3.8 Environmental Health

This section describes how implementation of any of the action alternatives could affect the health of local receptors, including on-site workers, visitors, and nearby residents in the study area of the Alternative 1 and Alternative 2 sites, compared with each other and with the No Action Alternative. The section incorporates and relies on information relevant to environmental health from other sections, including air, vegetation, fish and wildlife, water, and noise. The section addresses potential environmental health impacts associated with exposure to contaminants in water, air toxics, dust, or odoriferous compounds; pests or other disease vectors; exposure to noise or vibration, and the risk of explosion from landfill gas. Potential impacts from releases of toxic or hazardous materials to the environment are discussed in Section 3.4, Hazardous Materials.

This environmental review determined that there would be no significant unavoidable adverse impacts to environmental health under any of the alternatives during construction or operation.

3.8.1 Regulatory Context

Local receptors, including on-site workers, visitors, and nearby residents could be impacted by hazardous materials, which include any substance that because of its quantity, concentration, or physical or chemical properties may pose a hazard to environmental health, either by itself or through interaction with other factors. Hazardous materials are classified based on the laws and regulations that define their characteristics and use by the EPA and Ecology. In addition, several other local agencies support the protection of human health and the environment. These agencies and their functions are described in the following sections.

Section 3.4.1. provides a summary of potentially applicable federal, state, and local applicable or relevant and appropriate requirements (ARARs) identified for cleanup actions and related to potential environmental health impacts from contaminated soil, surface water, groundwater, and air at sites within the study area.

3.8.1.1 Federal Regulations

Federal regulations governing human and environmental health are a complex and extensive set of rules and laws aimed at safeguarding the well-being of individuals and the environment.

3.8.1.1.1 Environmental Protection Agency

The EPA oversees regulations related to air and water quality, hazardous and solid waste disposal, chemical safety, and the protection of endangered species. The environmental laws administered by the EPA relevant to environmental health include:

- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
- Resource Conservation and Recovery Act (RCRA)
- The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- The Toxic Substance Control Act (TSCA)

- The Clean Water Act (CWA) including National Pollutant Discharge Elimination System (NPDES) permits:
    - A – Industrial Stormwater General Permit [ISGP] for stormwater discharged from facilities with industrial activities, and
    - B – Construction Stormwater General Permit (CSWGP) for stormwater discharged from construction sites.
- The Clean Air Act (CAA), including regulation of asbestos
- Safe Drinking Water Act (SDWA)
- Title III of the Superfund Amendments and Reauthorization Act (SARA) (commonly referred to as the Community Right-to-Know Act)

Through the CERCLA, RCRA, and TSCA laws, the EPA tracks hazardous waste sites and users of hazardous substances. CERCLA, also known as Superfund, addresses problems associated with releases to the environment at closed or abandoned waste sites. The EPA tracks these sites based on reported potential or actual releases to the environment, emergency response notifications, and cleanup progress at major release sites.

RCRA is concerned with the use of hazardous materials and the treatment, storage, and disposal of hazardous wastes and solid wastes, as well as cleanup of contaminated hazardous waste facilities. The EPA and Ecology track solid and hazardous waste management at individual facilities throughout the state. For hazardous/dangerous wastes, this is accomplished through notification and recordkeeping requirements that define the magnitude of waste generated (large or small quantity generators), the type of handling performed (e.g., treatment, storage, or disposal), or identify whether a release to the environment has occurred. For solid wastes, Ecology delegates oversight to local public health agencies for permitting of solid waste facilities but retains oversight to ensure that facilities meet design criteria established in state law.

Toxic substances are a subset of hazardous substances additionally regulated by the federal TSCA. The focus of TSCA is to evaluate human health and environmental effects of all new chemical substances and existing chemicals put to new uses. TSCA also stipulates additional controls governing disposal, beyond CERCLA and RCRA requirements, for specific toxic substances, such as polychlorinated biphenyls (PCBs). All TSCA sites are tracked by the EPA.

Federal regulations in 40 CFR 258.22 and state regulations in WAC 173-351-200(3) that copy them address disease vector control for municipal solid waste landfills. These regulations state:

> “Disease vector control.
>
> (a) Owners or operators of all MSWLF units must prevent or control on-site populations of disease vectors using techniques appropriate for the protection of human health and the environment.
>
> (b) For purposes of this section, disease vectors mean any rodents, flies, mosquitoes, or other animals, including insects, capable of transmitting disease to humans.”

3.8.1.1.2 OSHA

The Occupational Safety and Health Act of 1970 is a U.S. labor law governing the federal law of occupational health and safety in the private sector and federal government in the public sector. The main goal of the Act is to ensure that employers provide employees with an environment free from recognized hazards, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions (OSHA 2023). The Act created the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH).

NIOSH is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness.

3.8.1.2 State Regulations

3.8.1.2.1 Ecology

The Washington State Legislature and Ecology promulgate laws and regulations to enact or expand the federal environmental protection laws. Ecology enforces regulations that protect air, water, and land resources throughout the state, while working with local regulatory agencies such as county health departments and fire departments.

Ecology identifies and tracks hazardous substance sites, including petroleum releases, through the Model Toxics Control Act (MTCA) and the Toxics Cleanup Program. Any report of a release or suspected presence of a hazardous substance that may threaten human health or the environment requires that Ecology investigate the property. If an initial investigation confirms contamination is present and cleanup may be necessary, the property is entered on the Site Information System database.

Washington State Dangerous Waste Regulations implement the state Hazardous Waste Management Act and federal RCRA (as delegated by EPA) to designate dangerous and extremely hazardous wastes, as well as universal wastes (i.e., batteries, pesticides, mercury-containing equipment, lamps, and aerosol cans), and provide for surveillance and monitoring until designated wastes are detoxified, reclaimed, neutralized, or properly disposed of. This includes tracking facilities based on required registration of underground storage tanks and maintaining an inventory of solid waste facilities and landfill sites.

Ecology primarily enforces state regulations that govern solid waste handling and disposal. Ecology delegates oversight to local public health agencies for permitting of solid waste facilities but retains oversight to ensure that facilities meet design criteria established in state law. State law includes requirements relevant to environmental health, including for the operation and management of active landfills, closed landfills, transfer stations, waste handling procedures, facility design, special waste handling and disposal, and litter control.

3.8.1.2.2 Washington Department of Labor and Industries

The state Department of Labor and Industries (L&I) administers the Washington Industrial Safety and Health Act (WISHA). Through this Act, L&I has created health and safety regulations to protect workers.

The WISHA regulations include provisions for training, workplace safety, and chemical-specific issues (e.g., lead and asbestos).

3.8.1.3 Local Laws, Plans, and Policies

3.8.1.3.1 Puget Sound Clean Air Agency

PSCAA regulates air pollution sources in King, Pierce, Snohomish, and Kitsap counties. The agency is responsible for implementing the provisions of the federal Clean Air Act through enforcement of Regulations I, II, and III of PSCAA in the four counties. Hazardous materials may be discharged to the atmosphere subject to restrictions imposed by the agency on a case-by-case basis. Each discharge requires a permit obtained at the time that work is performed for the location specified. If asbestos-containing materials are confirmed to be present at the Houghton RTS through a Hazardous Building Material Survey (HBMS), a permit would be required for abatement (i.e., removal and off-site disposal) prior to demolishing the building.

3.8.1.3.2 King County

Public Health-Seattle & King County (Public Health) implements the King County Title 10 Solid Waste Regulations, which govern solid waste handling, storage, collection, transportation, treatment, use, processing, and disposal. The County regulates disposal and treatment facilities that accept hazardous *materials* as part of the solid waste stream; these solid waste regulations do not apply to management of hazardous or dangerous *wastes*. Public Health also sets waste acceptance criteria for facilities that treat petroleum-contaminated soil and other special wastes, and they provide oversight of the landfill monitoring program using criteria established in King County Board of Health Code Title 10 – Solid Waste Code (see below).

Title 10 King County Board of Health Solid Waste Code governs handling of solid waste at operating and closed landfills. Authority is established under RCW Chapter 70.05 and Washington State Administrative Code (WAC) 173-301 (repealed), Regulations Relating to Minimum Functional Standards for Solid Waste Handling, and WAC 173-351, Criteria for Municipal Solid Waste Landfills. In addition, Title 10 King County Board of Health Solid Waste Regulations and WAC 173-350, Solid Waste Handling Standards, govern the location, design, construction, operation, and closure of intermediate solid waste handling facilities such as the existing Houghton RTS and the proposed NERTS facility.

The KCWTD operates the local wastewater treatment facilities and much of the regional wastewater conveyance system that accept discharges to the sanitary sewer system. Hazardous materials may be discharged to the sanitary sewer only with verbal or written authorization from the KCWTD’s Industrial Waste Program.

The “Sustainable & Resilient Frontline Communities” section of the 2020 Strategic Climate Action Plan identifies climate preparedness actions that help King County government and communities focus on climate equity and community driven policy (King County 2021e). Focus Area 4 lists the priority action to “prioritize the identification of strategies, resources, and training opportunities in partnership with frontline communities to ensure residents, communities, and small businesses can effectively respond and recover after a climate and/or public health emergency event," which will help inform how the proposed facility will support and enhance environmental health and preparedness.

3.8.1.3.3 City of Kirkland and City of Woodinville

In addition to the other regulations cited in this section, the cities of Kirkland and Woodinville also regulate various aspects of public safety throughout their respective municipal codes. The City of Kirkland cites public health and safety regulations in KMC Chapters 1, 3, 7, 8, 11, 14, 15, 16, 19, 21, 22, 26, and 29. The City of Woodinville cites public health and safety regulations in WMC Chapters 1, 6, 8, 12, 15, and 21.

3.8.2 Affected Environment

The study of impacts on environmental health from implementation of any of the action alternatives considered potential exposure routes for chemical contaminants in air, water, soil, dust, waste, and other emissions or conditions such as noise, vectors, and litter, that affect environmental health risk or public safety.[11]

For a human health risk to exist, two components must be present: 1) hazard or toxicity--the potential for and degree of harm that a chemical, pathogen, or physical effect may inflict, and 2) an exposure or pathway--the degree to and manner in which humans come into contact with and absorb a chemical or pathogen, or come into contact with and are affected by a physical effect, e.g., noise or vibration. Risk defines the likelihood of experiencing harm from a chemical, pathogen, or physical effect. A description of the affected environment for environmental health risks requires identification of potential exposure pathways to potentially exposed populations.

The primary potential exposure pathways relevant to the alternative sites are surface water and groundwater; air contaminants, dust, and odor; pests and disease vectors (animals capable of transmitting disease to humans); and noise and vibration.[12] Other potential exposure pathways considered include dermal, inhalation, and ingestion from sources such as waste storage, litter and trash, and hazardous wastes.

The other sections in this EIS discuss the affected environment for elements of the environment that are relevant to this discussion of environmental health risks. Section 3.2, Air describes the affected environment related to the potential air pathways; Section 3.3, Water describes the affected environment related to potential surface water, groundwater, and stormwater pathways; Section 3.4, Hazardous Materials describes potential impacts from releases of toxic or hazardous materials to the environment; Section 3.6, Vegetation, Fish, and Wildlife describes the affected environment related to potential pest and

[11] An exposure route is the way a chemical enters an organism upon contact. The four primary exposure routes through which chemical contaminants can enter the bodies of humans include: ingestion, inhalation, ophthalmic absorption (e.g., absorption through the eyes), and dermal absorption (e.g., absorption through the skin).

[12] An exposure pathway is the link between a chemical of concern source and a receptor (such as humans, plants, or animals) that is eventually exposed to it. If an exposure pathway is incomplete, then there is no potential for exposure to the chemical of concern.

disease vectors; and Section 3.10, Noise describes the affected environment related to potential noise and vibration effects. Each of the pathways, and potentially exposed populations, is discussed below.

While those sections go on to discuss how the proposed alternatives may affect the environment, this section discusses how the proposed alternatives may affect environmental health by focusing on the potential impacts related to Alternative 1 and Alternative 2.

3.8.2.1 Study Area

The study area for this assessment encompasses areas where the project alternatives would have the potential to affect environmental health. The study area includes the project area and a quarter-mile beyond the project area boundary for the No Action Alternative and Alternative 1 site and Alternative 2 site (Figure 3.8-1 and Figure 3.8-2). In accordance with the American Society of Testing and Materials (ASTM) standard practice ASTM E1527-21 (ASTM 2021), a query was performed of all available Federal, State, and Local records pertaining to confirmed or suspected contaminated hazardous materials sites within a 1 mile search distance of the Alternative 1 and Alternative 2 sites (see Environmental Data Resources reports in Appendix A and Appendix B of the NERTS Hazardous Materials Assessment in Appendix C of this EIS). The study area boundary was then set at one quarter mile radius as an appropriate minimum radius for the environmental site assessments to identify current or historical conditions that could cause soil, groundwater, or other contamination on or adjacent to the sites. .

3.8.2.2 No Action Alternative and Alternative 1

3.8.2.2.1 Surface Water, Groundwater, and Leachate

Potential impacts of surface water and stormwater runoff would be related to potential contamination from the closed landfill or existing transfer station entering receiving waters without proper pretreatment or collection protocols. Potential impacts on humans could include heavy metals contamination; toxic organics contamination; oil and grease (petroleum hydrocarbon) contamination; and introduction of pathogens. Potential impacts of groundwater would be related to potential closed landfill contamination entering groundwater used for drinking water. Similar to surface water, potential impacts on humans could include exposure to heavy metals contamination, toxic organics contamination, oil and grease (petroleum hydrocarbon) contamination, and introduction of pathogens.

Populations that could potentially be affected by water from the No Action Alternative and Alternative 1 site are those using, or coming into contact with, surface water downstream of the closed landfill or existing transfer station. Management of surface water at the site is described in Section 3.3, Water, although generally, treatment is required before release from the site. All surface water that runs off the site must meet stormwater effluent criteria per all relevant regulations, before discharge to the City of Kirkland's stormwater system and ultimately to Yarrow Creek south of NE 60th Street. With this system of surface water controls that prevent exposure to waste, there is a minimal exposure pathway via surface water.

Section 3.3.2.2.4.1 discusses surface water quality for stormwater monitoring conducted at the existing transfer station per the requirements of the ISGP. Sampling is conducted at SW-S1 and SW-S2 in accordance with the ISGP and as defined in the SWPPP for Transfer Stations and Recycling Centers Covered Under the ISGP (King County 2020c). Sampling is conducted at least quarterly, provided there is flow. Sampling requirements for Houghton RTS are specified as pH, turbidity, oil sheen, total copper, and total zinc. As shown in Table 3.3-3, turbidity benchmarks have been exceeded in every quarter of 2023 and 2024 at SW-S1. Total copper and zinc were also exceeded in multiple quarters in both 2023 and 2024. Oil sheen was only observed once in Q4 of 2023, and the only exceedances at SW-S2 were for turbidity in Q1 2023, Q1 2024, and Q2 2024. These exceedances resulted in corrective actions as required under the ISGP and King County is currently evaluating additional improvements to stormwater BMPs at Houghton RTS to address these exceedances. Stormwater runoff from the hardscaped surfaces of the Houghton RTS is separated from the closed Houghton landfill runoff. Stormwater from the Houghton RTS' full truck parking and washdown areas, and all other contaminated stormwater including stormwater that encounters leachate from garbage, is collected separately from clean stormwater on site and conveyed through a wastewater collection system managed by the City of Kirkland before being treated at the King County South Treatment Plant. All of these discharges are regulated under the Houghton RTS industrial waste discharge permit (Permit #4423-02) under King County's Industrial Waste Program. The wastewater is sampled and analyzed in accordance with permit - potential exposures are to KCSWD sampling crew and wastewater crew during routine maintenance. Segregation of the contaminated stormwater is protective of public health and the environment.

Groundwater at the No Action Alternative and Alternative 1 site varies seasonally but flows generally toward the south and southwest, with the Regional Aquifer a more consistent southwesterly flow path. As refuse decomposes underground, the conditions in the subsurface change. These changes can lead to new chemicals being formed such as methane gas in landfill gas (LFG), which is a byproduct of the waste decomposition. Groundwater can be contaminated primarily by either leachate, water or other liquid that has been contaminated by dissolved or suspended materials due to contact with solid waste or gases, or by LFG migration from the closed Houghton landfill. LFG can contain trace amounts of toxic compounds that may be harmful to human health at high enough concentrations and exposures.

When landfills close and stop accepting waste, they go through a period of post-closure care where monitoring is conducted for these chemicals, and if necessary, mitigation measures are employed to prevent migration and ensure they do not pose a threat to human health or the environment.

Section 3.3.2.2.1.1 discusses groundwater quality at Houghton Landfill and a summary of groundwater quality exceedances that occurred between 2019 and 2024 is included in Table 3.3-2. Groundwater quality exceedances in the Perched Zone monitoring wells between 2019 and 2024 included pH, dissolved arsenic, total metals (arsenic, iron, manganese, and sodium), tetrachloroethene, and nitrate. Groundwater quality exceedances in the Regional Aquifer monitoring wells between 2019 and 2024 included pH, specific conductivity, total dissolved solids, dissolved arsenic, total metals (arsenic, iron, manganese, and sodium), and vinyl chloride.

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Legend

- Streams
- Road
- 0.25-mile Study Area Boundary
- Alternative Location

Future Development Areas

- Alternative 1A
- Alternative 1B

NWI Wetlands

- Riverine

Figure 3.8-1. Study Area for Evaluating Environmental Health in the Vicinity of the Action Alternative 1 Site.

N
PLAN

SCALE: 1" = 550'-0"

0 275 550
Feet

King County

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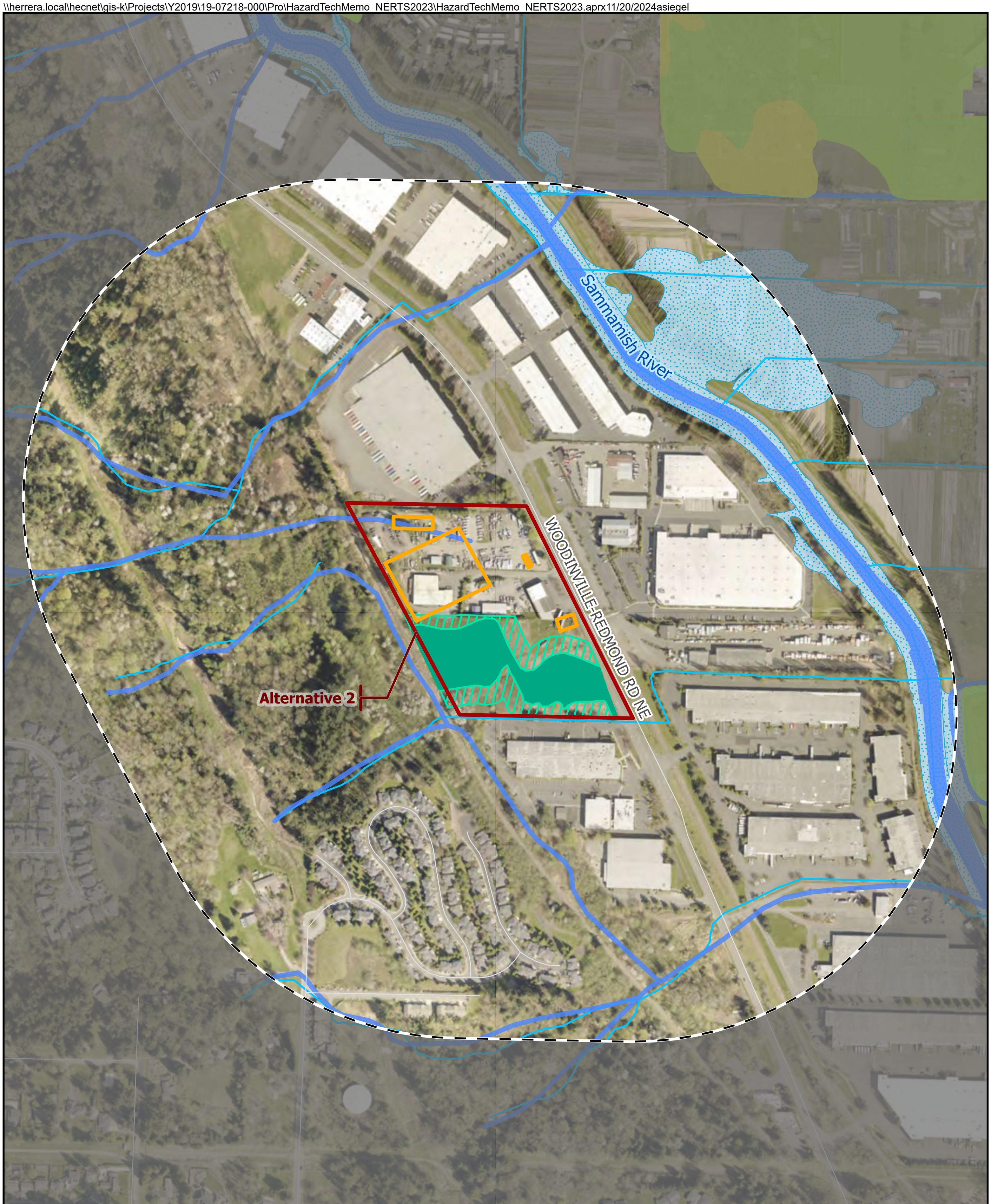

Legend
Streams
Road
0.25-mile Study Area Boundary
Alternative Location
Future Development Areas
Alternative 2
Delineated Wetlands
Wetland
79.8ft Wetland Buffer
NWI Wetlands
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Riverine
FEMA 100-Year Floodplain

Figure 3.8-2. Study Area for Evaluating Environmental Health in the Vicinity of the Action Alternative 2 Site.

PLAN

SCALE: 1" = 550'-0"

0 275 550 Feet

King County

Post-closure care would continue under all alternatives. Regulatory requirements for groundwater protection and monitoring, a description of the monitoring program, and groundwater quality (currently and under each action alternative) are addressed in Section 3.4, Hazardous Materials.

Populations that could potentially be affected by water from the No Action Alternative and Alternative 1 site are those using, or coming into contact with, groundwater downgradient (south or southwest) of the closed landfill or existing transfer station through use of contact with water from domestic water supply wells or irrigation wells. As described in Section 3.14, Public Services and Utilities, Kirkland's drinking water is supplied from sources in the Tolt and/or Cedar River watersheds. There are no known domestic water supply wells on the site or in the study area. Washington Department of Health does indicate that there are a variety of unknown wells in the study area. All measures in place to protect groundwater would be continued and/or expanded during the implementation of Alternative 1A or 1B. The combination of the closed Houghton landfill's site hydrogeology, LFG management system, and groundwater monitoring system would serve to largely eliminate or mitigate exposure pathways via groundwater.

Leachate potentially contains various biological and chemical contaminants that are either contained in the solid waste or formed during solid waste decomposition. There is no existing leachate collection system at the closed Houghton landfill. Leachate from the existing transfer station and the empty and loaded trailer parking area drains to a wet well, separately from the stormwater system, and is conveyed to a force main that pumps the liquid to the KCWTD for treatment and eventual discharge. In this environmental health risk context, leachate has limited exposure pathways.

3.8.2.2.2 Air Contaminants, Dust, and Odor

Air quality is potentially impacted by the existing closed Houghton landfill and operations at the existing Houghton RTS. As discussed in Section 3.2, air quality can be impacted through toxic or odorous compound emissions contained in landfill gas, construction equipment, or from transfer station operations such as collection and transfer truck emissions, and equipment use for waste loading, unloading, or storage. Populations potentially affected by air contamination are on-site workers, visitors, and nearby residents. With sufficient exposure, health effects from air toxics "…can include damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory and other health problems" (EPA 1999).

The Clean Air Act identifies 188 air toxics, also known as hazardous air pollutants (HAPs). EPA assessed and identified a subset of 21 HAPs emitted by mobile sources, which are set forth in an EPA final rule, *Control of Emissions of Hazardous Air Pollutants from Mobile Sources* (40 Federal Register 59, 80, 85, and 86). Washington State regulates more than 430 toxic air pollutants from commercial and industrial sources, including the 21 HAPs emitted by mobile sources. On-road mobile sources include automobiles and light-duty and heavy-duty trucks used for employee commutes and material transport. Non-road sources include various types of construction equipment. On-road and non-road mobile sources emit air toxics that are included in EPA's list of HAPs and Washington State toxic air pollutants that can cause cancer and other health risks.

Dust released during excavation of contaminated soils could pose a health risk to construction workers and nearby residents if mitigation measures are not implemented during construction. As described in Section 3.4 Hazardous Materials, in October 2024, a soil boring investigation was completed at the Kirkland site to better characterize soil and refuse in the immediate vicinity of the proposed transfer station Alternatives 1A and 1B. A total of 19 samples were submitted for laboratory analysis of a wide range of contaminants of interest (COIs). The only COIs that exceeded the Model Toxics Control Act (MTCA) Method A or Method C cleanup levels for industrial land use were gasoline-, and diesel-, and oil-range petroleum hydrocarbons in two soil samples from borings SB-1 and SB-2; DDT in one sample from SB-3; and cadmium in two samples from SB-3. With proper mitigation measures in place during construction, there is a low risk of dust with COIs being released to the environment. Refer to Section 3.4 and the Hazardous Materials Assessment technical memorandum in Appendix C for additional details.

As described in Section 3.2, Air, humans vary tremendously in their ability to perceive odor and in their physical and psychological reaction to odor. In general, odor is not indicative of toxicity; however, unpleasant odors may be perceived as an indication of potential health risks from chemicals causing unpleasant odors. Persistent odors can have physiological effects, including eye and respiratory irritation or breathing problems. Similar to the description above, with sufficient exposure, odorous chemicals also have the potential to cause adverse health effects. Although there are no ambient air quality standards for odorous compounds, odor thresholds have been defined as described in 3.2, Air.

3.8.2.2.3 Pest and Disease Vectors

As a putrescible material (a material that contains organics and is liable to decay), MSW can attract pest species and/or animals such as rodents, insects such as flies and mosquitoes, birds, and other animals or organisms that are potential disease vectors that can transmit infectious pathogens between humans, or from animals to humans. Potential impacts of pest and disease vectors at the No Action Alternative and Action Alternative 1 site would be related to potential exposure of on-site workers, site visitors, or neighbors to pest species and/or animals that are typically controlled to protect human health and the environment.

Federal regulations in 40 CFR 258.22 and state regulations in WAC 173-351-200(3) that are based on them address disease vector control for municipal solid waste landfills. These regulations state:

> "Disease vector control.
>
> Owners or operators of all MSWLF units must prevent or control on-site populations of disease vectors using techniques appropriate for the protection of human health and the environment.
>
> For purposes of this chapter, disease vectors mean any rodents, flies, mosquitoes, or other animals, including insects, capable of transmitting disease to humans."

The Houghton RTS Operating Plan specifies that vectors such as rodents, flies, and mosquitoes must be controlled to protect human health and the environment. The Operating Plan requires that when specific problems are identified, physical evidence and the surrounding area are examined to help identify the source and address the problem at the source. The specific resolution depends on the source and will vary:

- For rodents:
  - On a regular basis, a contracted vendor places and maintains bait stations and traps.
  - If rodent activity is observed between visits by the contractor, an additional visit by the contractor may be arranged.
  - Feeding of animals, such as birds or squirrels, is prohibited. All food kept on site is to be kept in sealed containers.
  - Rodent habitat is discouraged by control of vegetation and litter.
- For birds:
  - Transfer trailer loads are covered with heavy tarp lids to minimize attraction.
- For insects:
  - Upon request, a contracted vendor sprays for insects.
  - Containers of stagnant water are not allowed.

Best management practices currently employed to control vectors would continue or be enhanced during implementation of the No Action Alternative or Alternative 1.

3.8.2.2.4 Noise and Vibration

Potential impacts of noise and vibration at the No Action Alternative and Alternative 1 site would be related to potential exposure of on-site workers, site visitors, or neighbors to noise levels associated with health effects indicated by federal noise guidelines and peer-reviewed literature. The most common physiological effects caused by persistent exposure to environmental noise in humans consist of:

- hearing loss
- sleep disturbance or difficulty falling asleep
- increased blood pressure or heart rate
- headaches
- fatigue
- stomach ulcers
- vertigo

Psychological effects that can be induced or exacerbated by exposure to noise can include the following (EPA 1974 & 1978; Suter 1991; Berglund 1999; Seligman 2001; WHO 2002, 2009):

- speech interference
- irritation
- anxiety

Exposure to ground-borne vibrations is not associated with specific human health effects but can result in strong irritation and annoyance, and potentially sleep disruption, to exposed receptors such as nearby residents.

The primary sources of noise at the No Action Alternative and Alternative 1 site are waste collection and transfer vehicles. Waste unloading and loading, including consolidation of waste on site, may be heard off site. In addition, back-up safety alarms on vehicles and machinery may be heard at times off site. Potential sources of vibration at the No Action Alternative and Alternative 1 site are primarily from site operations, i.e., tipping of trailers and moving waste.

As described in Section 3.10, Kirkland Municipal Code (KMC 115.95) establishes limits on the levels and durations of noise crossing property boundaries. Allowable maximum sound levels depend on the land-use zoning designations of both the noise source and the receiving property.

No specific regulatory standards for vibration apply to the No Action Alternative and Alternative 1 site. However, the Federal Transit Administration has established guidelines for vibration impact criteria based on a building's use and the frequency of events causing vibration.

3.8.2.2.5 Waste Storage

Potential impacts of waste storage at the No Action Alternative and Alternative 1 site would be related to potential exposure of on-site workers, site visitors, or neighbors to odors, emissions, or contaminated leakage associated with storage of solid waste in trailers prior to removal off site to Cedar Hills Regional Landfill (CHRLF); from temporary storage of hazardous waste illegally disposed at the facility; or from spill cleanup residues.

The Houghton RTS Operating Plan directs that loaded trailers be parked with lids closed in the loaded trailer parking section on the west side of the Empty and Loaded Trailer Parking Area. As discussed in Section 2.3.3.5, KCSWD launched a year-long pilot for a primarily five-day waste hauling and tipping schedule at CHRLF. With the five-day waste hauling operation (see Section 2.2.3.5), some full transfer trailers (fully enclosed) are now being stored on site. A non-legally binding 2005 MOU between KCSWD and the City of Kirkland addressed a number of operation issues at the existing Houghton RTS, including a unique plan whereby the Division would be limited on the ability to store waste trailers overnight at the Houghton RTS. The intent was to minimize the risk of odor issues until other odor mitigation projects could be completed. King County has completed the odor mitigation improvements agreed to in the MOU.

KCSWD anticipates that zero to approximately fourteen trailers could be stored on site during the pilot program. Fully enclosed trailers would be stored as they accumulate over the weekend and would be cleared out on a "first in, first out" basis by early- to mid-following week. Removal of all full trailers also may be precluded by unforeseen and unpreventable situations such as, but not limited to, emergency roadway conditions, equipment breakdown, and inclement weather conditions. If a trailer is partially full when the station closes, it is pulled from the loading area and parked with lids closed; it is returned to the loading area to complete loading when the station reopens.

In addition, at the end of each day the standard BMP is to clear the tipping floor of all solid waste, and for Alternatives 1A and 1B, store waste overnight inside the sealed compactor, if necessary. When a full trailer-load is accumulated in the compactor, it is then ejected into a trailer and the doors closed.

For trailers requiring immediate attention due to odors or other issues, the trailer is removed as soon as possible, and the Special Waste Unit is contacted to supervise waste handling if necessary. Leaking trailers are allowed to drain on site before being hauled to the CHRLF where they are dumped, then parked for repair by shop personnel. Trailers with lids that will not close are held at the station to be repaired prior to hauling.

The Houghton RTS Operating Plan also calls for any hazardous waste encountered to be transported from the transfer station to a treatment, storage, or disposal facility (TSDF) as soon as possible. This generally requires at least two weeks for staff to submit samples and obtain laboratory analytical data; classify the waste; and obtain approval from the TSDF. Under certain emergency situations where leaving the waste material in place poses an unreasonable risk, the transportation contractor can obtain authorization to transport hazardous waste to the TSDF within one day of generation (King County 2010).

The Houghton RTS Operating Plan also has procedures for identifying and removing unacceptable or prohibited waste that is inadvertently accepted. Prohibited waste is recovered and removed from the waste stream and set aside in a suitable container for characterization until it can be properly disposed offsite at a licensed TSD facility. Transfer station operators perform waste screening at the scale house as transfer station visitors enter the site and educate people about prohibited wastes that cannot be accepted.

Operations at a new NERTS facility would be similar, or enhanced to reduce the number or duration of loaded trailers stored on site at any given time.

3.8.2.2.6 Litter and Trash

Potential impacts of litter and trash at the No Action Alternative and Alternative 1 site would be related to potential exposure of neighbors and the public to the public nuisance of uncontained litter and trash from existing or future recycling and transfer station operations, on and surrounding the site; and exposure of on-site workers, site visitors, or neighbors to pest species and/or animals such as rodents, insects such as flies and mosquitoes, birds, and other animals or organisms that are attracted to uncontrolled litter and trash on and surrounding the site.

The King County Title 10 Solid Waste Code regulates control of litter and municipal waste that may create public nuisances in KCC 10.04.040 and 10.04.080.

The Houghton RTS Operating Plan also calls for the following to control litter:

- The transfer building and litter fencing within the site provide barriers against scattering litter; the perimeter fence acts as a barrier to keep litter contained within the site.
- Transfer Station Operators pick up litter within the site daily and respond to weather and heavy wind conditions that may spread litter.

- The Transfer Station Operators pick up recycling area litter other than that which is inaccessible when the recycling collection container is in place. The recyclables hauler performs site cleanup under the recycling collection containers at the time of switching containers.
- The litter control crew picks up litter outside the site fences and on access roads each weekday.
- Any load that is not secured in a manner that would prevent material from leaving the vehicle while it is in motion is subject to an additional fee.
- Transfer trailer loads are covered with heavy tarp lids to minimize litter and potential for birds to enter the trailer and spread litter.

Baseball fields at Taylor Fields on top of the closed Houghton landfill are managed by Kirkland American Little League. Their end-of-game procedures require teams and spectators to pick up all trash inside dugouts and dispose of it. Any solid waste generated during the course of closed landfill operations and maintenance is disposed of by KCSWD staff and contractors at the Houghton RTS, or at approved disposal facilities if not acceptable by SWD.

3.8.2.2.7 Hazardous Wastes

Construction workers, nearby residents, and wildlife could experience exposures to fugitive dust; unpleasant odors; contaminants in soil, sediment, or groundwater; and hazardous materials encountered during construction, or used during construction, if a spill were to occur. The potential for environmental and human health impacts from hazardous waste on the No Action Alternative and Alternative 1 site is discussed in Section 3.4, Hazardous Materials.

3.8.2.3 Alternative 2

3.8.2.3.1 Surface Water and Groundwater

Potential impacts of surface water and stormwater runoff would be related to potential transfer station contamination entering receiving waters without proper pretreatment or collection protocols. Potential impacts on humans could include heavy metals contamination; toxic organics contamination; oil and grease (petroleum hydrocarbon) contamination; and introduction of pathogens.

Populations that could potentially be affected by surface water from the Alternative 2 site are those using, or coming into contact with, surface water in the areas where trucks and trailers are parked. Management of surface water at the site is described in Section 3.3, Water, although generally, surface water would be managed by either stormwater or sanitary sewer systems requiring treatment before release from the site. All surface water that runs off the site must meet stormwater effluent criteria per all relevant regulations, before discharge to the City of Woodinville's stormwater system and ultimately to an unnamed tributary and then to the Sammamish River, which is located within the quarter-mile study area. All areas inside the transfer station that come in contact with refuse, as well as all paved areas that underlie waste transfer trucks and trailer parking include infrastructure that collects wash water and other runoff and discharge to the sanitary sewer for eventual treatment and disposal by KCWTD. All With this system of surface water controls that prevent exposure to waste, there is a minimal exposure pathway via surface water.

Potential impacts of groundwater would be related to potential transfer station contamination entering groundwater used for drinking water. Potential impacts on humans could include exposure to heavy metals contamination, toxic organics contamination, oil and grease (petroleum hydrocarbon) contamination, and introduction of pathogens. The approximate direction of groundwater flow in the study area and at the Alternative 2 site is generally to the east-southeast.

Populations that could potentially be affected by groundwater beneath the Alternative 2 site are those using, or coming into contact with, groundwater downgradient (east-southeast) of the proposed recycling and transfer station through use of or contact with water from domestic water supply wells or irrigation wells. As described in Section 3.14, Public Services and Utilities, the Woodinville Water District does have several wells in the aquifer underlying the city, but the District obtains all municipal water supplies from Seattle Public Utilities. The Alternative 2 site is not located within the limits of the Cross Valley Sole Source Aquifer or within the one-year or five-year travel time for any wellhead protection area. There is one water well on the site, but its use is unknown; there are approximately 137 water wells in the study area, the majority of which are registered as temporary dewatering wells used during construction and site redevelopment (Ecology 2023). Washington Department of Health does indicate that there are a variety of unknown wells in the study area. With the system of surface water controls to prevent exposure to groundwater, and with the limited use of the local aquifer for drinking water, there is a minimal exposure pathway via groundwater.

3.8.2.3.2 Air Toxics, Dust, and Odor

Air quality in the study area is potentially impacted by the operations at the proposed recycling and transfer station. As discussed in Section 3.2, air quality can be impacted through toxic or odorous compound emissions from construction equipment, transfer station operations such as collection and transfer truck emissions, and equipment use for waste loading, unloading, or storage. Populations potentially affected by air contamination are on-site workers, visitors, nearby residents, and nearby outdoor workers including agricultural and migrant workers. With sufficient exposure, health effects from air toxics "…can include damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory and other health problems" (EPA 1999).

As described in Section 3.8.2.2.2, WAC 173-460 addresses the control of toxic air pollutants, which would apply to the Alternative 2 site. Also as described in Section 3.8.2.2.2 and Section 3.2, Air, potential implications for odor from the Alternative 2 site are similar to those for the No Action and Alternative 1 site.

3.8.2.3.3 Pest and Disease Vectors

As discussed in Section 3.8.2.2.3, MSW can attract animals, including insects, rodents, and birds that are potential disease vectors. Potential impacts of pest and disease vectors at the Action Alternative 2 site would be related to potential exposure of on-site workers, site visitors, or neighbors to pest species and/or animals that are controlled to protect human health and the environment. A portion of the Alternative 2 site is currently used as a staging location for portable toilets and restroom trailers, which may attract vectors such as rodents and insects. A portion of the Alternative 2 site is currently vacant and may provide natural habitat for rodents and insects but is not a significant non-natural source or attractant for these vectors.

A new NERTS operating plan would specify measures to protect human health and the environment from vectors attracted to MSW. Best management practices currently employed to control vectors at other King County stations would continue or be enhanced and reflect the unique operating environment and conditions for the new NERTS facility at the Alternative 2 site.

3.8.2.3.4 Noise and Vibration

As discussed in Section 3.8.2.2.4, potential impacts of noise and vibration at the Alternative 2 site would be related to potential exposure of on-site workers, site visitors, or neighbors to noise levels associated with health effects indicated by federal noise guidelines and peer-reviewed literature.

The primary sources of noise at the Alternative 2 site are currently from the commercial businesses that operate there, and the truck and vehicular traffic that support the businesses. Some noise may also be associated with on-site manufacturing and operational functions, although these are inside buildings and noise is unlikely to travel far. The primary sources of noise at the Alternative 2 site with the NERTS facility would be the same as those for the No Action and Alternative 1 site: waste collection and transfer vehicles; waste unloading and loading, including consolidation of waste on site; operation of balers for cardboard; dropping off empty dumpsters and roll-off bins; and back-up safety alarms on vehicles and machinery may be heard off site. Potential sources of vibration at the Alternative 2 site would be primarily from site operations: tipping of trailers and moving waste.

As described in Section 3.10, Woodinville Code (WCC 8.08) establishes limits on the levels and durations of noise crossing property boundaries. Allowable maximum sound levels depend on the land-use zoning designations of both the noise source and the receiving property.

As with the No Action and Alternative 1 site, no specific regulatory standards for vibration apply to the Alternative 2 site.

3.8.2.3.5 Waste Storage

Potential impacts of waste storage at the Alternative 2 site would be related to potential exposure of on-site workers, site visitors, or neighbors to odors, emissions, or contaminated leakage associated with storage of solid waste in trailers prior to removal to CHRLF; from temporary storage of hazardous waste illegally disposed of at the facility; or from spill cleanup residues. A BMP would be implemented at the end of each day to clear the tipping floor of all solid waste, and to store waste overnight inside the sealed compactor, if necessary. When a full trailer load is accumulated in the compactor, it would then be ejected into a trailer and the doors closed.

The NERTS facility at the Alternative 2 site would also have an MRW facility. Operations would be similar to existing protocols at other County-operated MRW facilities to manage small quantities of hazardous waste.

Operations at a new NERTS facility would be similar to existing protocols used at the existing Houghton RTS to manage empty and loaded trailers, but enhanced to reduce the number or duration of loaded trailers on site at any given time; or by providing a storage location that minimizes release of odors or liquids to the outside environment.

3.8.2.3.6 Litter and Trash

Like the Alternative 1 site, potential impacts of litter and trash at the Alternative 2 site would be related to potential exposure of neighbors and the public to the public nuisance of uncontained litter and trash from existing or future recycling and transfer station operations, on and surrounding the site; and exposure of on-site workers, site visitors, or neighbors to pest species and/or animals such as rodents, insects such as flies and mosquitoes, birds, and other animals or organisms that are attracted to uncontrolled litter and trash on and surrounding the site.

A new NERTS operating plan would specify measures to protect human health and the environment from vectors attracted to MSW, and for litter and trash control. Best management practices currently employed to control vectors at other King County stations would continue or be enhanced and reflect the unique operating environment and conditions for the new NERTS facility at the Alternative 2 site.

3.8.2.3.7 Hazardous Wastes

Construction workers, nearby residents, and wildlife could experience exposures to fugitive dust; unpleasant odors; contaminants in soil, sediment, or groundwater; and hazardous materials encountered during construction or used during construction, if a spill were to occur. The potential for environmental and human health impacts from hazardous waste on the Alternative 2 site is discussed in Section 3.4, Hazardous Materials.

3.8.3 Environmental Impacts

3.8.3.1 No Action Alternative

This section describes the potential environmental health impacts from the No Action Alternative located at the existing Houghton RTS property at 11724 NE 60th Street. Under the No Action Alternative, the existing Houghton RTS would continue to operate and no new NERTS facility would be developed. The existing Houghton RTS would continue to operate as currently permitted, and the existing closed Houghton landfill would remain in its current condition. KCSWD would continue to conduct operations and maintenance activities on the aging transfer station infrastructure as needed to effectively carry out waste disposal needs for the northeast area of King County, strive to meet permit requirements and upgrade facilities where possible, maintain landfill environmental control systems, and minimize negative impacts on environmental health.

3.8.3.1.1 Impacts from Construction

Under the No Action Alternative, a new transfer station would not be built. Direct construction related environmental health impacts would not occur and no land uses would be modified. No additional impacts to environmental health would be anticipated from construction at or in the study area of the No Action Alternative site.

3.8.3.1.2 Impacts from Operation

Under the No Action Alternative, existing conditions for environmental health at the existing Houghton RTS would remain the same or worsen. Continued increases in population and waste disposal volumes would put growing stress on the existing facility, which is already aged, under-sized, and does not meet current King County RTS level of service standards (SWD 2007). Increasing precipitation and more intense storms resulting from climate change in the future could create drainage conditions for existing on-site stormwater or sanitary sewer infrastructure that result in contamination entering receiving waters without proper pretreatment. This could result in human, plant, and animal exposures to contaminants. However, continued compliance with the applicable permits, plans, and manuals, and upgrades to the management system, if necessary, are expected to control both exposure and toxicity and make these direct operational impacts negligible. No operational environmental health impacts are expected on groundwater from the existing Houghton RTS.

Under the No Action Alternative, increasing volumes of waste for disposal and lack of adequate operational space and waste compaction at the existing facility could result in several potential environmental health impacts. The No Action Alternative would result in the greatest increase in transfer truck trips of all of the alternatives, with a resulting increase in vehicle emissions, and potential exposure to air toxics by workers, visitors, and neighbors. King County is preparing to replace diesel-fueled solid waste transfer trucks, maintenance vehicles, and other equipment with all-electric or hybrid electric vehicles and equipment, which would eliminate these impacts.

Greater waste volumes in an undersized facility could also result in an increase in odors to be periodically evident in the community surrounding the Houghton RTS. Although unpleasant odors can be a nuisance, the detection of odor is not a reliable indicator of toxicity and identifiable adverse health effects. With the five-day waste hauling operation (see Section 2.2.3.5), some full transfer trailers (fully enclosed) would be stored on site under the No Action Alternative. KCSWD anticipates that zero to approximately fourteen trailers could be stored on site under the No Action Alternative. The five-day hauling operation will increase KCSWD's hauling capacity during the weekdays enabling the stations to generally be cleared out prior to the weekends. Fully enclosed trailers would be stored as they accumulate over the weekend and would be cleared out on a "first in, first out" basis by early- to mid-following week. Waste received on weekends is primarily received from self-haul customers and is mostly "dry," containing fewer organic materials. This reduces the risks of odors. KCSWD has committed to an odor monitoring and response plan while the operation is in its pilot phase. Long term odor monitoring and response could also be considered under the No Action Alternative. With these operational changes, it is unlikely odiferous compounds would be detected at concentrations that would be sufficient to cause any adverse health effect, and significant adverse environmental health impacts from odor under the No Action Alternative would be unlikely.

Greater waste volumes, particularly with limited operational space, may lead to longer waste storage time and increases in uncontrolled litter, and could result in an increase in rodent, fly, mosquito, or other disease vector problems at the site and nearby under the No Action Alternative. With operational changes to ensure rapid removal of waste from the RTS and transfer to disposal, these impacts would be reduced.

Continued operation of the existing open transfer building under the No Action Alternative could allow exposure of neighbors and wildlife to occasional noise from operations. The current average daytime and nighttime ambient noise levels measured at the property line for the existing Houghton RTS were below the Washington/Kirkland maximum permissible noise levels for Class A receivers (see Section 3.10, Noise). Noise regulations developed by the state and adopted by the City of Kirkland are designed to be protective of human health. These regulations are used to determine whether the measured and projected noise levels generated by a source are likely to cause health effects or irritation/annoyance to nearby residents, visitors to the sites, or other exposed receptors. Therefore, environmental health impacts from noise under the No Action Alternative are less than significant.

Construction activities associated with normal operation and maintenance of the Houghton RTS may involve repair of buildings or support structures used at the facility. Because of the potential hazards associated with the Alternative 1A site (see Section 3.4, Hazardous Materials), impacts could include unintended exposure of maintenance workers to contaminants and hazardous materials. The following measures are regularly followed to reduce these potential impacts:

- Staff or contractors are required to develop a site-specific Health and Safety Plan that details potential hazards on the site, including from potential contamination and hazardous materials; documents an Emergency Response Plan for injury or exposure; identifies required training, equipment, and responsibilities of staff; identifies procedures for alerting Kirkland response agencies and personnel; and identifies emergency routes to nearby hospitals. Additional detail is provided in Section 3.4, Hazardous Materials.
- Coordination with Kirkland Fire Department to minimize the possibility of service disruptions during maintenance.
- Coordination with the Eastside Hazardous Materials Response Team (EHMT) to minimize the possibility of service disruptions during maintenance.
- Coordination with local medical facilities to minimize the possibility of service disruptions during maintenance.
- Working with all emergency service providers to ensure that reliable emergency access is maintained at the site and to emergency facilities, and to inform them of maintenance schedules and any potential disruptions.

Under the No Action Alternative, existing conditions for environmental health in the areas immediately adjacent to the existing Houghton RTS would remain the same. Most areas of the closed landfill are covered with grassy vegetation over an approximately one-foot-thick to greater than four-foot-thick imported soil cap that was placed in multiple phases, or pavement, which limits human and wildlife exposure to the low concentrations of contaminants detected in surface soils (see Section 3.4, Hazardous Materials).

3.8.3.2 Impacts Common to All Action Alternatives

3.8.3.2.1 Impacts from Construction

3.8.3.2.1.1. Direct Impacts

Construction of any of the action alternatives would have impacts similar to that of any large construction project and includes impacts to individual workers at the construction site and to the surrounding population. Environmental health impacts would primarily be associated with general construction activities and operation of vehicles and heavy equipment; excavation, handling, and off-site disposal or reburial of contaminated soils; and management of stormwater and dewatering water. Construction workers, nearby residents, and wildlife could experience exposures to vehicle emissions; fugitive dust; unpleasant odors; contaminants in soil, sediment, or groundwater; criteria pollutants, air contaminants, and greenhouse gases (GHG); hazardous materials if encountered during construction; and hazardous materials used during construction, if a spill were to occur.

Construction of any of the action alternatives could produce temporary impacts on stormwater quality from runoff and erosion during construction clearing and grading and development of the site. Section 3.3, Water, details the requirements, methods, and BMPs for reducing stormwater pollution. Section 3.3 also discusses the potential for leaks and spills from heavy equipment and the likelihood that a Spill Prevention Control and Countermeasures (SPCC) plan would be developed to minimize these risks. A Health and Safety Plan, a contaminated media contingency plan, and other measures would be implemented prior to construction to minimize the potential for contaminants to enter surface waters (see also Section 3.4, Hazardous Materials). Negligible stormwater or water quality impacts are anticipated during construction when available BMPs are implemented. These methods would also serve to reduce exposure to contaminants in stormwater and surface water by on-site workers and wildlife, and those living, working, and recreating downstream of the action alternative sites.

Under all of the action alternatives, construction workers, nearby residents, and wildlife could experience the direct impact of being exposed to fugitive dust (very small particles of soil or sediment suspended in the air) if dust is released during excavation, grading, stockpiling, hauling of soils, or demolition. These environmental health impacts are considered less than significant because BMPs would be implemented in accordance with the approved project plans and construction specifications. Examples of these BMPs include controlling and minimizing dust using water spray, street sweeping, and temporary covers over stockpiles; and covering soils loaded into trucks before trucks exit the sites.

Under all of the action alternatives, construction workers, nearby residents and outside workers, and wildlife could experience the direct impact of being exposed to criteria pollutants, air toxics, and greenhouse gases (GHGs) from the construction and demolition activities associated with the proposed action. Project construction would have the potential to emit criteria pollutants, air toxics and GHGs from the combustion of fossil fuels in construction equipment and vehicles. The County would implement BMPs and emission-control measures specified by Ecology and PSCAA guidelines and regulations to ensure that concentrations of air pollutants are minimized during the construction phase. Implementation of BMPs, such as using energy-efficient construction equipment and limiting the equipment and vehicle idling time during construction, would reduce criteria pollutants, air toxics, and GHG emissions, and as a result reduce environmental health impacts to less than significant. See Section 3.2, Air and Appendix A, Air Quality Assessment.

Also under all action alternatives, construction workers, neighbors, plants, wildlife, soil, and surface water could be exposed to hazardous materials used during construction (such as fuels, lubricants, solvents, and paint) if released via accidental spills to water or land. The extent of the impacts from a release into surface water at the site would depend upon several factors, including the type and quantity of the material released, location of the release, physical and biological features of the environment, and the sensitivity of various species to the hazardous material. However, these potentially significant impacts would be minimized through compliance with applicable regulations, implementation of BMPs, and SPCC plan to prevent or control hazardous material exposures, which would be required to obtain project permits.

A beneficial result of encountering hazardous materials during construction at any of the action alternatives would be that contamination that otherwise would have remained in place, and potentially migrated, would be discovered, and addressed by the proposed project.

The construction of the new NERTS facility under any of the action alternatives would lead to some habitat disruption and loss, affecting local plants and wildlife. These impacts are discussed in detail in Section 3.6, Vegetation, Fish, and Wildlife.

None of the action alternatives are likely to have direct significant adverse impacts on environmental health during construction.

3.8.3.2.1.2. Indirect Impacts

The limited impacts on environmental health from the construction of the NERTS facility at the action alternative sites are unlikely to lead to additional projects or actions that would result in additional indirect environmental health impacts.

3.8.3.2.2 Impacts from Operation

3.8.3.2.2.1. Direct Impacts

For any of the action alternatives, the proposed action would have beneficial direct effects on the stormwater system at each site. The project would reduce stormwater runoff quality and quantity impacts, as all runoff would be detained and treated to current standards and routed to discharge points with more reliable infrastructure, which would be an improvement compared with the No Action Alternative. In accordance with applicable regulatory requirements and current stormwater management standards, the project would provide new storm drainage conveyance, treatment, and flow-control facilities to replace any such facilities that may need to be removed during project construction. Stormwater from full truck parking and washdown areas, and all other contaminated stormwater including stormwater that encounters leachate from garbage, would be collected separately from clean stormwater on site and conveyed through a wastewater collection system to a King County wastewater treatment plant. These features would be incorporated into the project design. With installation of these systems, there would be no reason to expect any environmental health impacts related to potential contamination of surface water or groundwater from NERTS facility operations under any of the alternatives.

Under all of the alternatives, workers, nearby residents, and wildlife could experience the direct impact of being exposed to fugitive dust from waste unloading and loading operations. These environmental health impacts are considered less than significant because of the design features of modern transfer stations, including enclosed transfer buildings, modern mechanical exhaust ventilation systems with filtration media, and misting (or equivalent technology)/dust suppression systems. In addition, transfer station operations also could include controlling and minimizing dust using wheel wash or washout areas and street sweeping.

All of the alternatives, including the No Action Alternative, would result in an increase in transfer truck trips due to expected population growth and a resulting increase in waste disposed in the northeast area of King County. However, while increasing truck trips will result in a short-term increase in vehicle emissions from diesel exhaust pending upgrades to the truck fleet, and potential exposure to air toxics by workers, visitors, and neighbors, the action alternatives could result in fewer of these emissions compared with the No Action Alternative due to the use of waste compactors. Impacts from King County emissions would be eliminated when King County replaces diesel-fueled solid waste transfer trucks, maintenance vehicles, and other equipment with all-electric or hybrid electric vehicles and equipment. These actions are required under King County Ordinance 19052 and reinforced by King County's 2020 SCAP (Focus Area 2. Transportation and Land Use, County Operations, Alternative Fuel Vehicles), which outlines goals and priority short term actions consistent with this legislation (King County 2021e). All action alternatives would offer sufficient queuing space for customers, which would reduce idling time, motor vehicle emissions, and potential exposures (prior to switching to hybrid equipment), compared with the No Action Alternative.

All action alternatives would minimize exposure of workers, customers, and neighbors to odors from waste handling operations, compared with the No Action Alternative. KCSWD would design an enclosed transfer building with additional features to control odor impacts, including modern mechanical exhaust ventilation systems with filtration media, closable access doorways, misting systems (or equivalent technology), and tightly-sealing waste containers compatible with waste compactors. Significant environmental health impacts from odor would be unlikely under the action alternatives. With the five-day waste hauling operation (see Section 2.2.3.5), some full transfer trailers (fully enclosed) would be stored on site under all action alternatives. KCSWD anticipates that zero to approximately seven trailers could be stored on site under all action alternatives. The five-day hauling operation will increase KCSWD's hauling capacity during the weekdays enabling the stations to generally be cleared out prior to the weekends. Fully enclosed trailers would be stored as they accumulate over the weekend and would be cleared out on a "first in, first out" basis by early- to mid-following week. Waste received on weekends is primarily received from self-haul customers and is mostly "dry," containing fewer organic materials. This reduces the risks of odors. KCSWD has committed to an odor monitoring and response plan while the operation is in its pilot phase. Long term odor monitoring and response could also be considered under the No Action Alternative. With these operational changes, it is unlikely odiferous compounds would be detected at concentrations that would be sufficient to cause any adverse health effect, and significant adverse environmental health impacts from odor under the action alternatives would be unlikely.

Operation of the NERTS facility under any of the action alternatives would require KCSWD to handle and manage a wide variety of putrescible materials, which could attract a variety of pest species such as flies, mosquitoes, and other insects, as well as rodents, birds, and other pests. These organisms in turn may become potential disease vectors for humans or wildlife. Washington State Solid Waste Handling Standards Chapter 173-350-310 WAC addresses vector wildlife that may be a nuisance and requires operators to demonstrate how waste will be managed to control vectors.

Vector wildlife control for rodents, insects, and nuisance birds would be implemented by KCSWD based on regulatory procedures and industry BMPs and could include rat poison and other substances, if required. The enclosed transfer building, concrete tipping floor, concrete walls, and use of BMPs would minimize any environmental health impacts from the action alternatives.

All action alternatives would also minimize impacts related to exposure of workers, customers, and neighbors to noise from waste handling operations, compared with the No Action Alternative. The design features mentioned above in relation to odor would also limit propagation of noise, resulting in less than significant environmental health impacts related to noise. KCSWD would operate the new NERTS facility within state and city maximum permissible noise levels. Vibrations caused by machinery, equipment, or trucks operating on site of the action alternatives are not likely to be noticeable to nearby residents living outside of the site boundary and would be unlikely to result in a significant risk to environmental health under any of the alternatives.

All action alternatives would have reduced impacts on environmental health due to waste storage compared with the No Action Alternative. Many of the design features would serve to reduce exposure to stored waste, including the enclosed transfer building, mechanical exhaust ventilation and misting systems (or equivalent technology), tightly-sealing enclosed transfer containers, separate and reserved load-out for organics, more load-out bays, and stormwater collection to sanitary sewer for waste handling and trailer areas. The larger and modern facility would also allow for operational efficiencies that could reduce the need for waste storage, including using more load-out bays and greater truck payloads. All waste delivered to the transfer station would be removed or placed in an enclosed container by the end of each workday, and the tipping floor would be washed daily.

None of the action alternatives are anticipated to cause or create environmental health impacts through litter. Tightly-sealing, enclosed containers would be used for the transfer of solid waste, reducing the potential for spillage of waste and litter on site. Enhanced perimeter landscaping and fencing would be installed to trap any litter, and weekly litter clean-up crews would be assigned to patrol and clean up any escaped litter on site and in the neighborhood. KCSWD would work with the local neighbors to monitor litter conditions and adapt cleanup frequency to meet mutually agreeable standards. Driving with an unsecured load is illegal under Washington State law and loads transported on every vehicle driven or moved on any public road are required to be secured (RCW 46.61.655). King County charges a $25 fee to any driver arriving at an RTS or the landfill with an unsecured load under King County Code 10.12.040. With these BMPs, exposure to litter and impacts on environmental health would be less than significant.

Also under all action alternatives, workers, neighbors, plants, wildlife, soil, and surface water could be exposed to hazardous materials such as fuels, lubricants, solvents, and paint used during operation of the facility if released via accidental spills to water or land. The extent of the impacts from a release into surface water at the site would depend upon several factors, including the type and quantity of the material released, location of the release, physical and biological features of the environment, and the sensitivity of various species to the hazardous material. However, these potentially significant impacts would be rendered insignificant by compliance with applicable regulations, implementation of BMPs, and an SPCC plan to prevent or control hazardous material exposures.

All action alternatives may include installation of underground or above-ground fuel tanks for fueling on-site equipment. This would result in some risk of propane, gasoline, or diesel fuel spills/leakage during fueling and use of equipment. An SPCC plan will be implemented to minimize impacts to soil, surface water, and groundwater as a result of fuel spills during construction and operation. These measures will reduce potential environmental health impacts to less than significant.

In addition, to reduce the potential for improper disposal of hazardous materials and reduce the risks of exposure, modern facilities have an enhanced capacity to conduct screening of incoming wastes through automated camera and detection systems. KCSWD would continue to enforce the Waste Acceptance Rule (PUT 716(PR)). It is anticipated that special wastes, which may be accepted on a case-by-case basis with a Waste Clearance Decision from the Special Waste Unit, would continue to be handled in the same manner as they are at present. Under WAC 173-303-040, special waste means any state-regulated dangerous waste that is solid only (nonliquid, nonaqueous, nongaseous), that is: corrosive waste (WAC 173-303-090 (6)(b)(ii)), toxic waste that has Category D toxicity (WAC 173-303-100(5)), PCB waste (WAC 173-303-9904 under State Sources), or persistent waste that is not extremely hazardous waste (WAC 173-303-100(6)). Any solid waste that is regulated by the EPA as hazardous waste cannot be a special waste. Special wastes pose a relatively low hazard to human health and the environment, and no impacts to environmental health would be anticipated.

3.8.3.2.2.2. Indirect Impacts

The limited and beneficial impacts on environmental health from the operation of the NERTS facility at the action alternative sites are unlikely to lead to additional projects or actions that would result in indirect environmental impacts.

The addition of recycling capacity at the NERTS facility under all action alternatives could indirectly increase the volume of materials collected for recycling, with corresponding beneficial reductions in impacts related to raw material extraction, energy use, carbon emissions, and other environmental pollution. These beneficial impacts could enhance environmental health within King County.

3.8.3.2.3 Cumulative Impacts

Prior growth in both study areas has contributed to impacts on environmental health, including ongoing growth in traffic and transportation infrastructure and residential, commercial, and industrial development. Historic agricultural, industrial, and community practices often contributed to environmental health impacts with improper handling and disposal of hazardous wastes, solid wastes, stormwater, and air quality, while the advent of modern environmental regulations has reduced those practices and impacts and helped to reclaim lands and resources for productive use and environmental restoration. New developments have likely reduced levels of potential hazardous materials and pollutants in the vicinity of the action alternatives due to investigations, remediation, ongoing monitoring, and regulatory oversight.

There are numerous reasonably foreseeable future projects in the vicinity of both study areas (see Appendix I). Therefore, there appears to be a potential for cumulative impacts on environmental health associated with the action alternatives. However, as described in this section, SWD's proposed facility has a number of features that would minimize or eliminate environmental health impacts at the sites and in the study areas and reduce environmental health impacts on the public and the environment. As a result, cumulative impacts on environmental health would be minimal and less than significant.

3.8.3.3 Alternative 1A

This section describes impacts unique to Alternative 1A, along with applicable mitigation measures. Alternative 1A would construct the new NERTS facility at the Houghton RTS property at 11724 NE 60th Street in Kirkland after the existing transfer station building is closed and demolished.

3.8.3.3.1 Impacts from Construction

3.8.3.3.1.1. Direct Impacts

All project impacts, regulatory requirements, and cumulative impacts related to environmental health under Alternative 1A would include those described previously in Section 3.8.3.2, Impacts Common to All Action Alternatives.

Because of the potential hazards associated with the Alternative 1A site (see Section 3.4, Hazardous Materials), construction impacts could include unintended exposure of construction workers and potentially neighbors to contaminants and hazardous materials. Pathways for exposure could include surface water and airborne emissions in the form of landfill gas. In addition, the development footprint for Alternative 1A extends over the known extent of waste in the closed Houghton landfill, which could lead to the direct short-term impact of construction workers being potentially exposed to hazardous materials. Any waste encountered would require excavation, removal, and reburial off site at the CHRLF or other permitted facility.

Because the exact nature of the waste that would be removed is unknown, KCSWD would implement a waste- screening protocol during removal to determine waste characteristics and proper disposal requirements. Waste excavation activities have the potential to generate both odors and fugitive dust.

Because construction on the site would be located on the closed landfill, activities that break the existing surface have the potential to release odors from the buried material. During construction, KCSWD would tarp or otherwise cover all exposed areas of the closed landfill every day to mitigate for potential odors and fugitive gas emissions, until permanent cover and environmental controls are constructed.

Dust emissions from the construction of Alternative 1A could be slightly higher or similar to the emissions from Alternative 1B depending on the demolition of the existing transfer station and the construction of the TBD building (see Section 3.2). However, with the BMPs in place both alternatives would comply with the PSCAA requirements listed in Section 3.2, Air.

Exposures by direct contact or incidental ingestion would be minimized by implementing mitigation measures outlined in the required project Health and Safety Plan, Stormwater Pollution Prevention Plan, and other regulatory compliance documents. For example, personal protective equipment applicable to the hazard level of the waste encountered would be required for all construction workers. These potentially significant impacts would be reduced to less than significant by implementing appropriate BMPs that would be required in accordance with the approved project plans, construction specifications, and permits. The following BMPs would be implemented to minimize impacts to environmental health:

- Contractor will be required to develop a site-specific Health and Safety Plan that (1) details potential hazards on the Alternative 1A site, including from potential contamination and hazardous materials; (2) documents an Emergency Response Plan for injury or exposure; (3) identifies required training, equipment, and responsibilities of construction staff; (4) identifies procedures for alerting local response agencies and personnel; and (5) identifies emergency routes to nearby hospitals. Additional detail is provided in Section 3.4, Hazardous Materials.
- Coordinate with Kirkland Fire Department to minimize the possibility of service disruptions during construction.
- Coordinate with EHMT to minimize the possibility of service disruptions during construction.
- Coordinate with local medical facilities to minimize the possibility of service disruptions during construction.
- Work with all emergency service providers to ensure that reliable emergency access is maintained at the site and to emergency facilities, and to inform them of construction schedules and any potential disruptions.

See Section 3.4, Hazardous Materials, for a detailed discussion of potential impacts from hazardous materials under Alternative 1A.

In areas of disturbance at the existing closed Houghton landfill where waste remains after construction of the NERTS facility, KCSWD would be required to install a new landfill cap, leachate collection, stormwater management, and landfill gas collection and treatment systems that meet WAC 173-351-500, the most recent and rigorous standards for landfill closure and post-closure care. These systems would be integrated with the existing systems for areas of the landfill that were undisturbed and closed under WAC 173-301/King County Title 10 (WAC 173-301 was repealed in 1985 when WAC 173-304 went into effect). For those landfills that closed before 1985, the effective date of WAC 173-304, the applicable regulations are those of the Code of the King County Board of Health, Title 10. If redevelopment occurs under Alternative 1A or Alternative 1B, Public Health would be consulted to determine if a solid waste landfill permit is required. Installation of these systems would improve overall closed landfill environmental controls and reduce potential exposure of workers, residents, and visitors to potential environmental health effects associated with the closed landfill.

3.8.3.3.1.2. Indirect Impacts

Under Alternative 1A, some increase in illegal dumping could be experienced compared to Alternative 1B and Alternative 2, if customers who travel to the closed facility do not choose to go to the recommended alternate disposal site. King County would provide advanced notice of closure, recommendations for alternative disposal locations, and notice of incentives for proper disposal and penalties for illegal dumping, as appropriate. With the mitigation proposed for the impacts anticipated, no significant indirect impacts on existing environmental health during construction are expected under Alternative 1A.

3.8.3.3.2 Impacts from Operation

3.8.3.3.2.1. Direct Impacts

All project impacts, regulatory requirements, and cumulative impacts related to environmental health under Alternative 1A would include those described previously in Section 3.8.3.2, Impacts Common to All Action Alternatives.

Under Alternative 1A, the proposed action would reduce stormwater runoff quality and quantity impacts, as all runoff would be treated and detained to current standards and routed to discharge points with new, more reliable infrastructure. It is anticipated that new storm drainage conveyance, treatment, and flow control facilities would address the primary target constituents for treatment at the existing Houghton RTS, including turbidity, copper, and zinc (see the Water Resources Assessment, Appendix B). These improvements would have direct beneficial effects on Yarrow Creek and Lake Washington, downstream of the site. The project would be an improvement compared with the No Action Alternative and produce similar outcomes to Alternative 1B and Alternative 2.

These stormwater management practices and implementation of BMPs at the Alternative 1A site would ensure stormwater discharged from the site to receiving surface waters does not pose a risk to human or ecological health under Alternative 1A. As a result, no significant environmental health impacts related to potential contamination of surface water would result from NERTS facility operations.

As discussed in Section 3.4, Hazardous Materials, the closed Houghton landfill adjacent to the Alternative 1A potential development footprint has a landfill cap of one to four feet of compacted soil, a series of HDPE or PVC liner "patches" around LFG extraction wells, a stormwater management system, and a landfill gas collection and treatment system, but no bottom liner. Despite the confirmation of contaminants in groundwater at the site, including VOCs (both non-halogenated and halogenated organics such as 1,1,1-trichloroethane), arsenic and other heavy metals, these environmental control systems are all contributing to reducing impacts on groundwater, and human and environmental exposure to contaminants that may exist in groundwater. After construction of the new NERTS facility, including the new components of environmental controls systems on disturbed landfill areas and the improved surface water control discussed above, exposure to groundwater contaminants would be reduced and operation of the new RTS would be unlikely to contribute to environmental health impacts related to groundwater.

As described in Section 3.2, Air, and in the revised NERTS Air Quality Assessment in Appendix A, MOVES4 modeling shows that total MSATs, and most individual MSATs, are lower under Alternative 1A in 2029 compared to existing conditions; and all MSATs are lower by 2040 compared with existing conditions. Three MSATs, acetaldehyde, ethyl benzene, and formaldehyde increase slightly from existing conditions under Alternative 1A by 2029 but then decrease well below existing conditions by 2040. Total MSATs, and all individual MSATs, are lower under Alternative 1A in 2029 and 2040 compared to the No Action Alternative, with Alternative 1 having slightly higher MSAT emissions than Alternative 2 in both years.

As discussed previously, operation of Alternative 1A would have reduced impacts on air emissions, fugitive dust, odor, pest and disease vectors, noise, waste storage, and litter compared with the No Action Alternative. This includes impacts on nearby local receptors such as residences, daycare/schools, and park users and wildlife. Most or all of these outcomes would result from the combination of modern design features of the new NERTS facility, structural BMPs, regulatory requirements, proposed mitigations, and KCSWD operational practices, previously outlined. As a result, no significant impacts would occur on environmental health for these pathways under Alternative 1A.

3.8.3.3.2.2. Indirect Impacts

Under Alternative 1A, with the mitigation proposed for the impacts anticipated, no significant indirect impacts on existing environmental health are expected during operation.

3.8.3.3.3 Cumulative Impacts

Cumulative impacts under Alternative 1A would be largely similar to those described in Section 3.8.3.2.3. In particular, past industrial use of the Alternative 1 site as a landfill contributed to environmental health impacts with improper handling and disposal of hazardous wastes, solid wastes, stormwater, and air quality. The closure of the landfill and installation of environmental control systems to reduce impacts on environmental health has helped to reclaim lands and resources for productive use and environmental restoration.

In the Alternative 1A study area, there are numerous reasonably foreseeable future projects in the vicinity (see Appendix I). Therefore, there appears to be a potential for cumulative impacts on environmental health associated with the action alternatives. However, SWD’s proposed facility has a number of features, described in this section, that would minimize or eliminate environmental health impacts at the site and in the study area and reduce environmental health impacts on the public and the environment. As a result, cumulative impacts on environmental health for Alternative 1A would be minimal and less than significant.

3.8.3.4 Alternative 1B

This section describes impacts unique to Alternative 1B, along with applicable mitigation measures. Alternative 1B would construct the new NERTS facility at the existing Houghton RTS property at 11724 NE 60th Street in Kirkland while the existing transfer station building is open and operating. The old transfer station building would then be closed and repurposed or replaced after the new station is open.

3.8.3.4.1 Impacts from Construction

3.8.3.4.1.1. Direct Impacts

All project impacts, regulatory requirements, and cumulative impacts related to environmental health under Alternative 1B would include those described previously in Section 3.8.3.2.1, Impacts Common to All Action Alternatives.

Construction impacts associated with Alternative 1B are expected to be largely similar to those for Alternative 1A. Impacts on surface and groundwater, air emissions, fugitive dust, odor, pest and disease vectors, noise, waste storage, and litter would be the same as Alternative 1A and with similar comparisons to the No Action Alternative. Impacts on surface and groundwater, air emissions, fugitive dust, noise, and litter would be similar to Alternative 2. Impacts on odor, pest and disease vectors, and waste storage could be slightly higher compared with Alternative 2.

If the existing transfer building is repurposed instead of demolished under Alternative 1B, there could be less exposure of construction workers and neighbors to fugitive dust during construction compared with Alternative 1A. If the existing transfer building is demolished instead of repurposed, there could be about the same exposure as with Alternative 1A. KCSWD would also inspect all structures slated for demolition and conduct a hazardous building materials survey to identify any hazards in the buildings, such as lead-based paint and asbestos. If those materials are detected, lead paint and asbestos abatement would be conducted prior to demolition to minimize risks to workers. KCSWD and contractors would also use BMPs to minimize dust, as described in Section 3.8.3.2.1.1. None of these impacts on environmental health would be considered significant.

Construction of Alternative 1B would be subject to the same potential hazards associated with the Alternative 1A site (see Section 3.4, Hazardous Materials), from unintended exposure of construction workers and potentially neighbors to contaminants and hazardous materials. The hazards would be mitigated with similar measures. For Alternative 1B, the development footprint over the known extent of waste in the closed Houghton landfill is larger than under Alternative 1A. This could lead to marginally higher direct, short-term risks of construction workers being potentially exposed to hazardous materials and odors. As with Alternative 1A, waste encountered would require excavation, removal, and reburial off site at the CHRLF or other permitted facility, and exposures by direct contact or incidental ingestion would be minimized by implementing the mitigation measures outlined in the discussion of Alternative 1A, Section 3.8.3.3.1.1. Alternative 1B would also result in new landfill cap, leachate collection, stormwater management, and landfill gas collection and treatment systems that meet WAC 173-351-500 in areas of disturbance at the existing closed Houghton landfill where waste remains after construction, but over a larger area than Alternative 1A. The reduced exposure to environmental health effects would be similar to Alternative 1A.

3.8.3.4.1.2. Indirect Impacts

Under Alternative 1B, with the mitigation proposed for the impacts anticipated, no significant indirect impacts on existing environmental health are expected during construction.

3.8.3.4.2 Impacts from Operation

3.8.3.4.2.1. Direct Impacts

All project impacts, regulatory requirements, and cumulative impacts related to environmental health under Alternative 1B would include those described previously in Section 3.8.3.2.2, Impacts Common to All Action Alternatives.

Operational impacts associated with Alternative 1B are expected to be largely similar to those for Alternative 1A. Impacts on surface and groundwater, air emissions, fugitive dust, odor, pest and disease vectors, noise, waste storage, and litter would be the same as Alternative 1A and with similar comparisons with the No Action Alternative. As described in Section 3.2, Air, and in the NERTS Air Quality Assessment in Appendix A, MOVES4 modeling shows that total MSATs, and most individual MSATs, are lower under Alternative 1B in 2029 compared to existing conditions; and all MSATs are lower by 2040 compared to existing conditions. Three MSATs, acetaldehyde, ethyl benzene, and formaldehyde increase slightly from existing conditions under Alternative 1B by 2029 but then decrease well below existing conditions by 2040. Total MSATs, and all individual MSATs, are lower under Alternative 1B in 2029 and 2040 compared with the No Action Alternative, with Alternative 1 having slightly higher MSAT emissions than Alternative 2 in both years.

Under Alternative 1B, the larger site development footprint provides a larger buffer between the operations and the neighbors to the west than under Alternative 1A. This buffer allows for additional dilution of any odors or dust emissions before they reach the site property line.

As with Alternative 1A, Alternative 1B would include the new portions of landfill cap, leachate collection, stormwater management, and landfill gas collection and treatment systems, but over a larger area. Similarly, exposure to groundwater contaminants would be reduced and operation of the new RTS would be unlikely to contribute to environmental health impacts related to groundwater.

As discussed previously, operation of Alternative 1B also would have reduced impacts on air emissions, fugitive dust, odor, pest and disease vectors, noise, waste storage, and litter compared with the No Action Alternative and similar to Alternative 1A. Most or all of these outcomes would result from the combination of modern design features of the new NERTS facility, structural BMPs, regulatory requirements, proposed mitigations, and KCSWD operational practices, previously outlined. As a result, no significant impacts would occur on environmental health for these pathways under Alternative 1B.

3.8.3.4.2.2. Indirect Impacts

Under Alternative 1B, with the mitigation proposed for the impacts anticipated, no significant indirect impacts are expected on environmental health during operation.

3.8.3.4.3 Cumulative Impacts

Cumulative impacts on environmental health associated with Alternative 1B are expected to be largely similar to those for Alternative 1A and similar in comparison with the No Action Alternative.

3.8.3.5 Alternative 2

This section describes impacts unique to Alternative 2, along with applicable mitigation measures. Alternative 2 would construct the new NERTS facility on six tax parcels in the 15000 block of Woodinville-Redmond Road NE in Woodinville.

3.8.3.5.1 Impacts from Construction

3.8.3.5.1.1. Direct Impacts

All project impacts, regulatory requirements, and cumulative impacts related to environmental health under Alternative 2 would include those described previously in Section 3.8.3.2.1, Impacts Common to All Action Alternatives.

Like Alternative 1, construction of Alternative 2 would have impacts similar to that of any large construction project and includes impacts to individual workers at the construction site and to the surrounding population. Environmental health impacts would primarily be associated with general construction activities and operation of vehicles and heavy equipment; excavation, handling, and off-site disposal or reburial of contaminated soils if any are discovered; and management of stormwater and dewatering water. Construction workers, nearby residents, and wildlife could experience exposures to fugitive dust; contaminants in soil, sediment, or groundwater; hazardous materials if encountered during construction, and hazardous materials used during construction if a spill were to occur.

Construction of Alternative 2 could produce temporary effects at a level similar to Alternative 1 on stormwater quality from runoff and erosion during construction clearing and grading and development of the site. During construction, BMPs described in Section 3.3, Water and Section 3.5, Wetlands, would be implemented to protect on-site wetlands and downstream tributaries to the Sammamish River. These methods would serve to also reduce exposure to contaminants in stormwater and surface water by on-site workers and wildlife, and those working and recreating downstream of the Alternative 2 site.

The Alternative 2 site itself was identified as a potential hazardous material release site due to three USTs that were removed from the site in 1996, although no release was reported (Northwest Utilities, Inc. [EDR map ID A3]). Section 3.4, Hazardous Materials and Appendix C, revised NERTS Hazardous Materials Assessment, describe the potential for encountering contaminated soils or groundwater associated with the three USTs, contaminated groundwater from three nearby sites to north and northeast, and for encountering contaminated soil or groundwater associated with leaks or spills from historic site operations. Temporary increases in human, plant, and animal exposures to contaminants via these exposure pathways may occur during site redevelopment, but would be minimized using the project controls in plans and specifications described in Section 3.4, Hazardous Materials and Appendix C. The potential for these hazards is likely less than under Alternative 1 and the No Action Alternative because current uses of the site are not known to have produced contamination on site and are generally not considered to be pollution-generating industries, and because portions of the site are undeveloped.

The construction of the new NERTS facility under Alternative 2 could lead to impacts on wetlands or wetlands buffers on the southern portion of the site, and to disruption of birds and wildlife that use existing vegetation on the undeveloped portion of the site for feeding, nesting, or migration. These impacts are discussed in detail in Section 3.5, Wetlands and Section 3.6, Vegetation, Fish, and Wildlife.

None of the action alternatives are likely to have direct significant adverse impacts on environmental health during construction.

3.8.3.5.1.2. Indirect Impacts

The limited impacts on environmental health from the construction of the NERTS facility at the Alternative 2 site is unlikely to lead to additional projects or actions that would result in additional indirect environmental health impacts.

3.8.3.5.2 Impacts from Operation

3.8.3.5.2.1. Direct Impacts

All project impacts, regulatory requirements, and cumulative impacts related to environmental health under Alternative 2 would include those described previously in Section 3.8.3.2.2, Impacts Common to All Action Alternatives.

Under Alternative 2, privately-owned storm drains and underground vaults on the site collect stormwater runoff from the developed portions of the site and direct it into a grass swale that runs along the eastern border of the site parallel to Woodinville-Redmond Road NE (see Section 3.3, Water). The grass swale then directs flow southeastward and off site into a storm drain network owned by WSDOT and maintained by the City of Woodinville. The proposed action would reduce stormwater runoff quality and quantity impacts, as all runoff would be treated and detained to current standards and routed to discharge points with new or more reliable infrastructure. These improvements would minimize impacts for on-site wetlands and tributaries to the Sammamish River downstream of the site and would be an improvement compared with stormwater system on the developed portions of the site. These stormwater management practices and implementation of BMPs at the Alternative 2 site would ensure stormwater discharged from the site to receiving surface waters does not pose a risk to human or ecological health under Alternative 2. As a result, no significant environmental health impacts related to potential contamination of surface water would result from NERTS facility operations.

The Alternative 1 site in Kirkland is located 22 miles from the CHRLF. The Alternative 2 site in Woodinville is located 29 miles from CHRLF and therefore has a trip distance about one-third longer than the Alternative 1 site. As shown in Appendix M, NERTS Fuel Use Assessment, the addition of a compactor would reduce the total number of transfer hauling trips for the same amount of waste resulting in lower fuel use and emissions for King County transfer trailers over the long-term compared with the No Action Alternative. Because the trip distance from the proposed transfer station to Cedar Hills Regional Landfill for Alternative 2 is longer than for Alternatives 1A and 1B, the fuel use and emissions for King County transfer trailers has a greater reduction for Alternative 1 than for Alternative 2. Overall fuel use follows the same pattern, with all action alternatives using less fuel in 2029 and 2040 compared with the No Action Alternative in each year, with Alternative 2 using slightly more than Alternative 1 in each year. Emissions comparisons between alternatives are shown in Section 3.2. Alternative 2 would produce new vehicle trips of all types in the study area due to the presence of the new facility when compared with the absence of a facility under the No Action Alternative. All employee and transfer trailer trips would be new to the Alternative 2 study area. Some waste transport trips already exist on the roadway network in and around the Alternative 2 study area. While local emissions contributed by the traffic associated with the new RTS would be new to the area, their marginal contributions to the existing emissions and exposure levels from background levels of traffic in the area would mean their impact on environmental health would be less than significant.

As described in Section 3.2, Air, and in the NERTS Air Quality Assessment in Appendix A, MOVES4 modeling shows that total MSATs, and all individual MSATs, are lower under Alternative 2 in 2029 and 2040 compared to existing conditions. Total MSATs, and all individual MSATs, are lower under Alternative 2 in 2029 and 2040 compared to the No Action Alternative, with Alternative 2 having slightly lower MSAT emissions than Alternative 1 in both years.

The NERTS facility at the Alternative 2 site would also have an MRW facility and could result in exposure of on-site workers, site visitors, or neighbors to small quantity hazardous waste spills or uncontrolled emissions. Operations at a new NERTS facility would be similar to existing protocols at other County-operated MRW facilities to manage small quantities of hazardous waste. These include:

- Conducting weekly facility inspections and maintaining inspection reports, with needed items addressed in a timely manner.
- Ensuring that containers holding MRW remain closed except when adding or removing waste in order to prevent a release of MRW through evaporation or spillage if overturned.
- Ensuring all containers have visible and legible labels or markings that identify the type of MRW.
- Abiding by the waste acceptance policy as described in the current, approved operating plan and WAC 173-350-360 of the MRW handling regulation.
- Ensuring all workers are wearing appropriate Personal Protective Equipment.
- Preparing and submitting an annual report to Public Health and Ecology.
- Following specific MRW facility permit requirements in compliance with WAC 173-350-330. (SWD Factoria 2020)

SWD is part of the King County Hazardous Waste Management Program and would operate the NERTS MRW Drop-Off Service in coordination with that program and the Wastemobile mobile collection program. Transport of hazardous waste from the transfer station to a treatment, storage, or disposal facility (TSDF) would occur as soon as possible.

As discussed previously, operation of Alternative 2 also would have minimal impacts on fugitive dust, odor, pest and disease vectors, noise, waste storage, and litter. Most or all of these outcomes would result from the combination of modern design features of the new NERTS facility, structural BMPs, regulatory requirements, proposed mitigations, and KCSWD operational practices, previously outlined. As a result, no significant impacts on environmental health would occur for these pathways under Alternative 2.

3.8.3.5.2.2. Indirect Impacts

Under Alternative 2, with the mitigation proposed for the impacts anticipated, no significant indirect impacts on existing environmental health during operation are expected.

3.8.3.5.3 Cumulative Impacts

Cumulative impacts under Alternative 1A are largely similar to those described in Section 3.8.3.2.3. In the Alternative 2 study area, there are numerous reasonably foreseeable future projects in the vicinity (see Appendix I). Therefore, there appears to be a potential for cumulative impacts on environmental health associated with the action alternatives. However, SWD's proposed facility has a number of features, described in this section, that would minimize or eliminate environmental health impacts at the site and in the study area and reduce environmental health impacts on the public and the environment. As a result, cumulative impacts on environmental health for Alternative 1A would be minimal and less than significant.

3.8.4 Mitigation Measures

Many of the applicable mitigation measures for environmental health impacts are discussed throughout Section 3.8.3, including compliance with all regulations, permits, plans, and authorizations issued for the project.

3.8.4.1.1 For Construction

1. For all action alternatives, the project would meet the requirements of the Construction Stormwater General Permit issued by Ecology through the NPDES permit program of the federal Clean Water Act. In addition, to prevent the spread of contaminants at the sites during construction, all dewatering water and contaminated stormwater would be captured in tanks, pretreated, and tested prior to disposal to the sanitary sewer. The pretreatment and testing program would ensure compliance with the requirements of the Major Discharge Authorization permit issued by King County for sanitary sewer discharges under their Industrial Waste Program.
2. With proper control techniques (as stipulated in approved project plans, construction specifications, and permits), any contaminated soils encountered would be removed and properly disposed off-site at facilities licensed to accept the waste, and contaminated stormwater and/or excavation

dewatering water encountered during construction would be pretreated on-site before being disposed to the sanitary sewer. By using licensed carriers and vehicles equipped for the task, there would be limited risk of public exposure during excavated waste removal and transport off site. On-site treatment of stormwater and dewatering water would employ techniques engineered for the specific contaminants of concern.

3. Public health and safety measures such as temporary fencing to prevent access to construction areas and dust controls would be implemented to minimize exposure to contaminants through both airborne and direct contact routes. The contractor's Health and Safety Plan would also identify measures to ensure construction worker safety, outline emergency medical procedures, and specify reporting requirements.
4. To prevent the release of contaminants to surface waters during waste excavation, the contractor would employ shoring and excavation techniques to ensure waste and contaminated soil and groundwater cannot escape the work area. Closed landfill waste would be excavated in discreet cells to isolate the active work area and prevent migration of contaminants into areas already excavated and backfilled with clean fill material.
5. The project design documents would include specifications for control of contractor activities associated with the use of hazardous materials such as fuels, lubricants, and solvents that may be used on the job. Management of these items and the activities associated with them would be prescribed in the required SPCC plan and actions would be reviewed by inspectors in the field.
6. Throughout the construction process, management of hazardous materials would be tracked carefully and reported appropriately. Project planning would accommodate regulatory agency requirements as well as off-site disposal or treatment facility requirements.
7. In accordance with the requirements of the Construction Stormwater General Permit, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP). This plan would specify a range of BMPs that would be implemented to prevent discharge of contaminated or sediment-laden stormwater off-site, control dust, and prevent tracking of sediment onto nearby streets and also specify other measures to ensure permit compliance. The SWPPP, along with project construction specifications and frequent site inspections by qualified personnel, would help to ensure that contaminants are not released beyond the work area into the environment.
8. For Alternative 1A, KCSWD would provide advanced notice of existing Houghton RTS closure, recommendations for alternative disposal locations within the King County solid waste system and notice of incentives for proper disposal and penalties for illegal dumping, as appropriate.

3.8.4.1.2 For Operations

1. SWD would consider inclusion of a public meeting/learning space at the new facility to facilitate environmental education, including on the subject of waste management, recycling, and protection of environmental health.

2. SWD would continue to implement best management and engineering practices in designing, operating, and maintaining closed landfill environmental control systems, including disease vector control and the landfill gas, leachate, stormwater, and cover systems.
3. SWD would provide all residents within a quarter-mile of the selected alternative notification of major activities and has a 24-hour hotline available for residents to report concerns. KCSWD has emergency response plans to cover RTS operations. Additional detail is provided in Section 3.4, Hazardous Materials.
4. SWD would implement an odor monitoring program and an odor complaint response program to provide rapid identification and resolution of odor issues at the operating NERTS facility, to minimize or eliminate persistent odors.

With these controls in place, no additional mitigation measures are necessary.

3.8.5 Significant Unavoidable Adverse Impacts

Compliance with the applicable regulations along with implementation of the BMPs and mitigation measures described in Section 3.8.3 and 3.8.4 would reduce impacts on environmental health under the action alternatives. No significant unavoidable adverse impacts to environmental health are anticipated under any of the action alternatives.

Under the No Action Alternative, existing conditions for environmental health at the existing Houghton RTS would remain the same or could worsen as infrastructure continues to age. As infrastructure ages, continued operation of the Houghton RTS could pose a significant unavoidable adverse impact to environmental health in the future.