WASHINGTON STATE DEPARTMENT OF ECOLOGY

INITIAL INVESTIGATION FIELD REPORT

ERTS Number: 669600
Parcel #(s): 0417103017
COUNTY: Pierce

SITE INFORMATION

Site Name (e.g., Co. name over door):	Site Address (including City and Zip+4):	Site Phone:
~~LRI 304th St. Landfill~~, ~~Energyneering~~ Plant (Land Recovery Landfill)	30919 Meridian ~~St~~ E. Ave Graham, WA 98338	253/377-2958
Site Contact and Title: Jim Crandall, Landfill Manager	Site Contact Address (including City and Zip+4): same as above	Site Contact Phone: same as above
Site Owner: P C Recycling, Composting & Disposal LLC	Site Owner Address (including City and Zip+4): 17925 Meridian E Puyallap, WA 98375	Site Owner Phone: same as above
Site Owner Contact: Kevin Lakey, consultant	Site Owner Contact Address (including City and Zip+4): SCS Engineers 2405 140th Ave NE, Ste 107; Bellevue 98005	Owner Contact Phone: 425/746-4600
Alternate Site Name(s):	Comments:	
Previous Site Owner(s):	Comments:	

Latitude (Decimal Degrees): 46.96949
Longitude (Decimal Degrees): -122.29086

INSPECTION INFORMATION

Inspection Conducted? Yes ☒ No ☐	Date/Time: 12.20.16; 11:15	Entry Notice: Announced ☒	Unannounced ☐
Photographs taken?	Yes ☒	No ☐	
Samples collected?	Yes ☐	No ☒	If *Yes*, be sure to include a figure/sketch showing sample locations.

RECOMMENDATION

No Further Action (Check appropriate box below):		**LIST on Confirmed and Suspected Contaminated Sites List:** ☐
Release or threatened release does not pose a threat	☐	
No release or threatened release	☐	
Refer to program/agency (Name: _____)	☐	
Independent Cleanup Action Completed (i.e., contamination removed)	☒	

COMPLAINT (Brief Summary of ERTS Complaint):
1000 gallon release of leachate occurred when a hose coupling failed; leachate was spilled to the ground and a portion entered the stormwater collection system.

CURRENT SITE STATUS (Brief Summary of why Site is recommended for Listing or NFA):
The impacted soil has been successfully remediated, to the extent that it could be found.

Investigator: S. Bell	Date Submitted: 06.20.17

OBSERVATIONS

Description (please be sure to include the following: site observations, site features and cover, chronology of events, sources/past practices likely responsible for contamination, presence of water supply wells and other potential exposure pathways, etc.):

The subject site is the LRI Landfill (LRI), a municipal solid waste landfill serving Pierce County. The property is owned by Pierce County Recycling, Composting & Disposal, LLC doing business as LRI. LRI is an engineered, lined landfill that began operating in December 1999 under a permit from the Tacoma-Pierce County Health Department. It is located on the southeast corner of the intersection of 304th Street E and SR 161 (Meridian E) in Graham, and encompasses 320 acres over many parcels. The south fork of Muck Creek traverses the northern section of the property. A restored wetland and a storm water detention pond occupy about a quarter of the LRI site at the north end of the property, and the wetland drains into the south fork of Muck Creek. Groundwater, landfill gas, and surface water are routinely monitored and the landfill operations and site are routinely inspected.

A renewable energy facility is also located on the north side of the landfill, owned and operated by Energyneering Solutions, Inc. The construction pad for the energy facility increased the footprint in that location by constructing a retaining wall approximately 15' high, and backfilling with a gravel mix. Stormwater runoff from the facility is directed into the landfill's stormwater conveyance and detention system. The renewable energy facility processes landfill gases and converts them into electricity. Condensate from processing landfill gases is collected into a sump and pumped to LRI's leachate collection system (force main).

On 12.18.16, a release of an estimated 1000 gallons of landfill leachate occurred in the processing area of the energy plant when a hose coupling failed between the condensate sump and the leachate force main resulting in a backflow of leachate. Discussions of the spill estimate indicated that about 10% (or 100 gallons) flowed into the stormwater collection system. Impact to the stormwater collection system was referred to Paul Stasch at Ecology for follow-up. This initial investigation is focused solely on the discharge of leachate to the ground.

I inspected the spill area, accompanied by Keith Johnston (TPCHD's permit manager for the landfill), on 12.20.16. We met with Jim Crandall and George Duvendack of LRI. It was apparent from the site conditions that recovery of any leachate would be difficult and remediation would be problematic given the amount of infrastructure present for the energy plant. Furthermore, the spill was located within an area of about 15' of fill comprised primarily of highly permeable gravel (anecdotal information provided by Andy Comstock, TPCHD). The gravel media represented a considerable challenge in collecting sufficient and appropriate sample material to determine the extent of contamination or successful remedation and that point was raised with the LRI representatives as needing careful consideration.

No direct sampling of the leachate was conducted to identify specific contaminants or concentrations. However, the involved force main collects leachate from landfill cells 1, 2A, 2B, and 3A. The leachate is periodically sampled for waste characterization and Kevin Lakey (LRI's consultant with SCS Engineers) provided December 2015 and December 2016 leachate sample results for use in assessing impact from the spill. Contaminants of concern in the leachate from cells 1, 2A, 2B, and 3A were metals and VOCs. Kevin suggested removing 6 inches of stained material from the impact area and thought that sufficient fines would be present at that depth to collect samples. Because "auto fluff" (non-metal detritus from Schnitzer Steel's vehicle processing) is routinely used as daily cover at the landfill, I requested that PCBs be included in the analytical suite of any samples due to their prevalence in auto fluff material.

Initial remediation efforts involved removing surface material, described as 15 cubic yards of soil and gravel, from the area in the immediate area of the hose failure and an adjacent area north where leachate flowed. Four confirmation samples were collected and analyzed for metals, VOCs, and PCBs. Sample S3, collected from the excavation below the failed hose, contained a variety of VOCs and PCB-1016; concentrations exceeding MTCA Method A CULs are tabulated below (units are mg/kg).

Sample S-3	Lab Result	MTCA CUL
PCB-1016	1.2	1
Tetrachloroethylene	0.056	0.05
Naphthalene	12	5

Additional material was removed from the area below the hose failure and sample S-5 was collected. Analytical results for PCBs and VOCs were below CULs. I inspected the excavations and noted some issues:

- the dimensions were different from what was reported and did not support removal of 15 cubic yards or the stated sample depths;
- the limits of the excavations were still gravel material, and not at all suitable for collection of sample material, particularly VOCs.

Discussions ensued about how best to determine if there was any residual impact from the leachate release, particularly given the more than 5 inches of rain that occurred over the 6 weeks since the spill (12/18/16 – 1/31/17). Ecology, TPCHD, and LRI agreed to a work plan submitted by SCS to conduct three borings within the spill footprint, collection of soil and groundwater samples from the borings, and collection of soil samples from the toe of the slope on the north side of the retaining wall to look for impact downgradient.

The borings and sample collection occurred on 03.07.17. I was present during the first two borings, accompanied by Kirsten Alvarez (Ecology). Soil recovery within the borings was generally good, and the material recovered below 2 to 3 feet was suitable for sample collection. Native soils were encountered at depths rangings from 9 to 12' bgs, and groundwater was encountered at depths ranging from 8 to

collection. Native soils were encountered at depths rangings from 9 to 12' bgs, and groundwater was encountered at depths ranging from 8 to 16' bgs. Soil samples were collected in 5' increments to a depth of 20' bgs, and at the native soil interface. Both soil and groundwater samples were analyzed for VOCs and PCBs. The analytical results demonstrated low levels of several VOCs were present in soil at two boring locations and groundwater from all three borings, but at concentrations below cleanup standards.

Soil samples were also collected from 18" bgs near the base of the retaining wall using a hand auger and analyzed for VOCs and PCBs. Analytical results for all four hand augered samples were non-detect for all parameters.

The soil collected from the borings was also analyzed for grain size distribution. The engineered fill was primarily gravel and sand with 14 to 19.6% fines. The native soils contained 29 to 37% fines.

No residual impact from the leachate spill was found. Of note, the period between the spill and the borings (12.18.16 – 03.07.17) was particularly wet with approximately 15 inches of rainfall, possibly diluting any affect from the spill.

The low pressure hose from the condensate sump has been replaced with a high pressure hydraulic line and that line is now connected to a check valve to prevent backflow from the leachate force main in the future.

The efforts by LRI and SCS did not result in delineation of the contamination, but sample data from the excavation limits, borings (soil and groundwater), and along the downgradient side of the retaining wall indicated that no residual contamination was present in concentrations exceeding MTCA cleanup levels. The TPCHD recommends no further action at this time.

(fill in contaminant matrix below with appropriate status choice from the key below the table)

CONTAMINANT GROUP	CONTAMINANT	SOIL	GROUNDWATER	SURFACE WATER	AIR	BEDROCK	DESCRIPTION
Non-Halogenated Organics	Phenolic Compounds						Compounds containing phenols (Examples: phenol; 4-methylphenol; 2-methylphenol)
	Non-Halogenated Solvents	RB					Organic solvents, typically volatile or semi-volatile, not containing any halogens. To determine if a product has halogens, search HSDB (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) and look at the Chemical/Physical Properties, and Molecular Formula. If there is not a Cl, I, Br, F in the formula, it's not halogenated. (Examples: acetone, benzene, toluene, xylenes, methyl ethyl ketone, ethyl acetate, methanol, ethanol, isopropranol, formic acid, acetic acid, stoddard solvent, Naptha). *Use this when TEX contaminants are present independently of gasoline.*
	Polynuclear Aromatic Hydrocarbons (PAH)						Hydrocarbons composed of two or more benzene rings.
	Tributyltin						The main active ingredients in biocides used to control a broad spectrum of organisms. Found in antifouling marine paint, antifungal action in textiles and industrial water systems. (Examples: Tributyltin; monobutyltin; dibutyltin)
	Methyl tertiary-butyl ether						MTBE is a volatile oxygen-containing organic compound that was formerly used as a gasoline additive to promote complete combustion and help reduce air pollution.
	Benzene						Benzene
	Other Non-Halogenated Organics						Other Non-Halogenated Organics (Example: Phthalates)
	Petroleum Diesel						Petroleum Diesel
	Petroleum Gasoline						Petroleum Gasoline
	Petroleum Other	RB					Crude oil and any fraction thereof. Petroleum products that are not specifically Gasoline or Diesel.
Halogenated Organics (see notes at bottom)	PBDE						Polybrominated di-phenyl ether
	Other Halogenated Organics						Other organic compounds with halogens (chlorine, fluorine, bromine, iodine). search HSDB (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) and look at the Chemical/Physical Properties, and Molecular Formula. If there is a Cl, I, Br, F in the formula, it is halogenated. (Examples: Hexachlorobutadiene; hexachlorobenzene; pentachlorophenol)
	Halogenated solvents	RB					Solvents containing halogens (Halogen is typically chlorine, but can also be fluorine, bromine, iodine), and their breakdown products (Examples: Trichloroethylene; Tetrachloroethylene (aka Perchloroethylene); TCE; TCA; trans and cis 1,2 dichloroethylene; vinyl chloride)
	Polychlorinated Biphenyls (PCB)	RB					Any of a family of industrial compounds produced by chlorination of biphenyl, noted primarily as an environmental pollutant that accumulates in animal tissue with resultant pathogenic and teratogenic effects
	Dioxin/dibenzofuran compounds (see notes at bottom)						A family of more than 70 compounds of chlorinated dioxins or furans. (Examples: Dioxin; Furan; Dioxin TEQ; PCDD; PCDF; TCDD; TCDF; OCDD; OCDF). *Do not use for 'dibenzofuran', which is a non-chlorinated compound that is detected using the semivolatile organics analysis 8270*
Metals	Metals - Other						Metals other than arsenic, lead, or mercury. (Examples: cadmium, antimony, zinc, copper, silver)
	Lead						Lead
	Mercury						Mercury

CONTAMINANT GROUP	CONTAMINANT	SOIL	GROUNDWATER	SURFACE WATER	AIR	BEDROCK	DESCRIPTION
	Arsenic						Arsenic
Pesticides	Non-halogenated pesticides						Pesticides without halogens (Examples: parathion, malathion, diazinon, phosmet, carbaryl (sevin), fenoxycarb, aldicarb)
	Halogenated pesticides						Pesticides with halogens (Examples: DDT; DDE; Chlordane; Heptachlor; alpha-beta and delta BHC; Aldrin; Endosulfan, dieldrin, endrin)
Other Contaminants	Radioactive Wastes						Wastes that emit more than background levels of radiation.
	Conventional Contaminants, Organic						Unspecified organic matter that imposes an oxygen demand during its decomposition (Example: Total Organic Carbon)
	Conventional Contaminants, Inorganic						Non-metallic inorganic substances or indicator parameters that may indicate the existence of contamination if present at unusual levels (Examples: Sulfides, ammonia)
	Asbestos						All forms of Asbestos. Asbestos fibers have been used in products such as building materials, friction products and heat-resistant materials.
	Other Deleterious Substances						Other contaminants or substances that cause subtle or unexpected harm to sediments (Examples: Wood debris; garbage (e.g., dumped in sediments))
	Benthic Failures						Failures of the benthic analysis standards from the Sediment Management Standards.
	Bioassay Failures						For sediments, a failure to meet bioassay criteria from the Sediment Management Standards. For soils, a failure to meet TEE bioassay criteria for plant, animal or soil biota toxicity.
Reactive Wastes	Unexploded Ordinance						Weapons that failed to detonate or discarded shells containing volatile material.
	Other Reactive Wastes						Other Reactive Wastes (Examples: phosphorous, lithium metal, sodium metal)
	Corrosive Wastes						Corrosive wastes are acidic or alkaline (basic) wastes that can readily corrode or dissolve materials they come into contact with. Wastes that are highly corrosive as defined by the Dangerous Waste Regulation (WAC 173-303-090(6)). (Examples: Hydrochloric acid; sulfuric acid; caustic soda)

Status choices for contaminants	
Contaminant Status	**Definition**
B - Below Cleanup Levels (Confirmed)	The contaminant was tested and found to be below cleanup levels. (Generally, we would not enter each and every contaminant that was tested; for example if an SVOC analysis was done we would not enter each SVOC with a status of "below". We would use this for contaminants that were believed likely to be present but were found to be below standards when tested
S - Suspected	The contaminant is suspected to be present; based on some knowledge about the history of the site, knowledge of regional contaminants, or based on other contaminants known to be present
C - Confirmed Above Cleanup Levels	The contaminant is confirmed to be present above any cleanup level. For example - above MTCA method A, B, or C; above Sediment Quality Standards; or above a presumed site-specific cleanup level (such as human health criteria for a sediment contaminant).
RA - Remediated - Above	The contaminant was remediated, but remains on site above the cleanup standards (for example - capped area).
RB - Remediated - Below	The contaminant was remediated, and no area of the site contains this contaminant above cleanup standards (for example - complete removal of contaminated soils).

Halogenated chemicals and solvents: Any chemical compound with chloro, bromo, iodo or fluoro is halogenated; those with eight or fewer carbons are generally solvents (e.g. halogenated methane, ethane, propane, butane, pentane, hexane, heptane or octane) and may also be used for or registered as pesticides or fumigants. Most are dangerous wastes, either listed or categorical. Organic compounds with more carbons are almost always halogenated pesticides or a contaminant or derivitive. Referral to the HSDB is recommended you are unfamiliar with a chemical name or compound, as it contains useful information about synonyms, uses, trade names, waste codes, and other regulatory information about most toxic or potentially toxic chemicals.

Dibenzodioxins and dibenzofurans are normalized to a combined equivalent toxicity based on 2,3,7,8-tetrachloro-p-dibenzodioxin as set out in Ch. 173-340-708(8)(d) and in the Evaluating the Toxicity and Assessing the Carcinogenic Risk of Environmental Mixtures using Toxicity Equivalency Factors Focus Sheet (https://fortress.wa.gov/ecy/clarc/FocusSheets/tef.pdf). Results may be reported as individual compounds and isomers (usually lab results), or as a toxic equivalency value (reports).

FOR ECOLOGY USE ONLY (For Listing Sites):

How did the Site come to be known: ☐ **Site Discovery (received a report):** _____ (Date Report Received)
☐ **ERTS Complaint**
☐ **Other (please explain):** _____

Does an Early Notice Letter need to be sent: ☐ Yes ☐ No
If *No*, please explain why: _____

NAICS Code (if known): _____
Otherwise, briefly explain how property is/was used (i.e., gas station, dry cleaner, paint shop, vacant land, etc.):
_____

Site Unit(s) to be created (Unit Type): ☐ Upland (includes VCP & LUST) ☐ Sediment

If multiple Units needed, please explain why: _____

Cleanup Process Type (for the Unit): ☐ No Process ☐ Independent Action
☐ Voluntary Cleanup Program ☐ Ecology-supervised or conducted
☐ Federal-supervised or conducted

Site Status: ☐ Awaiting Cleanup ☐ Construction Complete – Performance Monitoring
☐ Cleanup Started ☐ Cleanup Complete – Active O&M/Monitoring
☐ No Further Action Required

Site Manager (Default: Southwest Region): _____

Specific confirmed contaminants include:

_____ in Soil

_____ in Groundwater

_____ in Other (specify matrix: _____)

Facility/Site ID No. (if known):
_____

COUNTY ASSESSOR INFO:

Please attach to this report a copy of the tax parcel/ownership information for each parcel associated with the site, as well as a parcel map illustrating the parcel boundary and location.