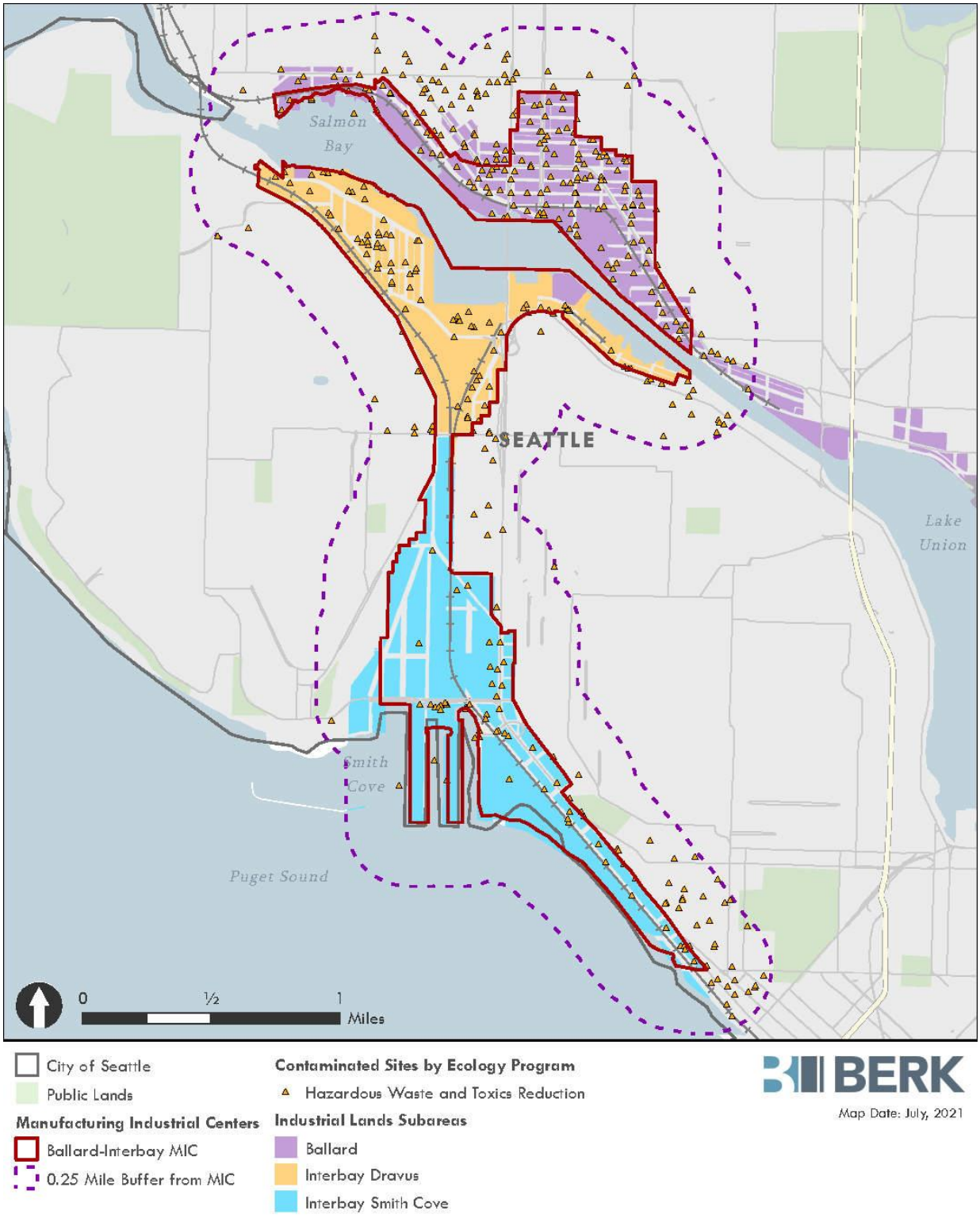
Exhibit 3.5-6 provides a summary of the total number of Toxics Cleanup Sites, and Hazardous Waste and Toxics Reduction Sites within the BINMIC and Greater Duwamish MIC and subareas. Note that because some sites are tracked by Ecology's Toxics Cleanup Program in multiple categories, the total number of Toxics Cleanup Program sites listed is not equal to the sum of all sites shown in each program subcategory in **Exhibit 3.5-6**.

Exhibit 3.5-2 Confirmed or Suspected Contaminated Sites Within 0.25-mile of the BINMIC



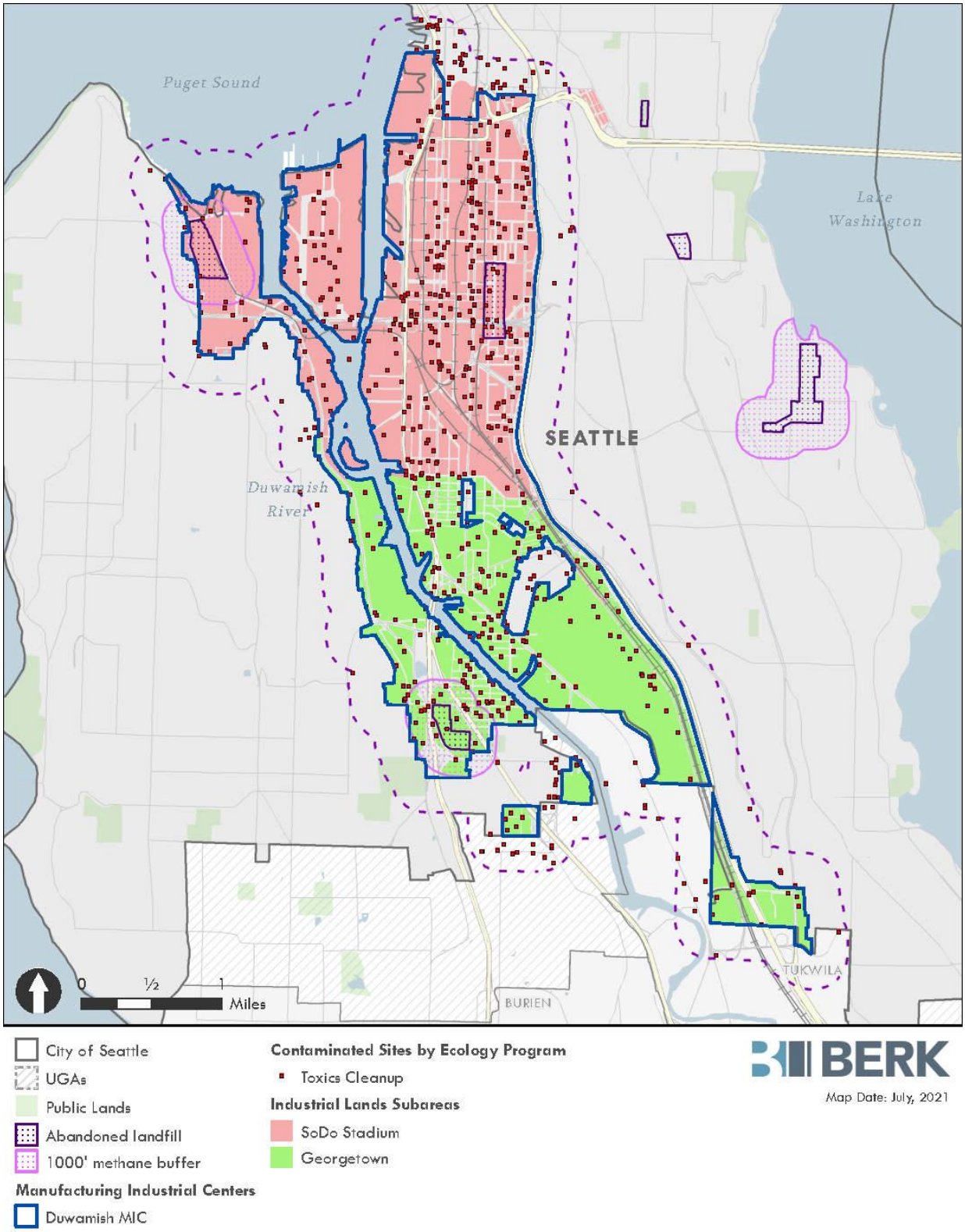
Source: Ecology, 2021.

Exhibit 3.5-3 Hazardous Waste and Toxics Reduction Sites Within 0.25-mile of the BINMIC



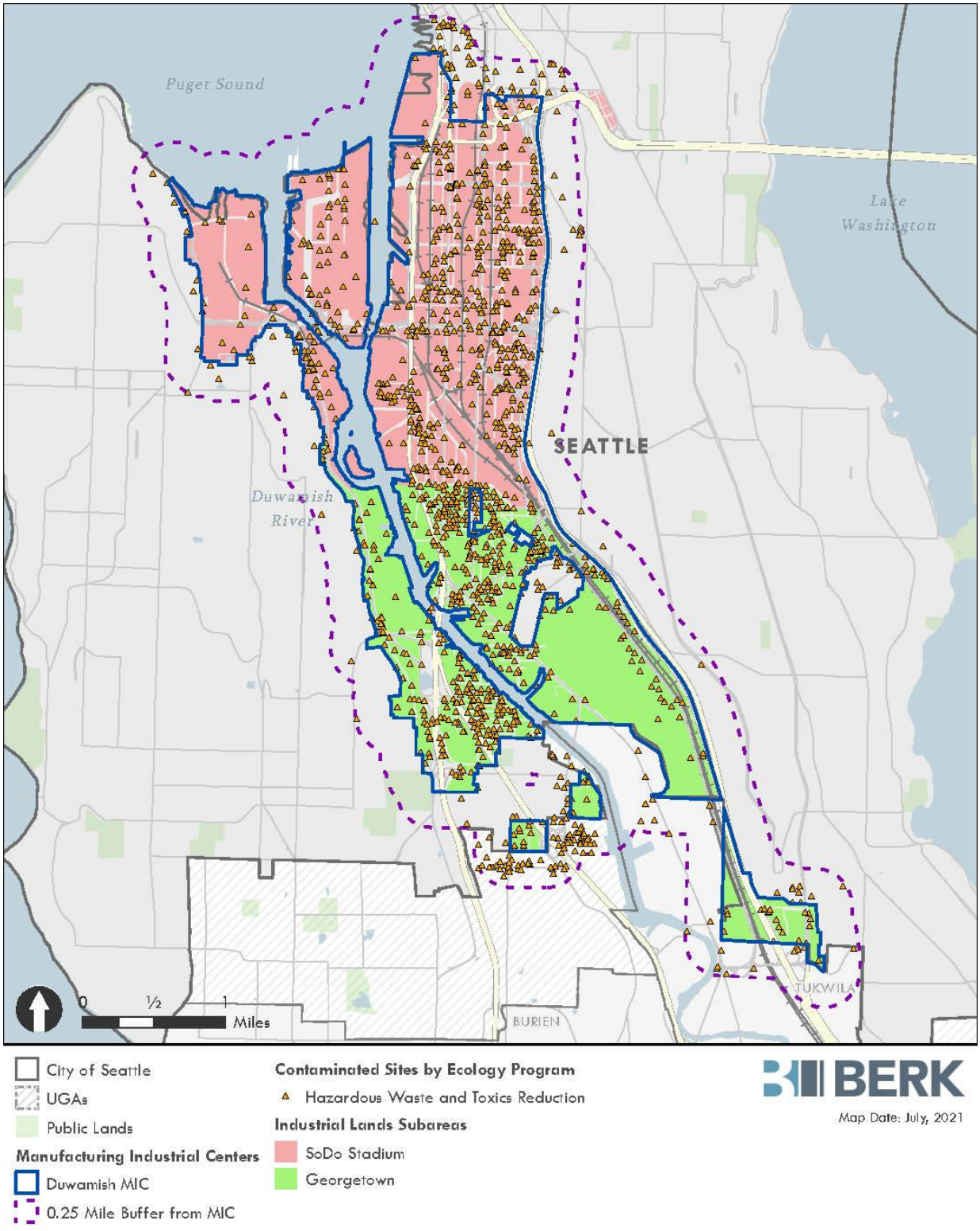
Source: Ecology, 2021.

Exhibit 3.5-4 Confirmed or Suspected Contaminated Sites Within 0.25-mile of the Greater Duwamish MIC



Source: Ecology, 2021.

Exhibit 3.5-5 Hazardous Waste and Toxics Reduction Sites Located Within 0.25-mile of the Greater Duwamish MIC



Source: Ecology, 2021.

Exhibit 3.5-6 Summary of Toxics Cleanup Sites and Hazardous Waste and Toxics Reduction Sites Within the BINMIC and Greater Duwamish MIC and Subareas

MIC	Subarea	Enforcement Action	Federal Superfund	Independent Cleanup / Remedial Action	LUST	UST	Sediments	State Cleanup	VCP	Total Number of Toxics Cleanup Program Sites[a]	Total Number of Hazardous Waste and Toxics Reduction Program Sites	
BINMIC	Ballard	3	0	9	19	44	2	22	29	73	143	276
	Interbay Dravus	1	0	5	11	21	1	16	13	38	79	
	Interbay Smith Cove	0	0	5	17	35	1	14	16	48	54	
Greater Duwamish MIC	SODO/Stadium	5	2	32	126	234	12	112	73	331	672	1,261
	Georgetown/South Park	20	0	26	76	141	4	81	51	220	589	
					Grand Totals Within the Full Study Area					**710**	**1,537**	

[a] Because some sites are tracked by Ecology's Toxics Cleanup Program in multiple categories, the total number of Toxics Cleanup Program sites listed is not equal to the sum of all sites shown in each program subcategory.
LUST: leaking underground storage tank
UST: underground storage tank
VCP: voluntary cleanup program
Source: Ecology, 2021.

Ballard

A total of 73 Toxics Cleanup sites and 143 Hazardous Waste and Toxics Reduction were identified in the Ballard Subarea (see **Exhibit 3.5-2** and **Exhibit 3.5-3**).

A historical landfill is located within the Ballard Subarea, adjacent to the south of Shilshole Avenue NW, along Salmon Bay (see **Exhibit 3.5-2**; City of Seattle 2021). Limited information regarding the landfill is available and it was not identified in the 1984 Abandoned Landfill Study (Seattle-King County Department of Public Health 1984). The landfill likely began operating in the early 1900s, covers approximately 10.5 acres, and is now developed with industrial and office buildings. Development within the former landfill area is subject to special engineering and construction management requirements to prevent damage from methane gas buildup, subsidence, and earthquake-induced ground shaking. Development in this area must comply with critical areas regulations.

Interbay Dravus

A total of 38 Toxics Cleanup sites and 79 Hazardous Waste and Toxics Reduction were identified within the Interbay Dravus Subarea (see **Exhibit 3.5-2** and **Exhibit 3.5-3**).

The Interbay Landfill is located adjacent to the west of the Interbay Dravus Subarea ((see **Exhibit 3.5-2**). The landfill is situated along 15th Avenue West, south of West Dravus Street and north of West Wheeler Street. A 1,000-foot methane buffer for the landfill overlaps with the southern portion of the Interbay Dravus secondary study area. The landfill consists of approximately 55 acres of land presently occupied by the Interbay Golf Center. The landfill, also known as the Interbay Dump or Sanitary Landfill No. 2, was established by the City in 1911 and continued to be used off and on until 1968 (Seattle-King County Department of Public Health 1984). Municipal solid waste from local homes and businesses was dumped at the south end, the north end was operated as a fire dump and received combustible wastes including wastes from local industries and the military. The landfill contains a wide range of putrescible and non-putrescible solid waste. The landfill is prone to settlement and is still producing methane gas. High groundwater and leachate formation are also concerns at this site.

Interbay Landfill and areas within a 1,000-foot radius are regulated as an Abandoned Landfill environmentally critical area (Landfill ECA). Specifically, Seattle Building Code (SBC) 1811—*Methane Mitigation Measures* requires that all construction within a Landfill ECA be protected from accumulation of methane within or under the enclosed portion of a building. Methane mitigation systems typically consist of passive or active venting systems installed in subslab /crawlspace areas coupled with monitoring systems in enclosed interior spaces.

Interbay Smith Cove

A total of 48 Toxics Cleanup sites and 54 Hazardous Waste and Toxics Reduction were identified within the Interbay Smith Cove Subarea (see **Exhibit 3.5-2** and **Exhibit 3.5-3**).

The northern portion of the Interbay Smith Cove Subarea is also located within the 1,000-foot methane buffer for the Interbay Landfill (see **Exhibit 3.5-2**). As previously mentioned, areas within this buffer are subject to the methane mitigation measures outline under SBC 1811 to prevent accumulation of methane within or under the enclosed portion of a building.

SODO/Stadium

A total of 331 Toxics Cleanup sites and 672 Hazardous Waste and Toxics Reduction were identified within the SODO/Stadium Subarea (see **Exhibit 3.5-4** and **Exhibit 3.5-5**).

The West Seattle Landfill, previously known as the West Hanford Street Landfill, is located within the SODO-Stadium Subarea. The landfill is situated along Harbor Avenue SW, just south of SWA Florida Street (see **Exhibit 3.5-4;** City of Seattle 2021). The landfill is approximately 20 acres in size, built on former tidelands, and operated from 1939 until 1966. The landfill has a 1,000-foot methane buffer and areas within the buffer are subject to the methane mitigation measures outline under SBC 1811 (City of Seattle 2021).

The West Seattle Landfill accepted municipal solid waste as well as industrial wastes from local industries associated with lumber yards and mills, ship building, creosote pile treating, pesticide manufacturing, and a steel mill. The landfill historically had problems with fires and the Seattle Fire department also used a portion of the site for its oil fire control school (Seattle-King County Department of Public Health 1984).

A second landfill is located within the SODO/Stadium Subarea (see **Exhibit 3.5-4;** City of Seattle (2021). The landfill is approximately 51 acres in size, straddles 6th Avenue South, and extends from South Forest Street on the north end to South Charlestown Street on the south end. The landfill was not identified in the 1984 abandoned landfill study conducted by the Seattle-King County Department of Public Health. The former landfill area is densely developed with industrial/commercial buildings.

Three federal Superfund sites in the SODO-Stadium area have undergone cleanup. These include the Pacific Sound Resources and Lockheed West Seattle sites on what is now the Terminal 5 property on the west side of the west Duwamish waterway. The Harbor Island Superfund site is comprised of seven operable units—smaller areas to make cleanup easier and more manageable—with five having completed cleanup and two (the East Waterway and Todd Shipyards sediment areas awaiting cleanup estimated in 2023-2024).

Georgetown/South Park

A total of 220 Toxics Cleanup sites and 589 Hazardous Waste and Toxics Reduction were identified within the Georgetown/South Park Subarea (see **Exhibit 3.5-4** and **Exhibit 3.5-5**).

The South Park landfill located within the Georgetown/South Park Subarea covers approximately 96 acres and is bounded on the east by West Marginal Way and 5th Avenue South; on the north by Kenyon Street; on the west by 2nd Avenue South and Occidental Avenue; and on the south by Sullivan Street (see **Exhibit 3.5-4;** City of Seattle 2021). It began operating

after 1945 and closed in 1966 when the site was converted to a solid waste landfill (Seattle-King County Department of Public Health 1984). The landfill was used primarily for non-putrescible wastes and sawdust in the early years and operated as fire dump by the City where combustible refuse was burned until 1961. The landfill was also used to dispose putrescible waste as well as industrial wastes from nearby industries. An investigation in 1983 revealed fill soils with various debris, scattered organics, and an oily sheen and odors (Seattle-King County Department of Public Health 1984).

The Lower Duwamish Waterway (LDW) federal Superfund site extends 5 miles from the mouth of the Duwamish waterway in the SODO-Stadium area to the southern extent of the waterway where it becomes the Duwamish River in the Georgetown/South Park subarea. The LDW site encompasses upland sources of contamination as well as contamination within the waterway. The EPA is responsible for administering the cleanup of sediments in the Waterway, and Ecology is responsible for controlling sources of pollution to the Waterway. Most of the human health risk comes from polychlorinated biphenyls (PCBs), arsenic, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), as well as dioxins and furans. As a result, consumption of resident fish and shellfish, as well as contact with contaminated sediments, pose a risk to human health (EPA 2021).

3.5.2 Impacts

Impacts Common to All Alternatives

Development under any of the alternatives may encounter hazardous materials such as contaminated soil, soil vapor, groundwater, surface water, or sediments. The greatest potential for impacts associated with contamination would occur during construction when sites are disturbed. Construction activities could release hazardous materials due to ground disturbing, dewatering, and demolition activities. Development within the study area, especially where known hazardous material sites are located, would address the removal of hazardous materials, which could include contaminated soils, groundwater, surface water, and, in older structures, the potential for lead-based paints and asbestos-containing materials (ACMs).

A soil and groundwater management plan could be necessary for construction activities in areas with known or suspected contamination. Contaminated soils excavated during construction activities would require special handling, transport, storage, and off-site disposal. If soils are not contaminated, excavations at many sites would still require off-site hauling if the soils cannot be relocated and placed onsite. If there is concurrent construction requiring earth fill in close proximity, excavated materials could be transported to the nearby site as long as the excavated material is protected from precipitation and surface water runoff.

Depending on groundwater depth and the type of hazardous materials, it is possible that contaminants from historic spills or releases may have infiltrated and migrated, requiring

additional cleanup. Cleanup efforts implemented before or during construction would reduce potential short-term and long-term impacts.

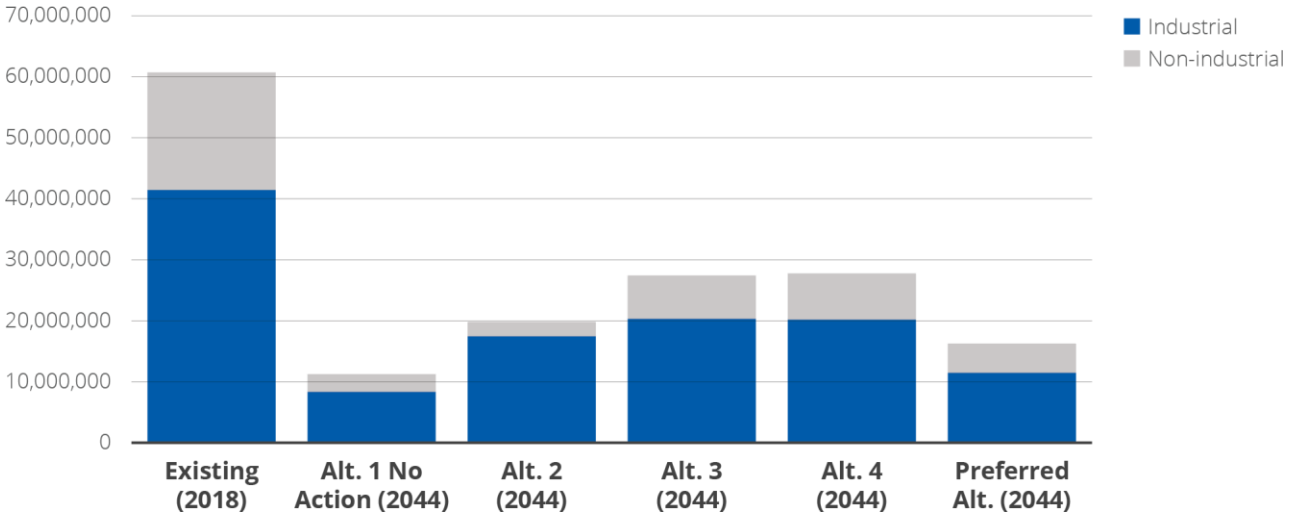
For contaminated soil, MTCA generally requires residential land uses to use the most protective cleanup levels established under MTCA Method A or B cleanup levels (WAC 173-340-740). These requirements apply to most land uses except those that meet the definition of "industrial property" as defined in WAC 173-340-200 and 173-340-745. For industrial properties, MTCA allows less restrictive soil cleanup levels established under MTCA Method A or C (WAC 173-340-745) based on adult worker exposure scenarios only and including the use of institutional controls.[10] Access to industrial properties by the public, especially children, or even proximity to residential areas may limit use of the less restrictive standard. All sites being redeveloped and needing cleanup under MTCA would be assessed for the nature of the contamination, the complexity and location of the site, and the current and potential land use to determine appropriate cleanup standards. Because documented contamination requiring cleanup would be removed or contained prior to new development, it is assumed there would be no significant health and safety impacts on those living, working, or visiting the area, or impacts on the intended uses of properties within the study area.

As growth occurs in the study area, there is potential for hazardous material spills associated with petroleum products to increase as traffic and the potential for accidents increases. With growth there is also the potential for increased risk of spills from industrial activities, industrial processes, or use of industrial chemicals. Any spills would be cleaned up consistent with applicable state and local requirements and no significant impacts are anticipated.

Alternative 1 would allow the least new jobs and housing and Alternative 4 the most in each subarea and across the whole subarea. See **Exhibit 3.5-7** and **Exhibit 3.5-8**.

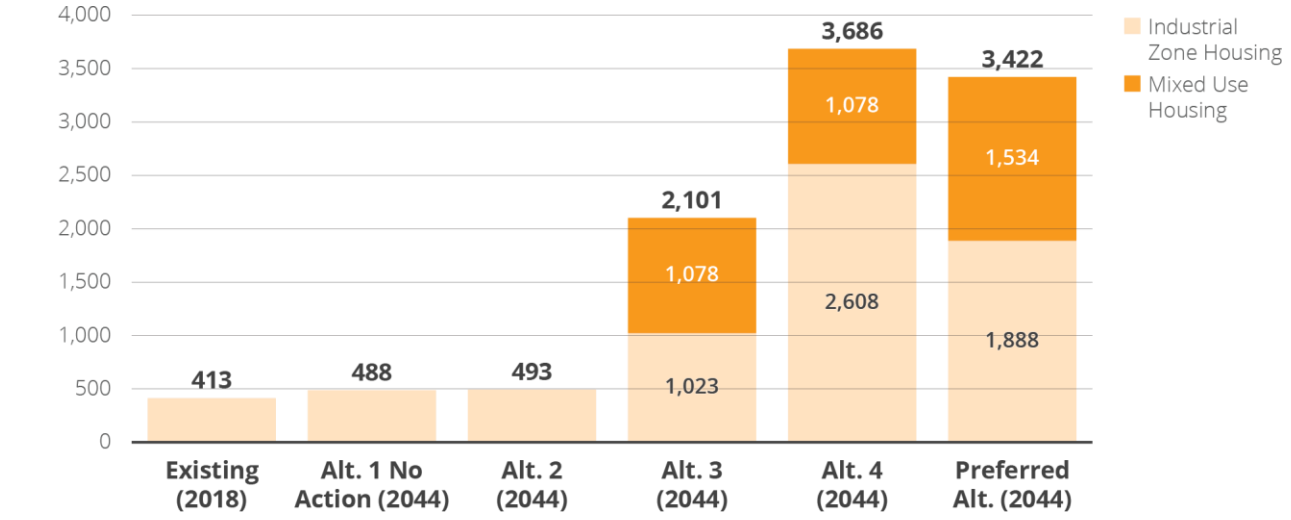
[10] Measures undertaken to limit or prohibit activities that may interfere with the integrity of an interim action or cleanup action or that may result in exposure to hazardous substances at a site.

Exhibit 3.5-7 Existing and Net Employment Building Space by Alternative



Note: This chart was updated to include the Preferred Alternative.
Source: City of Seattle, 2022~~1~~; BERK, 2022~~1~~.

Exhibit 3.5-8 Total Housing in Study Area by Alternative



Note: This chart was updated to include the Preferred Alternative.
Source: City of Seattle, 2022~~1~~; BERK, 2022~~1~~.

Ballard

Alternative 1 would allow the least new jobs and housing and Alternative 4 the most. The Ballard Subarea would see the third highest growth in jobs and the second highest in housing under the alternatives of all the subareas. This subarea also has 73 Toxics Cleanup Program sites and 143 Hazardous Waste and Toxics Reduction Program sites. The risks of release of contaminants or of hazardous chemicals being used or causing conditions that result in health or safety impacts or impede future development are potentially higher than with the two

Interbay subareas, but less than the SODO/Stadium and Georgetown/South Park subareas. Although these risks are considered significant, they are avoidable with mitigation.

Interbay Dravus

Alternative 1 would allow the least new jobs and housing and Alternative 4 the most. The Interbay Dravus Subarea would see modest growth in jobs and housing under the alternatives compared to the other subareas. This subarea has 38 Toxics Cleanup Program sites and 79 Hazardous Waste and Toxics Reduction Program sites. The risks of release of contaminants or of hazardous chemicals being used or causing conditions that result in health or safety impacts or impede future development are less than the Ballard, SODO/Stadium and Georgetown/South Park subareas. These risks are considered significant but avoidable with mitigation.

Interbay Smith Cove

Alternative 1 would allow the least new jobs and housing and Alternative 4 the most. The Interbay Smith Cove Subarea would also see modest growth in jobs but minimal growth in housing under the alternatives compared to the other subareas. This subarea has 48 Toxics Cleanup Program sites and 54 Hazardous Waste and Toxics Reduction Program sites. The risks of release of contaminants or of hazardous chemicals being used or causing conditions that result in health or safety impacts or impede future development are also less than the Ballard, SODO/Stadium and Georgetown/South Park subareas. These risks are considered significant but avoidable with mitigation.

SODO/Stadium

Alternative 1 would allow the least new jobs and housing and Alternative 4 the most. The SODO/Stadium Subarea would see the most growth in jobs and housing under the alternatives compared to the other subareas. This subarea also has 331 Toxics Cleanup Program sites and 672 Hazardous Waste and Toxics Reduction Program sites. The risks of release of contaminants or of hazardous chemicals being used or causing conditions that result in health or safety impacts or impede future development are greater than the other subareas. These risks are considered significant but avoidable with mitigation.

Georgetown/South Park

Alternative 1 would allow the least new jobs and housing and Alternative 4 the most. The Georgetown/South Park Subarea would see the second highest growth in jobs and third highest growth in housing compared to the other subareas. This subarea also has 220 Toxics Cleanup Program sites and 589 Hazardous Waste and Toxics Reduction Program sites. The risks of release of contaminants or of hazardous chemicals being used or causing conditions that result in health or safety impacts or impede future development are greater than other subareas except the SODO/Stadium Subarea. These risks are considered significant but avoidable with mitigation.

Equity & Environmental Justice Considerations

Under any of the Action Alternatives, the primary equity and environmental justice concern for the proposal would be that cleanup of contaminated sites could cause temporary adverse effects from potential exposure of workers, nearby residents, and animals to contaminated soil, groundwater, surface water, fugitive dust, or spilled hazardous materials if mitigation measures are not fully implemented. This could lead to exposure of vulnerable communities, including lower-wage or under-represented workers, to inequitable exposure to contamination.

Under the Alternative 1 No Action, humans, plants, and animals could potentially be exposed to contaminants at existing contaminated sites in all subareas.

The greatest impacts would be associated with Alternative 4 because it would result in the most sites disturbed and cleaned up, housing units created, and workers living and working in the subareas. However, after completion of cleanup actions for projects under all the Action Alternatives, nearby residents would benefit from reduced risk of potential exposure to contaminants.

In order to mitigate potential exposure to contaminants, all workers would be issued personal protective equipment and protected by measures implemented under the contractor's site-specific health and safety plan.

Although all alternatives would likely result in short-term adverse effects on this determinant of equity and social justice, the Action Alternatives would generally have positive long-term benefits.

Impacts of Alternative 1 No Action

Under Alternative 1 No Action, contaminated sites and spills would still be investigated and cleaned up in accordance with MTCA and other applicable local, state, and federal laws. Industrial facilities and other sites would continue to manage hazardous and non-hazardous solid wastes as required under RCRA and Washington's Dangerous Waste Regulations to prevent human exposures and releases to the environment. A total of 8,330,000 square feet (SF) of industrial space and 2,900,000 SF of non-industrial space would be developed. This development would increase the short-term risk of exposure to contaminants as sites are cleaned up but result in a long-term benefit of lower concentrations of chemicals after sites are cleaned up. With the increases in industrial jobs (described below by subarea) and industrial space there would be an increased risk of chemical exposures and industrial spills related to industrial processes.

Impacts of Alternative 2

The impacts of Alternative 2 are similar to those described above under **Impacts Common to All Alternatives**, but the increased development under Alternative 2 increases the likelihood of encountering contaminated sites and for hazardous chemicals to cause impacts on health and

safety or cause project delays. Under Alternative 2, the number of industrial jobs in the subareas would increase above Alternative 1 No Action by 2,000 in Ballard, 1,000 in Interbay Dravus, 1,100 in Interbay Smith Cove, 5,500 in SODO/Stadium, and 3,400 in Georgetown/South Park. In addition, the total square feet of industrial space developed within the subareas would more than double, from 8,330,000 SF under the No Action Alternative to 17,430,000 SF under Alternative 2.

With more industrial jobs and more than double the square footage of industrial space, there would be an increase in the number of Toxics Cleanup Program sites developed and cleaned up and an increase in the number of new Hazardous Waste and Toxics Reduction Program sites where chemicals are used. With the increase in industrial jobs and industrial space there would be an increased risk of chemical exposures and industrial spills related to industrial processes.

There would be a slight decrease~~also be an increase~~ in non-industrial jobs of 2,100~~9,500~~ in new building space of 2,375,000 square feet, slightly lower than Alternative 1 No Action; the development of non-industrial space has the potential to increase the risk of potential chemical exposures.

The increase in total housing units from 488 under ~~the No Action~~ Alternative 1 No Action to 493 under Alternative 2 would also mean slightly more residents living in the subareas who could be exposed to contamination. The increased development would result in increases in traffic, which would increase the potential for hazardous material spills related to traffic accidents.

All these impacts together are considered significant but avoidable with mitigation.

Impacts of Alternative 3

The impacts of Alternative 3 are similar to ~~as~~ those described above under Impacts Common to All Alternatives and under Impacts of Alternative 2. The zoning and development of residential properties and non-industrial mixed-use properties would require more restrictive cleanup levels under MTCA. This would have the positive benefit of removing more contamination to achieve lower cleanup levels and further reduce potential exposures.

Under Alternative 3, there would be slight increases in the number of industrial employees added in each of the subareas and Ballard and SODO/Stadium subareas would see the largest increases in number of housing units created.

The number of industrial jobs would increase above Alternative 1 No Action by ~~2~~4,300 in Ballard, 1,600 each in Interbay Dravus and ~~, 500 in~~ Interbay Smith Cove, ~~and~~ 6,500~~1,000~~ in SODO/Stadium, and ~~would decrease by 300~~3,100 in Georgetown.

Beyond Alternative 1 No Action, Alternative 3 would result in ~~2,870~~11,970,000 SF of industrial space, 4,~~725~~200,000 SF of non-industrial space. Additionally, 2,~~101~~ 195 housing units would be developed above Alternative 1 within the subareas. As with Alternative 2, the increases

industrial jobs added, and industrial and non-industrial space added under Alternative 3 would increase the risk of potential chemical exposures.

All these impacts together are considered significant but avoidable with mitigation.

Impacts of Alternative 4

The impacts of Alternative 4 are similar to ~~as~~ those described above under Impacts Common to All Alternatives and under Impacts of Alternative 3. The zoning and development of residential properties and non-industrial mixed-use properties would require more restrictive cleanup levels under MTCA. As with Alternative 3 this would have the positive benefit of removing more contamination to achieve lower cleanup levels and further reduce potential exposures.

Under Alternative 4, the number of industrial jobs would increase ~~by 100~~ above Alternative 1 No Action by a few thousand in each subarea~~in the Ballard and Interbay Dravus subareas, remain the same in the Interbay Smith Cove Subarea, and decrease by 300in the SODO/Stadium Subarea and 100 in the Georgetown/South Park Subarea~~. The total square footage of industrial space would decrease slightly, but an additional 500,000 SF of non-industrial space, and 3,686 housing units would be developed within the subareas. With the slight increases in the number of industrial employees working in the Ballard and Interbay Dravus subareas and increases in residents living in the developed housing units in the Ballard, Interbay Dravus, SODO/Stadium, and Georgetown/South Park subareas, potential exposures to contaminants or chemicals would increase due to the number of people working and living there.

All these impacts together are considered significant but avoidable with mitigation.

Impacts of the Preferred Alternative

Under the preferred alternative, increases in employment are expected to be similar to Alternative 2, while increases in housing are expected to be similar to alternatives 3 and 4. The impacts of the Preferred Alternative are similar to those described above under **Impacts Common to All Alternatives** and under Impacts of alternatives 3 and 4. More restrictive MTCA cleanup levels required for development of residential properties and non-industrial mixed-use properties would have the positive benefit of removing more contamination and further reducing potential exposures.

Under the Preferred Alternative, the number of industrial jobs would increase by 2,085 above Alternative 1 No Action in the Ballard Subarea, by 884 in Interbay Dravus, by 430 in Interbay Smith Cove, by 922 in SODO/Stadium, and 133 in the Georgetown/South Park Subarea. The total square footage of industrial space would increase by 3,117,176, and an additional 1,897,973 SF of non-industrial space, and 3,009 housing units would be developed within the subareas. With the slight increases in the number of industrial employees working in the subareas and increases in residents living in the developed housing units in the subareas,

potential exposures to contaminants or chemicals would increase due to the number of people working and living there.

All these impacts together are considered significant but avoidable with mitigation.

3.5.3 Mitigation Measures

Incorporated Plan Features

There are no incorporated plan features related to contamination.

Regulations & Commitments

All site development projects would be required to comply with applicable federal, state, and local regulations. The existing regulations described under *Current Policy and Regulatory Frameworks* in **Section 3.5.1 Affected Environment** establish standards for site characterization, cleanup of hazardous materials, and disposal of hazardous waste, as well as mitigation measures for development on or adjacent to historical landfills.

Site contamination and remediation are addressed at the time of development or redevelopment through existing processes under MTCA and other regulations. SEPA documentation submitted with project applications requires disclosure of known or suspected contamination of soil, soil vapor, groundwater, and sediment.

Development of known or suspected contaminated sites would require a Phase I Environmental Site Assessment per ASTM 1527 and potentially a Phase II Environmental Site Assessment (soil, sediment, and/or groundwater sampling) prior to construction-related activities, including demolition. Prior to renovation or demolition of structures, hazardous building material surveys (HBMS) would be conducted, and abatement of lead-based paints and asbestos, if present, would be required by the Puget Sound Clean Air Agency (PSCAA) and other agencies and laws. To the extent possible, the amount of contamination at a site with known contamination would be verified prior to construction, to minimize exposure to hazardous materials.

For contaminated sites with current industrial land use designations that maintain an industrial focus under new land use designations, cleanup will not likely happen until redevelopment occurs, or there is a property sale that triggers site characterization and remediation activities in order to secure project financing.

MTCA sets strict cleanup standards to ensure human health and the environment are not compromised. Washington's Dangerous Waste Regulations ensure that non-hazardous and hazardous solid wastes are properly managed from cradle to grave at industrial sites and other properties to prevent impacts to human health and the environment. Compliance with the regulations results in low levels of contamination after site cleanup and redevelopment.

The Seattle Department of Construction and Inspections and Seattle Fire Department regulate hazardous materials through the International Building Code and the International Fire Code. New development would need to meet the requirements prior to permits being issued for construction. Development and implementation of Construction Stormwater Pollution Prevention Plans would be required by the City to minimize the potential for release of hazardous materials to soil, groundwater, or surface water during construction.

Other Potential Mitigation Measures

During construction, the following measures would minimize potential impacts of accidental releases of hazardous material:

- Preparing a comprehensive contingency and hazardous substances management plan, a worker health and safety plan, a spill prevention control and countermeasures plan, and a Construction Stormwater Pollution Prevention Plan.
- Managing and disposing of hazardous or contaminated materials in accordance with applicable laws and regulations.
- Prior to commencing site-specific subsurface investigations of soils, the Duwamish tribe should be notified to ensure that an archaeologist can observe the work. Standard archaeological techniques should be used during excavation and drilling for the potential discovery and preservation of cultural and historical artifacts related to the indigenous tribes. Any evidence gathered should be presented and turned over to the Duwamish Tribe at the Duwamish Longhouse & Cultural Center.
- The City and partner agencies could improve coordination and improve the user experience for community members registering complaints or requesting information about enforcement related to contamination from sites or businesses.

3.5.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts would occur with the implementation of mitigation measures. Hazardous materials sources would not impede redevelopment. Federal, state, and local regulations are in place to require cleanup of sites and to promote spill prevention.