Third Quarter 2023 Monitoring Report

LRI Landfill
Graham, Washington

Pierce County Recycling, Composting
& Disposal, LLC dba LRI
17925 Meridian Street East
Puyallup, Washington 98375

SCS ENGINEERS

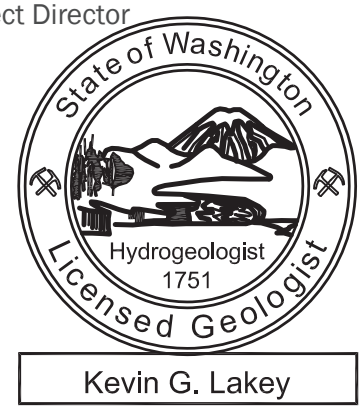
04223001.02 | December 26, 2023

2405 140th Avenue NE, Suite 107
Bellevue, WA 98005
425-746-4600

This document is the Third Quarter 2023 Monitoring Report for the LRI Landfill located in Graham, Washington. Activities this quarter included monitoring the volume and specific conductance of water pumped from the leak detection/collection system, quarterly groundwater monitoring, monthly landfill gas monitoring, and weekly surface water monitoring. This document was prepared by Jovany Estrada and Kevin Lakey of SCS Engineers and submitted to Mr. Keith Johnston of the Tacoma-Pierce County Health Department (TPCHD).

Jovany Estrada
Associate Staff Scientist
SCS ENGINEERS

Kevin Lakey, LHG, PE
Vice President/Project Director
SCS Engineers



Attachments:
Attachment A: Groundwater Flow Map
Attachment B: Groundwater Data Summary Tables
Attachment C: Field Sampling Documentation
Attachment D: Statistical Calculations
Attachment E: Trilinear Diagrams
Attachment F: Analytical Data Validation Report
Attachment G: Groundwater and LDCS Time Trend Plots
Attachment H: LDCS & Leachate Pumping Records and Conductivity Measurements
Attachment I: Surface Water Data
Attachment J: Landfill Gas Data

cc:
Trevor Priestly, TPCHD (email)
Peter Lyon, Ecology (email)
Suzy Lewis, Ecology (email)
Ryan Roth, LRI (email and hard copy)
Olivier Moi, LRI (email)
George Duvendack, LRI (email)
Kevin Green, LRI (email)
Samantha Winkle, LRI (email)
Jody Snyder, LRI (email)
Maria Finley, LRI (email and CD)

GROUNDWATER MONITORING

Third quarter 2023 groundwater samples were collected on September 27 and 28, 2023. Nine monitoring wells (MW-1A, MW-2A, MW-3, MW-4, MW-5A, MW-6, MW-7, MW-9, and MW-10) and ten leak detection collection locations (LDCS-1, LDCS-2A, LDCS-2B, LDCS-3A, LDCS-4A, LDCS-4B, LDCS-5, LDCS-6, LDCS-7, and LDCS-8) were sampled this quarter during September. LDCS 9 was sampled in August due to access issues related to site construction activities. In addition, a leachate sample was collected from Cell 9. Water level elevations were measured on September 27 through-29, 2023. Field quality control samples consisted of one field blank and one duplicate sample collected at MW-7. Sampling procedures followed the LRI Landfill Groundwater Monitoring Plan (GWMP), dated March 10, 2014.

Groundwater samples were collected using low-flow purging and sampling techniques with dedicated pumps at all monitoring wells, except MW-4 where a non-dedicated QED Sample Pro pump was deployed. Samples for laboratory analyses were submitted to Eurofins Scientific of Denver, Colorado for the parameters listed in Appendix I and II of WAC 173-351-990. Groundwater sampling locations are shown in Figure 1.

A groundwater surface elevation map for the third quarter monitoring event is included as Figure 1. The average groundwater gradients and flow directions calculated for the quarter remain similar to those previously reported at the facility, with a flow rate of about 45 feet per year towards the northwest for horizontal groundwater movement within the uppermost aquifer (assuming a horizontal hydraulic conductivity of 1×10^{-3} centimeters per second and an effective porosity of 30 percent).

Field measurements and analytical results for groundwater, leak detection/collection system (LDCS), leachate, and quality control samples are summarized on the following tables presented in Attachment B: Groundwater Level Elevations, Field Parameters, Inorganic Parameters, Appendix I Metals, Appendix II Metals, Volatile Organic Compounds, Cation-Anion Balance, and Duplicate Sample Results.

Copies of the Field Sampling Data Sheets are included in Attachment C. Statistical calculations are provided in Attachment D. Trilinear (Piper) plots of groundwater and LDCS sample results are included in Attachment E. Data validation results are summarized in Attachment F.

Groundwater results were reviewed and validated (see attached Data Validation Report). Field measurements and analytical data were uploaded into the Washington State Department of Ecology (Ecology) Environmental Information Management (EIM) System. Laboratory reports were provided to the Tacoma-Pierce County Health Department (TPCHD) and the Washington Department of Ecology (Ecology) under separate cover.

A nonparametric inter-well prediction limit approach was used to evaluate the water quality results for Appendix I parameters listed in WAC 173-351-990 (15 total metals and nitrate). Prediction limits were generated using background data for nitrate and eight rounds of quarterly sampling conducted in 2014 and 2015 for fifteen (15) total metals. Using this procedure, the highest concentration of each parameter in the data set was selected as the prediction limit for that parameter. In addition, the prediction limit data set includes ongoing water quality results from background (upgradient) wells MW-9 and MW-10. Appendix I total metal and nitrate concentrations measured at the downgradient monitoring wells were less than or equal to prediction limit values at each monitoring well this quarter.

Groundwater time-trend plots for inorganic parameters and metals are included in Attachment G. The following four plots are provided for each monitoring well:

- Plot 1 — ammonia, nitrate, chloride, total organic carbon (TOC)
- Plot 2 — alkalinity, sulfate, total dissolved solids (TDS)
- Plot 3 — calcium, magnesium, sodium, potassium
- Plot 4 — iron, manganese, zinc, arsenic

Time trend plots show that concentrations of metals and inorganic parameters remained generally consistent with previously observed values during the third quarter unless otherwise noted. Higher concentrations than previously reported of calcium (62 mg/L) and magnesium (25 mg/L) were reported at MW-1A. The remaining groundwater chemistry results from MW-1A Are typical of previous results. The highest concentrations of chloride and nitrate in the uppermost aquifer continue to be observed in background well MW-10.

Reported detections of inorganic parameters and metals measured at downgradient monitoring wells during the third quarter were less than or equal to the groundwater quality criteria listed in WAC 173-200-040, with the exceptions shown in Exhibit 1.

Exhibit 1. Groundwater Results Greater Than WAC 173-200-040 Criteria

Parameter	Groundwater Quality Criteria	MW-1A	MW-2A	MW-3	MW-4	MW-5A	MW-6	MW-7
Arsenic, Total	0.00005	**	**	**	0.0089	**	0.0070	**
Iron, Dissolved	0.30	*	0.71	*	*	*	*	*
Manganese, Dissolved	0.05	0.19	0.28	0.26	0.07	0.12	0.19	0.20

Notes:
Concentrations listed as mg/L = milligrams per liter.
** = Not detected above the method reporting limit (MRL), but MRL exceeded WAC 173-200-040 GW Quality Criteria.
* = Reported value was less than WAC 173-200-040 Groundwater Quality Criteria.

The results summarized in Exhibit 1 are typical of previous results (see time-trend plots in Attachment G), are interpreted to be within natural background variation, and in the case of total arsenic, are less than or equal to the background level used to establish the prediction limit (prediction limits are not applicable for dissolved iron or manganese). The method reporting limit (MRL) for arsenic is 0.005 milligrams per liter (mg/L), which is greater than the WAC 173-200-040 criteria of 0.00005 mg/L. Therefore, arsenic results reported as non-detect are considered to be greater than the WAC 173-200-040 criterion.

Low-level detections of ammonia (ranging between 0.12 and 0.21 mg/L) were reported at downgradient wells MW-2A, MW-3, MW-5A, and MW-6, and MW-7. The ammonia concentrations appear to be due to site-wide aquifer chemistry, which has also affected water quality within the LDCS.

The cation-anion balance evaluates the difference in the sum of cations and anions (in milliequivalents per liter [meq/L]) within a water sample to determine if it is electroneutral (balanced cation and anion charges). Consistent with WAC 173-350-430(5), a threshold of ten percent difference is used if the total cation-anion sum is less than 5.0 meq/L, and a threshold of five

percent difference is used if the total cation-anion sum is greater than or equal to 5.0 meq/L. During the third quarter, the cation-anion balance evaluation exceeded the appropriate threshold for monitoring wells MW-1A, MW-4, MW-7, and background monitoring well MW-10. The high cation-anion balance result in MW-1A (52.2%) is likely due to anomalously elevated concentrations of calcium and magnesium. The remaining three exceedances are low-level, and likely due to natural groundwater chemistry. All other monitoring well cation-anion balance evaluations were below the appropriate threshold.

Graphical plots of water quality results are presented on trilinear (piper) diagrams in Attachment E. These plots demonstrate the inherent water quality differences between groundwater from the monitoring wells, shallow groundwater from the LDCS, and leachate (collected annually in December).

No volatile organic compounds (VOCs) were reported in samples collected from the monitoring wells this quarter.

LEAK DETECTION/COLLECTION SYSTEM (LDCS) MONITORING

A leak detection/collection system (LDCS) is present directly beneath the composite liner of each landfill cell to provide for early leak detection and to collect leachate in the event a leachate leak develops in the composite liner or leachate force main. The system consists of a high permeability gravel blanket that is underlain and overlain by geosynthetic fabrics. The system also dewaters groundwater that is present within the glacial till. Leachate leaks are indicated by the presence of acetone and 2-butanone (primary leachate indicator parameters) and increases in concentrations of ammonia and chloride (secondary leachate indicator parameters), as well as increases in specific conductance (conductivity), alkalinity, sodium, potassium, TDS, and TOC.

LDCS Maintenance. No significant maintenance activities occurred this quarter.

LDCS Daily Monitoring. Daily monitoring of the LDCS for volume of water pumped, liquid level, and specific conductance (conductivity) was performed by using a programmable logic controller (PLC) and through direct measurements by LRI site personnel. Rainfall data were recorded manually using an on-site rain gauge. The combined field and PLC data, as well as time series plots of the data, are included in Attachment H.

Conductivity data from the LDCS sumps trended within typical historical ranges during the third quarter of 2023.

LDCS Quarterly Monitoring. Samples were collected using disposable bailers at LDCS-1, LDCS-2A, and LDCS-2B, and with dedicated QED Sleeper Pumps at LDCS-3A, LDCS-4A, LDCS-4B, LDCS-5, LDCS-6, and LDCS-7. The sample from LDCS-8 was collected as a grab sample from the dewatering pump discharge spigot. The sample from LDCS-9 was collected as a grab sample directly from the sump that was under construction at that time.

LDCS-1 water quality results included a detection of acetone at 160 µg/L and a low-level detection of 1,4-dichlorobenzene at 1.4 µg/L. In addition, total organic carbon has been increasing over the last several events and was 200 mg/L in the third quarter. Primary leachate indicator parameter 2-butanone, was not detected and concentrations of secondary leachate indicator parameters, ammonia (0.90 mg/L) and chloride (5.5 mg/l), remained low. Therefore, the VOC and TOC detections do not appear to be the result of leachate.

LDCS-4A and LDCS-4B water quality results display generally increasing trends in chloride (see time trend plots in Attachment G). However, the remaining leachate indicator parameters remained low or non-detect, therefore, the water quality trends noted above do not appear to be the result of leachate.

LDCS-7 water quality results included a detection of benzene at 9.2 ug/L. Primary leachate indicator parameters, acetone and 2-butanone, were not detected and secondary leachate indicator parameters, ammonia (0.17 mg/L) and chloride (5.7 mg/L), remained low. Therefore, the benzene detection does not appear to be the result of leachate.

LDCS time trend plots for inorganic parameters and dissolved metals are included in Attachment G. The following four plots are provided for each leak detection sump:

- Plot 1 — ammonia, nitrate, chloride, TOC
- Plot 2 — alkalinity, sulfate, TDS
- Plot 3 — calcium, magnesium, sodium, potassium
- Plot 4 — iron, manganese, zinc, arsenic

Graphical plots of the LDCS water quality results are presented on trilinear (piper) diagrams in Attachment D. These plots demonstrate the inherent water quality differences between groundwater from the monitoring wells, shallow groundwater from the LDCS, and leachate (collected annually in December).

SURFACE WATER MONITORING

Surface water monitoring was performed per the requirements of NPDES Construction Stormwater General Permit (CSWGP) WAR 002603C and NPDES Industrial Stormwater General Permit (ISGP) WAR 002557. Discharge Monitoring Reports (DMR's) were submitted to Ecology on a monthly (Construction Permit) and quarterly (Industrial Permit) basis. Copies of the third quarter 2023 DMR's are included in Attachment I. No discharges of construction or industrial stormwater occurred during the third quarter.

LEACHATE MONITORING

Leachate volumes were monitored using the automated PLC system and through direct measurements by LRI site personnel. A summary of daily volumes pumped and leachate sump level data is provided in Attachment H.

Collected leachate was truck-hauled to the pretreatment facility at the Hidden Valley Landfill where it was discharged to the Pierce County sewer system in accordance with Pierce County Utilities Department Industrial Discharge Permit Number PC03096, and to the City of Tacoma and City of Salem Wastewater Treatment Plants for proper disposal. A summary of year-to-date leachate volume data based on volumes truck-hauled off site is provided on Exhibit 2.

Exhibit 2. 2023 Leachate Volume Data

Month	Leachate Trucked Offsite for Proper Disposal (gallons)	Monthly Rainfall (inches)
January	2,919,816	2.51
February	2,422,279	2.36
March	3,021,650	2.28
April	2,928,551	5.04
May	3,047,657	0.62
June	2,625,858	1.18
July	2,511,154	0.15
August	2,546,507	0.13
September	2,869,744	2.75
Totals	24,893,216	17.02

Notes:
Leachate was trucked off-site for proper disposal.
Leachate volumes were determined by trucking records kept on a daily basis.

LANDFILL GAS MONITORING

Monthly monitoring of the landfill gas probes was conducted on July 25th, August 22nd, and September 29th using a Landtec GEM2000 portable gas monitor. Monitoring results for the first nine months of 2023 performance probes installed within the perimeter berm adjacent to the landfill are included in Exhibit 3.

Exhibit 3. 2023 Landfill Gas Probe Monitoring Summary (Percent Methane)
Performance Probes

Monitoring Date	GP-1	GP-2	GP-3	GP-4	GP-9	GP-10	GP-10P	GP-11	GP-12	GP-13	GP-14	GP-15	GP-16
January 25	0.0	**5.9**	0.0	0.0	0.0	0.0	**15.5**	0.0	**12.7**	0.0	0.0	2.3	0.0
February 16	0.0	0.8	0.0	0.0	0.0	0.0	**8.7**	0.0	**12.0**	0.0	0.0	0.0	0.0
March 23	0.0	0.0	0.0	0.0	0.0	**13.4**	**16.4**	0.0	**15.2**	0.1	0.0	0.0	0.0
April 27	**17.0**	0.8	0.0	0.0	0.0	**13.4**	0.8	0.0	**14.5**	0.0	0.0	0.0	0.0
May 24	0.0	0.2	0.0	0.0	0.0	**6.8**	**15.4**	0.0	**17.0**	0.0	0.0	0.0	0.0
June 21	**14.7**	0.0	0.0	0.0	0.0	**15.3**	0.0	0.0	**19.9**	0.0	0.0	0.0	0.0
July 25	4.7	0.0	0.0	0.0	0.0	**6.7**	**7.2**	0.0	**24.1**	0.0	0.0	0.0	0.0
August 22	**9.8**	0.0	0.0	0.0	0.0	0.0	2.2	0.0	**15.3**	0.0	0.0	0.0	0.0
September 29	**10.6**	0.6	0.0	0.0	0.0	0.0	1.6	0.0	3.7	0.0	0.0	3.5	0.0

Notes: All values are reported as percent methane by volume.
Methane measurements at or above the lower explosive limit of 5.0% by volume are shown in **bold**.

Monitoring results for five probes that were installed in September 2022 in native soils closer to the property boundary of the facility are included in Exhibit 4. Methane measurements were less than the lower explosive limit (LEL) of five percent by volume at each of these probes.

Exhibit 4. 2023 Landfill Gas Probe Monitoring Summary (Percent Methane)
Native Soils Probes

Monitoring Date	GP-17	GP-18	GP-19	GP-20	GP-21
January 25	0.0	0.0	0.0	0.0	0.0
February 16	0.0	0.0	0.0	0.0	0.0
March 23	0.0	0.0	0.0	0.0	0.0
April 27	0.0	0.0	0.0	0.0	0.0
May 24	0.0	0.0	0.0	0.0	0.0
June 21	0.0	0.0	0.0	0.0	0.0
July 25	0.0	0.0	0.0	0.0	0.0
August 22	0.0	0.0	0.0	0.0	0.0
September 29	0.0	0.0	0.0	0.0	0.0

Notes: All values are reported as percent methane by volume.

Indoor air was tested for the presence of methane on September 31, 2023. The office, maintenance building and scale house were tested with a portable flame ionization detector (MicroFID). No significant levels of methane were detected.

Field records for gas probe and indoor air monitoring are included in Attachment J.

LANDFILL GAS EXTRACTION WELL CONSTRUCTION

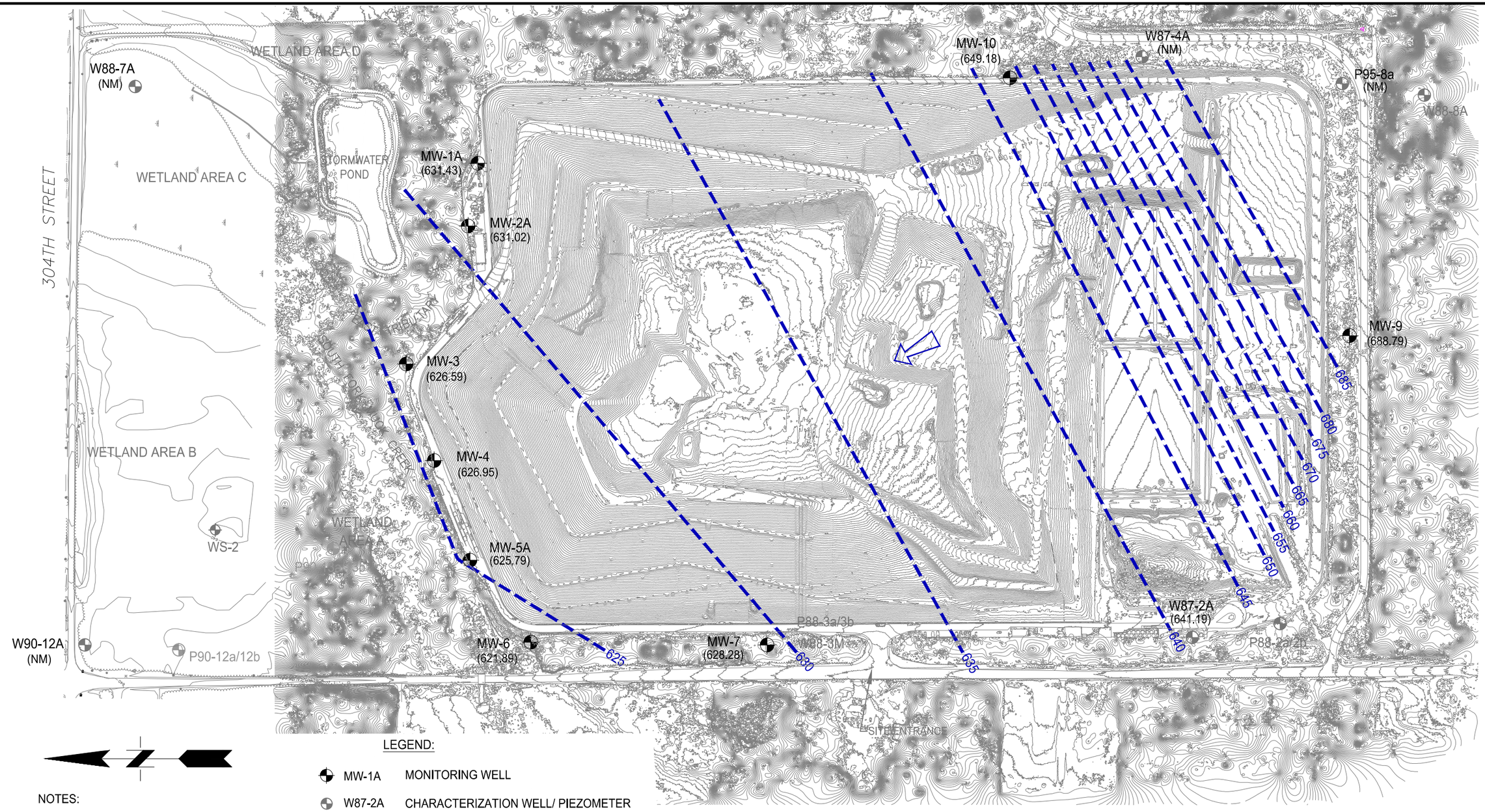
Eight interim landfill gas extraction wells and four permanent landfill gas extraction wells were installed at the landfill during the period of July 31 through August 10, 2023. A copy of the well installation report is included in Attachment J.

GROUNDWATER MONITORING WELL CONSTRUCTION AND MAINTENANCE

No well construction or significant well maintenance activities were performed this quarter.

Attachment A

Groundwater Flow Map



LEGEND:

MW-1A	MONITORING WELL
W87-2A	CHARACTERIZATION WELL/ PIEZOMETER
(641.19)	GROUNDWATER ELEVATION (IN FEET ABOVE MSL)
	INFERRED GROUNDWATER FLOW DIRECTION
(NM)	NOT MEASURED

NOTES:

VERTICAL DATUM - BASED ON PIERCE COUNTY BENCH NO. 112-28, ELEVATION 660.29 NGVD29

0 400 800

SCALE (ft)

SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04223001.02	DES BY AMD	POTENTIOMETRIC SURFACE CONTOUR MAP SEPTEMBER 29, 2023	DATE NOVEMBER 2023
SCALE AS SHOWN	CHK BY KGL	LRI LANDFILL 30919 MERIDIAN STREET E. GRAHAM, WASHINGTON	FIGURE 1
CAD FILE FIGURE 1	APP BY KGL		

Attachment B

Groundwater Data Summary Tables

Table 1. Groundwater Level Elevations
Third Quarter, 2023
LRI Landfill, Pierce County, Washington

Location	Well Casing Elevation (ft)	Depth to Water (ft)	Water Level Elevation (ft, NGVD29)
Wells			
W87-2A	664.01	22.82	641.19
W88-3M	656.48	NM*	--
W87-4A	693.29	NM*	--
W88-7A	632.51	NM*	--
W88-8A	721.05	NM*	--
W90-12A	640.84	NM*	--
MW-1A	652.57	21.14	631.43
MW-2A	651.93	20.91	631.02
MW-3	637.41	10.82	626.59
MW-4	652.37	25.42	626.95
MW-5A	655.55	29.76	625.79
MW-6	635.71	13.82	621.89
MW-7	656.03	27.75	628.28
MW-9	701.77	12.98	688.79
MW-10	678.37	29.19	649.18
Piezometers			
P13-14A	665.96	NM*	--
P88-2A	663.96	NM*	--
P88-2B	663.48	NM*	--
P88-3A	656.20	NM*	--
P88-3B	655.98	NM*	--
P95-8A	722.07	NM*	--
P90-12A	640.84	NM*	--
P90-12B	640.73	NM*	--
P90-13A	645.19	NM*	--
P90-13B	643.63	NM*	--
GP-1P	652.00	NM*	--
GP-2P	658.61	NM*	--
GP-3P	658.51	NM*	--
GP-4P	662.01	NM*	--
GP-9P	674.03	NM*	--
GP-14P			
GP-15P			
GP-16P	689.51		
GP-17P			
P21-2			
P22-1		33.02	
P22-2		4.20	
P22-3			
South Creek			
SWSC-1	632.68	4.20	628.48
SWSC-2	629.98	NM*	--
Leak Detection System			
LDCS-1	657.26	NM*	--
LDCS-2A	659.24	NM*	--
LDCS-2B	661.70	NM*	--

Notes:

NM = not measured

-- = not applicable

All measurements taken between September 27-29, 2023

Table 2. Field Parameters
Third Quarter 2023
LRI Landfill, Pierce County, Washington

Location	Sample Number	Sample Date	Sampling Method	pH	Conductivity	Temperature
Units				(SU)	(µS/cm)	(°C)
WAC 173-200 Criteria				6.5-8.5	700[b]	—
Monitoring Wells						
MW-1A	304-092723-02	9/27/2023	DP	6.63	163	14.0
MW-2A	304-092723-04	9/27/2023	DP	7.03	293	13.6
MW-3	304-092723-06	9/27/2023	DP	7.32	346	10.9
MW-4	304-092823-21	9/28/2023	SP	6.69	339	13.8
MW-5A	304-092723-08	9/27/2023	DB	7.50	277	12.9
MW-6	304-092723-12	9/27/2023	DP	7.44	322	10.8
MW-7	304-092823-14	9/28/2023	DP	7.16	341	11.0
MW-9	304-092823-18	9/28/2023	DP	6.53	133	10.4
MW-10	304-092723-16	9/27/2023	DP	**5.89**	263	12.2
Leak Detection System						
LDCS-1	304-092823-09	9/28/2023	DB	4.02	560	17.4
LDCS-2A	304-092823-07	9/28/2023	DB	3.93	847	19.1
LDCS-2B	304-092823-05	9/28/2023	DB	4.13	1091	16.4
LDCS-3A	304-092723-03	9/27/2023	DP	5.56	753	20.0
LDCS-4A	304-092723-11	9/27/2023	DP	5.34	692	19.1
LDCS-4B	304-092723-19	9/27/2023	DP	5.12	764	24.3
LDCS-5	304-092723-17	9/27/2023	DP	4.92	604	27.4
LDCS-6	304-092823-13	9/28/2023	DP	3.05	1,038	24.1
LDCS-7	304-092723-01	9/27/2023	DP	4.76	614	25.9
LDCS-8	304-092823-20	9/28/2023	DB	2.92	908	26.7
LDCS-9	304-081823	8/18/2023	GB	5.89	621	21.6

Notes:

Groundwater (monitoring well) concentrations greater than the WAC 173-200 criteria are shown in **bold**

b = Secondary Drinking Water Standard

°C = degrees celcius

DB = disposable bailer

DP = dedicated pump

GB = grab sample

SP = submersible pump

SU = standard units

µS/cm = microsiemens per centimeter

Table 3. Inorganic Parameters
Third Quarter 2023
LRI Landfill, Pierce County, Washington

Parameter	Alkalinity, Total	Ammonia	Chloride	Nitrate	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
MRL	10	0.10	0.20	0.50	0.20	10	1.0	4.0
WAC 173-200 Criteria	—	—	250	10	250	500	—	—
Prediction Limit	—	—	—	6.4	—	—	—	—
Monitoring Wells								
MW-1A	80	*	2.1	*	6	130	*	*
MW-2A	140	0.18	3.6	*	15	190	*	*
MW-3	140	0.12	4.2	*	33	220	1.1	*
MW-4	140	*	4.5	*	23	220	1.1	*
MW-5A	140	0.13	2.2	*	3.7	170	*	*
MW-6	160	0.14	5.3	*	6.7	200	1	*
MW-7	170	0.21	2.9	*	4.1	200	*	*
(BG) MW-9	67	*	1.6	*	1.7	130	*	*
(BG) MW-10	110	*	7.1	2.4	5.9	180	*	*
Leak Detection System								
LDCS-1	290	0.9	5.5	*	8.6	370	200	—
LDCS-2A	440	0.52	12	*	43	520	8.8	—
LDCS-2B	430	1.9	39	*	53	570	44	—
LDCS-3A	460	0.33	4.7	*	51	570	2.1	—
LDCS-4A	360	0.29	35	*	57	510	8.4	—
LDCS-4B	410	0.42	44	*	60	560	9.2	—
LDCS-5	270	0.59	48	*	56	480	34	—
LDCS-6	470	0.3	25	*	110	690	4.7	—
LDCS-7	390	0.17	5.7	*	12	450	6.9	—
LDCS-8	450	0.1 U	21	*	55	560	6.7	—
LDCS-9	230	0.1 U	8.1	1.5	64	400	4.6	—

Notes:

All sample units are milligrams per liter (mg/L)

Groundwater (monitoring well) concentrations greater than prediction limits or WAC 173-200 criteria are shown in **bold**

Analyses performed by Eurofins TestAmerica of Denver, Colorado

Method Reporting Limit (MRL) is typical and may be elevated for some samples

* = Sample result was not reported at or above the MRL

— = Not applicable or not performed

BG = Background

B = compound was detected in the method blank and the sample

Table 4. WAC 173-351 Appendix I Metals
Third Quarter 2023
LRI Landfill, Pierce County, Washington

Parameter	Antimony-D	Antimony-T	Arsenic-D	Arsenic-T	Barium-D	Barium-T	Beryllium-D	Beryllium-T	Cadmium-D	Cadmium-T	Chromium-D	Chromium-T	Cobalt-D	Cobalt-T	Copper-D	Copper-T	Lead-D	Lead-T	Nickel-D	Nickel-T	Selenium-D	Selenium-T	Silver-D	Silver-T	Thallium-D	Thallium-T	Vanadium-D	Vanadium-T	Zinc-D	Zinc-T
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL	0.05	0.05	0.005	0.005	0.005	0.005	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.01	0.01	0.002	0.002	0.02	0.02	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.01
WAC 173-200 Criteria	—	—	—	0.00005	—	1.0	—	—	—	0.01	—	0.05	—	—	—	1.0	—	0.05	—	—	—	0.01	—	0.05	—	—	—	—	—	5.0
Prediction Limit	—	0.05	—	0.011	—	0.091	—	0.005	—	0.005	—	0.011	—	0.01	—	0.063	—	0.042	—	0.020	—	0.005	—	0.01	—	0.005	—	0.016	—	0.290
Monitoring Wells																														
MW-1A	—	*	—	*	—	0.019	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-2A	—	*	—	*	—	0.015	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-3	—	*	—	*	—	0.01	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-4	—	*	—	**0.0089**	—	0.016	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.013
MW-5A	—	*	—	*	—	0.011	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-6	—	*	—	**0.007**	—	0.012	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-7	—	*	—	*	—	0.012	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
(BG) MW-9	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.016	—	*
(BG) MW-10	—	*	—	*	—	0.014	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.015
Leak Detection System																														
LDCS-1	*	—	0.010	—	0.012	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-2A	*	—	0.044	—	0.079	—	*	—	*	—	*	—	0.0016	—	*	—	*	—	*	—	*	—	*	—	*	—	0.006	—	*	—
LDCS-2B	*	—	0.010	—	0.040	—	*	—	*	—	*	—	0.0075	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-3A	*	—	0.018	—	0.025	—	*	—	*	—	*	—	0.0013	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-4A	*	—	0.012	—	0.026	—	*	—	*	—	*	—	0.0019	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-4B	*	—	0.022	—	0.042	—	*	—	*	—	*	—	0.0014	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-5	*	—	0.0068	—	0.044	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-6	*	—	0.028	—	0.069	—	*	—	*	—	*	—	0.0014	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-7	*	—	0.017	—	0.036	—	*	—	*	—	*	—	0.0034	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-8	*	—	0.007	—	0.040	—	*	—	*	—	*	—	0.002	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-9	*	—	*	—	0.023	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.036	—

Notes:

All sample units are milligrams per liter (mg/L)

WAC 173-200-040 Table 1 Groundwater Quality Criteria are for total metals

Groundwater (monitoring well) concentrations greater than prediction limits or WAC 173-200 criteria are shown in **bold**

Parameter concentrations for monitoring wells are total (T) metals

Parameter concentrations for LDCS sumps are dissolved (D) metals

Parameter concentrations for leachate samples are total (T) metals

Analyses performed by Eurofins TestAmerica of Denver, Colorado

Method Reporting Limit (MRL) is typical and may be elevated for some samples

* = sample result was not reported at or above the MRL

— = not applicable or not performed

BG = Background

Table 5. WAC 173-351 Appendix II Metals (Dissolved)
Third Quarter 2023
LRI Landfill, Pierce County, Washington

Parameter	Calcium	Iron	Magnesium	Manganese	Potassium	Sodium
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL	0.20	0.10	0.10	0.005	2.0	1.0
WAC 173-200 Criteria	—	0.30	—	0.050	—	—
Monitoring Wells						
MW-1A	62	0.1 U	25	**0.19**	2.7	8.9
MW-2A	25	**0.71**	12	**0.28**	3.8	18
MW-3	36	*	16	**0.26**	4.1	14
MW-4	36	*	15	**0.074**	5.6	15
MW-5A	28	*	12	**0.12**	4	15
MW-6	34	*	15	**0.19**	5.1	11
MW-7	30	0.25	20	**0.2**	6.1	16
(BG) MW-9	10	*	6.8	*	2.3	8.1
(BG) MW-10	26	*	11	*	2.5	13
Leak Detection System						
LDCS-1	32	6.1	18	0.79	5.3	20
LDCS-2A	110	6.8	41	2.2	10	33
LDCS-2B	120	1.4	52	3.4	8.9	25
LDCS-3A	110	4.7	46	3.3	7.5	26
LDCS-4A	85	0.88	48	1.1	7.5	39
LDCS-4B	95	1.8	49	2.2	8	41
LDCS-5	61	0.41	35	0.96	10	43
LDCS-6	110	3.4	72	2.6	8	36
LDCS-7	90	3.1	34	3.8	5	29
LDCS-8	90	*	66	1.8	5.5	28
LDCS-9	73	*	23	0.18	5	28

Notes:

All sample units are milligrams per liter (mg/L)

WAC 173-200-040 Table 1 Groundwater Quality Criteria are for total metals

Groundwater (monitoring well) concentrations greater than WAC 173-200 criteria are shown in **bold**

Analyses performed by Eurofins TestAmerica of Denver, Colorado

Method Reporting Limit (MRL) is typical and may be elevated for some samples

* = sample result was not reported at or above the MRL

** = Reported concentrations for leachate are total metals

— = not applicable or not performed

BG = Background

Table 6. Volatile Organic Compounds (µg/L)
Third Quarter 2023
LRI Landfill, Pierce County, Washington

Parameter	1,4-Dichlorobenzene	2-Butanone (MEK)	4-Methyl-2-pentanone (MIBK)	Acetone	Benzene	Carbon disulfide	Ethylbenzene	m-Xylene & p-Xylene	o-Xylene	Toluene
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MRL	0.50	6.0	5.0	10.0	0.50	0.63	1.0	0.50	0.50	0.50
WAC 173-200 Criteria	4.0	—	—	—	1.0	—	—	—	—	—
Monitoring Wells										
MW-1	*	*	*	*	*	*	*	*	*	*
MW-2	*	*	*	*	*	*	*	*	*	*
MW-3	*	*	*	*	*	*	*	*	*	*
MW-4	*	*	*	*	*	*	*	*	*	*
MW-5	*	*	*	*	*	*	*	*	*	*
MW-6	*	*	*	*	*	*	*	*	*	*
MW-7	*	*	*	*	*	*	*	*	*	*
(BG) MW-9	*	*	*	*	*	*	*	*	*	*
(BG) MW-10	*	*	*	*	*	*	*	*	*	*
Leak Detection System										
LDCS-1	1.4	*	*	160	*	*	*	*	*	*
LDCS-2A	*	*	*	*	*	*	*	*	*	*
LDCS-2B	*	*	*	*	*	*	*	*	*	*
LDCS-3A	*	*	*	*	*	*	*	*	*	*
LDCS-4A	*	*	*	*	*	*	*	*	*	*
LDCS-4B	*	*	*	*	*	*	*	*	*	*
LDCS-5	*	*	*	*	*	*	*	*	*	*
LDCS-6	*	*	*	*	*	*	*	*	*	*
LDCS-7	*	*	*	*	**9.2**	*	*	*	*	*
LDCS-8	*	*	*	*	*	*	*	*	*	*
LDCS-9	*	*	*	*	*	*	*	*	*	*
Leachate Collection System										
Leachate, Cell 9	*	490	*	560	*	*	*	1.4	0.92	4.3
Quality Control Samples										
Field Blank	*	*	*	*	*	*	*	*	*	*

Notes:

All sample units are micrograms per liter (µg/L)

Analyses performed by Eurofins TestAmerica of Denver, Colorado

Groundwater (monitoring well) concentrations greater than WAC 173-200 criteria are shown in **bold**

Method Reporting Limit (MRL) is typical and may be elevated for some samples

* = sample result was not reported at or above the MRL

— = not applicable or not performed

BG = Background

Table 7. Cation-Anion Balance
Third Quarter 2023
LRI Landfill, Pierce County, Washington

Cations	mg/L					meq/L					% of Total		
	Ca	Mg	K	Na	Total	Ca	Mg	K	Na	Total	Na+K	Ca	Mg
MW-1A	62	25	2.7	8.9	98.6	3.09	2.06	0.06	0.39	5.60	8.0	55.3	36.7
MW-2A	25	12	3.8	18	58.8	1.25	0.99	0.09	0.78	3.10	28.0	40.2	31.8
MW-3	36	16	4.1	14	70.1	1.80	1.32	0.09	0.61	3.81	18.4	47.1	34.5
MW-4	36	15	5.6	15	71.6	1.80	1.23	0.13	0.65	3.81	20.4	47.2	32.4
MW-5A	28	12	4	15	59	1.40	0.99	0.09	0.65	3.13	23.8	44.7	31.6
MW-6	34	15	5.1	11	65.1	1.70	1.23	0.12	0.48	3.52	16.8	48.1	35.0
MW-7	30	20	6.1	16	72.1	1.50	1.65	0.14	0.70	3.98	21.0	37.6	41.4
MW-9	10	6.8	2.3	8.1	27.2	0.50	0.56	0.05	0.35	1.46	27.6	34.1	38.3
MW-10	26	11	2.5	13	52.5	1.30	0.91	0.06	0.57	2.82	22.0	45.9	32.0
LDCS-1	32	18	5.3	20	75.3	1.60	1.48	0.12	0.87	4.07	24.3	39.3	36.4
LDCS-2A	110	41	10	33	194.0	5.49	3.37	0.23	1.44	10.52	15.8	52.2	32.1
LDCS-2B	120	52	8.9	25	205.9	5.99	4.28	0.20	1.09	11.56	11.1	51.8	37.0
LDCS-3A	110	46	7.5	26	189.5	5.49	3.79	0.17	1.13	10.58	12.3	51.9	35.8
LDCS-4A	85	48	7.5	39	179.5	4.24	3.95	0.17	1.70	10.06	18.6	42.2	39.3
LDCS-4B	95	49	8	41	193	4.74	4.03	0.18	1.78	10.74	18.3	44.1	37.6
LDCS-5	61	35	10	43	149	3.04	2.88	0.23	1.87	8.02	26.1	38.0	35.9
LDCS-6	110	72	8	36	226.0	5.49	5.93	0.18	1.57	13.16	13.3	41.7	45.0
LDCS-7	90	34	5	29	158.0	4.49	2.80	0.11	1.26	8.66	15.9	51.8	32.3
LDCS-8	90	66	5.5	28	189.5	4.49	5.43	0.12	1.22	11.26	11.9	39.9	48.2
LDCS-9	73	23	5.0	28	129.0	3.64	1.89	0.11	1.22	6.87	19.4	53.1	27.6

Anions	mg/L					meq/L					% of Total			Total Ions (meq/L)	Cation - Anion Balance	Applicable Ratio (%)	Ratio Exceedance
	Alk	Cl	NO_3	SO_4	Total	Alk	Cl	NO_3	SO_4	Total	Cl	Alk	SO_4				
MW-1A	96	2.1	0.0	6	104.1	1.57	0.06	0.000	0.12	1.76	3.4	89.5	7.1	7.36	52.2	5	Exceeds
MW-2A	168	3.6	0.0	15	186.6	2.76	0.10	0.000	0.31	3.17	3.2	86.9	9.8	6.27	1.0	5	O
MW-3	168	4.2	0.0	33	205.2	2.76	0.12	0.000	0.69	3.56	3.3	77.4	19.3	7.37	3.5	5	O
MW-4	168	4.5	0.0	23	195.5	2.76	0.13	0.000	0.48	3.36	3.8	82.0	14.2	7.17	6.3	5	Exceeds
MW-5A	168	2.2	0.0	3.7	173.9	2.76	0.06	0.000	0.08	2.89	2.1	95.2	2.7	6.02	3.9	5	O
MW-6	192	5.3	0.0	6.7	204	3.15	0.15	0.000	0.14	3.44	4.3	91.6	4.1	6.96	1.3	5	O
MW-7	204	2.9	0.0	4.1	211	3.35	0.08	0.000	0.09	3.51	2.3	95.2	2.4	7.49	6.2	5	Exceeds
MW-9	80.4	1.6	0.0	1.7	83.7	1.32	0.05	0.000	0.04	1.40	3.2	94.2	2.5	2.86	2.2	10	O
MW-10	132	7.1	2.4	5.9	147.4	2.16	0.20	0.039	0.12	2.53	7.9	85.7	4.9	5.35	5.6	5	Exceeds
LDCS-1	348	5.5	0.0	8.6	362.1	5.71	0.16	0.000	0.18	6.04	2.6	94.5	3.0	10.11	19.5	5	Exceeds
LDCS-2A	528	12	0.0	43	583	8.66	0.34	0.000	0.89	9.89	3.4	87.5	9.0	20.42	3.1	5	O
LDCS-2B	516	39	0.0	53	608	8.46	1.10	0.000	1.10	10.66	10.3	79.4	10.3	22.22	4.0	5	O
LDCS-3A	552	4.7	0.0	51	607.7	9.05	0.13	0.000	1.06	10.25	1.3	88.4	10.4	20.82	1.6	5	O
LDCS-4A	432	35	0.0	57	524	7.08	0.99	0.000	1.19	9.26	10.7	76.5	12.8	19.32	4.1	5	O
LDCS-4B	492	44	0.0	60	596	8.07	1.24	0.000	1.25	10.56	11.8	76.4	11.8	21.29	0.8	5	O
LDCS-5	324	48	0.0	56	428	5.31	1.35	0.000	1.16	7.83	17.3	67.8	14.9	15.85	1.2	5	O
LDCS-6	564	25	0.0	110	699	9.25	0.71	0.000	2.29	12.24	5.8	75.6	18.7	25.40	3.6	5	O
LDCS-7	468	5.7	0.0	12	486	7.68	0.16	0.000	0.25	8.09	2.0	94.9	3.1	16.75	3.5	5	O
LDCS-8	540	21	0.0	55	616	8.86	0.59	0.000	1.14	10.59	5.6	83.6	10.8	21.86	3.1	5	O
LDCS-9	230	8.1	1.5	64	304	3.77	0.23	0.024	1.33	5.36	4.3	70.4	24.9	12.22	12.4	5	Exceeds

Notes:

mg/L = milligrams per liter

meq/L = milliequivalents per liter

Total alkalinity concentration, reported as calcium carbonate ($CaCO_3$), is converted to the bicarbonate (HCO_3) ion by multiplying by a factor of 1.2

Cation / anion balance equation is the equivalent percent difference in cations minus anions divided by the sum of cations and anions [(cations-anions)/(anions+cations)*100].

The MRL was used for analytes that were non-detect

A 10% difference threshold is used if the total cation-anion sums are < 5.0 meq/liter

A 5% difference threshold is used if the total cation-anion sums are > or = to 5.0 meq/liter

Table 8. Duplicate Sample Results
Third Quarter 2023 Monitoring Report
LRI Landfill, Pierce County, Washington

Parameter	MRL	MW-7	MW-7 (Duplicate)	RPD (%)
Inorganic Parameters (mg/L)				
Alkalinity, Total	10	170	170	0.0
Ammonia	0.1	0.21	0.23	9.1
Chloride	0.2	2.9	3.0	3.4
Sulfate	0.2	4.1	4.3	4.8
Total Dissolved Solids	10	200	200	0.0
Total Organic Carbon	1.0	1	1	0.0
Dissolved Metals (mg/L)				
Calcium	0.2	36	37	2.7
Iron	0.1	0.27	0.25	7.7
Magnesium	0.1	24	23	4.3
Manganese	0.005	0.28	0.26	7.4
Potassium	2.0	6.7	6.5	3.0
Sodium	1.0	18	16	11.8
Total Metals (mg/L)				
Arsenic	0.005	0.005	0.0052	3.9
Barium	0.005	0.012	0.013	8.0

Notes:

Analyses performed by Eurofins TestAmerica of Denver, Colorado

Parameters not listed were not present at concentrations exceeding the Method Reporting Limit (MRL)

RPD = relative percent difference

µg/L = micrograms per liter

mg/L = milligrams per liter

U= parameter was not detected in sample

* = sample result was not reported at or above the MRL

The MRL was used to calculate the RPD for analytes where one sample was non-detect

Attachment C

Field Sampling Documentation

September 29, 2023
File No. 04223001.02

Subject: **Third Quarter 2023 Groundwater Monitoring Event**
LRI Landfill, Pierce County, Washington

NOTES/SAMPLE DECODING:

Event Dates: September 27-29, 2023
Field Staff: Jovany Estrada, Alex Deszo, & Jack Faille

- This event served as a quarterly monitoring event.
- Dedicated pumps were used for purging and sampling wells MW-1A, MW-2A, MW-3, MW-5A, MW-6, MW-7, MW-9, MW-10, and leak detection/collection system points LDCS-3A, LDCS-4A, LDCS-4B, LDCS-5, LDCS-6, and LDCS-7.
- Disposable bailers were used to sample leak detection/collection system points LDCS-1, LDCS-2A, LDCS-2B.
- The sample from LDCS-8 was collected from the channel discharge spigot.
- A leachate sample was collected from Cell 9A sump using a disposable bailer.
- A non-dedicated Sample Pro pump was used for purging and sampling well MW-4.
- A round of water level measurements was completed on September 29, 2023.
- Multiparameter field meters were calibrated daily, prior to sampling.
- Source water for the field blank was lab-grade deionized water (VOC-free) provided by TestAmerica in Tacoma, Washington.

Sample Number	Well Number
304-092723-01	LDCS-7
304-092723-02	MW-1A
304-092723-03	LDCS-3
304-092723-04	MW-2A
304-092823-05	LDCS-2B
304-092723-06	MW-3
304-092823-07	LDCS-2A
304-092723-08	MW-5A
304-092823-09	LDCS-1
304-092723-11	LDCS-4A
304-092723-12	MW-6
304-092823-13	LDCS-6
304-092823-14	MW-7
304-092823-15	QC, FB

304-092723-16	MW-10
304-092723-17	LDCS-5
304-092823-18	MW-9
304-092723-19	LDCS-4B
304-092823-20	LDCS-8
304-092823-21	MW-4
304-092823-23	MW-7 (Duplicate)
304-092823-25	Leachate Cell 9

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.03
Site LF1 304th
Well ID: LDCS-7
Sample ID: 304-092723-01
Date: 9/27/23
Weather: Rainy

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

DTW
TOS
Intake
BOS
Total Depth

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill 11.5
Discharge 35
Pressure 40
Flow 200 ml/min

1 ft water = 0.62L
1L = 0.26 gallons

One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
0935		15.5	586	6.98	6.14	-342.0	19.0	
0940		21.5	640	4.77	6.18	-418.8		
0943		23.2	644	4.19	6.09	-407.3		
0946		24.5	657	3.88	5.60	-406.5	5.0	
0949		25.4	636	3.63	4.92	-425.9		
0952		25.9	615	3.52	4.79	-421.1		
(0955)		25.9	614	3.52	4.76	-418.1	4.0	

Notes / Observations (color, odor, anomalies, etc):

LCRS 14.3
LDCRS 7.1
Cond 0

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Jovany Estrada
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 01223001.02
Site: 304th
Well ID: MW-1A
Sample ID: 304-092723-02
Date: 9/27/23
Weather: Cloudy rain

21.14 DTW
TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated (7) | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other
Meter: MP-20 YSI
CONTROL SETTINGS:
Refill 1
Discharge 6
Pressure 40
Flow

1 ft water = 0.62L 1L = 0.26 gallons
One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1023		17.5	132.6	6.81	6.77	252.7	2.78	
1028		14.3	153.9	2.22	6.18	268.7	8.17	
1031		14.2	152.1	2.33	6.38	249.5	5.66	
1034		14.2	154.1	2.12	6.48	145.0	5.56	
1037		14.1	158.7	1.95	6.56	80.6	5.53	
1040		14.0	161.4	1.80	6.61	62.5	6.64	
1043		14.0	162.7	1.70	6.63	53.9	4.75	

Notes / Observations (color, odor, anomalies, etc):

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Alex Desgo
Printed Name

AD
Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 4223001.03
Site LR1 304th
Well ID: 304-092723-03
Sample ID: LDCS-3
Date: 9/27/23
Weather: Rainy

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter: MP-20 YSI

DTW
TOS
Intake
BOS
Total Depth

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.26 gallons

Refill 12
Discharge 3
Pressure 40
Flow 333 ml/min

One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? Y N
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1021		17.5	672	6.43	7.78	-220	13.0	
1026		19.7	762	5.48	5.74	-415.3		
1029		19.9	759	5.43	5.59	-424.5		
1032		20.0	757	5.40	5.58	-428.9	11.0	
1035		19.9	755	5.41	5.55	-429.4		
1038		20.0	~~754~~ 538	5.36	5.54	-431.6		
1041		20.0	753	5.36	5.56	-428.9	9.0	

Notes / Observations (color, odor, anomalies, etc):

LDCS 11.51
Cond 993.7

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Jovani Estrada
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02
Site: 304th
Well ID: MW-2A
Sample ID: 304-092723-04
Date: 9/27/23
Weather: Cloudy Raining

20.91 DTW
TOS
Intake
BOS
Total Depth

Sampling Method : Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill 9
Discharge 6
Pressure 30
Flow 400 ml/min

1 ft water = 0.62L 1L = 0.26 gallons
One Well Volume (liters)
Other :
Flow Setting :
Total Volume Bailed (liters)

Filtered? Y N
Locked? Y N
Water in Protector? Y N
Damage? Y N

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1113		14.9	252.4	2.63	6.73	86.2	2.76	
1118		13.8	312.3	0.87	6.82	-36.4	2.47	
1121		13.7	313.6	0.78	6.96	-64.2	3.04	
1124		13.7	302.7	0.75	6.99	-75.0	3.29	
1127		13.7	297.1	0.74	7.01	-80.6	2.99	
1130		13.7	295.4	0.72	7.02	-84.9	2.90	
1133		13.6	293.1	0.72	7.03	-86.9	2.97	

Notes / Observations (color, odor, anomalies, etc):

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: ALEX DEGEN
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.03
Site LRI 304th
Well ID: LDCS-23
Sample ID: 304-092523-05
Date: 9/25/23
Weather: Cloudy



DTW
TOS
Intake
BOS
Total Depth

Sampling Method : Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter: MP-20 YSI

CONTROL SETTINGS:

1-ft water = 0.62L 1L = 0.26 gallons

Refill
Discharge
Pressure
Flow

One Well Volume (liters)
Total Volume Bailed (liters)
Other :
Flow Setting :

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1045		16.4	1091	7.35	4.13	-349.2	213.0	

Notes / Observations (color, odor, anomalies, etc):

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: J Estrada
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02
Site: Boeing
Well ID: MW-3
Sample ID: BOE-092723-06
Date: 9/27/23
Weather: Cloudy Rain



10.82 DTW
TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other
Meter: MP-20 YSI
CONTROL SETTINGS:
Refill: 9
Discharge: 6
Pressure: 35
Flow: 400 mL/min

1 ft water = 0.62L
1L = 0.26 gallons
One Well Volume (liters):
Total Volume Bailed (liters):
Other:
Flow Setting:

Filtered? (Y) N
Locked? (Y) N
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:
1000 ml Poly
500 ml Poly
250 ml Poly
125 ml Poly
500 ml HNO3 x2
500 ml H2SO4 x2
40 ml VOA x3 x6
1000 ml Amber
125 ml NaOH

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1202		12.5	369.7	8.15	7.53	144.9	2.82	
1207		11.0	349.2	1.63	6.22	122.9	4.45	
1210		10.9	345.8	1.25	7.13	70.7	3.03	
1213		10.9	345.8	1.10	7.21	46.9	3.00	
1216		10.9	345.8	1.00	7.25	28.3	2.92	
1219		10.9	345.9	0.94	7.29	16.2	2.91	
1222		10.9	345.0	0.91	7.32	8.6	2.88	

Notes / Observations (color, odor, anomalies, etc):

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Alex Desio
Printed Name

IAD
Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.03
Site: LRI 304th
Well ID: LDCS-2A
Sample ID: 304-092823-07
Date: 9/25/23
Weather: Cloudy



DTW
TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill
Discharge
Pressure
Flow

1 ft water = 0.62L
1L = 0.26 gallons

One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

Notes / Observations (color, odor, anomalies, etc):

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1000		19.1	847	6.02	3.93	-312.4	46.0	

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Jovany Estrada
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02
Site: 304th
Well ID: MW-5A
Sample ID: 304-092723-08
Date: 9/27/23
Weather: Cloudy Raining

DTW: 29.76
TOS:
Intake:
BOS:
Total Depth:

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other
Meter: MP-20 YSI
CONTROL SETTINGS:
Refill: 9
Discharge: 6
Pressure: 40
Flow: 400 ml/min

1 ft water = 0.62L
1L = 0.26 gallons
One Well Volume (liters):
Total Volume Bailed (liters):
Other:
Flow Setting:

Filtered? Y N
Locked? Y N
Water in Protector? Y N
Damage? Y N

Sample Containers:
1000 ml Poly
500 ml Poly
250 ml Poly
125 ml Poly
500 ml HNO3 x2
500 ml H2SO4 x2
40 ml VOA x3 x6
1000 ml Amber
125 ml NaOH

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1242		13.2	328.2	2.26	6.24	70.5	11.35	
1247		12.9	275.5	0.88	7.26	62.4	9.00	
1250		12.9	275.9	0.81	7.45	25.1	10.45	
1253		12.9	276.6	0.77	7.50	-8.9	7.65	
1256		12.9	276.5	0.75	7.51	-25.7	14.11	
1259		12.9	276.5	0.74	7.51	-37.2	15.09	
1302		12.9	277.0	0.73	7.50	-45.5	18.87	

Notes / Observations (color, odor, anomalies, etc):
Water does not appear as turbid as YSI is reading.

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Alex Dosso
Printed Name

AD
Signature

SCS ENGINEERS

2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.03
Site LRI 304th
Well ID: LDCS-1
Sample ID: 304-092823-09
Date: 9/28/23
Weather: Cloudy

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

DTW
TOS
Intake
BOS
Total Depth

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill
Discharge
Pressure
Flow

1 ft water = 0.62L 1L = 0.26 gallons

One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
0930		17.4	560	6.75	4.02	-341.7	11.0	

Notes / Observations (color, odor, anomalies, etc):

Cond 160.0

1st lab to filter

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Jovany Estrada
Printed Name

Signature

SCS ENGINEERS

2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.03
Site: LF1 304th
Well ID: LDCS-4A
Sample ID: 304-092723-11
Date: 9/27/23
Weather: Rainy

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

DTW
TOS
Intake
BOS
Total Depth

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill: 1
Discharge: 4
Pressure: 40
Flow: 150 ml/min

1 ft water = 0.62L
1L = 0.26 gallons

One Well Volume (liters):
Total Volume Bailed (liters):
Other:
Flow Setting:

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:
1000 ml Poly | 500 ml Poly | 250 ml Poly | 125 ml Poly
500 ml HNO3 x2 | 500 ml H2SO4 x2 | 40 ml VOA x3 x6 | 1000 ml Amber
125 ml NaOH

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1113								
~~1112~~		16.7	648	6.81	6.09	-314.8	11.0	
1118		18.4	674	6.04	5.61	-360.8		
1121		18.5	679	~~5.51~~ 6.02	5.50	-363.2		
1124		18.5	681	6.01	5.39	-347.5	11.0	
1127		18.7	683	5.89	5.34	-333.1		
1130		19.0	689	5.80	5.34	-357.5		
1133		19.1	692	5.74	5.34	-363.6	10.0	

Notes / Observations (color, odor, anomalies, etc):

LDCRS 6.43
Cond 534.7

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Jovany Estrada
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 01223601.02
Site: 36th
Well ID: MW-6
Sample ID: 36-092723-12
Date: 9/27/23
Weather: Cloudy Rain

13.82 DTW
TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other
Meter: MP-20 YSI
CONTROL SETTINGS:
Refill 9
Discharge 6
Pressure 75 40
Flow 350 ml/min

1 ft water = 0.62L
1L = 0.26 gallons
One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? Y N
Locked? Y N
Water in Protector? Y N
Damage? Y N

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

Notes / Observations (color, odor, anomalies, etc):

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1326		10.9	324	1.06	7.37	61.0	2.31	
1331		10.8	322.4	1.36	7.35	65.3	2.34	
1334		10.8	323.1	1.11	7.40	60.0	2.21	
1337		10.8	323.4	0.97	7.42	50.9	2.14	
1340		10.8	323.1	0.92	7.43	44.2	2.17	
1343		10.8	322.5	0.89	7.44	38.0	2.15	
1346		10.8	321.8	0.87	7.44	34.8	2.15	

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Alex Dezso
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.03
Site: LDI 304th
Well ID: ~~Field Blank~~ LDCS-6
Sample ID: 304-092823-~~15~~-13
Date: 9/28/23
Weather: cloudy

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | ~~Grab~~ | Other

Meter: MP-20 YSI

CONTROL SETTINGS:

DTW
TOS
Intake
BOS
Total Depth

Refill: 12
Discharge: 3
Pressure: 60
Flow: 200 ml/min

1 ft water = 0.62L
1L = 0.26 gallons

One Well Volume (liters):
Total Volume Bailed (liters):
Other:
Flow Setting:

Filtered? (Y) N
Locked? ~~Y~~ (N) ~~N/A~~
Water in Protector? ~~Y~~ (N) ~~N/A~~
Damage? ~~Y~~ (N) ~~N/A~~

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1125								
~~1105~~		15.8	924	7.74	4.78	-281.5	60.0	
~~1130~~								
1130		16.5	939	6.96	4.25	-278.2		
1133		20.8	956	5.24	3.33	-364.9		
1136		22.76	1005	4.57	3.08	-351.9	39.0	
1139		23.6	1040	4.30	3.03	-400.4		
1142		23.8	1038	4.25	3.04	-406.7		
1145		24.1	1038	4.17	3.05	-408.9	10.0	

Notes / Observations (color, odor, anomalies, etc):

LCRS 24.1
LDCRS 2.3
Cond 1072

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: J. Estrada
Printed Name

JE
Signature

SCS ENGINEERS

2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223009.02
Site: 304th
Well ID: MW-7
Sample ID: 304-092823-14
Date: 9/28/23
Weather: Partly Cloudy

27.75 DTW
TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill: 9
Discharge: 6
Pressure: 30
Flow: 400 mL/min

1 ft water = 0.62L 1L = 0.26 gallons
One Well Volume (liters):
Total Volume Bailed (liters):
Other:
Flow Setting:

Filtered? (Y) N
Locked? (Y) N
Water in Protector? Y N
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1115		11.3	320.3	3.35	6.21	109.8	2.75	
1120		11.0	342.7	1.06	7.21	-74.3	3.15	
1123		11.0	338.0	1.59	7.03	-42.3	2.86	
1126		11.0	339.6	1.42	7.06	-46.1	2.79	
1129		11.0	340.7	1.27	7.10	-55.4	2.77	
1132		11.0	341.6	1.15	7.15	-65.8	2.70	
1135		11.0	341.9	1.09	7.16	-70.1	2.67	

Notes / Observations (color, odor, anomalies, etc):

23

DUP taken at 1150

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Alex Desco
Printed Name

AD
Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02
Site: 304TH
Well ID: FB
Sample ID: 304-092823-15
Date: 9/25/23
Weather: Raining / Cloudy

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | (Grab) | Other

DTW
TOS
Intake
BOS
Total Depth

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill
Discharge
Pressure
Flow

1 ft water = 0.62L
1L = 0.26 gallons

One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1245		15.2	9.3	7.53	7.23	134.3	0.0	

Notes / Observations (color, odor, anomalies, etc):

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Alex Dosso
Printed Name

AD
Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02
Site: LRI 304
Well ID: MW-16
Sample ID: 304-092723-16
Date: 9/27/23
Weather: Cloudy raining

29.14 DTW
/ TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill 9
Discharge 6
Pressure 40
Flow 200 ml/min

1 ft water = 0.62L
1L = 0.26 gallons
One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? Y (N)
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
933		13.7	272.0	2.08	5.68	236.5	3.55	
938		12.5	270.6	1.07	5.79	231.9	3.35	
941		12.4	265.0	0.96	5.81	233.6	3.34	
944		12.3	262.9	0.92	5.82	234.7	3.19	
947		12.3	262.6	0.92	5.84	235.0	3.20	
950		12.3	262.7	0.93	5.86	235.3	3.05	
953		12.2	262.8	0.95	5.89	235.5	3.11	

Notes / Observations (color, odor, anomalies, etc):

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Alex Dezso
Printed Name

AD
Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.03
Site: LRI South
Well ID: LDLS-5
Sample ID: 304-092723-17
Date: 9/27/23
Weather: Cloudy



DTW
TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter: MP-20 YSI

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.26 gallons

Refill: 12
Discharge: 3
Pressure: 40
Flow: 150 ml/min

One Well Volume (liters):
Total Volume Bailed (liters):
Other:
Flow Setting:

Filtered? Y (N)
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

Notes / Observations (color, odor, anomalies, etc):

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1305								
~~1306~~		21.0	703	4.94	5.93	-281.2	9.0	
				4.58				
1313		22.1	~~717~~	~~5.60~~	5.60	-298.9		
1316		24.1	718	3.96	5.32	-363.1		
1319		25.6	651	3.56	5.09	-374.8	10.0	
1322		26.8	609	3.29	4.97	-398.4		
1325		27.3	605	3.21	4.94	-401.3		
1328		27.4	604	3.18	4.92	-407.9	8.0	

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Jovany Estrada
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02
Site: 304th
Well ID: MW-9
Sample ID: 304.092823-18
Date: 9/28/23
Weather: Cloudy



12.98 DTW
TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other
Meter: MP-20 YSI
CONTROL SETTINGS:
Refill 9
Discharge 6
Pressure 45
Flow 300 ml/min

1 ft water = 0.62L
1L = 0.26 gallons
One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? (Y) N
Locked? (Y) N
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

Notes / Observations (color, odor, anomalies, etc):

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1200		11.4	132.2	5.75	6.53	112.6	3.04	
1205		10.5	133.1	4.22	6.72	134.3	2.75	
1208		10.5	133.1	4.19	6.66	152.4	2.77	
1211		10.5	133.1	4.18	6.58	166.6	2.82	
1214		10.4	133.1	4.17	6.56	172.6	2.75	
1217		10.4	133.0	4.17	6.53	180.6	2.78	
1220		10.4	133.0	4.16	6.53	185.7	2.87	

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Alex Mon
Printed Name

AD
Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.03
Site: LR4 304th
Well ID: 30 4 - 092723 - 19
Sample ID: LDCS - 4B
Date: 9/27/23
Weather: Cloudy

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter: MP-20 (YSI)

DTW
TOS
Intake
BOS
Total Depth

CONTROL SETTINGS:
Refill: 12
Discharge: 3
Pressure: 60
Flow: 120 ml/min

1 ft water = 0.62L
1L = 0.26 gallons

One Well Volume (liters):
Total Volume Bailed (liters):
Other:
Flow Setting:

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y (N)
Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1219		23.1	753	4.28	5.94	-269.8	10.0	
1224		23.4	769	4.19	5.30	-325.8		
1227		23.5	768	4.17	5.25	-335.4		
1230		23.40	766	4.20	5.19	-366.9	12.0	
1233		23.96	765	4.06	5.14	-376.5		
1236		24.04	767	4.02	5.14	-386.4		
1239		24.31	764	3.91	5.12	-381.2	15.0	

Notes / Observations (color, odor, anomalies, etc):

LDCRS 13
Cond 1006

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Jovany Estrada
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 0422300103
Site: LR1 304th
Well ID: LDCS-8
Sample ID: 304-092823-20
Date: 9/28/23
Weather: Cloudy

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | (Grab) | Other

Meter: MP-20 (YSI)

DTW
TOS
Intake
BOS
Total Depth

CONTROL SETTINGS:
Refill
Discharge
Pressure
Flow

1 ft water = 0.62L
1L = 0.26 gallons

One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y (N)
Damage? (Y) N

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1205		26.7	908	3.55	2.92	-314.1	12.0	

Notes / Observations (color, odor, anomalies, etc):

LCRS 18.2
LDCRS 4.5
Cond 1000

Ask lab to filter

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: J. Estrada
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02
Site: 304th
Well ID: MW-4
Sample ID: 304-092823-21
Date: 9/28/23
Weather: Partly Cloudy

25.42 DTW
TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other
Meter: MP-20 YSI
CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.26 gallons
Refill 9
Discharge 6
Pressure 50
Flow
One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

Filtered? Y N
Locked? Y N
Water in Protector? Y N
Damage? Y N

Sample Containers:
1000 ml Poly | 500 ml Poly | 250 ml Poly | 125 ml Poly
500 ml HNO3 x2 | 500 ml H2SO4 x2 | 40 ml VOA x3 x6 | 1000 ml Amber
125 ml NaOH

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1004		14.2	338.8	2.79	6.30	246.5	27.9	
1009		13.9	339.6	2.28	6.56	243.9	8.93	
1012		13.8	340.0	2.15	6.60	241.2	6.65	
1015		13.8	340.4	2.11	6.62	237.2	15.41	
1018		13.8	340.4	2.08	6.64	233.1	5.71	
1021		13.8	339.4	2.01	6.67	224.1	5.34	
1024		13.8	339.2	1.95	6.69	213.1	5.66	

Notes / Observations (color, odor, anomalies, etc):

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Alex Dezso
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.03
Site: Leachate cell 9
Well ID: LF1 304th
Sample ID: 304-092823-25
Date: 9/25/23
Weather: Cloudy



DTW
TOS
Intake
BOS
Total Depth

Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill
Discharge
Pressure
Flow

1 ft water = 0.62L
1L = 0.26 gallons

One Well Volume (liters)
Total Volume Bailed (liters)
Other :
Flow Setting :

Filtered? Y(N) Locked? Y(N) Water in Protector? Y(N) Damage? Y(N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

Notes / Observations (color, odor, anomalies, etc):

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1330		17.6	199.0	3.70	5.83	82.6	5.10	

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: J. Estrada
Printed Name

Signature

SCS ENGINEERS
2405 140th ave NE #107
Bellevue, WA 98005 (425) 746-4600

Groundwater Sampling Data Sheet

Project #: ~~04223020.00~~ 04223001.17
Site ~~CSWF 2023~~ LFI 304
Well ID: 9B1 LDCS Sump
Sample ID: 304-081823-01
Date: 8-18-23
Weather: Sunny Clear



DTW
TOS
Intake
BOS
Total Depth

Sampling Method : Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Meter:
MP-20
YSI

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.26 gallons

Refill
Discharge
Pressure
Flow

One Well Volume (liters)
Total Volume Bailed (liters)
Other :
Flow Setting :

Filtered? Y (N) Locked? Y (N) Water in Protector? Y (N) Damage? Y (N)

Sample Containers:

1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly
500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber
125 ml NaOH			

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
11:30		21.6	621	3.12	5.89	266.9	1.90	

Notes / Observations (color, odor, anomalies, etc):

Sample was taken as a grab sample w/ New Home depot bucket
Which bottles were filled from,

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER:
Printed Name
Signature

SCS ENGINEERS

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	8-18-23					
Time	9:30					
Weather (sky or precip, temp)	Clear, Sunny 64° F					
Parameter	Conductivity	pH 4	pH 7	D.O.	Turbidity	Comments/Exceptions
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.00	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1442	3.98	6.87	8.19	N/A	
Post Cal Reading	1413	4.00	7.00	8.5	N/A	
Descrepancy	NO					
Calib. Successful?	Yes					
Calibration by	AMD					
Instrument Type, ID	(YSI Pro DDS) / YSI 556 / Rental				(YSI Pro DDS) / HACH2000	
Calibration Location	NWL staging area near Cell 9B1					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

SCS ENGINEERS

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	9/27/23					
Time	850					
Weather (sky or precip, temp)	Cloudy Rain					
Parameter	Conductivity	pH 4	pH 7	D.O.	Turbidity	Comments/Exceptions
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.00	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1351	4.09	6.99	9.74	—	
Post Cal Reading	1413	4.00	7.00	8.5		
Descrepancy	NO					
Calib. Successful?	Y/N					
Calibration by	AMD					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental				YSI Pro DDS / HACH2000	
Calibration Location	LIZ office lot					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

SCS ENGINEERS

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	9/27/23					
Time	0915					
Weather (sky or precip, temp)	Rainy					
Parameter	Conductivity	pH 4	pH 7	D.O.	Turbidity	Comments/Exceptions
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.00	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1783	3.98	6.71	8.9		
Post Cal Reading	1413	4.00	7.00	8.5		
Descrepancy	No					
Calib. Successful?	yes					
Calibration by	Jovany Estrada					
Instrument Type, ID	~~YSI Pro DDS~~ / (YSI 556) / Rental				YSI Pro DDS / HACH2000	
Calibration Location	UPI office					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

SCS ENGINEERS

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	9/28/27					
Time	847					
Weather (sky or precip, temp)	Partly Cloudy					
Parameter	Conductivity	pH 4	pH 7	D.O.	Turbidity	Comments/Exceptions
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.00	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1422	3.98	7.07	9.40	/	
Post Cal Reading	1413	4.00	7.00	8.5	/	
Descrepancy	NO					
Calib. Successful?	Yes					
Calibration by	AMD					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental				YSI Pro DDS / HACH2000	
Calibration Location	LRI office Lot					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

SCS ENGINEERS

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	9/28/23					
Time	0910					
Weather (sky or precip, temp)	Cloudy					
Parameter	Conductivity	pH 4	pH 7	D.O.	Turbidity	Comments/Exceptions
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.00	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1221	3.95	9.28	8.19		
Post Cal Reading	1413	4.00	7.00	8.50		
Descrepancy	No					
Calib. Successful?	yes					
Calibration by	J. Estrada					
Instrument Type, ID	YSI Pro DDS / (YSI 556) / Rental				YSI Pro DDS / HACH2000	
Calibration Location	LRI office					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

Attachment D

Statistical Calculations

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Third Quarter 2023
LRI Landfill, Pierce County, Washington

Location ID	Antimony (Sb)		Arsenic (As)		Barium (Ba)		Beryllium (Be)		Cadmium (Cd)		Chromium (Cr)		Cobalt (Co)		Copper (Cu)		Lead (Pb)		Nickel (Ni)		Selenium (Se)		Silver (Ag)		Thallium (Tl)		Vanadium (V)		Zinc (Zn)		Nitrate (NO_3)	
Monitoring Date	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-1																																
3/24/2014	0.002	L 0.001	0.005	L 0.0025	0.022	0.022	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/24/2014	0.002	L 0.001	0.005	L 0.0025	0.02	0.02	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/17/2014	0.05	L 0.025	0.005	L 0.0025	0.024	0.024	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.02	0.02	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.005	L 0.0025	0.03	0.03	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.032	0.032	0.5	L 0.25
3/23/2015	0.05	L 0.025	0.005	L 0.0025	0.02	0.02	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/8/2015	0.05	L 0.025	0.005	L 0.0025	0.022	0.022	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/16/2015	0.05	L 0.025	0.005	L 0.0025	0.021	0.021	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
12/14/2015	0.05	L 0.025	0.005	L 0.0025	0.024	0.024	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		0		8		0		0		0		0		0		0		0		0		0		0		2		0			
Minimum Concentration		0.001		0.0025		0.02		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.0025		0.03		0.0025		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.005		0.032		0.25
Average Concentration		NC		NC		0.02288		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Variance		NC		NC		1.1E-05		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Deviation		NC		NC		0.0033		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Coefficient of Variation (%)		NC		NC		14.2974		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Error		NC		NC		0.00116		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
MW-2																																
3/24/2014	0.002	L 0.001	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/26/2014	0.002	L 0.001	0.005	L 0.0025	0.015	0.015	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/16/2014	0.05	L 0.025	0.005	L 0.0025	0.018	0.018	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/23/2015	0.05	L 0.025	0.005	L 0.0025	0.012	0.012	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/8/2015	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/16/2015	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
12/14/2015	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		0		8		0		0		0		0		0		0		0		0		0		0		0		0			
Minimum Concentration		0.001		0.0025		0.012		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.0025		0.018		0.0025		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.005		0.005		0.25
Average Concentration		NC		NC		0.01413		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Variance		NC		NC		3.3E-06		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Deviation		NC		NC		0.00181		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Coefficient of Variation (%)		NC		NC		12.798		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Error		NC		NC		0.00064		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
MW-3																																
3/26/2014	0.002	L 0.001	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/25/2014	0.002	L 0.001	0.005	L 0.0025	0.011	0.011	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/17/2014	0.05	L 0.025	0.005	L 0.0025	0.01	0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.005	L 0.0025	0.012	0.012	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/26/2015	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/9/2015	0.05	L 0.025	0.005	L 0.0025	0.011	0.011	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/16/2015	0.05	L 0.025	0.005	L 0.0025	0.01	0.01	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
12/14/2015	0.05	L 0.025	0.005	L 0.0025	0.015	0.015	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		0		8		0		0		0		0		0		0		0		0		0		0		0		0			
Minimum Concentration		0.001		0.0025		0.01		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.0025		0.015		0.0025		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.005		0.005		0.25
Average Concentration		NC		NC		0.012		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Variance		NC		NC		3.4E-06		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Deviation		NC		NC		0.00185		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Coefficient of Variation (%)		NC		NC		15.4303		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Error		NC		NC		0.00065		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Third Quarter 2023
LRI Landfill, Pierce County, Washington

Location ID	Antimony (Sb)		Arsenic (As)		Barium (Ba)		Beryllium (Be)		Cadmium (Cd)		Chromium (Cr)		Cobalt (Co)		Copper (Cu)		Lead (Pb)		Nickel (Ni)		Selenium (Se)		Silver (Ag)		Thallium (Tl)		Vanadium (V)		Zinc (Zn)		Nitrate (NO_3)	
Monitoring Date	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-4																																
3/24/2014	0.002	L 0.001	0.0074	0.0074	0.012	0.012	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/25/2014	0.002	L 0.001	0.0086	0.0086	0.012	0.012	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/17/2014	0.05	L 0.025	0.0099	0.0099	0.013	0.013	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.0076	0.0076	0.011	0.011	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/24/2015	0.05	L 0.025	0.0079	0.0079	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/9/2015	0.05	L 0.025	0.0094	0.0094	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/18/2015	0.05	L 0.025	0.0094	0.0094	0.017	0.017	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.5	L 0.25
12/15/2015	0.05	L 0.025	0.011	0.011	0.091	0.091	0.001	L 0.0005	0.001	L 0.0005	0.011	0.011	0.0039	0.0039	0.063	0.063	0.042	0.042	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.29	0.29	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		8		8		0		0		1		1		1		1		0		0		0		0		1		2		0	
Minimum Concentration		0.001		0.0074		0.011		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.011		0.091		0.0025		0.0025		0.011		0.005		0.063		0.042		0.01		0.0025		0.005		0.0025		0.014		0.29		0.25
Average Concentration		NC		0.0089		0.02275		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Variance		NC		1.6E-06		0.00076		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Deviation		NC		0.00125		0.02763		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Coefficient of Variation (%)		NC		14.0465		121.469		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Error		NC		0.00044		0.00977		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
MW-5																																
3/24/2014	0.002	L 0.001	0.0072	0.0072	0.032	0.032	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/25/2014	0.002	L 0.001	0.0067	0.0067	0.033	0.033	0.001	L 0.0005	0.005	L 0.0025	0.0036	0.0036	0.01	L 0.005	0.0061	0.0061	0.001	L 0.0005	0.0043	0.0043	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/16/2014	0.05	L 0.025	0.0059	0.0059	0.036	0.036	0.005	L 0.0025	0.005	L 0.0025	0.0051	0.0051	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.01	0.01	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.0055	0.0055	0.022	0.022	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/23/2015	0.05	L 0.025	0.008	0.008	0.03	0.03	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/8/2015	0.05	L 0.025	0.0075	0.0075	0.02	0.02	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/18/2015	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
12/14/2015	0.05	L 0.025	0.0072	0.0072	0.021	0.021	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		7		8		0		0		2		0		1		0		1		0		0		0		0		1		0	
Minimum Concentration		0.001		0.0025		0.014		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.008		0.036		0.0025		0.0025		0.0051		0.005		0.0061		0.001		0.01		0.0025		0.005		0.0025		0.005		0.01		0.25
Average Concentration		NC		0.00631		0.026		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Variance		NC		3E-06		6E-05		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Deviation		NC		0.00175		0.00776		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Coefficient of Variation (%)		NC		27.6653		29.863		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Error		NC		0.00062		0.00275		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
MW-6																																
3/26/2014	0.002	L 0.001	0.0075	0.0075	0.014	0.014	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/25/2014	0.002	L 0.001	0.0065	0.0065	0.011	0.011	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/18/2014	0.002	L 0.001	0.0078	0.0078	0.01	0.01	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
12/17/2014	0.05	L 0.025	0.0068	0.0068	0.012	0.012	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/26/2015	0.05	L 0.025	0.0068	0.0068	0.01	0.01	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/8/2015	0.05	L 0.025	0.0075	0.0075	0.01	0.01	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/17/2015	0.05	L 0.025	0.0069	0.0069	0.011	0.011	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
12/14/2015	0.05	L 0.025	0.0074	0.0074	0.011	0.011	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		8		8		0		0		0		0		0		0		0		0		0		0		0		0		0	
Minimum Concentration		0.001		0.0065		0.01		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.0078		0.014		0.0005		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.005		0.005		0.25
Average Concentration		NC		0.00715		0.01113		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Variance		NC		2.1E-07		1.8E-06		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Deviation		NC		0.00046		0.00136		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Coefficient of Variation (%)		NC		6.38736		12.1906		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Error		NC		0.00016		0.00048		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
MW-7																																
3/26/2014	0.002	L 0.001	0.0054	0.0054	0.016	0.016	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/26/2014	0.002	L 0.001	0.0053	0.0053	0.016	0.016	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/17/2014	0.05	L 0.025	0.0052	0.0052	0.015	0.015	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.005	0.005	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/24/2015	0.05	L 0.025	0.005	L 0.0025	0.015	0.015	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/9/2015	0.05	L 0.025	0.0054	0.0054	0.015	0.015	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/17/2015	0.05	L 0.025	0.005	L 0.0025	0.012	0.012	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
12/15/2015	0.05	L 0.025	0.0055	0.0055	0.016	0.016	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		6		8		0		0		0		0		0		0		0		0		0		0		0		0		0	
Minimum Concentration		0.001		0.0025		0.012		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.0055		0.016		0.0025		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.005		0.005		0.25
Average Concentration		NC		0.0046		0.01488		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Variance		NC		1.7E-06		1.8E-06		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Deviation		NC		0.0013		0.00136		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Coefficient of Variation (%)		NC		28.3682		9.11733		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Error		NC		0.00046		0.00048		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Third Quarter 2023
LRI Landfill, Pierce County, Washington

Location ID	Antimony (Sb)		Arsenic (As)		Barium (Ba)		Beryllium (Be)		Cadmium (Cd)		Chromium (Cr)		Cobalt (Co)		Copper (Cu)		Lead (Pb)		Nickel (Ni)		Selenium (Se)		Silver (Ag)		Thallium (Tl)		Vanadium (V)		Zinc (Zn)		Nitrate (NO_3)	
Monitoring Date	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-9																																
3/25/2014	0.002	L 0.001	0.005	L 0.0025	0.0047	0.0047	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.016	0.016	0.01	0.01	0.5	L 0.25
6/24/2014	0.002	L 0.001	0.005	L 0.0025	0.0045	0.0045	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.016	0.016	0.01	L 0.005	0.5	L 0.25
9/18/2014	0.002	L 0.001	0.005	L 0.0025	0.0057	0.0057	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.014	0.014	0.014	0.014	0.5	L 0.25
12/17/2014	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
3/24/2015	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
6/9/2015	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
9/18/2015	0.05	L 0.025	0.005	L 0.0025	0.005	0.005	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
12/16/2015	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.042	0.042	0.5	L 0.25
3/22/2016	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.028	0.028	0.5	L 0.25
6/8/2016	0.05	L 0.025	0.005	L 0.0025	0.005	0.005	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.023	0.023	0.5	L 0.25
9/16/2016	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.015	0.015	0.043	0.043	0.5	L 0.25
12/6/2016	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
3/29/2017	0.05	L 0.025	0.005	L 0.0025	0.0056	0.0056	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
6/22/2017	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
9/26/2017	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.012	0.012	0.01	L 0.005	0.5	L 0.25
12/13/2017	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
3/21/2018	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.016	0.016	0.01	L 0.005	0.5	L 0.25
6/19/2018	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
9/19/2018	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
12/4/2018	0.05	L 0.025	0.005	L 0.0025	0.0051	0.0051	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
3/11/2019	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
6/19/2019	0.05	L 0.025	0.005	L 0.0025	0.0051	0.0051	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
9/26/2019	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
12/11/2019	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.016	0.016	0.01	L 0.005	0.5	L 0.25
3/17/2020	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.015	0.015	0.01	L 0.005	0.5	L 0.25
6/8/2020	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
9/22/2020	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.016	0.016	0.01	L 0.005	0.5	L 0.25
12/16/2020	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
3/9/2021	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.015	0.015	0.01	L 0.005	0.5	L 0.25
6/15/2021	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
9/15/2021	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.015	0.015	0.01	L 0.005	0.5	L 0.25
12/15/2021	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.015	0.015	0.01	L 0.005	0.5	L 0.25
3/30/2022	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.015	0.015	0.01	L 0.005	0.5	L 0.25
6/15/2022	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
9/14/2022	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.016	0.016	0.01	L 0.005	0.5	L 0.25
12/29/2022	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
3/14/2023	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.017	0.017	0.01	L 0.005	0.5	L 0.25
6/7/2023	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.0073	0.0073	0.01	L 0.005	0.5	L 0.25
9/28/2023	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.016	0.016	0.01	L 0.005	0.5	L 0.25
Number Analyzed	39		39		39		39		39		39		39		39		39		39		39		39		39		39		39		39	
Number Detected	0		0		8		0		0		0		0		0		0		0		0		0		0		39		6		0	
Minimum Concentration		0.001		0.0025		0.0025		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0073		0.005		0.25
Maximum Concentration		0.025		0.0025		0.0057		0.0005		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.017		0.043		0.25
Average Concentration		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		0.01424		NC		NC
Variance		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		2.5E-06		NC		NC
Standard Deviation		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		0.00158		NC		NC
Coefficient of Variation (%)		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		11.0855		NC		NC
Standard Error		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		0.00025		NC		NC
MW-10																																
3/25/2014	0.002	L 0.001	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	6.4	6.4
6/25/2014	0.002	L 0.001	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	0.01	5.8	5.8
9/16/2014	0.05	L 0.025	0.005	L 0.0025	0.015	0.015	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.011	0.011	5.4	5.4
12/17/2014	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.3	5.3
3/25/2015	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.9	5.9
6/8/2015	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.7	5.7
9/15/2015	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.1	5.1
12/16/2015	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	4.9	4.9
3/21/2016	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.9	5.9
6/6/2016	0.05	L 0.025	0.005	L 0.0025	0.012	0.012	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.9	5.9
9/15/2016	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.4	5.4
12/6/2016	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.2	5.2
3/29/2017	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.8	5.8
6/19/2017	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.5	5.5
9/26/2017	0.05	L 0.025	0.005	L 0.0025	0.012	0.012	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.2	5.2
12/12/2017	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	4.9	4.9
3/20/2018	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.3	5.3
6/18/2018	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	5.0	5.0
9/18/2018	0.05	L 0.025	0.005	L 0.0025	0.016	0.016	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	4.7	4.7
12/4/2018	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	4.3	4.3
3/12/2019	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	4.4	4.4
6/17/2019	0.05	L 0.025	0.005	L 0.0025	0.015	0.015	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	4.7	4.7
9/25/2019	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	4.2	4.2
12/11/2019	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	3.9	3.9
3/17/2020	0.05	L 0.025	0.005	L 0.0025	0.015	0.015	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.034	0.034	3.7	3.7
6/9/2020	0.05	L 0.025	0.005	L 0.0025	0.016	0.016	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Third Quarter 2023
LRI Landfill, Pierce County, Washington

Location ID	Antimony (Sb)		Arsenic (As)		Barium (Ba)		Beryllium (Be)		Cadmium (Cd)		Chromium (Cr)		Cobalt (Co)		Copper (Cu)		Lead (Pb)		Nickel (Ni)		Selenium (Se)		Silver (Ag)		Thallium (Tl)		Vanadium (V)		Zinc (Zn)		Nitrate (NO_3)	
Monitoring Date	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
6/15/2022	0.05 L	0.025	0.005 L	0.0025	0.014	0.014	0.001 L	0.0005	0.001 L	0.0005	0.005 L	0.0025	0.001 L	0.0005	0.01 L	0.005	0.002 L	0.001	0.02 L	0.01	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.013	0.013	2.8	2.8
9/14/2022	0.05 L	0.025	0.005 L	0.0025	0.016	0.016	0.001 L	0.0005	0.001 L	0.0005	0.005 L	0.0025	0.001 L	0.0005	0.01 L	0.005	0.002 L	0.001	0.02 L	0.01	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.019	0.019	3.1	3.1
12/29/2022	0.05 L	0.025	0.005 L	0.0025	0.013	0.013	0.001 L	0.0005	0.001 L	0.0005	0.005 L	0.0025	0.001 L	0.0005	0.01 L	0.005	0.002 L	0.001	0.02 L	0.01	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.01 L	0.01	3.0	3.0
3/14/2023	0.05 L	0.025	0.005 L	0.0025	0.014	0.014	0.001 L	0.0005	0.001 L	0.0005	0.005 L	0.0025	0.001 L	0.0005	0.01 L	0.005	0.002 L	0.001	0.02 L	0.01	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.01 L	0.01	3.0	3.0
6/8/2023	0.05 L	0.025	0.005 L	0.0025	0.013	0.013	0.001 L	0.0005	0.001 L	0.0005	0.005 L	0.0025	0.001 L	0.0005	0.01 L	0.005	0.002 L	0.001	0.02 L	0.01	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.01 L	0.01	2.6	2.6
9/27/2023	0.05 L	0.025	0.005 L	0.0025	0.013	0.013	0.001 L	0.0005	0.001 L	0.0005	0.005 L	0.0025	0.001 L	0.0005	0.01 L	0.005	0.002 L	0.001	0.02 L	0.01	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.005 L	0.0025	0.011	0.011	2.4	2.4
Number Analyzed	39		39		39		39		39		39		39		39		39		39		39		39		39		39		39		39	
Number Detected	0		0		39		0		0		0		0		0		0		0		0		0		0		0		10		39	
Minimum Concentration		0.001		0.0025		0.012		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0025		0.005		2.4
Maximum Concentration		0.025		0.0025		0.016		0.0025		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.005		0.034		6.4
Average Concentration		NC		NC		0.01377		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		4.366667
Variance		NC		NC		1.1E-06		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		1.429123
Standard Deviation		NC		NC		0.00104		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		1.195459
Coefficient of Variation (%)		NC		NC		7.53672		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		27.37693
Standard Error		NC		NC		0.00017		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		0.191427

Notes: Metals results are for total metals.
mg/L = milligrams per liter.
L = not reported at or above the MRL (Method Reporting Limit).
One-half the MRL value used for statistical calculations when concentrations not reported at or above the MRL.
NC = not calculated due to insufficient number of reported detections.

Groundwater Prediction Limits (mg/L)
Appendix I Parameters, Third Quarter 2023
LRI Landfill, Pierce County, Washington

	MRL (typical)	Prediction Limit	MW-1/ MW-1A	MW-2/ MW-2A	MW-3	MW-4	MW-5/ MW-5A	MW-6	MW-7	MW-9	MW-10
Antimony	0.050	**0.050**	**0.050 L**	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L
Arsenic	0.005	**0.011**	0.005 L	0.005 L	0.005 L	**0.011**	0.008	0.008	0.006	0.005 L	0.005 L
Barium	0.005	**0.091**	0.030	0.018	0.015	**0.091**	0.036	0.014	0.016	0.0057	0.016
Beryllium	0.005	**0.005**	**0.005 L**	0.005 L	0.005 L	0.005 L	0.005 L	0.001 L	0.005 L	0.001 L	0.005 L
Cadmium	0.005	**0.005**	**0.005 L**	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L
Chromium	0.005	**0.011**	0.005 L	0.005 L	0.005 L	**0.011**	0.005	0.005 L	0.005 L	0.005 L	0.005 L
Cobalt	0.010	**0.010**	**0.010 L**	0.010 L	0.010 L	0.004	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L
Copper	0.010	**0.063**	0.010 L	0.010 L	0.010 L	**0.063**	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L
Lead	0.002	**0.042**	0.002 L	0.002 L	0.002 L	**0.042**	0.002 L	0.002 L	0.002 L	0.002 L	0.002 L
Nickel	0.020	**0.020**	**0.020 L**	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L
Selenium	0.005	**0.005**	**0.005 L**	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L
Silver	0.010	**0.010**	**0.010 L**	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L
Thallium	0.005	**0.005**	**0.005 L**	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L
Vanadium	0.010	**0.017**	0.010 L	0.010 L	0.010 L	0.014	0.010 L	0.010 L	0.010 L	**0.017**	0.010 L
Zinc	0.01	**0.290**	0.032	0.010 L	0.010 L	**0.290**	0.010	0.010 L	0.010 L	0.043	0.034
Nitrate as Nitrogen	0.50	**6.40**	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	**6.40**

Notes:

Prediction Limits are shown in bold.

Prediction Limits for metals are for total metals.

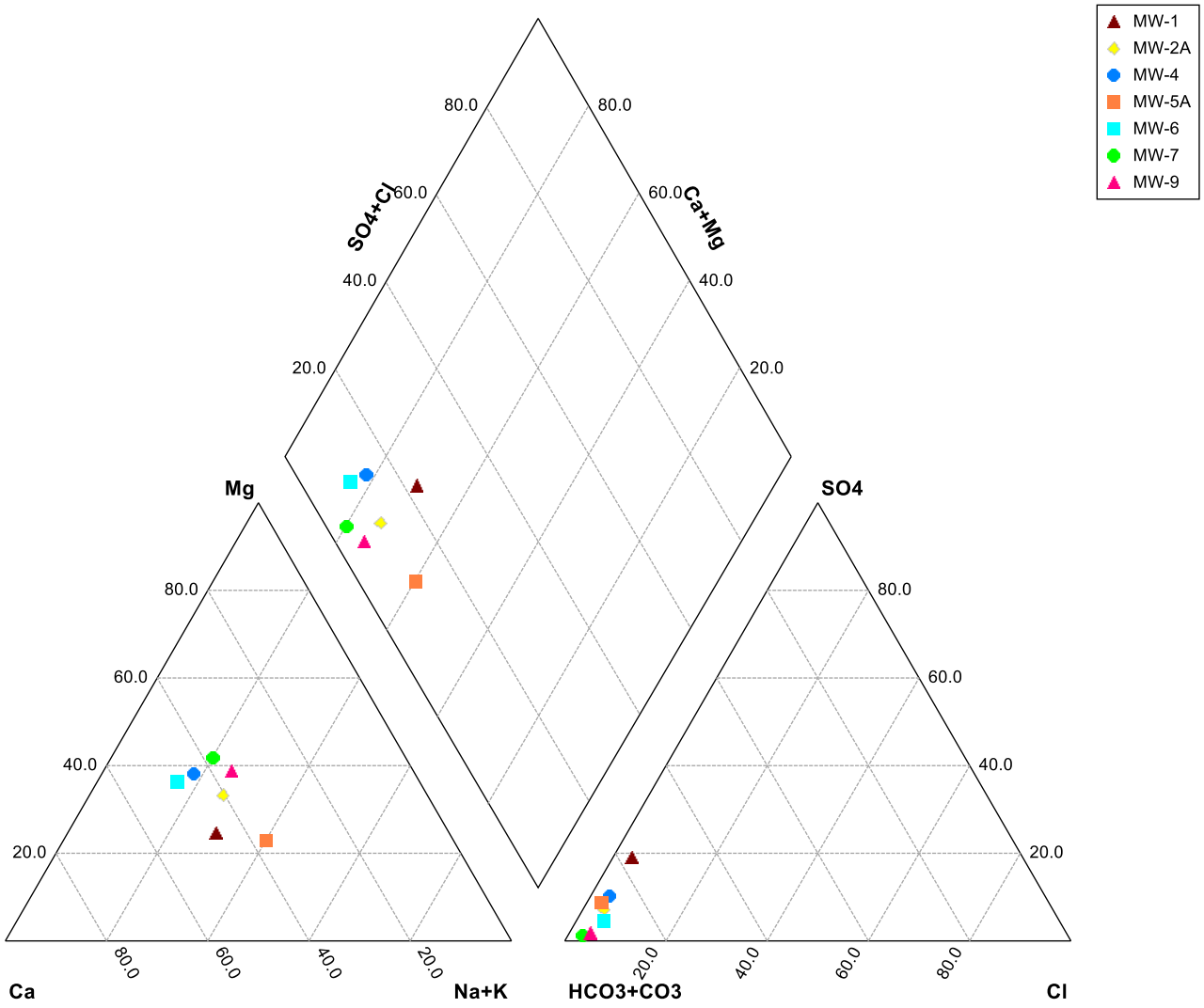
L = not reported at or above the MRL (Method Reporting Limit).

mg/L = milligrams per liter.

Attachment E

Trilinear Diagrams

Third Quarter 2023, Monitoring Wells

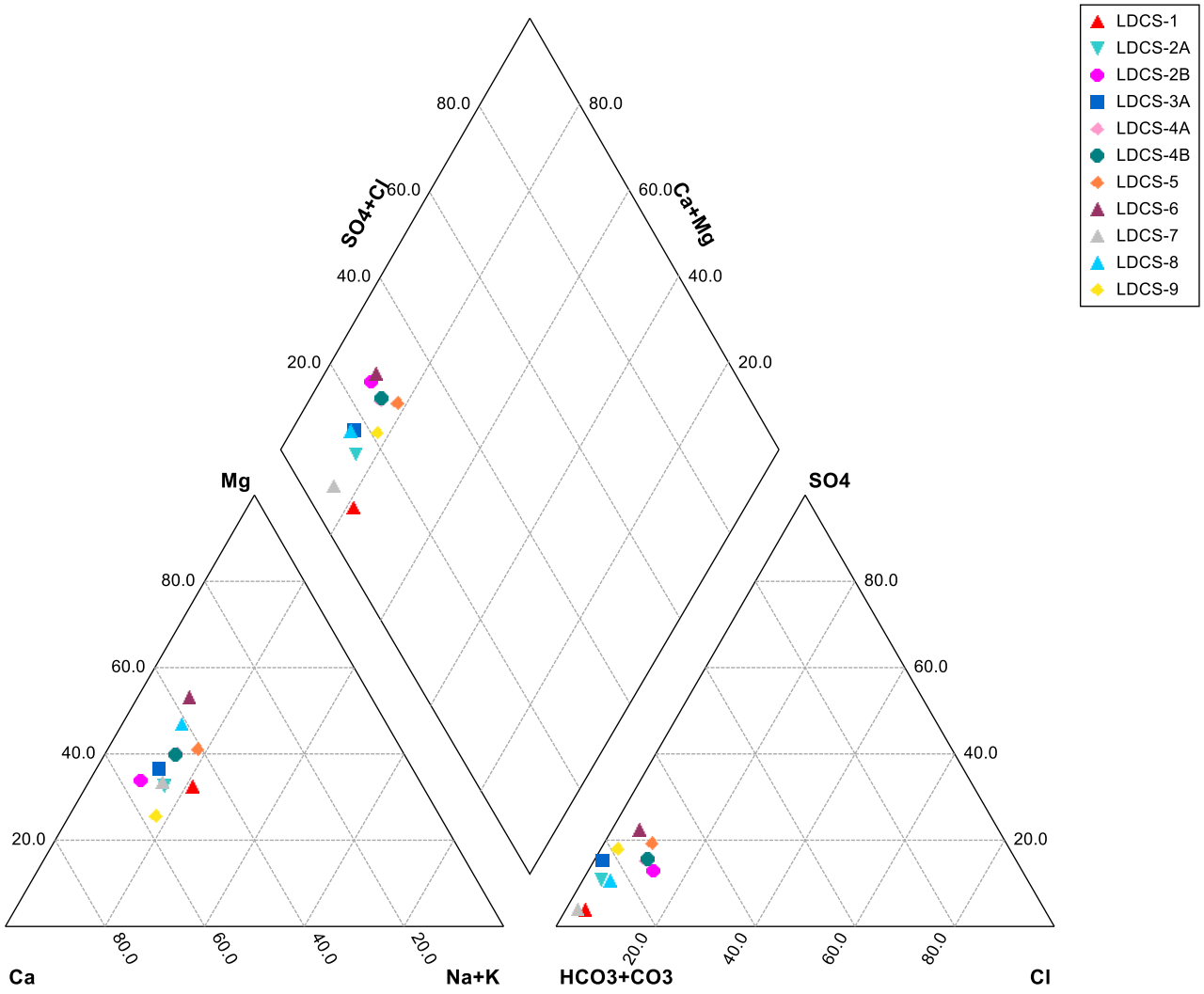


LRI Landfill

Piper Diagram – 3Q23

LRI, Inc.
04223001.02
November 10, 2023

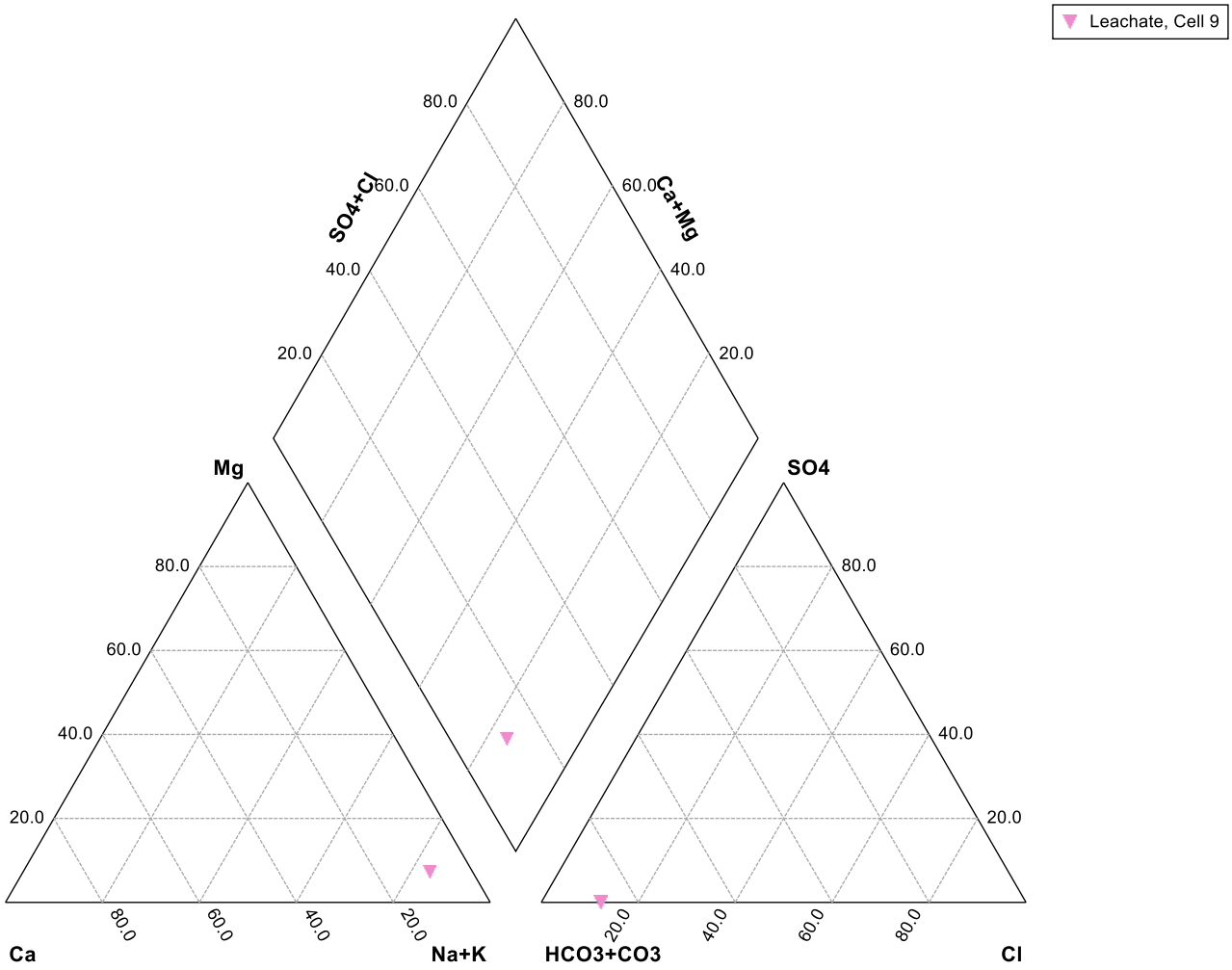
Third Quarter 2023, LDCS



LRI Landfill
Piper Diagram – 3Q23

LRI, Inc
04223001.02
November 10, 2023

Third Quarter 2023, Leachate



LRI Landfill
Piper Diagram – 3Q23

LRI, Inc
04223001.02
November 10, 2023

Attachment F

Analytical Data Validation Report

SECOND QTR. 2023 DATA VALIDATION REPORT – LRI LANDFILL

Project Details

Project No.	04223001.02	**Site Name**	LRI 304th Street LF
Data Validator	Alex Deszo	**Data Level**	Level 2
Date	10/23/23	**DV Tier**	Tier 1
QA Document	LRI Landfill Groundwater Monitoring Plan, March 10, 2014		

Sample Login Summary

Sample Group	Sample Login Comments	Analytical Lab (Primary)
280-182073-1	No Comment	TestAmerica, Denver, CO
280-182144-1	No Comment	TestAmerica, Denver, CO
280-182143-1	A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC)	TestAmerica, Denver, CO

Analytical Summary

Sample Group	Analyses					
	TDS/Alk/NO3	Metals	NH3/TOC	VOCs	Anions	TSS
280-182073-1	X	X_2	X	X	X	X
280-182144-1	X	X_3	X	X	X	-
280-182143-1	X	X_2	X	X	X	X

Notes:

1. Dissolved metals analysis performed (field filtered)
2. Dissolved and Total metals analysis performed
3. Total Metals analysis performed

Laboratory Quality Assurance Samples

Lab QA Samples	Results	Comments
Method Blank	Acceptable.	See case narratives
LCS/LCSD	Acceptable.	See case narratives.
MS/MSD	Acceptable	See case narratives.
Metals	Acceptable.	See case narratives.
Duplicates	Acceptable.	See case narratives.
Organics	Acceptable.	See case narratives.
General Chemistry	Acceptable.	See case narratives.
General Comments	Acceptable.	See case narratives.

Field Quality Assurance Samples

Field QA Samples	Sample Group	Analytes	Notes
QC-FB		None.	
QC-FB		None.	

Lab Quality Flags

Flag	Sample Groups	Comments
4	280-182143-1, 280-182073-1, 280-182144-1	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
^+	280-182073-1	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
F1	280-182073-1, 280-182143-1, 280-182144-1	MS and/or MSD recovery exceeds control limits.
J	280-182073-1, 280-182143-1, 280-182144-1	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Duplicate Evaluation

Analyte	Units	MW-7 (304-092823-14)	MW-7 DUP (304-092823-23)	RPD (%)
Alkalinity, Total	mg/L	170	170	0.00
Ammonia	mg/L	0.21	0.23	9.09
Arsenic, Total	mg/L	0.005	0.0052	3.92
Barium, Total	mg/L	0.012	0.013	8
Calcium, Dissolved	mg/L	30	30	0
Chloride	mg/L	2.9	3	3.39
Dibromofluoromethane	ug/L	0.62	0.62	0
Iron, Dissolved	mg/L	0.25	0.25	0
Magnesium, Dissolved	mg/L	20	20	0
Manganese, Dissolved	mg/L	0.2	0.21	4.88

Analyte	Units	MW-7 (304-092823-14)	MW-7 DUP (304-092823-23)	RPD (%)
Potassium, Dissolved	mg/L	6.1	5.8	5.04
Sodium, Dissolved	mg/L	16	14	13.33
Sulfate	mg/L	4.1	4.3	4.76
Toluene D8	ug/L	49	50	2.02
Total Dissolved Solids	mg/L	200	200	0
Total Organic Carbon	mg/L	1	1	0
4-bromofluorobenzene	ug/L	51	50	1.98

U = Non-detection. Reporting limit (RL) used for calculation of RPD when necessary.

Additional Data Flags

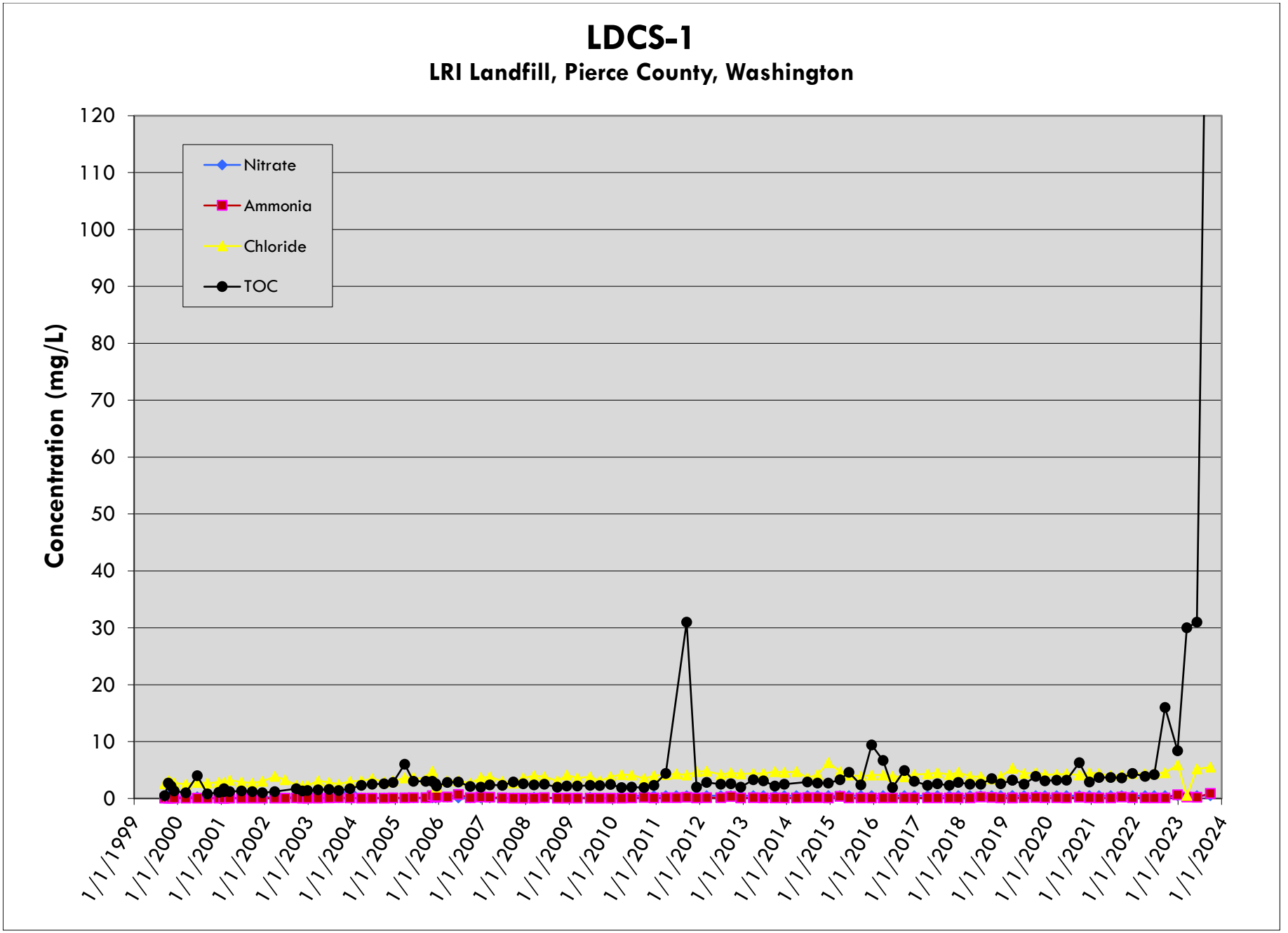
Flag	Description
U	Not detected above the method reporting limit.

Qualified Data and Usability

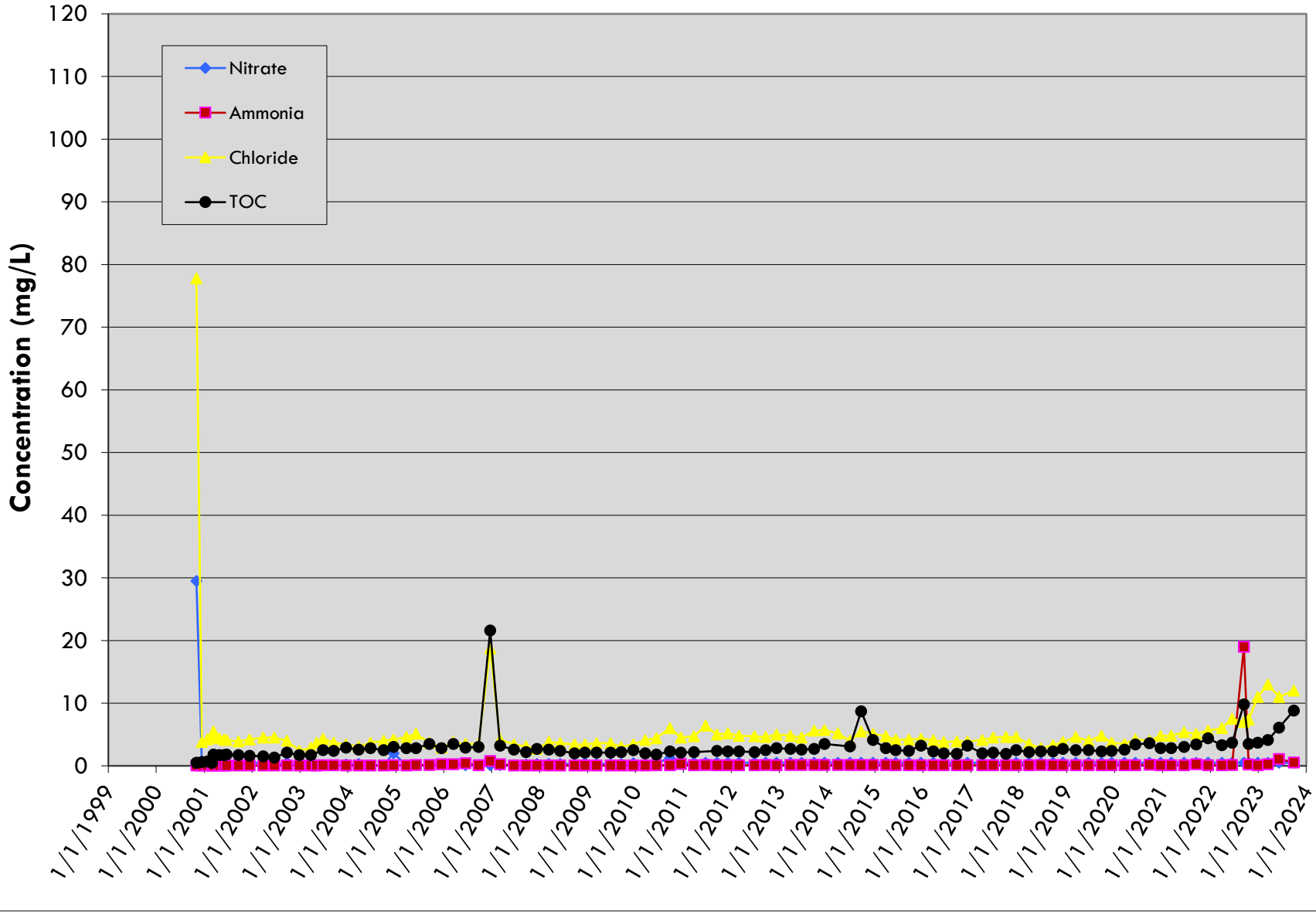
Lab qualifiers are noted. All data, as qualified, are acceptable for use.

Attachment G

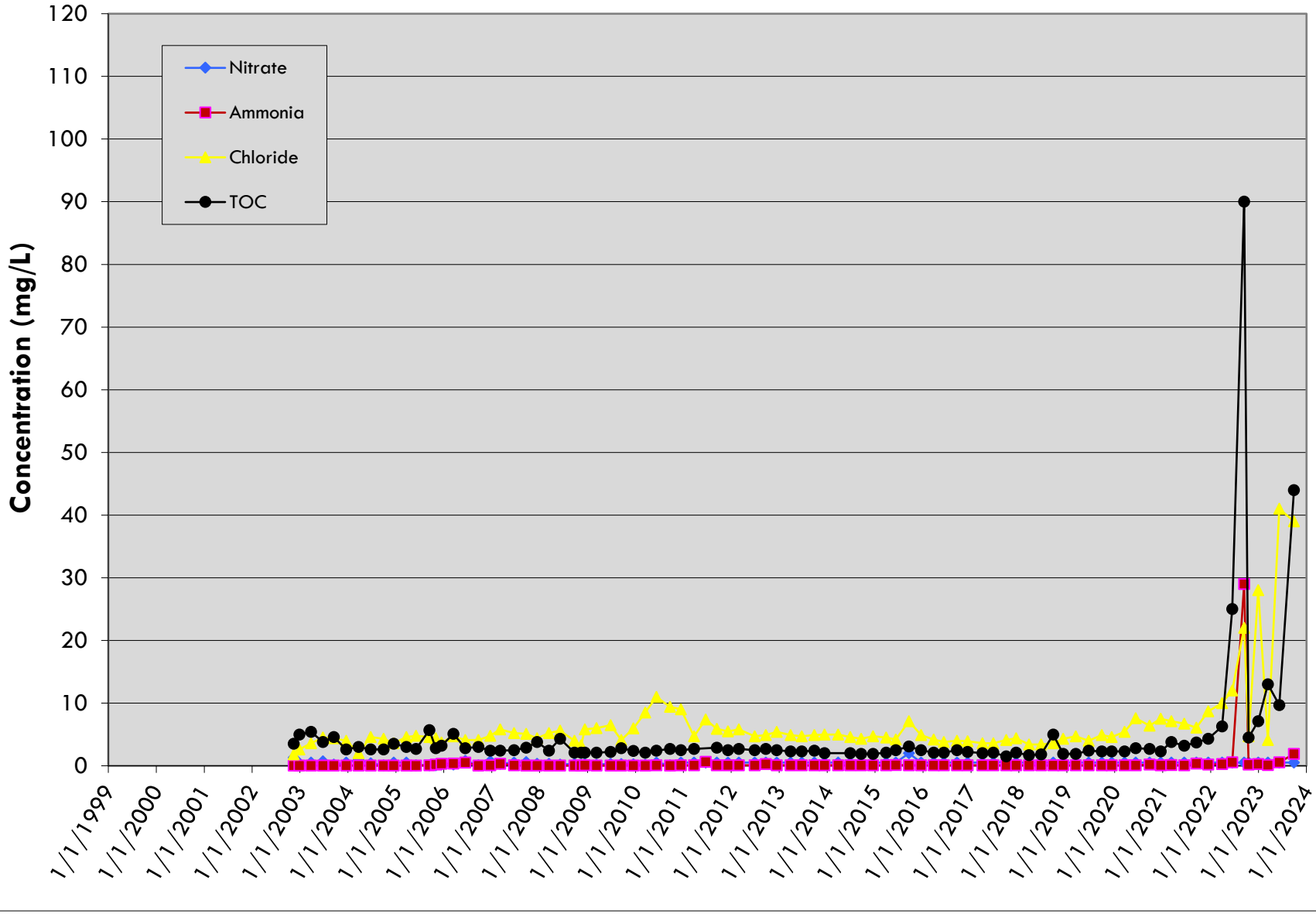
Groundwater and LDCS Time Trend Plots


LDCS-1
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Nitrate
Ammonia
Chloride
TOC
120
110
100
90
80
70
60
50
40
30
20
10
0
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

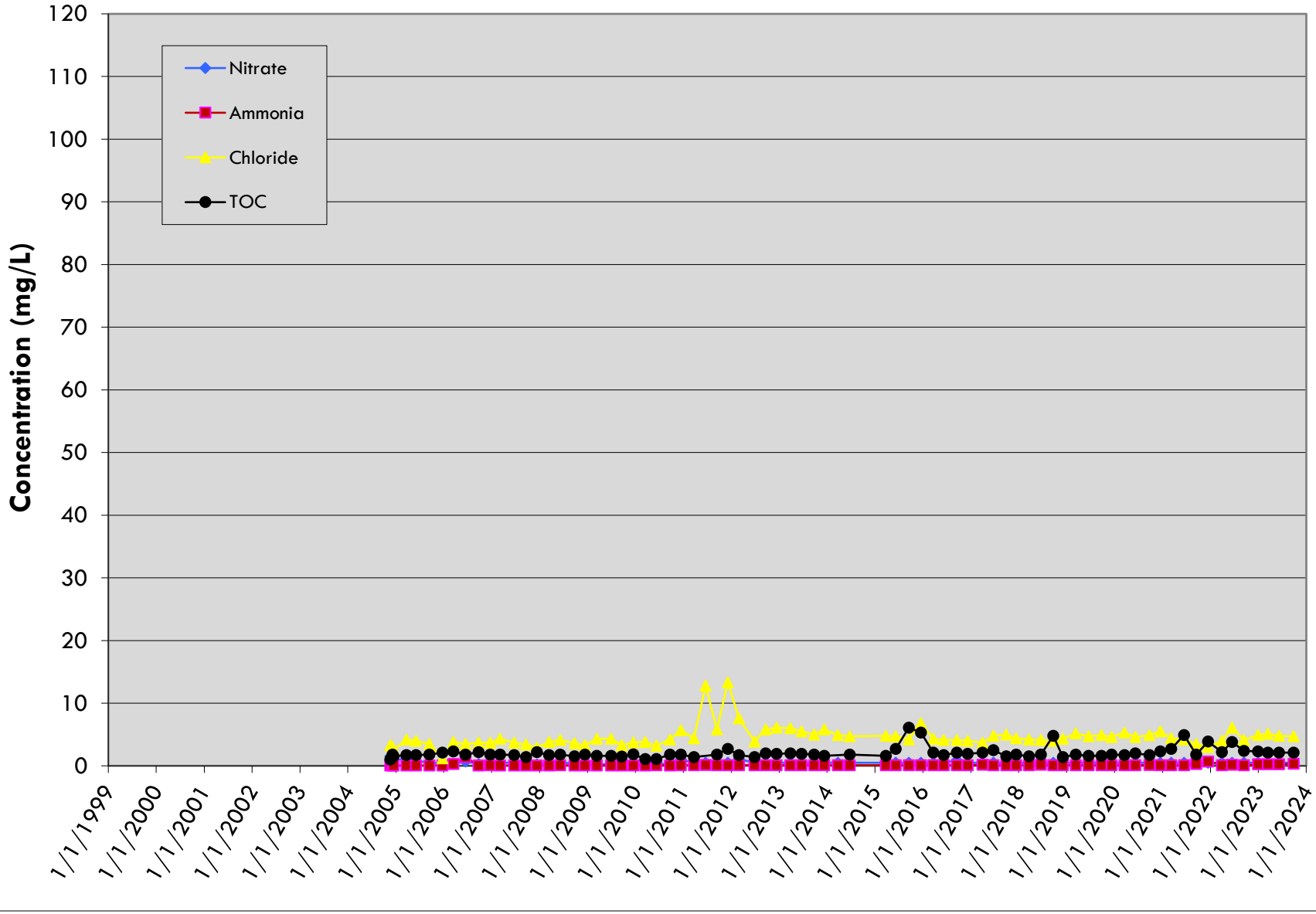
LDCS-2A
LRI Landfill, Pierce County, Washington



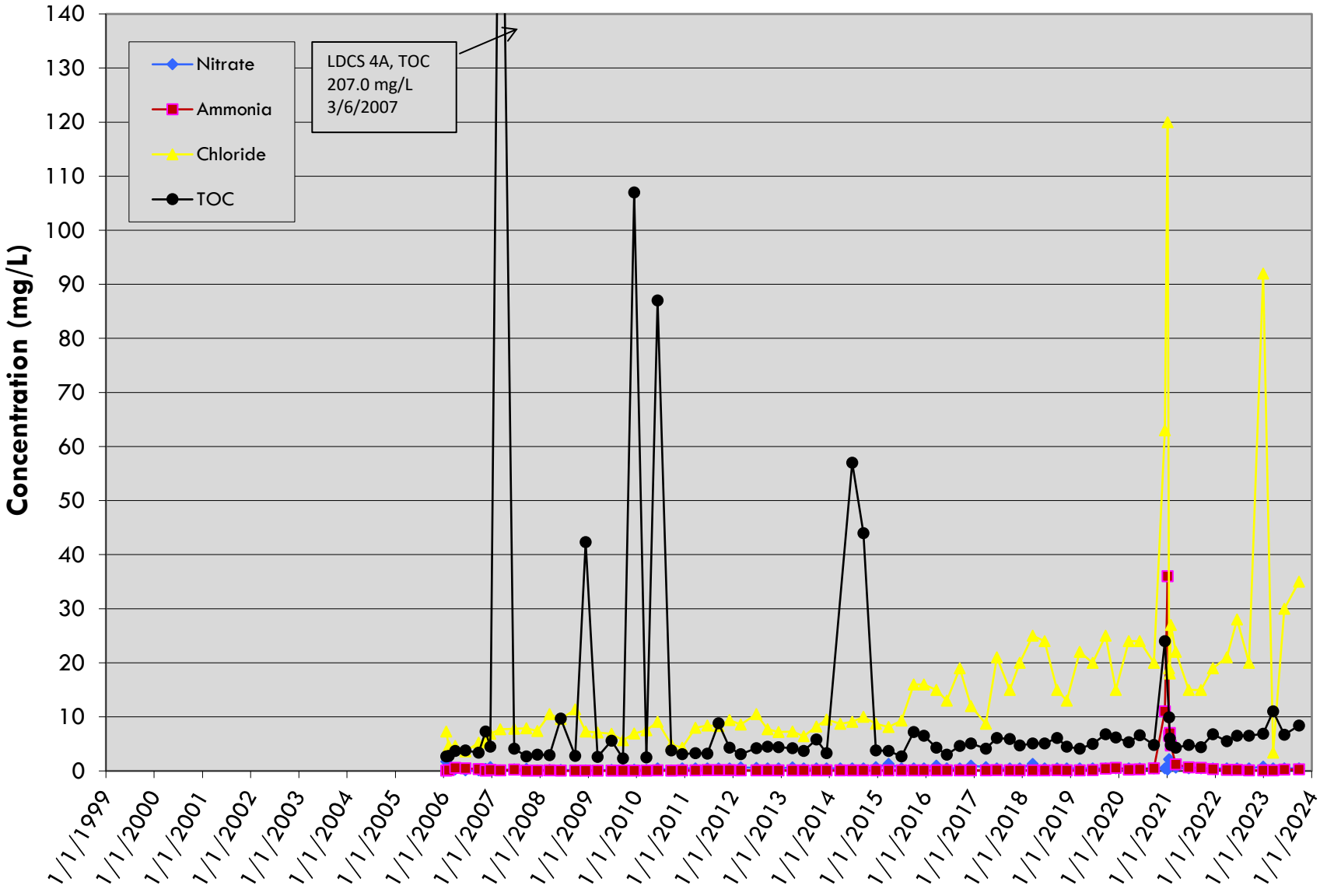
LDCS-2B
LRI Landfill, Pierce County, Washington



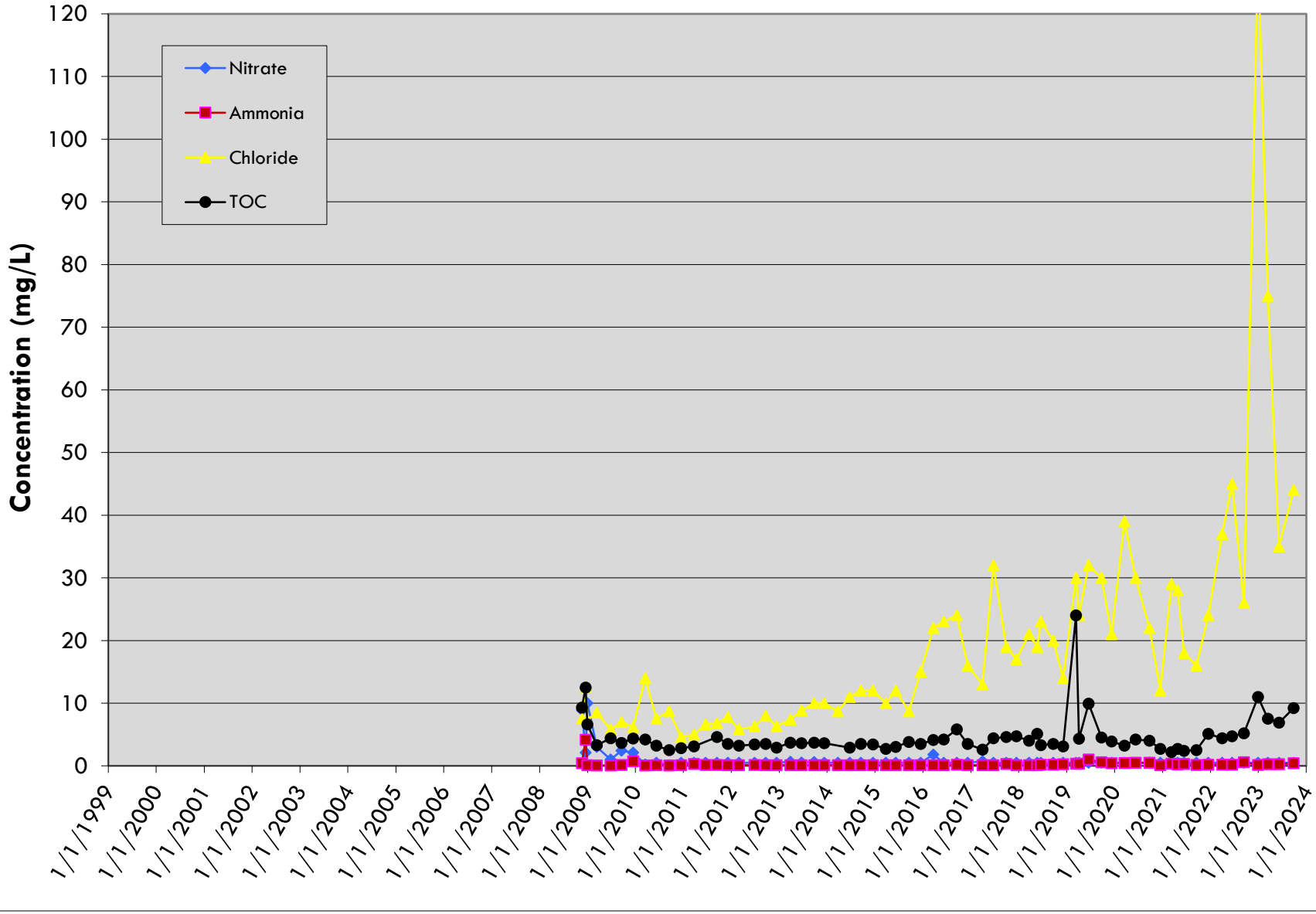
LDCS-3A
LRI Landfill, Pierce County, Washington



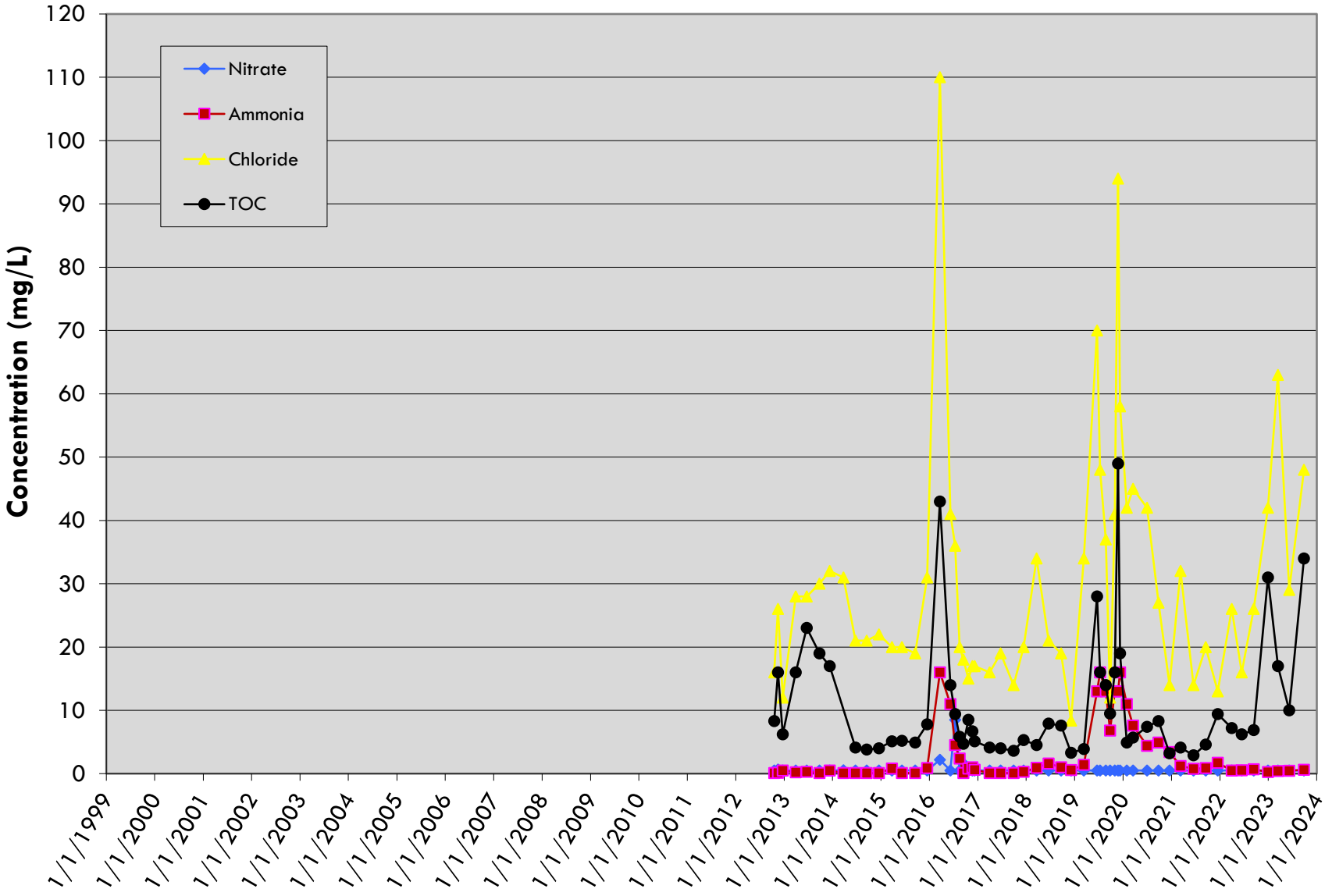
LDCS-4A
LRI Landfill, Pierce County, Washington



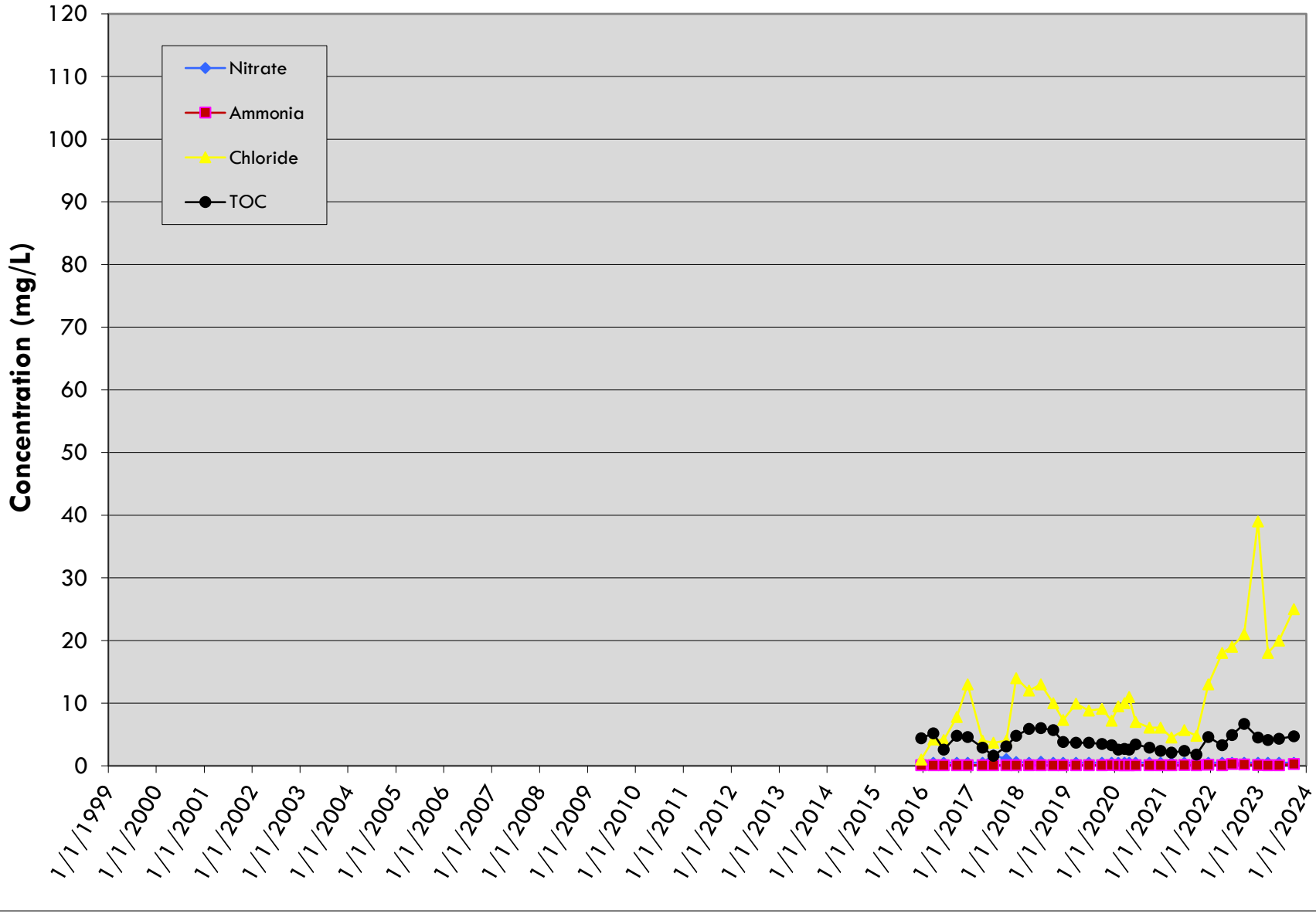
LDCS-4B
LRI Landfill, Pierce County, Washington

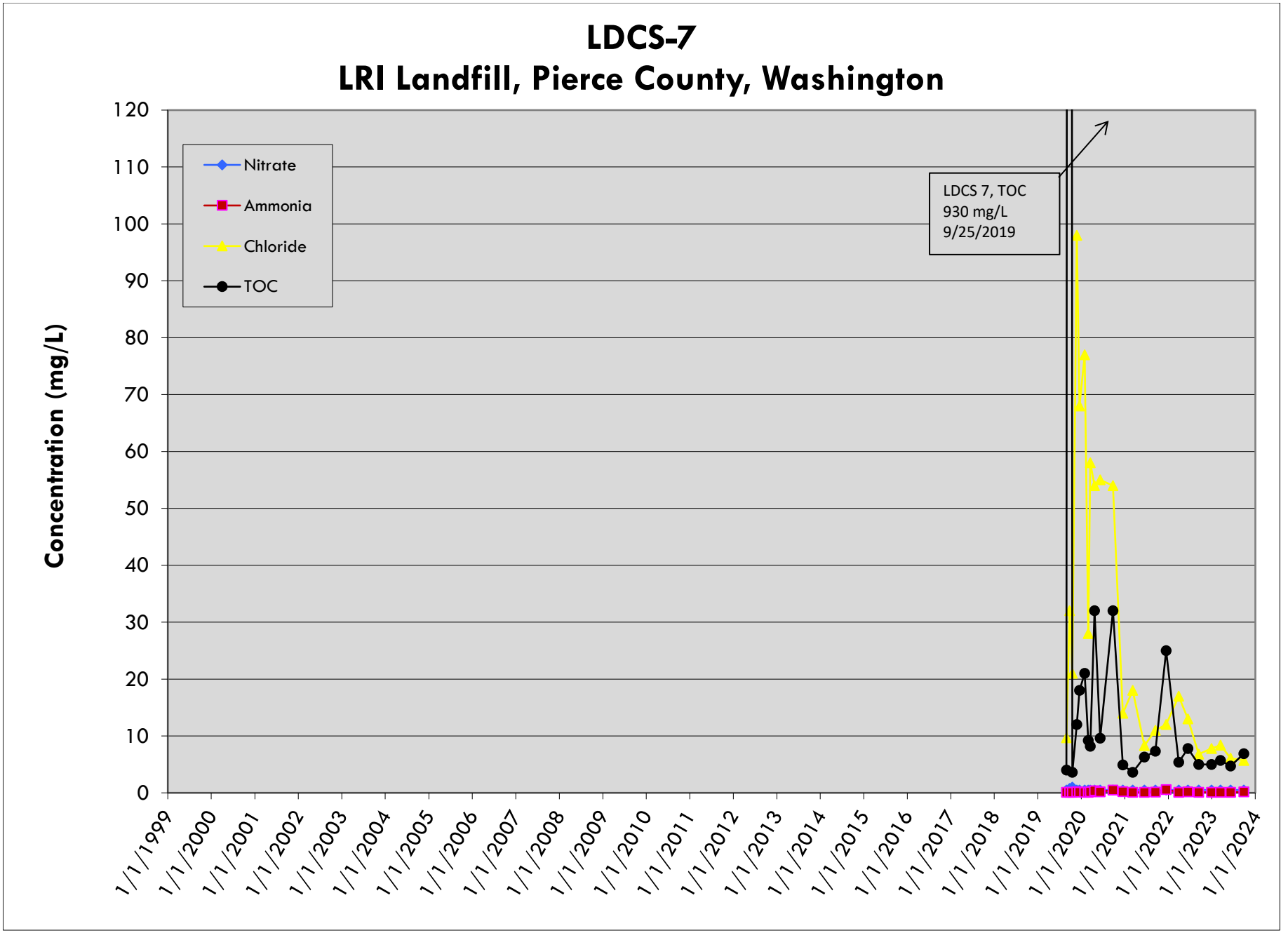


LDCS-5
LRI Landfill, Pierce County, Washington

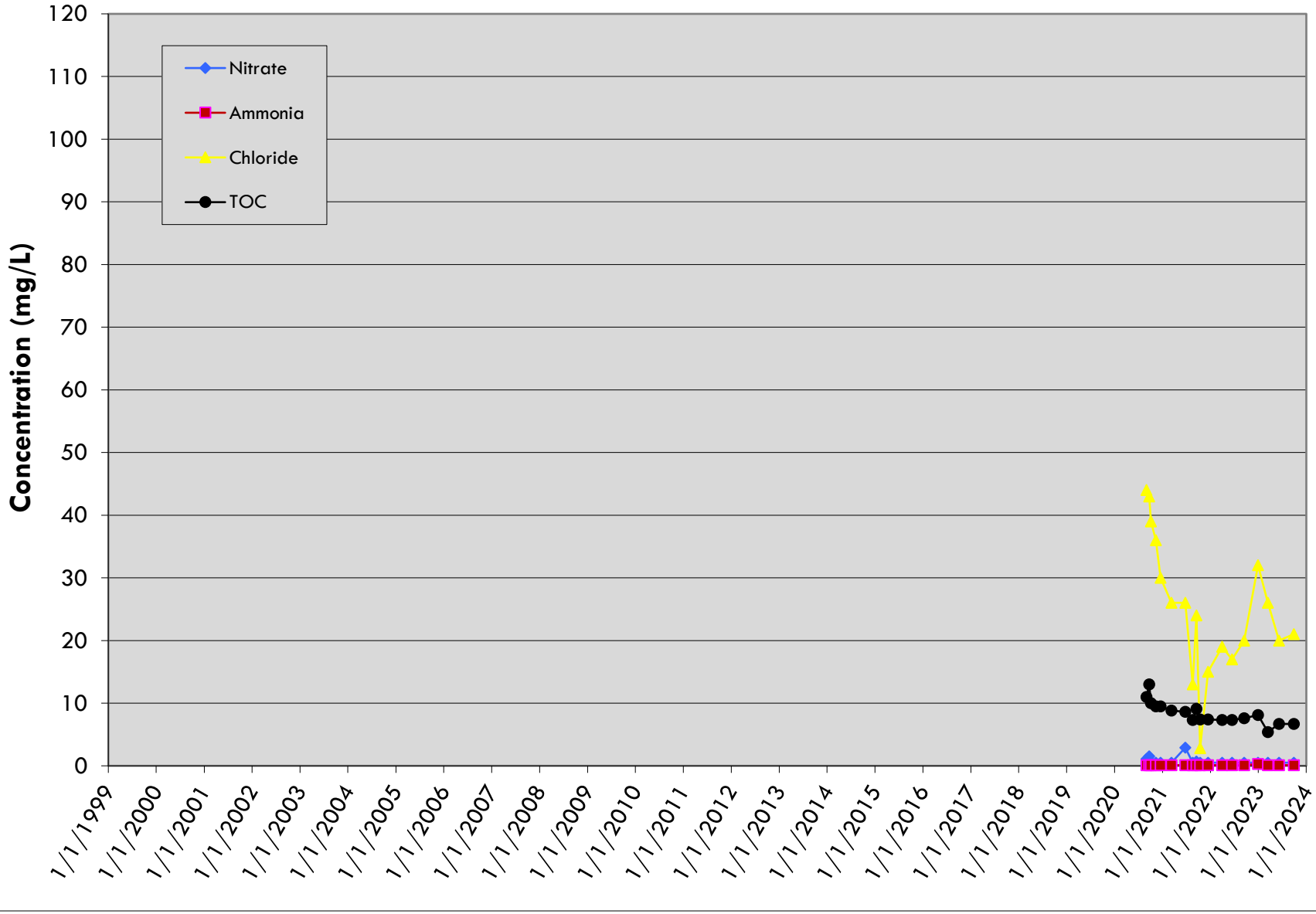


LDCS-6A
LRI Landfill, Pierce County, Washington

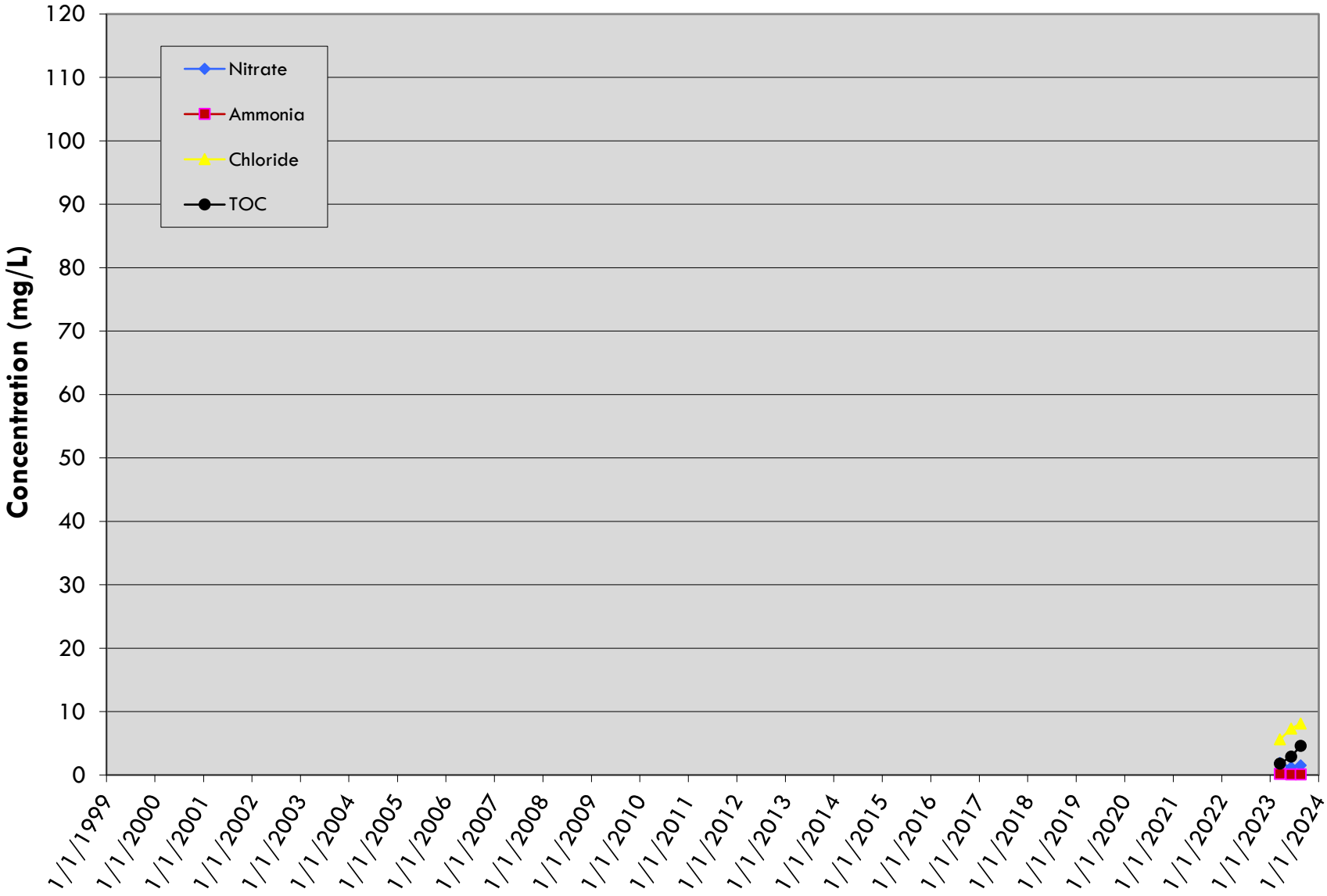


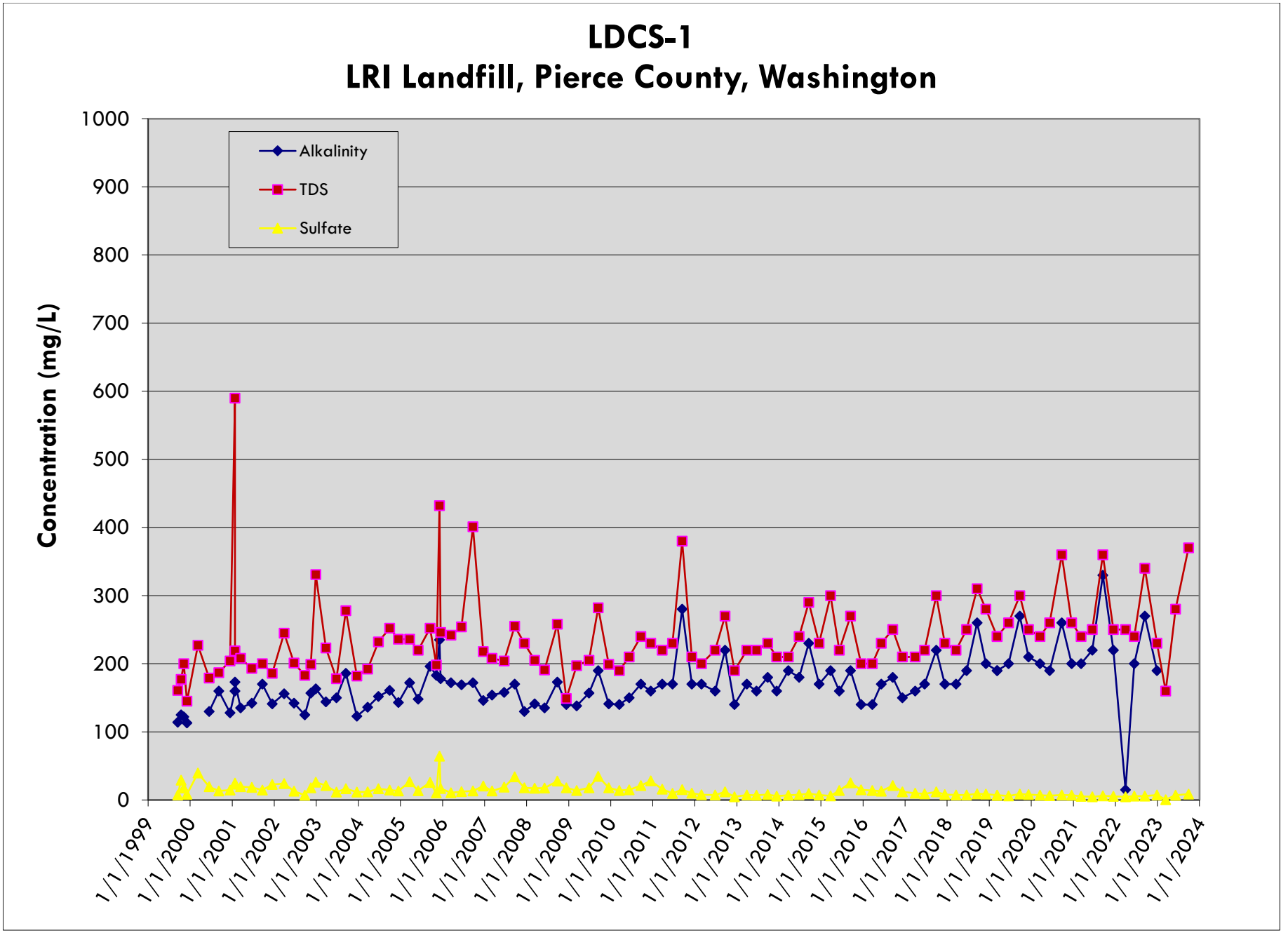

LDCS-7
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
120
110
100
90
80
70
60
50
40
30
20
10
0
Nitrate
Ammonia
Chloride
TOC
LDCS 7, TOC
930 mg/L
9/25/2019
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

LDCS-8
LRI Landfill, Pierce County, Washington

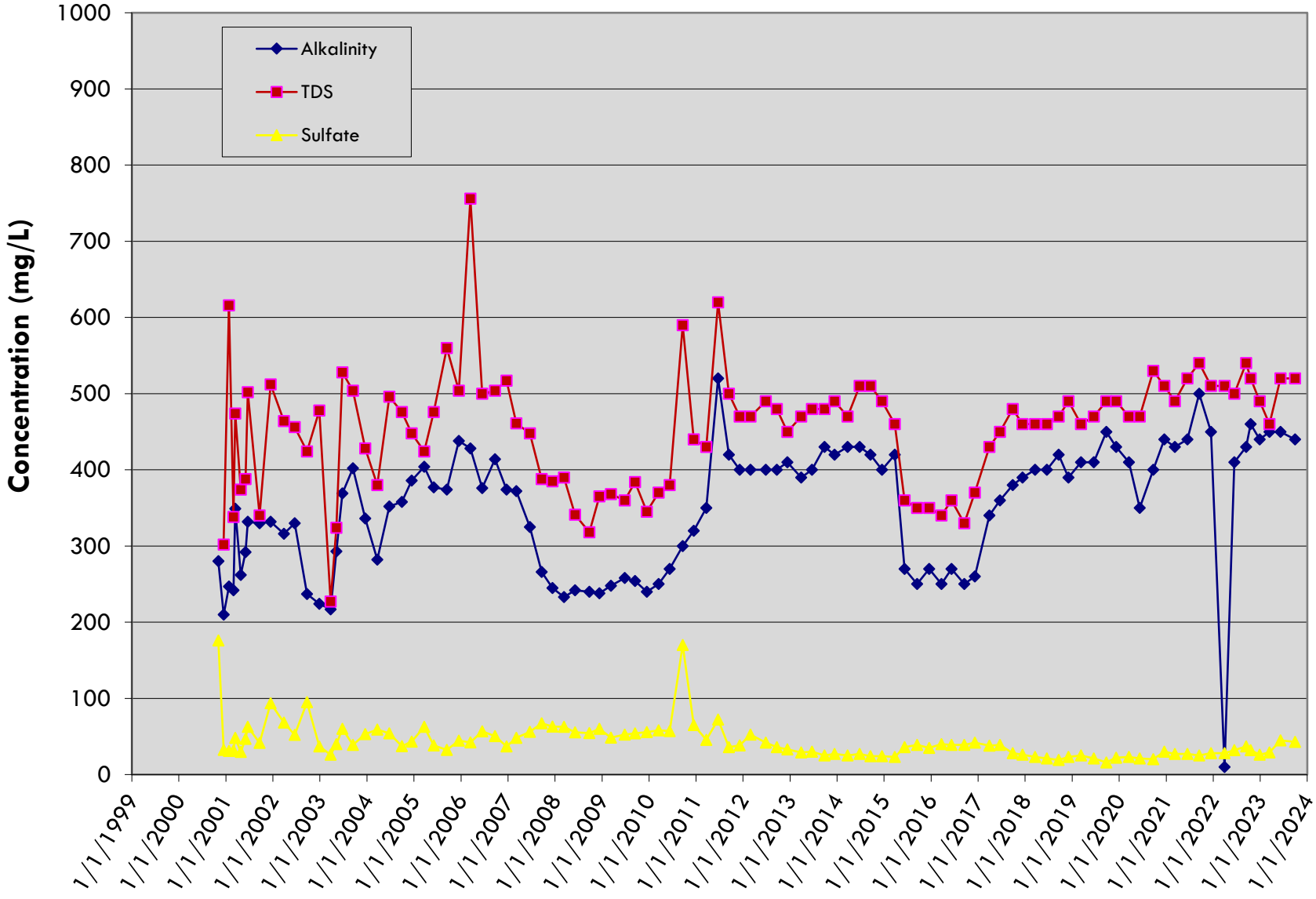


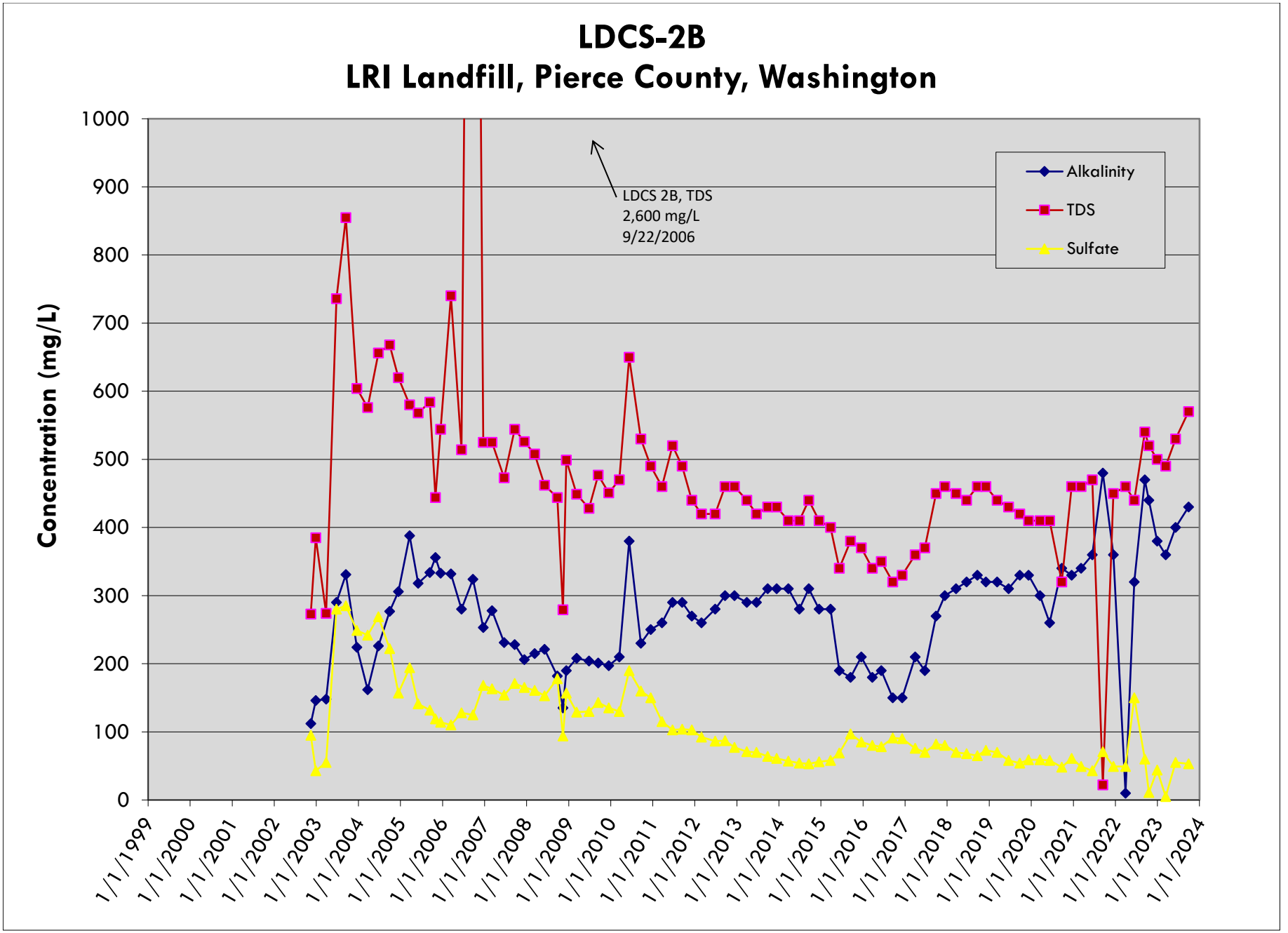
LDCS-9
LRI Landfill, Pierce County, Washington

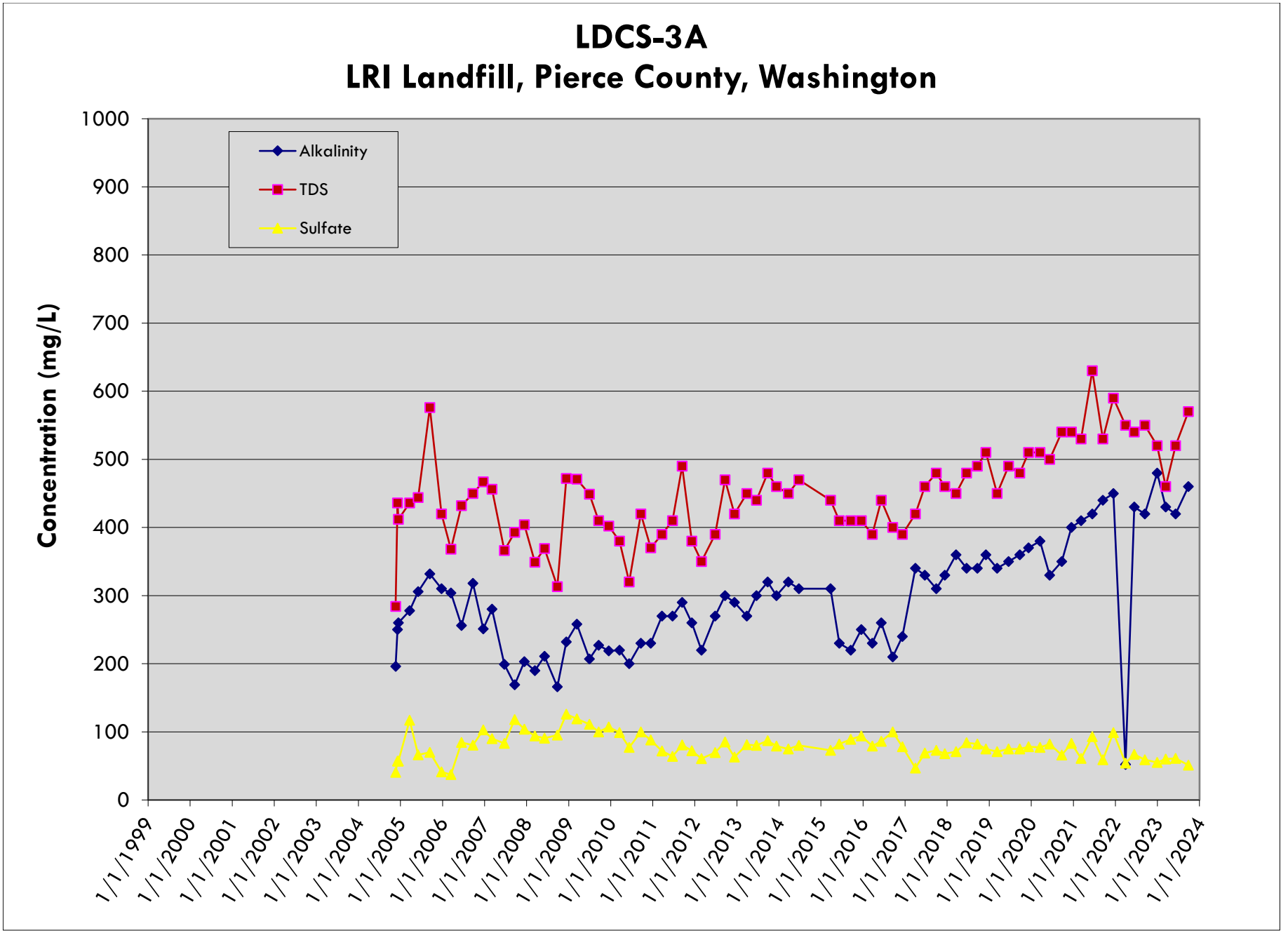



LDCS-1
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Alkalinity
TDS
Sulfate
1000
900
800
700
600
500
400
300
200
100
0
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

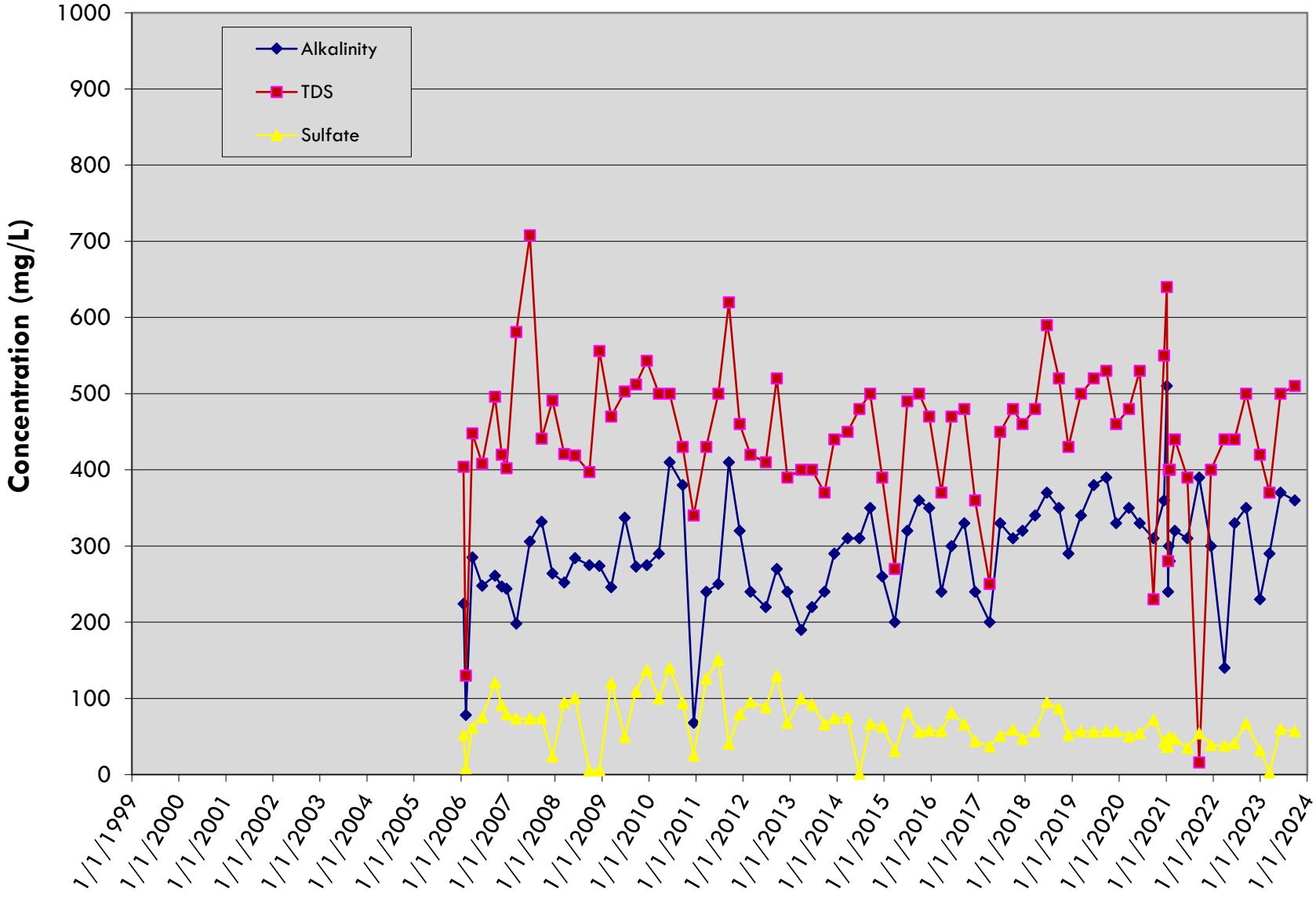
LDCS-2A
LRI Landfill, Pierce County, Washington

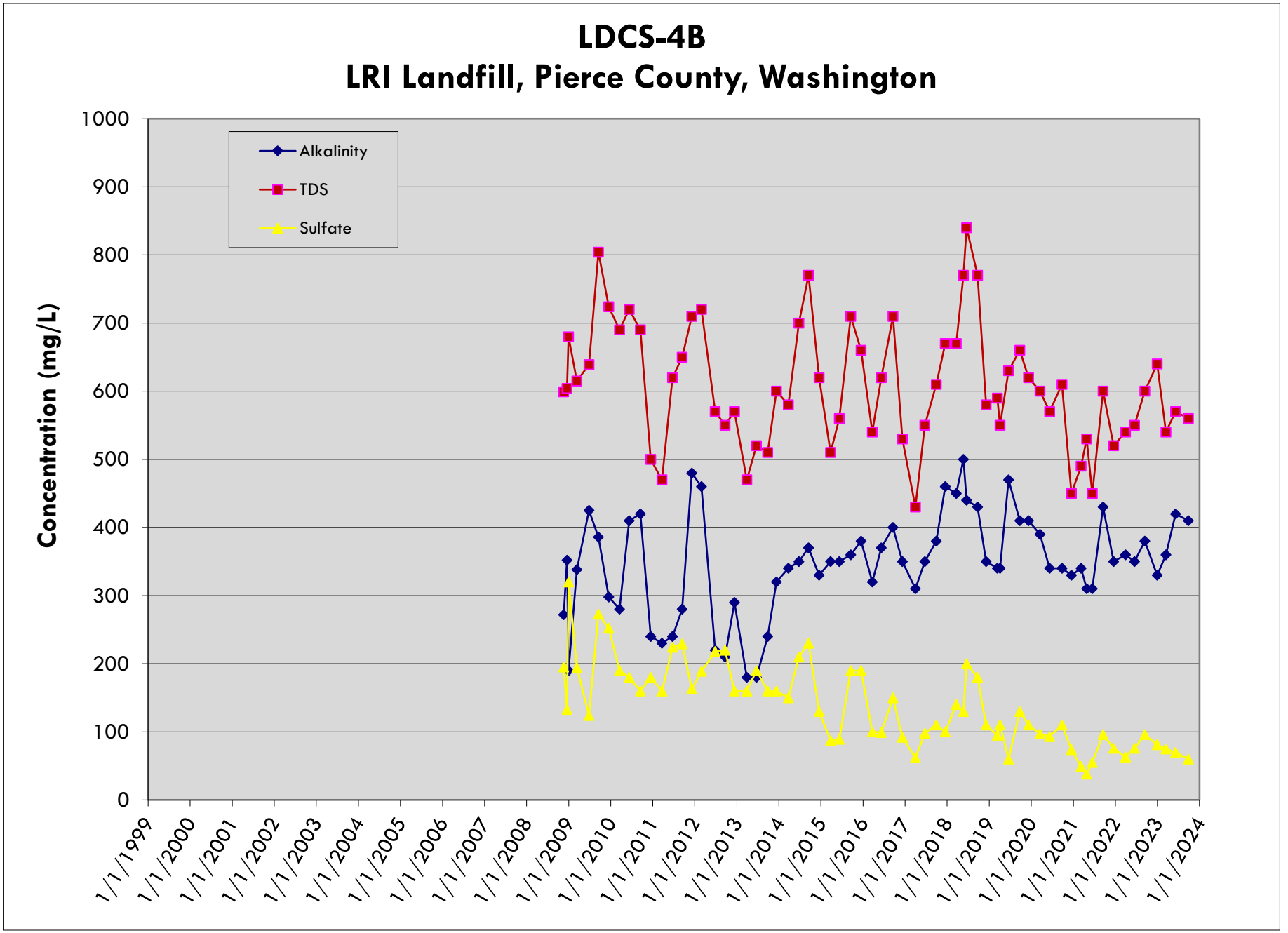



LDCS-2B
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
LDCS 2B, TDS
2,600 mg/L
9/22/2006
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

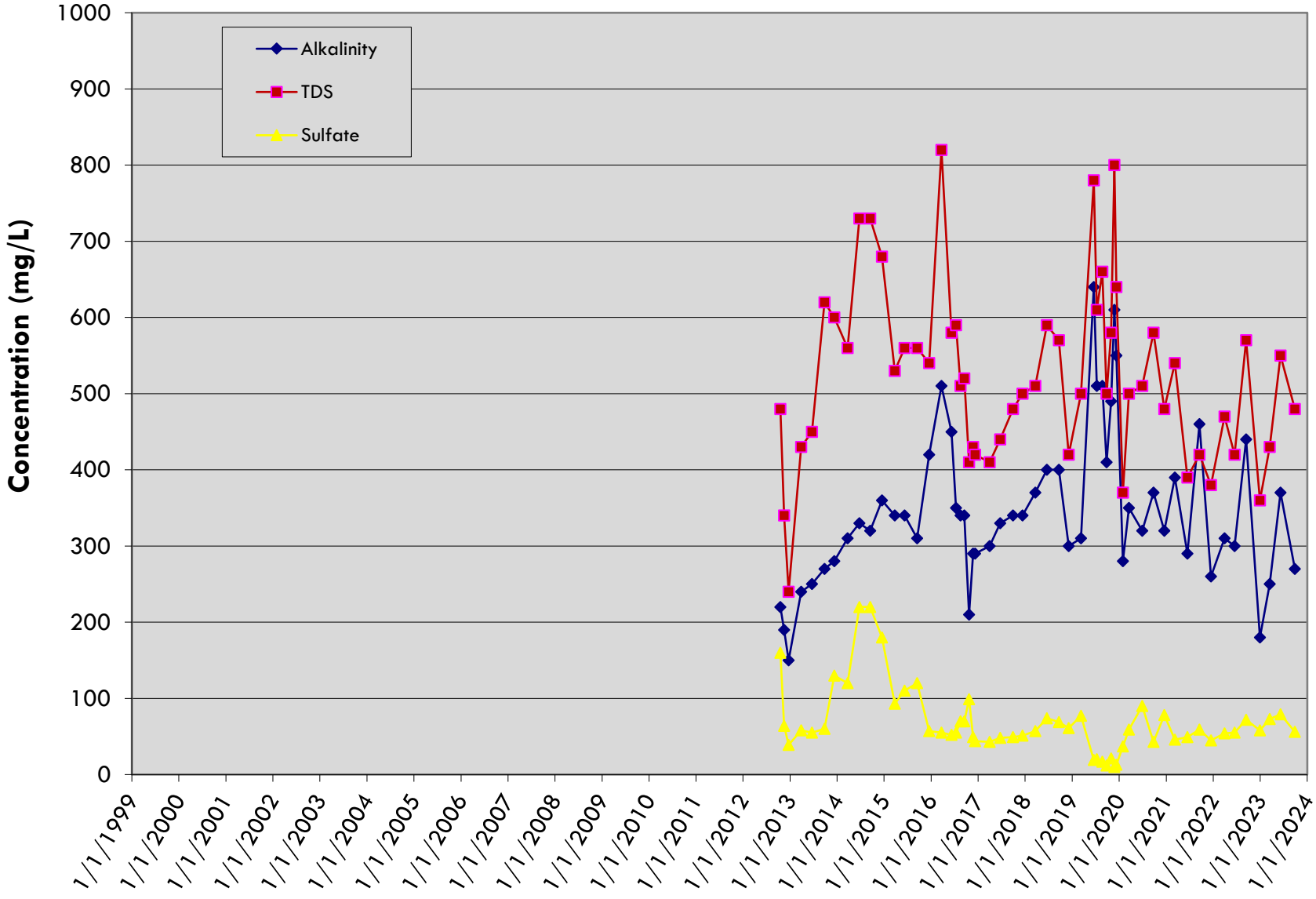

LDCS-3A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Alkalinity
TDS
Sulfate
1000
900
800
700
600
500
400
300
200
100
0
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

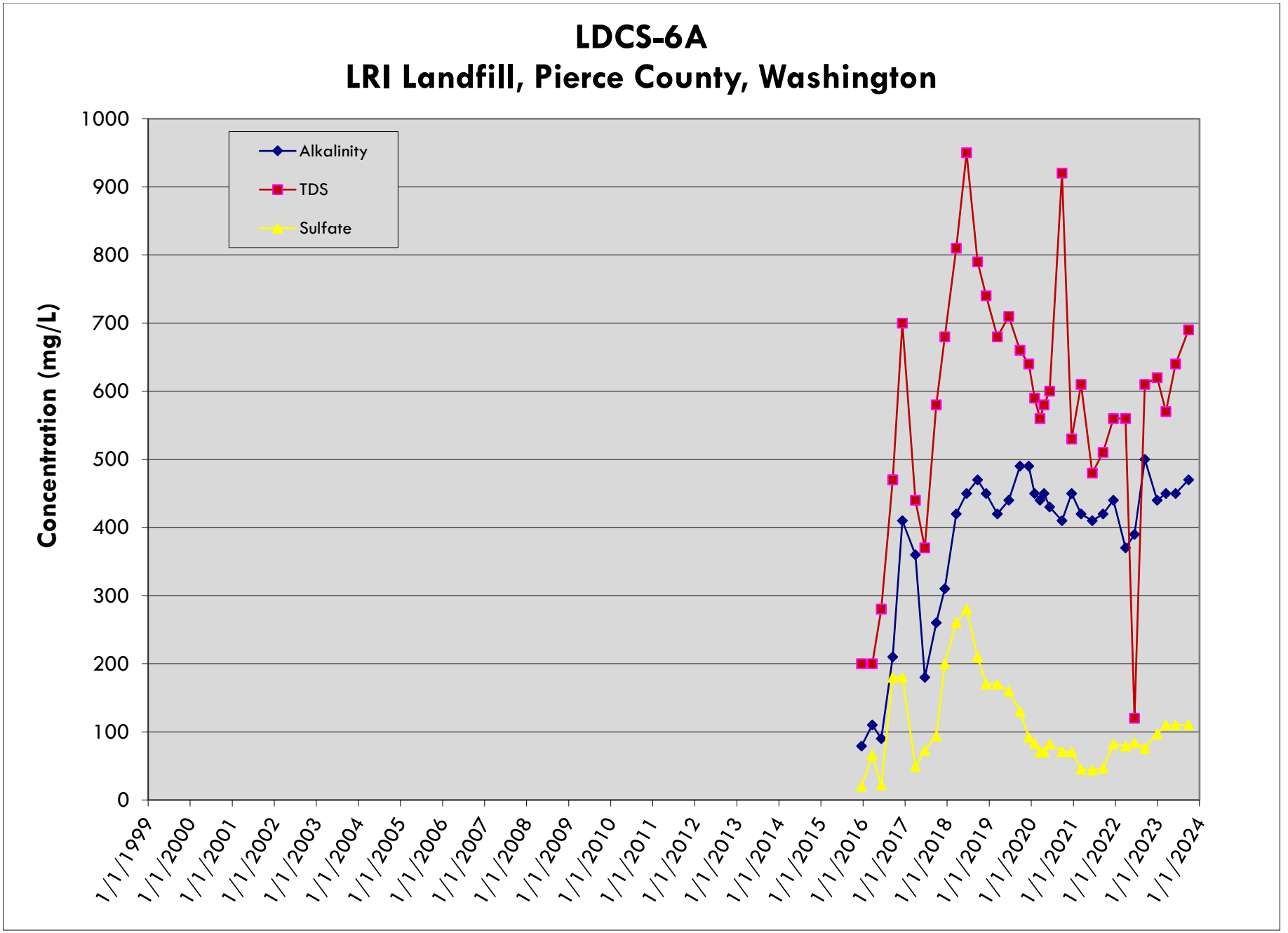
LDCS-4A
LRI Landfill, Pierce County, Washington



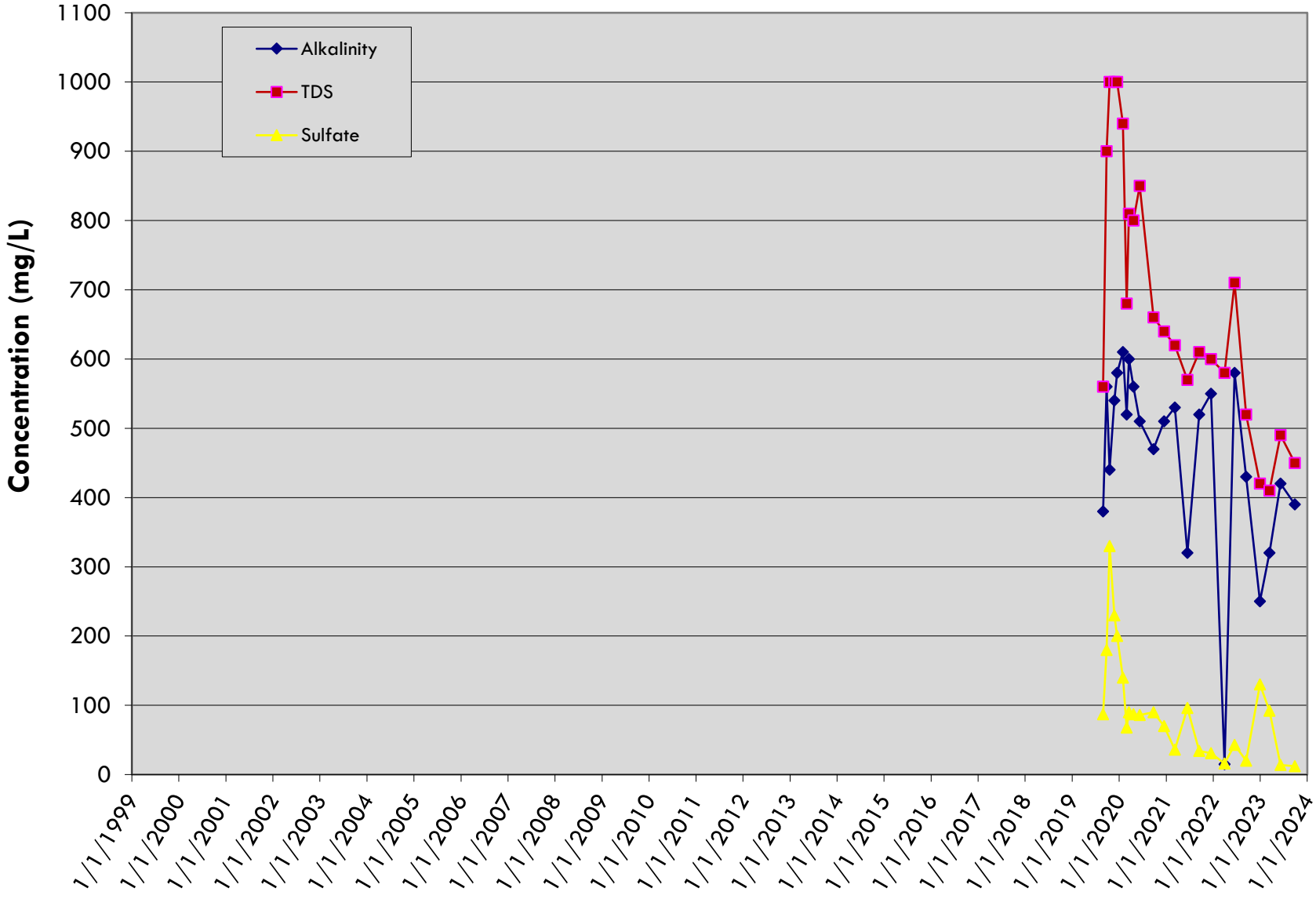

LDCS-4B
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Alkalinity
TDS
Sulfate
0
100
200
300
400
500
600
700
800
900
1000
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

LDCS-5
LRI Landfill, Pierce County, Washington

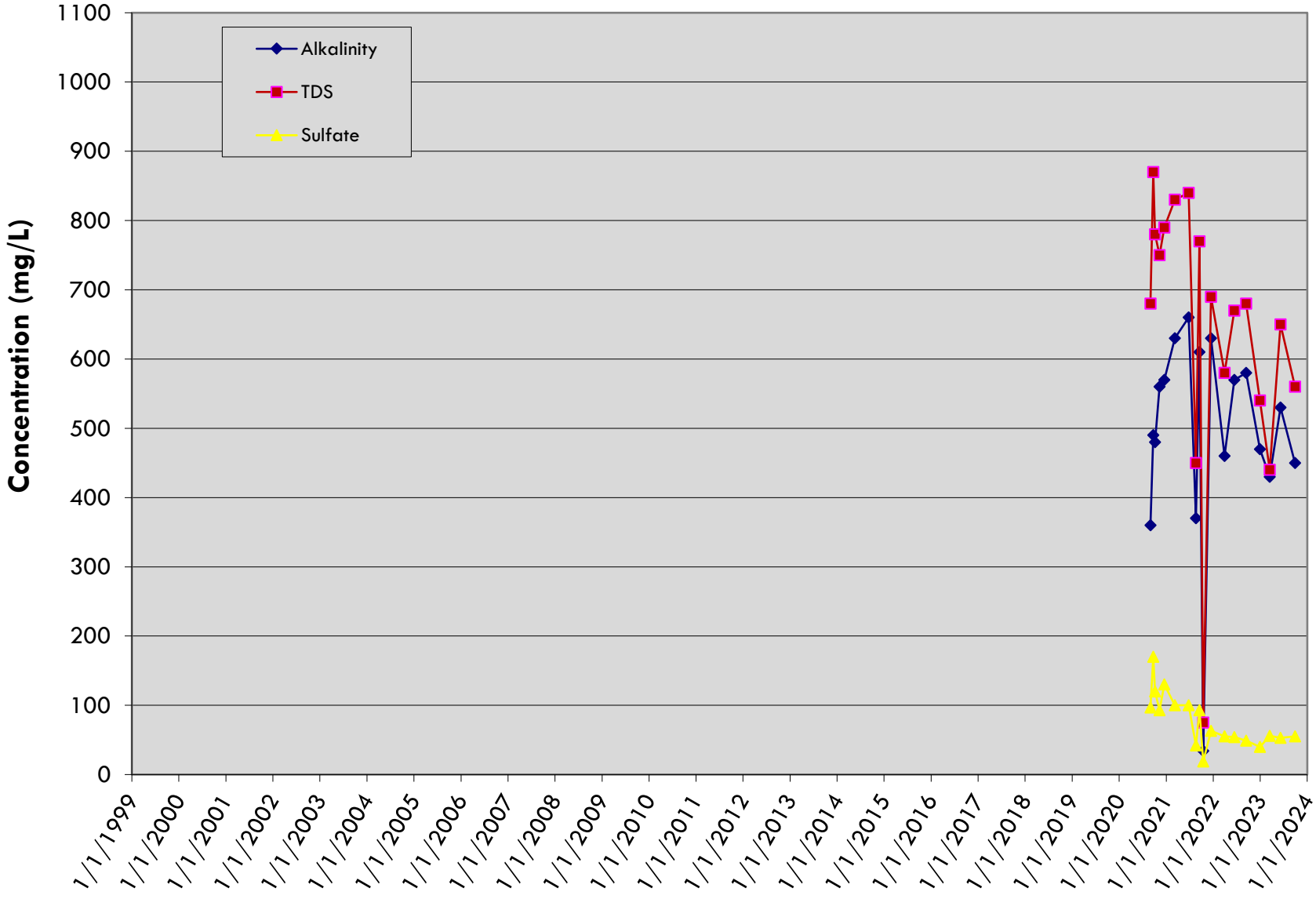



LDCS-6A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Alkalinity
TDS
Sulfate
1000
900
800
700
600
500
400
300
200
100
0
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

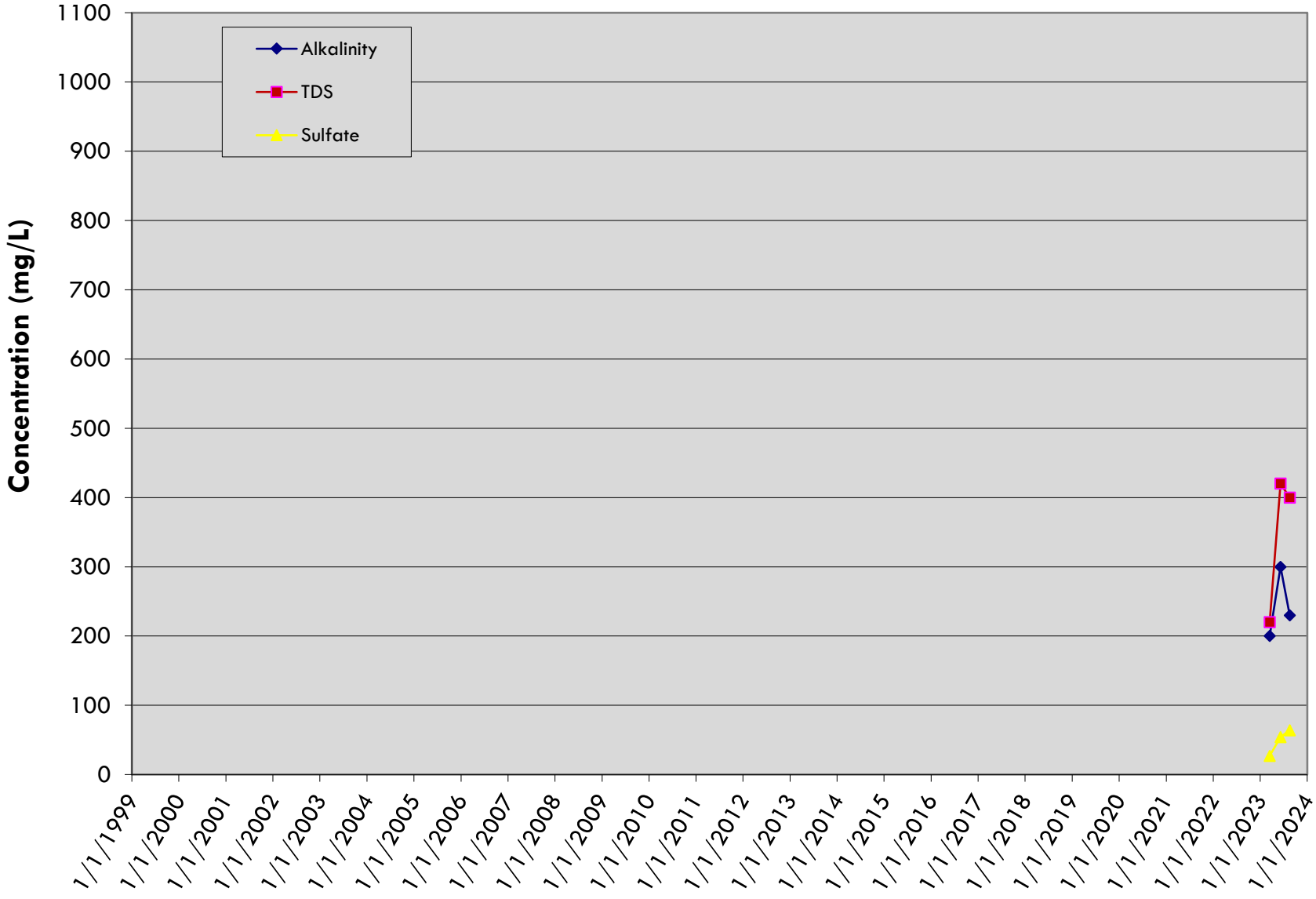
LDCS-7
LRI Landfill, Pierce County, Washington



LDCS-8
LRI Landfill, Pierce County, Washington

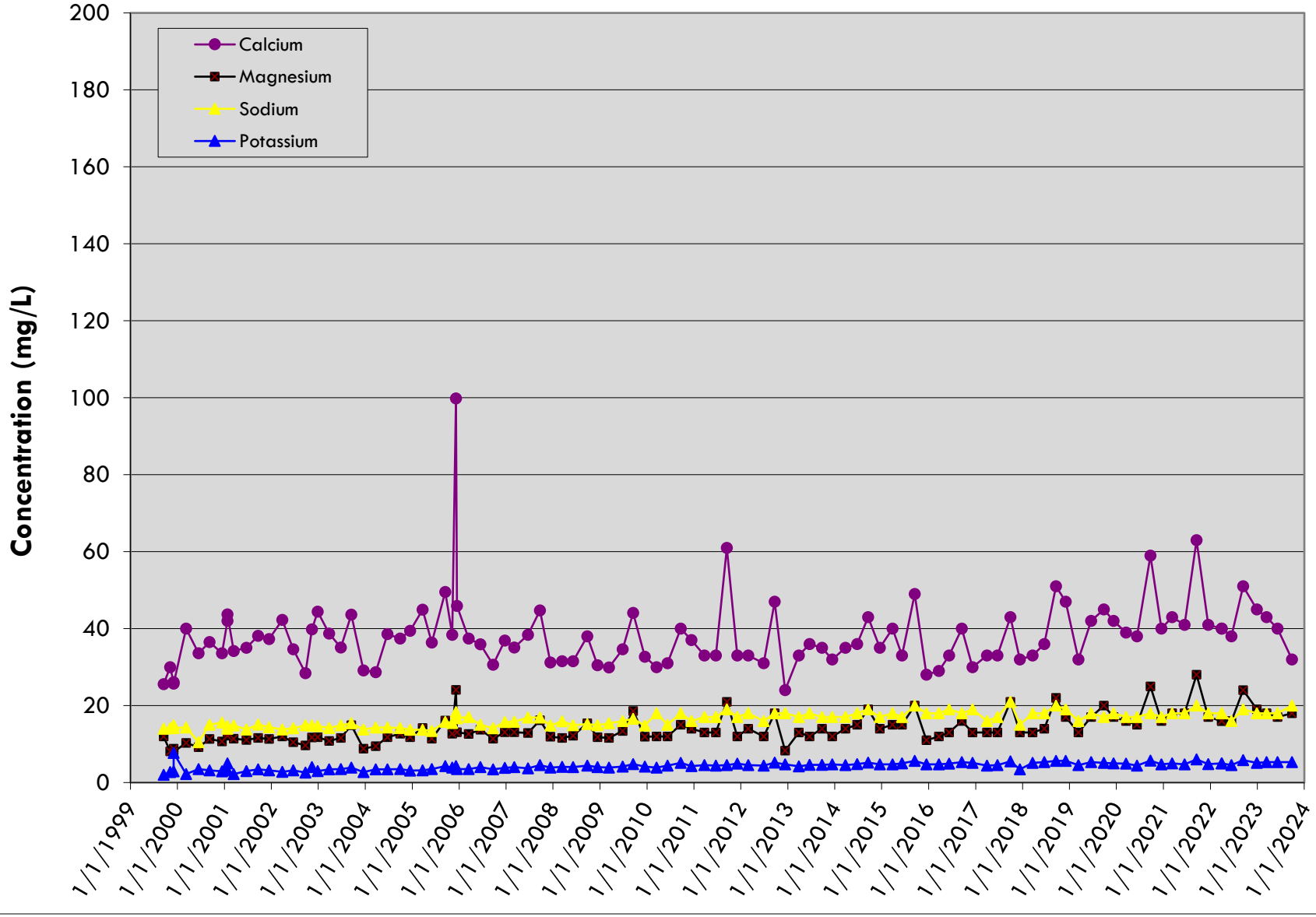


LDCS-9
LRI Landfill, Pierce County, Washington

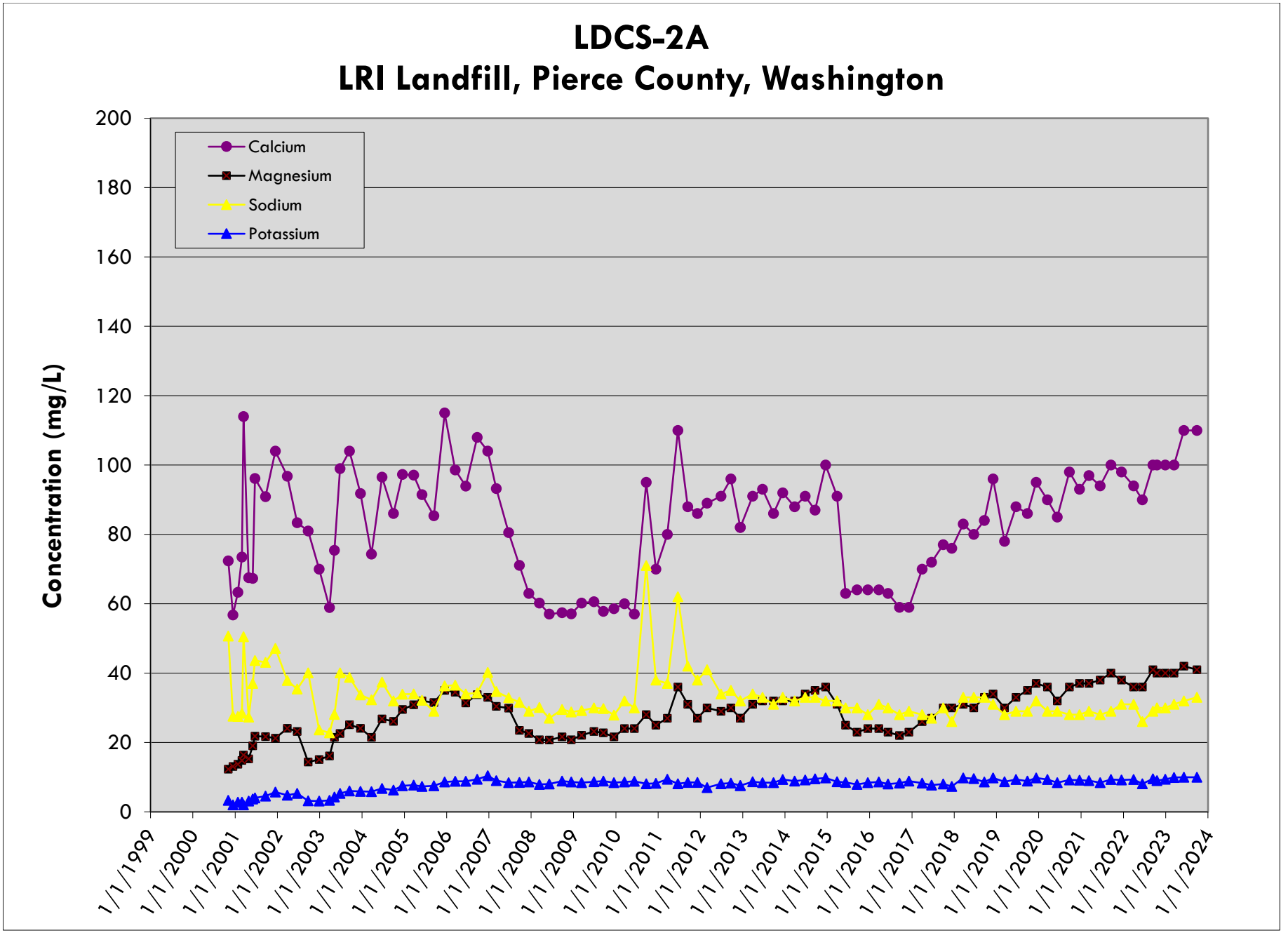


LDCS-1

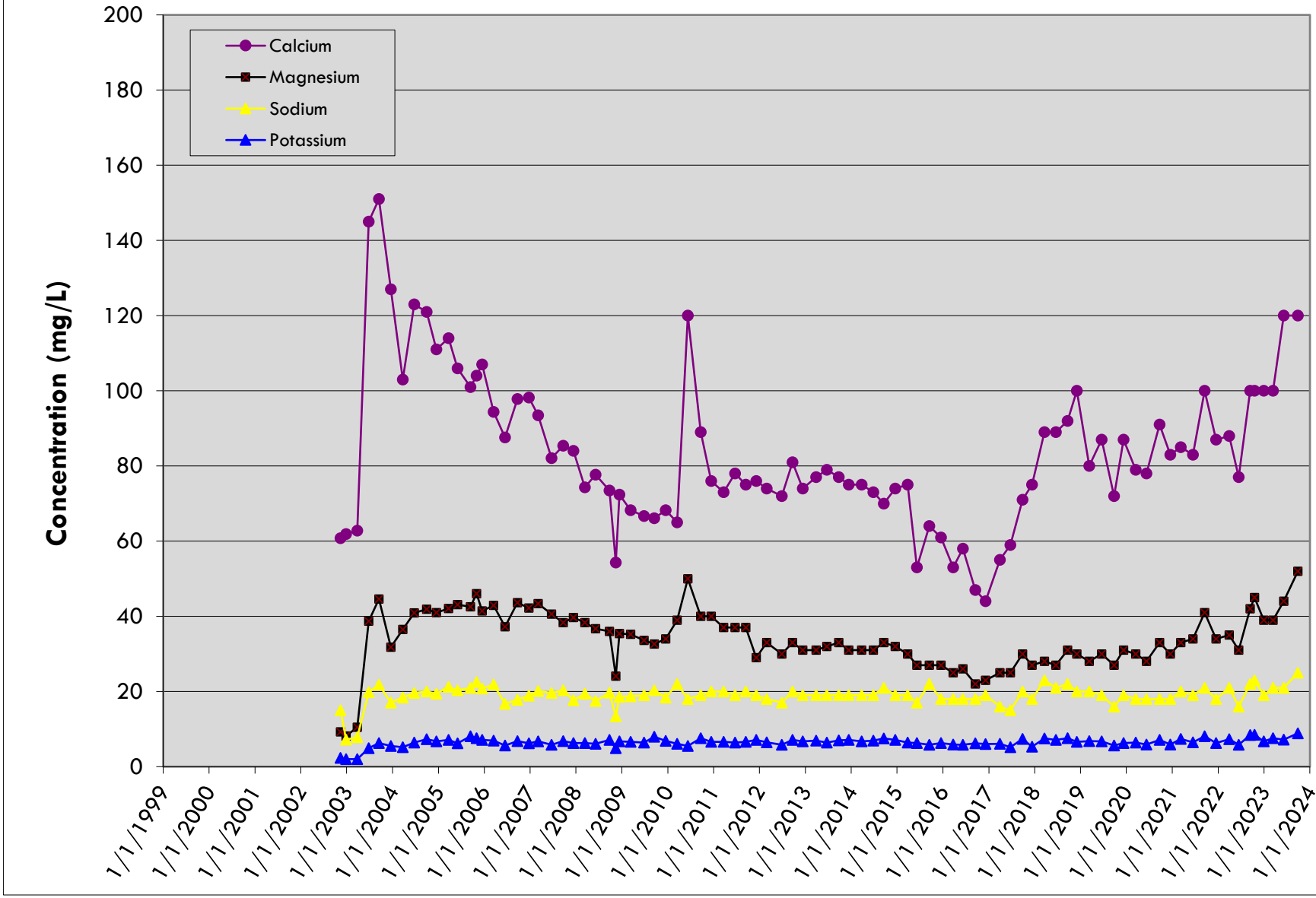
LRI Landfill, Pierce County, Washington



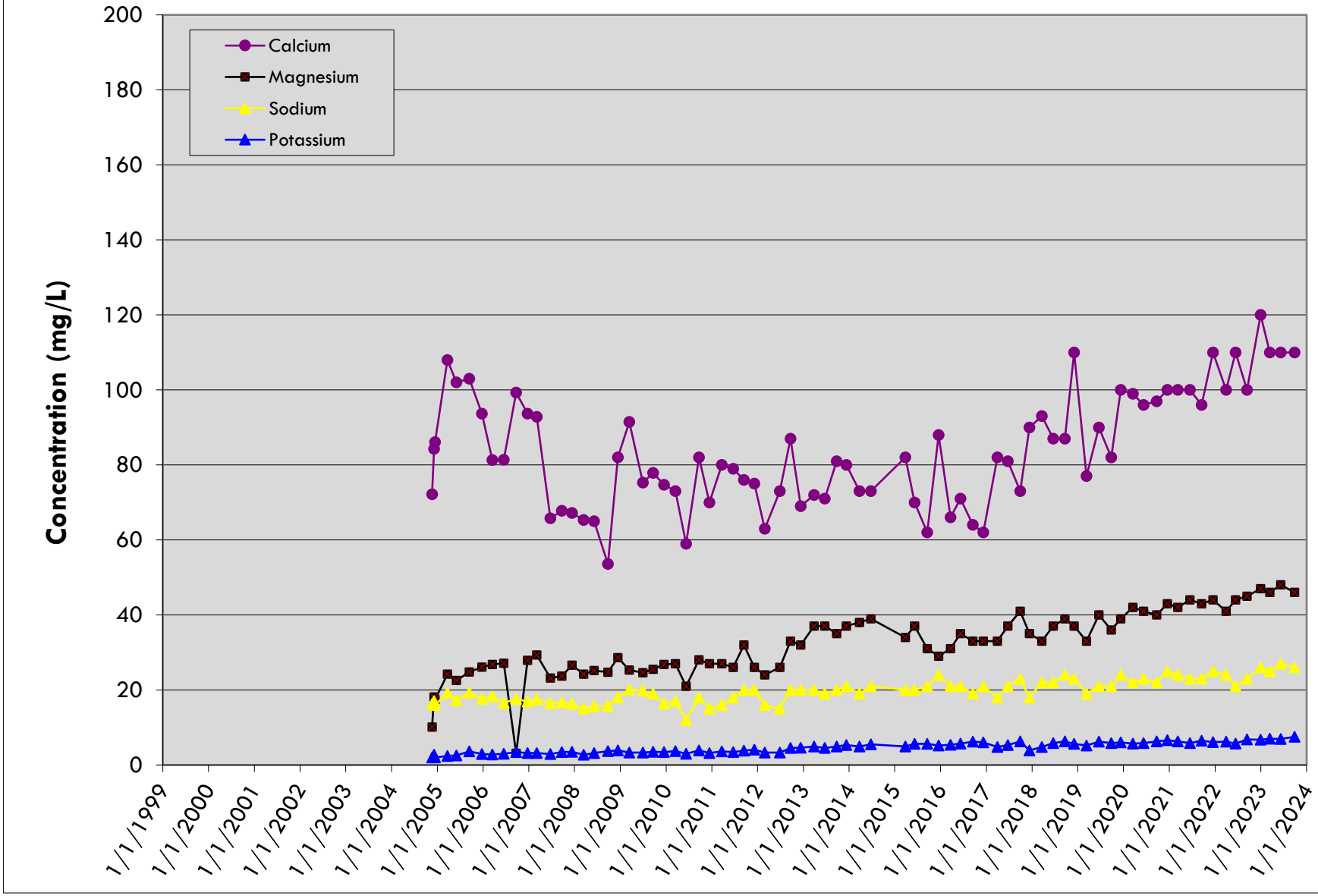
LDCS-2A
LRI Landfill, Pierce County, Washington



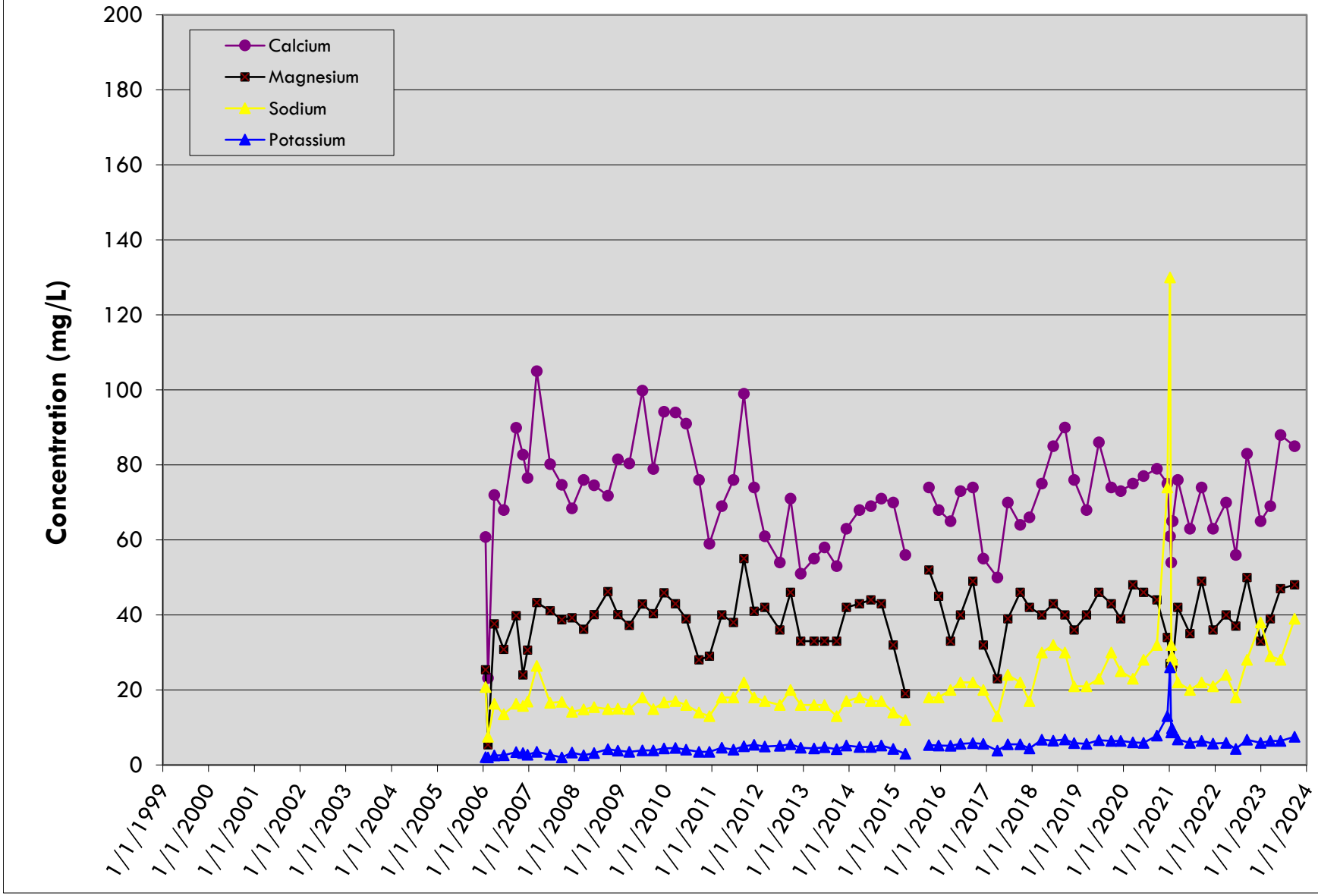
LDCS-2B
LRI Landfill, Pierce County, Washington



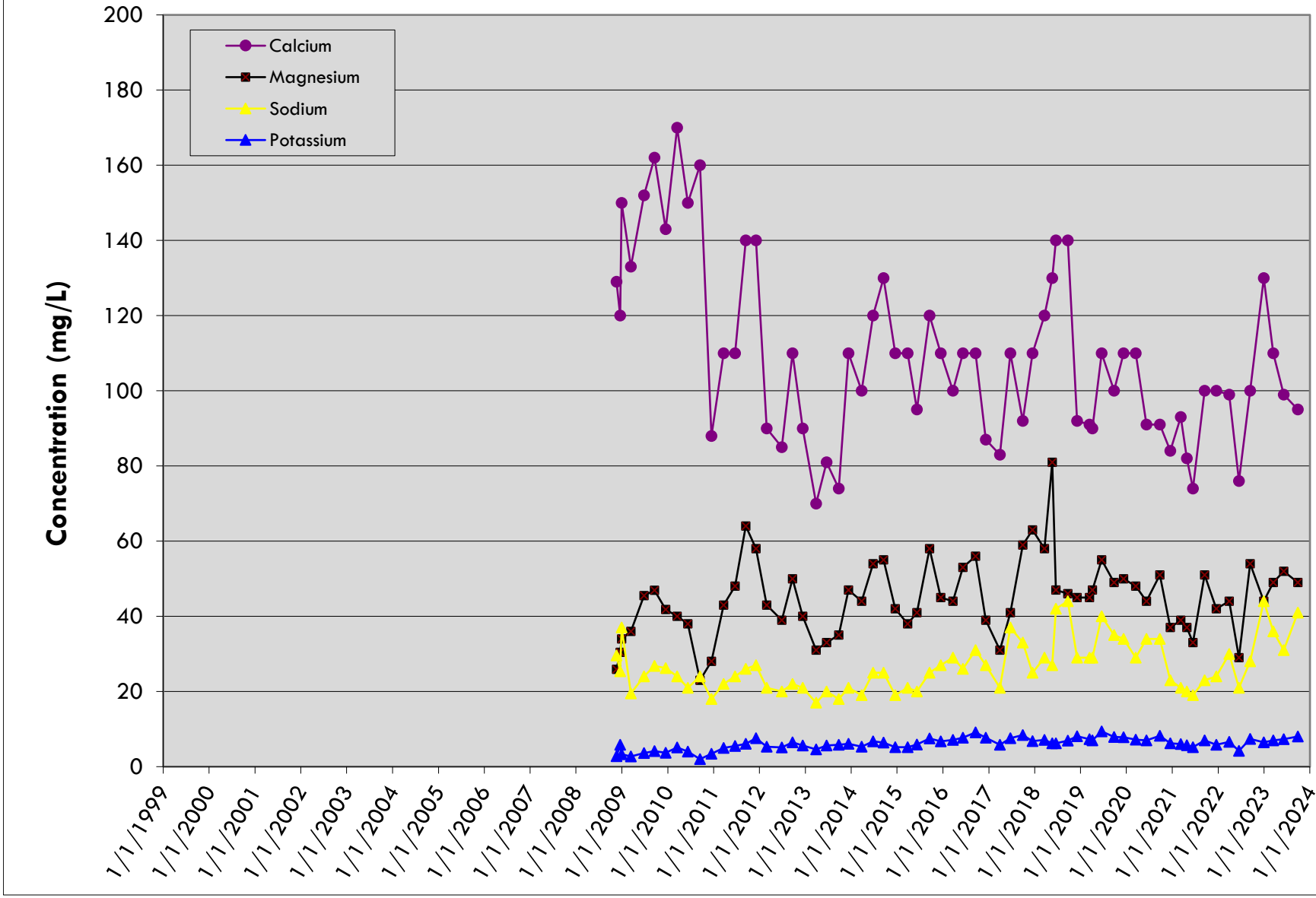
LDCS-3A
LRI Landfill, Pierce County, Washington



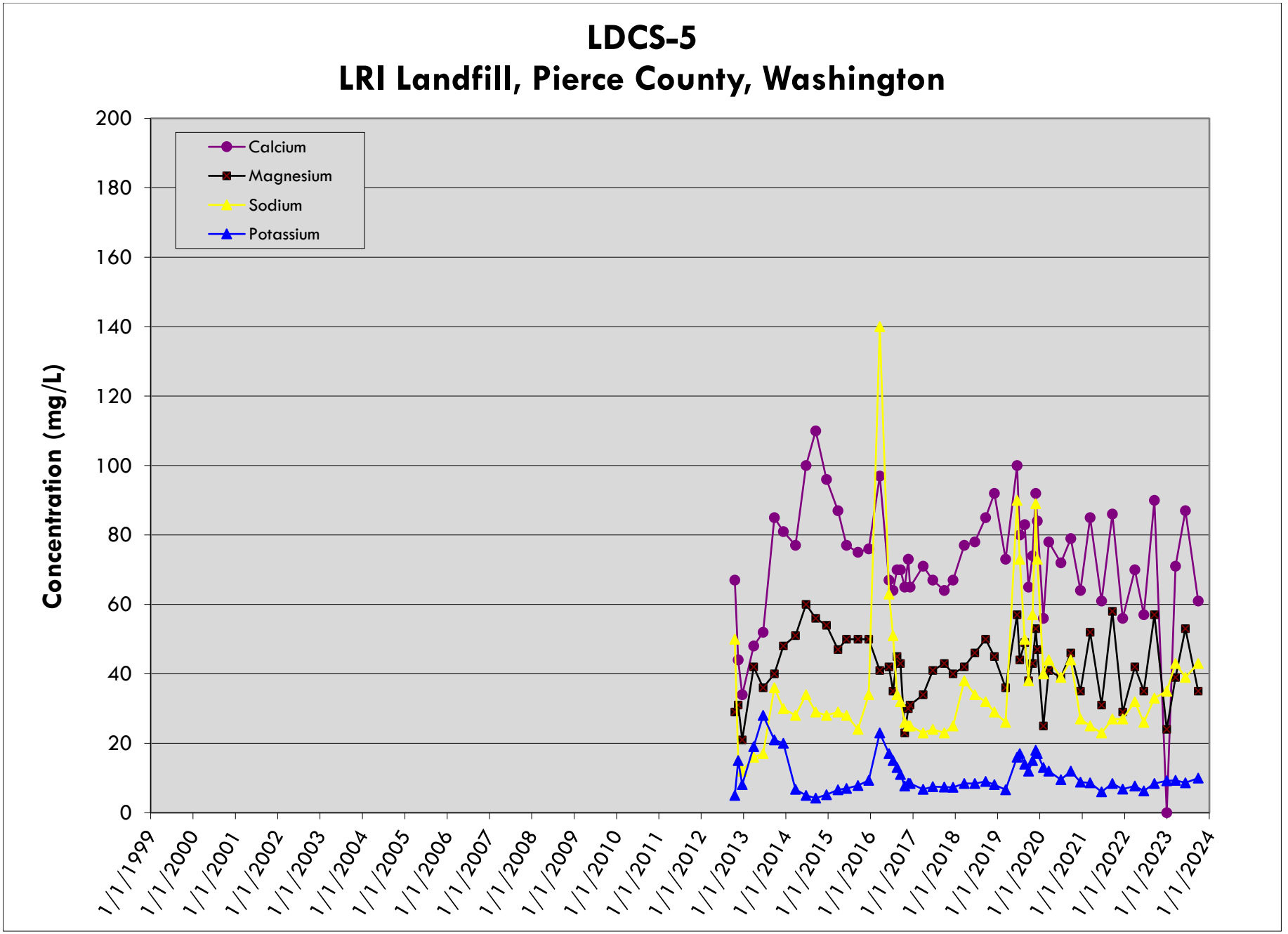
LDCS-4A
LRI Landfill, Pierce County, Washington



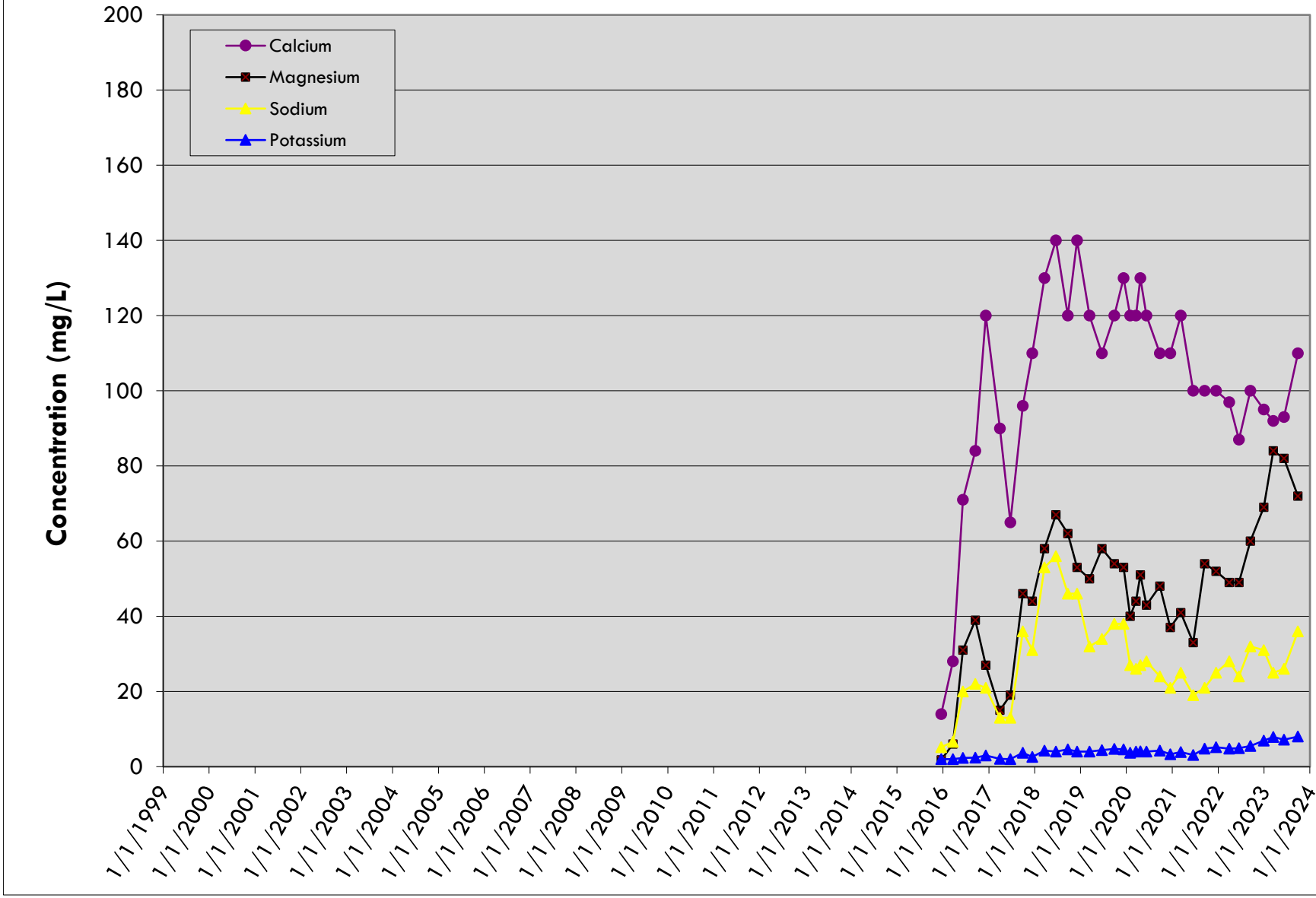
LDCS-4B
LRI Landfill, Pierce County, Washington



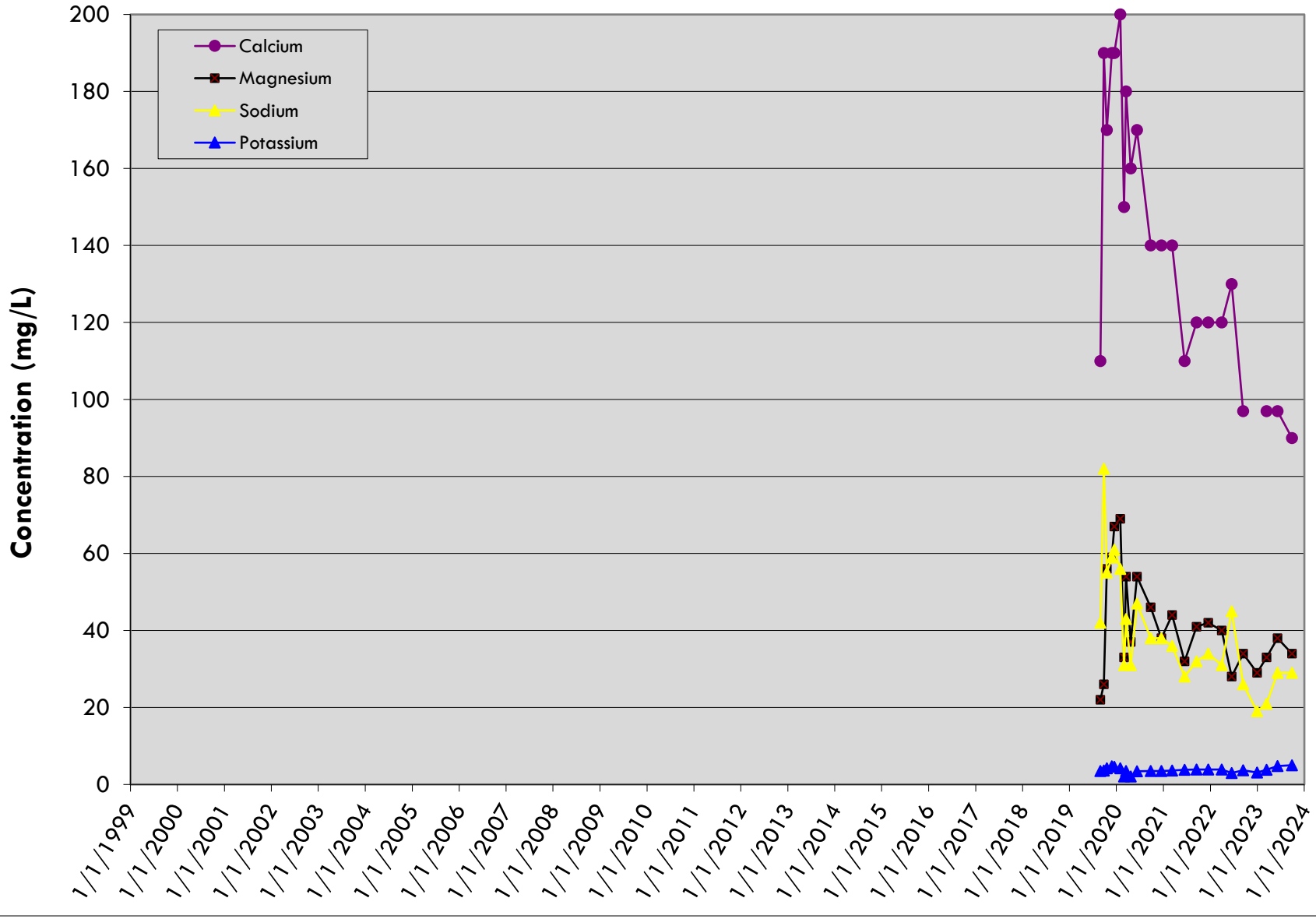
LDCS-5
LRI Landfill, Pierce County, Washington



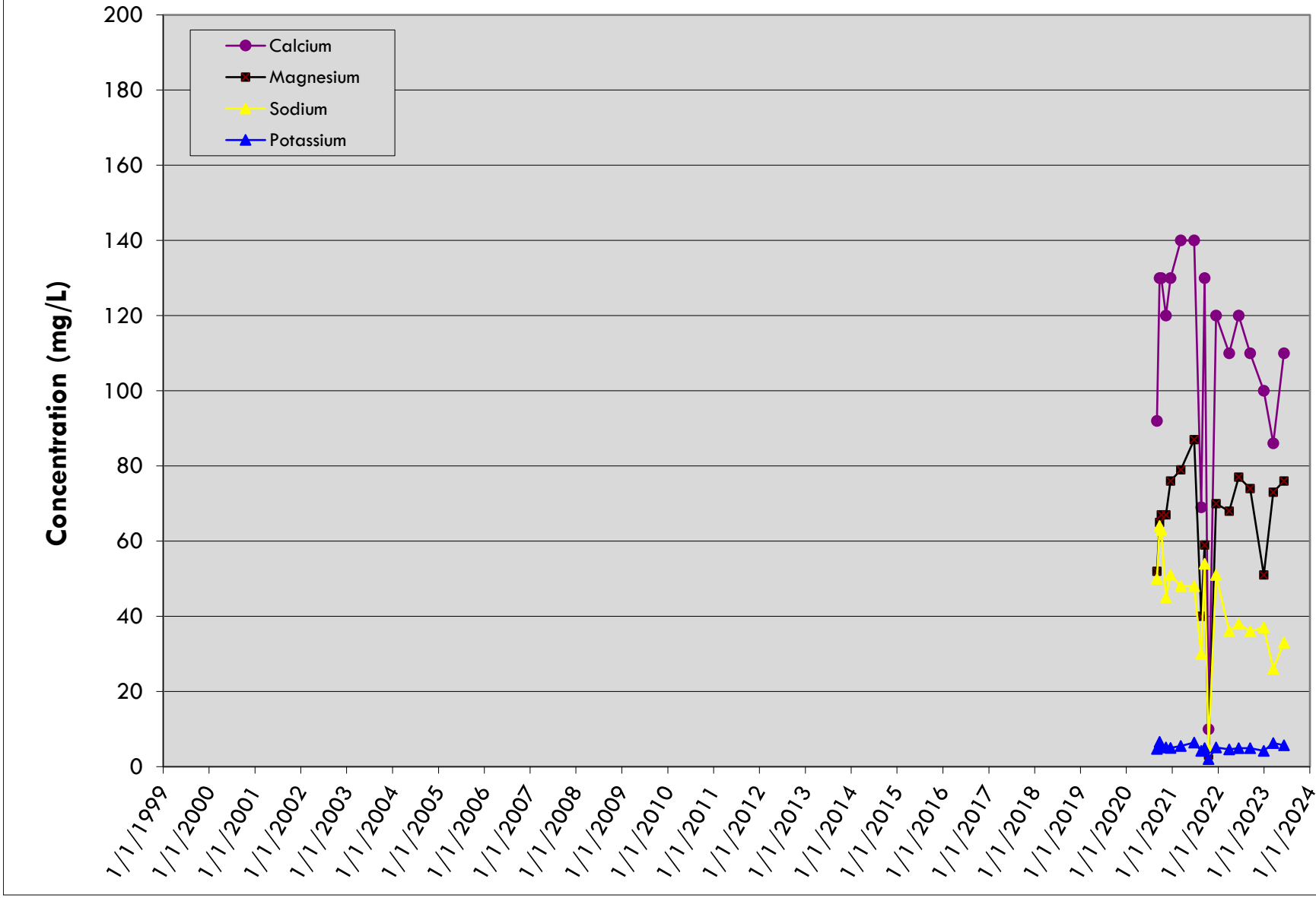
LDCS-6A
LRI Landfill, Pierce County, Washington



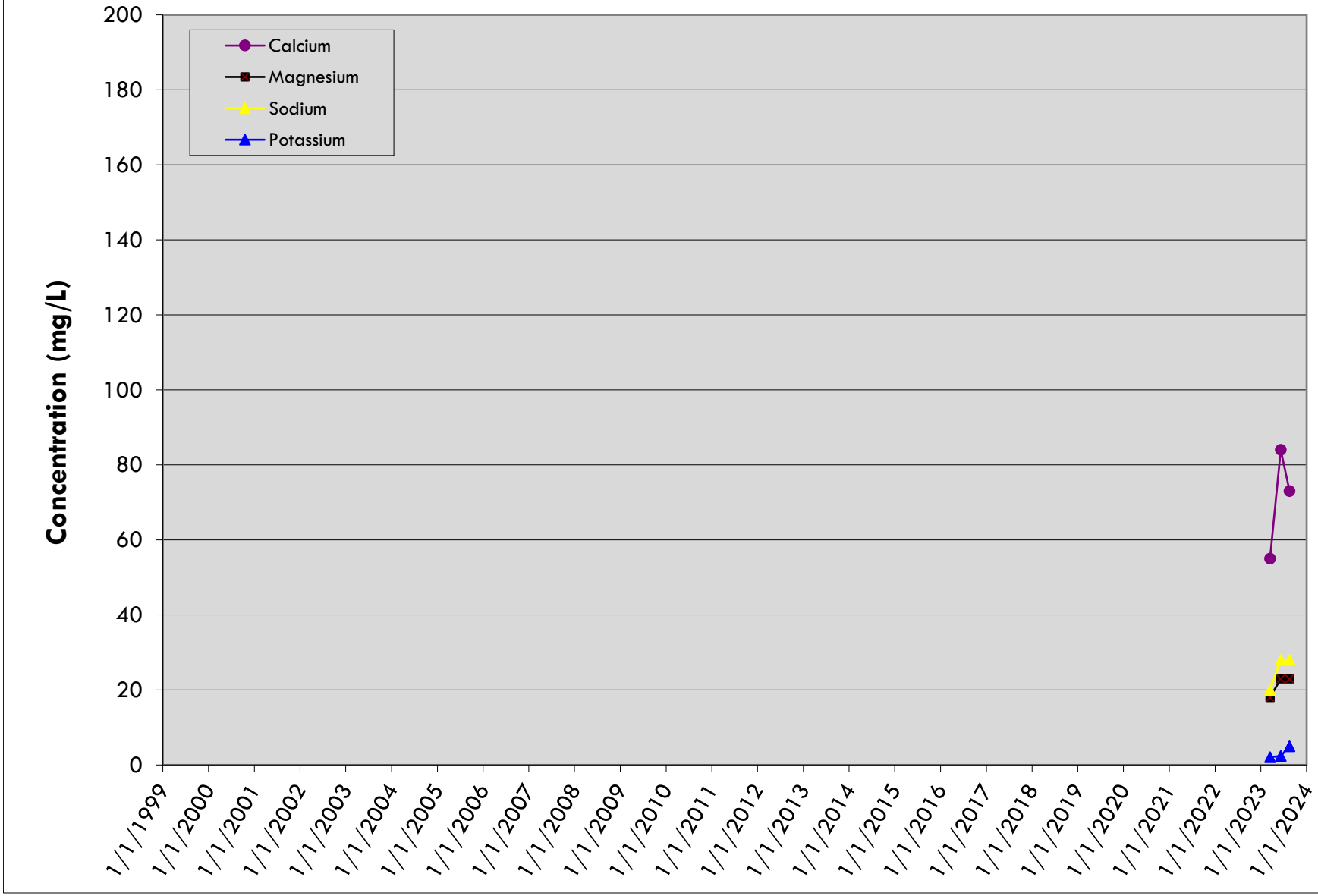
LDCS-7
LRI Landfill, Pierce County, Washington

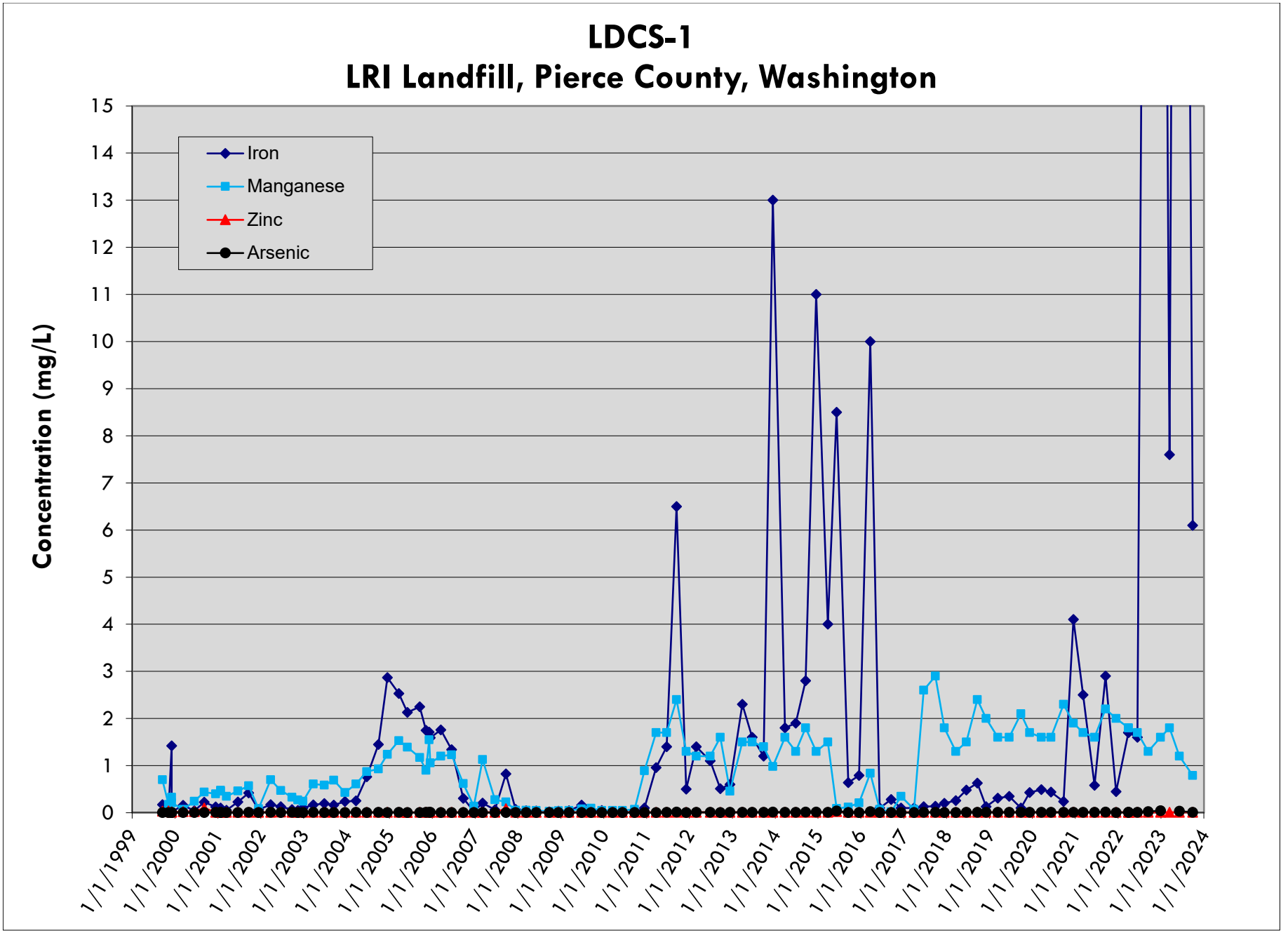


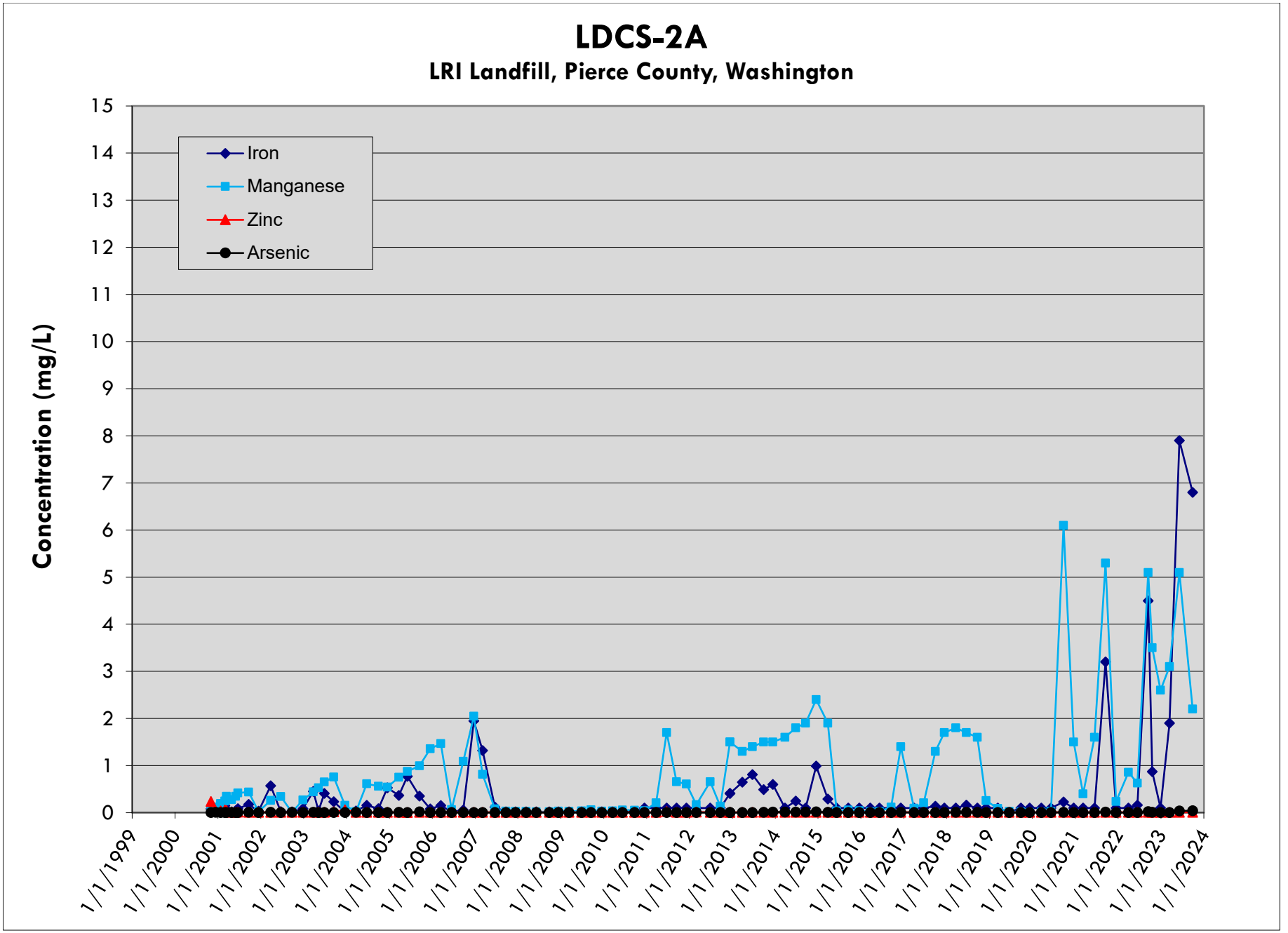
LDCS-8
LRI Landfill, Pierce County, Washington

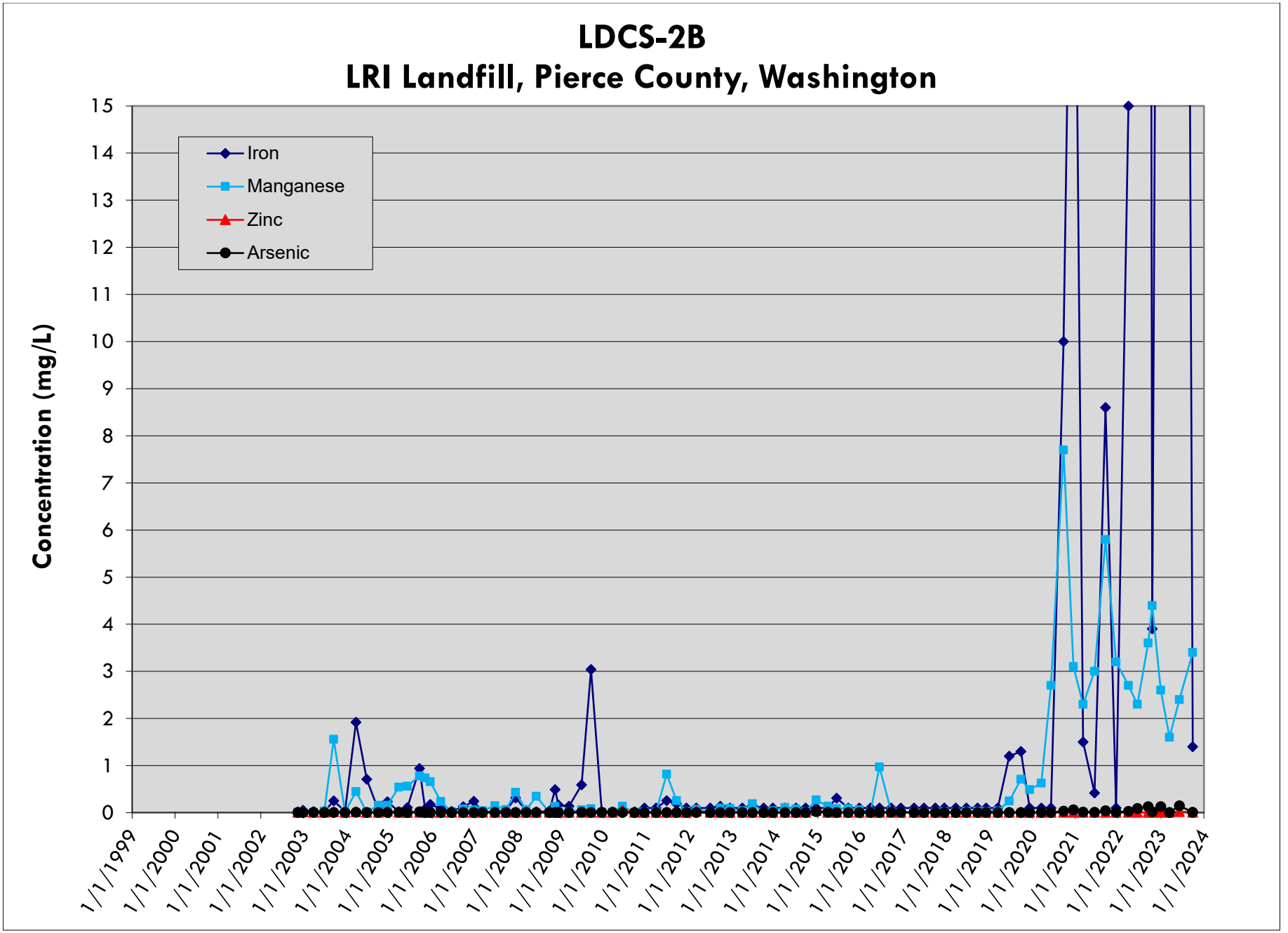


LDCS-9
LRI Landfill, Pierce County, Washington

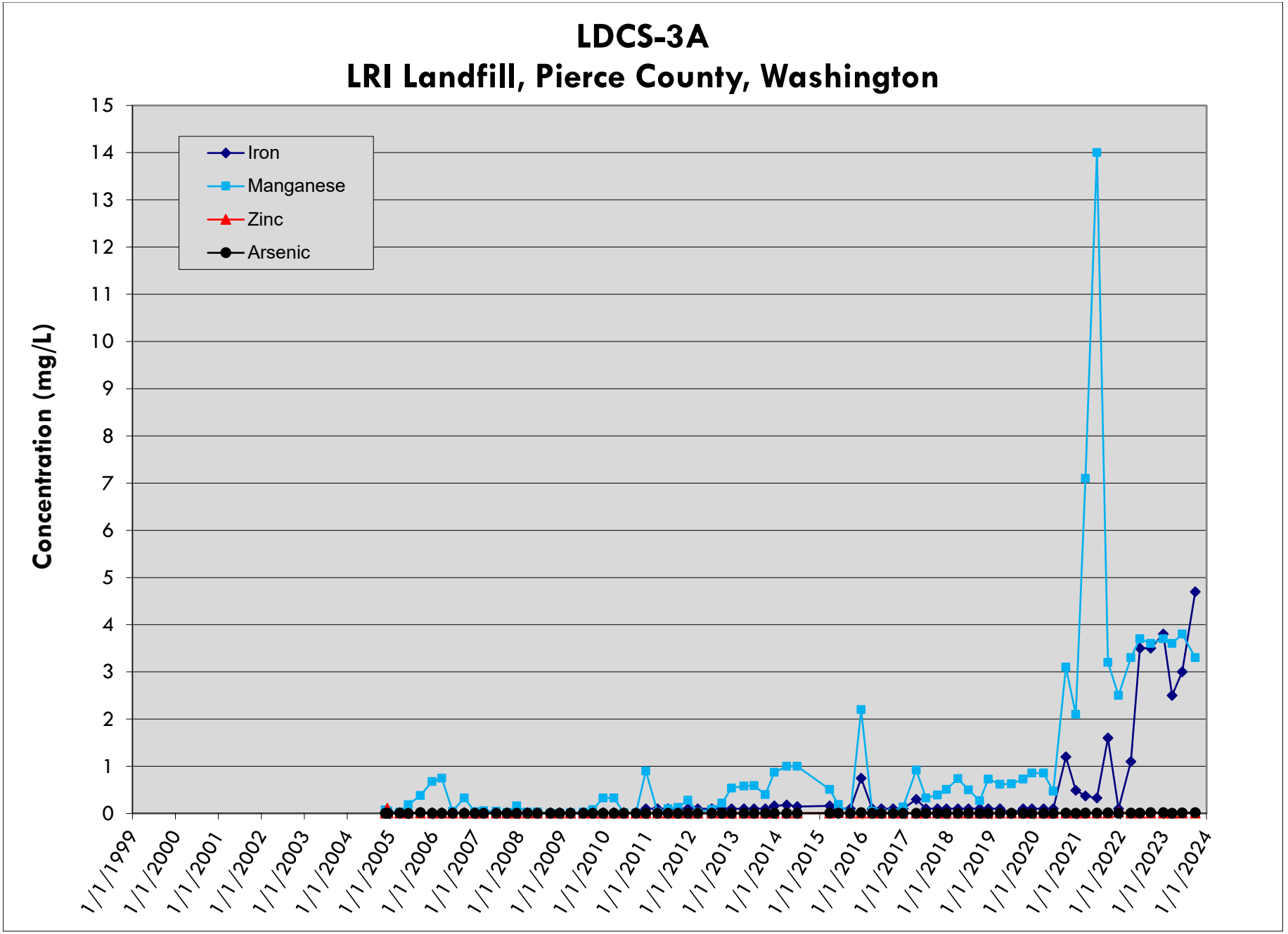


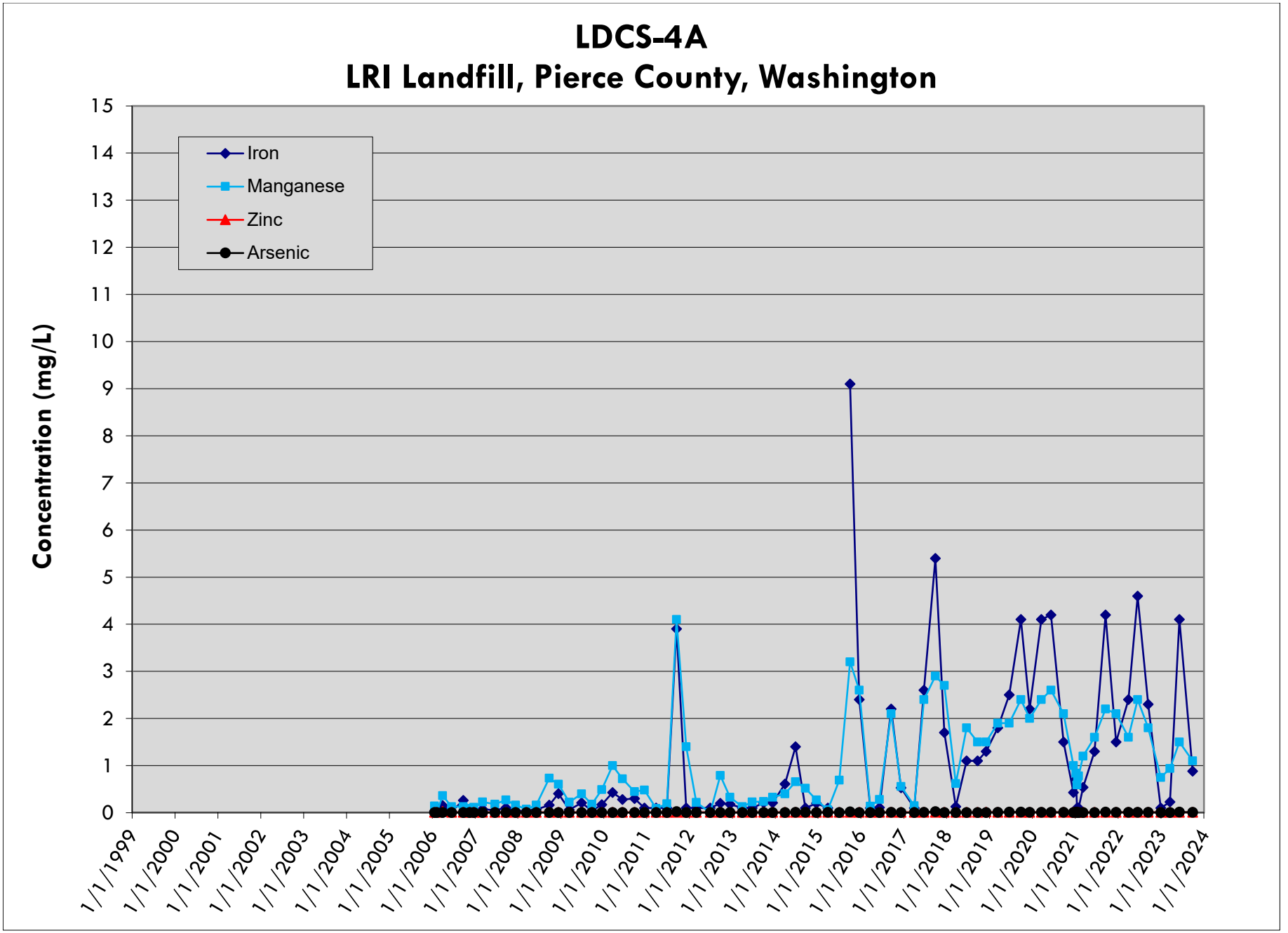

LDCS-1
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Iron
Manganese
Zinc
Arsenic
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

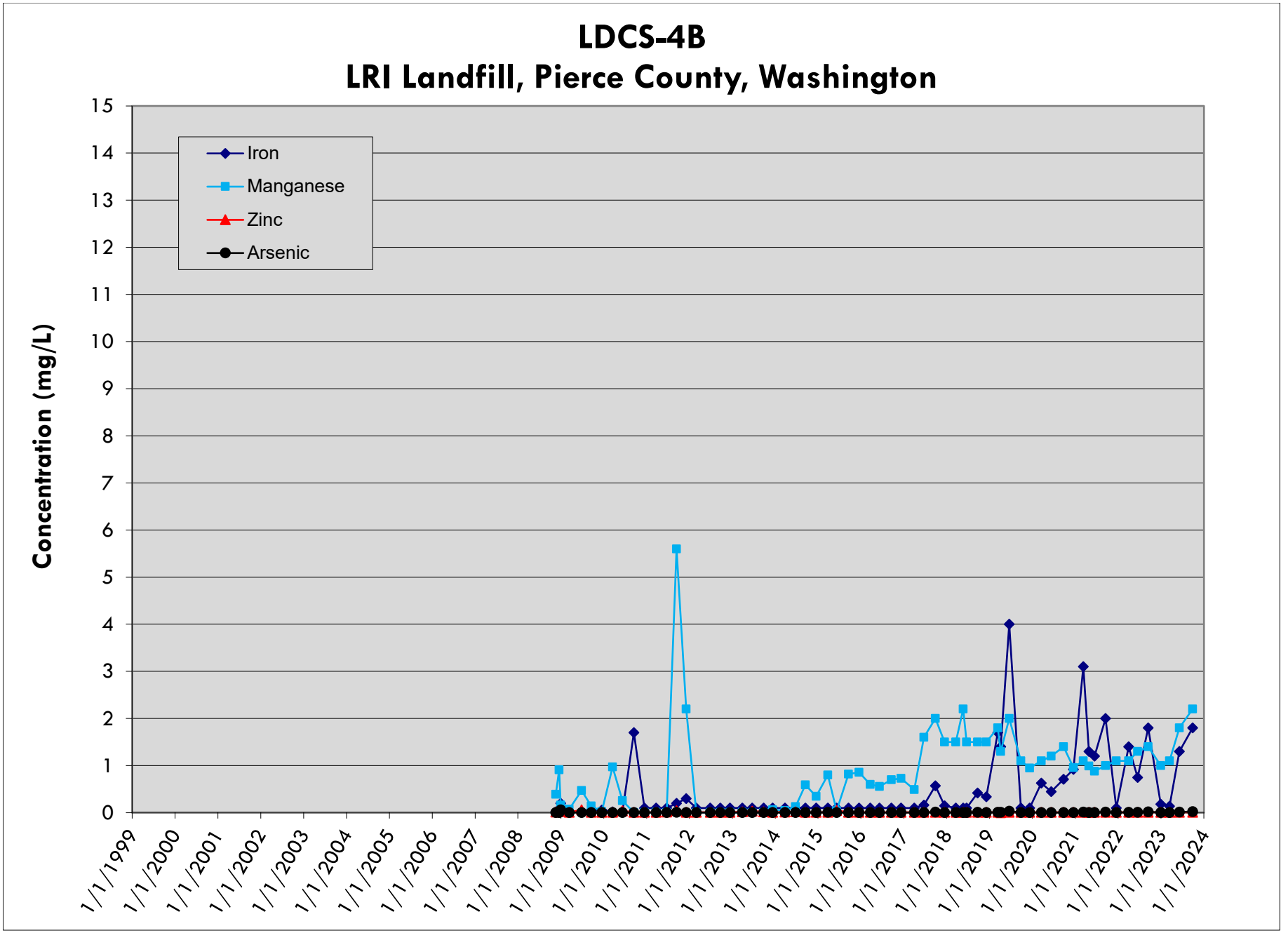

LDCS-2A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Iron
Manganese
Zinc
Arsenic
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

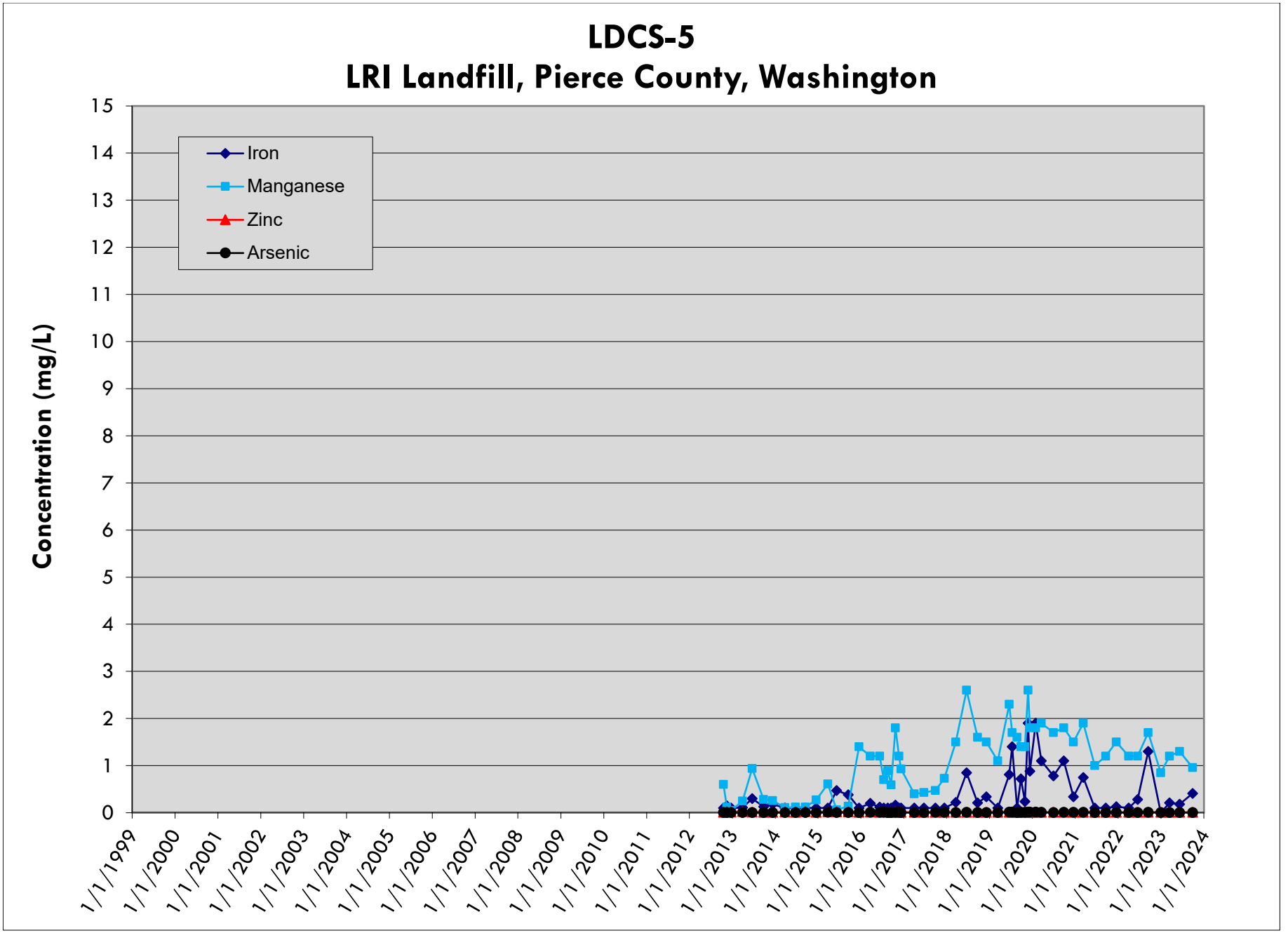

LDCS-2B
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Iron
Manganese
Zinc
Arsenic
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

LDCS-3A
LRI Landfill, Pierce County, Washington

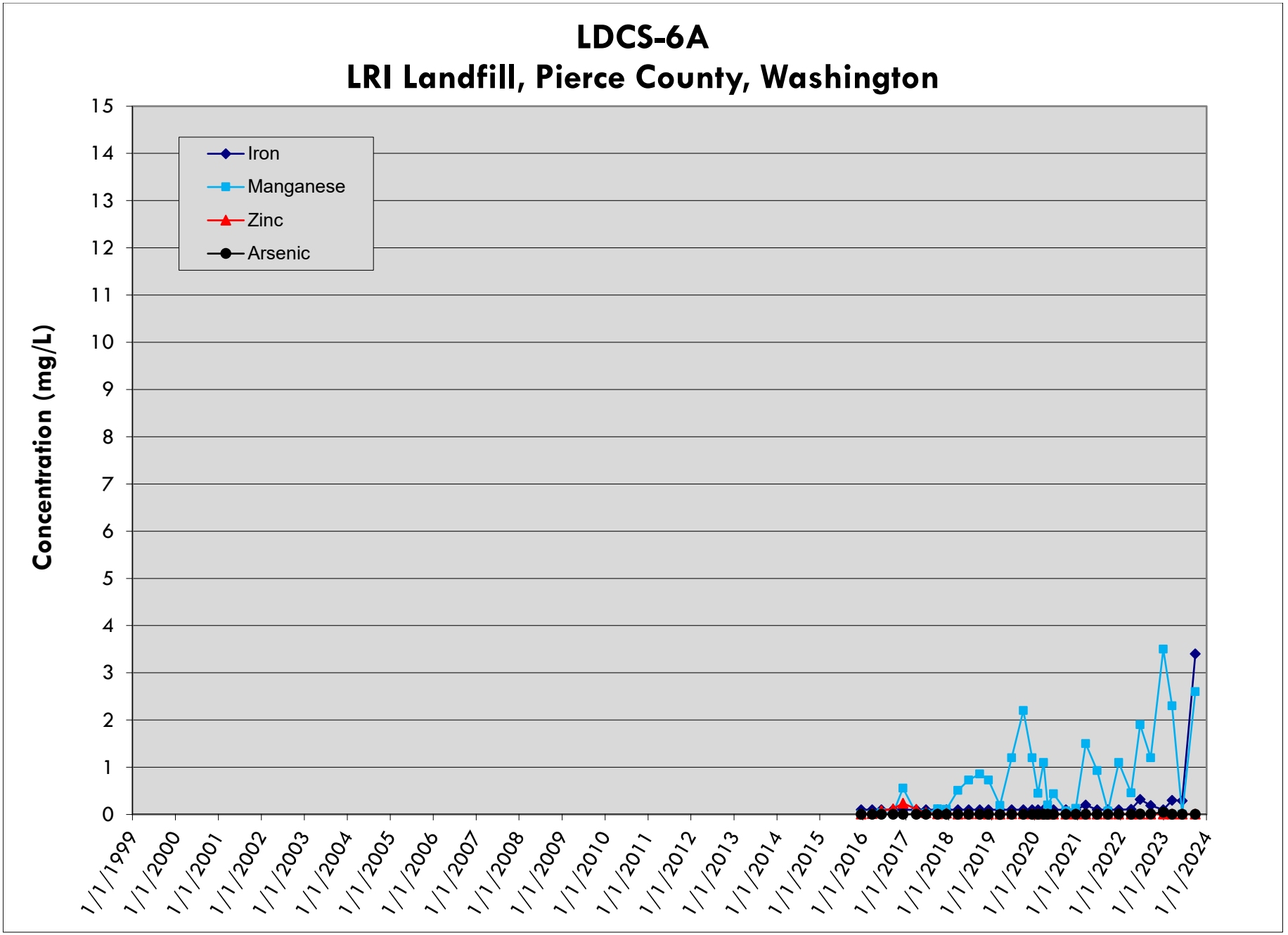


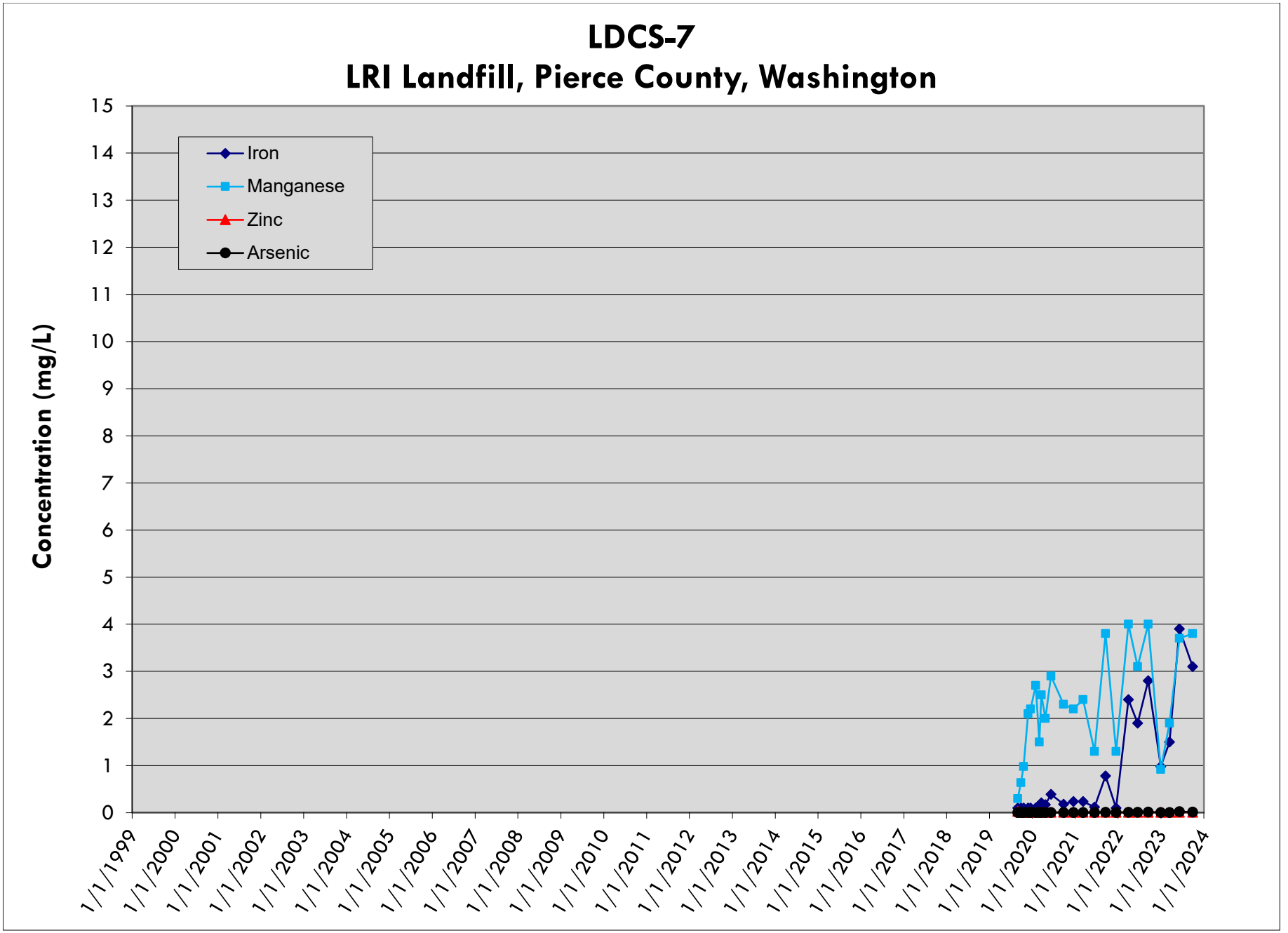

LDCS-4A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Iron
Manganese
Zinc
Arsenic
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

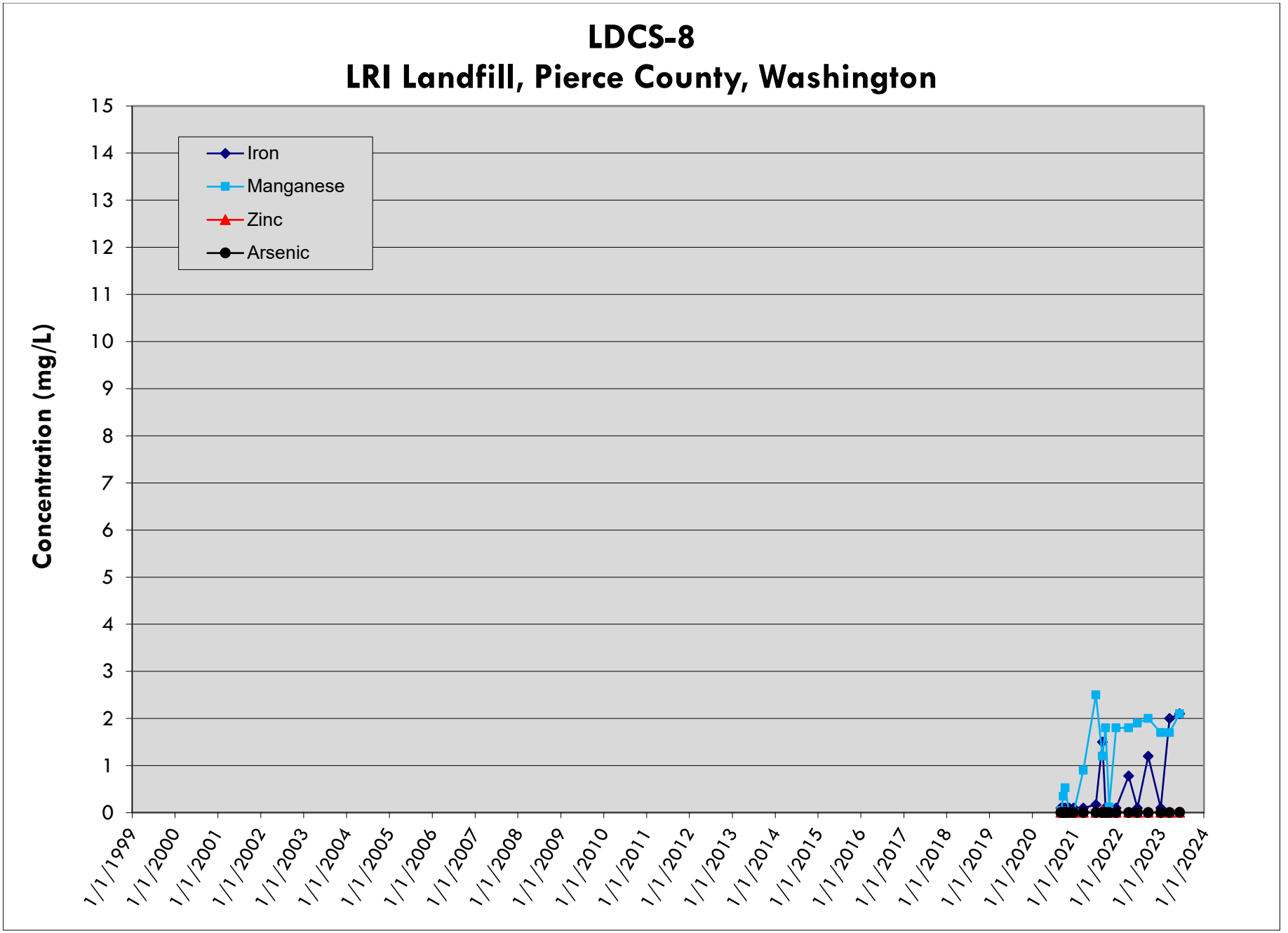

LDCS-4B
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Iron
Manganese
Zinc
Arsenic
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024


LDCS-5
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Iron
Manganese
Zinc
Arsenic
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

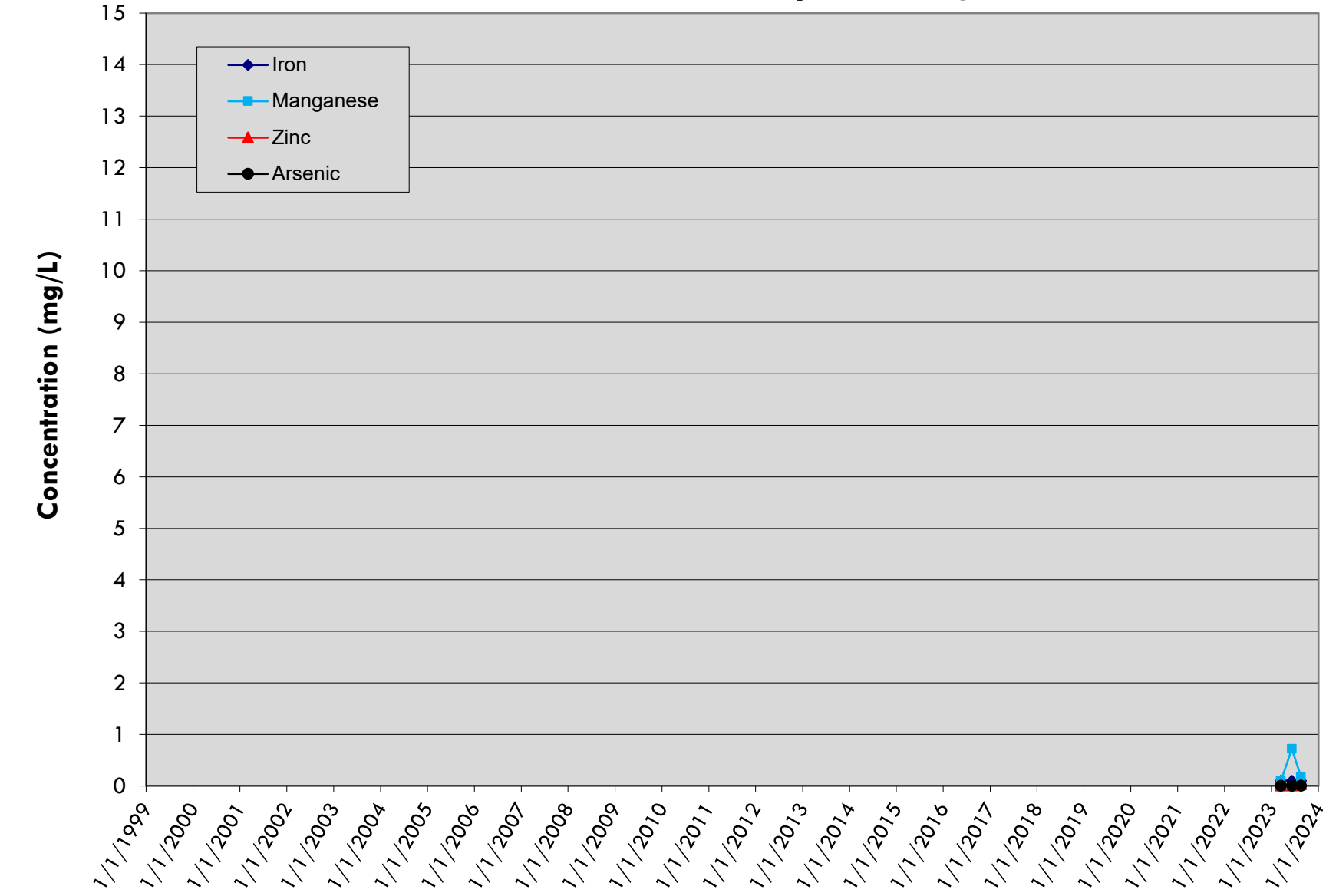
LDCS-6A
LRI Landfill, Pierce County, Washington

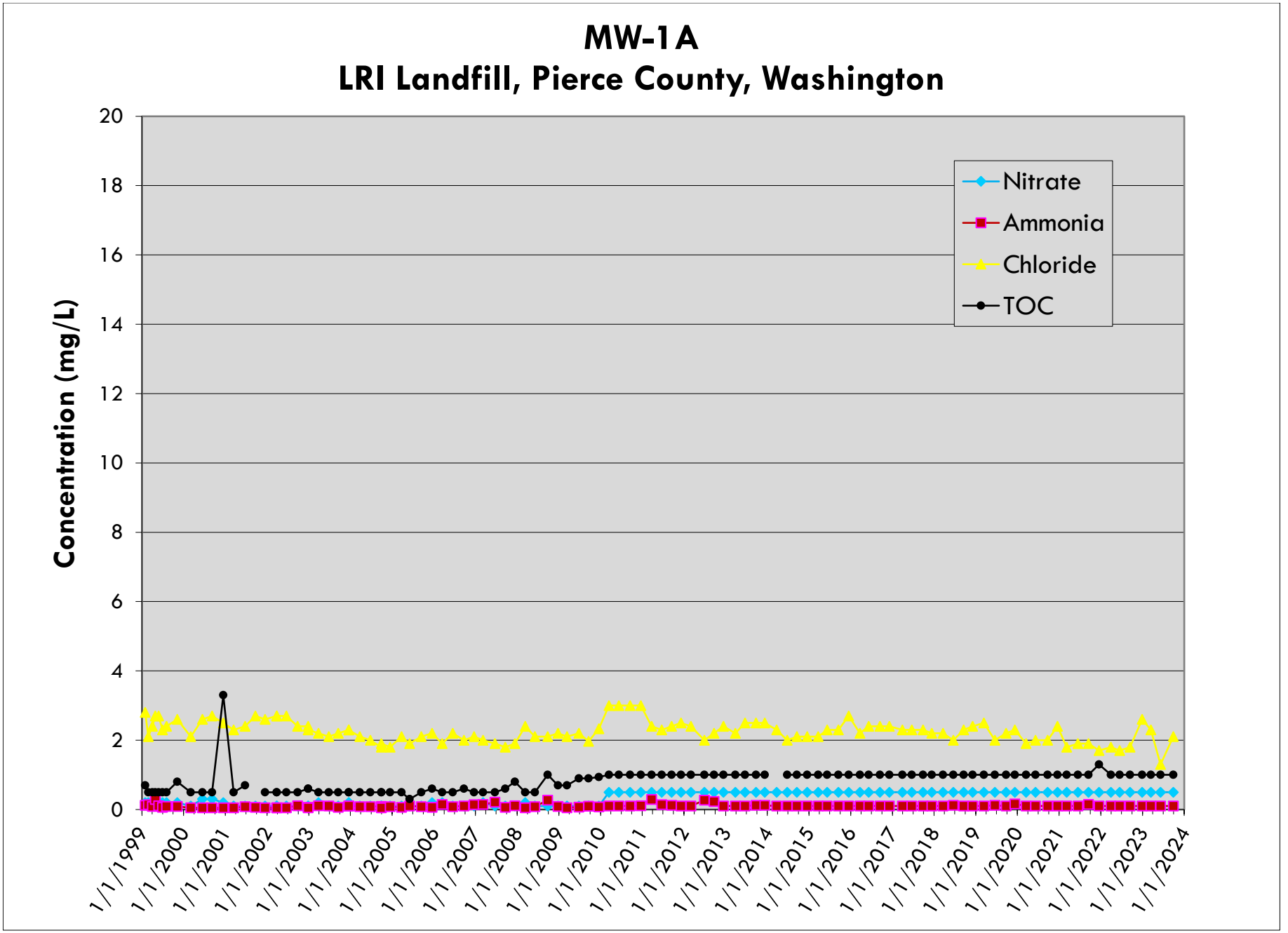


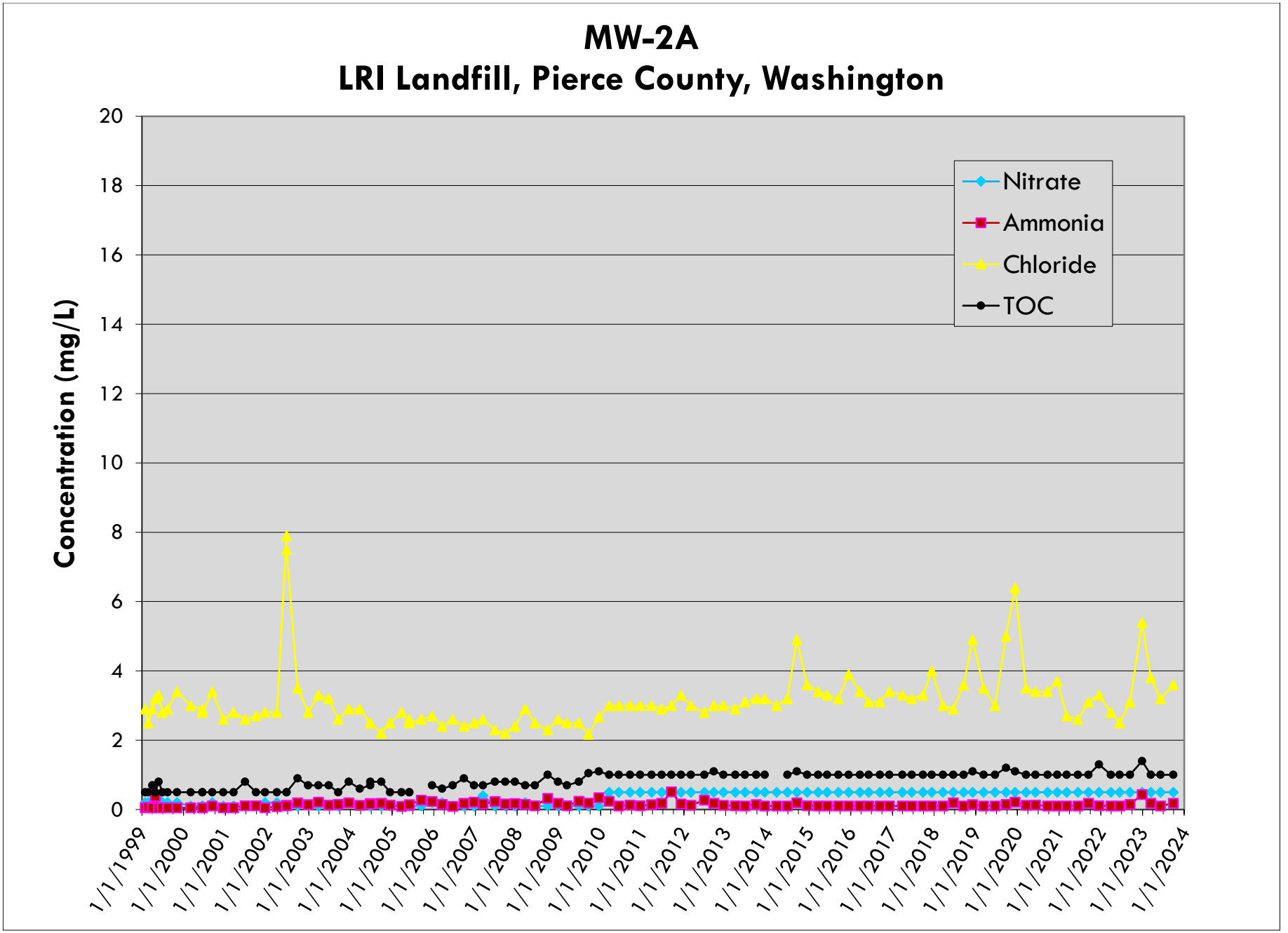

LDCS-7
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Iron
Manganese
Zinc
Arsenic
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

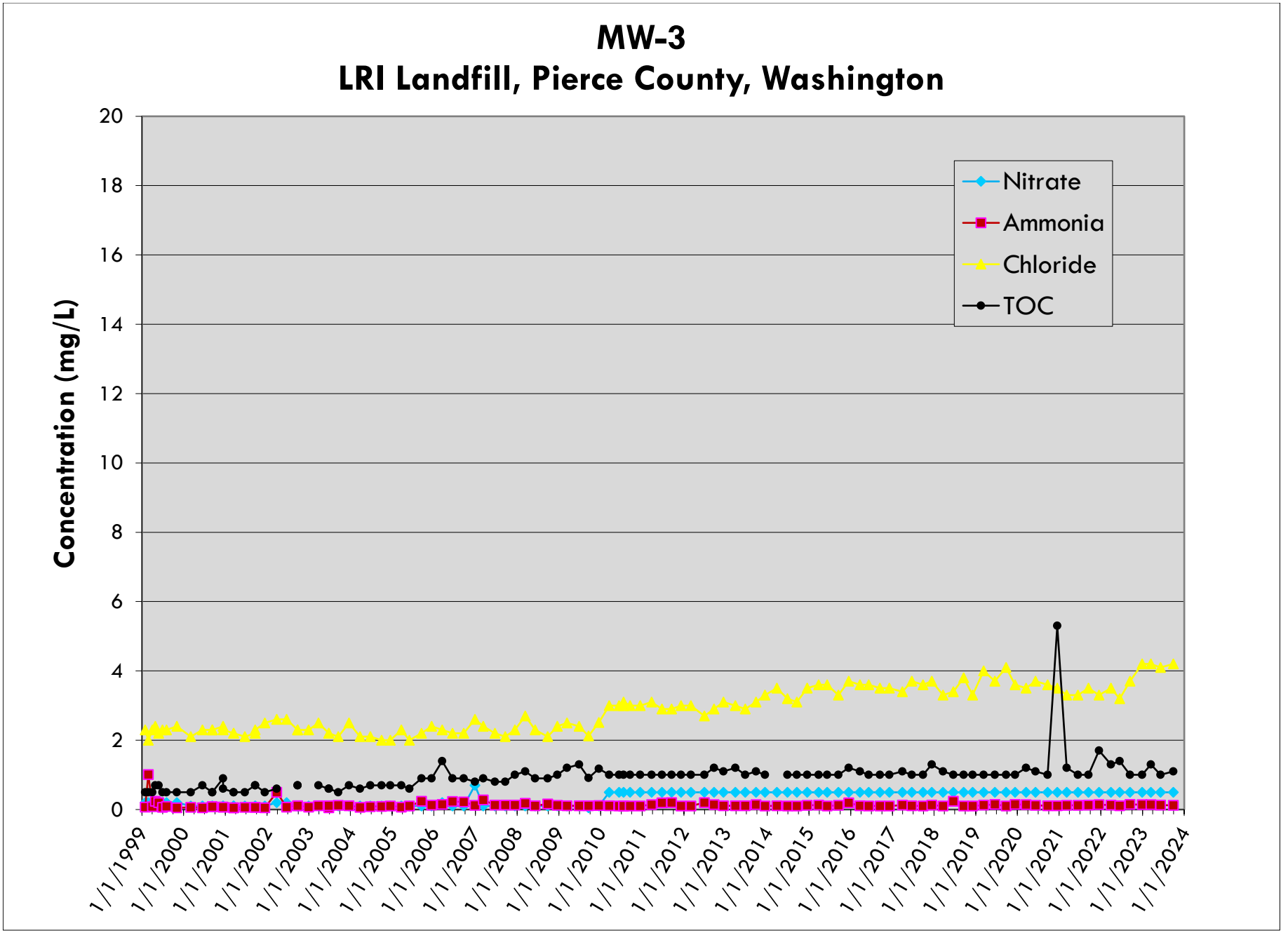

LDCS-8
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Iron
Manganese
Zinc
Arsenic
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

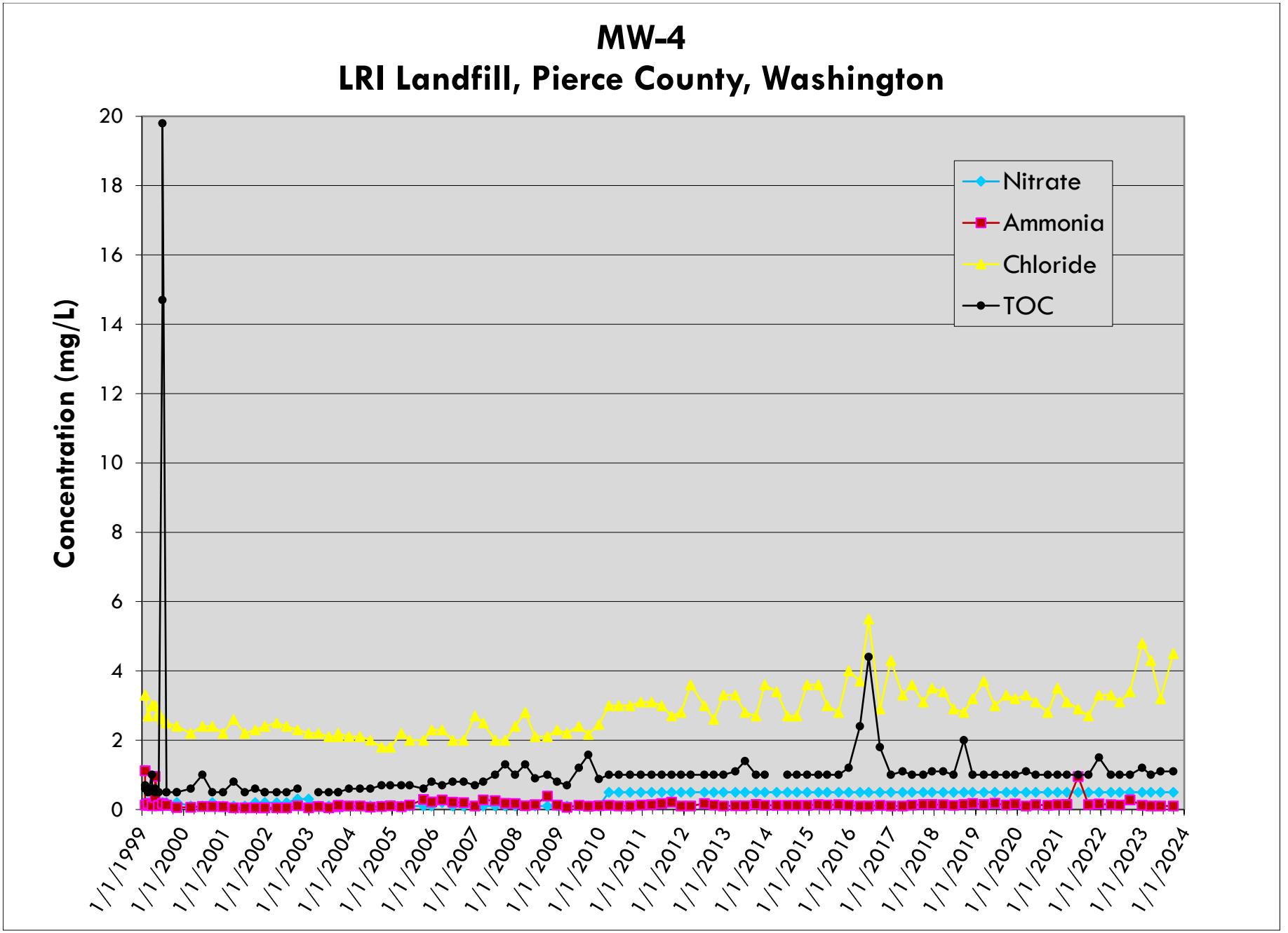
LDCS-9
LRI Landfill, Pierce County, Washington

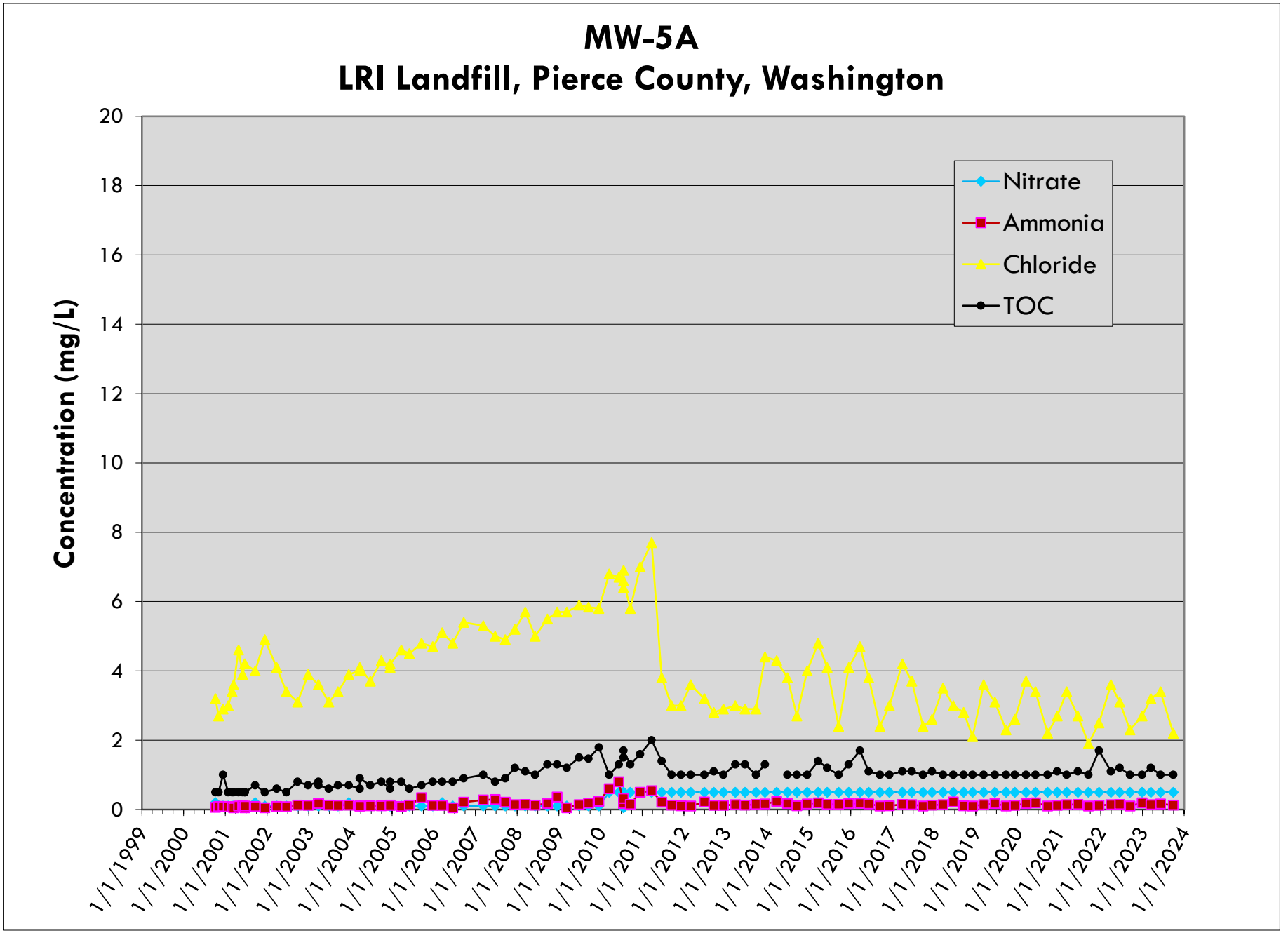


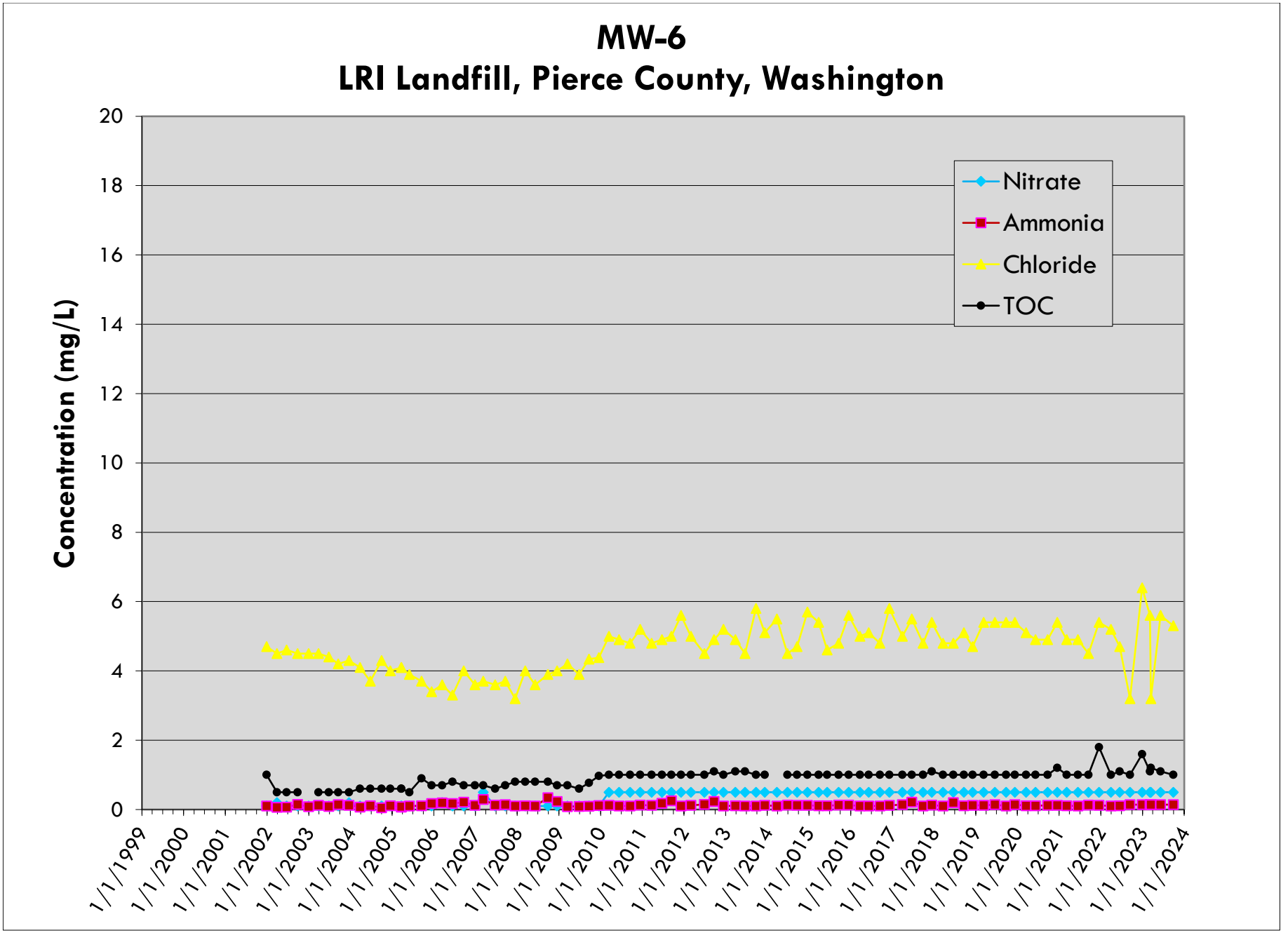

MW-1A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

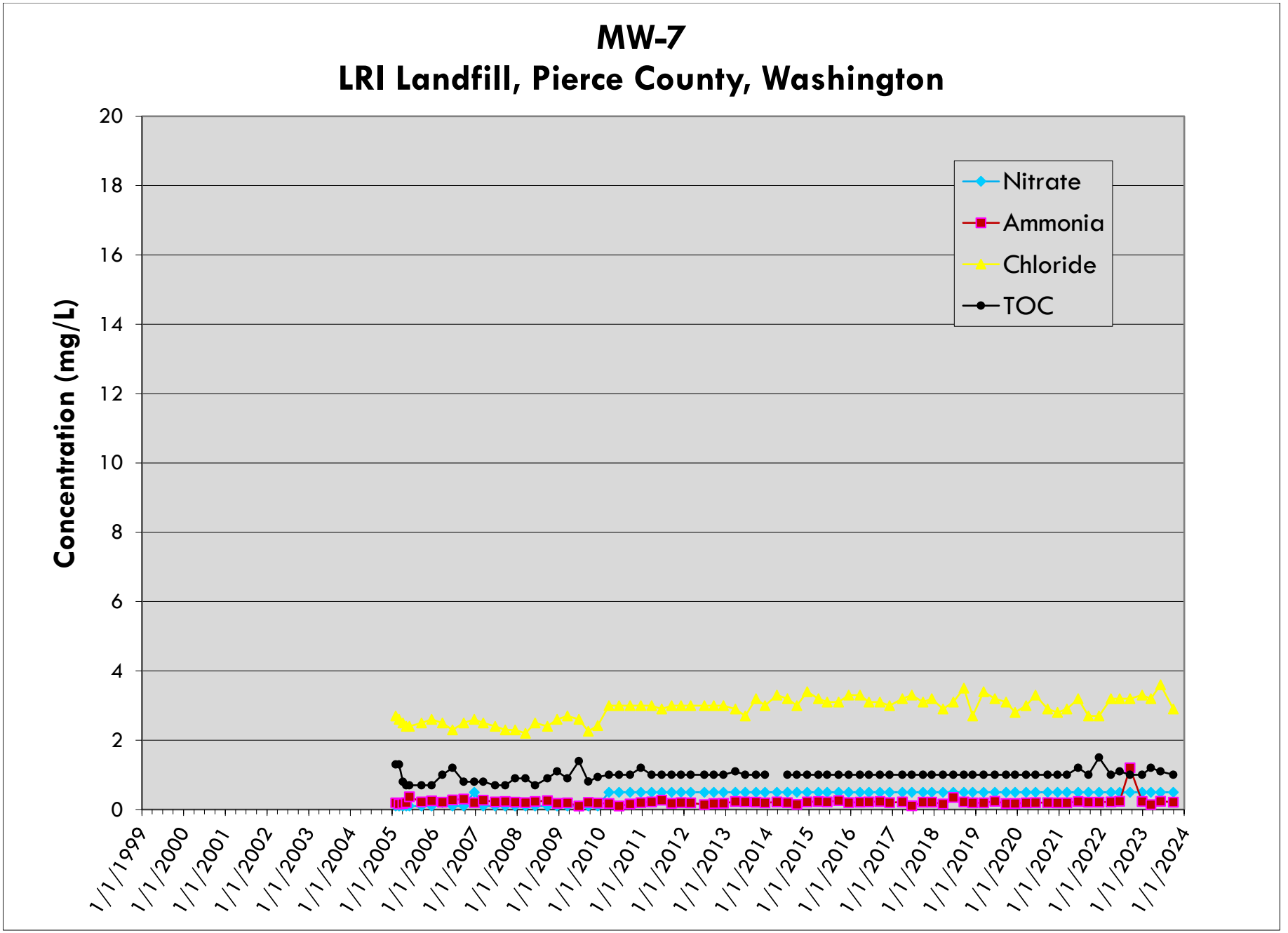

MW-2A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

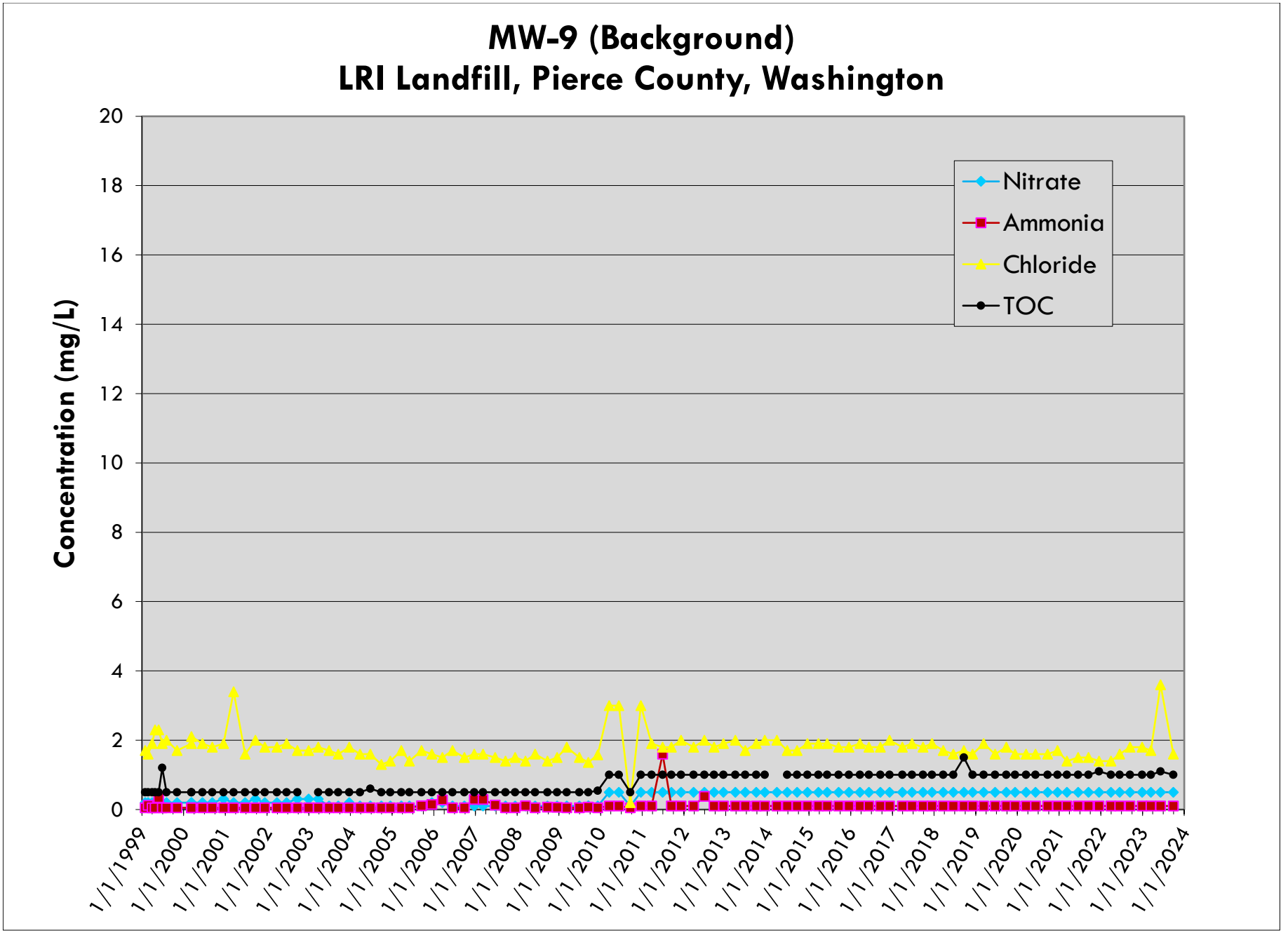

MW-3
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

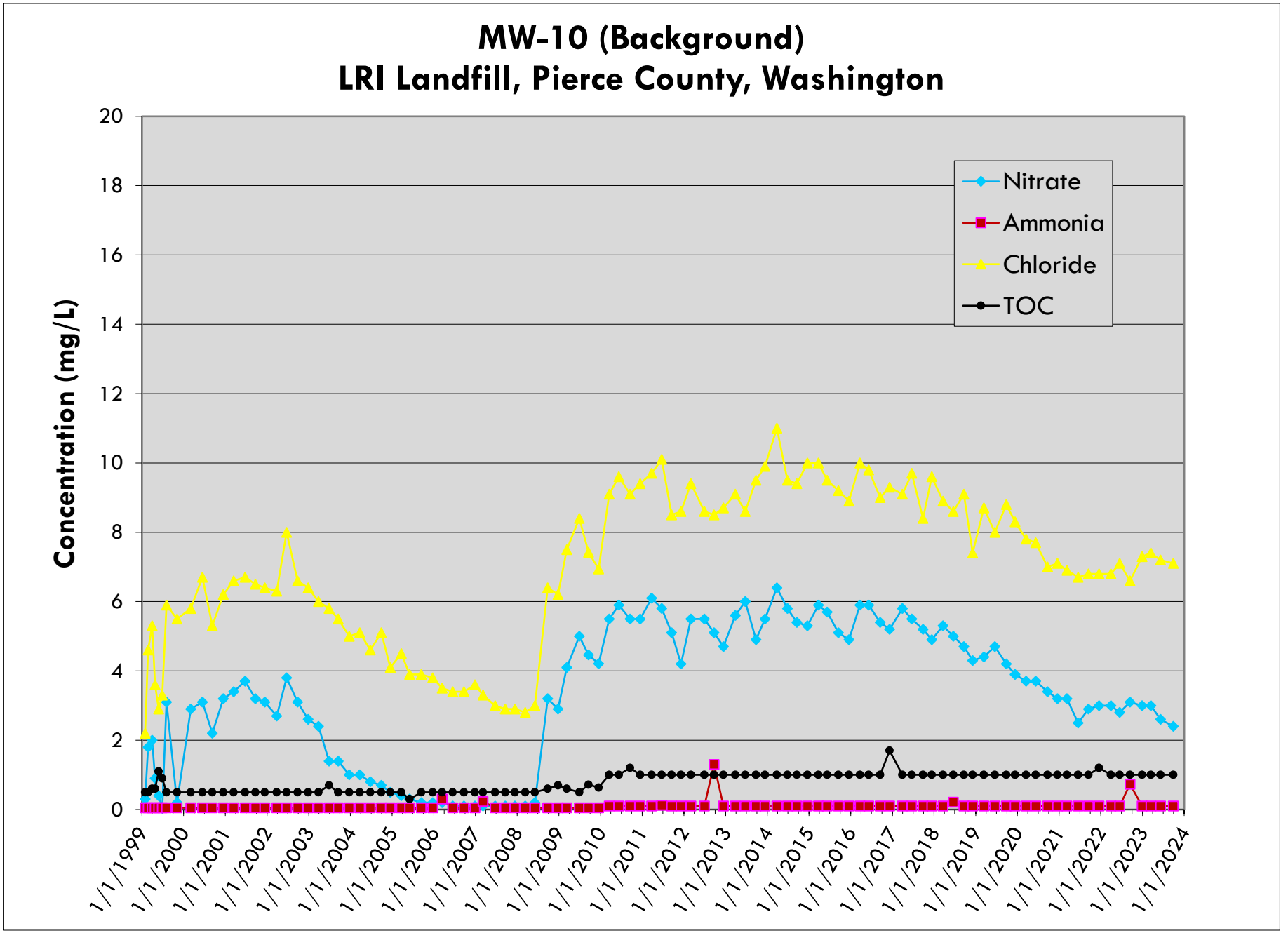

MW-4
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

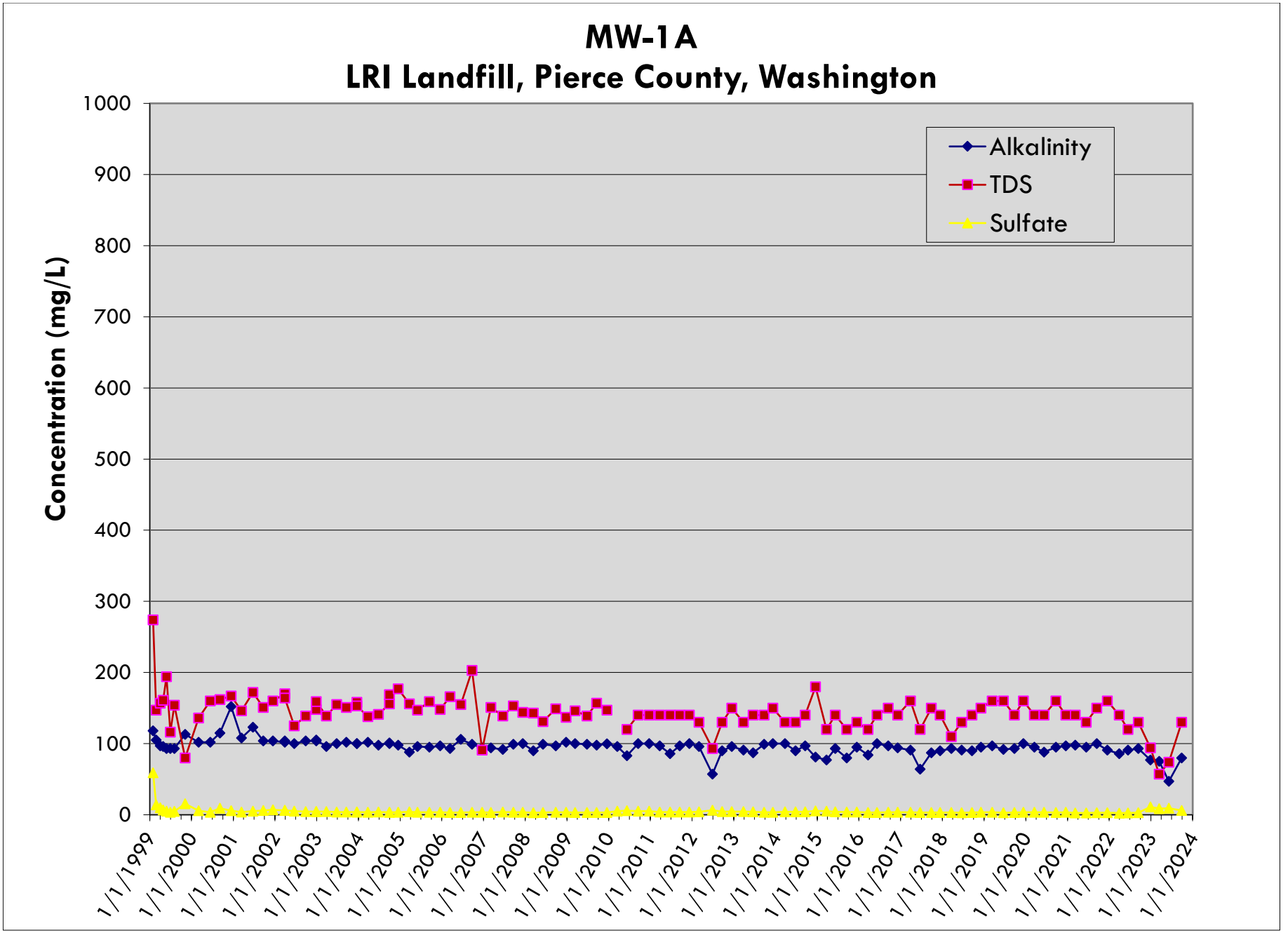

MW-5A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

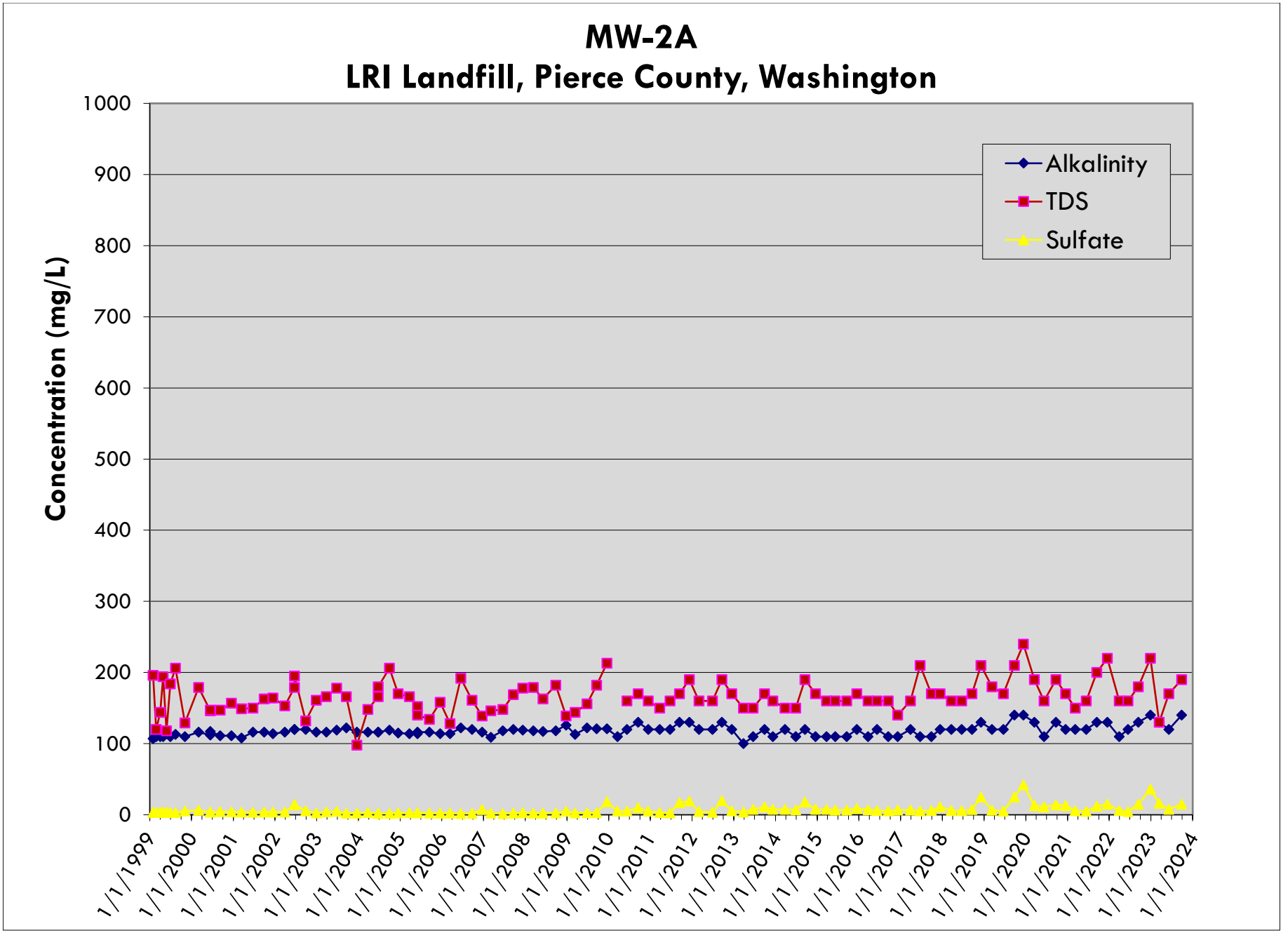

MW-6
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

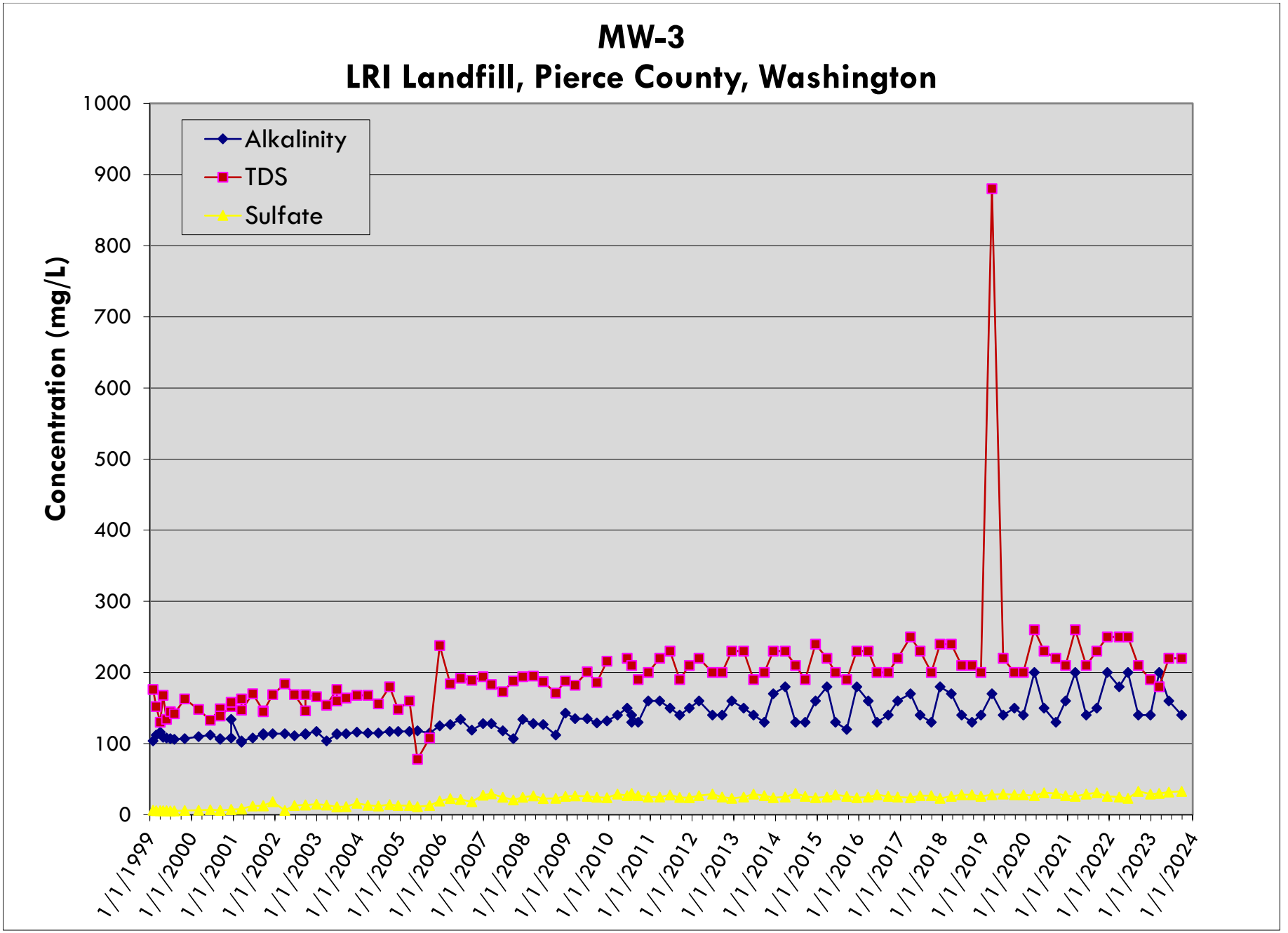

MW-7
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

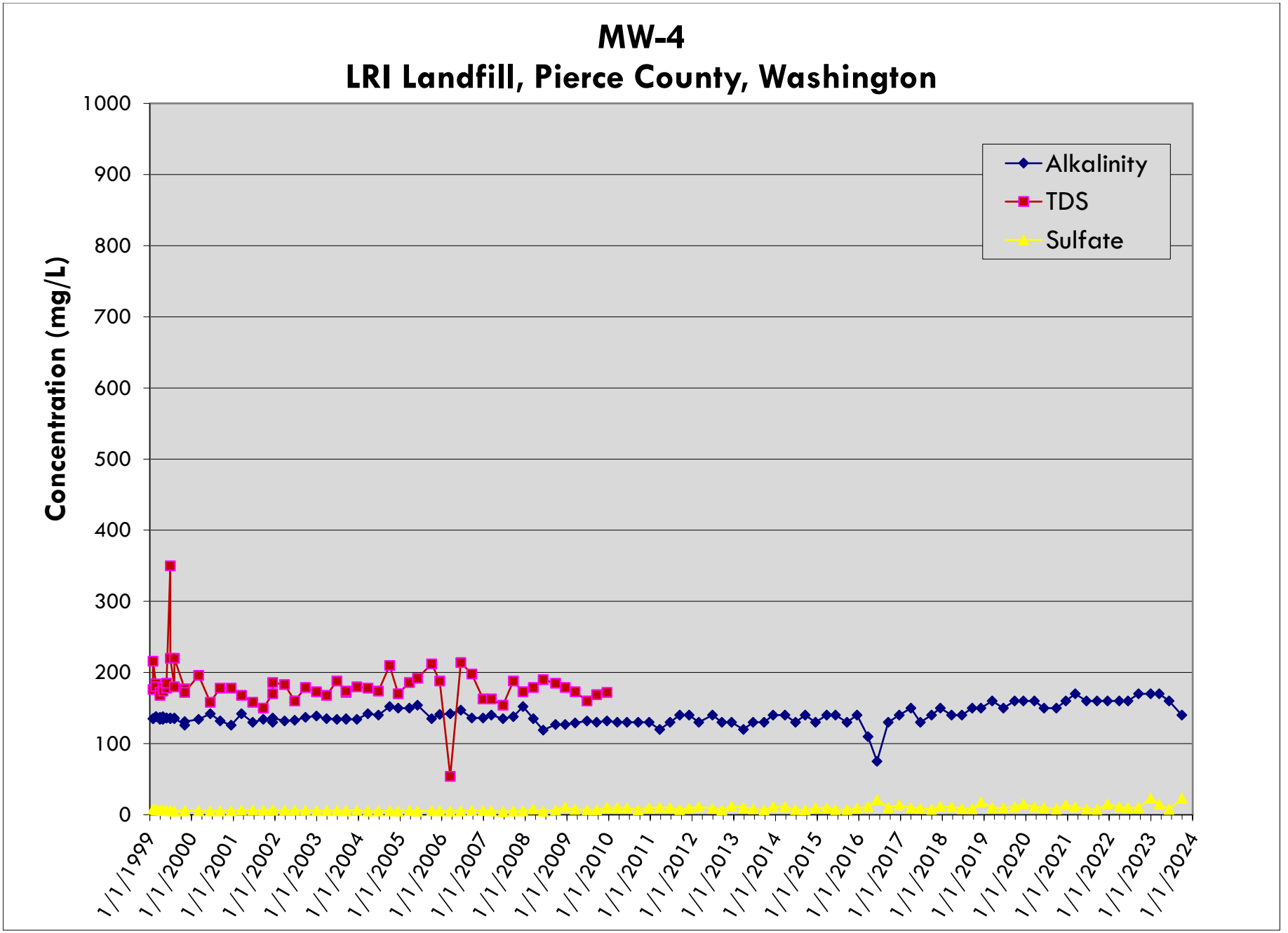

MW-9 (Background)
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

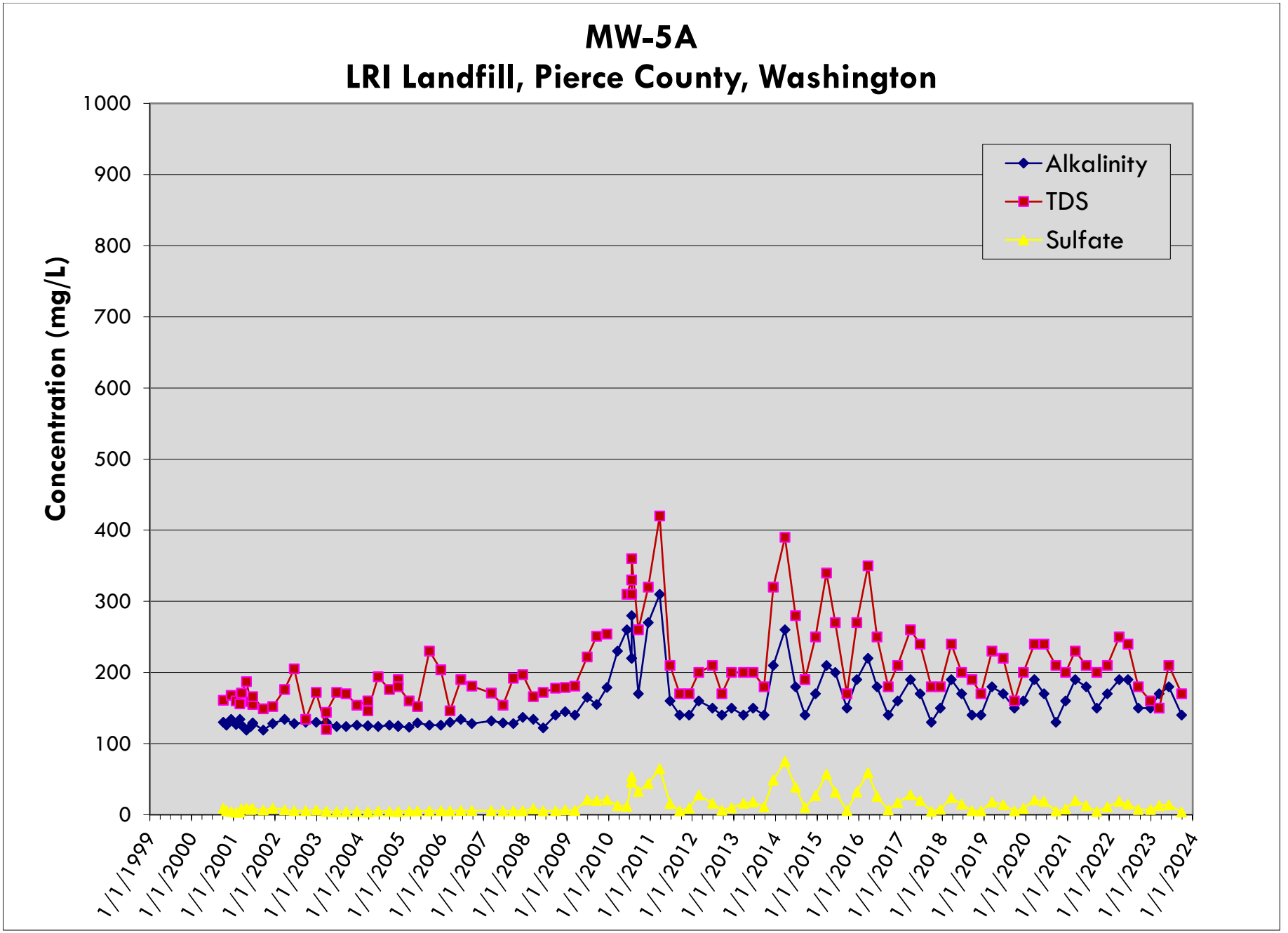

MW-10 (Background)
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

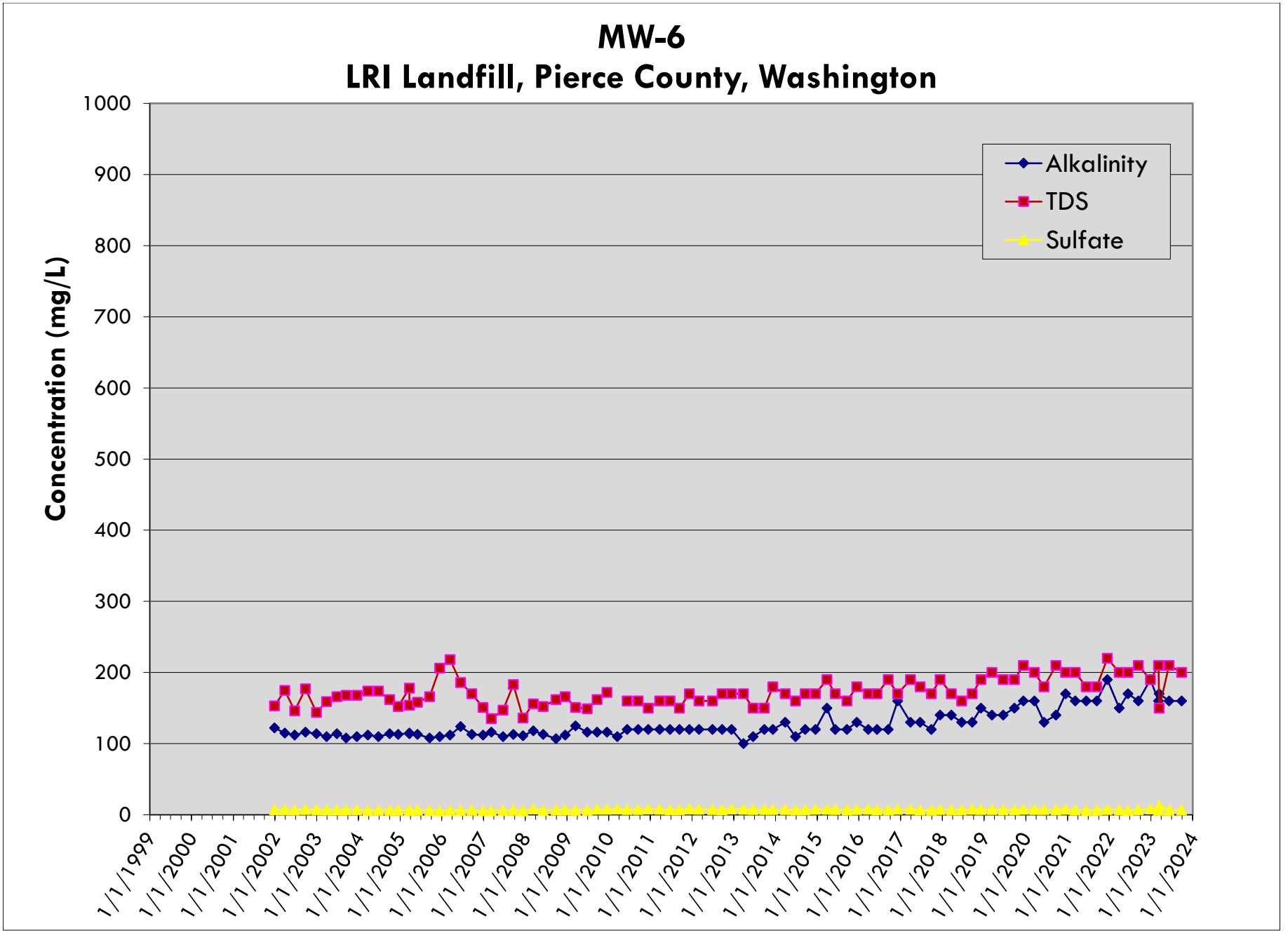

MW-1A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

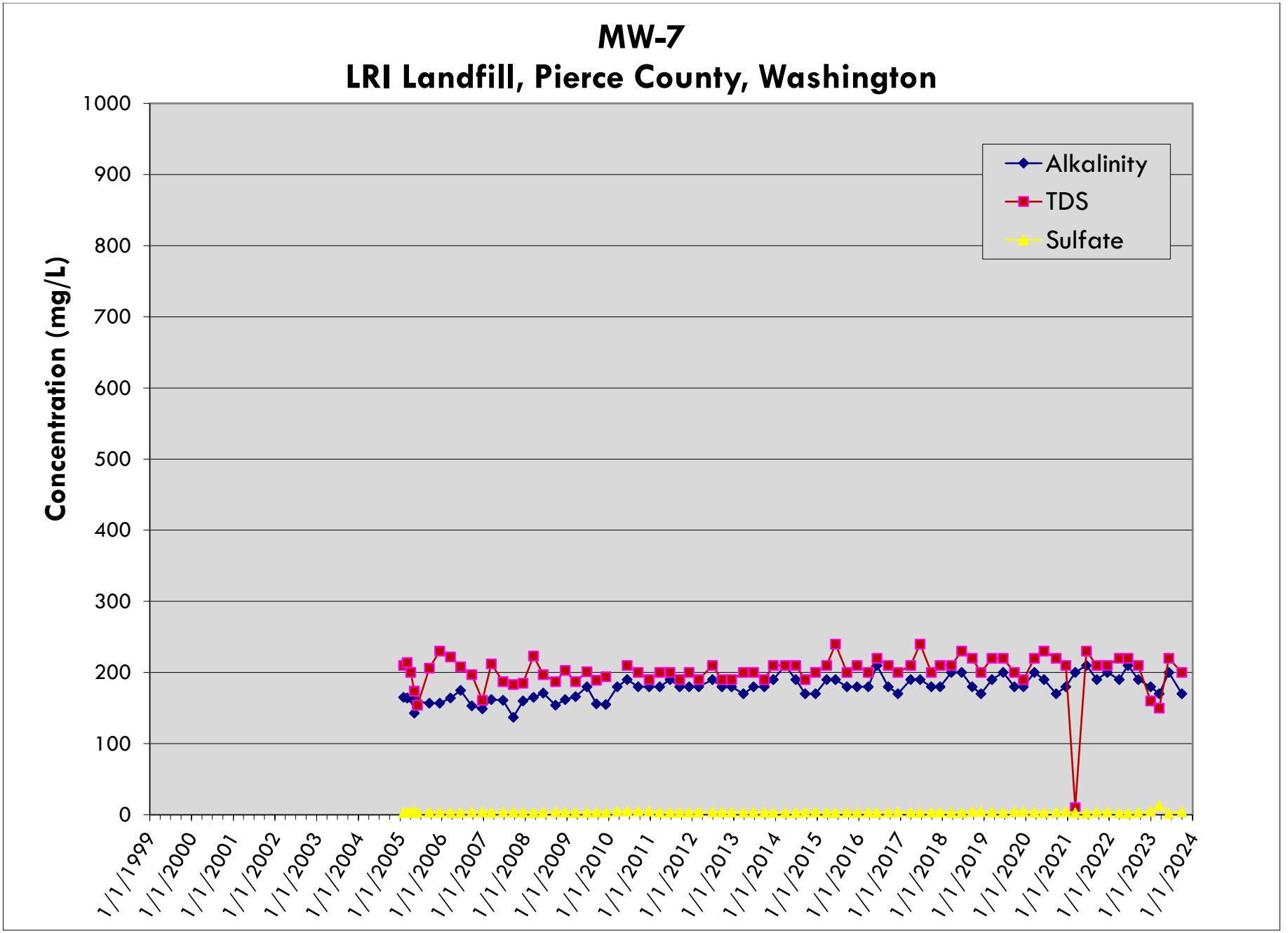

MW-2A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

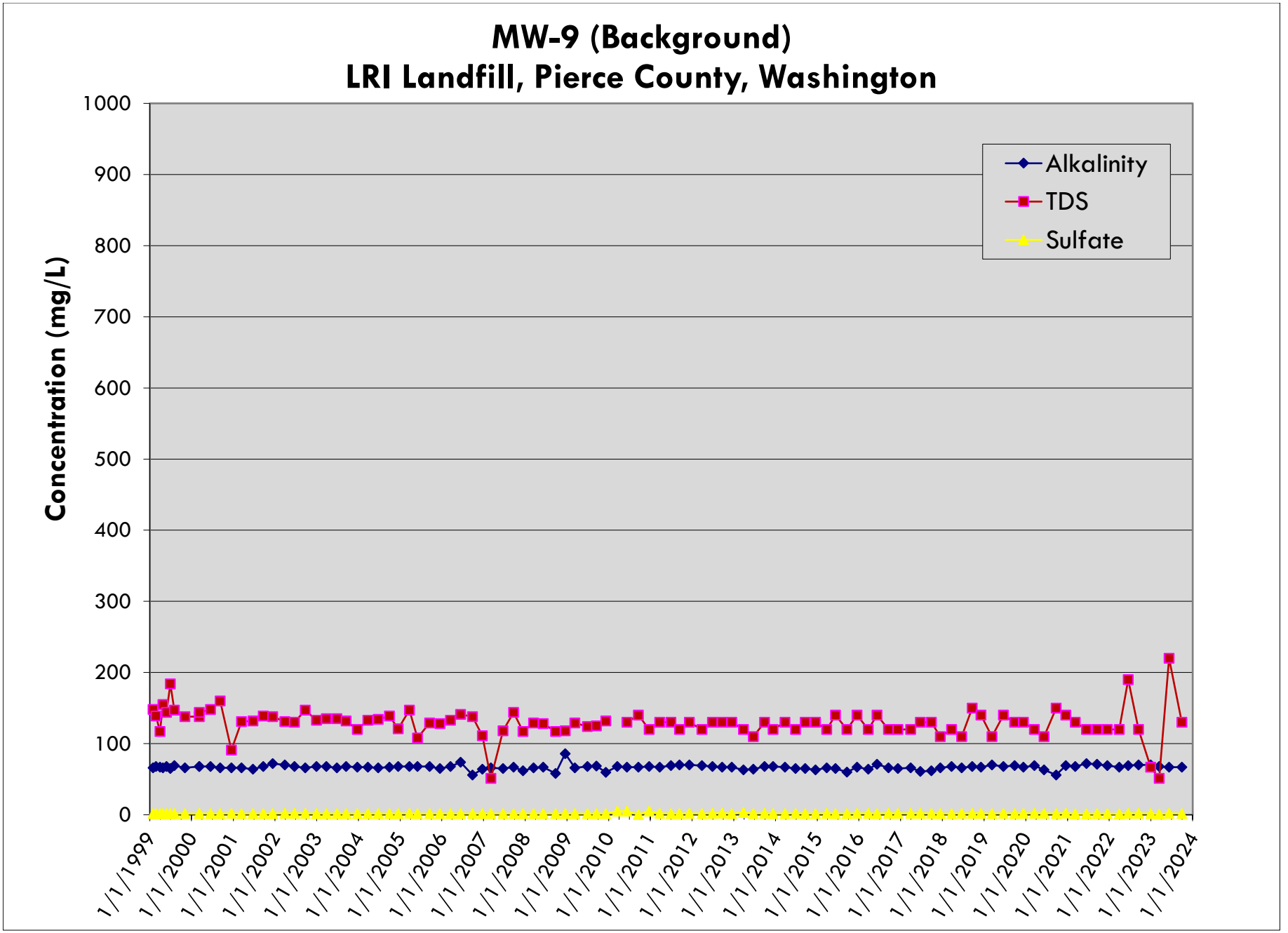

MW-3
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
Alkalinity
TDS
Sulfate
1000
900
800
700
600
500
400
300
200
100
0
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

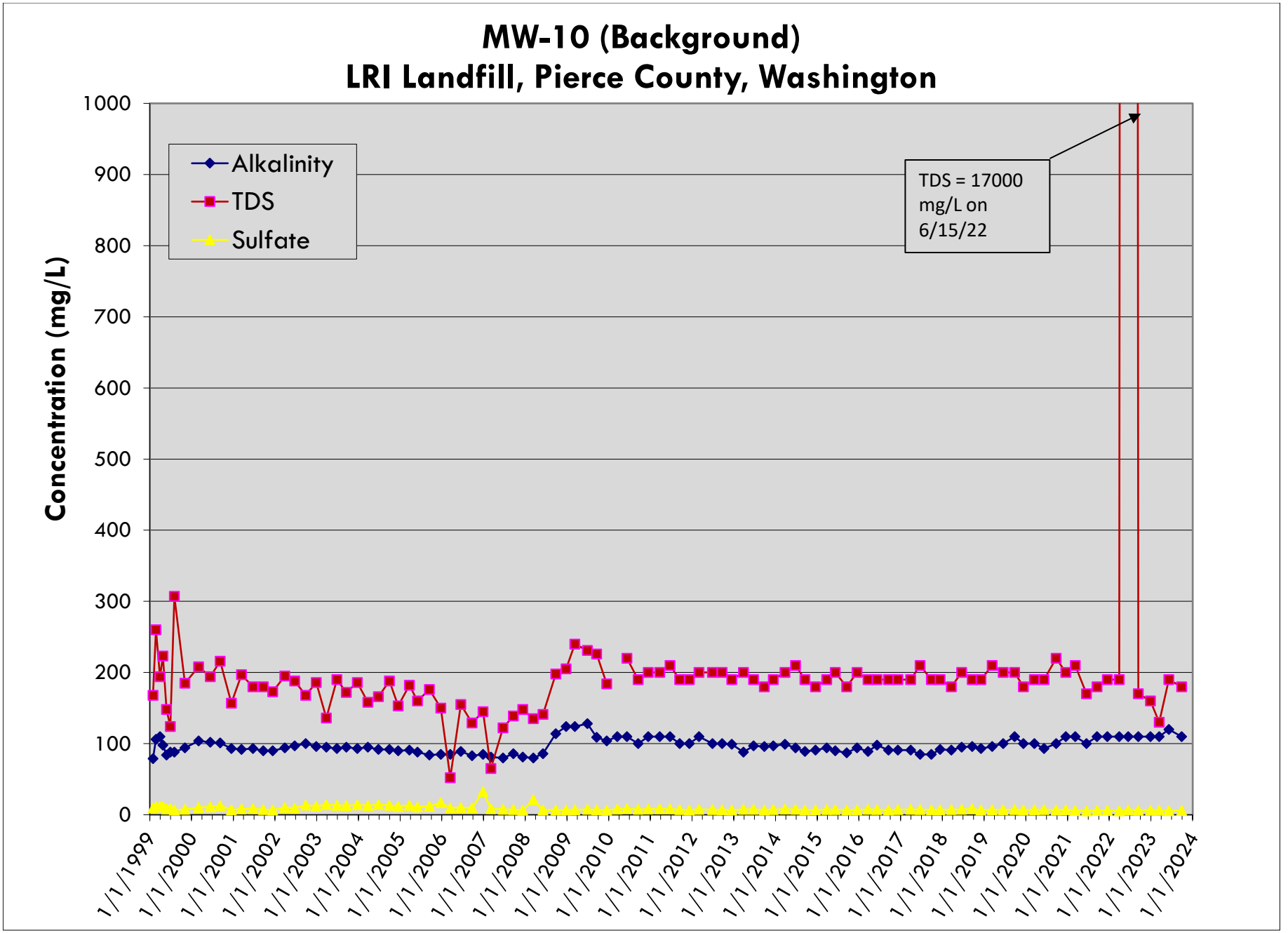

MW-4
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

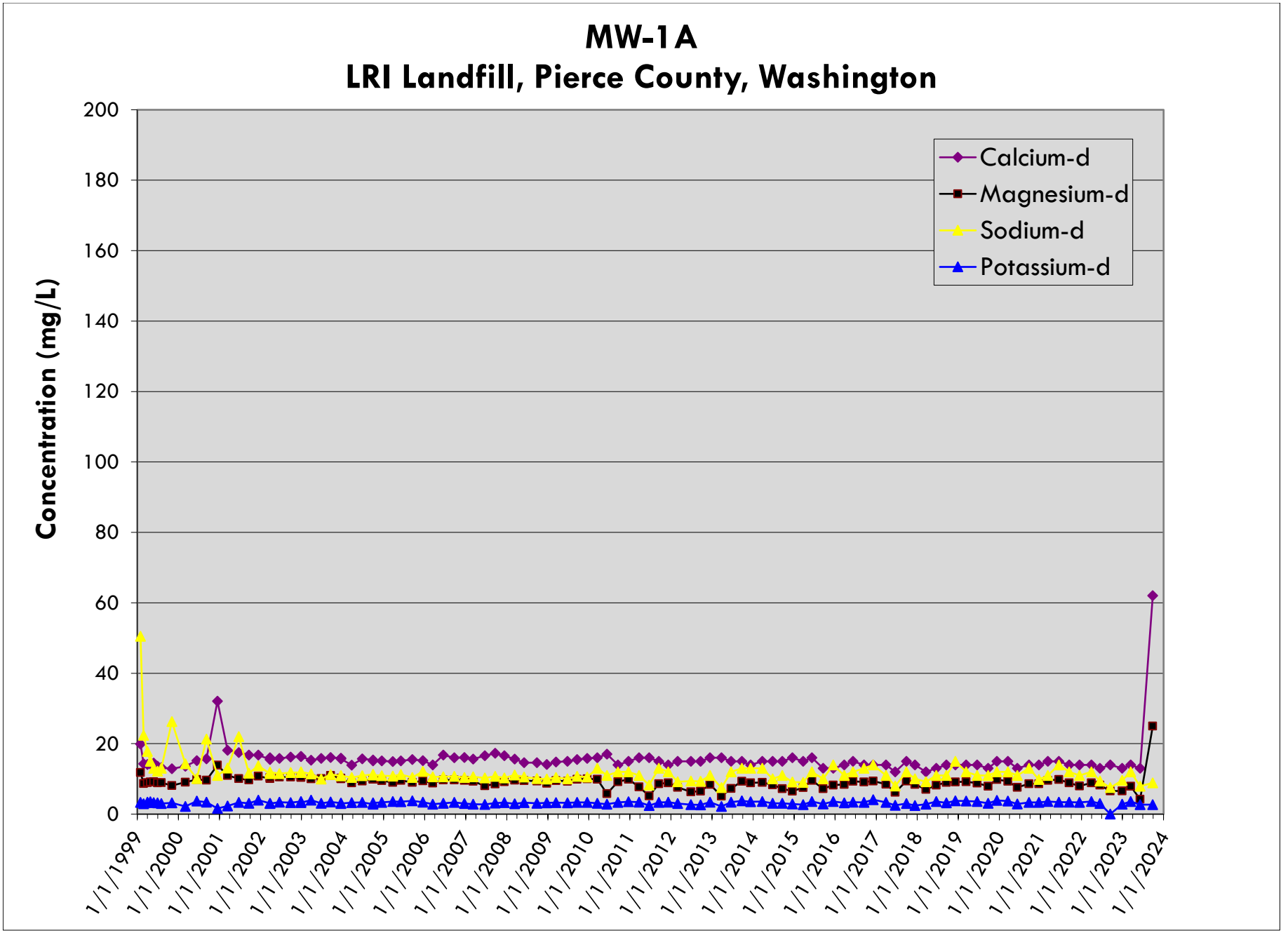

MW-5A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

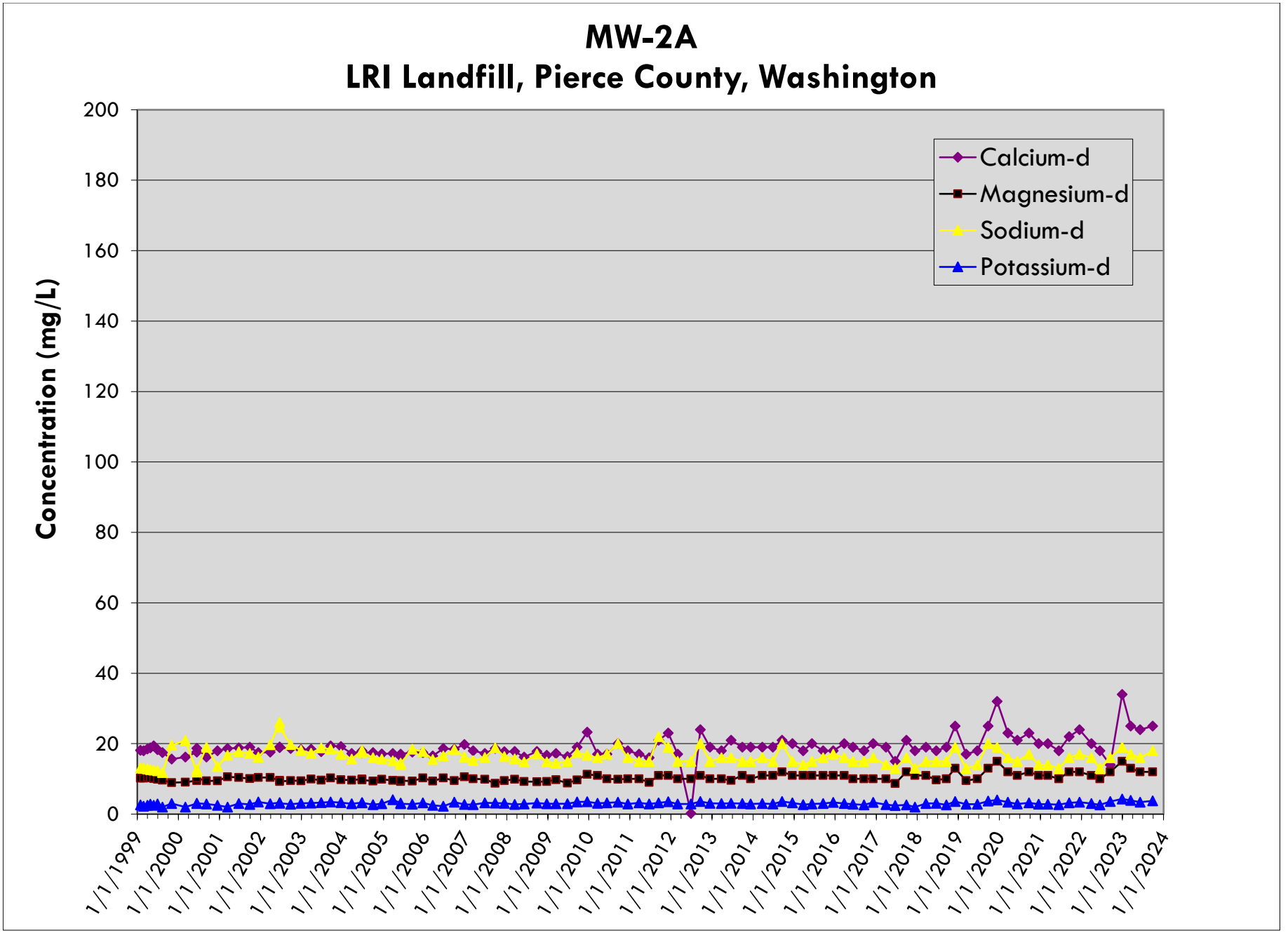

MW-6
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

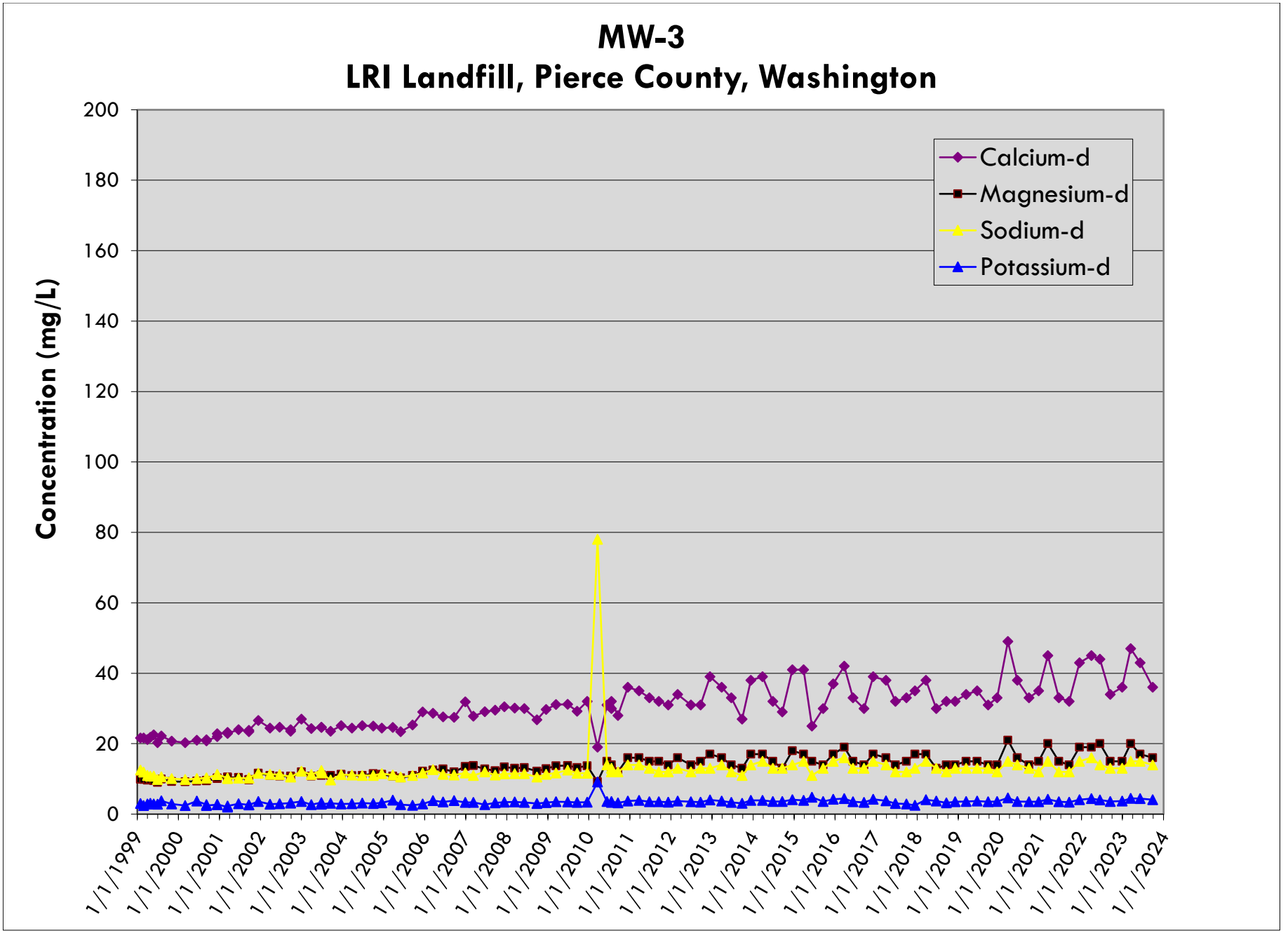

MW-7
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024


MW-9 (Background)
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

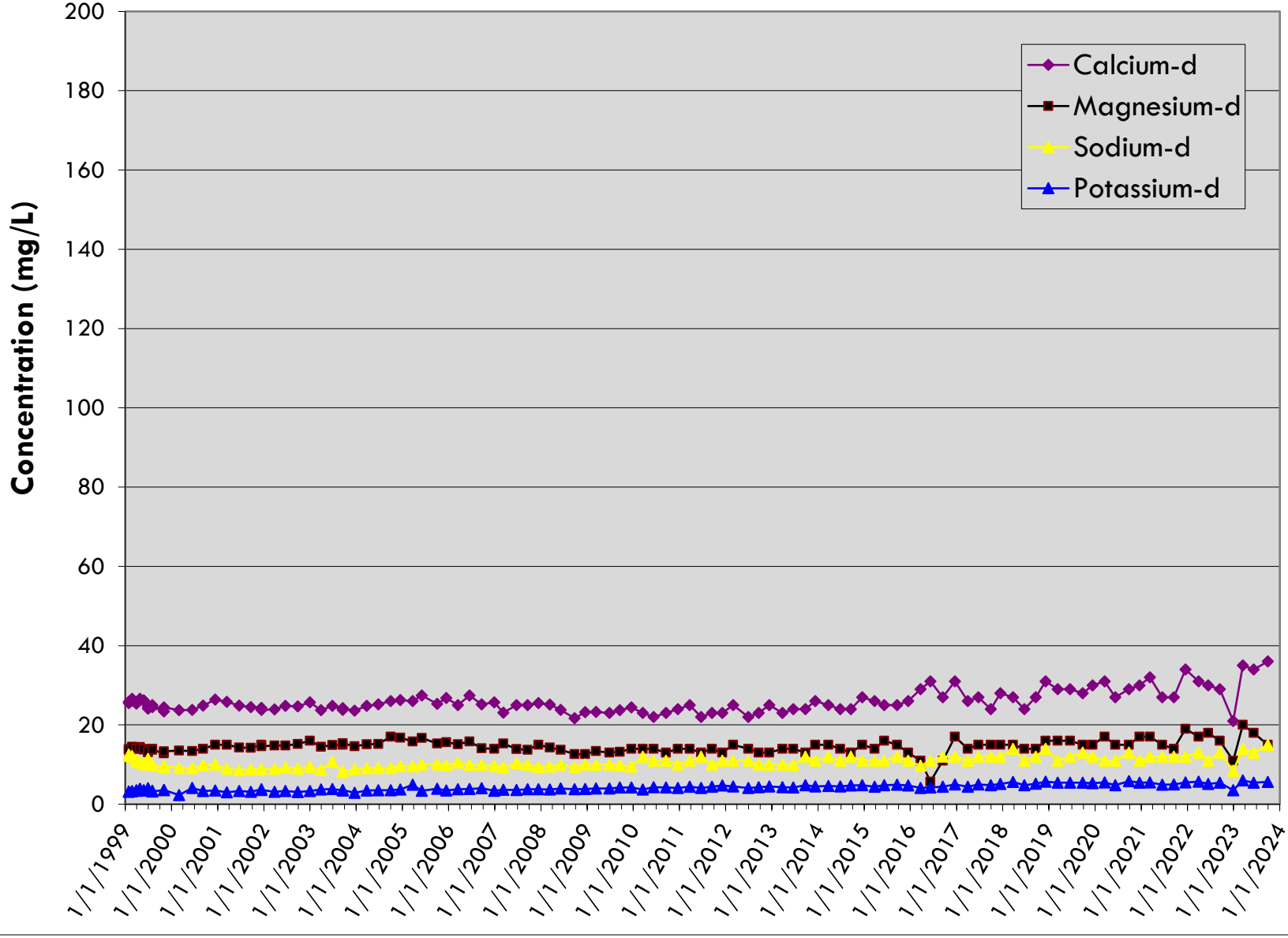

MW-10 (Background)
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
TDS = 17000 mg/L on 6/15/22
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

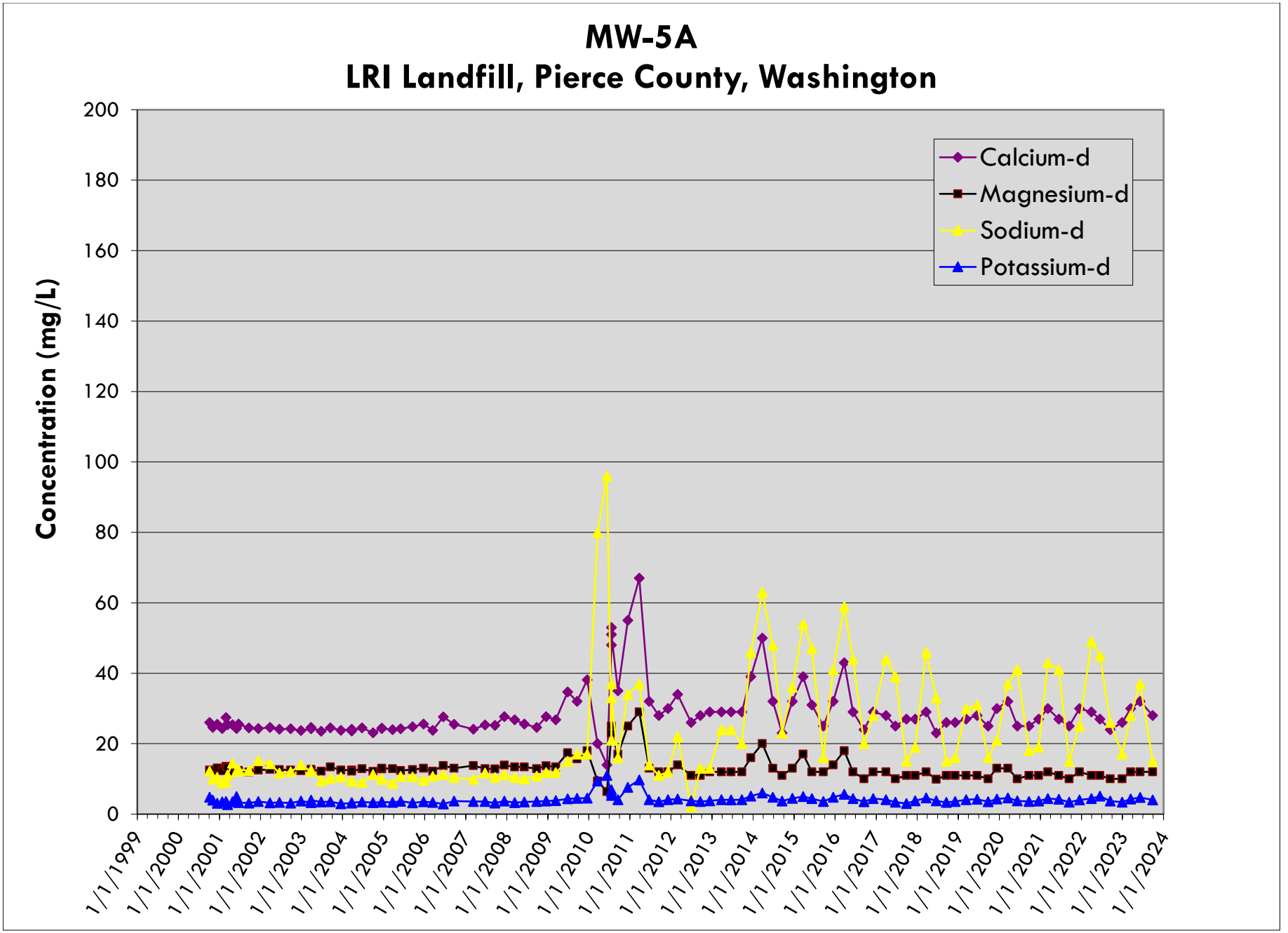

MW-1A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
200
180
160
140
120
100
80
60
40
20
0
Calcium-d
Magnesium-d
Sodium-d
Potassium-d
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024


MW-2A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
200
180
160
140
120
100
80
60
40
20
0
Calcium-d
Magnesium-d
Sodium-d
Potassium-d
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

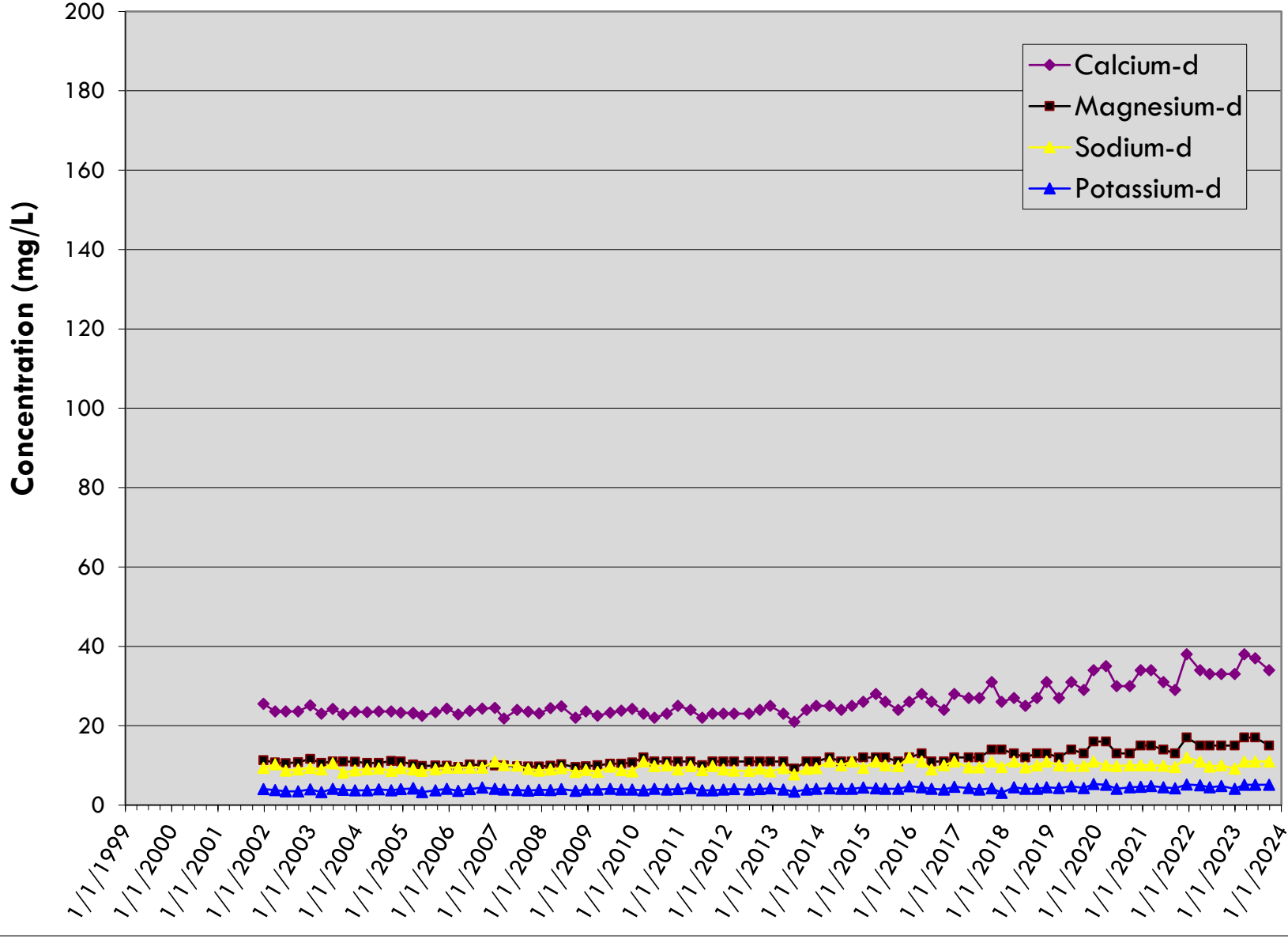

MW-3
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
200
180
160
140
120
100
80
60
40
20
0
Calcium-d
Magnesium-d
Sodium-d
Potassium-d
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

MW-4
LRI Landfill, Pierce County, Washington

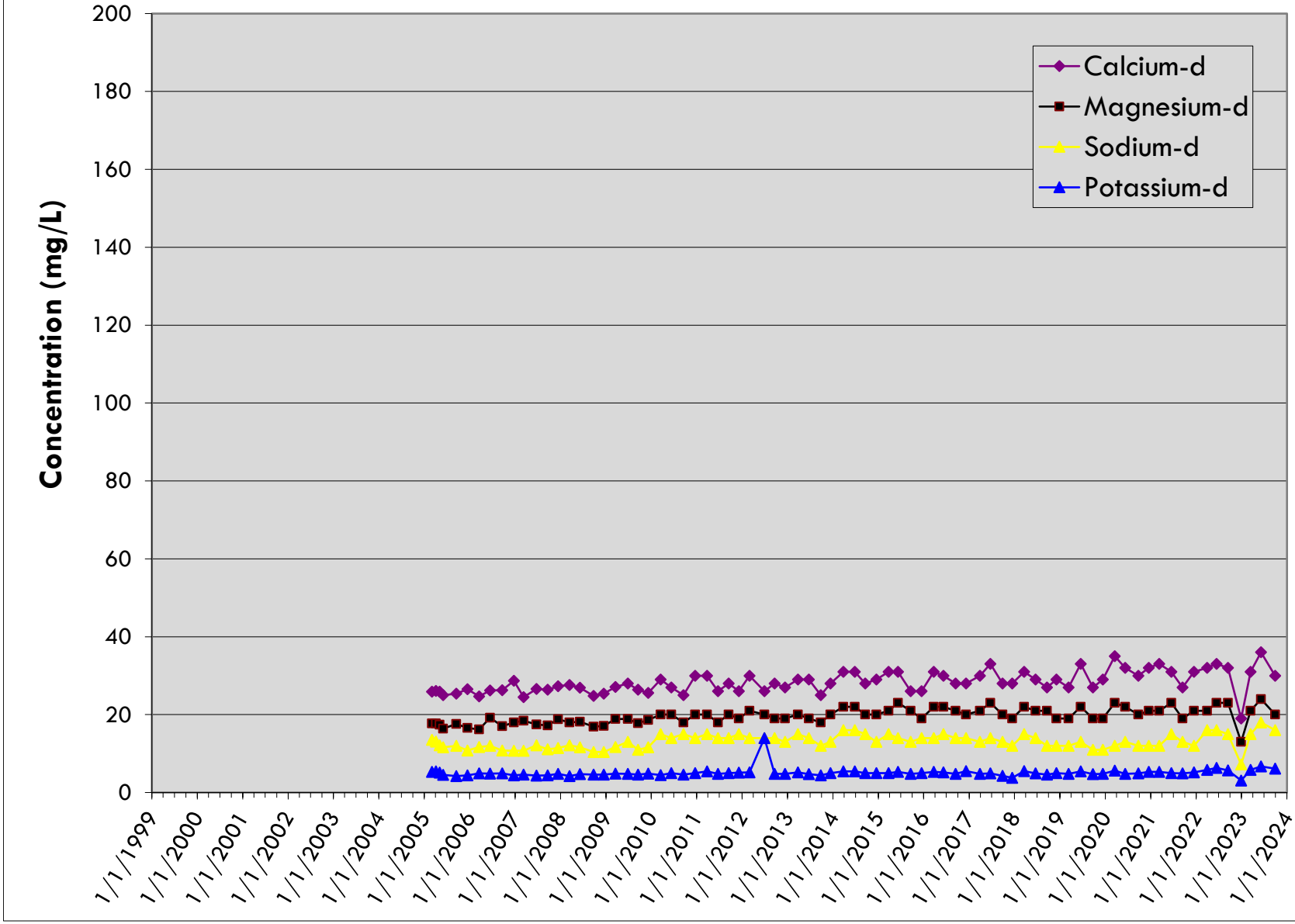



MW-5A
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
200
180
160
140
120
100
80
60
40
20
0
Calcium-d
Magnesium-d
Sodium-d
Potassium-d
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

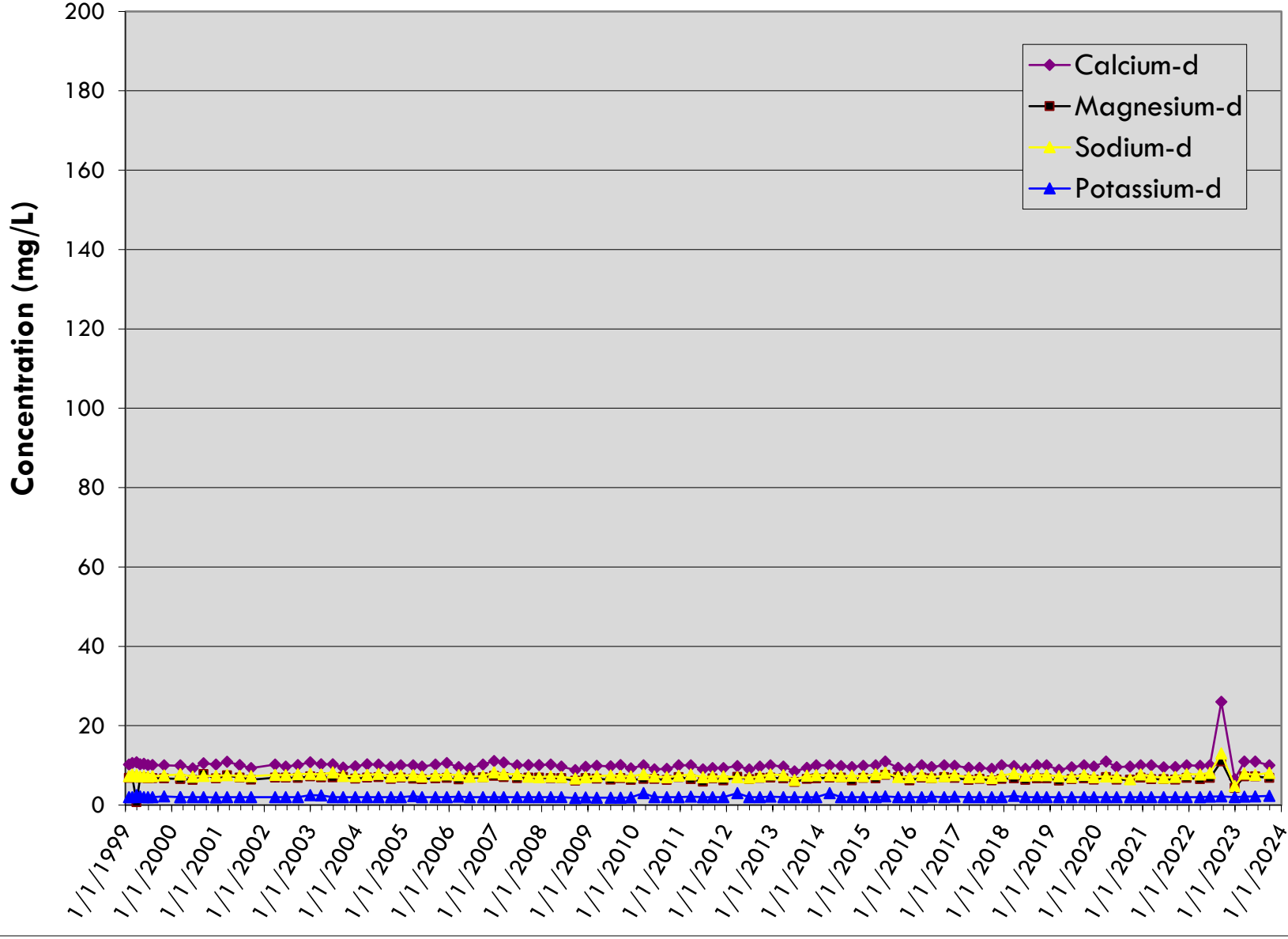
MW-6
LRI Landfill, Pierce County, Washington

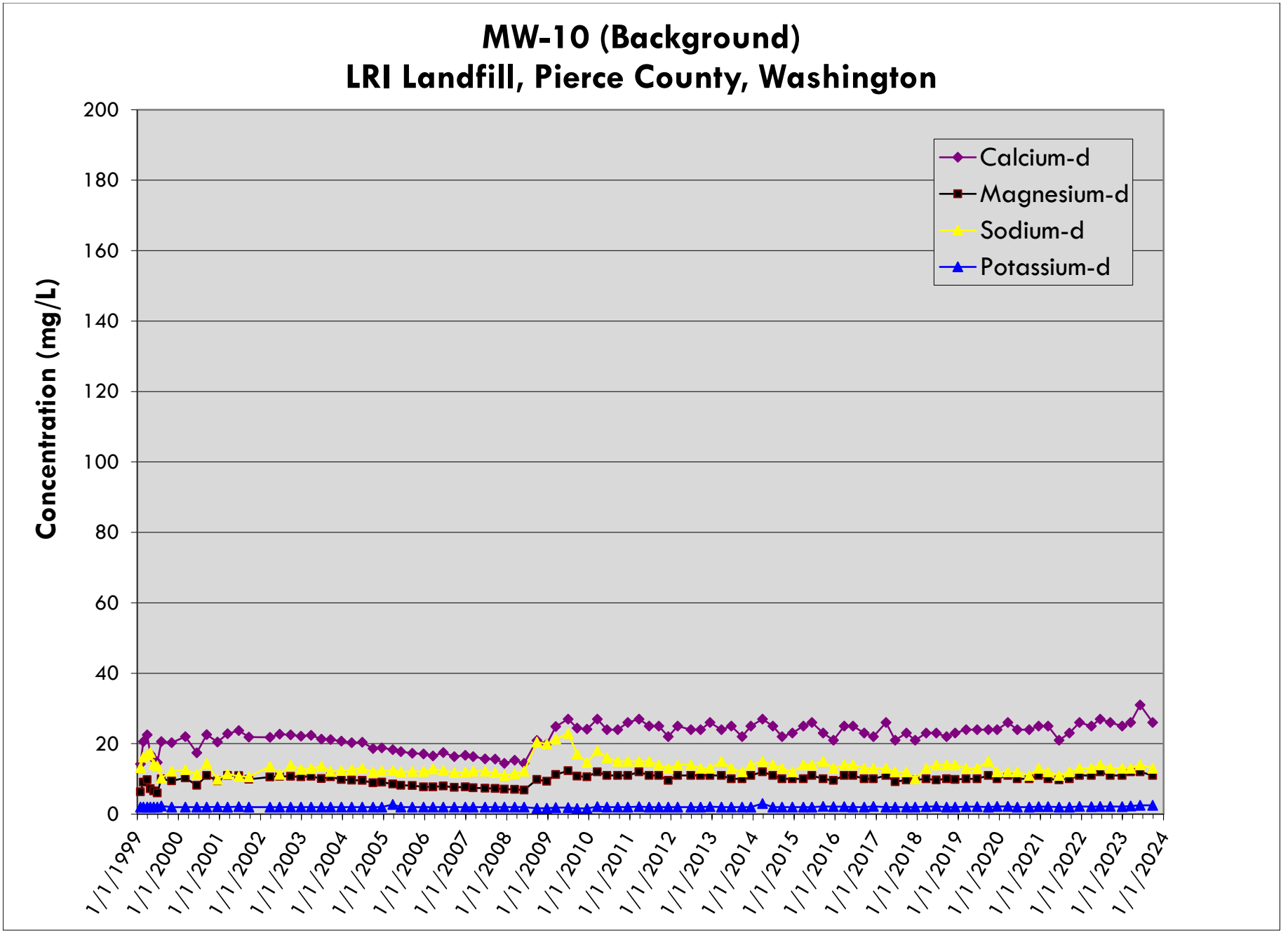


MW-7
LRI Landfill, Pierce County, Washington

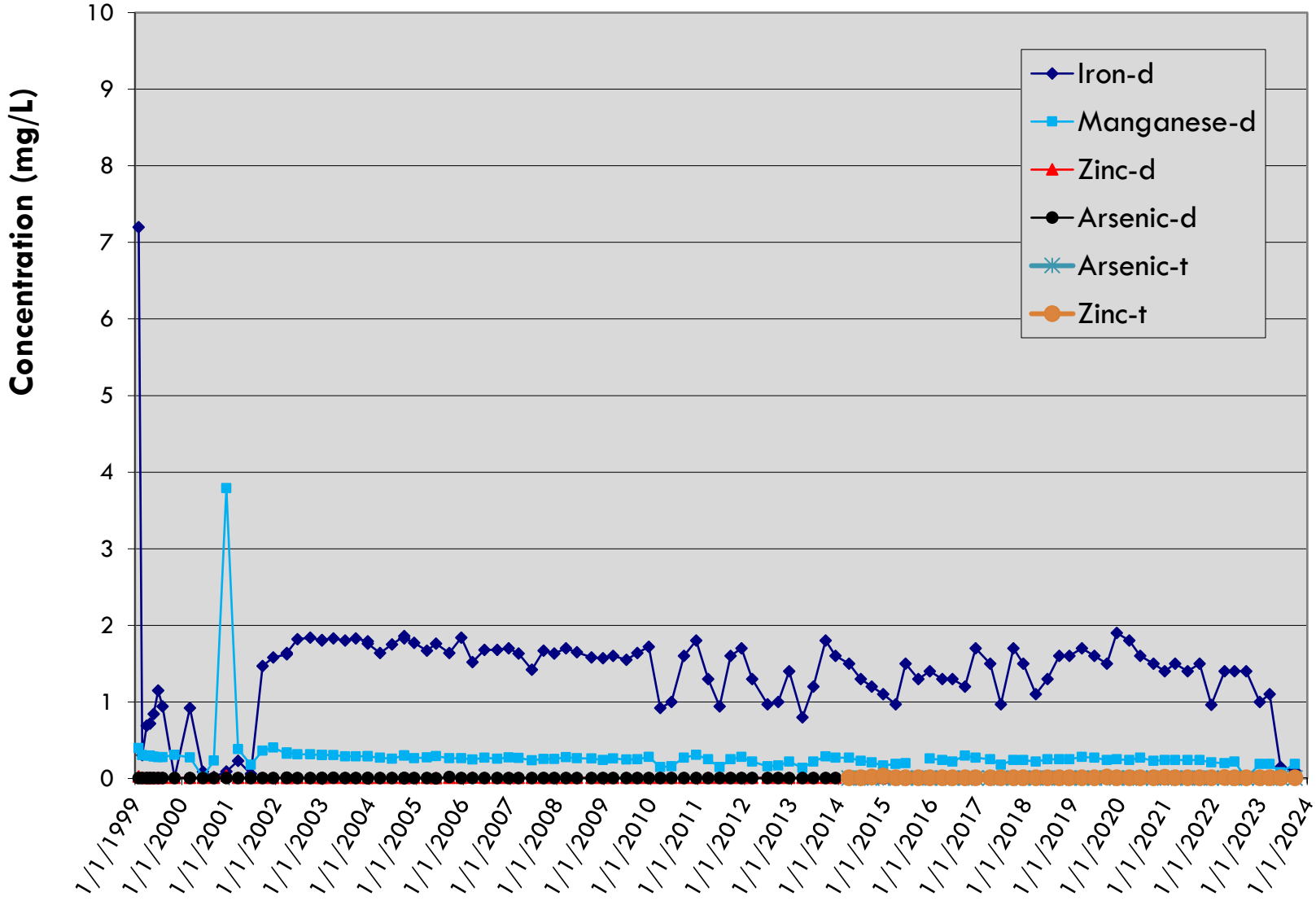


MW-9 (Background)
LRI Landfill, Pierce County, Washington

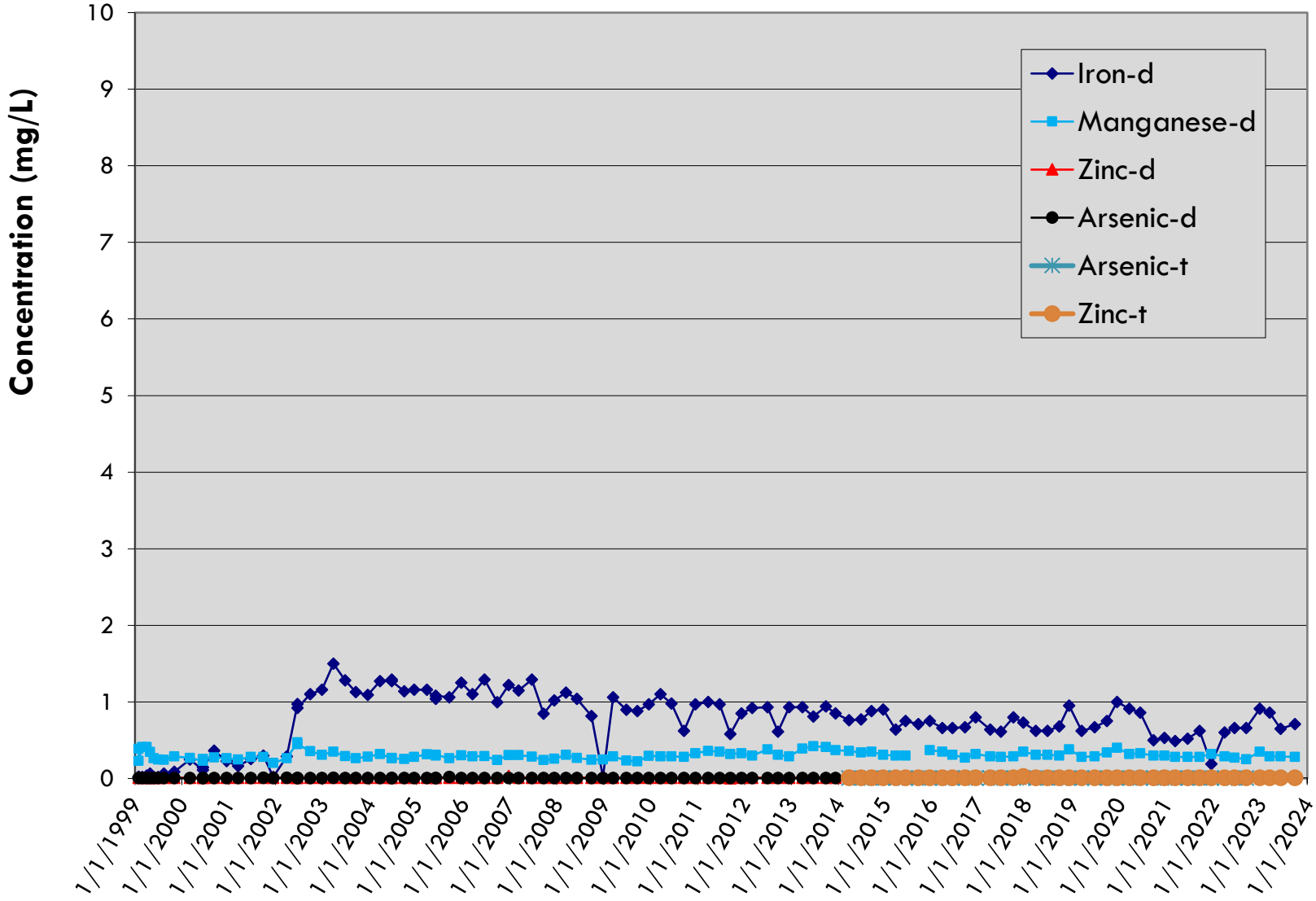



MW-10 (Background)
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
200
180
160
140
120
100
80
60
40
20
0
Calcium-d
Magnesium-d
Sodium-d
Potassium-d
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

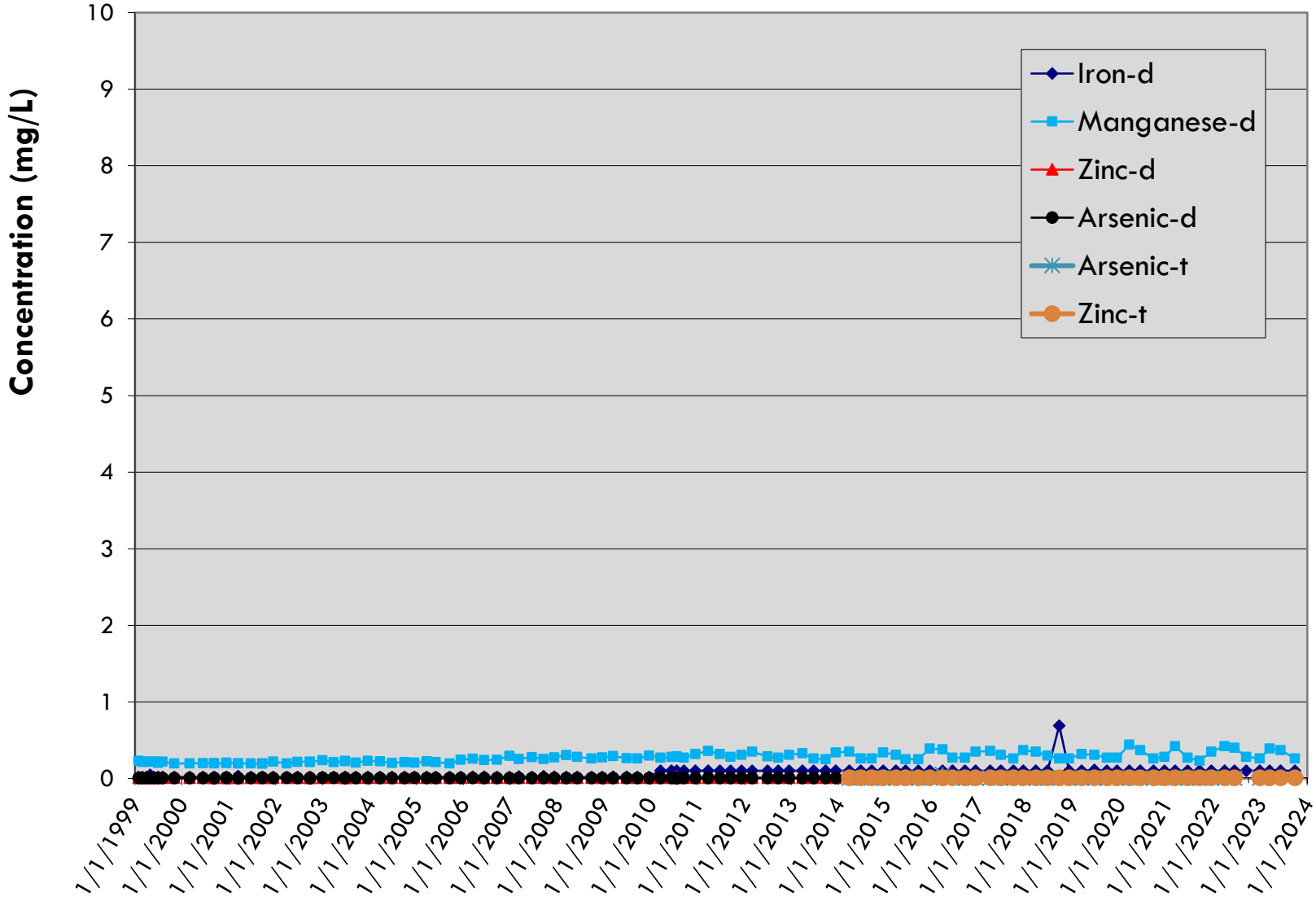
MW-1A
LRI Landfill, Pierce County, Washington



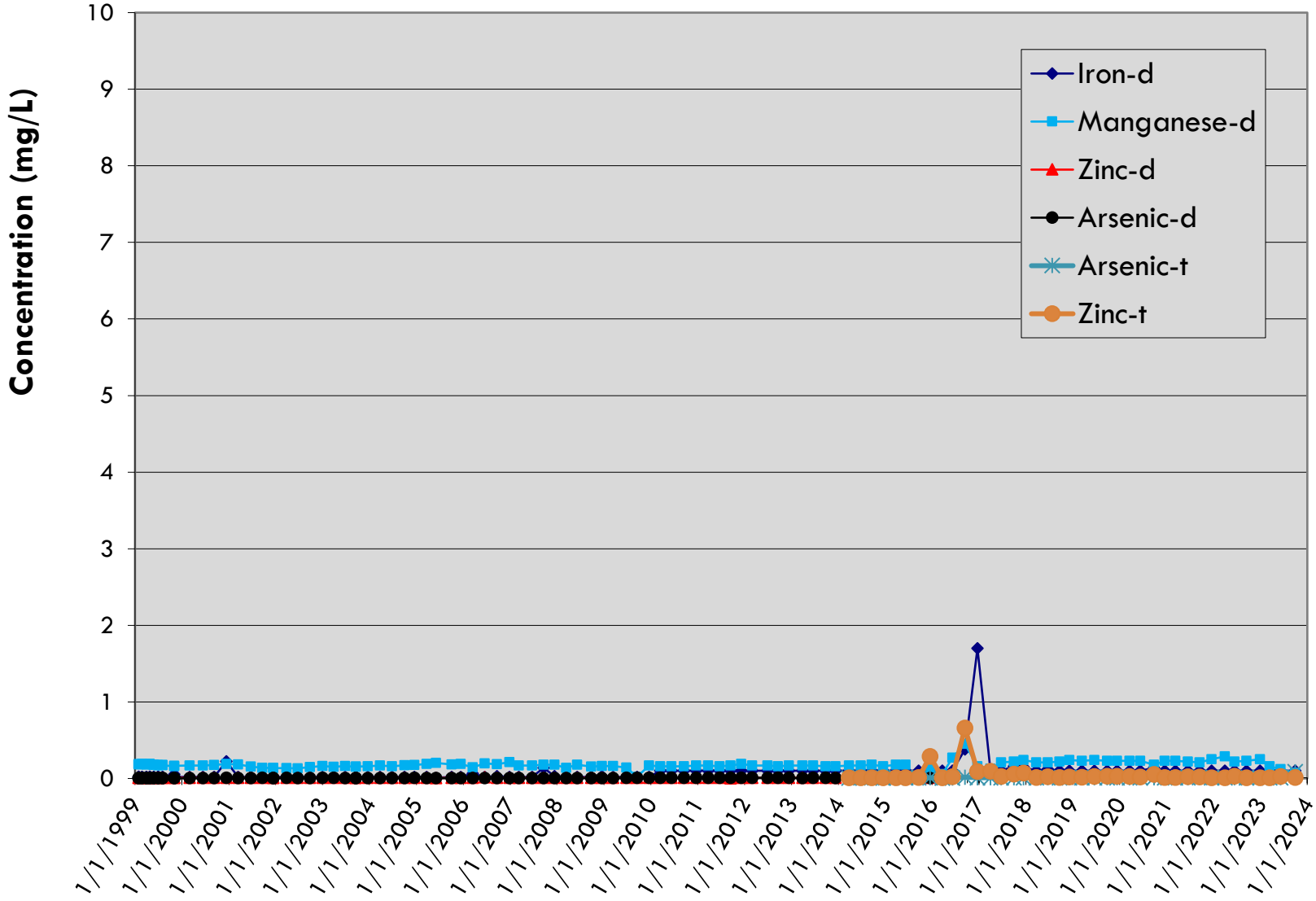
MW-2A
LRI Landfill, Pierce County, Washington



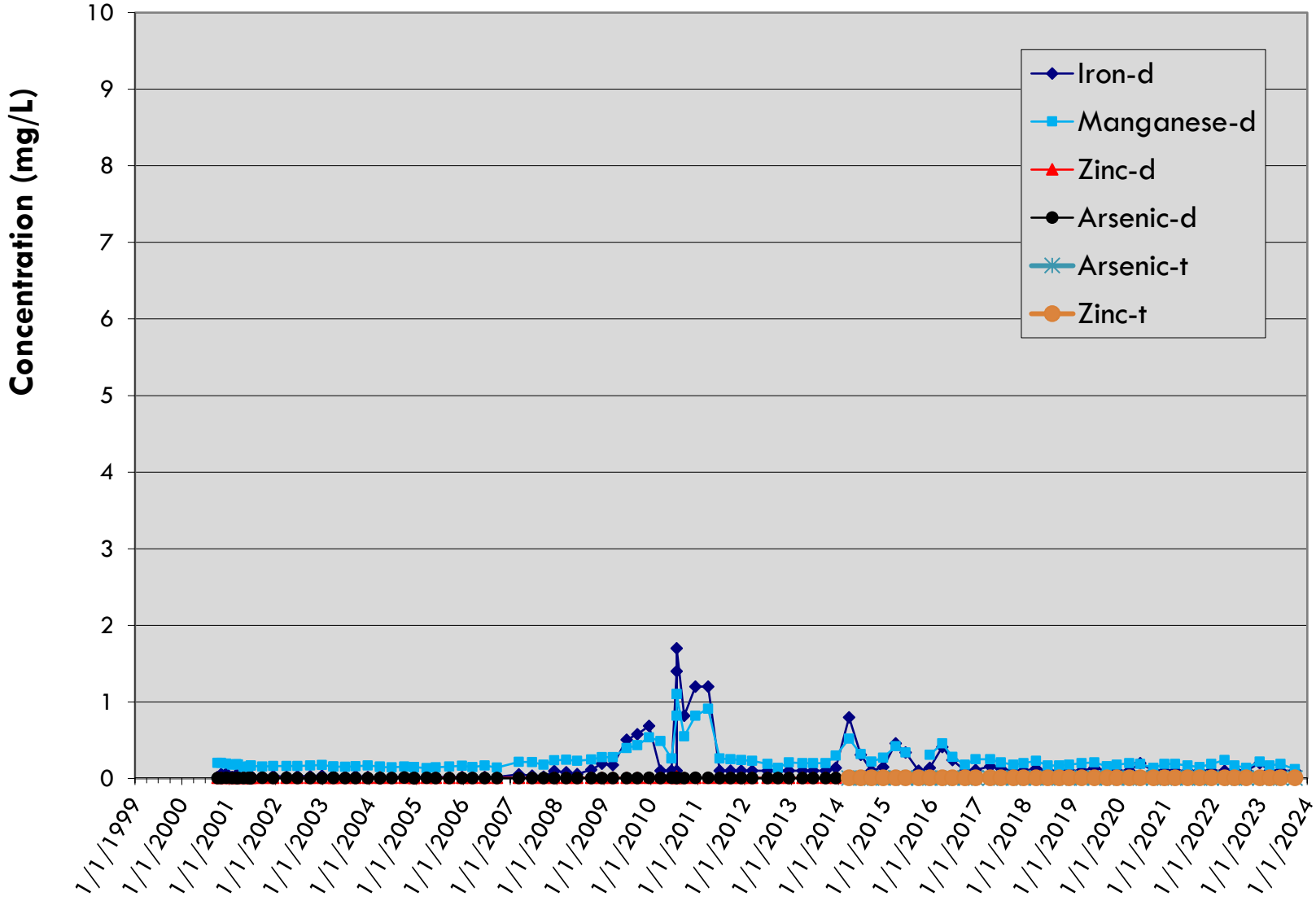
MW-3
LRI Landfill, Pierce County, Washington



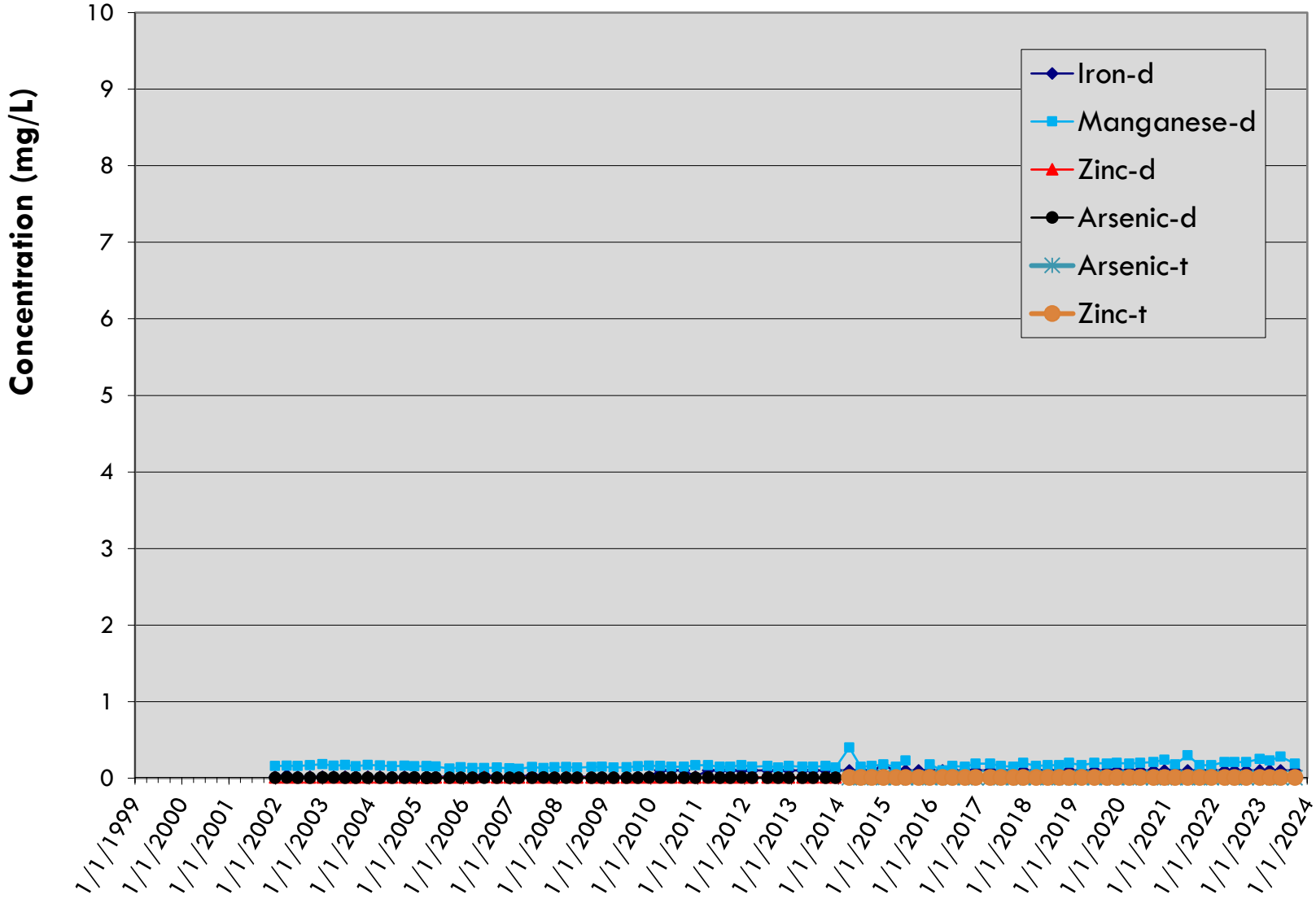
MW-4
LRI Landfill, Pierce County, Washington



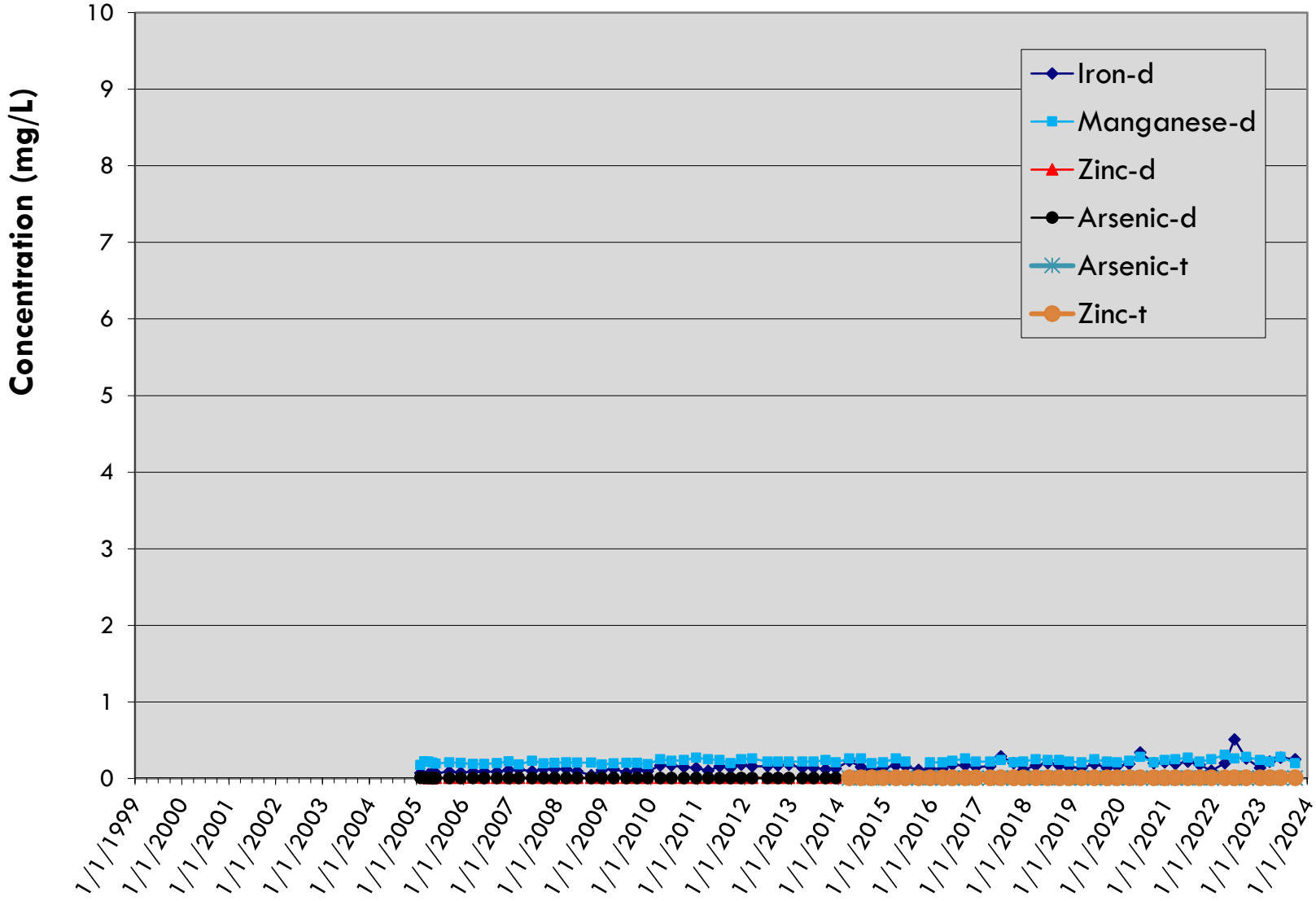
MW-5A
LRI Landfill, Pierce County, Washington

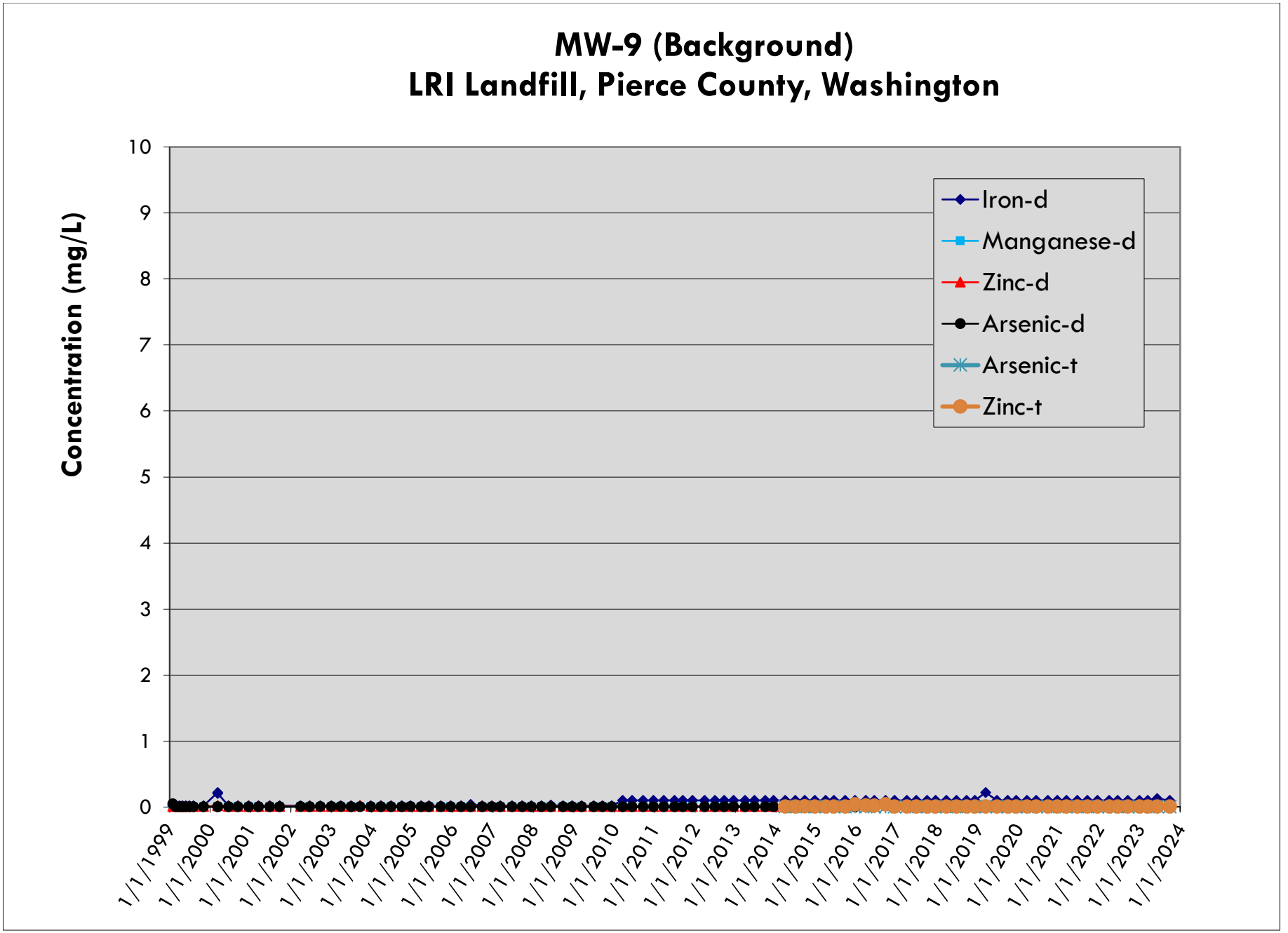


MW-6
LRI Landfill, Pierce County, Washington

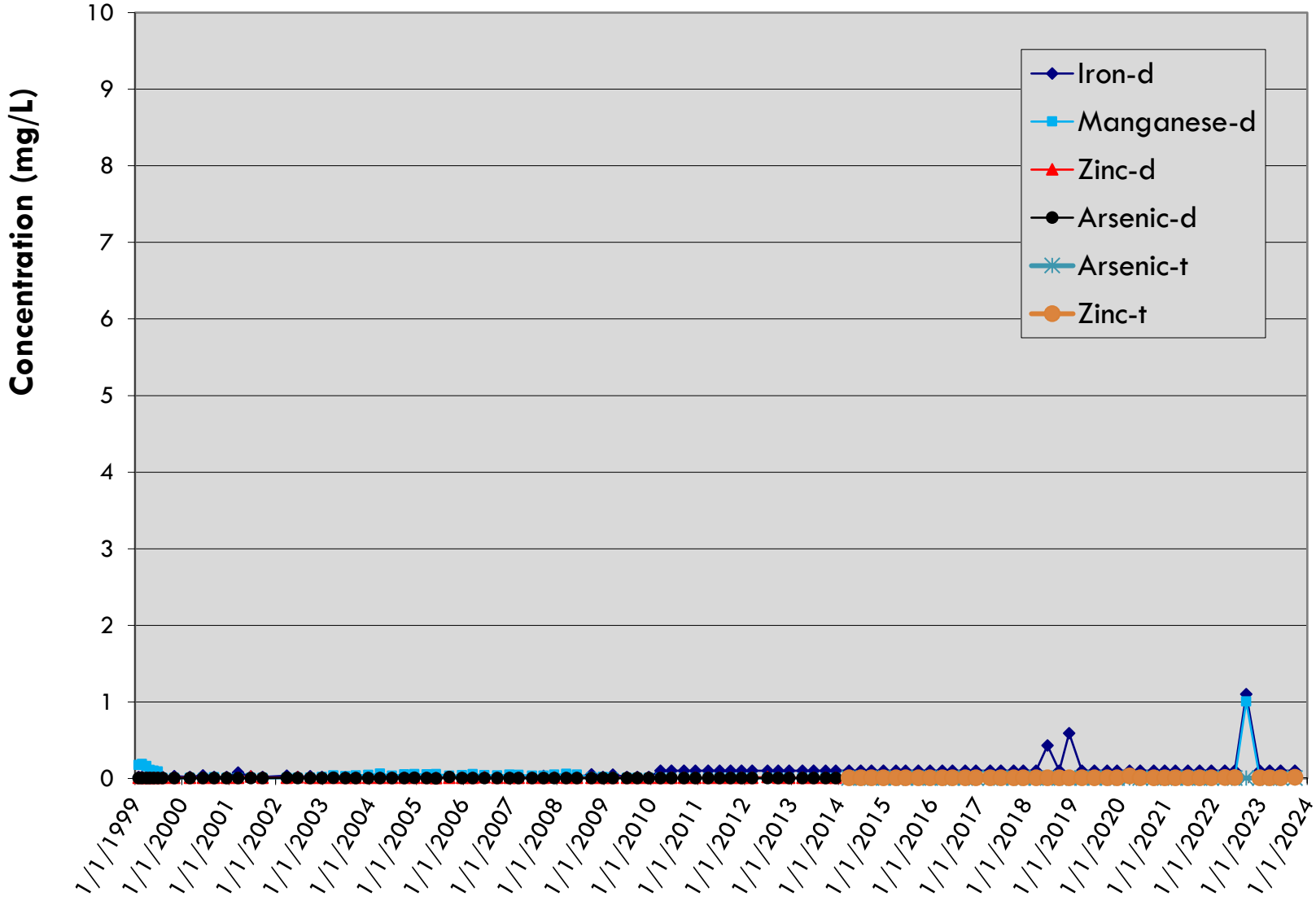


MW-7
LRI Landfill, Pierce County, Washington




MW-9 (Background)
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
10
9
8
7
6
5
4
3
2
1
0
Iron-d
Manganese-d
Zinc-d
Arsenic-d
Arsenic-t
Zinc-t
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
1/1/2020
1/1/2021
1/1/2022
1/1/2023
1/1/2024

MW-10 (Background)
LRI Landfill, Pierce County, Washington



Attachment H

LDCS & Leachate Pumping Records and Conductivity Measurements

Summary of LDCS Volumes Pumped and Conductivity Data
Third Quarter 2023
LRI Landfill, Pierce County, Washington

Date	Rainfall	LDCS-1 Vol. (Gal.)	LDCS-1 Cond. (µS/cm)	LDCS-2A Vol. (Gal)	LDCS-2A Cond. (µS/cm)	LDCS-2B Vol. (Gal)	LDCS-2B Cond. (µS/cm)	LDCS-3A Vol. (Gal)	LDCS-3A Cond. (µS/cm)	LDCS-4A Vol. (Gal)	LDCS-4A Cond. (µS/cm)*	LDCS-4B Vol. (Gal)	LDCS-4B Cond. (µS/cm)	LDCS-5 Vol. (Gal)	LDCS-5 Cond. (µS/cm)	LDCS-6 Vol. (Gal)	LDCS-6 Cond. (µS/cm)	LDCS-7 Vol. (Gal)	LDCS-7 Cond. (µS/cm)	LDCS-8 Vol. (Gal)	LDCS-8 Cond. (µS/cm)*
7/1/2023	0.00	4,010	165	0	925	0	797	3,150	935	4,490	838	7,920	1,073	384	759	18,617	1,845	4,195	0	2,457	1,000
7/2/2023	0.00	4,000	165	1,982	921	2,351	778	4,630	937	3,220	838	8,042	1,168	320	791	0	1,845	1,052	0	2,724	1,000
7/3/2023	0.00	4,490	164	974	921	1,222	823	3,130	936	3,150	414	7,176	1,212	320	852	10,523	1,430	0	0	2,450	1,000
7/4/2023	0.00	3,970	164	686	929	4,779	822	4,660	937	3,370	427	7,058	1,229	320	891	10,790	1,380	0	0	2,450	1,000
7/5/2023	0.00	4,790	164	929	941	1,540	875	3,140	937	3,470	314	7,050	1,238	320	910	8,672	1,321	3,419	0	2,447	1,000
7/6/2023	0.00	4,000	163	873	954	2,065	840	3,140	936	2,920	1130	7,300	1,237	319	806	0	1,271	1,820	0	2,449	1,000
7/7/2023	0.00	3,990	162	659	964	984	877	4,600	936	2,690	440	6,686	1,225	319	771	0	1,245	0	0	2,185	1,000
7/8/2023	0.00	3,960	162	0	967	3,298	811	3,160	937	2,540	443	6,530	1,211	319	790	4,143	1,241	0	0	2,454	1,000
7/9/2023	0.00	3,970	162	1,871	962	0	771	4,600	938	0	359	6,162	1,201	318	822	0	1,198	822	0	2,177	1,000
7/10/2023	0.00	3,200	161	763	956	2,203	761	3,060	940	2,170	359	5,866	1,192	319	850	0	1,198	4,452	0	2,184	1,000
7/11/2023	0.00	3,990	162	0	940	0	728	3,120	944	2,430	425	5,310	1,185	255	878	0	1,198	0	0	1,907	1,000
7/12/2023	0.00	3,160	162	0	923	0	796	3,090	946	2,530	425	4,974	1,180	254	910	0	1,198	0	0	2,174	1,000
7/13/2023	0.00	3,960	162	2,527	919	5,320	834	3,120	948	2,570	425	4,946	1,176	319	938	0	1,121	0	0	1,899	1,000
7/14/2023	0.00	3,160	162	0	920	0	789	4,680	951	2,520	411	4,640	1,175	256	949	0	1,121	5,206	0	2,170	1,000
7/15/2023	0.00	3,140	162	0	923	0	809	3,200	953	2,670	411	4,500	1,172	256	899	0	1,121	0	0	2,166	1,000
7/16/2023	0.00	2,350	162	0	931	5,102	849	3,080	953	2,550	411	4,576	1,169	256	875	0	1,076	0	0	1,891	1,000
7/17/2023	0.00	1,560	162	0	940	0	883	1,480	952	1,290	536	2,628	1,164	128	884	0	1,076	0	0	1,085	1,000
7/18/2023	0.00	2,350	162	3,966	939	2,155	883	3,090	953	2,520	536	4,884	1,161	191	912	0	1,069	2,103	0	1,891	1,000
7/19/2023	0.00	850	163	0	934	0	876	1,900	955	1,100	635	2,126	1,153	155	945	69	1,069	3,109	0	857	1,000
7/20/2023	0.00	2,330	163	0	939	0	854	3,060	957	2,500	635	4,464	1,151	383	970	2	1,069	1	0	1,884	1,000
7/21/2023	0.00	3,120	163	0	949	0	816	3,060	963	2,380	635	4,696	1,146	191	985	0	1,069	0	0	1,892	1,000
7/22/2023	0.00	2,330	162	0	947	0	796	3,030	964	2,440	635	4,344	1,141	254	994	0	1,069	0	0	1,885	1,000
7/23/2023	0.00	3,090	162	0	948	0	775	3,040	965	2,430	635	4,380	1,136	254	998	0	1,069	5,221	0	1,883	1,000
7/24/2023	0.00	2,340	161	4,497	953	10,240	754	3,010	964	2,380	635	4,238	1,130	254	999	0	1,069	0	0	1,889	1,000
7/25/2023	0.15	2,300	162	646	950	3,078	708	1,550	964	2,790	447	4,610	1,124	253	0	0	1,042	0	0	1,616	1,000
7/26/2023	0.00	2,330	162	980	935	1,841	842	3,060	966	2,160	407	4,510	1,116	255	0	0	1,042	0	0	1,885	1,000
7/27/2023	0.00	2,790	162	763	932	1,064	865	3,050	967	2,040	443	4,410	1,107	254	0	0	1,039	835	0	1,608	1,000
7/28/2023	0.00	2,490	162	0	940	0	916	3,070	967	1,910	420	4,264	1,101	254	0	0	1,036	4,349	0	1,613	1,000
7/29/2023	0.00	2,330	161	0	950	0	825	3,050	967	1,860	420	4,078	1,096	254	0	0	1,036	0	0	1,880	1,000
7/30/2023	0.00	2,310	161	0	953	0	837	3,010	967	1,820	420	4,142	1,096	254	0	0	1,036	0	0	1,611	1,000
7/31/2023	0.00	2,330	161	0	947	0	854	1,550	968	1,800	0	3,708	1,099	253	0	0	0	0	0	1,604	1,000
8/1/2023	0.00	2,340	161	3,447	944	9,141	751	3,080	968	1,800	262	3,742	1,103	254	0	0	1,039	5,138	0	1,604	1,000
8/2/2023	0.00	2,330	161	0	949	0	712	3,120	969	1,790	262	3,696	1,107	254	0	0	1,039	0	0	1,873	1,000
8/3/2023	0.00	2,320	160	744	958	1,847	675	3,040	969	1,830	403	3,702	1,110	190	0	0	1,040	0	0	1,604	1,000
8/4/2023	0.00	1,540	161	654	961	1,072	651	1,550	970	1,700	443	3,290	1,111	254	0	0	1,030	0	0	1,603	1,000
8/5/2023	0.00	2,320	161	0	957	0	642	3,010	971	1,780	442	3,424	1,110	254	0	0	1,030	0	0	1,604	1,000
8/6/2023	0.00	1,560	161	0	954	0	664	3,080	972	1,860	441	3,502	1,108	191	0	0	1,030	5,151	0	1,607	1,000
8/7/2023	0.00	2,320	161	2,167	956	3,453	662	3,030	974	1,840	401	3,576	1,108	253	0	0	1,035	0	0	1,606	1,000
8/8/2023	0.00	2,330	161	545	961	1,106	646	1,590	973	1,890	512	3,658	1,104	254	0	0	1,033	0	0	1,693	1,000
8/9/2023	0.00	1,540	160	848	969	3,888	415	3,070	971	2,120	512	3,770	1,099	190	0	0	1,033	0	0	1,626	1,000
8/10/2023	0.10	2,300	160	655	975	0	370	3,000	969	2,060	409	3,708	1,093	254	0	0	1,032	592	0	1,622	1,000
8/11/2023	0.00	1,510	160	655	976	2,522	564	1,570	969	1,970	421	3,756	1,084	190	0	0	1,034	4,554	0	1,616	1,000
8/12/2023	0.00	2,290	161	0	971	0	652	3,090	972	1,780	421	3,762	1,079	190	0	0	1,034	0	0	1,612	1,000
8/13/2023	0.00	1,540	161	0	961	0	644	3,000	974	1,910	420	3,878	1,079	254	0	0	1,034	0	0	1,608	1,000
8/14/2023	0.00	2,310	160	2,149	957	4,667	659	1,620	977	1,840	207	3,780	1,081	190	0	0	1,034	0	0	1,336	1,000
8/15/2023	0.00	1,540	160	654	961	1,774	789	3,090	978	1,920	269	3,882	1,082	189	0	0	1,033	2,500	0	1,602	1,000
8/16/2023	0.00	1,540	160	541	967	1,177	870	1,590	979	1,850	206	3,480	1,081	190	0	1	1,031	2,640	0	1,599	1,000
8/17/2023	0.00	1,510	160	763	971	4,022	934	3,150	979	1,880	245	3,884	1,082	126	0	0	1,029	0	0	1,552	1,000
8/18/2023	0.00	2,320	159	637	977	1,897	929	2,990	978	1,920	414	3,934	1,083	190	0	0	1,029	0	0	1,337	1,000
8/19/2023	0.00	1,540	160	537	973	1,027	963	1,530	977	1,830	419	3,650	1,080	190	0	0	1,029	0	0	1,334	1,000
8/20/2023	0.00	1,530	160	0	956	0	919	3,030	977	1,820	419	3,704	1,081	126	0	0	1,029	4,577	0	1,601	1,000
8/21/2023	0.00	1,540	159	0	947	0	824	2,950	977	1,800	419	3,538	1,082	190	0	0	1,032	557	0	1,336	1,000
8/22/2023	0.00	1,520	159	2,045	611	5,224	724	1,540	978	1,780	463	3,650	1,082	126	881	0	1,030	0	0	1,336	1,000
8/23/2023	0.00	1,540	160	754	563	1,730	807	1,480	979	1,840	322	3,426	1,081	190	701	0	1,029	0	0	1,335	1,000
8/24/2023	0.00	1,540	160	429	798	642	883	3,080	981	2,010	674	3,854	1,083	126	668	0	1,032	0	0	1,333	1,000
8/25/2023	0.00	2,280	160	763	886	1,410	907	1,480	982	1,850	434	3,530	1,085	189	662	0	1,031	1,978	0	1,334	1,000
8/26/2023	0.00	1,550	160	547	925	1,369	820	3,100	984	1,770	391	3,530	1,086	127	692	14,657	1,031	3,164	0	1,329	1,000
8/27/2023	0.00	1,530	160	0	941	0	730	1,540	985	1,610	391	3,508	1,090	189	738	2,395	1,031	0	0	1,331	1,000
8/28/2023	0.00	780	160	0	946	0	679	3,000	987	1,530	391	3,336	1,118	127	774	1,758	1,031	0	0	1,337	1,000
8/29/2023	0.02	1,540	160	0	944	0	651	1,500	987	1,290	391	2,890	1,173	189	798	1,836	1,031	0	0	1,335	1,000
8/30/2023	0.01	1,530	160	2,405	944	5,917	662	1,500	988	1,230	453	2,868	1,221	126	838	1,615	1,031	0	0	1,067	1,000
8/31/2023	0.00	1,550	160	0	953	0	807	3,010	988	1,230	0	3,040	1,240	127	866	1,385	0	5,140	0	1,333	1,000

Summary of LDCS Volumes Pumped and Conductivity Data
Third Quarter 2023
LRI Landfill, Pierce County, Washington

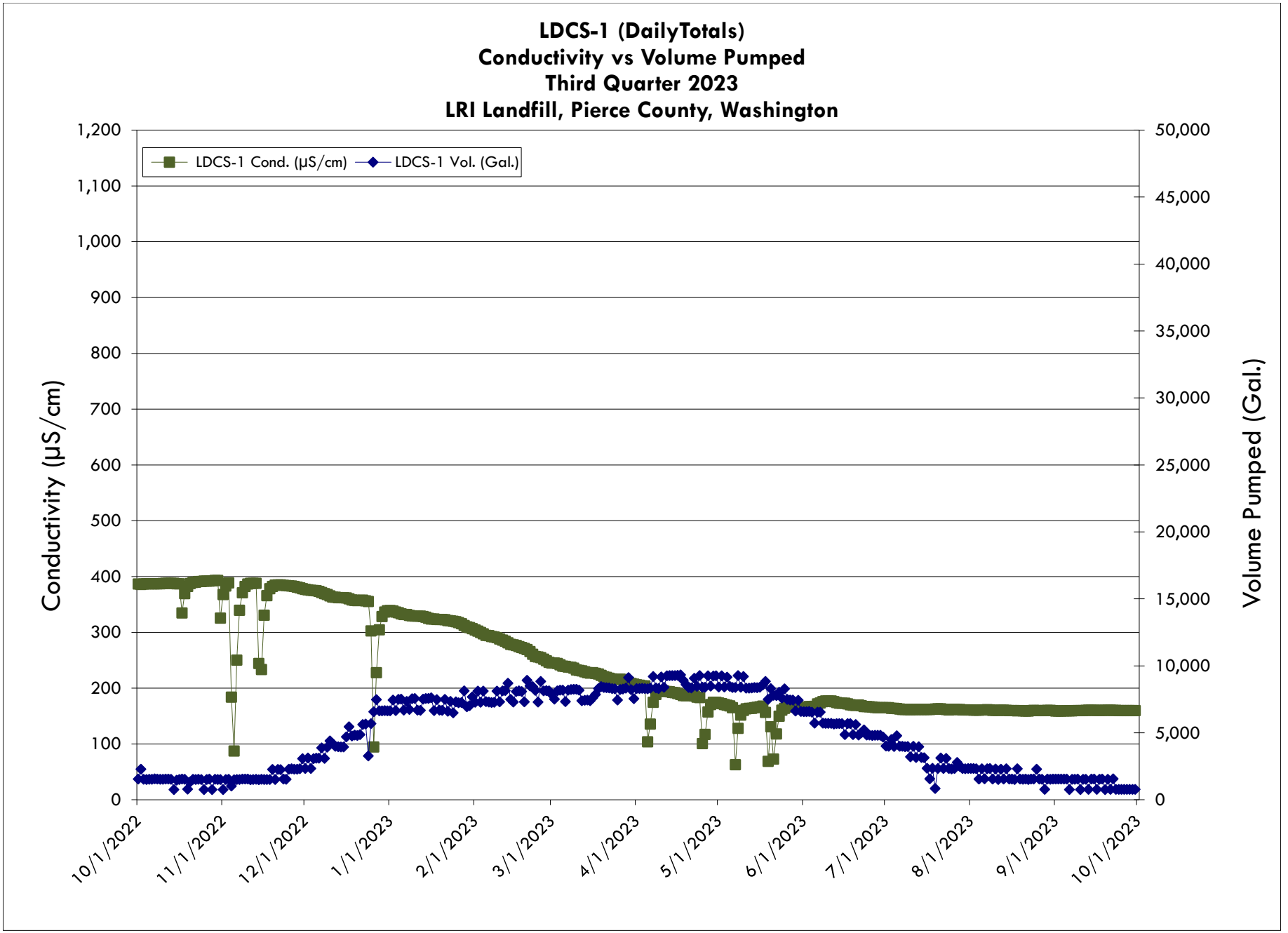
Date	Rainfall	LDCS-1 Vol. (Gal.)	LDCS-1 Cond. (µS/cm)	LDCS-2A Vol. (Gal)	LDCS-2A Cond. (µS/cm)	LDCS-2B Vol. (Gal)	LDCS-2B Cond. (µS/cm)	LDCS-3A Vol. (Gal)	LDCS-3A Cond. (µS/cm)	LDCS-4A Vol. (Gal)	LDCS-4A Cond. (µS/cm)*	LDCS-4B Vol. (Gal)	LDCS-4B Cond. (µS/cm)	LDCS-5 Vol. (Gal)	LDCS-5 Cond. (µS/cm)	LDCS-6 Vol. (Gal)	LDCS-6 Cond. (µS/cm)	LDCS-7 Vol. (Gal)	LDCS-7 Cond. (µS/cm)	LDCS-8 Vol. (Gal)	LDCS-8 Cond. (µS/cm)*
9/1/2023	0.00	1,550	159	0	966	0	723	1,500	987	1,160	0	3,134	1,242	240	878	704	41	0	0	1,334	1,000
9/2/2023	0.00	1,550	159	0	974	0	790	3,070	987	1,110	0	3,158	1,245	62	901	0	566	0	0	1,327	1,000
9/3/2023	0.00	1,550	159	1,840	975	9,317	888	1,530	987	1,070	0	2,598	1,226	189	917	0	915	0	0	1,331	1,000
9/4/2023	0.00	1,550	159	937	968	1,325	783	1,470	988	1,070	0	2,350	1,206	127	951	0	1,046	0	0	1,067	1,000
9/5/2023	0.00	1,540	160	1,244	957	2,142	695	3,000	989	1,070	0	2,692	1,204	189	977	51	1,091	5,077	0	1,329	1,000
9/6/2023	0.00	760	159	0	952	4,651	725	1,560	990	1,070	0	2,524	1,194	126	835	0	1,096	0	0	717	1,000
9/7/2023	0.00	1,530	159	0	958	0	810	1,500	991	970	0	2,578	1,189	126	746	0	1,088	0	0	1,711	1,000
9/8/2023	0.00	1,530	160	1,641	967	0	860	3,000	991	1,040	0	2,728	1,186	126	805	0	1,081	0	0	1,341	1,000
9/9/2023	0.00	1,540	160	0	969	0	876	1,580	992	1,070	0	2,510	1,182	126	844	0	1,075	0	0	1,337	1,000
9/10/2023	0.00	760	160	0	967	0	774	1,550	993	1,070	0	2,408	1,178	189	844	0	1,070	5,072	0	1,068	1,000
9/11/2023	0.00	1,530	160	1,594	968	5,893	739	1,480	994	1,150	0	2,412	1,173	126	844	0	1,066	0	0	1,339	1,000
9/12/2023	0.00	1,530	160	546	638	1,671	774	3,010	994	1,070	0	2,654	1,165	126	865	0	1,063	0	0	1,071	1,000
9/13/2023	0.00	770	160	0	583	0	817	1,570	995	1,060	0	2,542	1,159	126	777	0	1,060	0	0	1,071	1,000
9/14/2023	0.00	1,550	161	979	842	3,596	856	1,530	995	1,070	0	2,694	1,154	125	814	0	1,058	0	0	917	1,000
9/15/2023	0.00	1,550	160	0	933	0	898	1,460	996	880	0	2,538	1,152	63	826	0	1,056	1,995	0	0	1,000
9/16/2023	0.00	770	160	0	968	0	843	2,990	995	0	0	2,482	1,145	126	708	0	1,054	3,126	0	0	1,000
9/17/2023	0.00	1,530	160	1,519	985	5,267	754	1,540	994	640	0	2,232	1,139	126	708	0	1,053	0	0	0	1,000
9/18/2023	0.00	1,540	160	548	992	1,413	681	1,510	995	1,060	0	2,098	1,141	126	708	0	1,052	0	0	4,327	1,000
9/19/2023	0.00	760	160	438	988	1,709	726	1,470	995	1,140	0	2,538	1,145	125	757	0	1,050	0	0	1,338	1,000
9/20/2023	0.00	1,530	161	546	978	1,118	846	2,940	995	1,190	0	2,700	1,139	126	985	0	1,049	0	0	1,074	1,000
9/21/2023	0.00	780	160	0	972	0	925	1,520	995	1,320	0	3,604	1,134	126	861	0	1,047	5,077	0	1,069	1,000
9/22/2023	0.00	1,560	160	0	967	0	972	1,610	995	1,440	0	3,644	1,125	126	993	0	1,046	0	0	1,066	1,000
9/23/2023	0.00	770	160	1,301	966	3,878	989	1,490	995	780	0	1,702	1,126	62	997	0	1,045	0	0	536	1,000
9/24/2023	0.20	770	160	535	966	1,502	990	1,490	995	780	0	1,702	1,127	62	999	2,161	1,040	0	0	536	1,000
9/25/2023	0.71	770	160	0	966	2,379	990	1,490	995	780	0	1,702	1,127	62	1,000	1,032	1,037	0	0	536	1,000
9/26/2023	0.65	770	160	871	966	0	990	1,490	995	780	0	1,702	1,127	62	912	0	1,068	5,093	0	536	1,000
9/27/2023	0.70	770	160	0	966	2,476	990	1,490	995	780	0	1,702	1,127	62	729	0	1,083	0	0	536	1,000
9/28/2023	0.45	770	160	959	966	3,063	990	1,490	995	780	0	1,702	1,127	62	795	0	1,081	0	0	536	1,000
9/29/2023	0.04	770	160	0	966	0	990	1,490	995	780	0	1,702	1,127	62	851	0	1,076	0	0	536	1,000
9/30/2023	0	770	160	0	966	0	990	1,490	995	780	0	1,702	1,127	62	885	0	1,072	0	0	536	1,000

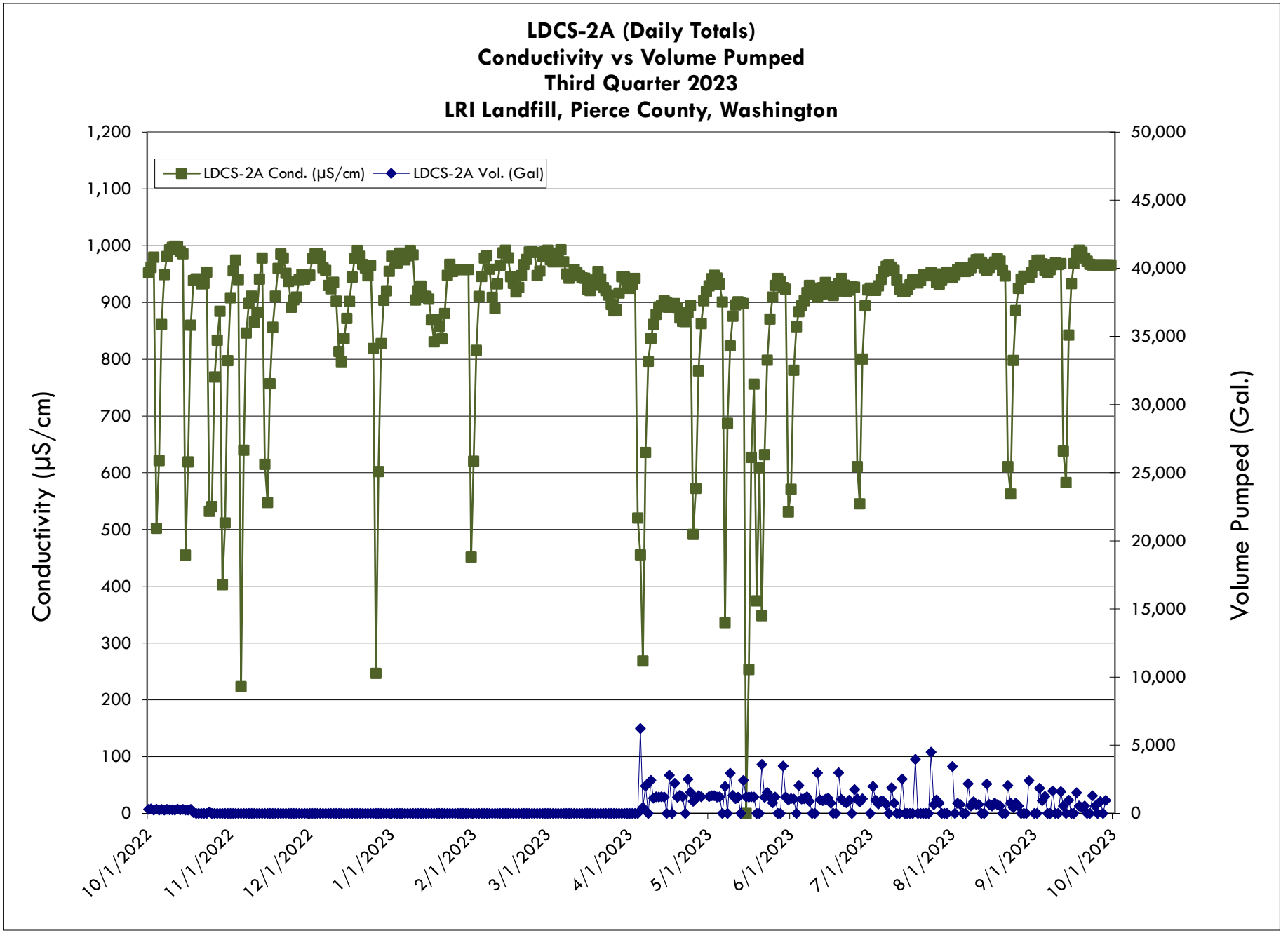
Summary of Leachate Volume and Depth Data
Second Quarter 2023
LRI Landfill, Pierce County, Washington

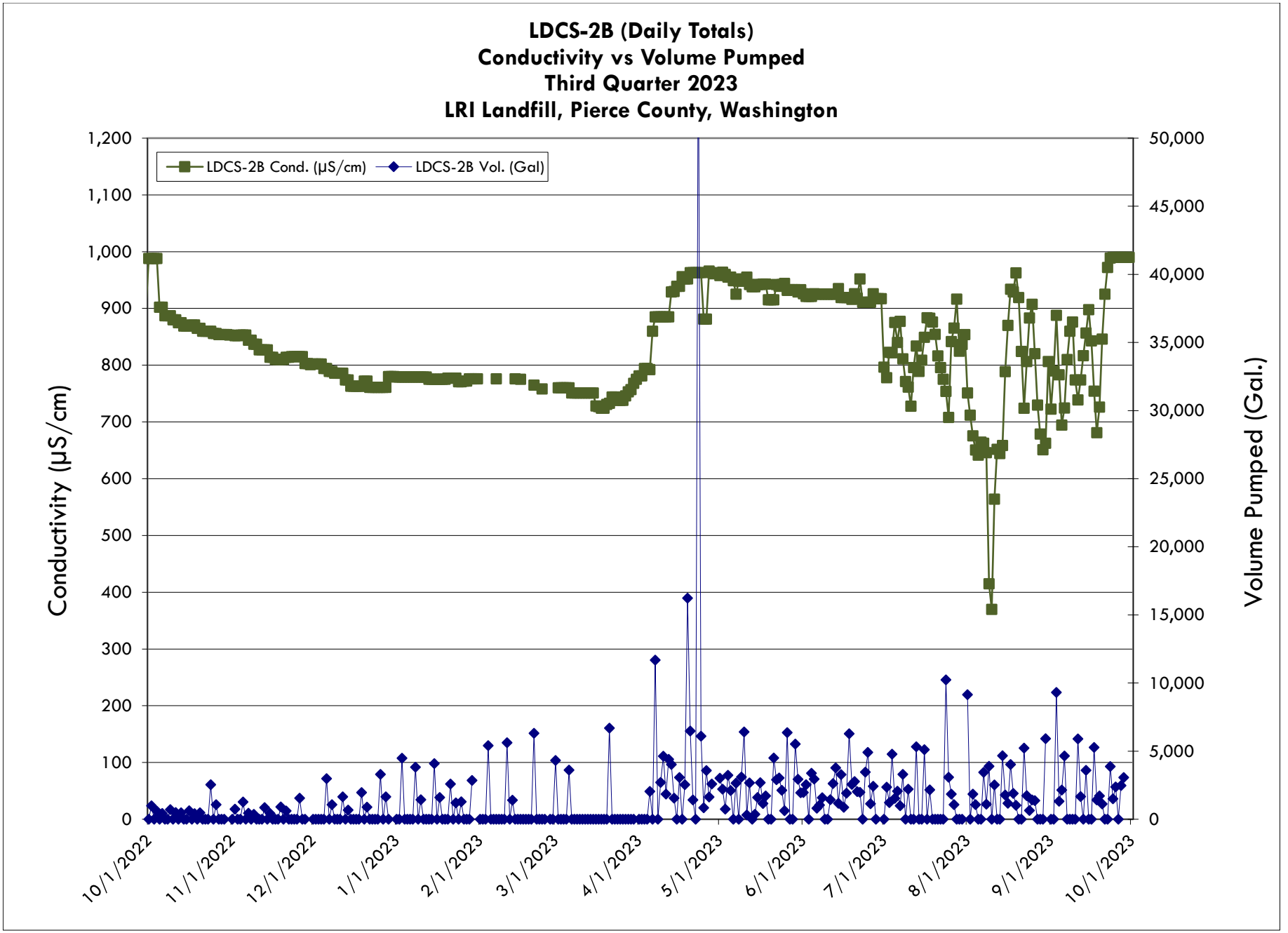
Date	Cell 1 Leachate Volume (GPD)	Cell 1 Leachate Level (in.)	Cell 2A Leachate Volume (GPD)	Cell 2A Leachate Level (in.)	Cell 2B Leachate Volume (GPD)	Cell 2B Leachate Level (in.)	Cell 3A Leachate Volume (GPD)	Cell 3A Leachate Level (in.)	Cell 4A Leachate Volume (GPD)	Cell 4A Leachate Level (in.)	Cell 4B Leachate Volume (GPD)	Cell 4B Leachate Level (in.)	Cell 5 Leachate Volume (GPD)	Cell 5 Leachate Level (in.)	Cell 6 Leachate Volume (GPD)	Cell 6 Leachate Level (in.)	Cell 7 Leachate Volume (GPD)	Cell 7 Leachate Level (in.)	Cell 8A Leachate Volume (GPD)	Cell 8A Leachate Level (in.)
7/1/2023	1,708	10.9	0	14.3	4,849	9.4	7,104	12.6	14,965	9.3	6,638	10.5	3,623	10.8	0	12.9	8,240	11.0	0	8.8
7/2/2023	1,838	11.4	0	15.2	4,728	9.4	5,794	14.0	7,471	8.9	10,312	10.2	3,501	10.9	0	12.2	8,422	10.9	0	8.8
7/3/2023	3,372	10.9	0	15.9	4,756	9.4	5,553	14.2	8,299	8.0	5,942	10.3	3,478	10.9	0	12.7	7,265	11.0	0	8.8
7/4/2023	1,827	11.1	0	16.7	4,972	9.4	6,360	12.7	16,435	9.5	6,795	10.5	3,525	10.8	0	12.5	9,302	10.9	0	8.9
7/5/2023	3,278	11.4	9,946	14.4	4,824	9.4	7,825	12.0	8,909	8.9	10,100	10.1	3,560	10.8	0	12.3	7,287	11.0	0	9.7
7/6/2023	2,003	10.9	0	12.5	4,864	9.4	9,269	11.6	9,809	8.6	7,078	10.2	3,699	10.8	0	12.7	7,585	11.0	0	9.7
7/7/2023	3,646	10.9	0	13.3	4,970	9.4	10,581	12.1	7,036	8.6	5,806	10.5	3,694	10.8	0	12.4	8,047	10.9	0	10.0
7/8/2023	1,806	11.0	0	14.1	5,187	9.4	9,095	12.3	8,538	8.8	9,880	10.2	3,610	10.8	0	12.0	7,848	10.9	0	10.0
7/9/2023	1,831	11.2	0	14.9	4,936	9.4	7,566	13.3	7,204	8.8	5,579	10.1	3,567	10.8	0	12.3	7,737	10.9	0	9.6
7/10/2023	1,771	11.3	0	15.7	4,883	9.4	5,805	12.2	17,344	8.8	5,489	10.6	3,482	10.8	0	12.1	7,861	10.9	0	10.0
7/11/2023	3,423	11.0	0	16.6	4,920	9.4	4,997	12.6	10,160	8.9	10,246	10.1	3,432	10.8	0	12.7	8,127	10.9	0	9.7
7/12/2023	2,010	11.0	0	17.5	4,694	9.4	5,801	13.7	7,223	8.9	6,577	10.1	3,765	10.7	0	12.7	7,653	11.0	0	9.7
7/13/2023	3,284	10.9	0	18.6	4,685	9.4	6,550	13.6	7,179	9.1	5,848	10.3	3,706	10.8	0	12.6	7,503	11.0	0	10.2
7/14/2023	1,916	10.9	0	19.5	4,521	9.4	6,128	14.2	21,179	8.4	6,321	10.5	3,502	10.8	0	13.0	7,642	11.0	0	9.5
7/15/2023	1,964	11.4	0	21.3	4,506	9.4	5,308	15.0	6,971	8.9	6,307	10.5	3,489	10.8	0	11.9	6,521	11.0	0	9.9
7/16/2023	1,847	11.5	0	23.3	4,542	9.4	5,351	14.1	7,409	9.7	10,280	10.0	3,512	10.8	0	12.1	6,829	11.0	0	10.1
7/17/2023	1,859	11.1	14,530	15.6	2,630	9.2	4,029	11.1	6,581	8.9	847	10.8	1,733	11.4	0	12.7	7,371	11.0	0	10.3
7/18/2023	3,214	11.0	0	9.9	4,698	9.2	8,588	11.5	9,076	9.8	6,459	10.9	3,394	11.6	0	12.5	7,267	11.0	0	10.6
7/19/2023	57	11.8	61	9.0	2,548	8.2	2,788	12.7	6,840	9.5	2,817	10.4	1,502	10.9	0	12.6	3,334	12.2	0	10.8
7/20/2023	2,282	11.6	0	10.0	4,923	9.2	9,551	10.8	10,952	10.1	13,073	10.4	5,268	10.4	0	14.0	11,817	13.3	0	8.8
7/21/2023	3,681	10.9	7,721	8.7	5,157	30.4	7,802	11.0	14,116	8.8	6,070	10.3	3,593	10.8	0	12.6	6,388	11.0	0	4.0
7/22/2023	3,535	10.9	0	7.5	4,897	9.4	8,115	13.7	6,808	8.7	6,657	10.5	3,611	10.8	0	12.1	7,922	10.9	0	4.3
7/23/2023	3,794	10.9	0	8.7	4,595	9.4	8,974	14.6	17,497	9.0	10,044	10.1	3,666	10.8	0	12.3	7,691	10.9	0	4.5
7/24/2023	1,935	11.2	0	9.7	4,965	9.4	9,346	10.2	9,796	8.6	5,908	10.2	3,643	10.8	0	13.3	7,395	11.0	0	4.6
7/25/2023	1,941	11.1	0	10.7	4,619	9.4	7,550	8.5	10,581	9.4	6,671	10.5	3,565	10.8	0	12.3	5,836	11.0	0	4.9
7/26/2023	3,720	10.9	7,993	8.2	4,554	9.4	7,778	10.3	21,540	7.5	10,023	10.1	3,590	10.8	0	12.3	6,979	11.0	0	7.6
7/27/2023	1,728	11.4	0	7.8	4,518	9.4	6,826	12.3	6,996	9.1	6,411	10.4	3,626	10.8	0	13.0	6,925	11.0	0	10.5
7/28/2023	3,626	10.8	0	8.8	4,659	9.4	4,931	12.6	6,735	9.1	9,978	10.2	3,621	10.8	0	12.4	6,864	11.0	0	10.4
7/29/2023	1,735	11.3	0	9.8	4,604	9.4	6,052	12.6	14,134	9.2	5,867	10.3	3,564	10.8	0	12.7	7,196	11.0	0	10.5
7/30/2023	3,419	10.9	0	10.9	4,579	9.4	7,403	12.8	7,289	8.8	6,357	10.5	3,495	10.8	0	12.3	6,701	11.1	0	10.6
7/31/2023	1,627	11.4	7,750	7.8	4,418	9.4	6,926	13.5	11,273	9.7	10,018	10.0	3,508	10.8	0	12.6	6,742	11.1	0	10.6
8/1/2023	3,583	10.8	0	7.8	4,625	9.4	6,183	14.4	10,320	8.4	6,390	10.4	3,677	10.8	0	12.6	6,794	11.0	0	10.4
8/2/2023	3,724	11.0	0	8.9	4,422	9.4	6,322	15.2	7,601	8.7	7,065	10.5	3,875	10.7	0	12.5	7,662	11.0	0	10.5
8/3/2023	1,743	10.9	0	9.8	4,444	9.4	5,862	15.0	7,272	9.0	10,068	10.2	3,671	10.8	0	12.7	6,263	11.0	0	10.6
8/4/2023	1,698	11.5	0	10.9	4,228	9.4	5,150	14.9	11,510	9.6	5,799	10.3	3,563	10.8	0	12.9	6,828	11.0	0	10.5
8/5/2023	3,249	10.9	7,574	8.9	4,751	9.4	6,035	15.0	9,139	8.7	6,600	10.5	3,549	10.8	0	12.5	7,485	10.9	0	10.2
8/6/2023	3,144	10.8	0	7.5	4,218	9.4	6,218	14.8	7,954	8.8	9,354	10.0	3,485	10.8	0	12.6	7,050	11.0	0	8.8
8/7/2023	1,726	11.2	0	8.7	4,709	9.4	5,399	12.5	12,606	9.1	5,639	10.4	3,528	10.8	0	13.3	7,414	11.0	0	9.9
8/8/2023	3,651	10.9	0	9.8	4,349	9.4	6,312	12.2	9,394	8.7	10,323	10.2	3,682	10.7	0	12.1	5,359	11.1	0	9.4
8/9/2023	1,822	11.4	0	11.0	4,731	9.4	6,451	12.1	6,762	8.7	6,002	10.3	3,833	10.6	0	13.2	7,097	11.0	0	8.6
8/10/2023	3,014	11.2	8,054	9.4	4,486	9.3	8,188	11.6	6,677	9.2	9,238	10.2	3,784	10.7	0	12.6	6,932	11.0	0	8.8
8/11/2023	1,610	11.3	0	7.4	4,551	9.4	9,123	11.7	8,825	8.7	6,643	10.1	3,635	10.7	0	12.6	6,674	11.0	0	9.4
8/12/2023	3,335	11.2	0	8.5	4,340	9.4	8,334	10.9	6,999	9.3	6,757	10.5	3,498	10.7	0	12.4	6,531	11.0	0	8.9
8/13/2023	2,056	11.1	0	9.6	4,348	9.4	7,568	12.2	6,998	9.2	6,351	10.5	3,522	10.7	0	12.6	7,695	11.0	0	9.0
8/14/2023	3,417	10.9	0	10.6	4,377	9.4	6,622	14.5	23,205	8.8	9,957	10.0	3,626	10.7	0	13.1	6,739	11.0	0	9.0
8/15/2023	1,766	11.5	1,170	11.1	4,308	9.4	6,508	14.9	26,865	7.8	6,911	10.4	3,617	10.7	0	13.0	6,224	11.1	0	9.0
8/16/2023	3,378	11.0	0	11.7	4,350	9.4	6,218	13.6	29,680	8.0	7,617	10.5	3,613	10.7	0	13.0	7,638	11.0	0	9.2
8/17/2023	3,657	10.8	0	12.6	4,439	9.4	5,888	12.2	11,689	8.1	9,224	10.0	3,737	10.6	0	13.4	6,479	11.0	0	9.6
8/18/2023	1,772	11.1	0	13.4	4,676	9.5	6,544	11.6	7,622	8.7	6,410	10.5	3,652	10.7	0	12.5	6,562	11.1	0	8.7
8/19/2023	3,496	11.0	0	14.5	4,324	9.5	6,822	11.9	7,063	9.1	10,207	10.1	3,589	10.7	0	12.6	6,579	11.0	0	8.6
8/20/2023	1,790	11.3	0	15.4	4,664	9.4	6,224	13.3	9,422	8.1	6,656	10.3	3,656	10.7	0	12.7	6,345	11.1	0	8.6
8/21/2023	3,976	10.7	0	16.0	4,657	9.5	7,753	14.0	7,343	9.0	8,179	10.5	3,674	10.7	0	12.8	6,734	11.0	0	8.9
8/22/2023	1,656	10.9	15,824	13.2	4,431	9.5	7,526	12.3	6,966	9.2	7,998	10.0	3,501	10.7	0	12.4	6,242	11.0	0	9.2
8/23/2023	3,026	11.0	0	7.3	4,309	9.5	7,553	10.9	7,059	9.0	5,853	10.6	3,429	10.7	0	13.2	6,331	11.1	0	10.1
8/24/2023	3,309	10.7	0	8.5	4,579	9.5	6,135	12.8	9,179	8.8	9,999	10.1	3,508	10.7	0	12.3	6,348	11.1	0	8.6
8/25/2023	1,828	10.9	0	9.5	4,448	9.5	7,537	13.9	7,257	8.9	6,752	10.3	3,591	10.6	0	13.4	7,584	11.0	0	8.4
8/26/2023	3,396	11.0	0	10.5	4,211	9.5	6,198	14.3	8,987	9.4	6,574	10.5	3,567	10.6	0	12.7	6,169	11.1	0	8.8
8/27/2023	1,960	10.9	0	11.5	4,432	9.5	5,817	13.8	9,971	8.9	9,810	10.2	3,529	10.6	0	12.3	5,933	11.1	0	9.0
8/28/2023	1,794	11.2	8,021	7.2	4,444	9.5	6,459	13.1	8,005	8.8	5,361	10.3	3,494	10.7	0	12.4	6,781	10.9	0	9.0
8/29/2023	3,241	10.8	0	7.9	4,701	9.5	5,688	13.6	12,129	9.1	9,895	10.2	3,542	10.7	0	13.0	6,642	11.0	0	9.1
8/30/2023	3,638	10.8	0	9.3	4,081	9.4	7,634	13.8	7,117	8.7	5,535	10.2	3,739	10.5	0	12.4	6,583	11.0	0	9.0
8/31/2023	1,738	11.0	0	10.0	4,566	9.5	7,662	13.4	8,064	8.7	8,173	10.5	3,775	10.6	0	13.4	7,110	11.0	0	9.4
9/1/2023	3,459	10.8	0	10.7	4,632	9.5	8,711	12.2	7,587	9.3	8,141	10.0	3,654	10.6	0	12.3	6,374	11.0	0	9.4

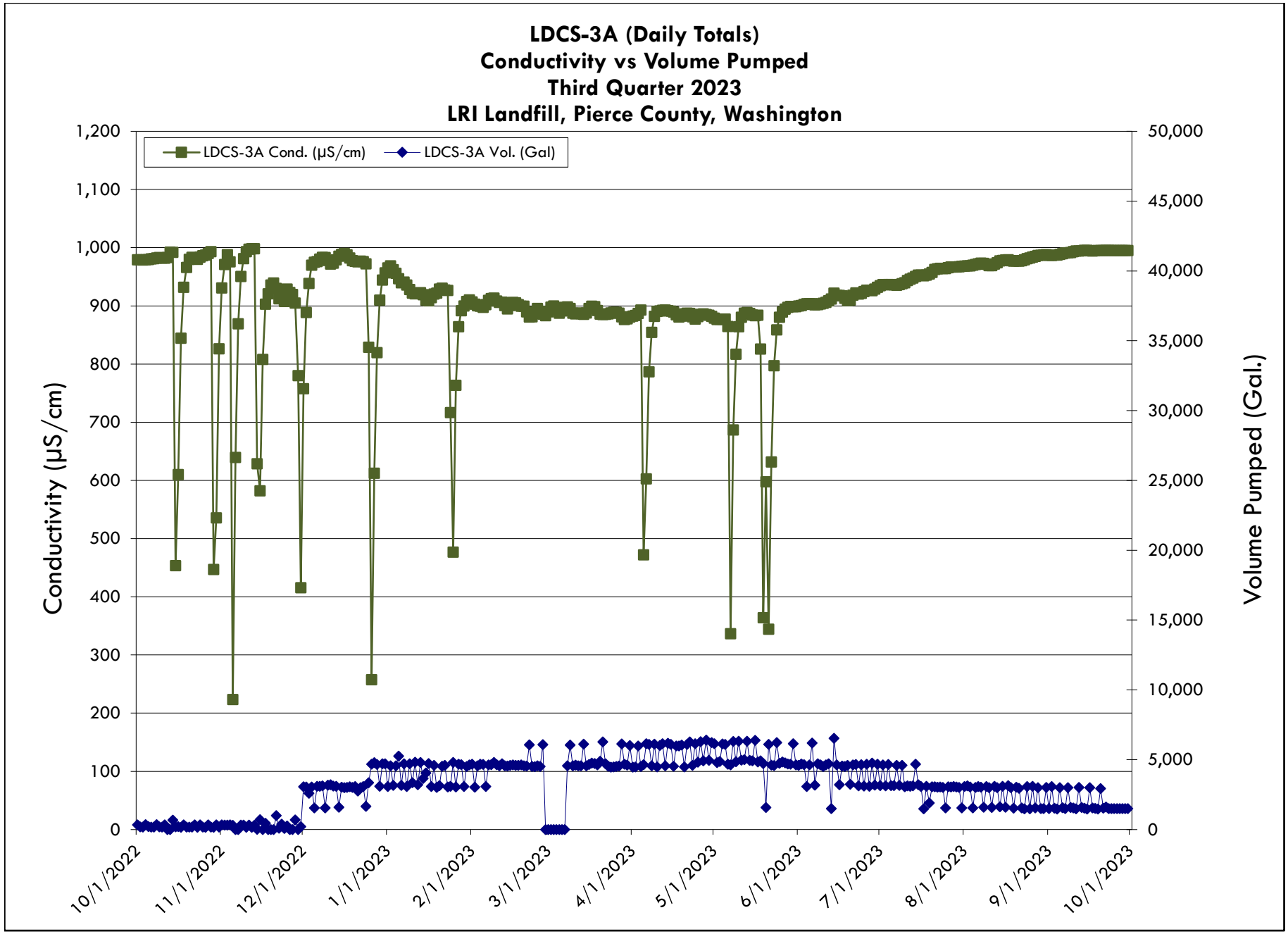
Summary of Leachate Volume and Depth Data
Second Quarter 2023
LRI Landfill, Pierce County, Washington

Date	Cell 1 Leachate Volume (GPD)	Cell 1 Leachate Level (in.)	Cell 2A Leachate Volume (GPD)	Cell 2A Leachate Level (in.)	Cell 2B Leachate Volume (GPD)	Cell 2B Leachate Level (in.)	Cell 3A Leachate Volume (GPD)	Cell 3A Leachate Level (in.)	Cell 4A Leachate Volume (GPD)	Cell 4A Leachate Level (in.)	Cell 4B Leachate Volume (GPD)	Cell 4B Leachate Level (in.)	Cell 5 Leachate Volume (GPD)	Cell 5 Leachate Level (in.)	Cell 6 Leachate Volume (GPD)	Cell 6 Leachate Level (in.)	Cell 7 Leachate Volume (GPD)	Cell 7 Leachate Level (in.)	Cell 8A Leachate Volume (GPD)	Cell 8A Leachate Level (in.)
9/2/2023	1,741	11.2	4,955	10.2	4,340	9.5	8,246	12.3	14,891	7.7	6,862	10.5	3,603	10.6	0	12.6	6,675	11.0	0	8.2
9/3/2023	1,835	11.3	0	9.2	4,417	9.4	6,442	12.0	6,612	9.2	9,926	10.1	3,598	10.6	0	12.4	6,496	11.0	0	9.0
9/4/2023	3,216	11.1	0	10.3	4,344	9.5	7,810	11.7	15,075	8.5	5,514	10.5	3,558	10.6	0	12.6	5,325	11.1	0	9.4
9/5/2023	3,210	10.6	0	11.4	4,400	9.4	6,900	12.5	7,459	9.1	10,264	10.0	3,541	10.6	0	13.1	7,348	11.0	0	8.5
9/6/2023	2,255	11.1	0	12.0	4,175	14.0	8,877	12.3	9,681	9.3	8,776	10.7	3,568	11.0	0	16.0	5,917	11.4	0	9.3
9/7/2023	1,973	11.2	0	13.0	4,255	25.4	8,939	11.1	8,459	9.3	9,317	11.2	3,535	11.5	0	27.3	5,310	11.7	0	9.1
9/8/2023	1,716	11.1	0	13.8	4,249	9.5	11,289	10.6	8,034	8.4	6,483	10.2	3,517	10.6	0	12.9	6,132	11.1	0	8.7
9/9/2023	3,275	11.0	0	14.7	4,370	9.4	8,897	13.0	7,439	8.8	7,708	10.5	3,549	10.6	0	12.8	6,391	11.0	0	8.8
9/10/2023	1,610	11.4	0	15.5	4,428	9.4	9,034	14.4	6,981	9.1	9,671	10.0	3,586	10.5	0	12.9	6,231	11.1	0	8.7
9/11/2023	3,433	10.8	0	16.4	4,488	9.4	9,000	15.1	6,933	9.0	11,260	10.2	3,597	10.5	0	12.4	6,376	11.1	0	8.9
9/12/2023	1,647	11.3	16,424	13.7	4,393	9.4	9,694	14.9	8,446	9.2	7,105	10.3	3,536	10.6	0	12.9	5,720	11.1	0	9.1
9/13/2023	3,074	10.7	0	7.1	4,260	9.4	9,534	14.3	9,193	9.1	11,264	10.0	3,475	10.6	0	12.9	6,360	11.1	0	9.1
9/14/2023	3,204	10.9	0	8.1	4,219	9.4	9,362	13.9	10,209	8.9	7,507	10.5	3,458	10.6	0	13.2	5,464	11.1	0	9.4
9/15/2023	3,223	10.8	0	9.3	4,580	9.4	9,552	13.2	10,627	8.0	11,252	10.0	3,651	10.5	0	12.2	6,333	11.1	0	8.6
9/16/2023	3,127	10.6	0	10.0	4,234	9.4	9,912	13.9	8,035	9.0	7,682	10.4	3,612	10.6	0	12.6	6,064	11.1	0	8.6
9/17/2023	1,495	10.8	0	10.9	4,599	9.4	9,990	13.3	6,528	9.4	11,165	10.0	3,496	10.6	0	12.5	5,989	11.1	0	8.8
9/18/2023	1,530	11.3	7,879	9.1	4,298	9.4	9,693	13.2	17,023	7.7	9,473	10.4	3,489	10.5	0	12.5	5,666	11.1	0	10.0
9/19/2023	3,240	10.8	0	7.7	4,467	9.4	9,273	13.5	6,990	9.0	7,314	10.3	3,414	10.7	0	12.5	5,894	11.1	0	9.9
9/20/2023	1,545	11.1	0	8.5	4,511	9.4	9,263	13.7	6,767	9.2	10,523	10.1	3,420	10.6	0	12.6	6,039	11.1	0	9.5
9/21/2023	3,139	10.7	5,893	6.8	4,305	9.4	8,836	13.9	14,780	9.3	7,739	10.3	3,509	10.5	0	12.8	6,925	11.1	0	10.0
9/22/2023	3,427	10.9	0	6.9	4,313	9.5	9,021	13.2	7,012	9.0	10,466	10.1	3,435	10.6	0	12.4	5,280	11.2	0	9.9
9/23/2023	1,805	10.9	0	7.4	2,445	9.8	4,967	10.3	0	10.9	5,730	9.7	1,805	9.9	0	10.0	3,903	11.1	0	10.7
9/24/2023	1,805	11.0	0	7.0	2,445	10.0	4,967	10.0	0	12.0	5,730	9.0	1,805	9.0	0	10.1	12,421	11.3	0	11.8
9/25/2023	1,805	11.0	0	7.0	2,445	10.0	4,967	10.0	0	12.0	5,730	9.0	1,805	9.0	0	12.9	8,233	11.4	0	11.8
9/26/2023	1,805	11.0	0	7.0	2,445	10.0	4,967	10.0	0	12.0	5,730	9.0	1,805	9.0	0	12.6	10,379	10.9	0	11.8
9/27/2023	1,805	11.0	0	7.0	2,445	10.0	4,967	10.0	0	12.0	5,730	9.0	1,805	9.0	0	19.3	5,659	14.9	0	11.8
9/28/2023	1,805	11.0	0	7.0	2,445	10.0	4,967	10.0	0	12.0	5,730	9.0	1,805	9.0	0	23.2	14,047	16.6	0	11.8
9/29/2023	1,805	11.0	0	7.0	2,445	10.0	4,967	10.0	0	12.0	5,730	9.0	1,805	9.0	0	16.2	13,499	12.6	0	11.8
9/30/2023	1,805	11.0	0	7.0	2,445	10.0	4,967	10.0	0	12.0	5,730	9.0	1,805	9.0	0	15.5	6,596	11.5	0	11.8

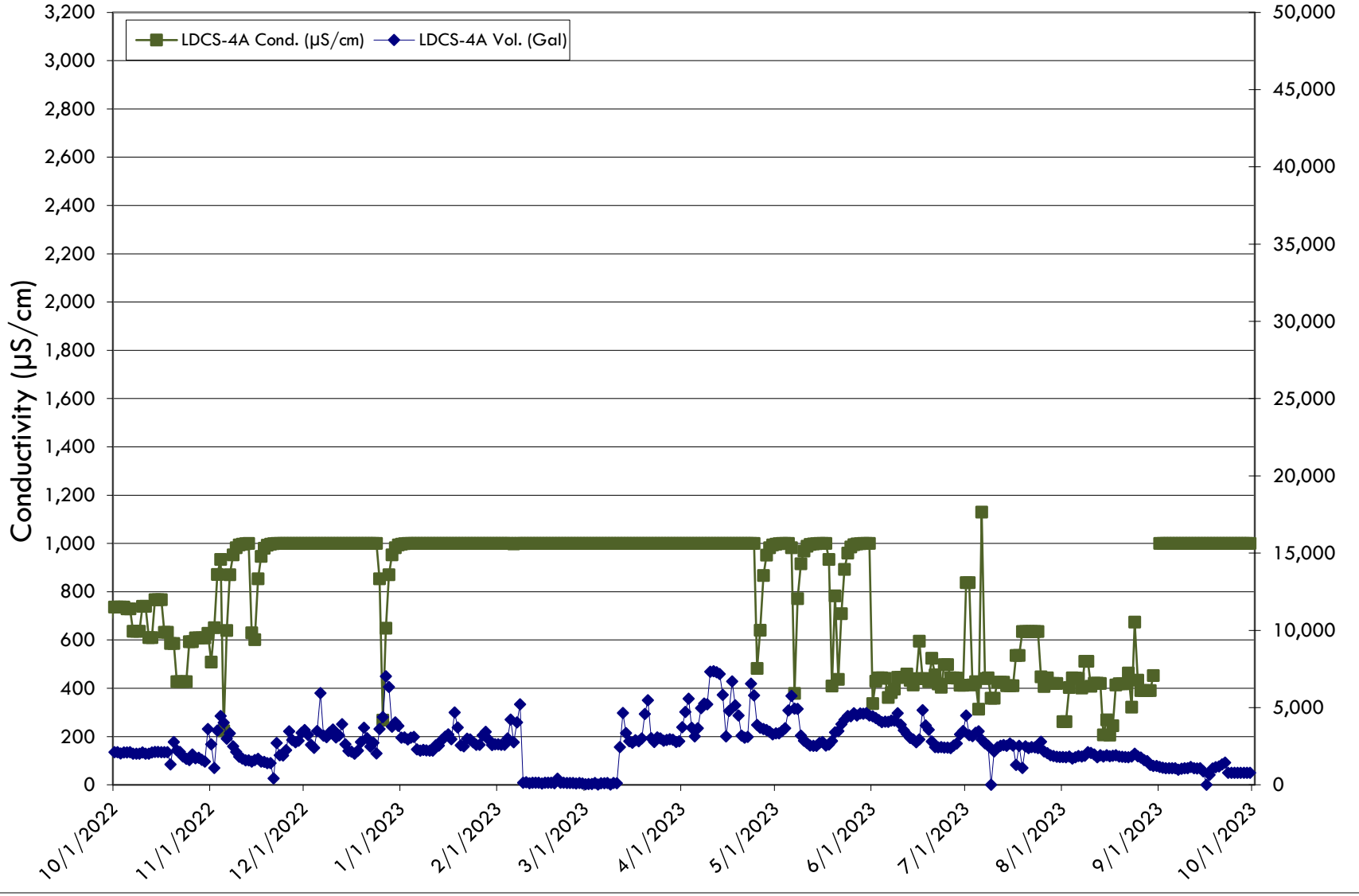

LDCS-1 (DailyTotals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-1 Cond. (µS/cm)
LDCS-1 Vol. (Gal.)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

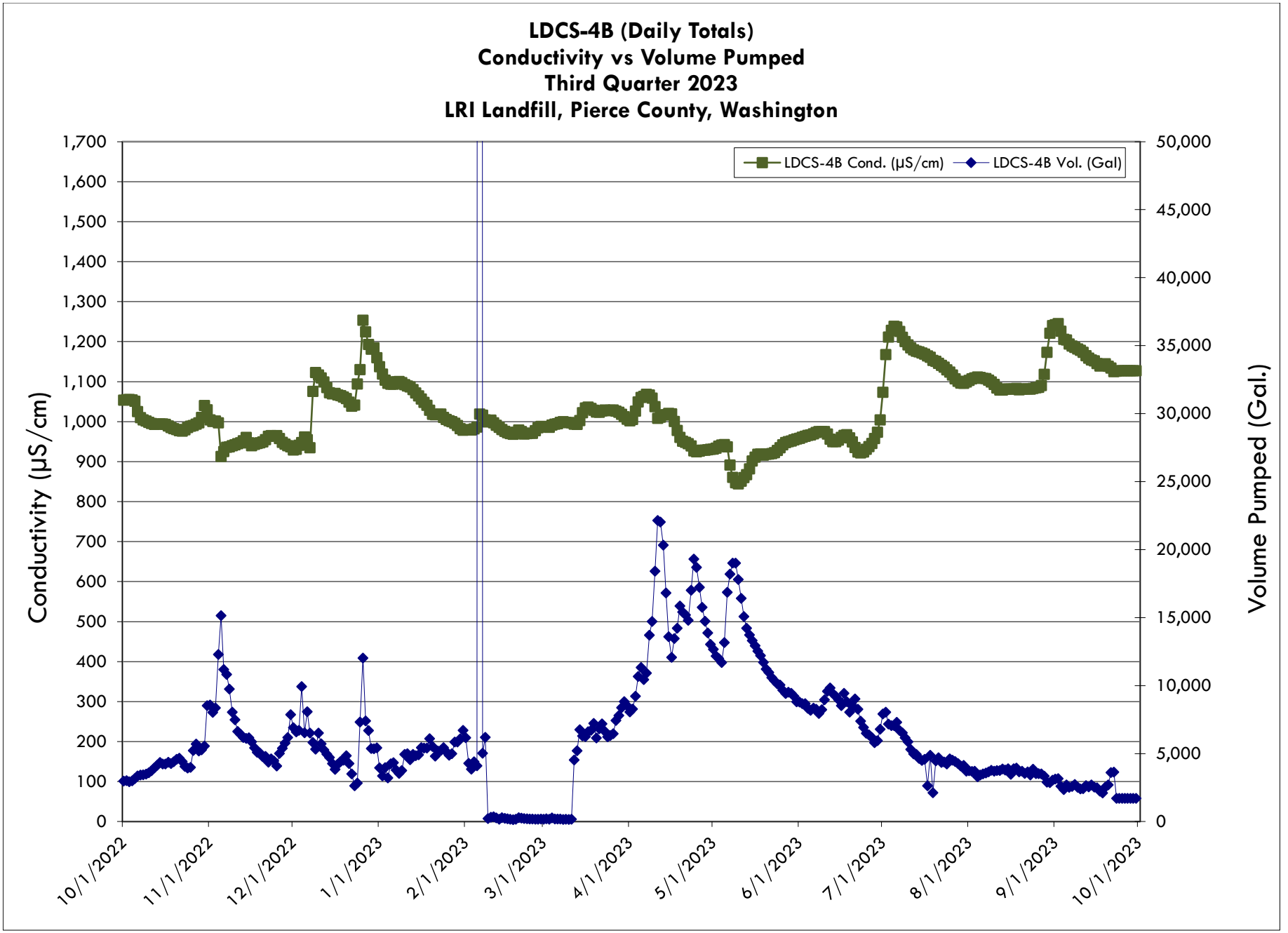

LDCS-2A (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-2A Cond. (µS/cm)
LDCS-2A Vol. (Gal)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

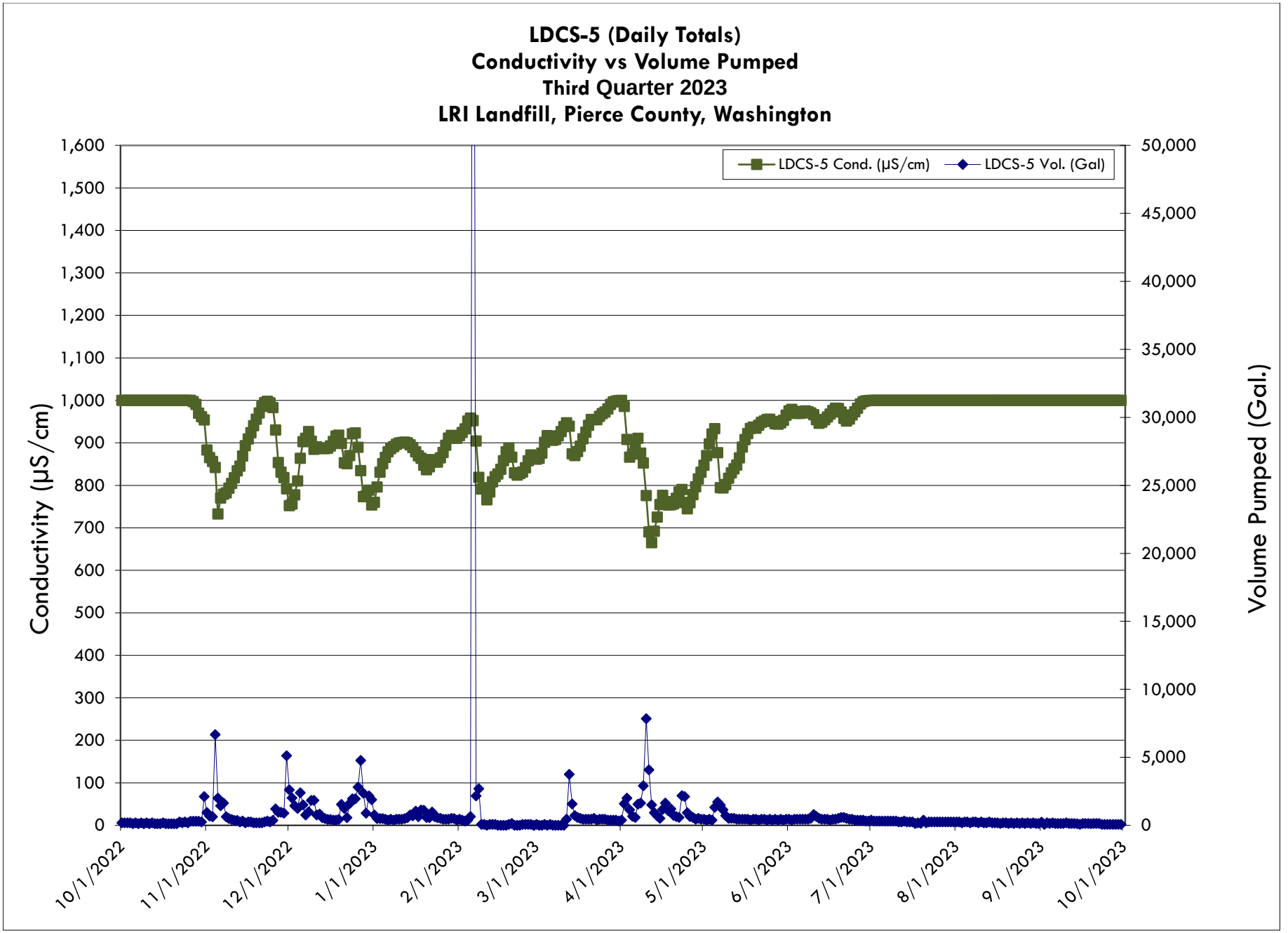

LDCS-2B (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-2B Cond. (µS/cm)
LDCS-2B Vol. (Gal)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

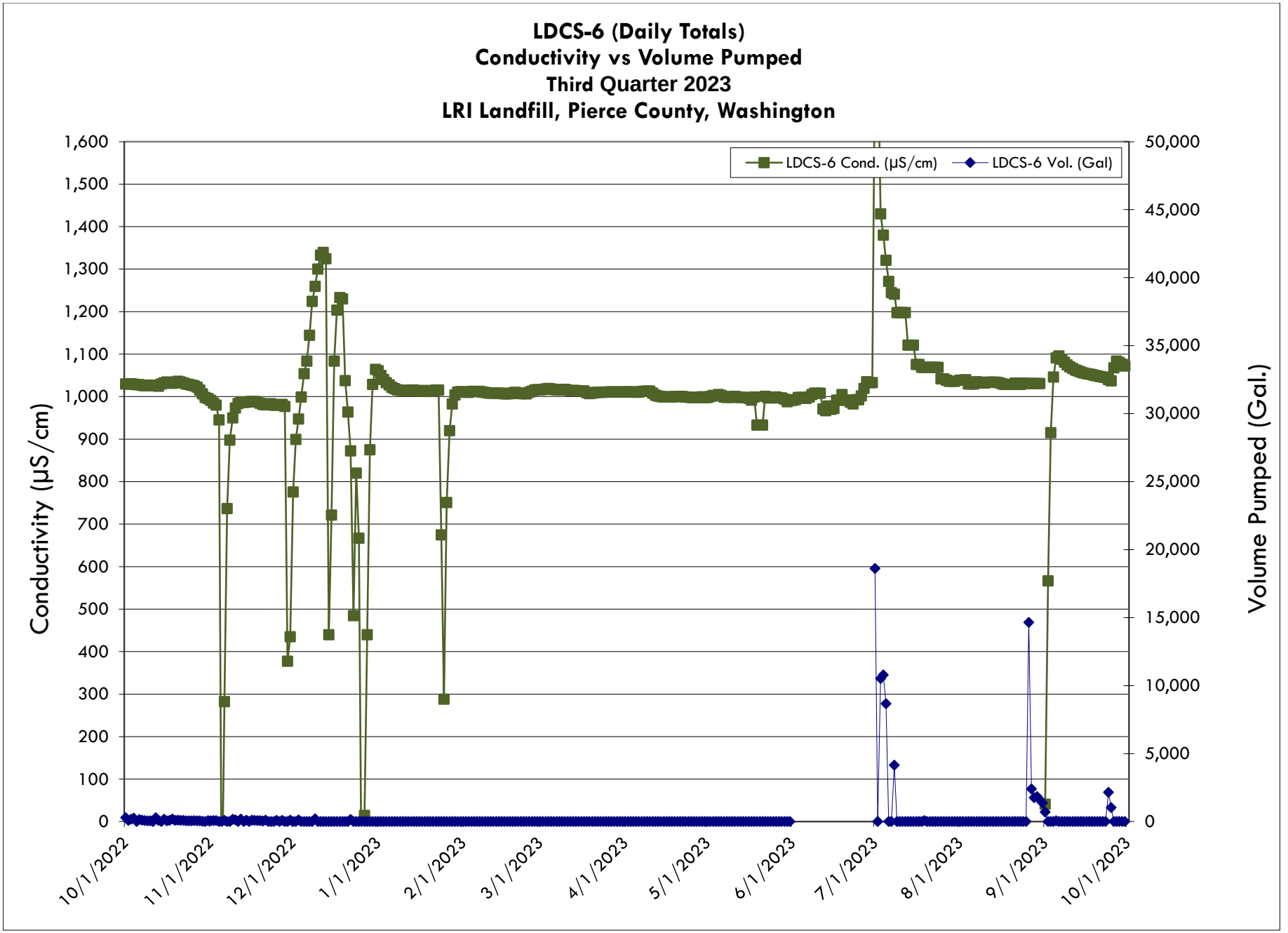

LDCS-3A (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-3A Cond. (µS/cm)
LDCS-3A Vol. (Gal)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

LDCS-4A (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington

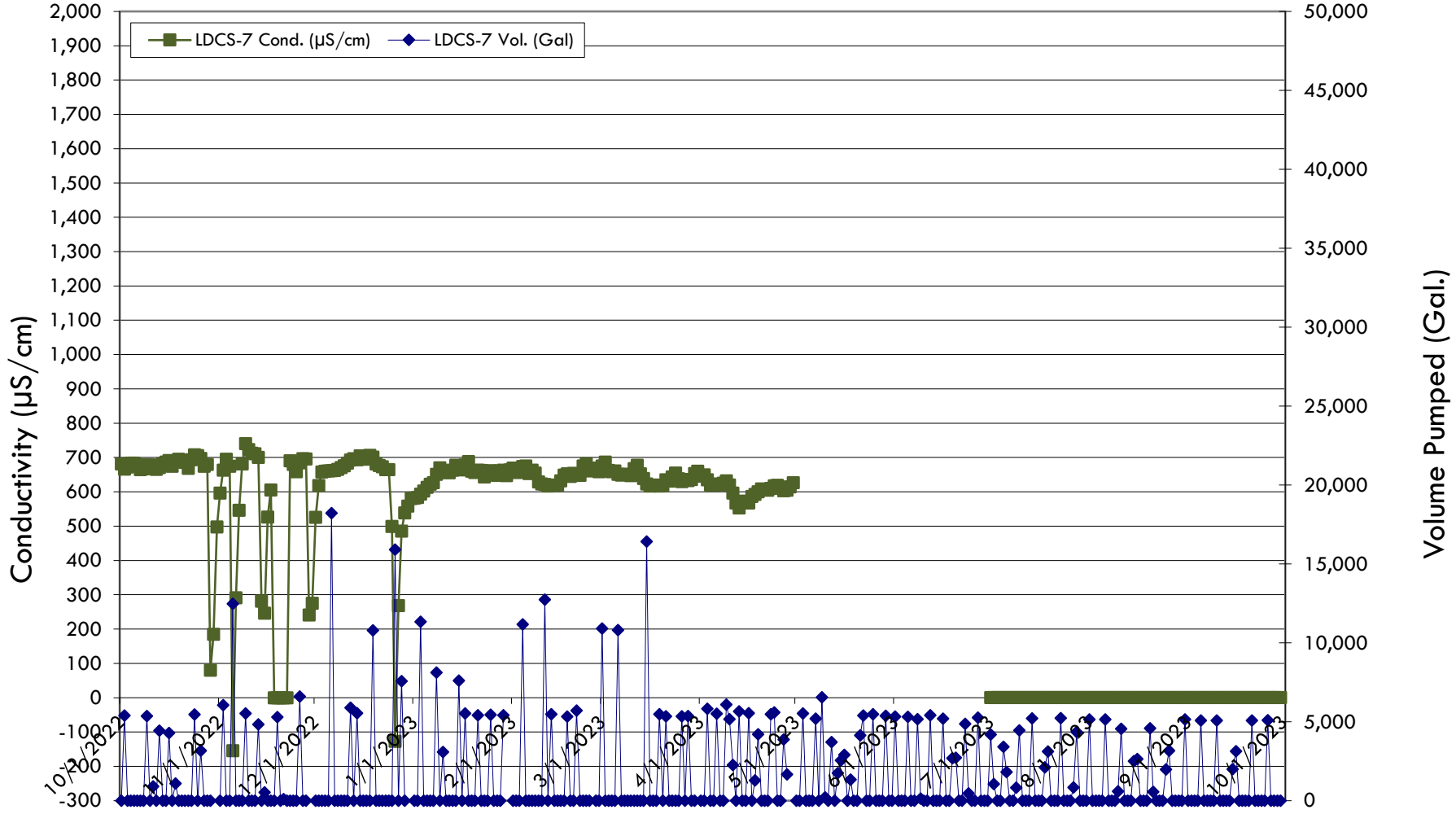



LDCS-4B (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-4B Cond. (µS/cm)
LDCS-4B Vol. (Gal)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

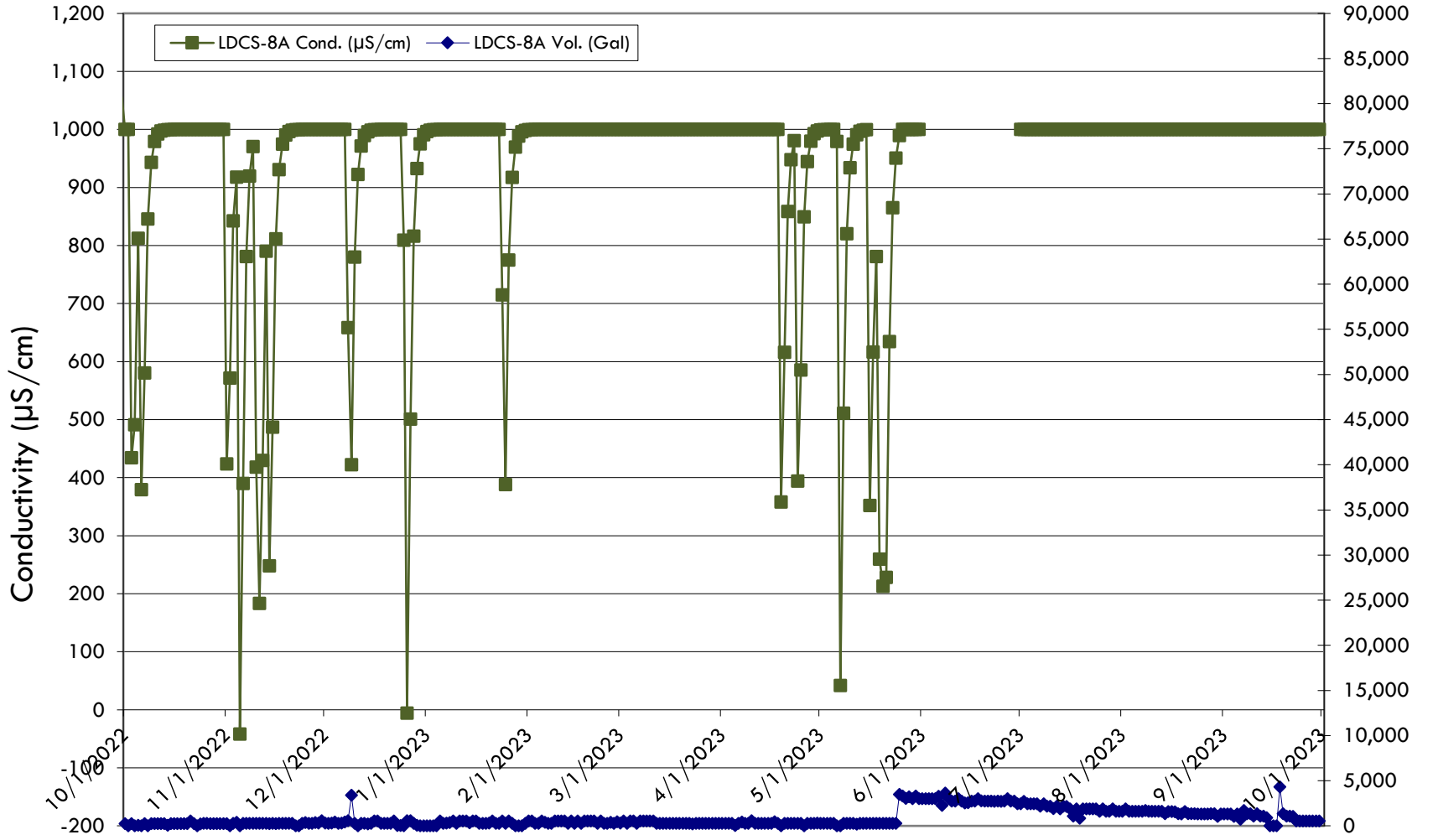

LDCS-5 (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-5 Cond. (µS/cm)
LDCS-5 Vol. (Gal)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023


LDCS-6 (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-6 Cond. (µS/cm)
LDCS-6 Vol. (Gal)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

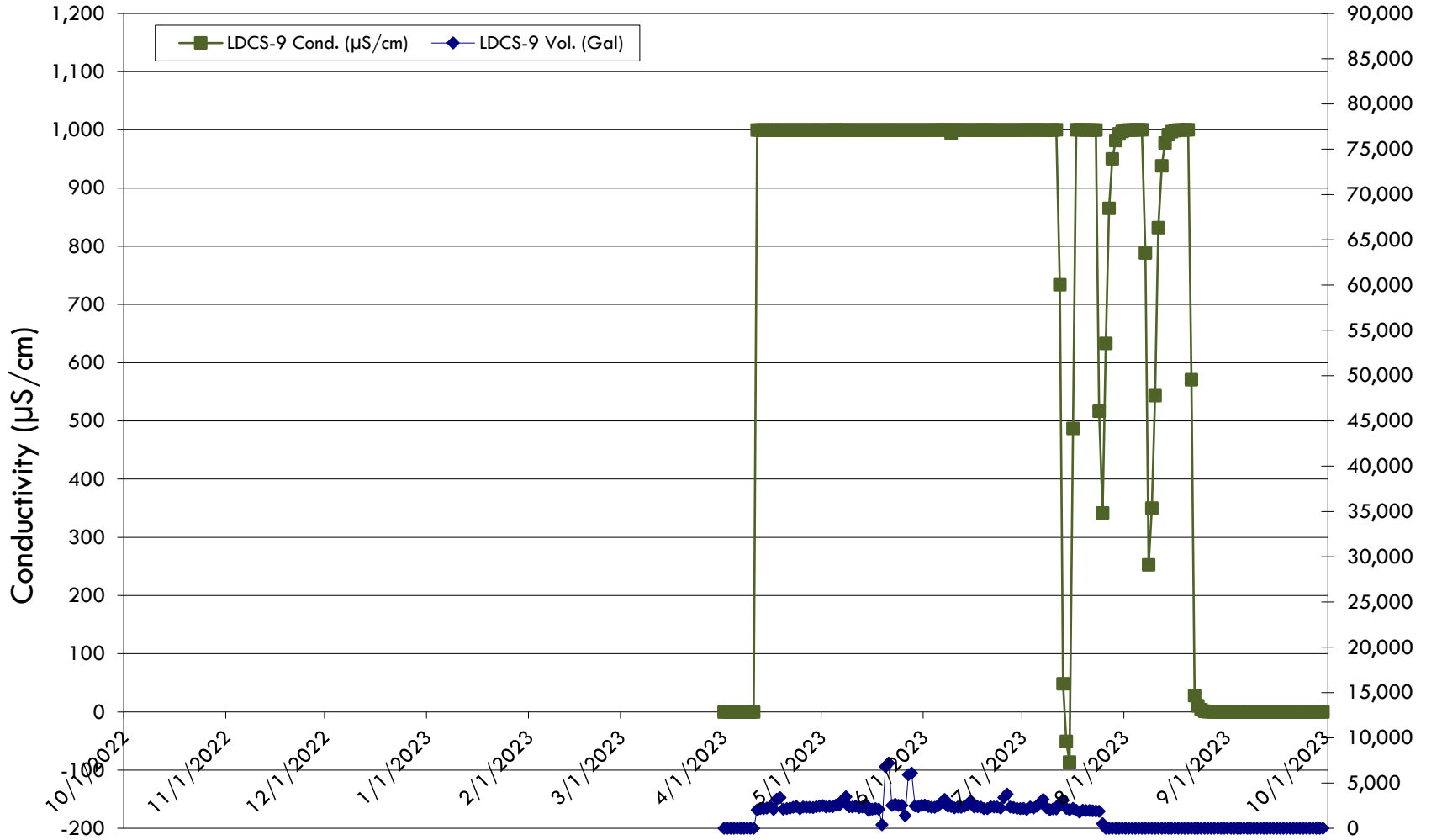
LDCS-7 (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington

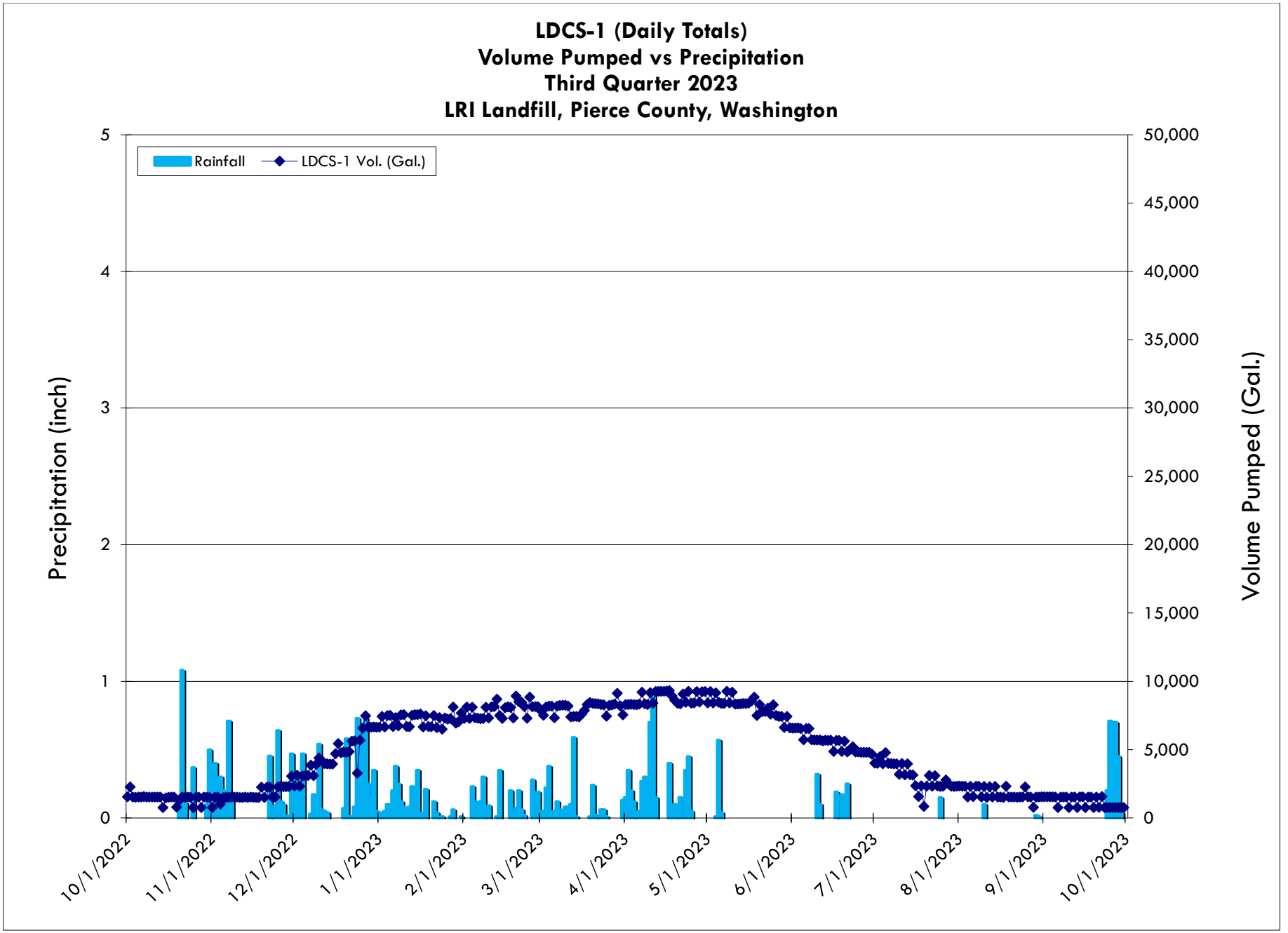


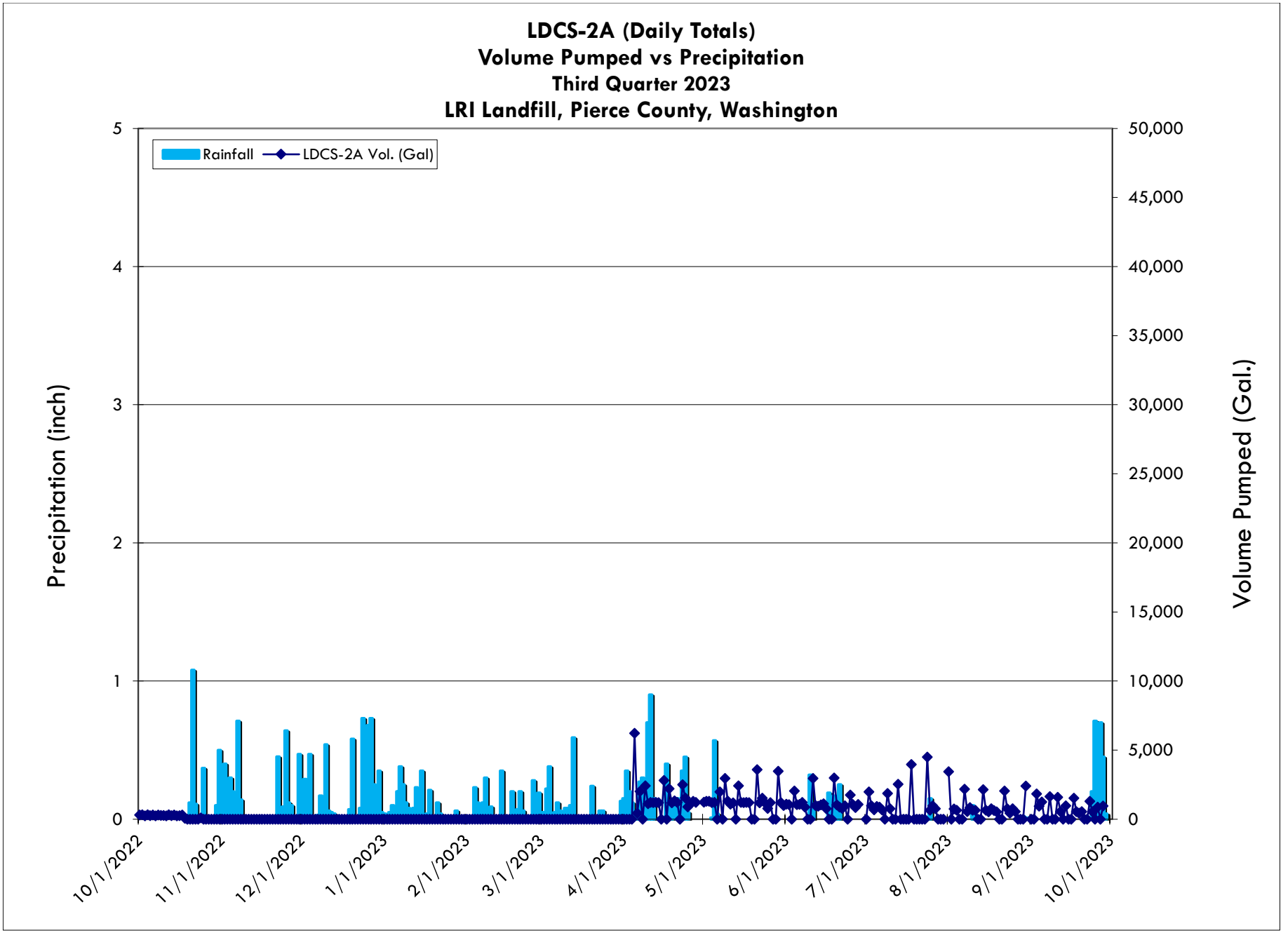
LDCS-8 (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington

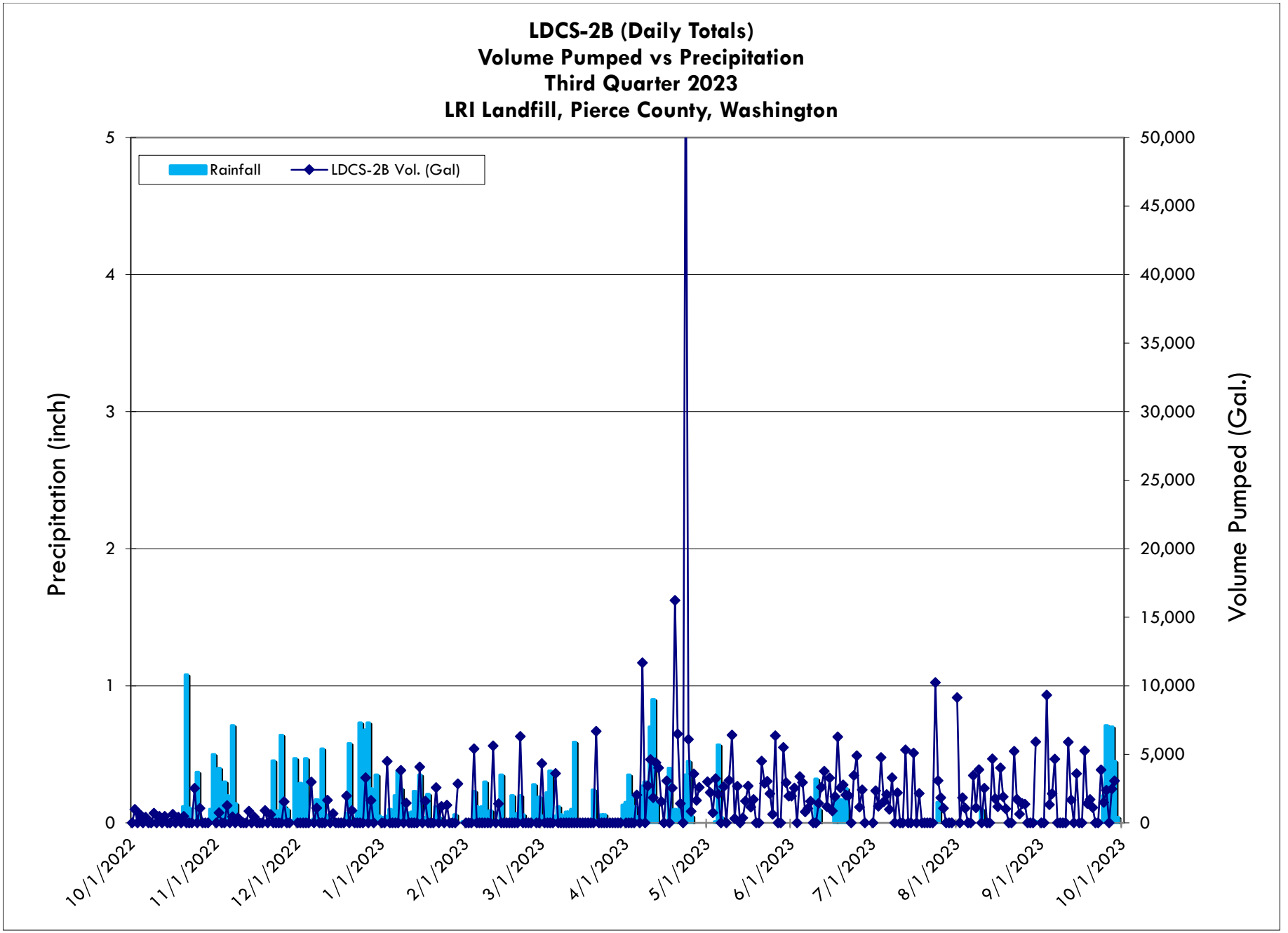


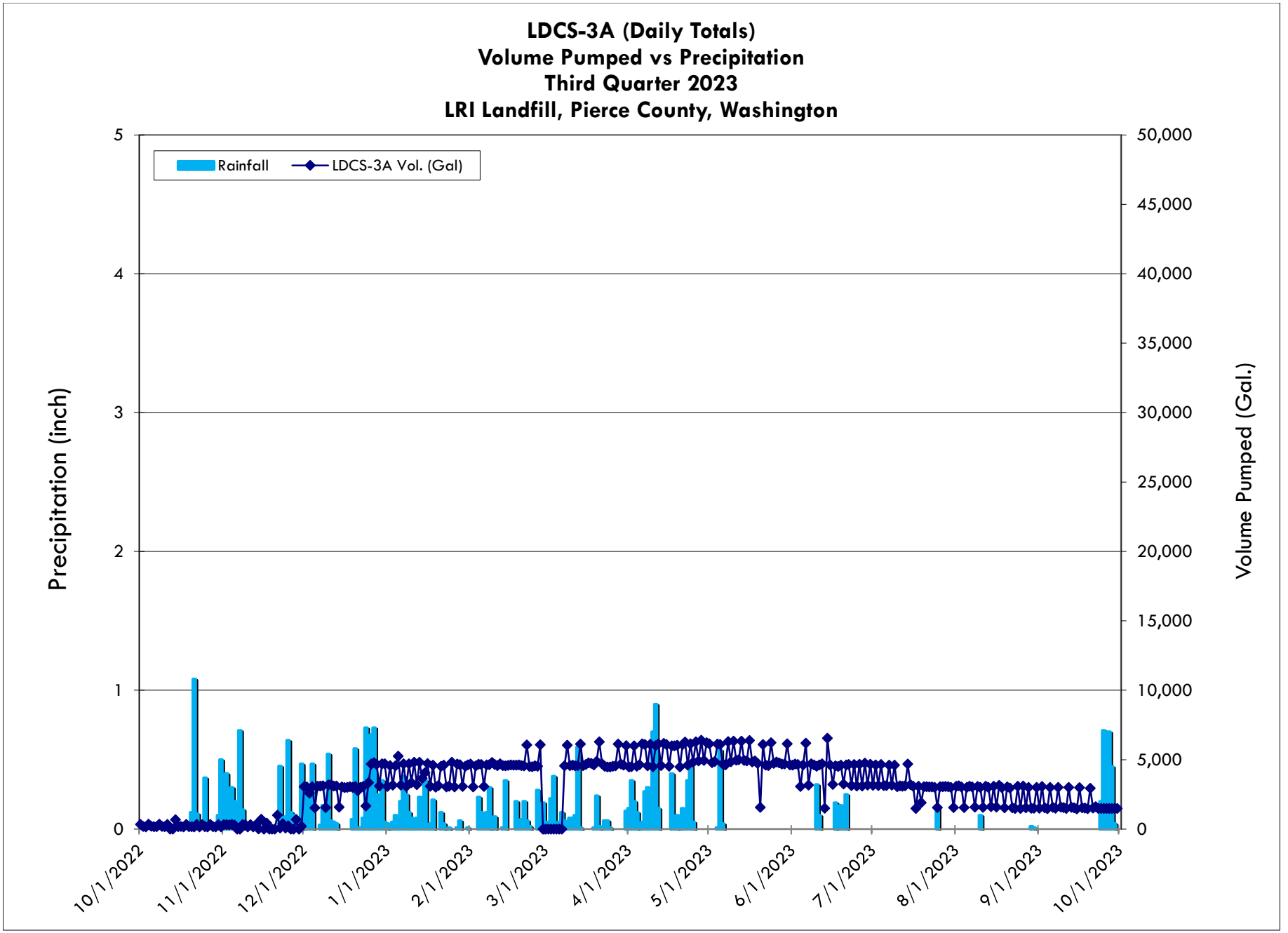
LDCS-9 (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington

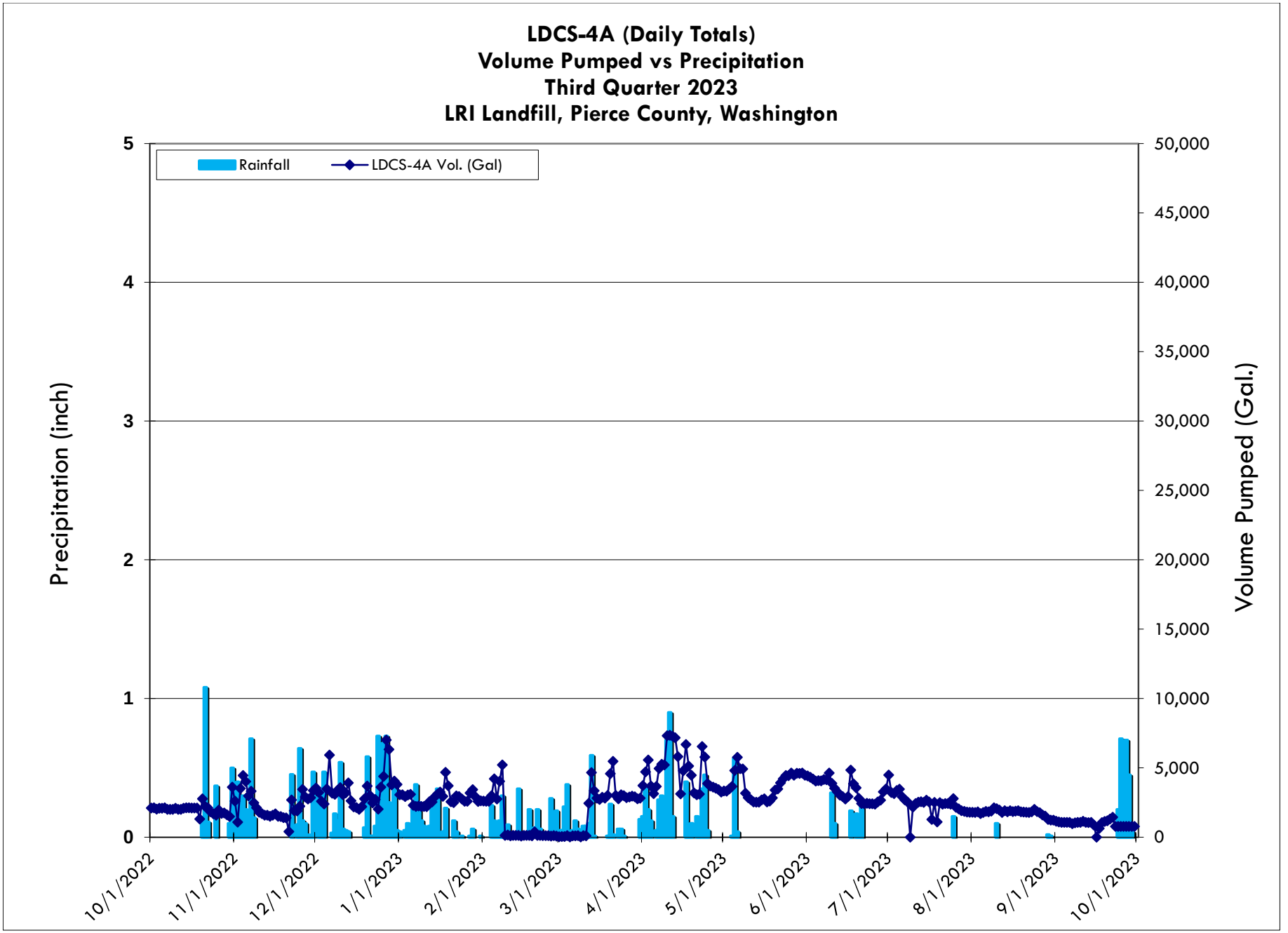


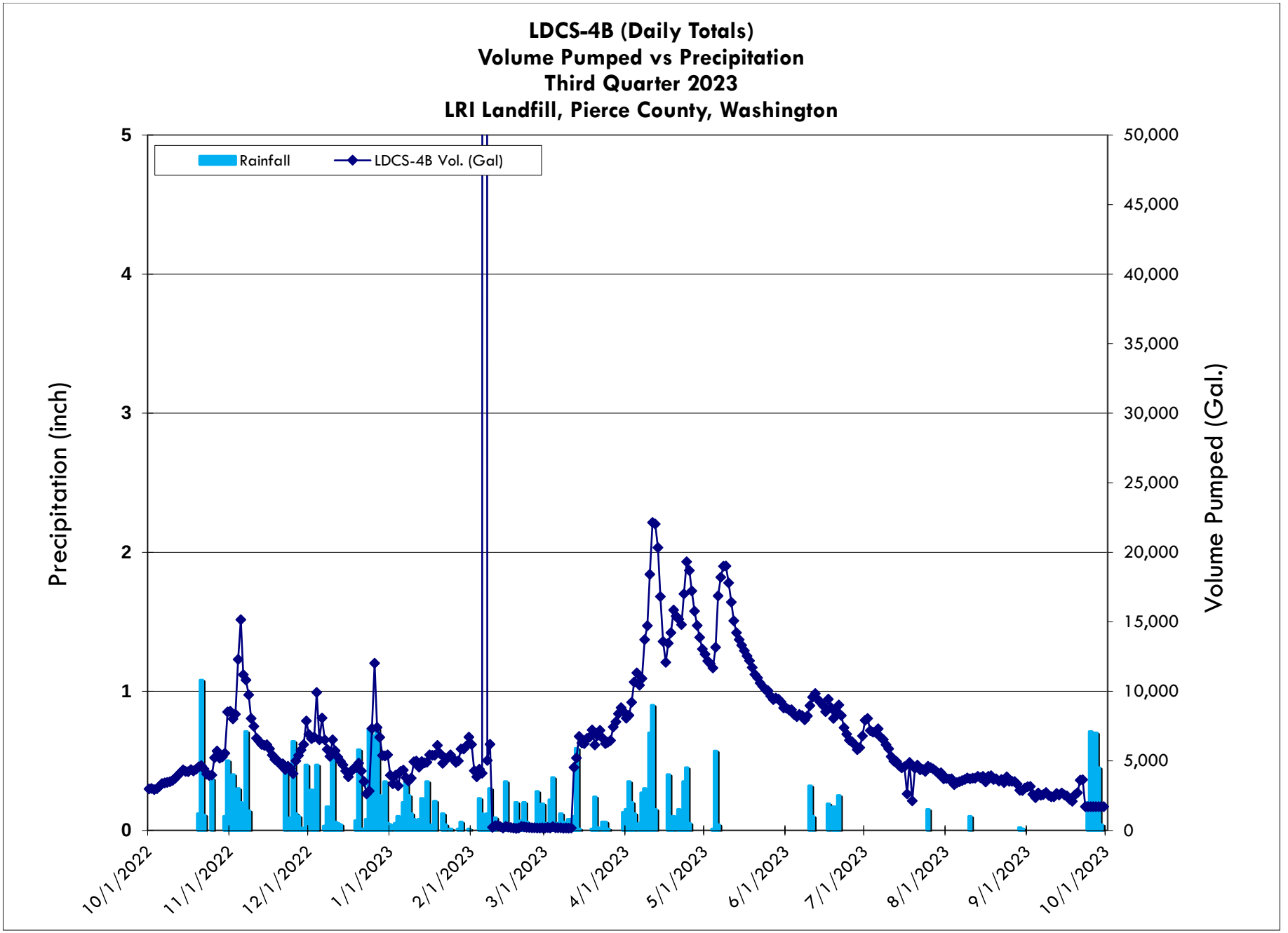

LDCS-1 (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-1 Vol. (Gal.)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

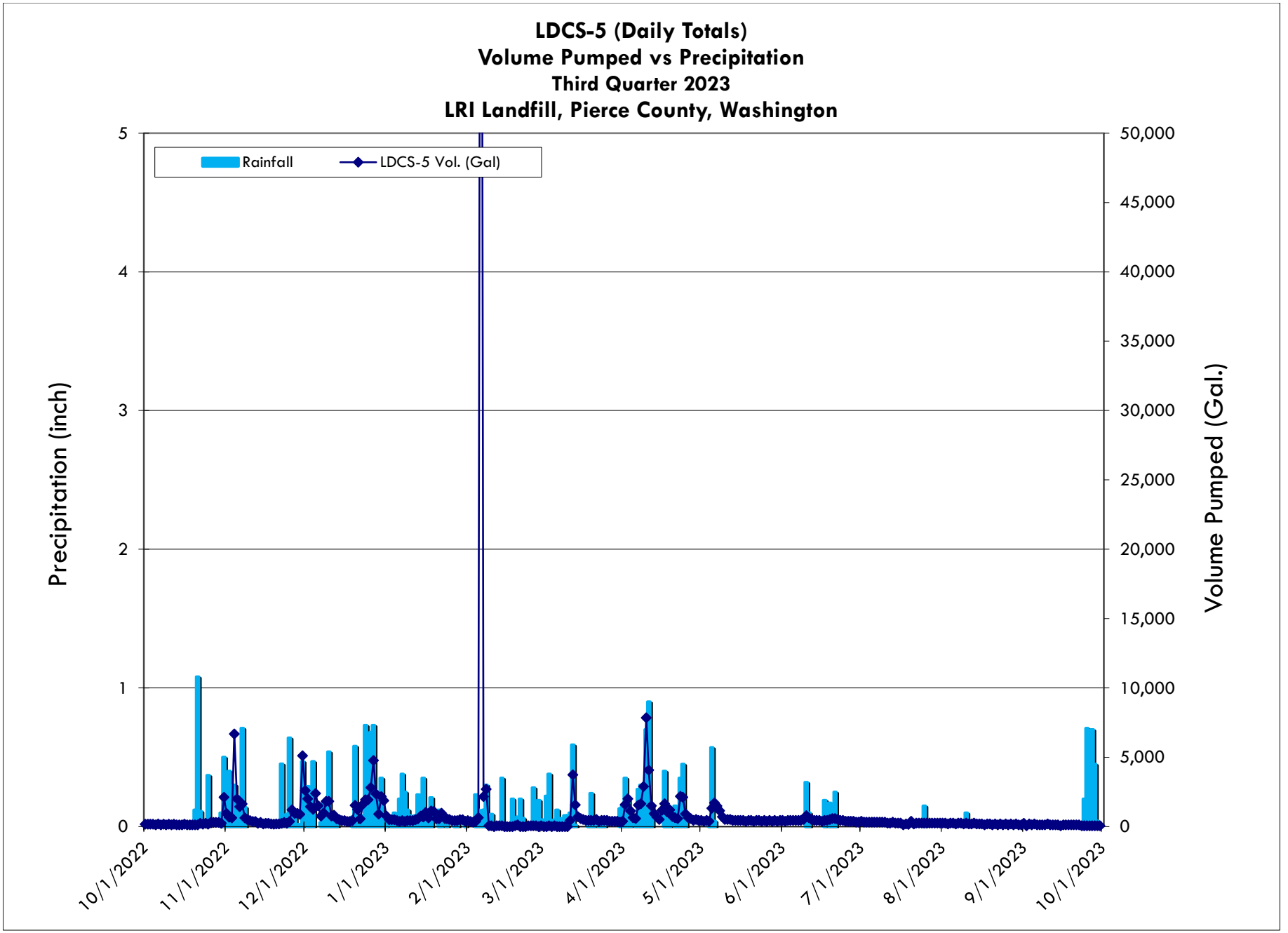

LDCS-2A (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-2A Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

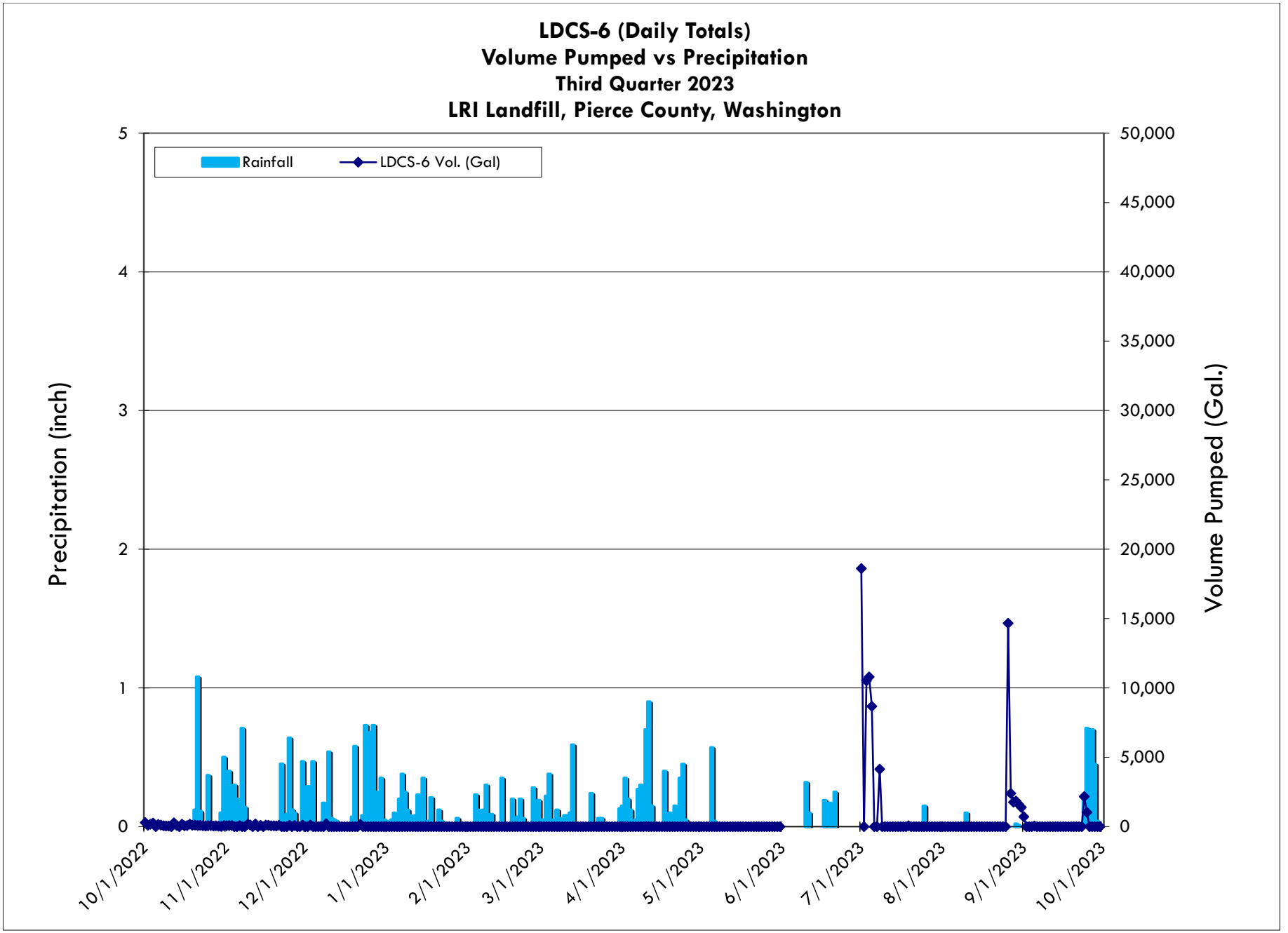

LDCS-2B (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-2B Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

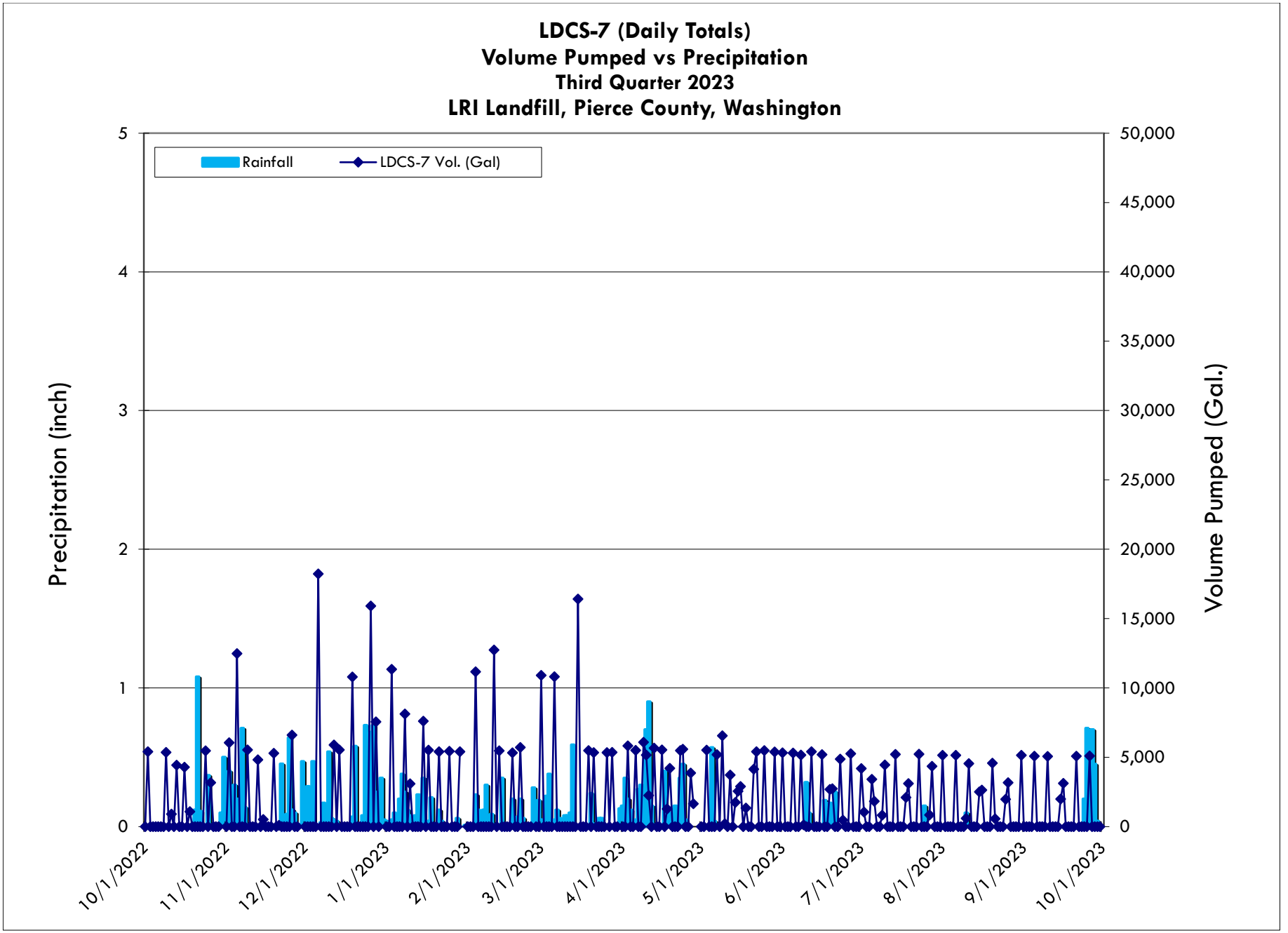

LDCS-3A (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-3A Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

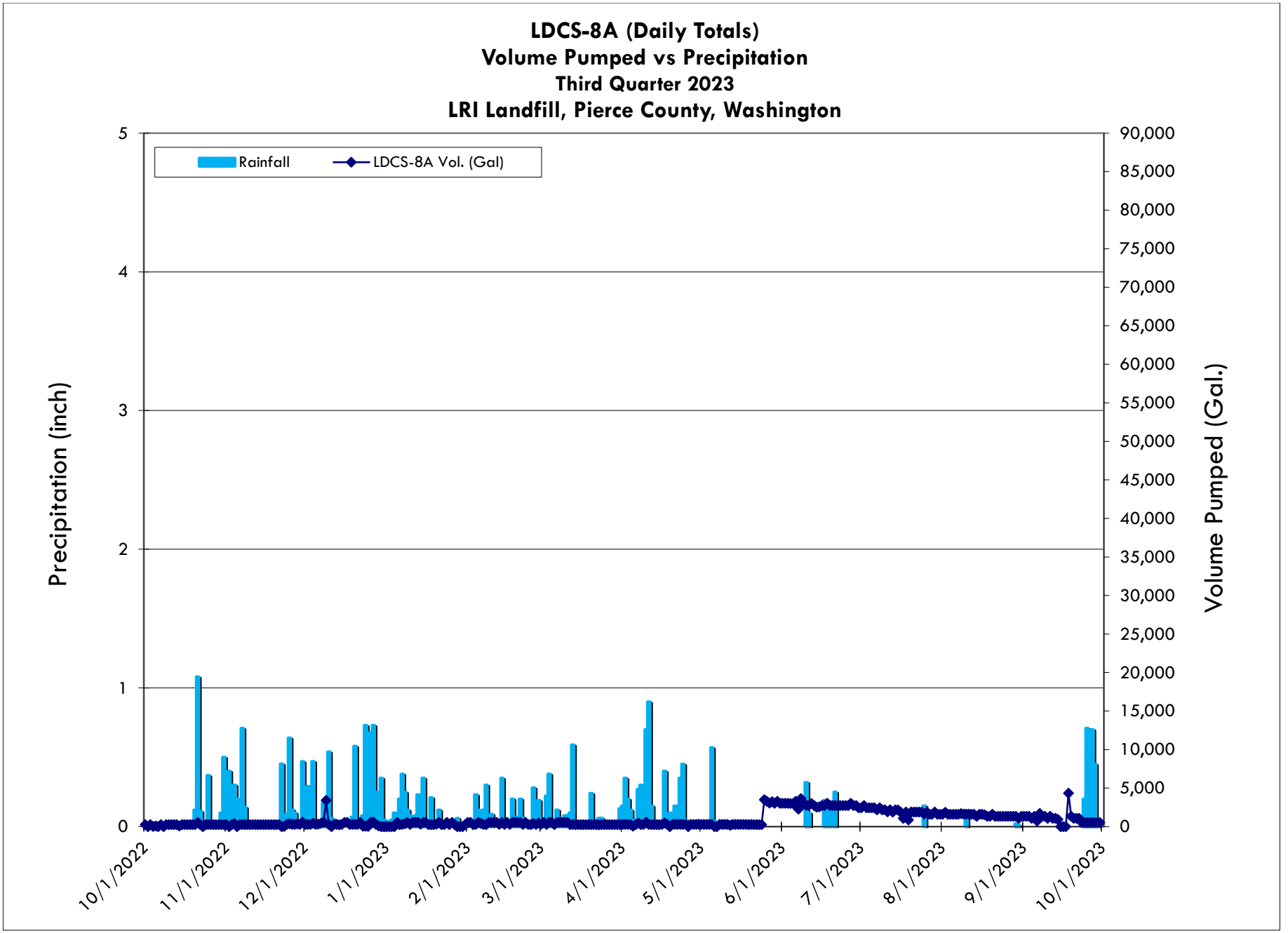

LDCS-4A (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-4A Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
5
4
3
2
1
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

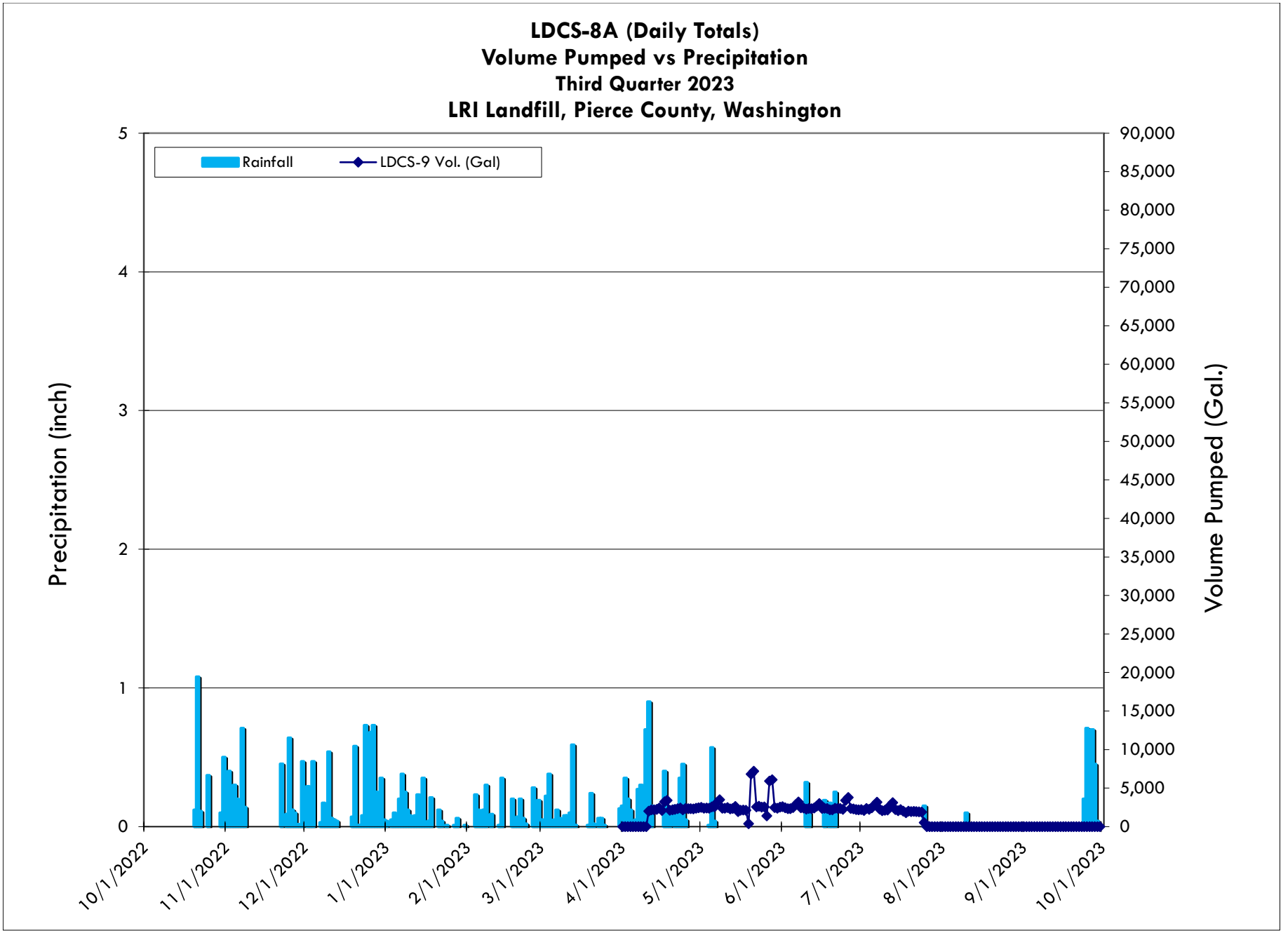

LDCS-4B (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-4B Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

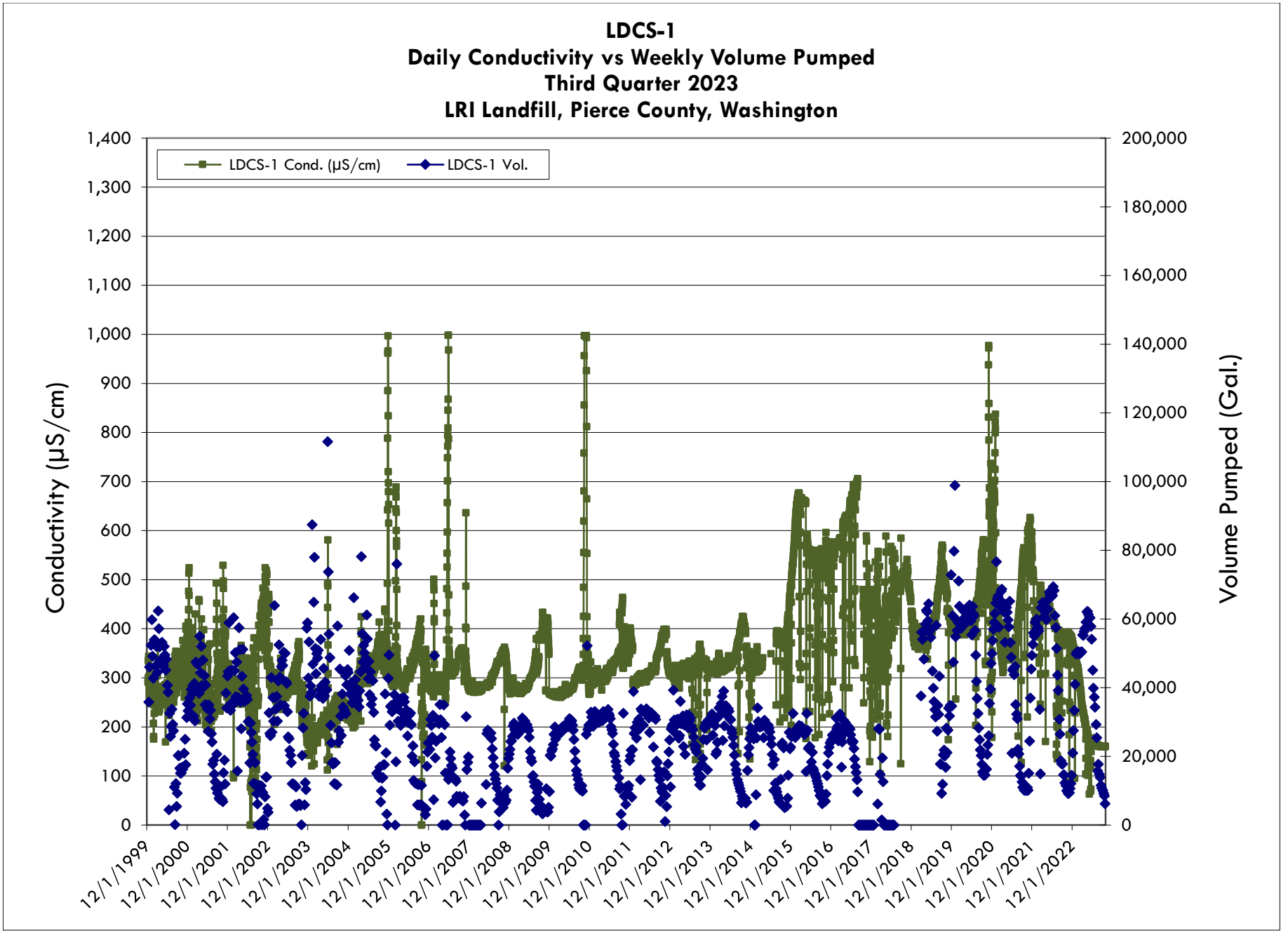

LDCS-5 (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-5 Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

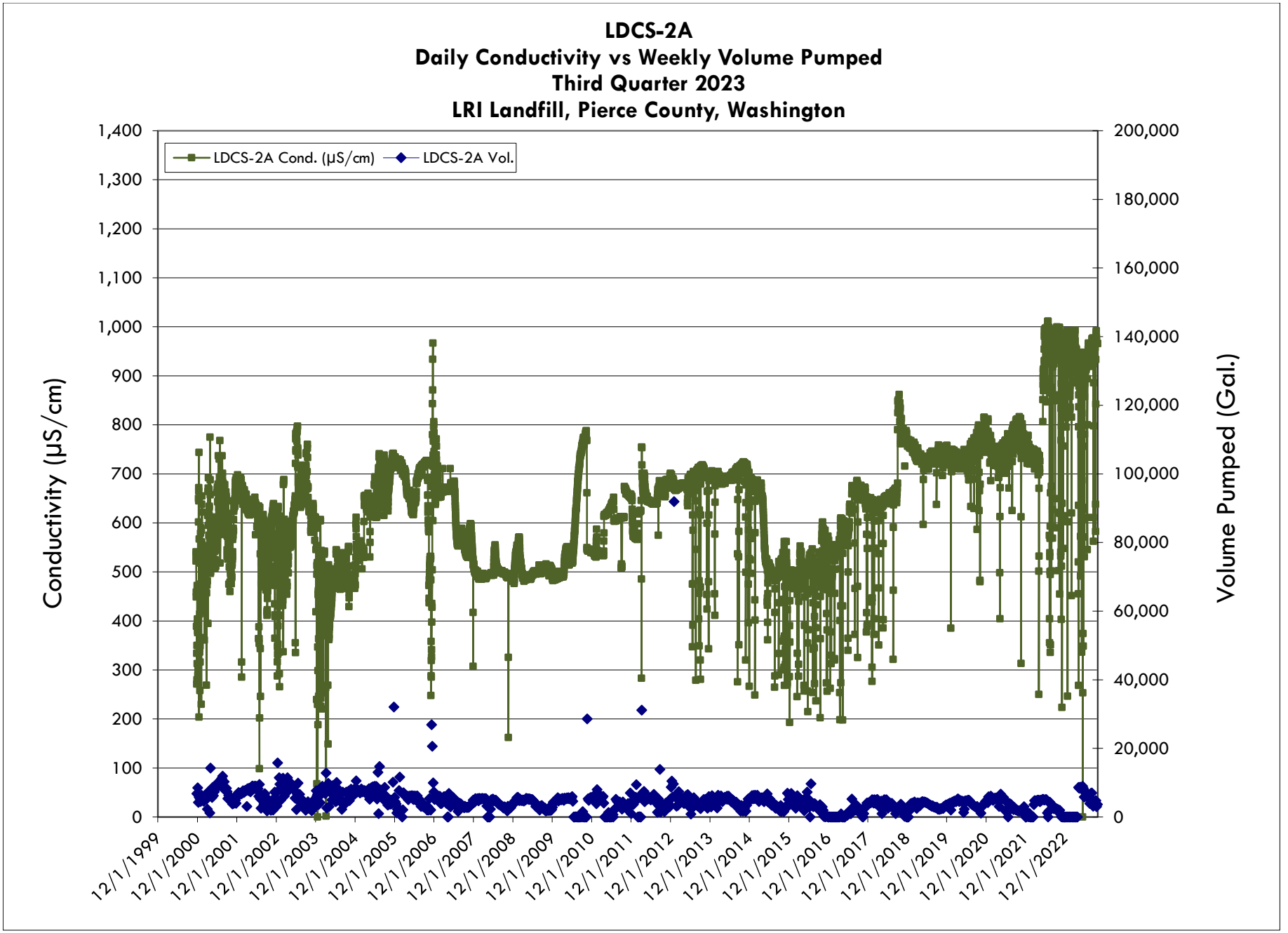

LDCS-6 (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-6 Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

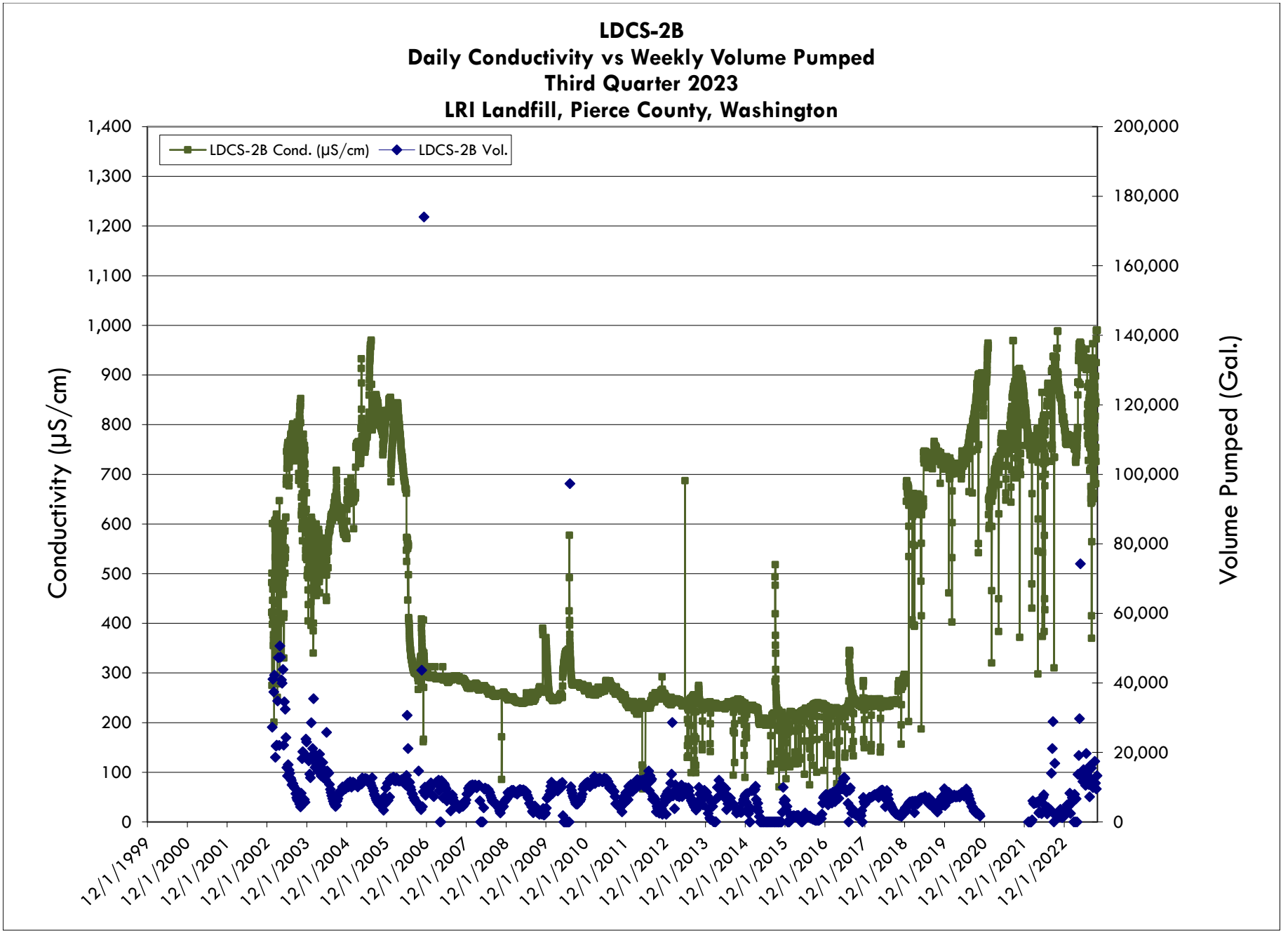

LDCS-7 (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-7 Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023


LDCS-8A (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-8A Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
55,000
60,000
65,000
70,000
75,000
80,000
85,000
90,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023

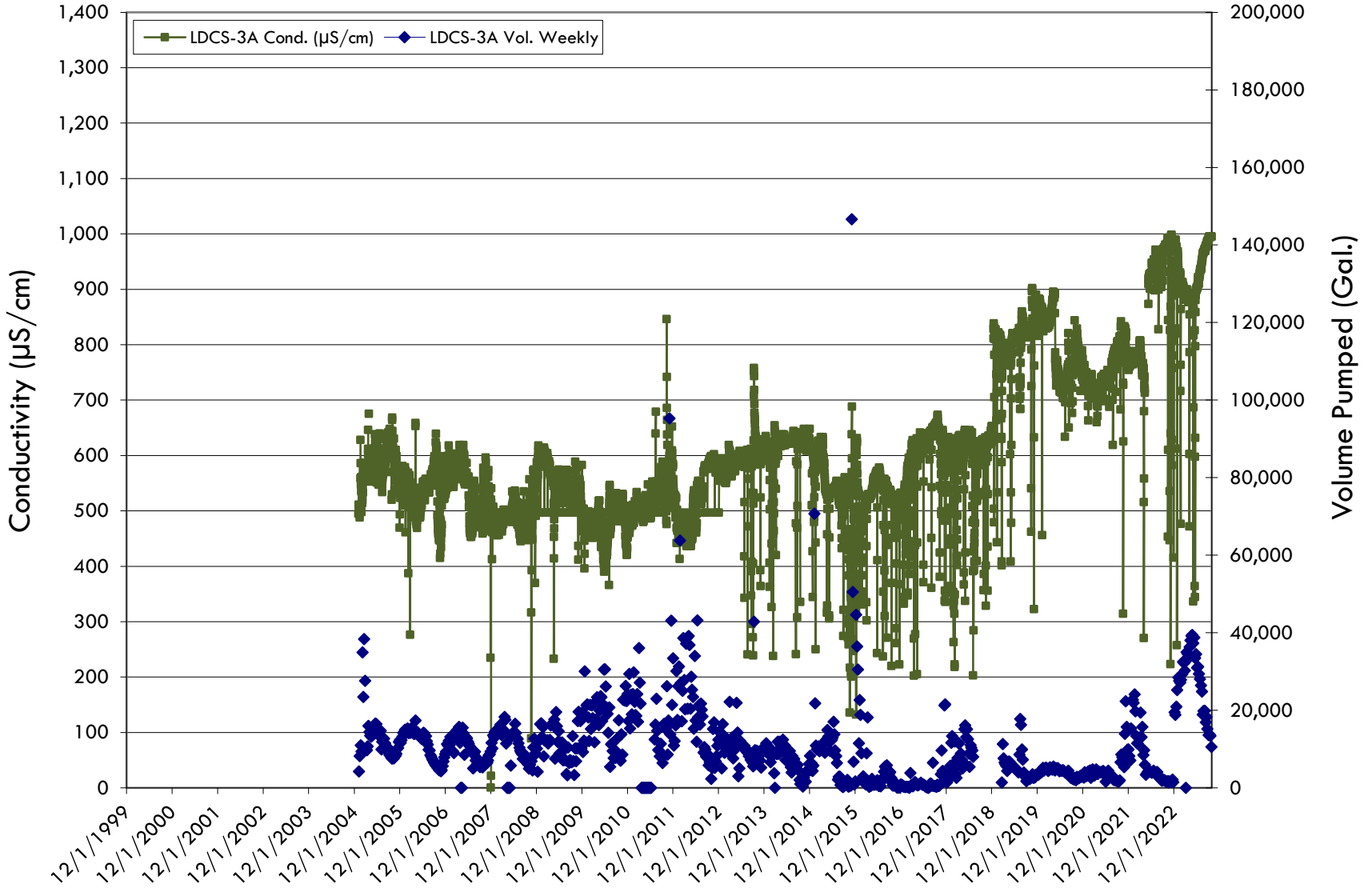

LDCS-8A (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2023
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-9 Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
55,000
60,000
65,000
70,000
75,000
80,000
85,000
90,000
10/1/2022
11/1/2022
12/1/2022
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023


LDCS-1
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-1 Cond. (µS/cm)
LDCS-1 Vol.
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
12/1/2020
12/1/2021
12/1/2022

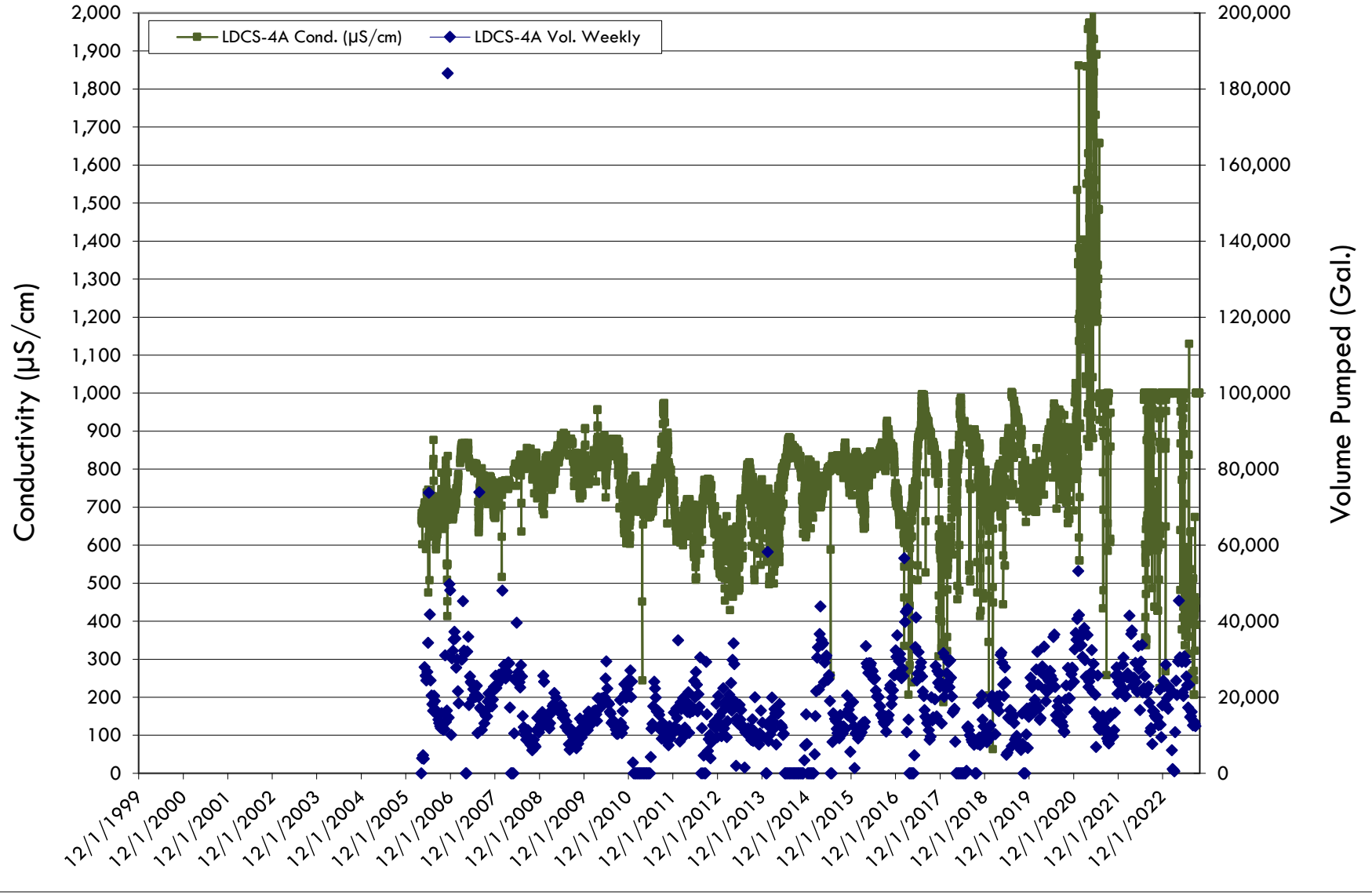

LDCS-2A
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-2A Cond. (µS/cm)
LDCS-2A Vol.
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
12/1/2020
12/1/2021
12/1/2022

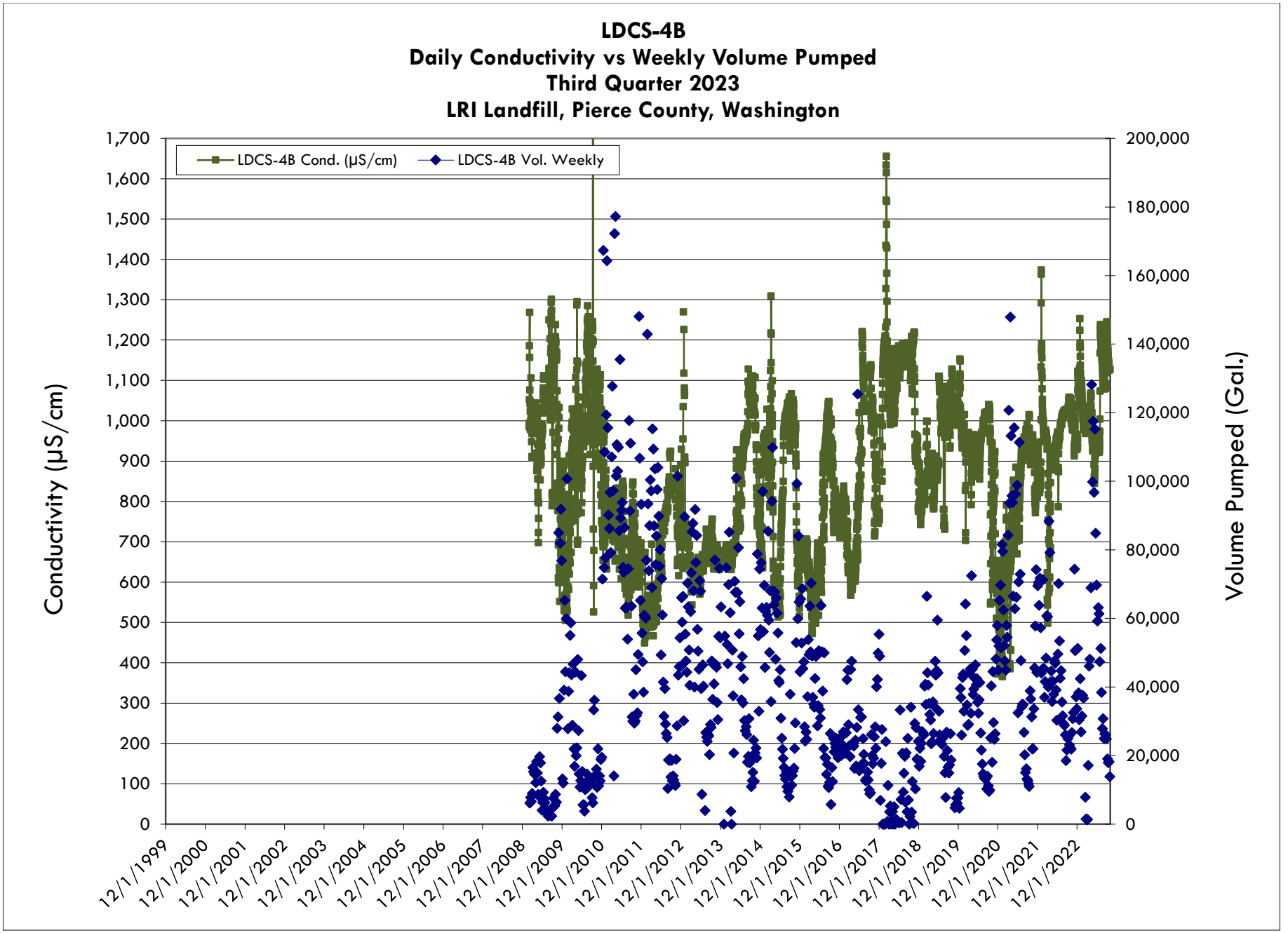

LDCS-2B
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-2B Cond. (µS/cm)
LDCS-2B Vol.
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
12/1/2020
12/1/2021
12/1/2022

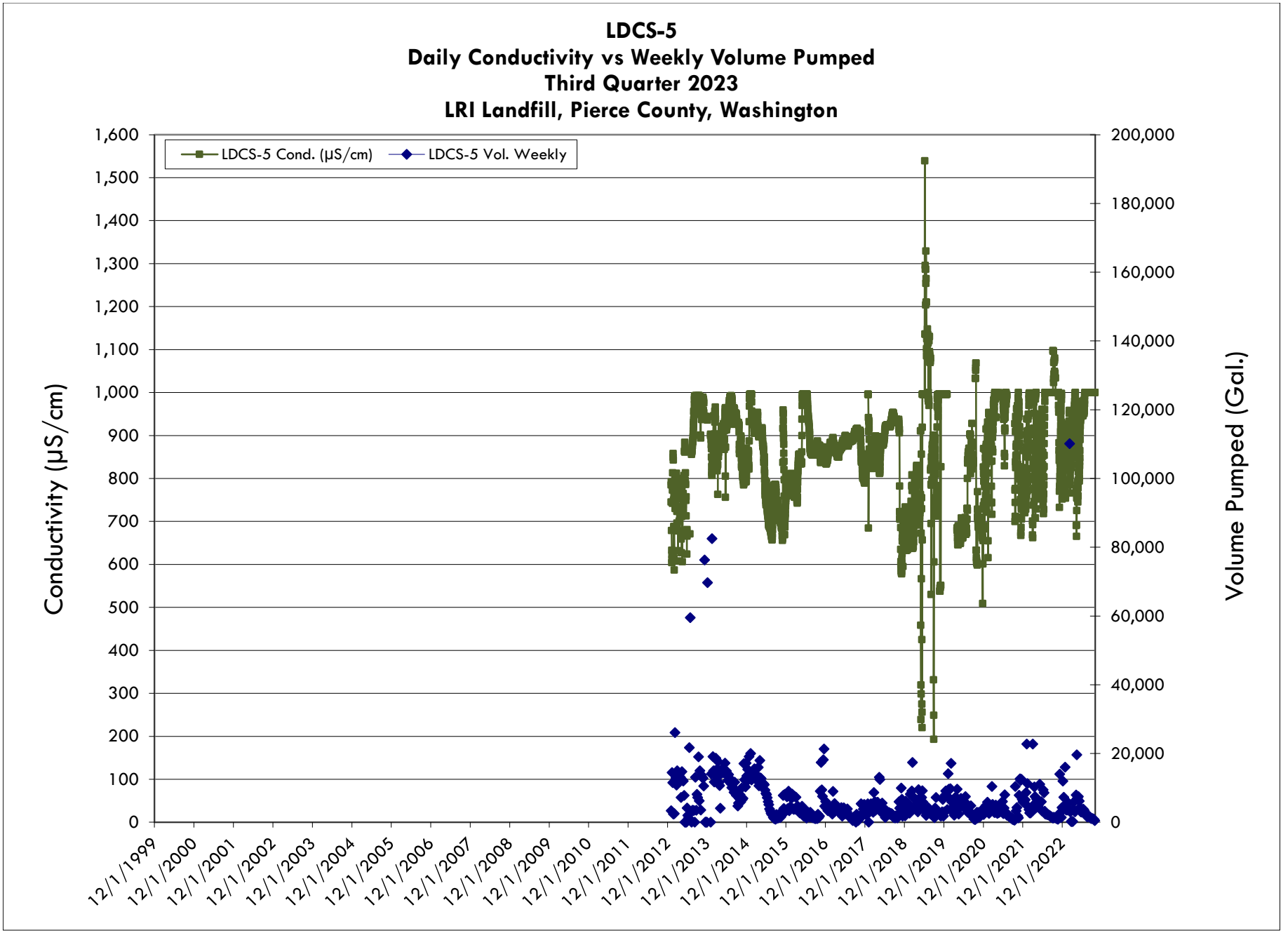
LDCS-3A
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington

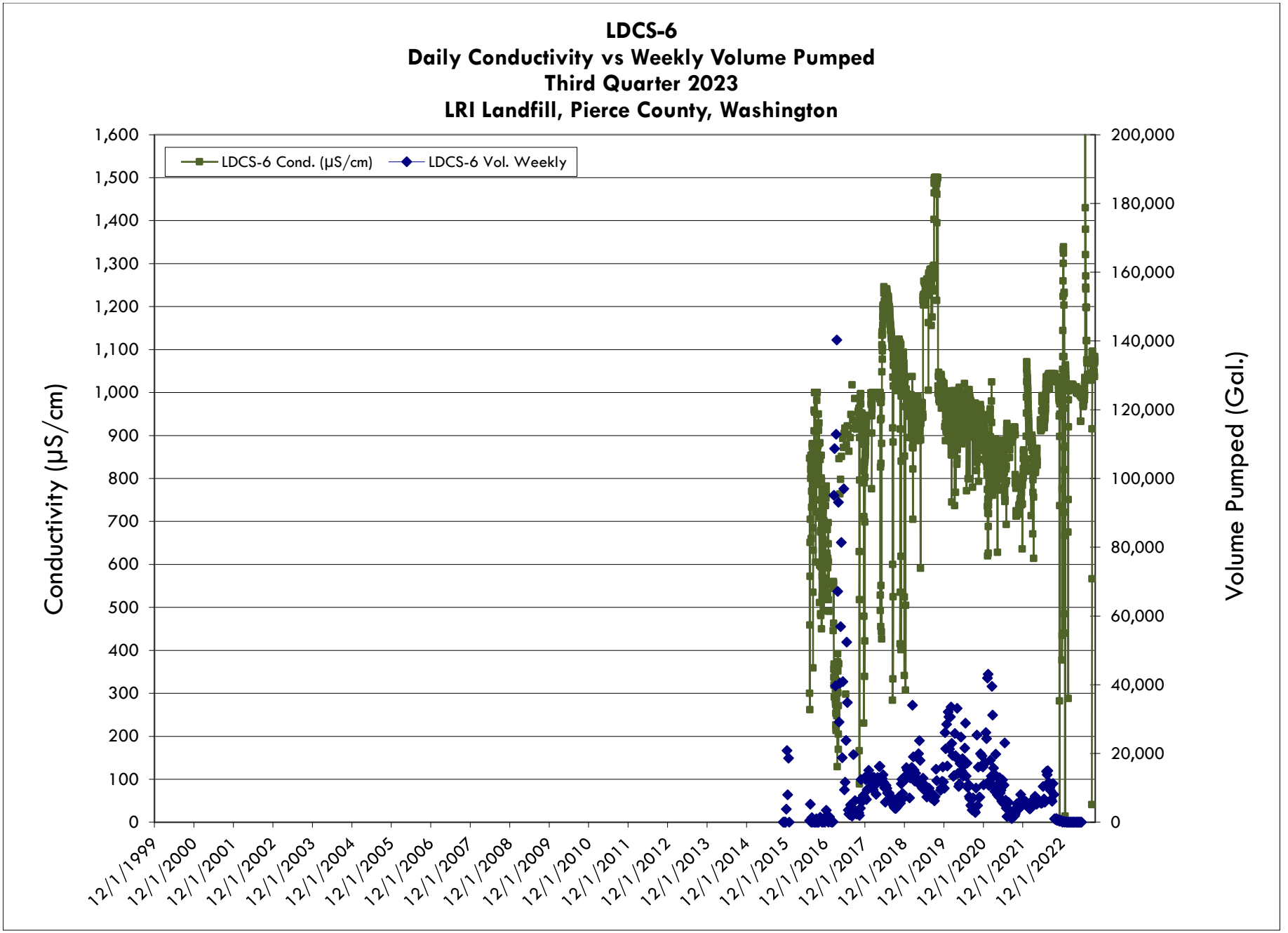


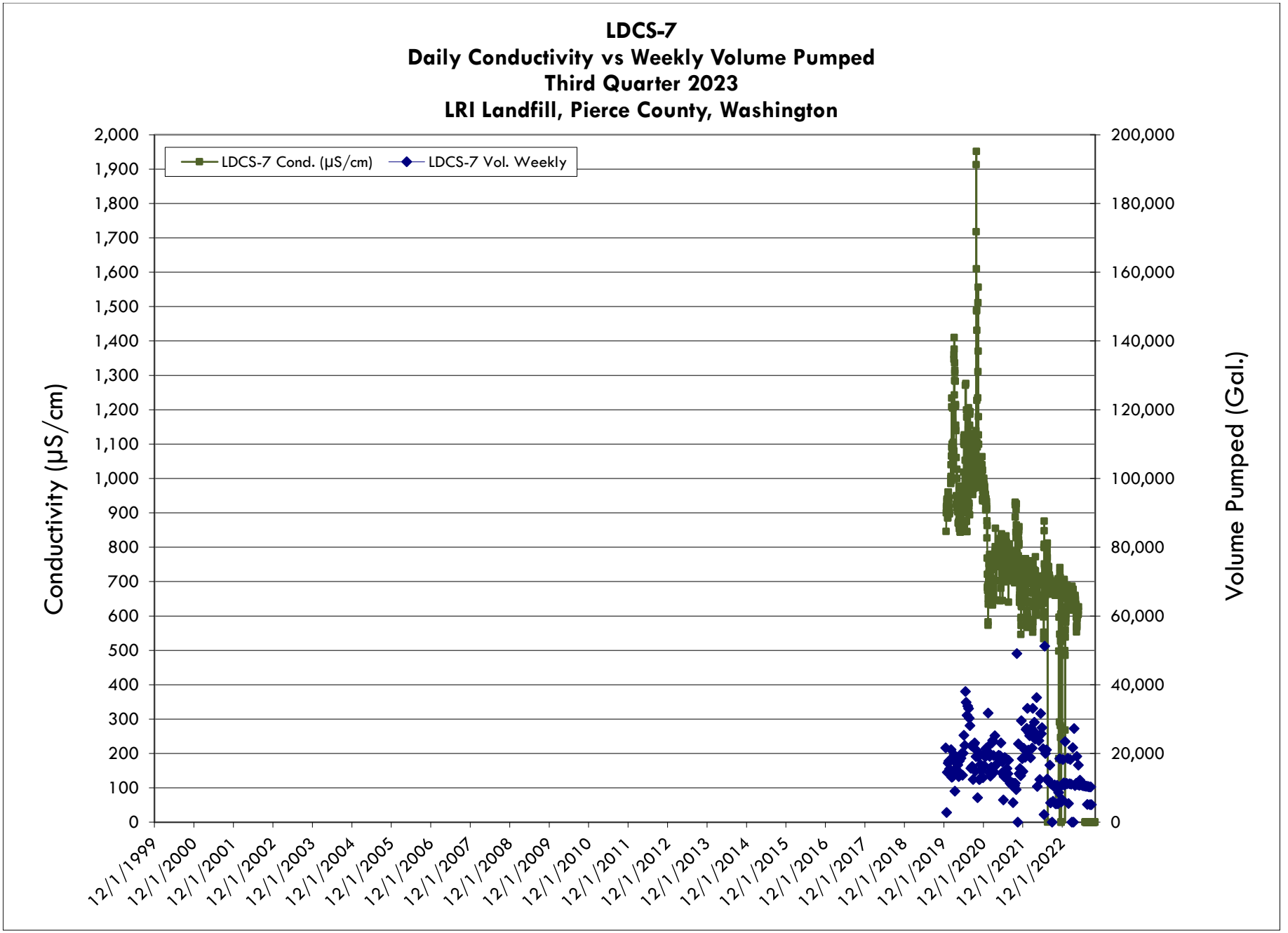
LDCS-4A
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington

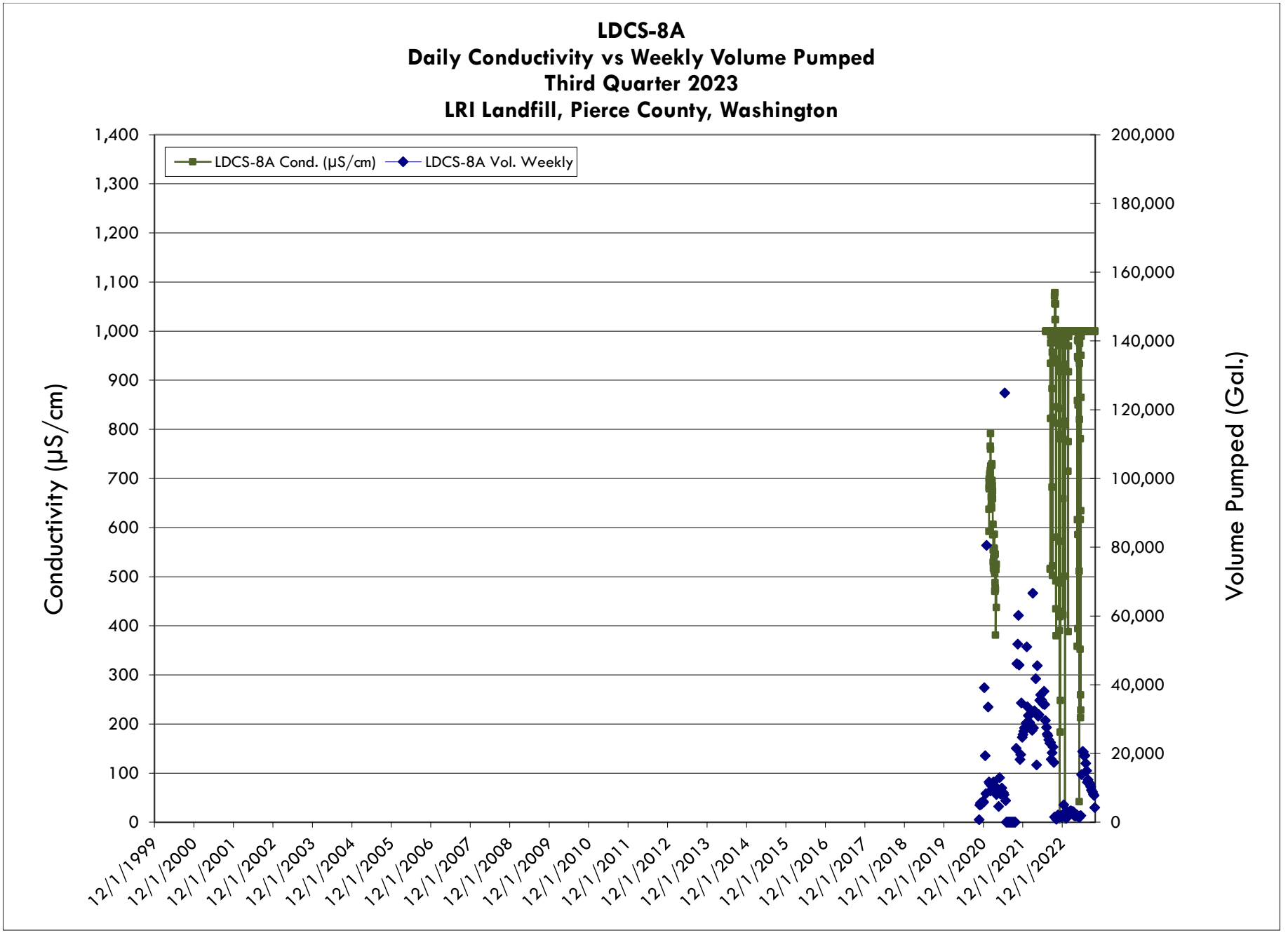


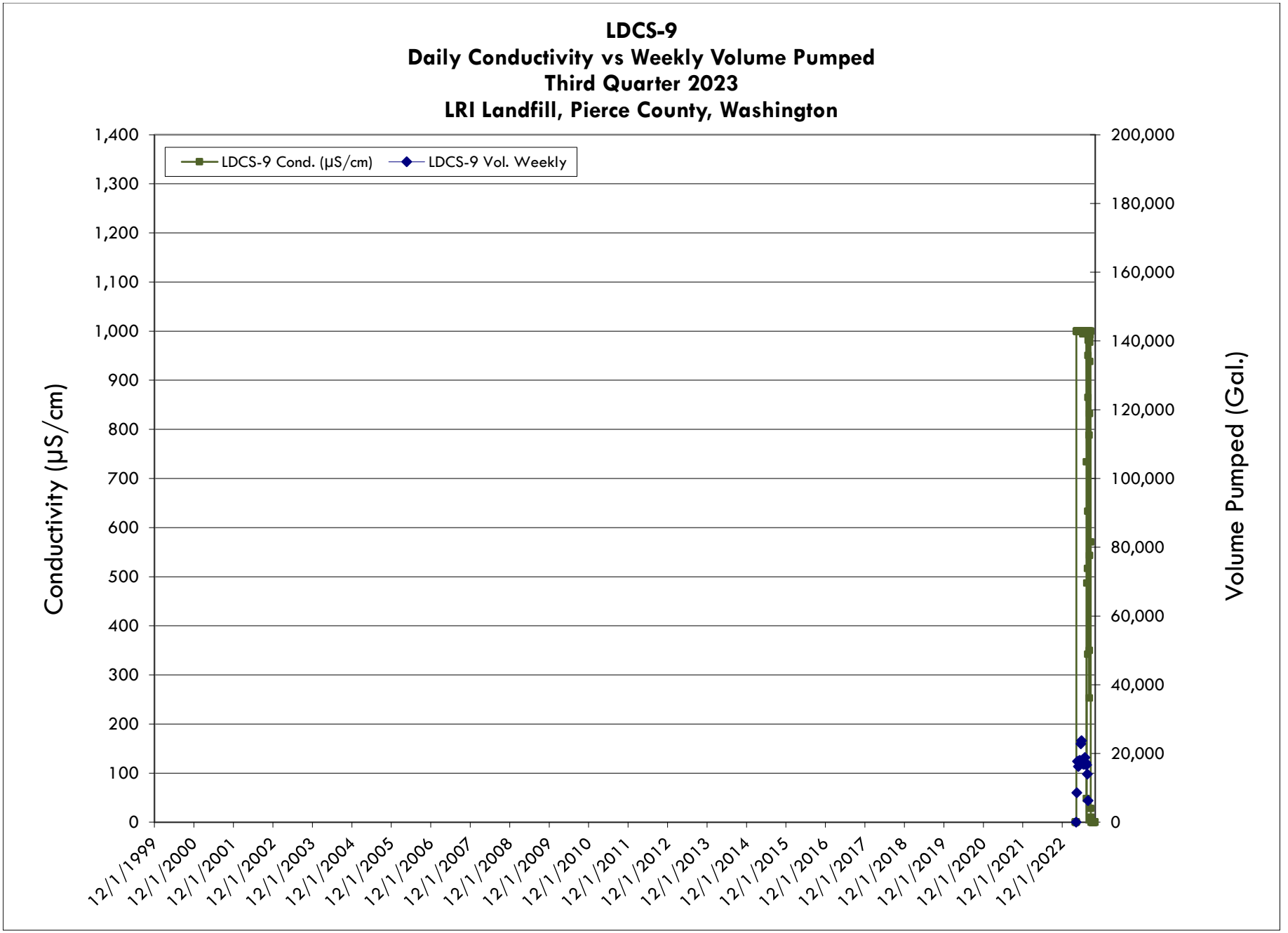

LDCS-4B
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-4B Cond. (µS/cm)
LDCS-4B Vol. Weekly
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
12/1/2020
12/1/2021
12/1/2022


LDCS-5
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-5 Cond. (µS/cm)
LDCS-5 Vol. Weekly
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
12/1/2020
12/1/2021
12/1/2022


LDCS-6
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-6 Cond. (µS/cm)
LDCS-6 Vol. Weekly
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
12/1/2020
12/1/2021
12/1/2022


LDCS-7
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-7 Cond. (µS/cm)
LDCS-7 Vol. Weekly
Conductivity (µS/cm)
Volume Pumped (Gal.)
2,000
1,900
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
12/1/2020
12/1/2021
12/1/2022


LDCS-8A
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-8A Cond. (µS/cm)
LDCS-8A Vol. Weekly
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
12/1/2020
12/1/2021
12/1/2022


LDCS-9
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2023
LRI Landfill, Pierce County, Washington
LDCS-9 Cond. (µS/cm)
LDCS-9 Vol. Weekly
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
12/1/2020
12/1/2021
12/1/2022

Attachment I

Surface Water Monitoring Data

Washington State Department of Ecology **Discharge Monitoring Report (DMR)**

Permit Number: WAR002603 **Permittee:** LRI 304th Street Landfill

Facility County: Pierce **Receiving Waterbody:** NEWB 2

Monitoring Period: 07/01/2023 - 07/31/2023 **Outfall:** 001 - South Creek **Version:** 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C8-1	C8-1	C8-2	C8-2	C9-1	C9-1
2-W	**7/5/23**	C	C	C	C	C	C
3-Th	**7/13/23**	C	C	C	C	C	C
4-T	**7/18/23**	C	C	C	C	C	C
5-W	**7/26/23**	C	C	C	C	C	C
Minimum							
			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum							
		BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: C - No Discharge

Overall DMR Notes/Comment

Reporting Code: C - No Discharge

Outfall: 001 - South Creek

Monitoring Point	Parameter	Sample Date/ Statistical Base	Value	Notes/Comment
C8-2	All Parameters		C	
C9-1	All Parameters		C	

BMPs

Monitoring Point	Week	BMP
C8-1		Check Dams
C8-1		Construction Stormwater Chemical Treatment
C8-1		Other
C8-1		Silt Fence
C8-1		Temporary Sediment Pond
C8-2		Check Dams
C8-2		Other
C8-2		Silt Fence
C9-1		Check Dams
C9-1		Silt Fence

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

George Duvendack

Signature

8/8/2023 11:38:53 AM

Date

Washington State Department of Ecology **Discharge Monitoring Report (DMR)**

Permit Number: WAR002603 **Permittee:** LRI 304th Street Landfill

Facility County: Pierce **Receiving Waterbody:** NEWB 2

Monitoring Period: 08/01/2023 - 08/31/2023 **Outfall:** 001 - South Creek **Version:** 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C8-1	C8-1	C8-2	C8-2	C9-1	C9-1
1-Th	**8/3/23**	C	C	C	C	C	C
2-W	**8/9/23**	C	C	C	C	C	C
3-T	**8/15/23**	C	C	C	C	C	C
4-W	**8/23/23**	C	C	C	C	C	C
5-W	**8/30/23**	C	C	C	C	C	C
Minimum			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum		BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: C - No Discharge

Overall DMR Notes/Comment

Reporting Code: C - No Discharge

No construction stormwater discharge for the month of August 2023

Outfall: 001 - South Creek

Monitoring Point	Parameter	Sample Date/ Statistical Base	Value	Notes/Comment
C8-1	All Parameters		C	
C8-2	All Parameters		C	
C9-1	All Parameters		C	

BMPs

Monitoring Point	Week	BMP
C8-1		Check Dams
C8-1		Construction Stormwater Chemical Treatment
C8-1		Other
C8-1		Silt Fence
C8-1		Temporary Sediment Pond
C8-2		Check Dams
C8-2		Other
C8-2		Silt Fence
C9-1		Check Dams
C9-1		Silt Fence

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Green
Signature

9/7/2023 6:36:27 AM
Date

Washington State Department of Ecology **Discharge Monitoring Report (DMR)**

Permit Number: WAR002603 **Permittee:** LRI 304th Street Landfill

Facility County: Pierce **Receiving Waterbody:** NEWB 2

Monitoring Period: 09/01/2023 - 09/30/2023 **Outfall:** 001 - South Creek **Version:** 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C8-1	C8-1	C8-2	C8-2	C9-1	C9-1
2-Th	**9/7/23**	C	C	C	C	C	C
3-W	**9/13/23**	C	C	C	C	C	C
4-W	**9/20/23**	C	C	C	C	C	C
5-M	**9/25/23**	C	C	C	C	C	C
Minimum							
			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum							
		BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: C - No Discharge

Overall DMR Notes/Comment

Reporting Code: C - No Discharge

Outfall: 001 - South Creek

Monitoring Point	Parameter	Sample Date/ Statistical Base	Value	Notes/Comment
C8-1	All Parameters		C	
C8-2	All Parameters		C	
C9-1	All Parameters		C	

BMPs

Monitoring Point	Week	BMP
C8-1		Check Dams
C8-1		Construction Stormwater Chemical Treatment
C8-1		Other
C8-1		Silt Fence
C8-1		Temporary Sediment Pond
C8-2		Check Dams
C8-2		Other
C8-2		Silt Fence
C9-1		Check Dams
C9-1		Silt Fence

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Green — **Signature**

10/3/2023 6:21:04 PM — **Date**

Washington State Department of Ecology **Discharge Monitoring Report (DMR)**

Permit Number: WAR002557 **Permittee:** Pierce County Recycling - 304th Street L

Facility County: Pierce **Receiving Waterbody:**

Monitoring Period: 07/01/2023 - 09/30/2023 **Outfall:** SWPO - Discharge from SW pond **Version:** 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Quarterly Grab	pH Standard Units Quarterly Grab	Oil & Grease Yes/No Quarterly Visual Observation	Copper Total Micrograms/L (ug/L) Quarterly Grab	Zinc Total Micrograms/L (ug/L) Quarterly Grab	Total BOD5 Total Milligrams/L (mg/L) Quarterly Grab	Solids (Residue) Total suspended (TSS) Milligrams/L (mg/L) Quarterly Grab	Ammonia Total Milligrams/L (mg/L) Quarterly Grab	Alpha-terpineol (3-Cyclohexene-1-methanol,.alpha.,alpha.,trimethyl-) Micrograms/L (ug/L) Quarterly Grab	Benzoic Acid Micrograms/L (ug/L) Quarterly Grab	p-Cresol (4-methylphenol) Micrograms/L (ug/L) Quarterly Grab
		SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO
Limit Set		ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit
Minimum												
			BM: >= 5.0 (RO)									
Average												
		BM: <= 25			BM: <= 14	BM: <= 117						
Maximum												
			BM: <= 9.0 (RO)									
Month 1 Average												
							<= 37	<= 27	<= 4.9	<= 16	<= 71	<= 14
Month 2 Average												
							<= 37	<= 27	<= 4.9	<= 16	<= 71	<= 14
Month 3 Average												
							<= 37	<= 27	<= 4.9	<= 16	<= 71	<= 14

Reporting Codes Used: C - No Discharge

Overall DMR Notes/Comment

Reporting Code: C - No Discharge

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Green
Signature

10/3/2023 6:18:42 PM
Date

Week	Monitoring Point	Phenol Micrograms/L (ug/L) Quarterly Grab	Zinc Total Micrograms/L (ug/L) Quarterly Grab	pH Standard Units Quarterly Grab
		SWPO	SWPO	SWPO
Limit Set		ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit
Minimum				
				>= 6.0 (RO)
Average				
Maximum				
				<= 9.0 (RO)
Month 1 Average				
		<= 15	<= 110	
Month 2 Average				
		<= 15	<= 110	
Month 3 Average				
		<= 15	<= 110	

Attachment J

Landfill Gas Monitoring Data

Exhibit 3 - Results of Landfill Gas Probe Monitoring

SCS Engineers

Landfill Gas Control System

04223001.04

LRI Landfill

July-23

Location Refer *Design.*	Date	Time	$P_{(well)}$ (in W.C.)	Gas Composition - *Note 1*: CH_4 Spike (% by vol.)	CH_4 (% by vol.)	CO_2 (% by vol.)	O_2 (% by vol.)	Balance (N_2 & H_2O) (% by vol.)	Depth to Water *Note 2* (ft-TOC)	Exposed Portion of Perforations - *Note 3* (ft)	Exposed Portion of Perforations - *Note 3* (%)	Comments
Normal Operating Rage:												
(min)			-	-	0.3	-	-				20.0	
(max)			0.07	-	5.0	5.0	20.3				90.0	
Perimeter Gas Probes												
GP-1A	7/25/2023	12:01	-0.06	--	4.7	18.3	7.6	69.4	15.0	5.0	100.0	
GP-2	7/25/2023	11:28	-0.13	--	0.0	16.7	0.2	83.1	16.3	0.0	0.0	
GP-3	7/25/2023	11:15	0.05	--	0.0	7.4	13.4	79.2	10.0	15.0	100.0	
GP-4	7/25/2023	11:09	-0.43	--	0.0	7.9	16.3	75.8	10.8	1.0	20.2	
GP-9	7/25/2023	11:02	-0.01	--	0.0	10.0	7.5	82.5	11.0	0.0	0.0	
GP-10	7/25/2023	12:04	-0.08	--	6.7	25.0	2.3	66.0				
GP-10P	7/25/2023	12:08	-0.08	--	7.2	27.6	0.1	65.1				
GP-11	7/25/2023	12:15	-0.08	--	0.0	23.2	2.9	73.9				
GP-12	7/25/2023	12:28	-0.04	--	24.1	59.7	0.2	16.0				
GP-13	7/25/2023	12:38	-0.61	--	0.0	9.6	11.4	79.0				
GP-14	7/25/2023	12:57	-0.03	--	0.0	0.1	22.4	77.5	14.3	0.0	0.0	
GP-15	7/25/2023	13:05	0.05	--	0.0	2.8	18.6	78.6	17.2	1.6	31.4	
GP-16	7/25/2023	10:48	-0.43	--	0.0	0.3	22.3	77.4	19.8	12.4	82.7	
GP-17	7/25/2023	11:34	-0.1	--	0.0	0.3	21.3	78.4	5.0	0.0	100.0	
GP-18	7/25/2023	11:21	0.0	--	0.0	0.2	22.2	77.6	3.3	0.0	0.0	
GP-19	8/2/2023	11:37	0.1	--	0.0	0.7	18.8	80.5	12.0	0.0	0.0	
GP-20	7/25/2023	12:50	-0.1	--	0.0	0.3	21.5	78.2	8.6	0.0	0.0	
GP-21	7/25/2023	12:44	-0.4	--	0.0	0.4	21.5	78.1	12.2	0.0	0.0	

General Data:

	Beginning	Ending	Average
Weather:	Cloudy	Cloudy	Cloudy
Temperature, T (deg F):	66	70.4	68.2
Wind Speed (mph):	1	1	1
Wind Direction:	360	135	247.5
Barometric Pressure, P (in Hg):	30.24	30.24	30.24
24hr Baro.Trend (rising / falling / steady / unsteady)	Steady		

Starting Date:	7/25/2023
Starting Time:	10:48
Finishing Date:	8/2/2023
Finishing Time:	11:37
Monitored by:	L. Walker
Instruments:	GEM 2000
Calibration Date:	7/25/2023

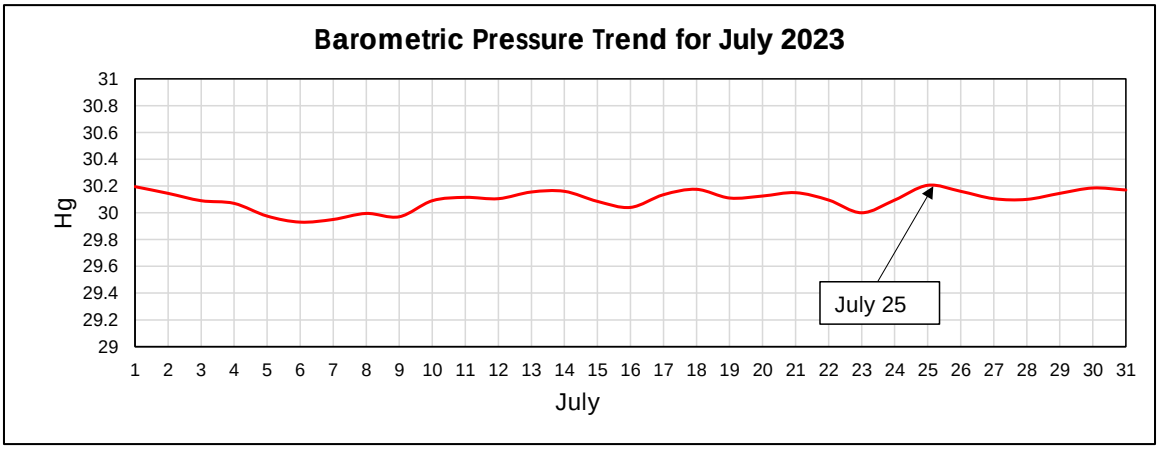
Headings:

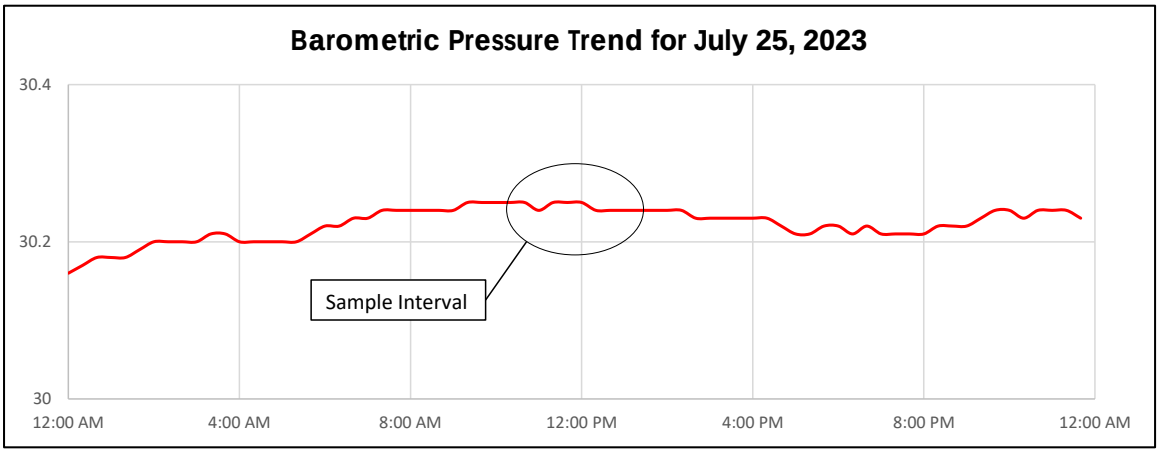
$P_{(well)}$	Relative Pressure
CH_4	Methane
CO_2	Carbon Dioxide
O_2	Oxygen
H_2O	Water Vapor
N_2	Nitrogen
TOC	Top of Casing

Notes:

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded as a comment if observed during sampling.
2. Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
3. Exposed Perforation = perforated pipe section not submerged by liquid.

Barometric Pressure Trend - July 2023
LRI Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (South Hill, WA)
Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL
Data Source:
https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-07-25/2023-07-25/monthly

Daily Data Source: Wunderground.com (South Hill, WA)
Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL
Data Source:
https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-07-25/2023-07-25/daily

Exhibit 3 - Results of Landfill Gas Probe Monitoring

SCS Engineers

Landfill Gas Control System

04223001.04

LRI Landfill

August-23

Location Refer *Design.*	Date	Time	$P_{(well)}$ (in W.C.)	Gas Composition - *Note 1*: CH_4 Spike (% by vol.)	CH_4 (% by vol.)	CO_2 (% by vol.)	O_2 (% by vol.)	Balance (N_2 & H_2O) (% by vol.)	Depth to Water *Note 2* (ft-TOC)	Exposed Portion of Perforations - *Note 3* (ft)	Exposed Portion of Perforations - *Note 3* (%)	Comments
Normal Operating Rage:												
(min)			-	-	0.3	-	-				20.0	
(max)			0.08	-	5.0	5.0	20.3				90.0	
Perimeter Gas Probes												
GP-1A	8/22/2023	14:03	0.08	34.6	9.8	31.8	12.3	46.1	12.6	2.6	52.0	
GP-2	8/22/2023	13:47	-0.12	--	0.0	17.4	0.3	82.3	17.6	0.0	0.0	
GP-3	8/22/2023	13:34	-0.11	--	0.0	7.3	13.8	78.9	11.8	16.8	100.0	
GP-4	8/22/2023	13:27	-0.10	--	0.0	8.9	13.7	77.4	14.0	4.2	84.6	
GP-9	8/22/2023	13:19	-0.14	--	0.0	10.0	8.0	82.0	15.6	2.4	47.0	
GP-10	8/22/2023	14:14	-0.06	--	0.0	9.2	12.1	78.7				
GP-10P	8/22/2023	14:18	-0.08	--	2.2	14.0	10.0	73.8				
GP-11	8/22/2023	14:37	-0.10	--	0.0	22.6	3.5	73.9				
GP-12	8/22/2023	14:45	-0.13	15.7	15.3	57.0	0.3	27.4				
GP-13	8/22/2023	14:53	-0.12	--	0.0	23.4	2.6	74.0				
GP-14	8/22/2023	14:59	-0.14	--	0.0	1.2	18.9	79.9	17.1	1.9	37.0	
GP-15	8/22/2023	15:09	-0.09	--	0.0	4.8	16.2	79.0	20.4	4.8	95.6	
GP-16	8/22/2023	13:12	-0.11	--	0.0	0.2	20.3	79.5	22.3	15.0	99.8	
GP-17	8/22/2023	13:54	-0.1	--	0.0	0.3	19.8	79.9	12.9	0.0	100.0	
GP-18	8/22/2023	13:39	-0.1	--	0.0	0.2	20.4	79.4	8.7	0.0	0.0	
GP-19	8/22/2023	15:48	-0.1	--	0.0	0.7	18.9	80.4	13.3	0.0	0.0	
GP-20	8/22/2023	15:29	-0.1	--	0.0	1.2	16.2	82.6	12.3	0.0	0.0	
GP-21	8/22/2023	15:19	-0.1	--	0.0	0.5	19.5	80.0	17.5	2.5	0.0	

General Data:

	Beginning	Ending	Average
Weather:	Cloudy	Cloudy	Cloudy
Temperature, T (deg F):	67.6	70.8	69.2
Wind Speed (mph):	2	2	2
Wind Direction:	67.5	22.5	45
Barometric Pressure, P (in Hg):	30.08	30.06	30.07
24hr Baro.Trend (rising / falling / steady / unsteady)	Steady		

Starting Date:	8/22/2023
Starting Time:	13:12
Finishing Date:	8/22/2023
Finishing Time:	15:48
Monitored by:	J. Faille
Instruments:	GEM 2000
Calibration Date:	8/22/2023

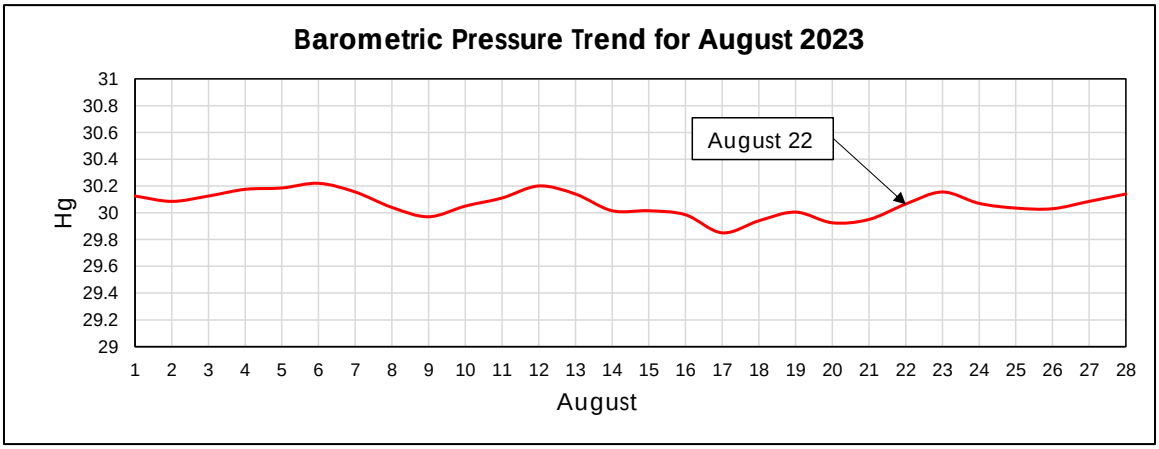
Headings:

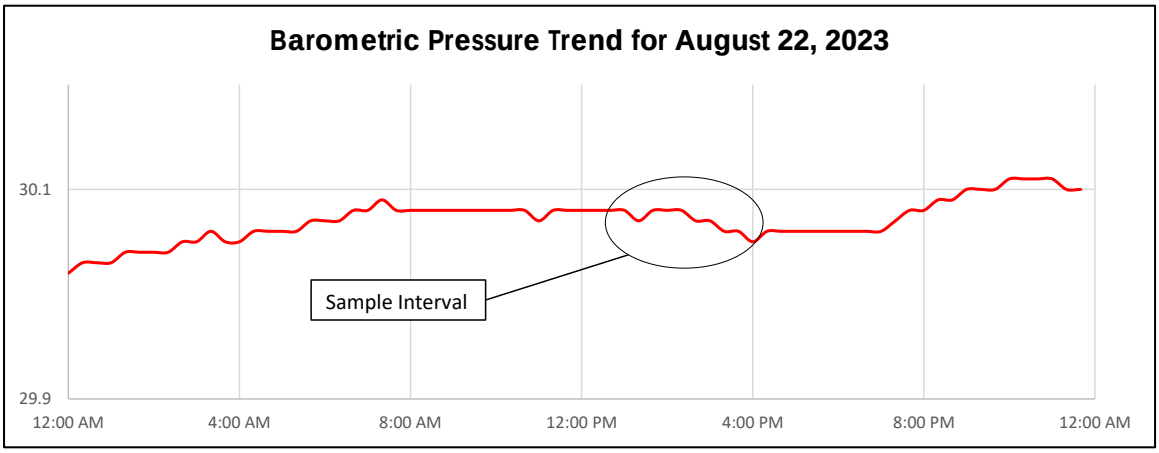
$P_{(well)}$	Relative Pressure
CH_4	Methane
CO_2	Carbon Dioxide
O_2	Oxygen
H_2O	Water Vapor
N_2	Nitrogen
TOC	Top of Casing

Notes:

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded as a comment if observed during sampling.
2. Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
3. Exposed Perforation = perforated pipe section not submerged by liquid.

Barometric Pressure Trend - August 2023
LRI Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (South Hill, WA)
Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL
Data Source:
https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-08-22/2023-08-22/monthly

Daily Data Source: Wunderground.com (South Hill, WA)
Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL
Data Source:
https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-08-22/2023-08-22/daily

Exhibit 3 - Results of Landfill Gas Probe Monitoring **SCS Engineers**

Landfill Gas Control System 04223001.04

LRI Landfill

September-23

Location Refer *Design.*	Date	Time	$P_{(well)}$ (in W.C.)	Gas Composition - *Note 1*					Depth to Water *Note 2* (ft-TOC)	Exposed Portion of Perforations - *Note 3*		Comments
				CH_4 Spike (% by vol.)	CH_4 (% by vol.)	CO_2 (% by vol.)	O_2 (% by vol.)	Balance (N_2 & H_2O) (% by vol.)		(ft)	(%)	
Normal Operating Rage:												
(min)			-	-	0.3	-	-				20.0	
(max)			0.59	-	5.0	5.0	20.3				90.0	
Perimeter Gas Probes												
GP-1A	9/29/2023	11:07	0.55	22.0	10.6	52.4	6.8	30.2	13.3	3.3	66.6	
GP-2	9/29/2023	10:51	0.11	--	0.6	17.3	1.0	81.1	18.5	0.0	0.0	
GP-3	9/29/2023	10:38	0.05	--	0.0	7.4	15.4	77.2	12.9	17.9	100.0	
GP-4	9/29/2023	10:33	0.04	--	0.0	8.0	14.9	77.1	14.5	4.7	94.2	
GP-9	9/29/2023	10:27	0.07	--	0.0	10.0	9.3	80.7	13.7	0.4	8.8	
GP-10	9/29/2023	11:21	0.02	--	0.0	8.8	6.5	84.7				
GP-10P	9/29/2023	11:17	0.02	--	1.6	13.0	10.5	74.9				
GP-11	9/29/2023	11:28	0.42	--	0.0	20.2	4.6	75.2				
GP-12	9/29/2023	11:39	-0.22	--	3.7	39.7	0.2	56.4				
GP-13	9/29/2023	11:47	0.07	--	0.0	22.8	3.3	73.9				
GP-14	9/29/2023	12:14	0.00	--	0.0	18.9	3.4	77.7	18.7	3.4	68.2	
GP-15	9/29/2023	12:25	0.08	3.5	3.5	44.3	0.1	52.1	20.6	5.0	99.6	
GP-16	9/29/2023	10:20	0.59	0.1	0.0	3.5	18.8	77.7	22.3	15.0	99.8	
GP-17	9/29/2023	10:56	0.04	--	0.0	0.4	20.1	79.5	15.5	0.5	100.0	
GP-18	9/29/2023	10:43	0.05	--	0.0	0.2	20.2	79.6	9.9	0.0	9.2	
GP-19	9/29/2023	12:44	-0.01	--	0.0	2.1	17.8	80.1	15.2	0.2	0.0	
GP-20	9/29/2023	12:02	-0.02	--	0.0	1.5	17.3	81.2	13.4	0.0	3.8	
GP-21	9/29/2023	11:52	-0.02	--	0.0	1.5	18.7	79.8	17.9	2.9	0.0	

General Data:

	Beginning	Ending	Average
Weather:	Drizzle	Cloudy	Cloudy
Temperature, T (deg F):	50.4	56.9	53.65
Wind Speed (mph):	0	4	2
Wind Direction:	360	22.5	191.25
Barometric Pressure, P (in Hg):	29.99	29.98	29.99
24hr Baro.Trend (rising / falling / steady / unsteady)	Falling		

Starting Date:	9/29/2023
Starting Time:	10:20
Finishing Date:	9/29/2023
Finishing Time:	12:44
Monitored by:	J. Faille
Instruments:	GEM 2000
Calibration Date:	9/29/2023

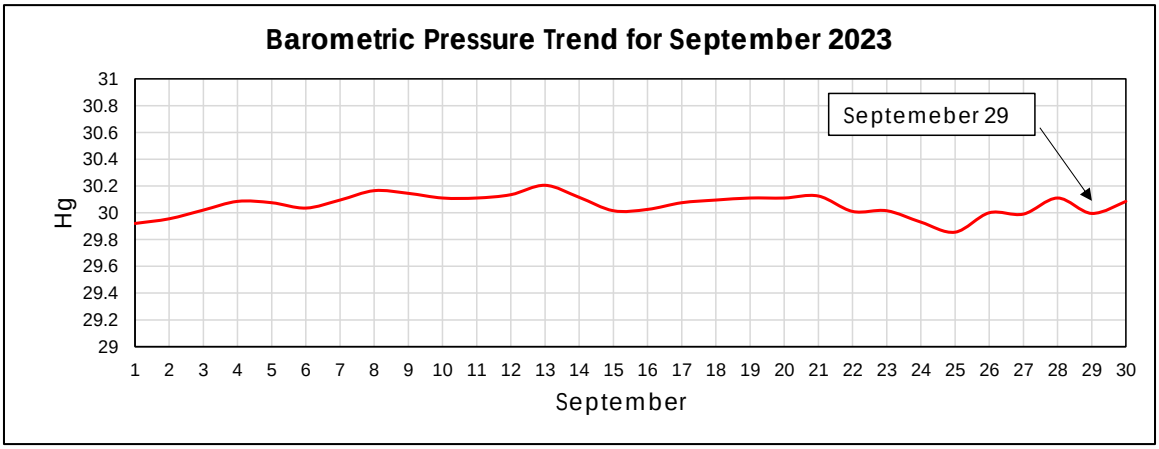
Headings:

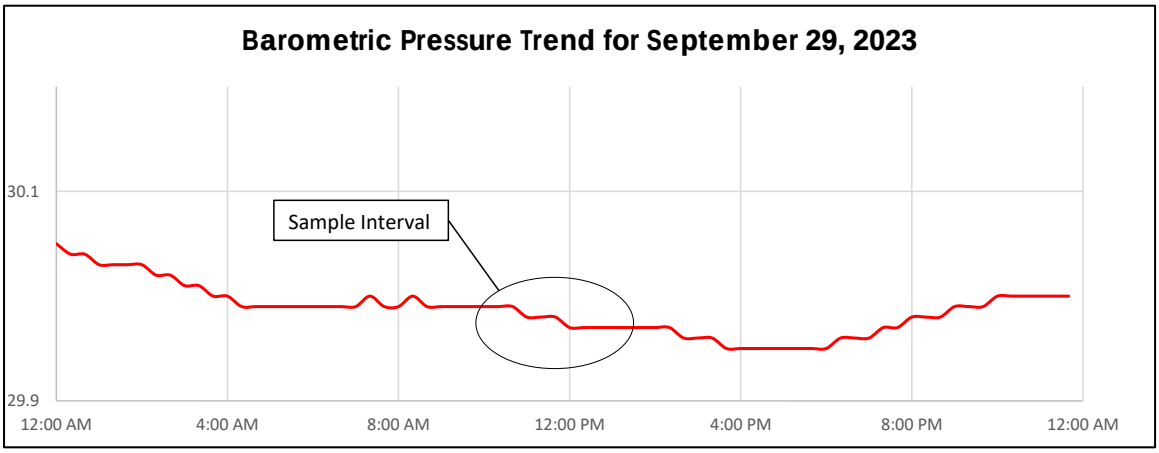
$P_{(well)}$	Relative Pressure
CH_4	Methane
CO_2	Carbon Dioxide
O_2	Oxygen
H_2O	Water Vapor
N_2	Nitrogen
TOC	Top of Casing

Notes:

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded as a comment if observed during sampling.
2. Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
3. Exposed Perforation = perforated pipe section not submerged by liquid.

Barometric Pressure Trend - September 2023
LRI Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (South Hill, WA)
Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL
Data Source:
https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-09-22/2023-09-22/monthly

Daily Data Source: Wunderground.com (South Hill, WA)
Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL
Data Source:
https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-09-29/2023-09-29/daily

LRI 304th Street Landfill
Landfill Gas Monitoring of On-site Buildings

Date: ~~5/25/2023~~ 9/31/23
Weather Conditions: overcast, slight breeze
Instrument: FID
Measured By: JTF

The atmosphere inside buildings at the landfill were monitored for possible intrusion of methane gas. Per WAC 173-351, concentrations of methane in on-site structures must not exceed 25% of the lower explosive limit (LEL). If off-site gas migration is suspected, concentrations of methane in off-site structures must not exceed 100 ppm methane.

The areas monitored included:

- The general overall work area
- Floor drains
- Underground conduit protrusions
- Closed areas where landfill gas could collect, such as under cupboards and inside closets

The gas detection instrument must be calibrated using calibration gas containing methane equal to 50 % LEL. Calibration must be performed before and after the survey is completed.

Checked boxes indicate that the survey revealed **no detectable methane**.

- [x] Main Office - individual office spaces, storage areas and within open crawl-space area.
- [x] Repair Shop – survey atmosphere conditions throughout (lower height levels).
- [x] Pay/Scale Booth – interior of building.

Background Concentrations:

Upwind 0 ppm
Downwind 0 ppm

JTF
Signature

September 19, 2023
File No. 04223001.15

Mr. George Duvendack
Region Engineer
Pierce County Recycling, Composting and Disposal, LLC dba LRI
17925 Meridian Street East
Puyallup, Washington 98375

Subject: **2023 Phase 2 Gas System Expansion Well Installation Report**
LRI Landfill, Graham, Washington

Dear George:

This letter report presents a summary of field activities performed by SCS Engineers (SCS) during the installation of 8 new interim landfill gas (LFG) wells at the LRI Landfill located in Graham, Washington. The LFG extraction wells were installed in general accordance with the 2023 Gas System Expansion design plans, approved well construction variance, and well completion schedule issued by SCS on July 14, 2023. Following completion of the well installation work, each well was given a standard well designation consistent with LRI naming convention as shown in Table 1.

Summary

SCS personnel were onsite from July 31, 2023 through August 10, 2023 to observe and document drilling and installation of 8 new interim LFG extraction wells and 4 new vertical LFG extraction wells performed by DBM Contractors, Inc. (DBM). Observations of the cuttings from well drilling were logged for each boring and are included on the attached boring and construction logs prepared by SCS. The following table presents a summary of the completed well installation data.

Table 1: Summary of Well Completion

Well ID	Design ID	Surface Elevation (ft-msl)(1)	Well Material	ECY Well Tag(2)	Design Depth (ft)	Installed Depth (ft)	Length of Screen (ft)
WE-368	IW-05	724.2	HDPE	BLP-685	40	42	20
WE-369	IW-06	715.4	HDPE	BLP-686	40	40	20
WE-370	IW-07	709.8	HDPE	BLP-687	40	41	20
WE-371	IW-08	707.09	HDPE	BLP-688	40	39.8	20
WE-372	IW-01	787.51	HDPE	BLP-692	40	41	20
WE-373	IW-02	780.89	HDPE	BLP-691	40	43	20
WE-374	IW-03	773.46	HDPE	BLP-690	40	40	20
WE-375	IW-04	765.41	HDPE	BLP-689	40	41	20
WE-376	VW-01	843.12	PVC	BLP-684	70	74	50
WE-377	VW-02	814.80	PVC	BLP-683	70	74	50
WE-378	VW-03	818.90	PVC	BLP-682	70	71	50
WE-379	VW-06	828.94	PVC	BLP-681	143	141	110
-	VW-04	Not Installed					
-	VW-05	855.52	Well not Installed–Drainage rock backfilled to a depth of 73-feet				

Notes:
1. Survey data provided by HRK prior to drilling and installation. Elevations are for the original staked locations and do not account for minor relocation at time of installation.
2. ECY Well Tags were provided by DBM upon completion of each well.

LFG Extraction Well Drilling and Installation

The borings for the LFG extraction wells were drilled using an IMT AF250 drill rig with a 10 foot long, 36-inch diameter core barrel. For each of the extraction wells, the borings were advanced to the design depths and over drilled up to 3-feet based on drilling conditions. Some drilling locations were located within the soil stockpile on top of the landfill, so for these locations the depths were adjusted to account for the extra soil placed on top of the original surface. The extraction wells were then constructed using 6-inch diameter SDR11 high density polyethylene (HDPE) pipe and fittings. Backfill was completed with 2-inch minus round rock, bentonite chips and granules, and clean soil as shown on the attached well construction logs. All construction materials were provided by DBM and verified by SCS prior to use. Drilling and installation of each well was completed in one day. A single borehole was left overnight, although this well was ultimately not installed and backfilled with drainage aggregate due to the high liquid level.

The wells were completed with approximately 5 feet of pipe stickup above the ground surface to allow for grading, landfill cover/closure, and connection to the existing LFG collection system. Additional 6-inch piping was used for well VW-06 to account for the additional soil stockpiled on the landfill surface. Upon completion, each well was issued a Washington State Department of Ecology (ECY) Well Tag in accordance with state regulations and connected to the existing gas collection and control system (GCCS).

The following variations to design were completed in conjunction with the well installations. Borings that were completed to within 4.0 feet of the design depth are not included on the following list.

- IW-08: This well was moved approximately 50-feet north and resurveyed by a licensed surveying prior to drilling. This extended the depth of boring to 40-feet.

- VW-05: Significant liquid was encountered at this location during the initial day of drilling. The approximate depth reached at the end of Day 1 was 110-feet and the hole was covered and left overnight. Upon returning to the boring the next day, the approximate depth of boring was 45-feet due to sluffing. Additional liquid was encountered when re-drilling at this location so a total depth of only 73-feet was achieved and no well was installed. Instead the boring was backfilled with a drainage aggregate to promote this liquid to drain back into the landfill over time.

- VW-04: It was determined that this boring would not be drilled and this well would not be installed after encountering the significant liquid issues at VW-05.

Closing

If you have any questions regarding the information presented in this letter or the attached boring logs, please do not hesitate to contact us.

Sincerely,

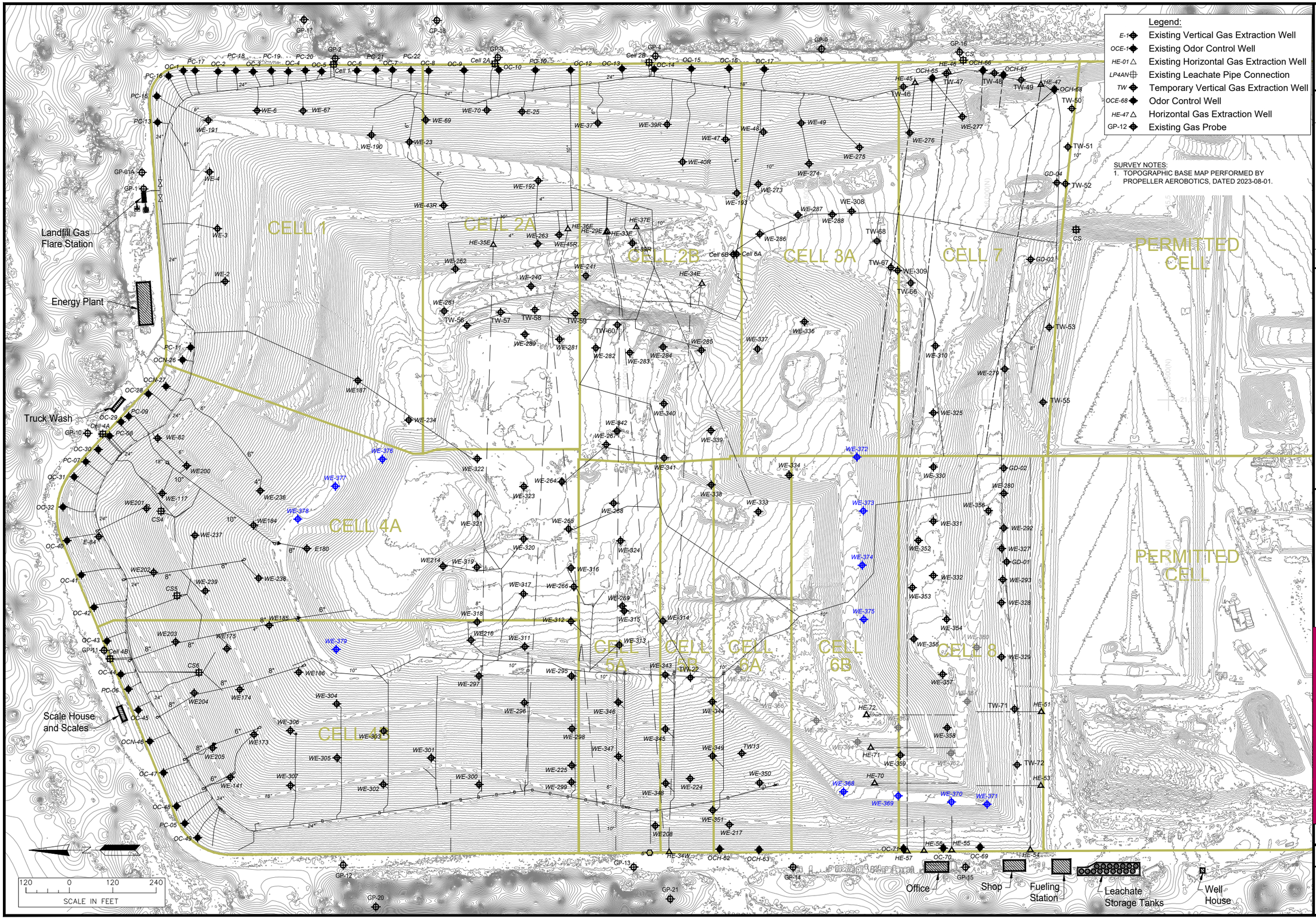
Travis Berndahl, EIT
Project Engineer
SCS Engineers

Karam Singh, P.E.
Senior Project Engineer
SCS Engineers

cc: Olivier Moi, LRI
Kevin Green, LRI
Samantha Winkle, LRI
Keith Johnston, TPCHD
Trevor Priestley, TPCHD
Bill Harris, Ecology
Derek Rockett, Ecology

Attachments:

2023 GCCS Improvements Phase 2 July – Existing Grades
2023 LFG Well Completion Logs



NO.	REVISION	DATE

SHEET TITLE: GCCS SITE PLAN

PROJECT TITLE: GCCS SITE PLAN
LRI LANDFILL
GRAHAM, WASHINGTON

LANDFILLING & RECYCLING

SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (503) 684-6948

PROJ. NO.	04215001.00
DSN. BY:	GDB
DWN. BY:	GDB / LEL
CHK. BY:	TAB
ACAD FILE:	2023-08-24-GCCS SITE PLAN
APP. BY:	KGL

DATE: SEPTEMBER 2023

SCALE: AS SHOWN

DRAWING NO. 1

LEGEND

PROPOSED EXISTING

- WE-1 or E-1 — VERTICAL GAS WELL
- OCE-1 — ODOR CONTROL WELL
- HE-01 — HORIZONTAL GAS COLLECTOR
- LP4AN — LEACHATE PIPE CONNECTION
- TW-68 — TEMPORARY VERTICAL GAS WELL
- IW-06 — PROPOSED INTERIM VERTICAL GAS WELL (JULY 2023)
- VW-04 — PROPOSED VERTICAL GAS WELL (JULY 2023)

VERTICAL GAS WELL (TYP VW-01 THRU VW-14) SEE DETAIL 1/C3 1/C4

SEE PROFILE -/C5

VERTICAL GAS WELL (TYP IW-01 THRU IW-04) SEE DETAIL 2/C3 1/C4

SEE PROFILE -/C6

WE-376 WE-377 WE-378 WE-379

WE-372 WE-373 WE-374 WE-375

WE-368 WE-369 WE-370 WE-371

GRAPHICAL REPRESENTATION OF WELL DISTRIBUTION

EXISTING LANDFILL FOOTPRINT

FUTURE CELL 9B1

FACILITY ENTRANCE

NOTES:
1. EXISTING TOPOGRAPHY PERFORMED BY PROPELLER AEROBOTICS, DATED 2023-08-01.
2. HORIZONTAL DATUM: ASSUMED LOCAL COORDINATE SYSTEM
   VERTICAL DATUM: BASED ON PIERCE COUNTY BENCH No 112-28, ELEVATION 660.29 NGVD 1929
3. LFG WELL LOCATIONS AND GCCS BASED ON INFORMATION PROVIDED BY LRI. UPDATED DECEMBER, 2021.

0 120 240
SCALE (ft)

NO.	REVISION	DATE
A	ISSUED FOR REVIEW	05/24/2023
B	ISSUED FOR CONSTRUCTION	06/23/2023
1	ISSUED FOR REVISION	07/14/2023
2	RECORD DRAWINGS	09/19/2023

SHEET TITLE: 2023 GCCS IMPROVEMENTS PHASE 2 JULY - OPERATIONS LAYER GRADES

PROJECT TITLE: 2023 GAS SYSTEM EXPANSION
PHASE 2 OF 3
LRI LANDFILL
GRAHAM, WASHINGTON

SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (503) 684-6948

ACAD FILE:	W:\GCCS Expan Ph2 2023 v0.0
APP. BY:	KGL
DWN. BY:	GDB/LEL
CHK. BY:	TAB
PROJ. NO.	04223001.14
DSN. BY:	JTF

DATE: SEPTEMBER 2023

SCALE: AS SHOWN

FIGURE NO. C2

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-368

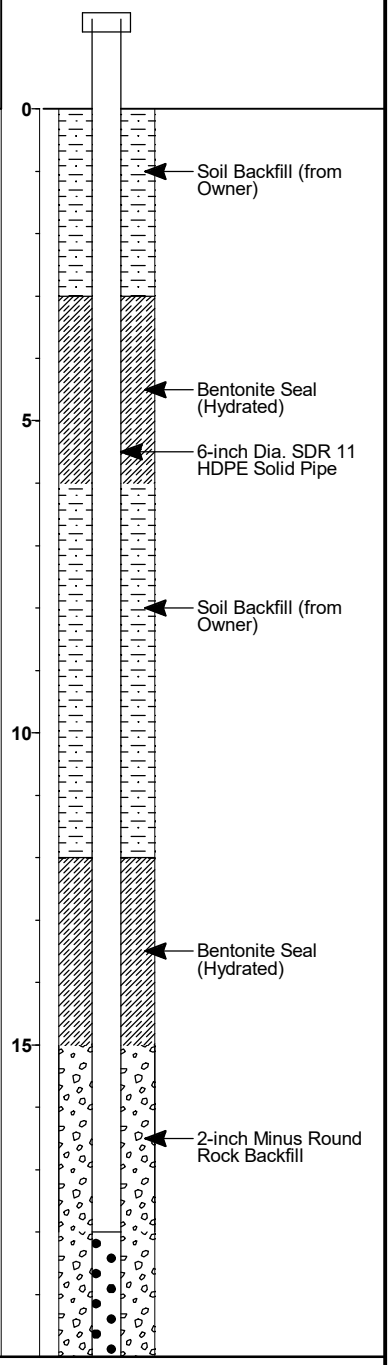
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-685. Drawing ID: 2023-C6. IW-05

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0					Soil		Soil Cover
3	10					REFUSE		8:42: Mixed refuse, (plastics, rubber, textiles, soil), light decomposition, slightly moist. Temperature = 102°F
5	17					REFUSE		8:46 Mixed refuse, light decomposition, black, brown, many colors, slightly moist.

Completion Detail



Drilling Company:	**DBM Contractors, Inc.**	Date Started:	**7/31/23**
Drilling Method:	**Core Barrel**	Date Ended:	**7/31/23**
Logged By:	**A. Deszo**	Boring Diameter:	**36-inch**
		Well Diameter:	**6-Inch**
		Time Started:	**08:30**
		Time Ended:	**10:30**
		Elevation:	**724.2 ft.**
		Total Depth:	**42.0 ft.**

STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

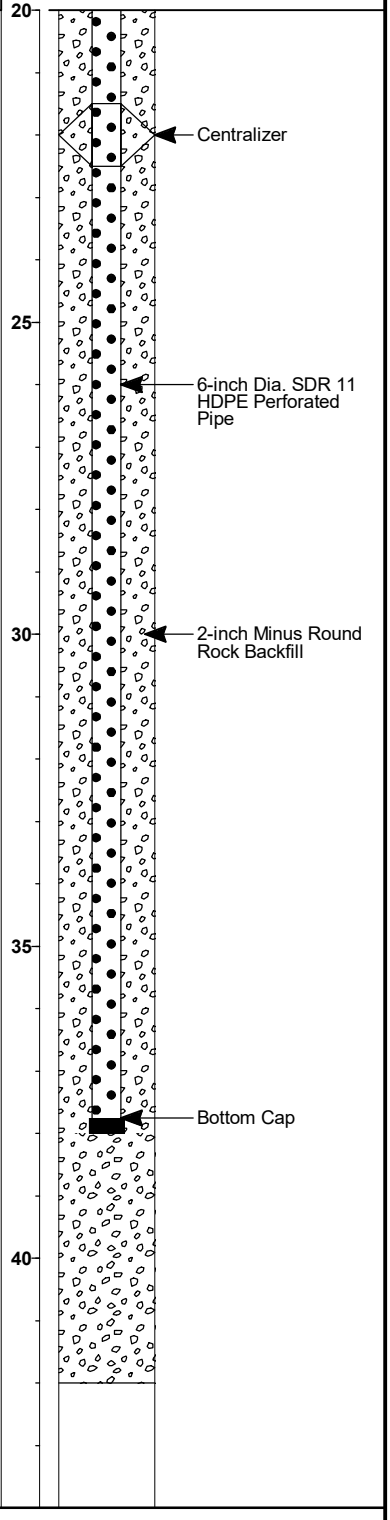
Well ID: WE-368

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							
	21							8:52: Temperature =99°F.
	22							
7	23							
	24							
	25							
8	26							
	27							
	28							
	29							
9	30					REFUSE		Mixed refuse, moderate decomposition, black/brown, few colors, semi-moist. Temperature =108°F.
	31							
	32							
10	33							
	34							
	35							
11	36							
	37							
	38							
12	39							
	40					REFUSE		
	41							
	42							42' depth taped, boring complete.
13	43							
	44							

Completion Detail



STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-369

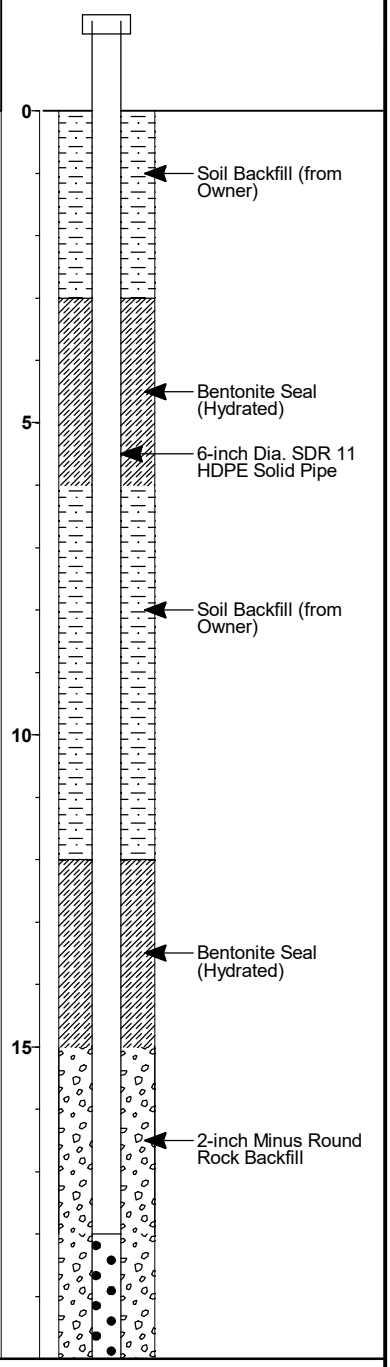
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-686. Drawing ID: 2023-C6. IW-06

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0							
	1							
	2							
1	3							Soil Cover
	4							
	5					Soil		
	6							
2	7					REFUSE		
	8							Mixed refuse (plastics, soils, rubber, textiles), light decomposition, browns and many colors, dry.
	9							
3	10							
	11							
	12							7:40: Temperature = 112°F
4	13							
	14							
	15							
5	16							
	17							
	18							
	19					REFUSE		Mixed refuse (soils, plastics, textiles, rubbers, wood debris), light decomposition, browns and many colors, slightly moist.
6	20							

Completion Detail



Drilling Company:	**DBM Contractors, Inc.**	Date Started:	**8/2/23**
Drilling Method:	**Core Barrel**	Date Ended:	**8/2/23**
Logged By:	**J. Faille**	Boring Diameter:	**36-inch**
		Well Diameter:	**6-inch**
		Time Started:	**07:30**
		Time Ended:	**12:50**
		Elevation:	**715.4 ft.**
		Total Depth:	**40.0 ft.**

STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

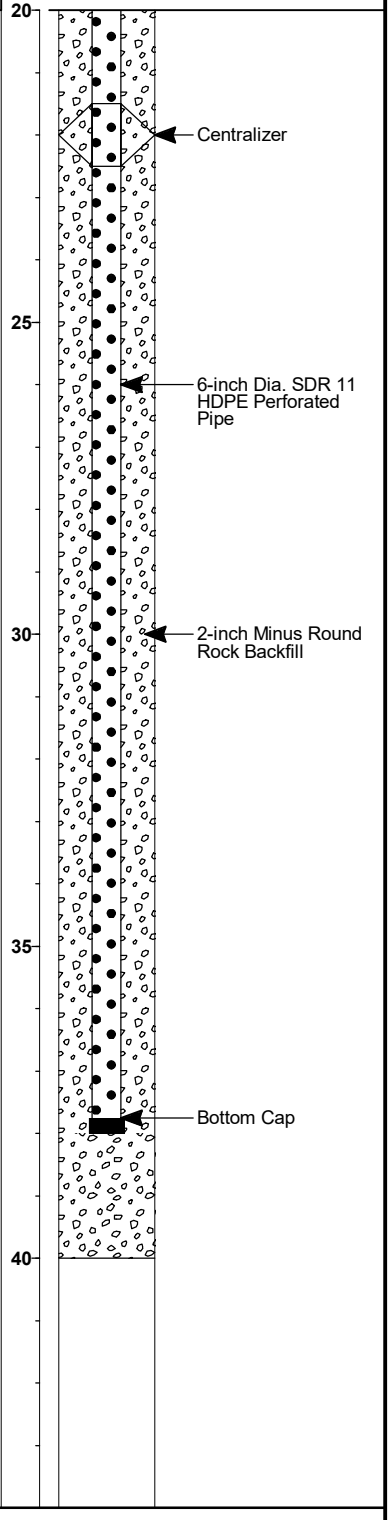
Well ID: WE-369

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							
	21							
	22							
7	23							
	24							
	25							
8	26					REFUSE		8:00: Temperature =111°F.
	27							
	28							
	29							
9	30							
	31							
	32							
10	33							
	34							
	35							Mixed refuse (plastics, textiles, soils), light to medium decomposition, dark browns and other colors, moist.
11	36							
	37							
	38							8:28: Temperature = 112°F.
12	39					REFUSE		
	40							8:30: 40' depth taped, boring complete.
	41							
	42							
13	43							
	44							

Completion Detail



STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-370

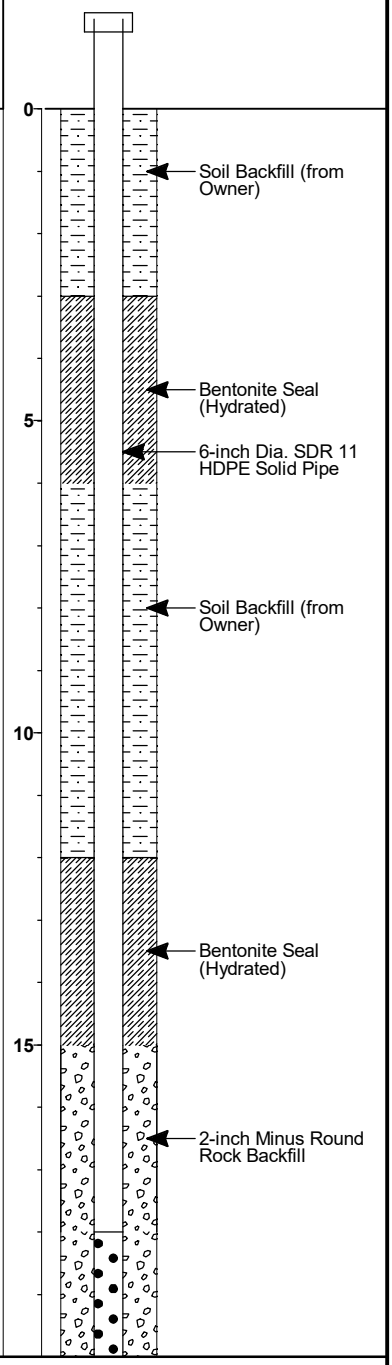
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-687. Drawing ID: 2023-C6. IW-07

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0							
	1							
	2							
	3							Soil Cover
1	4							
	5					Soil		
	6							
2	7							Mixed refuse (soils, organics, plastics), black, brown and several other colors.
	8					REFUSE		
	9							
3	10							
	11							Temperature = 111°F
	12							
4	13							
	14							
	15					REFUSE		
5	16							
	17							
	18							
	19							
6	20							

Completion Detail



Drilling Company:	**DBM Contractors, inc.**	Date Started:	**8/1/23**
Drilling Method:	**Core Barrel**	Date Ended:	**8/1/23**
Logged By:	**A. Deszo**	Boring Diameter:	**36-inch**
		Well Diameter:	**6-inch**
		Time Started:	**10:20**
		Time Ended:	**12:30**
		Elevation:	**709.8 ft.**
		Total Depth:	**41.0 ft.**

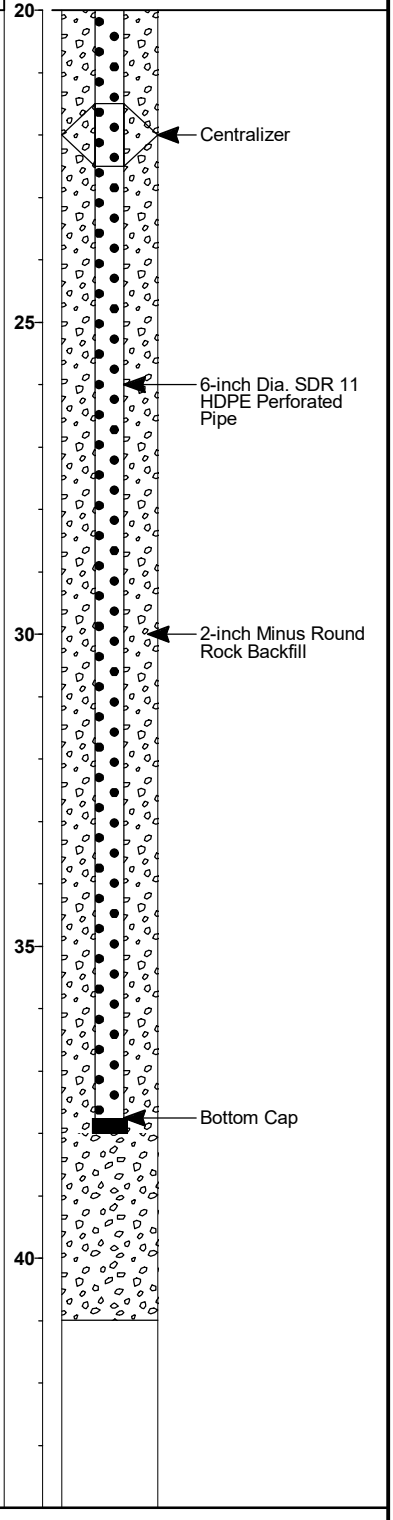
STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							
	21							
	22							
7	23					REFUSE		
	24							
	25							
8	26							Temperature =119°F. Mixed refuse (plastic), moderate decomposition, brown with few colors, slightly moist.
	27							
	28							
	29							
9	30					REFUSE		
	31							
	32							10:54: Temperature =118°F. Mixed refuse (plastic, rubbers, soils, organics), moderate decomposition, black and few colors, moist to dry.
10	33							
	34							
	35							
11	36							
	37							
	38							
	39							
12	40					REFUSE		
	41							Temperature =117°F. 11:06: 41' depth taped, boring complete.
	42							
13	43							
	44							

Completion Detail



SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-371

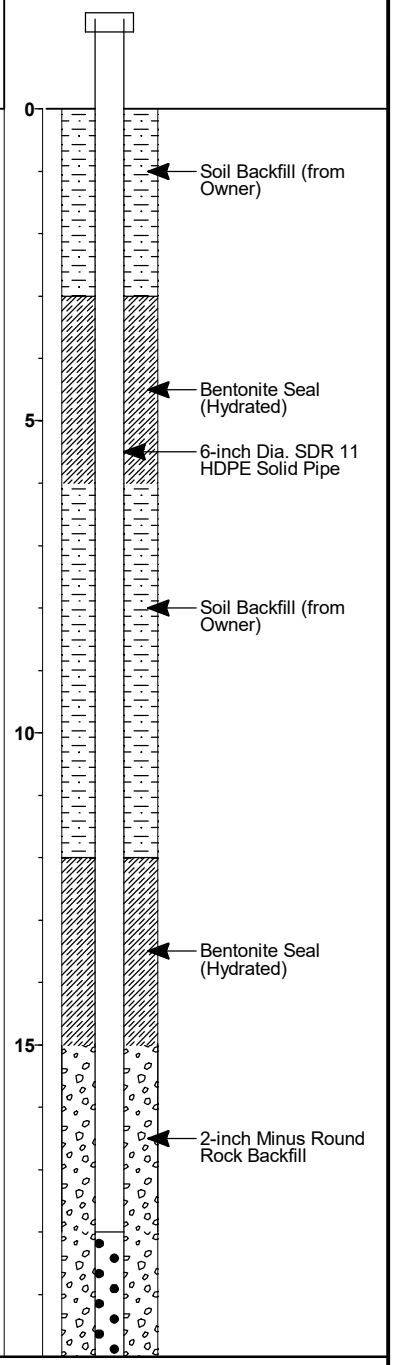
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-687. Drawing ID: 2023-C6. IW-08

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0							
	1							
	2							
1	3							Soil Cover
	4							
	5					Soil		
	6							
2	7							Mixed refuse (plastics, textiles), mild decomposition, many colors, black/brown soil.
	8							
	9							
3	10					REFUSE		
	11							
	12							Temperature = 84°F. Mixed refuse (wires, textiles) many colors, dry.
4	13							
	14							
	15					REFUSE		7:42: Slightly more decomposition.
5	16							
	17							
	18							Temperature = 102°F. Mixed refuse, less colors, brown.
6	19							
	20							

Completion Detail



Drilling Company:	**DBM Contractors, inc.**	Date Started:	**8/1/23**
Drilling Method:	**Core Barrel**	Date Ended:	**8/1/23**
Logged By:	**A. Deszo**	Boring Diameter:	**36-inch**
		Well Diameter:	**6-inch**
		Time Started:	**07:30**
		Time Ended:	**09:50**
		Elevation:	**707.1 ft.**
		Total Depth:	**40.0 ft.**

STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

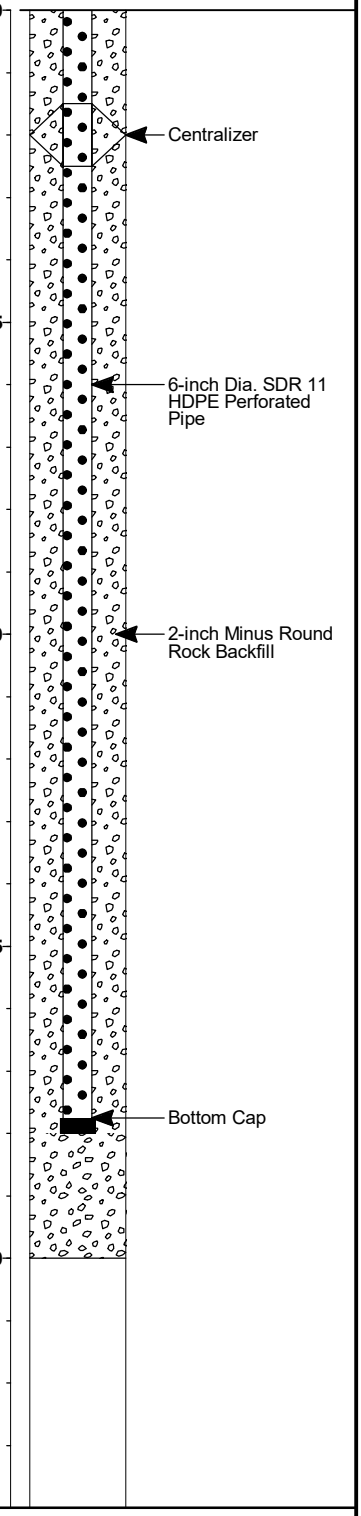
Well ID: WE-371

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							
	21							Mixed refuse (plastics), moderate decomposition, brown.
	22							
7	23							
	24							
	25							7:59: Temperature = 107°F. Mixed refuse, brown (less colors), dry.
8	26					REFUSE		
	27							Mixed refuse (plastics, textile, wire), moderate decomposition, slightly moist.
	28							
	29							
9	30							
	31							
	32							8:08: Temperature = 104°F. Mixed refuse, plastic, brown/black
10	33							
	34							
	35							Mixed refuse (plastics), moderate decomposition, black with a few colors, slightly moist.
11	36							
	37							
	38					REFUSE		
12	39							Temperature = 109°F. Mixed refuse, moderate decomposition, black with few colors, slightly moist.
	40							8:30: 40' depth taped. Boring complete.
	41							
	42							
13	43							
	44							

Completion Detail



STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-372

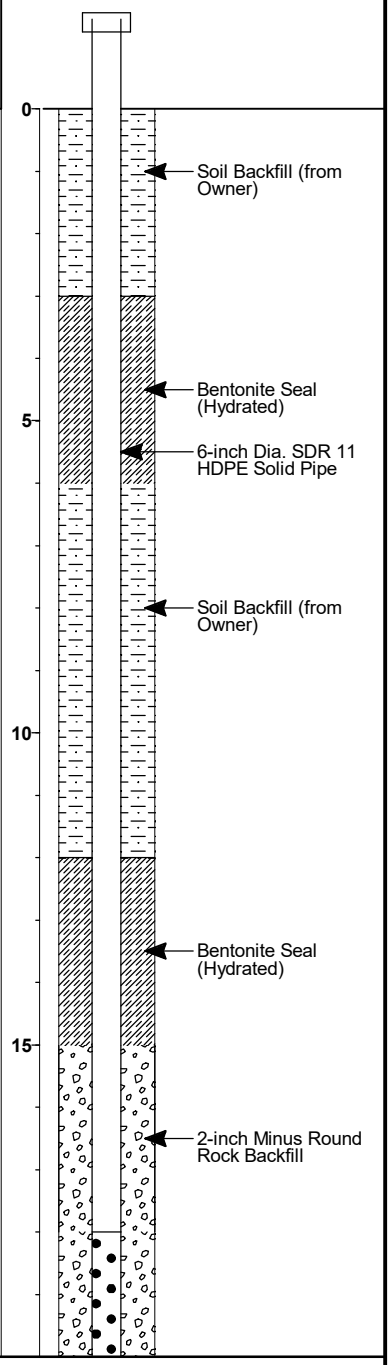
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-692. Drawing ID: 2023-C6. IW-01

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0							
	1							
	2							
1	3							Soil Cover
	4							
	5							
	6							
2	7							
	8					Soil		
	9							
3	10					REFUSE		Mixed refuse in dark, wet soil.
	11							
	12							
4	13							
	14							
	15							Temperature = 85°F
5	16							
	17							
	18					REFUSE		Mixed refuse (colored plastic, soils), wet.
	19							
6	20							

Completion Detail



Drilling Company:	**DBM Contractors, Inc**	Date Started:	**7/28/23**
Drilling Method:	**Core Barrel**	Date Ended:	**7/28/23**
Logged By:	**L. Walker**	Boring Diameter:	**36-inch**
		Well Diameter:	**6-inch**
		Time Started:	**10:00**
		Time Ended:	**12:00**
		Elevation:	**787.5 ft.**
		Total Depth:	**41.0 ft.**

STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

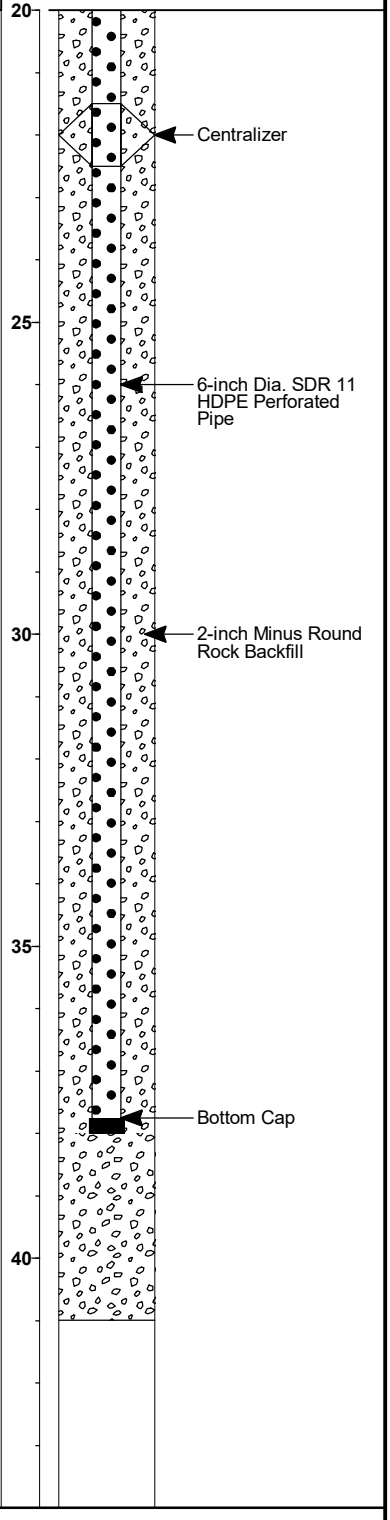
Well ID: WE-372

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							
	21							
	22					REFUSE		Mixed plastic refuse, heavy dark soil.
7	23							
	24							
	25							Temperature =85°F.
8	26							
	27							
	28							
	29							
9	30							
	31					REFUSE		Mixed plastic refuse, heavy, dark soil, wet.
	32							
10	33							
	34							
	35							Temperature =101°F.
11	36							
	37							
	38							
	39							
12	40					REFUSE		Wire, dark soil. Temperature =99°F.
	41							41' depth taped, boring complete.
	42							
13	43							
	44							

Completion Detail



STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-373

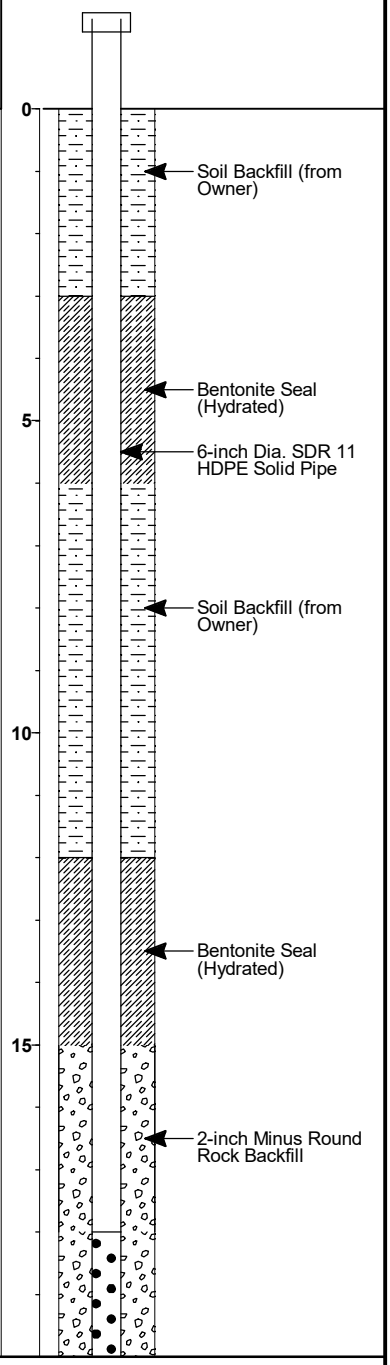
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-691. Drawing ID: 2023-C6. IW-02

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Description
0	0						
	1						
	2						
1	3						Soil Cover
	4						
	5					Soil	
	6						
2	7						
	8					REFUSE	Mixed refuse (colored plastic) with dark soil.
	9						
3	10						
	11						
	12						Temperature = 100.3°F
4	13						
	14						
	15						
5	16					REFUSE	Mixed refuse (colored plastic) with dark soil.
	17						
	18						
	19						
6	20						

Completion Detail



Drilling Company:	**DBM Contractors, inc**	Date Started:	**7/27/23**
Drilling Method:	**Core Barrel**	Date Ended:	**7/27/23**
Logged By:	**L. Walker**	Boring Diameter:	**36-inch**
		Well Diameter:	**6-inch**
		Time Started:	**10:30**
		Time Ended:	**13:00**
		Elevation:	**780.9 ft.**
		Total Depth:	**43.0 ft.**

STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

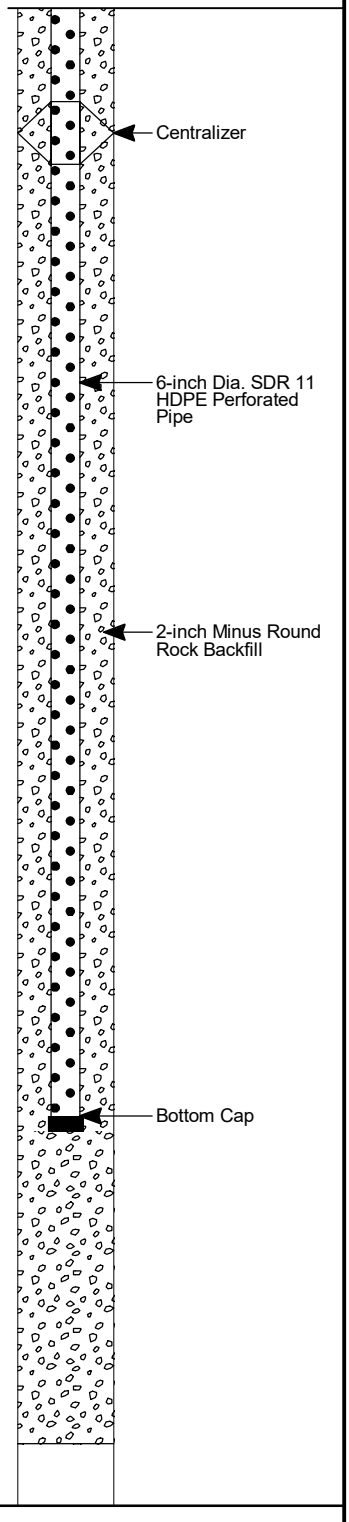
Well ID: WE-373

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							
	21							
	22							
7	23							Temperature =113°F.
	24							
	25					REFUSE		Tire refuse with light brown soil.
8	26							
	27							
	28							Temperature =116°F.
9	29							
	30							
	31							Mixed plastic refuse, tarps with dark brown soil.
	32							
10	33							
	34							
	35							
11	36							
	37							
	38							
12	39							Temperature =112°F.
	40					REFUSE		
	41							
	42							
13	43							43' depth taped, boring complete.
	44							

Completion Detail



SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-374

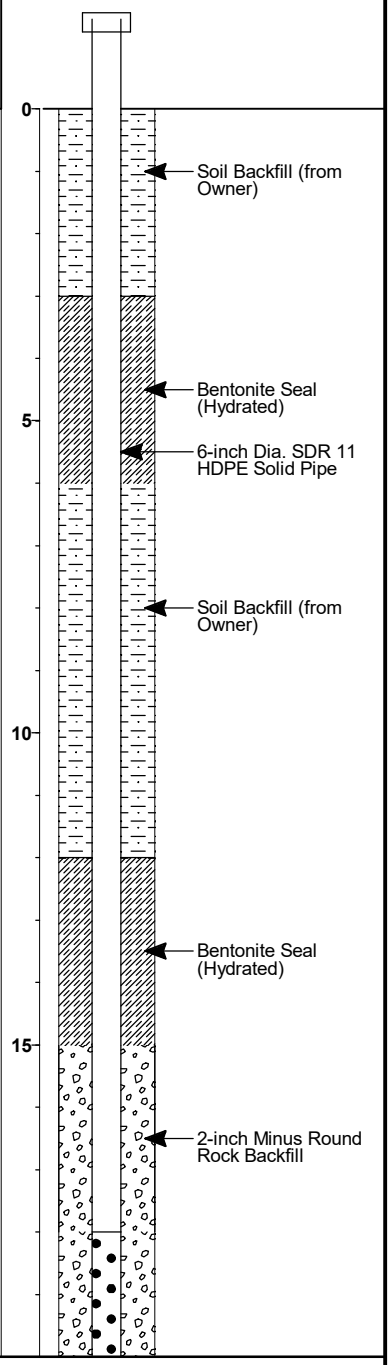
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-690. Drawing ID: 2023-C6. IW-03

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0							Mixed refuse.
	1					REFUSE		
	2							
1	3							Soil.
	4					SOIL		
	5							
	6							Mixed refuse.
2	7							
	8					REFUSE		Temperature = 63°F
	9							
3	10							
	11							
	12							
4	13							
	14							
	15							
5	16					REFUSE		Mixed refuse (plastic) with dark soil.
	17							
	18							
	19							
6	20							

Completion Detail



Drilling Company: **DBM Contractors, Inc.**
Drilling Method: **Core Barrel**
Logged By: **L. Walker**

Date Started: **7/27/23**
Date Ended: **7/27/23**
Boring Diameter: **36-inch**
Well Diameter: **6-inch**

Time Started: **07:30**
Time Ended: **10:00**
Elevation: **773.5 ft.**
Total Depth: **40.0 ft.**

STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

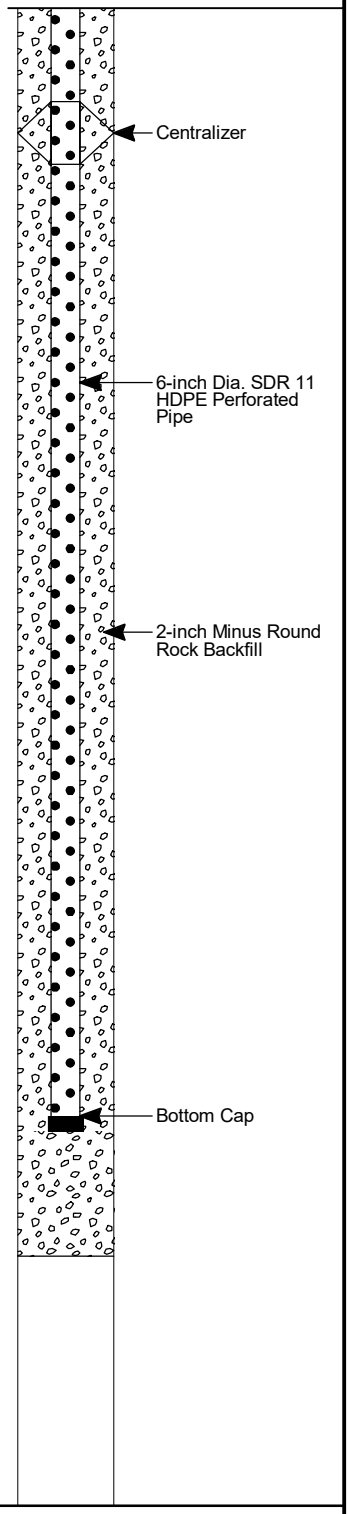
Well ID: WE-374

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Description
	20						
	21						Temperature =78°F.
	22						
7	23						
	24						
	25					REFUSE	Mixed plastic refuse with light brown soil, dry.
8	26						
	27						
	28						
	29						
9	30						
	31					REFUSE	Mixed plastic refuse with dark soil, moist.
	32						
10	33						Temperature =86°F.
	34						
	35						
11	36						
	37						
	38					REFUSE	Mixed refuse (colored plastic, tarp) with black soil, wet.
12	39						
	40						Temperature =97°F. 40' depth taped, boring complete.
	41						
	42						
13	43						
	44						

Completion Detail



SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-375

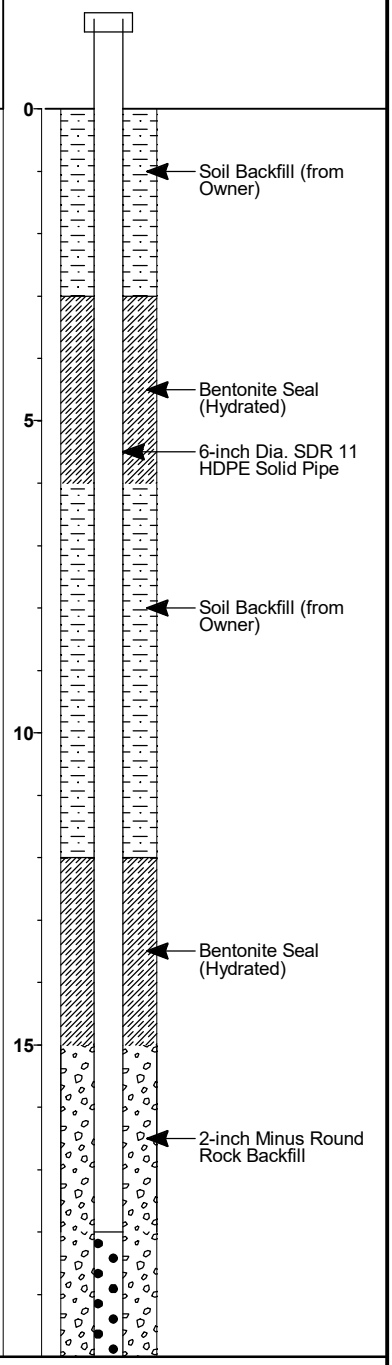
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-689. Drawing ID: 2023-C6. IW-04

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0					Soil		Soil Cover
	1							
	2							
1	3							
	4							
	5							
	6							
2	7							
	8							Temperature = 91°F
	9							
3	10							
	11							
	12					REFUSE		Mixed refuse (plastic) with dark soil, wet.
4	13							
	14							
	15							
5	16							
	17							Temperature =90°F.
	18							
	19							
6	20							

Completion Detail



Drilling Company:	**DBM Contractors, Inc.**	Date Started:	**7/26/23**
Drilling Method:	**Core Barrel**	Date Ended:	**7/26/23**
Logged By:	**L. Walker**	Boring Diameter:	**36-inch**
		Well Diameter:	**6-inch**
		Time Started:	**10:00**
		Time Ended:	**12:30**
		Elevation:	**765.4 ft.**
		Total Depth:	**41.0 ft.**

STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

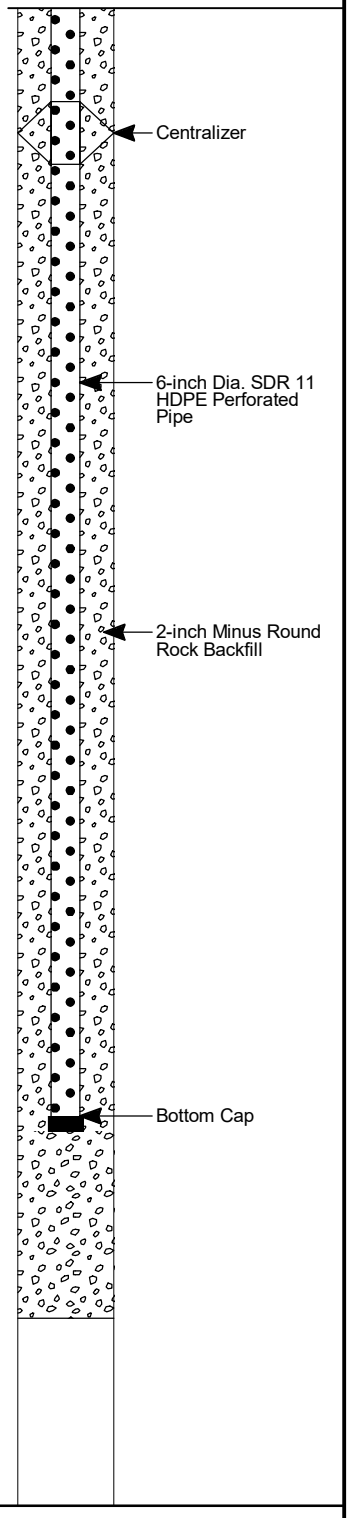
Well ID: WE-375

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20					REFUSE		Mixed refuse (plastic) with dark soil.
	21							
	22							Temperature =88°F.
7	23							
	24							
	25							
8	26					REFUSE		Mixed refuse (plastic) with light brown soil.
	27							
	28							
	29							
9	30							
	31							
	32							Temperature =98°F.
10	33							
	34							
	35							
11	36							
	37							
	38							Mixed refuse (plastic) with dark soil.
12	39					REFUSE		Mixed refuse (plastic) with black soil, wet. Temperature =109°F.
	40							
	41							41' depth taped, boring complete.
13	42							
	43							
	44							

Completion Detail



SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-376

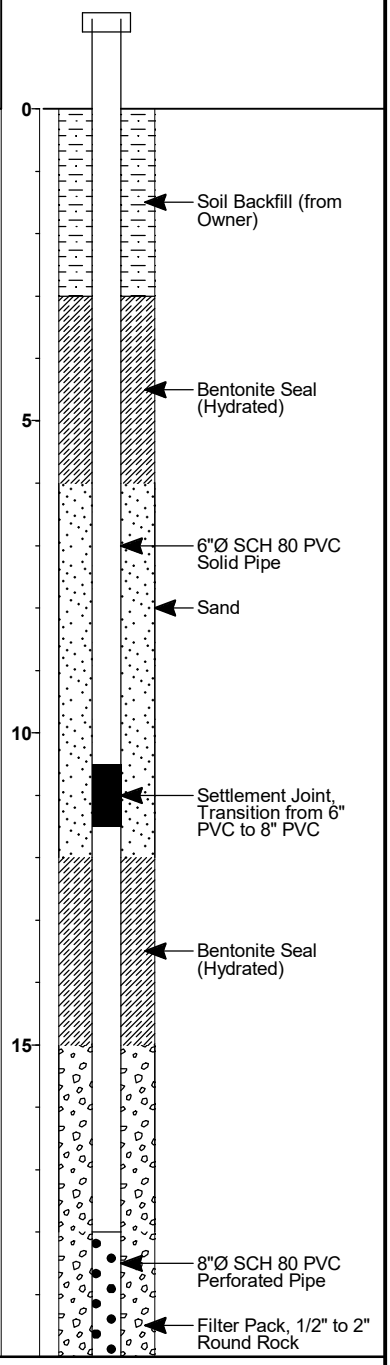
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-684. Drawing ID: 2023-C5. VW-01

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0					SM-GM		Cover soil.
	1							
	2							
1	3							
	4							
	5							
	6							
2	7							
	8							
	9							
3	10							
	11							
	12							
4	13							
	14							
	15							
5	16							
	17							
	18							
6	19							
	20							

Completion Detail



Drilling Company: **DBM Contractors, Inc.**
Drilling Method: **Core Barrel**
Logged By: **A. Deszo**

Date Started: **8/7/23**
Date Ended: **8/7/23**
Boring Diameter: **36-inch**
Well Diameter: **8-inch**

Time Started: **08:00**
Time Ended: **12:00**
Elevation: **843.1 ft.**
Total Depth: **74.0 ft.**

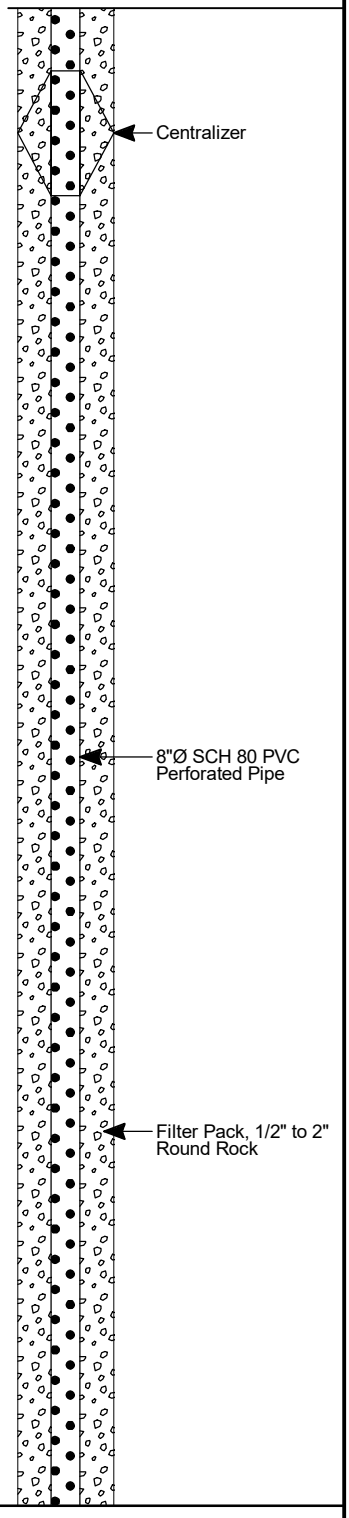
STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							
	21							
	22							
7	23							
	24							
	25					SM-GM		
8	26							
	27							
	28							
	29							
9	30							
	31					REFUSE		Mixed refuse (organics, plastic), moderate decomposition, black, brown, few colors, dry.
	32							
10	33							
	34							
	35							
11	36							
	37							
	38							
12	39							
	40					REFUSE		
	41							
	42							
13	43							
	44							

Completion Detail



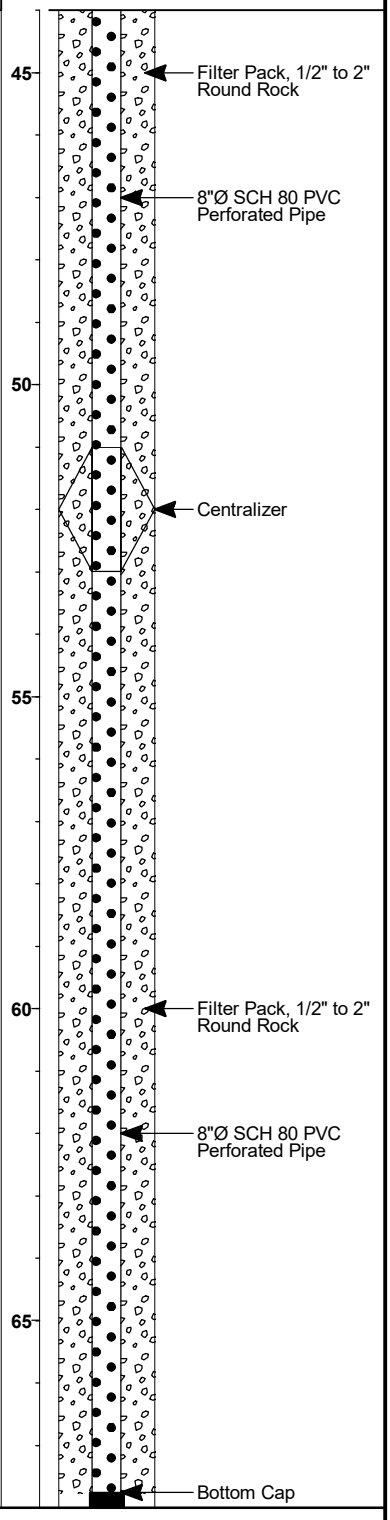
STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	44							
	45							8:24: Temperature = 91°F. Mixed refuse (plastics, organics, heavy soil), moderate decomposition, few colors.
14	46							
	47							
	48					REFUSE		
15	49							
	50							
	51							8:34: Temperature = 96°F.
16	52							
	53							
	54							
	55							
17	56							
	57							
	58							
18	59							
	60					REFUSE		
	61							
19	62							8:58: Temperature = 100°F. Mixed refuse (plastics), heavy decomposition, black, few colors, dry.
	63							
	64							
	65							
20	66							Mixed refuse (plastics), heavy decomposition, black, grey, slightly moist.
	67							
	68							

Completion Detail



SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

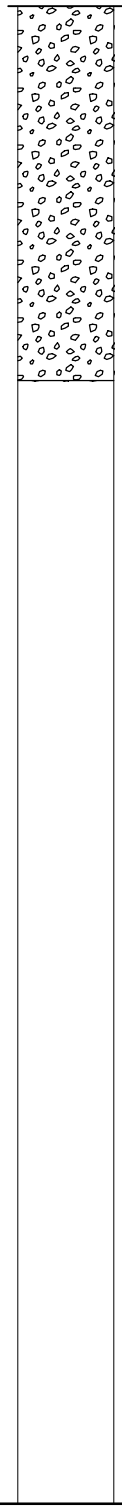
Well ID: WE-376

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	68							Encountered road and drilled through to trash below.
21	69							
	70					REFUSE		
	71							
22	72							Mixed refuse (plastics), heavy decomposition, black, few colors.
	73							
	74							9:22: Temperature = 108°F 9:22: Boring complete; 74 foot depth verified with sounding tape.
23	75							
	76							
	77							
	78							
24	79							
	80							
	81							
25	82							
	83							
	84							
26	85							
	86							
	87							
	88							
27	89							
	90							
	91							
28	92							

Completion Detail



SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-377

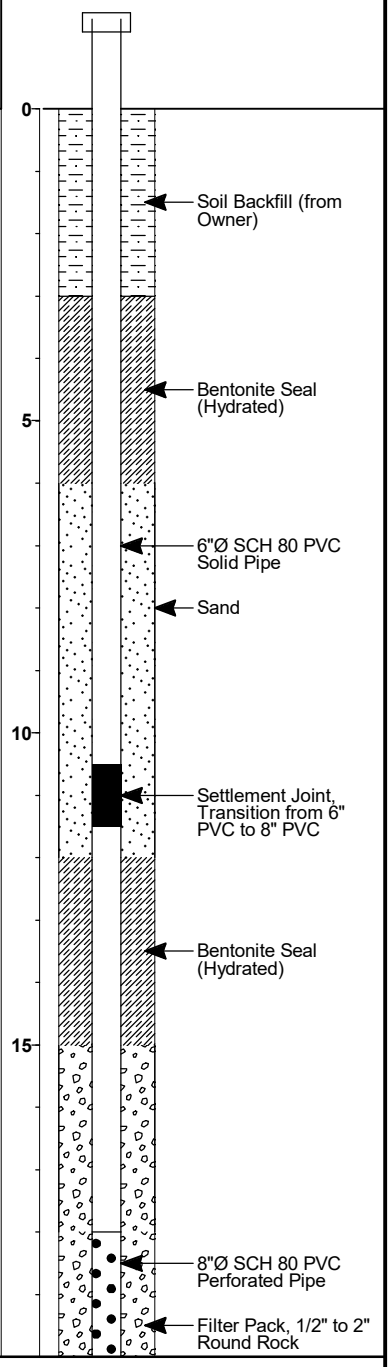
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-683. Drawing ID: 2023-C5. VW-02

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0					SM-GM		Cover soil.
	15					REFUSE		7:46: Temperature = 87°F Mixed refuse (organics, plastic), moderate to heavy decomposition, black, brown, few colors, slightly moist.

Completion Detail



Drilling Company: **DBM Contractors, Inc.**
Drilling Method: **Core Barrel**
Logged By: **A. Deszo**

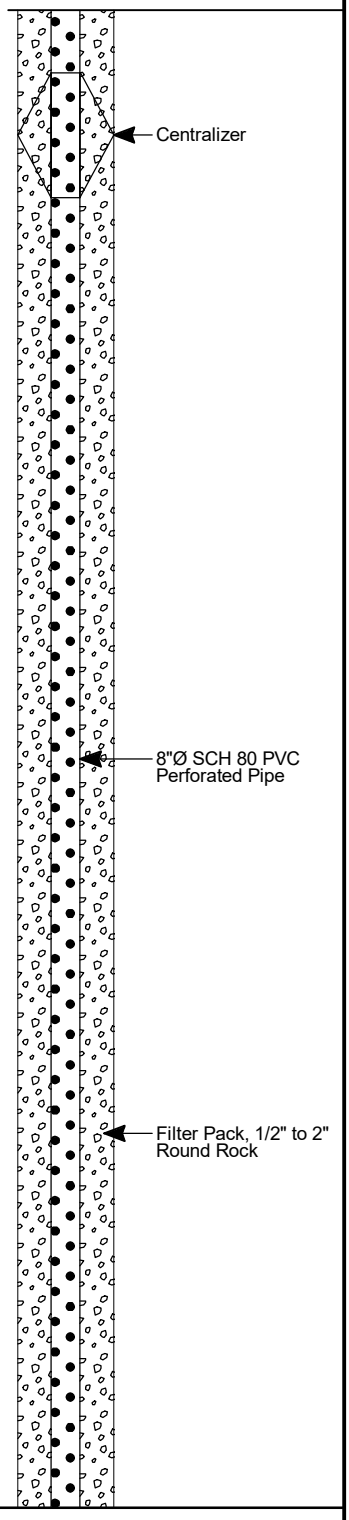
Date Started: **8/8/23**
Date Ended: **8/8/23**
Boring Diameter: **36-inch**
Well Diameter: **8-inch**
Time Started: **07:35**
Time Ended: **11:00**
Total Depth: **74.0 ft.**

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							
	21							
	22							
7	23							
	24							
	25					REFUSE		Increase in moisture content.
8	26							
	27							
	28							
	29							
9	30							
	31							
	32							
10	33							
	34							
	35							8:14: Temperature 99°F.
11	36							Mixed refuse (organics, plastics), moderate to heavy decomposition, black, few colors, moist.
	37							
	38							
	39							
12	40					REFUSE		
	41							
	42							
13	43							
	44							

Completion Detail

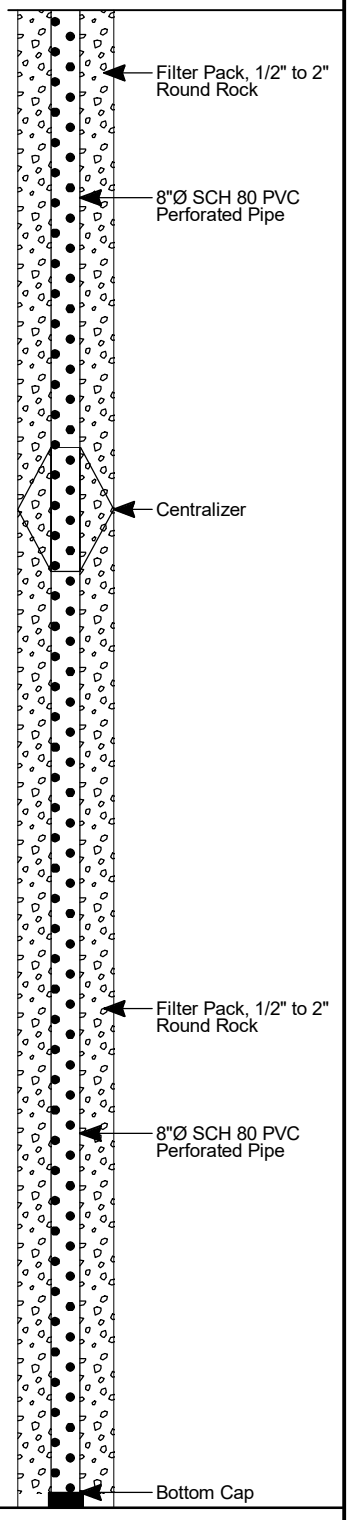


STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	44							
	45							
14	46					REFUSE		8:37: Temperature = 106°F. Mixed refuse (plastics, organics), moderate to heavy decomposition, black, few colors, moist, heavy odors.
	47							
	48							
15	49							
	50							
	51							
16	52							
	53							
	54							
	55							
17	56							
	57							
	58							
18	59							
	60					REFUSE		
	61							8:58: Temperature = 115°F. Mixed refuse (some plastics), heavy decomposition, black, brown, few colors, slightly moist, odors.
19	62							
	63							
	64							
	65							
20	66							Increasing moisture content, moist to wet.
	67							
	68							



2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description	Completion Detail
	68								
21	69							Temperature = 117°F.	
	70					REFUSE			70
	71								
22	72								
	73								
	74							Encountered road bed, and went through black soil, plastic, heavy decomposition, moist to wet. 9:26: Boring complete; 74 foot depth verified with sounding tape.	
	75								75
23	76								
	77								
	78								
24	79								
	80								80
	81								
25	82								
	83								
	84								
26	85								85
	86								
	87								
	88								
27	89								
	90								90
	91								
28	92								

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-378

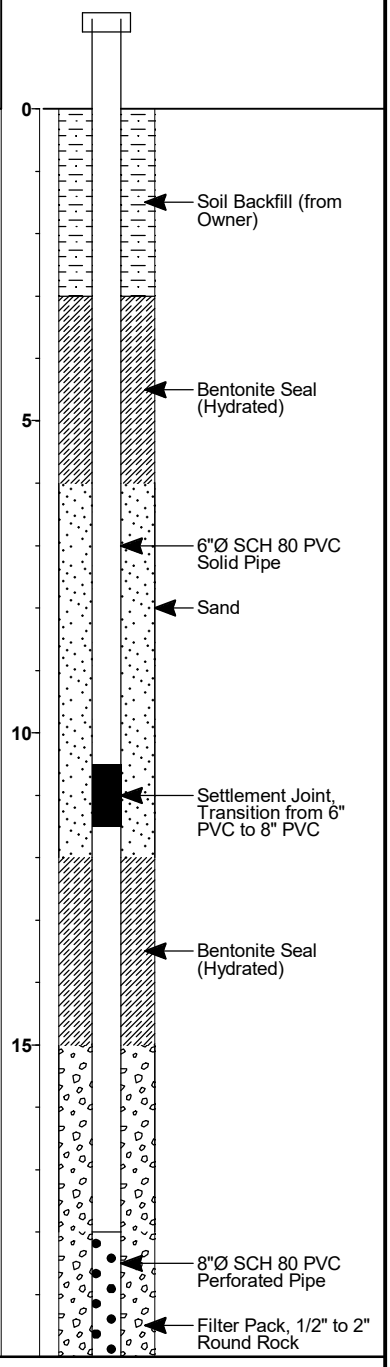
2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-682. Drawing ID: 2023-C5. VW-03

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
0	0					SM-GM		Cover soil.
	17					REFUSE		

Completion Detail



Drilling Company: **DBM Contractors, Inc.**
Drilling Method: **Core Barrel**
Logged By: **J. Faille**

Date Started: **8/9/23**
Date Ended: **8/9/23**
Boring Diameter: **36-inch**
Well Diameter: **8-inch**

Time Started: **07:30**
Time Ended: **10:30**
Elevation: **818.9 ft.**
Total Depth: **71.0 ft.**

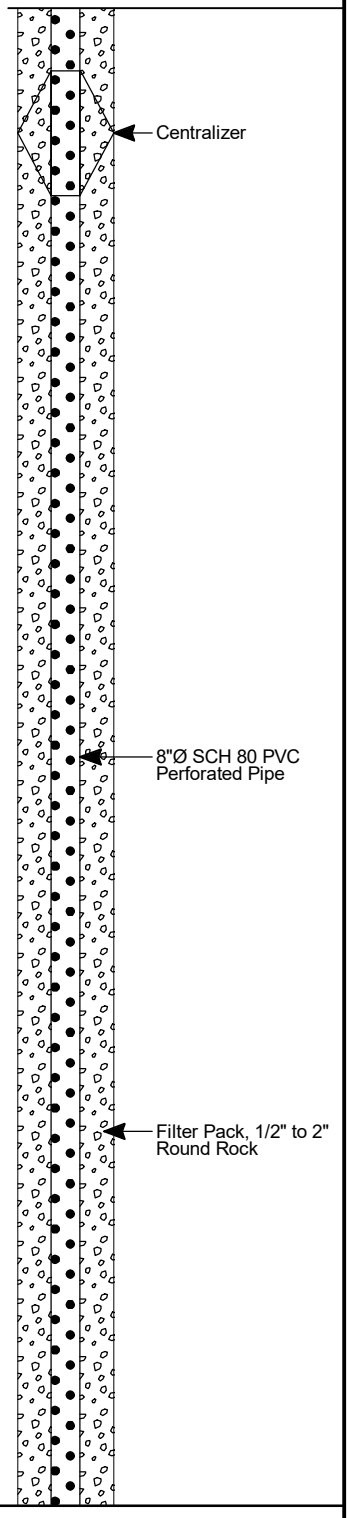
STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							Mixed refuse (plastics, rubber, shredded textiles, soil), moderate to heavy decomposition, black and some colors, moist.
	21							
	22							
7	23							
	24							
	25					REFUSE		
8	26							
	27							8:00: Temperature = 76°F.
	28							
	29							
9	30							
	31							
	32							Mixed refuse (plastics, textiles, wire), moderate to heavy decomposition, black, few colors, moist.
10	33							8: 08: Temperature = 88°F.
	34							
	35							
11	36							
	37							
	38							
	39							8:12: Encountered construction debris, plywood, increased moisture content to very moist.
12	40					REFUSE		
	41							
	42							
13	43							8:20: Temperature = 101°F.
	44							

Completion Detail



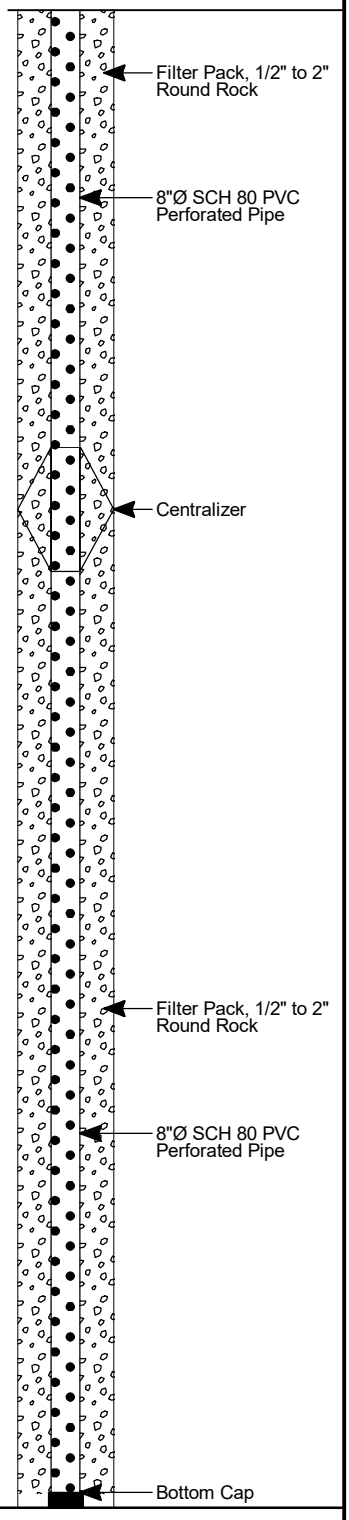
STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	44							
	45							Mixed refuse (plastics, textiles, rubber, rope, wood debris), mild decomposition, black, brown, many colors, moist.
14	46							
	47							
	48							
15	49							
	50							
	51							
	52							8:30: Temperature = 111°F.
16	53							
	54							Mixed refuse (plastics, wood, textiles, soil, foam), moderate decomposition, brown, many colors, moist.
	55							
17	56							
	57							
	58							
18	59							8:46: Temperature = 120°F
	60					REFUSE		
	61							
19	62							
	63							
	64							
20	65							9:01: Temperature = 116°F
	66							Mixed refuse (plastics, foam, rubber, textiles), moderate decomposition, black, brown, many colors, moist.
	67							
	68							

Completion Detail



SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-378

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
21	68								
	69								
	70					REFUSE			70
	71							9:07: Boring complete; 71 foot depth verified with sounding tape.	
22	72								
	73								
	74								
	75								75
23	76								
	77								
	78								
24	79								
	80								80
	81								
25	82								
	83								
	84								
26	85								85
	86								
	87								
	88								
27	89								
	90								90
	91								
28	92								

SCS ENGINEERS

BORING LOG

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

Well ID: WE-379

2023 GCCS Expansion Phase 2 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-681. Drawing ID: 2023-C5. VW-06

Depth		Sample Information							Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description	
0	0					SM-GM			0
	1								
	2								
1	3								
	4								
	5								5
	6								
2	7								
	8								
	9								
3	10							Cover soil.	10
	11								
	12								
4	13								
	14								
	15								15
5	16								
	17								
	18								
	19								
6	20								

Completion Detail:
- Soil Backfill (from Owner)
- 6"Ø SCH 80 PVC Solid Pipe
- Bentonite Seal (Hydrated)
- Sand

Drilling Company:	**DBM Contractors, Inc.**
Drilling Method:	**Core Barrel**
Logged By:	**A. Deszo**

Date Started:	**8/10/23**	Time Started:	**07:30**
Date Ended:	**8/10/23**	Time Ended:	**15:40**
Boring Diameter:	**36-inch**	Elevation:	**828.5 ft.**
Well Diameter:	**8-inch**	Total Depth:	**141.0 ft.**

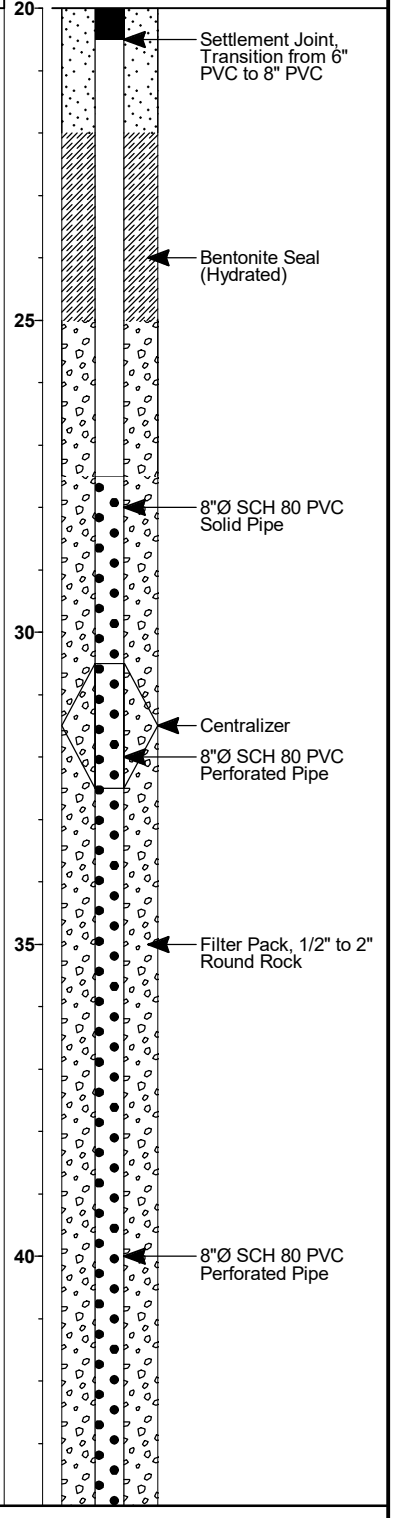
STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	20							
	21							
	22							
7	23							
	24							
	25					SM-GM		Cover soil.
8	26							
	27							
	28							
	29							
9	30							
	31							
	32							
10	33							
	34							
	35					REFUSE		7:35: Temperature = 80°F. Mixed refuse (plastics), heavy decomposition, black, brown, few colors, dry.
11	36							
	37							
	38							
	39							
12	40					REFUSE		7:54: Temperature = 90°F. Mixed refuse (plastics, organics), heavy decomposition, black, few colors, dry.
	41							
	42							
13	43							
	44							

Completion Detail

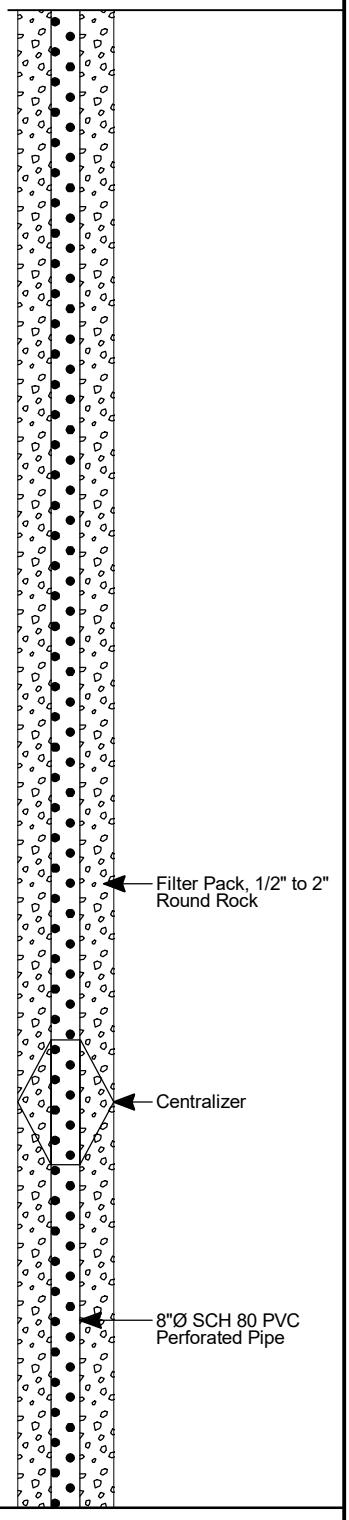


2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	44							
	45							Temperature = 99°F. Mixed refuse (plastic), heavy decomposition, black, no color, slightly moist.
14	46							
	47							
	48					REFUSE		
	49							Mixed refuse (plastic), heavy decomposition, black, no color, slightly moist.
15	50							
	51							
	52							
16	53							
	54							8:28: Mixed refuse.
	55							
17	56							
	57							Temperature = 100°F.
	58							
18	59							
	60					REFUSE		
	61							
19	62							
	63							
	64							
20	65							
	66							
	67							9:04: Temperature = 103°F. Mixed refuse (plastics), heavy decomposition, black, few colors.
	68							

Completion Detail

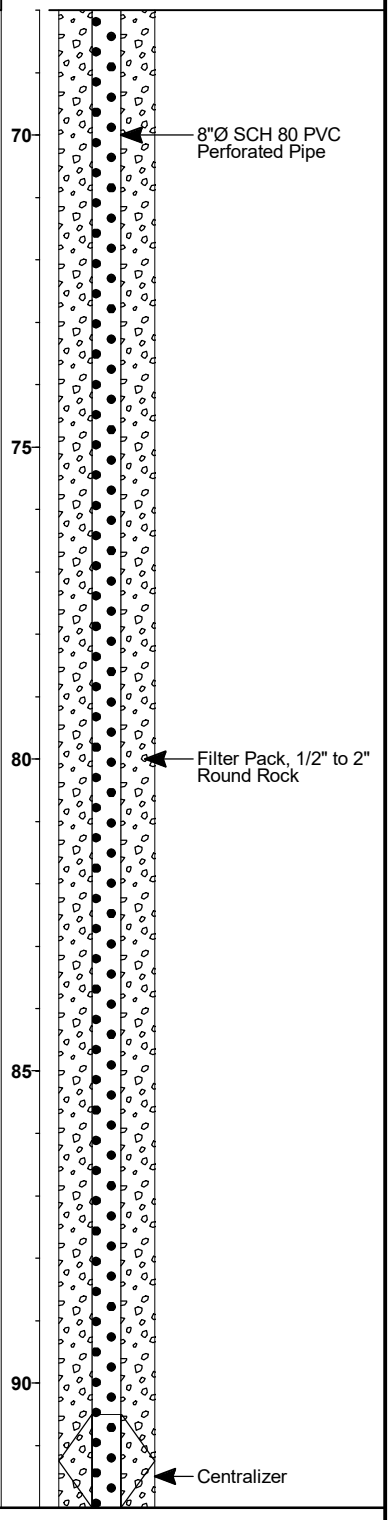


2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
21	68							
	69							
	70					REFUSE		
	71							
22	72							Mixed refuse (organics, plastics), heavy decomposition, black, slightly moist, steam and odors present.
	73							
	74							
	75							
23	76							9:32: Temperature = 114°F
	77							
	78							Mixed refuse (textiles, plastics), black, brown, few colors, slightly moist, steam and odors present.
24	79							
	80					REFUSE		
	81							
25	82							
	83							
	84							10:04: Temperature = 115°F
	85							
26	86							Mixed refuse (textiles, plastics, organics), heavy decomposition, black, brown, some colors, steam and odors present.
	87							
	88							
27	89							
	90					REFUSE		
	91							
28	92							

Completion Detail



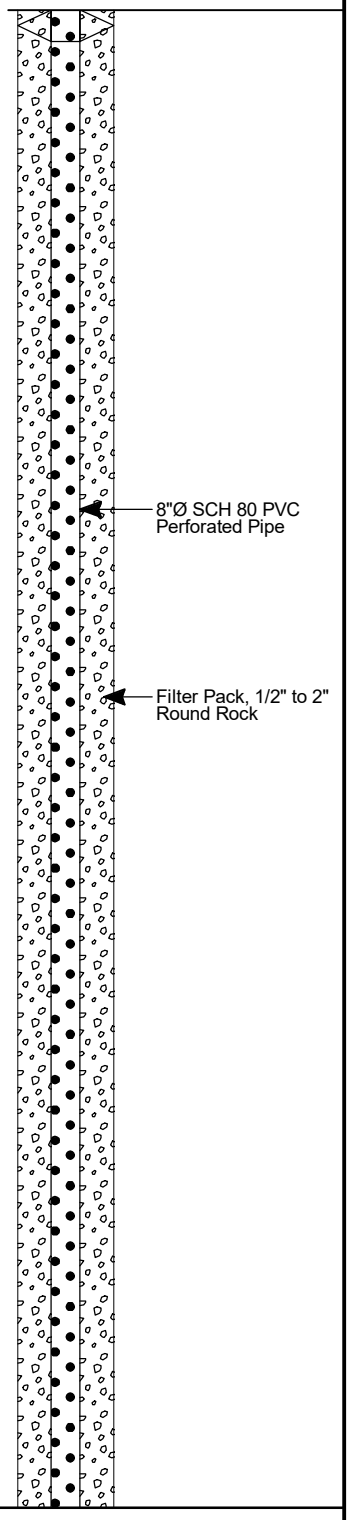
STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description
	92							
	93							
	94							
29	95							
	96							
	97							
	98							
30	99							
	100					REFUSE		
	101							
31	102							
	103							
	104							10:46: Temperature = 116°F. Mixed refuse (plastics), heavy decomposition, black, few colors, moist to dry, steam and odors present.
32	105							
	106							Black refuse, soil, organics, heavy decomposition.
	107							
33	108							
	109							
	110							11:37: Temperature = 135°F. Decomposed black organics, little moisture, steam and odors present.
34	111							
	112							
	113							
	114							
35	115					REFUSE		
	116							

Completion Detail



STANDARD_LOG 04223001.15 - LRI 304 PHASE 2 WELLS.GPJ STD_LOG.GDT 9/1/23

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.	Graphic Log	Description	Completion Detail
	116								
	117								
36	118							Increase in moisture content, saturated.	
	119								
	120					REFUSE		12:09: Temperature 124°F.	120 — Filter Pack, 1/2" to 2" Round Rock; Centralizer; 8"Ø SCH 80 PVC Perforated Pipe
37	121								
	122								
	123								
	124								
38	125							Mixed refuse (plastics, organics), heavy decomposition, black, some colors, moist to dry.	125
	126								
	127								
39	128								Filter Pack, 1/2" to 2" Round Rock
	129								
	130					REFUSE			130
40	131								
	132								
	133								
	134								
41	135							12:47: Temperature 131°F. Mixed refuse (plastics, organics), heavy decomposition, black with few colors.	135
	136								
	137								Bottom Cap
42	138								
	139								
	140								

2023 GCCS Expansion Phase 2 - LRI Landfill

JOB NUMBER: 04223001.15

Depth (meters)	Depth (feet)	Sample Information: Sample Location	Sample Information: Sample Number	Sample Information: Blow Counts	Sample Information: OVM (ppm)	Sample Information: USCS Soil Class.	Graphic Log	Description	Completion Detail
	140								140
43	141							13:20: Boring complete; 141 foot depth verified with sounding tape.	
	142								
	143								
	144								
44	145								145
	146								
	147								
45	148								
	149								
	150								150
46	151								
	152								
	153								
47	154								
	155								155
	156								
	157								
48	158								
	159								
	160								160
49	161								
	162								
	163								
	164								