




MEMORANDUM

DATE: March 20, 2026

TO: Jim Denson, Waste Management
CC: Diana Foss, Oregon Department of Environmental Quality

FROM: Andy Klopfenstein, RG
Senior Geologist/UST Supervisor #30044 

RE: UST Site Assessment – Columbia Ridge Landfill and Recycling – PEN 10001

INTRODUCTION

On March 3, 2026 the Oregon Department of Environmental Quality (DEQ) approved the following scope of work for performing a site assessment in response to underground storage tank (UST) product line modifications at Columbia Ridge Landfill and Recycling (CRL; site).

SAMPLING LOCATIONS

Two catch basins are located on either side of the approximate 20-foot section of replaced piping. These structures provide access to native soils beneath the former piping alignment.

- One soil sample will be collected from native soil beneath each catch basin, adjacent to the former piping corridor.
- If the replaced piping section exceeds approximately 20 feet, a third discrete soil sample will be collected at the midpoint of the piping run.
- If native soil cannot be accessed within a basin (e.g., due to structural limitations or base material), a discrete soil sample will be collected immediately adjacent to the basin at native soil depth along the piping alignment.

Samples will be collected from the depth corresponding to the piping interval or the first accessible native soil beneath structural materials.

ANALYTICAL SCHEDULE

All samples will be analyzed for:

- Diesel-range organics (DRO / Dx)

- Gasoline-range organics (GRO / Gx)

REPORTING

Analytical results, a site figure depicting sample locations relative to the piping alignment, field documentation, and a summary of findings will be submitted to DEQ following receipt of laboratory data.

SITE ASSESSMENT ACTIVITIES

On March 13, 2026 Environmental Works (EWorks) mobilized to the site and performed the following tasks.

UST PIPING AND UTILITY SURVEY

EWorks inventoried UST system components and other subsurface utilities, surveyed the area with ground penetrating radar (GPR), and cleared soil boring locations for the site assessment. Key findings include the following:

- EWorks requested site plans and utility diagrams depicting the UST system configuration from Waste Management (WM). WM indicated that no such plans are available.
- The spill containment sumps at each end of the new product piping run are fully sealed. No evidence of free-product was observed in the sumps.
- The new polyethylene product piping appears to have been installed by feeding the lines through existing fiberglass secondary containment piping.
- The length of new product piping is approximately 21 feet. The piping varies in depth from approximately 2.0 feet below ground surface (ft bgs) to 2.5 ft bgs.
- The active UST system appears to include three USTs and vent pipes; three product lines (two diesel & one gasoline); three fuel dispensers (two diesel & one gasoline); buried electrical conduit; and, spill containment sumps with leak detection.
- Inactive UST system components appear to include two former fueling dispensers, and associated product piping and electrical conduits.
- An approximately 14-inch, reinforced concrete slab covers all subsurface UST components.
- A catch basin with stormwater piping was observed in the vicinity of the USTs.
- A water supply shutoff was observed adjacent to the product line sump at a depth of approximately 5.0 ft bgs.
- GPR was ineffective at locating buried conduit, the water line, and the active product piping run between spill containment sumps.

SOIL SAMPLING

Based on the findings of the survey, EWorks advanced three soil borings to assess soil conditions beneath the product line runs. A summary of these activities and key findings are included below.

- Three soil boring locations were selected and cleared with GPR, and a hand-held push probe:
 - **PL1:** Located adjacent to the product line spill containment sump at the edge of the concrete pad.
 - **PL2:** Located adjacent to the product line spill containment sumps beneath the fueling dispensers.
 - **PL3:** Located halfway between the spill containment sumps and offset approximately 10 ft.
 - Rational for boring placement is discussed further under “Deviations From Scope of Work.”
- Soil borings were advanced using 1.25” geoprobe Large Bore tooling. Soils were screened from below the base of the product lines (approximately 3.0 ft bgs) to a depth of 7.0 ft bgs.
- Soil type was coarse, angular gravel.
- Groundwater was not observed.
- Drilling progress was extremely difficult and resulted in broken equipment on boring PL2. Recovery was poor (~40%) due to the soil type.
- **Staining and odor indicative of a petroleum release was observed starting at approximately 3.0 feet bgs in borings PL1 and PL2.**
- **Free product was not observed** in soils screened during this investigation.
- Soil samples were collected in laboratory provided containers, placed on ice, and transported under chain of custody to Friedman and Bruya, Inc in Seattle Washington for analysis using methods northwest total petroleum hydrocarbons – gasoline and diesel range organics (NWTPH-Dx/Gx).

A sampling location diagram and laboratory analytical reports are included as an attachment to this memorandum.

DISCUSSION

Petroleum compounds were detected in PL1 (pad spill containment sump) and PL2 (dispensers), with sample PL2-3-7 containing **1,800 milligrams per kilogram (mg/kg) gasoline and 23,000 mg/kg diesel**, respectively. The laboratory indicated that the gasoline detections are likely crossover from lighter-range diesel compounds and are flagged accordingly. A release was reported by EWorks using Your DEQ Online on March 19, 2026.

The staining/odors observed in the field appeared consistent with weathered diesel. The most recent UST piping modifications consisted of running new product line within existing secondary containment chases that connect two sealed spill containment sumps. Furthermore, no free product was observed in the sumps or in soils screened for the subsurface investigation. Based on these factors it is likely that the petroleum release resulted from a previous configuration of the UST system, or from UST system components unrelated to the new product lines investigated for this site assessment. No evidence of fire, explosion, or vapor hazards was observed, nor was evidence of a significant, ongoing release.

WM has requested that EWorks develop a work plan to support their ongoing efforts in completing initial abatement and site characterization measures under OARs 340-122-0220 through -00240.

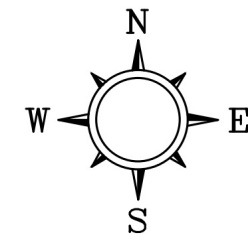
DEVIATIONS FROM SCOPE OF WORK

EWorks made significant attempts to locate boring locations in accordance with DEQ UST program guidance, and industry accepted best practices. However, due to uncertainty in the location of buried utilities, boring PL3 had to be offset approximately 10' away from the product line trench. Prior to selecting this location, EWorks attempted to locate a boring directly adjacent to the product lines, and another boring in the presumed down-gradient direction. Both locations were determined to represent unreasonable hazards to field staff.

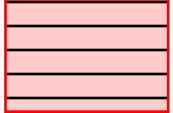


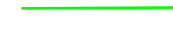




Attachments:

Sample Location Diagram

Laboratory Analytical Report



Legend

-  UST Field
-  Suspected Subsurface Pipe
-  Confirmed Subsurface Pipe
-  Diesel product Line
-  Gasoline product Line
-  Dispenser Sump (out of service)
-  Dispenser/Spill Sump (in service)
-  Soil Boring

Locations and dimensions are approximate

Latitude: 45.62332, Longitude: -120.22134



**FIGURE 2
SITE MAP**

Waste Management (WM)
Columbia Ridge Landfill and Recycling - UST Site Assessment

18177 Cedar Springs Lane
Arlington, Oregon

5 m
10 ft

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Elizabeth Webber-Bruya
Ann Webber-Bruya
Michael Erdahl
Vineta Mills
Eric Young

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

March 20, 2026

Lionel Mills, Project Manager
Environmental Works LLC
22820 NE Sandy Blvd
Fairview, OR 97024

Dear Mr Mills:

Included are the results from the testing of material submitted on March 17, 2026 from the 18177 Cedar Springs Ln, F&BI 603332 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Mac Goldman
Project Manager

Enclosures
c: EWK Reports
EWK0320R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on March 17, 2026 by Friedman & Bruya, Inc. from the Environmental Works LLC 18177 Cedar Springs Ln, F&BI 603332 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Works LLC</u>
603332 -01	PL1-3-7
603332 -02	PL2-3-7
603332 -03	PL3-3-7

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/20/26
Date Received: 03/17/26
Project: 18177 Cedar Springs Ln, F&BI 603332
Date Extracted: 03/17/26
Date Analyzed: 03/17/26

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
PL1-3-7 603332-01 1/50	530 x	120
PL2-3-7 603332-02 1/50	1,500 x	128
PL3-3-7 603332-03	<5	109
Method Blank 06-0281 MB	<5	101

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/20/26
Date Received: 03/17/26
Project: 18177 Cedar Springs Ln, F&BI 603332
Date Extracted: 03/17/26
Date Analyzed: 03/17/26

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND RESIDUAL RANGE
USING METHOD NWTPH-D_x**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Residual Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
PL1-3-7 603332-01	300	<200	101
PL2-3-7 603332-02	23,000	650 x	146
PL3-3-7 603332-03	<50	<200	101
Method Blank 06-618 MB	<50	<200	100

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/20/26

Date Received: 03/17/26

Project: 18177 Cedar Springs Ln, F&BI 603332

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 603297-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	115	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/20/26

Date Received: 03/17/26

Project: 18177 Cedar Springs Ln, F&BI 603332

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-D_x**

Laboratory Code: 603314-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	116	112	64-136	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	112	78-121

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.
- c - The presence of the analyte may be due to carryover from previous sample injections.
- cf - The sample was centrifuged prior to analysis.
- d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv - Insufficient sample volume was available to achieve normal reporting limits.
- f - The sample was laboratory filtered prior to analysis.
- fb - The analyte was detected in the method blank.
- fc - The analyte is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs - Headspace was present in the container used for analysis.
- ht - The analysis was performed outside the method or client-specified holding time requirement.
- ip - Recovery fell outside of control limits due to sample matrix effects.
- j - The analyte concentration is reported between the method detection limit and the lowest calibration point. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- lc - The presence of the analyte is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

603332

SAMPLE CHAIN OF CUSTODY

03/17/26

NI / I-2

Report To Lionel Mills

Company Environmental Works

Address 22820 NE Sandy Blvd

City, State, ZIP Fairview OR 97024

Phone 5037196715 Email lionel@eworksnw.com

SAMPLERS (signature) [Signature]

PROJECT NAME

18177 Cedar Springs Ln

PO #

REMARKS

INVOICE TO

Project Specific RIs - Yes / No

Page # 1 of 1

TURNAROUND TIME

Standard Turnaround

RUSH 1 day

Rush charges authorized by:
SAMPLE DISPOSAL
Dispose after 30 days
Archive Samples
Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED							Notes		
						NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082				
PL1-3-7	01A-C	3/15/26	1:00	Solids	3	X	X								
PL2-3-7	02	3/13/26	2:00	Solids	3	X	X								
PL3-3-7	03	3/13/26	3:30	Solids	3	X	X								

Samples received at 5:00

Friedman & Bryga, Inc.

5500 4th Avenue S

Seattle, WA 98108

Ph. (206) 285-8282

SIGNATURE

Reinquished by: [Signature]

Received by: [Signature]

PRINT NAME

Jesús G

Diana Phan

COMPANY

EAORCUS

FE BT

DATE

3/16/26

3/17/26

TIME

3:00

10:30

Reinquished by:	<u>[Signature]</u>	PRINT NAME	Jesús G	COMPANY	EAORCUS	DATE	3/16/26	TIME	3:00
Received by:	<u>[Signature]</u>	PRINT NAME	Diana Phan	COMPANY	FE BT	DATE	3/17/26	TIME	10:30
Reinquished by:									
Received by:									

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 603332 CLIENT Env. Works INITIALS/ AP DATE: 3/17/26

If custody seals are present on cooler, are they intact? [X] NA [] YES [] NO

Cooler/Sample temperature _____ °C Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? [X] YES [] NO

How did samples arrive? [] Over the Counter [] Picked up by F&BI [X] FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? [X] YES [] NO Initials/ NP Date: 3/17

Number of days samples have been sitting prior to receipt at laboratory 1 days

Are the samples clearly identified? (explain "no" answer below) [X] YES [] NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) [X] YES [] NO

Were appropriate sample containers used? [X] YES [] NO [] Unknown

If custody seals are present on samples, are they intact? [X] NA [] YES [] NO

Are samples requiring no headspace, headspace free? [X] NA [] YES [] NO

Is the following information provided on the COC, and does it match the sample label? (explain "no" answer below)

- Sample ID's [X] Yes [] No [] Not on COC/label
Date Sampled [X] Yes [] No [] Not on COC/label
Time Sampled [X] Yes [] No [] Not on COC/label
of Containers [X] Yes [] No
Relinquished [X] Yes [] No
Requested analysis [X] Yes [] On Hold

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? [X] NA [] YES [] NO

Number of unused TO15 canisters** _____ Number of unused TO17 tubes _____

**Fill out Green manifolds billing sheet

3/3/26, 10:29 AM

GLS.

Ship From

ENVIRONMENTAL WORKS LLC
LIONEL MILLS
22820 NE SANDY BLVD
FAIRVIEW, OR 97024

Ship To

FRIEDMAN & BRUYA, INC.
SAMPLE RECEIVING
5500 4TH AVENUE SOUTH
SEATTLE, WA 98108

COD: \$0.00

Weight: 0 lb(s)

Reference:

Delivery Instructions:

Signature Type: NOT REQUIRED

about:blank

800-322-5555
www.gls-us.com

PDS

Tracking #: 564147234



SEATTLE

S06437C



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KNT WA980-7C0

Print Date: 3/3/2026 10:28 AM

Package 6 of 25