

First 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

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

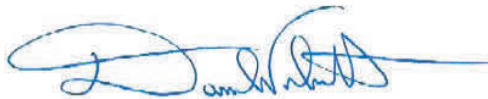
This document is the First Quarter 2023 Monitoring Report for the LRI Landfill located in Graham, Washington. Activities this quarter included monitoring the volume and specific conductance of water pumped from the leak detection/collection system, quarterly groundwater monitoring, monthly landfill gas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



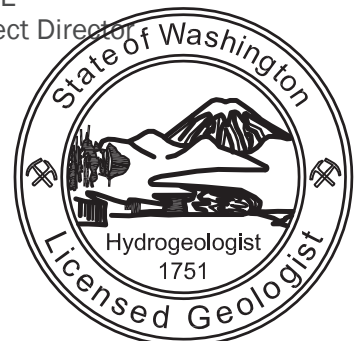
Jovany Estrada
Associate Staff Scientist
SCS Engineers



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



Daniel A. Venchiarutti, LG, LHG
Project Director
SCS Engineers



Kevin G. Lakey

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: 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

First quarter 2023 groundwater samples were collected on March 14 and 15, 2023. Nine monitoring wells (MW-1A, MW-2A, MW-3, MW-4, MW-5A, MW-6, MW-7, MW-9, and MW-10) and eleven leak detection collection locations (LDCS-1, LDCS-2A, LDCS-2B, LDCS-3A, LDCS-4A, LDCS-4B, LDCS-5, LDCS-6, LDCS-7, LDCS-8, and LDCS-9A) were sampled this quarter. In addition, a leachate sample was collected from Cell 8. Water level elevations were measured on March 14 and 15, 2023. Field quality control samples consisted of one field blank and one duplicate sample collected at MW-5A. 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 on Figure 1.

A groundwater surface elevation map for the first 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 all of the monitoring wells 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 first quarter unless otherwise noted. 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 first 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	**	**	**	0.011	0.0061	0.0077	0.0053
Iron, Dissolved	0.30	1.1	0.86	*	*	*	*	*
Manganese, Dissolved	0.05	0.19	0.29	0.39	0.16	0.17	0.23	0.22
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 0.14 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 first quarter, the cation-anion balance evaluation exceeded the appropriate threshold for

background monitoring well MW-10. All other monitoring well cation-anion balance evaluations were below the appropriate threshold.

Graphical plots of the current monitoring well 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 VOCs were reported in samples collected from the monitoring wells during the first quarter 2023.

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 dewateres groundwater that is present within the glacial till. Leachate leaks are indicated by the presence 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), total dissolved solids, alkalinity, sodium, potassium, and total organic carbon.

LDCS Maintenance. No significant maintenance activities occurred this quarter.

LDCS Daily Monitoring. Daily monitoring of the LDCS sumps 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 first 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 and the two samples from LDCS-9A were collected from the temporary HDPE sump using a peristaltic pump.

LDCS-1 water quality results included a low-level detection of acetone at 12 µg/L. Primary leachate indicator parameter 2-butanone, was not detected and concentrations of secondary leachate indicator parameters, ammonia (0.24 mg/L) and chloride (0.5 mg/l), remained low. Therefore, the acetone detection does not appear to be the result of leachate.

LDCS-2A water quality results included a low-level detection of 1,4, dichlorobenzene at 0.68 µg/L. Primary leachate indicator parameters acetone and 2-butanone were not detected and concentrations of secondary leachate indicator parameters, ammonia (0.27 mg/L) and chloride (13 mg/L), remained low. Therefore, the 1,4, dichlorobenzene detection does not appear to be the result of leachate.

LDCS-4A and LDCS-4B water quality results display generally increasing trends in chloride (see the 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 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. During the first quarter of 2023, construction and industrial stormwater treatment with Chitosan Sand Enhanced Filtration (CESF) was utilized each month

Discharge Monitoring Reports (DMR's) were submitted to Ecology on a monthly (Construction Permit) and quarterly (Industrial Permit) basis. Copies of the first quarter 2023 DMR's are included in Attachment I. No surface water benchmarks or water quality effluent limits were exceeded this 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
Totals	8,363,745	7.15
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 January 25, February 16, and March 23 using a Landtec GEM2000 portable gas monitor. Monitoring results for performance probes installed adjacent to the landfill within the perimeter berm 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

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

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

Indoor air was tested for the presence of methane on March 23, 2023. The office, maintenance building and scale house were tested with a portable flame ionization detector (MicroFID). No significant levels of methane were recorded.

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

LANDFILL GAS EXTRACTION WELL CONSTRUCTION

No new landfill gas extraction wells were installed at the landfill during the first quarter of 2023.

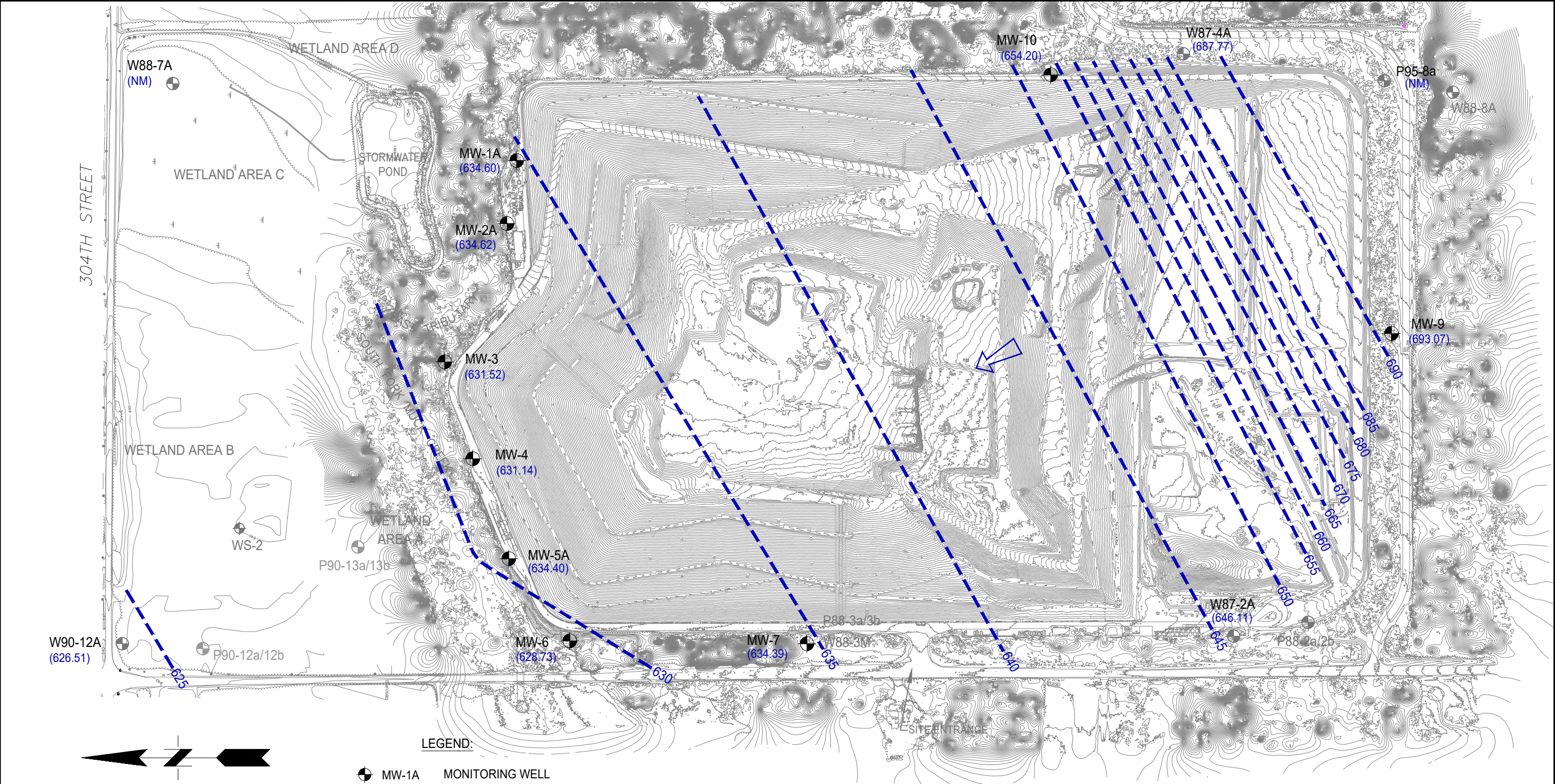
GROUNDWATER MONITORING WELL CONSTRUCTION AND MAINTENANCE

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



Attachment A

Groundwater Flow Map



NOTES:

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

LEGEND:

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



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	J.E.
SCALE	AS SHOWN	CHK BY	KGL
CAD FILE	FIGURE 1	APP BY	KGL

POTENTIOMETRIC SURFACE CONTOUR MAP
MARCH 14, 2023
LRI LANDFILL
30919 MERIDIAN STREET E.
GRAHAM, WASHINGTON

DATE	APRIL 2023
FIGURE	1

Attachment B

Groundwater Data Summary Tables

**Table 1. Groundwater Level Elevations
March 14 15, 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	17.90	644.60
W88-3M	656.48	14.93	639.87
W87-4A	693.29	5.52	686.38
W88-7A	632.51	NM*	--
W88-8A	721.05	NM*	--
W90-12A	640.84	30.31	608.29
MW-1A	652.57	17.97	635.19
MW-2A	651.93	17.31	634.89
MW-3	637.41	5.89	629.81
MW-4	652.37	21.23	631.14
MW-5A	655.55	21.15	633.25
MW-6	635.71	6.98	626.42
MW-7	656.03	21.64	633.06
MW-9	701.77	8.70	690.40
MW-10	674.17	24.17	647.33
Piezometers			
P13-14A	665.96	24.71	641.25
P88-2A	663.96	NM*	--
P88-2B	663.48	NM*	--
P88-3A	656.20	17.32	637.78
P88-3B	655.98	20.98	634.12
P95-8A	722.07	NM*	
P90-12A	640.79	14.33	624.27
P90-12B	640.73	13.74	624.86
P90-13A	645.19	NM*	--
P90-13B	643.63	NM*	--
GP-1P	652.00	5.00	647.00
GP-2P	658.61	15.70	642.91
GP-3P	658.51	9.70	648.91
GP-4P	662.01	9.50	652.51
GP-9P	674.03	11.30	662.7+D72
GP-14P		11.80	
GP-15P		15.00	
GP-16P	689.51	19.60	669.91
GP-17P		8.40	
P21-2		22.98	
P22-1		30.12	
P22-2		4.89	
P22-3		13.23	
South Creek			
SWSC-1	632.68	3.38	629.41
SWSC-2	629.98	5.21	624.74
Leak Detection System			
LDCS-1	657.26	29.19	628.07
LDCS-2A	659.24	26.87	632.37
LDCS-2B	661.70	28.45	633.25

Notes:

NM = not measured

-- = not applicable

All measurements taken on March 14 & 15, 2023

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

Location	Sample Number	Sample Date	Sampling Method	pH	Conductivity	Temperature
Units				(SU)	($\mu\text{S}/\text{cm}$)	(°C)
WAC 173-200 Criteria				6.5-8.5	700 ^b	—
Monitoring Wells						
MW-1A	304-031523-02	3/15/2023	DP	6.83	163	13.5
MW-2A	304-031423-04	3/14/2023	DP	6.98	298	12.8
MW-3	304-031423-06	3/14/2023	DP	6.92	432	10.3
MW-4	304-031523-21	3/15/2023	SP	7.19	368	13.4
MW-5A	304-031423-08	3/14/2023	DP	7.44	352	12.5
MW-6	304-031423-12	3/14/2023	DP	7.46	358	10.6
MW-7	304-031423-14	3/14/2023	DP	7.24	366	10.8
MW-9	304-031523-09	3/15/2023	DP	5.88	432	21.4
MW-10	304-031423-16	3/14/2023	DP	5.91	273	11.6
Leak Detection System						
LDCS-1	304-031423-09	3/14/2023	DB	5.88	432	21.4
LDCS-2A	304-031423-07	3/14/2023	DB	6.55	869	18.5
LDCS-2B	304-031423-05	3/14/2023	DB	6.00	913	18.3
LDCS-3A	304-031423-03	3/14/2023	DP	5.98	899	20.1
LDCS-4A	304-031423-11	3/14/2023	DP	5.73	753	17.1
LDCS-4B	304-031523-19	3/15/2023	DP	6.50	994	22.0
LDCS-5	304-031523-17	3/15/2023	DP	6.58	793	21.6
LDCS-6	304-031523-13	3/15/2023	DP	6.79	1,047	24.6
LDCS-7	304-031423-01	3/14/2023	DP	5.86	791	21.6
LDCS-8	304-031523-20	3/15/2023	GB	6.78	1,031	25.5
LDCS-9	304-031523-29	3/15/2023	GB	6.50	455	14.5

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

$\mu\text{S}/\text{cm}$ = microsiemens per centimeter

Table 3. Inorganic Parameters
First 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	75	*	2.3	*	8.6	57	*	*
MW-2A	130	0.18	3.8	*	16	130	*	*
MW-3	200	0.14	4.2	*	30	180	1.3	*
MW-4	170	*	4.3	*	15	160	1	*
MW-5A	170	0.14	3.2	*	13	150	1.2	*
MW-6	180	0.14	6.1	*	7.6	150	1.2	*
MW-7	190	0.21	3.4	*	3.6	160	1	*
(BG) MW-9	68	*	1.7	*	1.1	51	*	*
(BG) MW-10	110	*	7.4	3	6.3	130	*	5.6
Leak Detection System								
LDCS-1	200	0.24	0.51	*	*	160	30	290
LDCS-2A	450	0.27	13	*	29	460	4.1	*
LDCS-2B	360	0.13	4.1	*	4.9	490	13	460
LDCS-3A	430	0.24	5.1	*	60	460	2.1	4
LDCS-4A	290	0.11	3.4	*	2.8	370	11	50
LDCS-4B	360	0.27	75	*	75	540	7.5	*
LDCS-5	250	0.4	63	*	73	430	17	*
LDCS-6	450	*	18	*	110	570	4.1	*
LDCS-7	320	*	8.4	*	92	410	5.7	4.4
LDCS-8	430	*	26	*	56	440	5.4	*
LDCS-9	200	0.17	5.6	1.9	27	220	1.8	*

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
First 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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	mg/L	mg/L	mg/L	mg/L

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)
First 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	14	1.1	7.9	0.19	3.6	12
MW-2A	25	0.86	13	0.29	3.9	17
MW-3	47	*	20	0.39	4.5	15
MW-4	35	*	20	0.16	6.0	14
MW-5A	30	*	12	0.17	4.3	28
MW-6	38	*	17	0.23	5.1	11
MW-7	31	0.22	21	0.22	5.8	15
(BG) MW-9	11	*	7.2	*	2.1	8
(BG) MW-10	26	*	12	*	2.3	13
Leak Detection System						
LDCS-1	43	7.6	18	1.8	5.3	18
LDCS-2A	100	1.9	40	3.1	9.9	31
LDCS-2B	100	45	39	1.6	7.6	21
LDCS-3A	110	2.5	46	3.6	7.0	25
LDCS-4A	69	0.23	39	0.9	6.4	29
LDCS-4B	110	0.14	49	1.1	7.0	36
LDCS-5	71	0.21	39	1.2	9.3	43
LDCS-6	92	0.30	84	2.3	7.9	25
LDCS-7	97	1.5	33	1.9	3.8	21
LDCS-8	86	2.0	73	1.7	6.3	26
LDCS-9	55	*	18	0.1	2.1	20

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)
First 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	*	*	*	12	*	*	*	*	*	*
LDCS-2A	0.68	*	*	*	*	*	*	*	*	*
LDCS-2B	*	*	*	*	*	*	*	*	*	*
LDCS-3A	*	*	*	*	*	*	*	*	*	*
LDCS-4A	*	*	*	*	*	*	*	*	*	*
LDCS-4B	*	*	*	*	*	*	*	*	*	*
LDCS-5	*	*	*	*	*	*	*	*	*	*
LDCS-6	*	*	*	*	*	*	*	*	*	*
LDCS-7	*	*	*	*	*	*	*	*	*	*
LDCS-8	*	*	*	*	*	*	*	*	*	*
LDCS-9	*	*	*	*	*	*	*	*	*	*
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
First 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	14	7.9	3.6	12.0	37.5	0.70	0.65	0.08	0.52	1.95	30.9	35.8	33.3
MW-2A	25	13	3.9	17	58.9	1.25	1.07	0.09	0.74	3.14	26.3	39.7	34.0
MW-3	47	20	4.5	15	86.5	2.35	1.65	0.10	0.65	4.75	15.9	49.4	34.7
MW-4	35	20	6.0	14	75	1.75	1.65	0.14	0.61	4.14	18.0	42.2	39.8
MW-5A	30	12	4.3	28	74.3	1.50	0.99	0.10	1.22	3.80	34.6	39.4	26.0
MW-6	38	17	5.1	11.0	71.1	1.90	1.40	0.12	0.48	3.89	15.3	48.8	36.0
MW-7	31	21	5.8	15	72.8	1.55	1.73	0.13	0.65	4.06	19.3	38.1	42.6
MW-9	11	7.2	2.1	7.9	28.2	0.55	0.59	0.05	0.34	1.53	25.5	35.8	38.7
MW-10	26	12	2.3	13	53.3	1.30	0.99	0.05	0.57	2.90	21.3	44.7	34.0
LDCS-1	43	18	5.3	18	84.3	2.15	1.48	0.12	0.78	4.53	19.9	47.4	32.7
LDCS-2A	100	40	9.9	31	180.9	4.99	3.29	0.22	1.35	9.85	16.0	50.6	33.4
LDCS-2B	100	39	7.6	21	167.6	4.99	3.21	0.17	0.91	9.28	11.7	53.7	34.6
LDCS-3A	110	46	7.0	25	188.0	5.49	3.79	0.16	1.09	10.52	11.8	52.2	36.0
LDCS-4A	69	39	6.4	29	143.4	3.44	3.21	0.14	1.26	8.06	17.4	42.7	39.8
LDCS-4B	110	49	7.0	36	202	5.49	4.03	0.16	1.57	11.25	15.3	48.8	35.9
LDCS-5	71	39	9.3	43	162.3	3.54	3.21	0.21	1.87	8.83	23.6	40.1	36.3
LDCS-6	92	84	7.9	25	208.9	4.59	6.91	0.18	1.09	12.77	9.9	36.0	54.1
LDCS-7	97	33	3.8	21	154.8	4.84	2.72	0.09	0.91	8.56	11.7	56.6	31.7
LDCS-8	86	73	6.3	26	191.3	4.29	6.01	0.14	1.13	11.57	11.0	37.1	51.9
LDCS-9	55	18	2.1	20	95.1	2.74	1.48	0.05	0.87	5.14	17.8	53.4	28.8

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	75	2.3	0.0	8.6	85.9	1.23	0.06	0.000	0.18	1.47	4.4	83.5	12.1	3.43	14.0	10	Exceeds
MW-2A	130	3.8	0.0	16.0	149.8	2.13	0.11	0.000	0.33	2.57	4.2	82.9	12.9	5.72	10.0	5	Exceeds
MW-3	200	4.2	0.0	30	234.2	3.28	0.12	0.000	0.62	4.02	2.9	81.5	15.5	8.77	8.2	5	Exceeds
MW-4	170	4.3	0.0	15	189.3	2.79	0.12	0.000	0.31	3.22	3.8	86.5	9.7	7.36	12.4	5	Exceeds
MW-5A	170	3.2	0.0	13	186.2	2.79	0.09	0.000	0.27	3.15	2.9	88.5	8.6	6.95	9.4	5	Exceeds
MW-6	180	6.1	0.0	7.6	193.7	2.95	0.17	0.000	0.16	3.28	5.2	89.9	4.8	7.17	8.5	5	Exceeds
MW-7	190	3.4	0.0	3.6	197	3.12	0.10	0.000	0.07	3.29	2.9	94.8	2.3	7.35	10.5	5	Exceeds
MW-9	68	1.7	0.0	1.1	70.8	1.12	0.05	0.000	0.02	1.19	4.0	94.0	1.9	2.72	12.7	10	Exceeds
MW-10	110	7.4	3.0	6.3	126.7	1.80	0.21	0.048	0.13	2.19	9.5	82.3	6.0	5.09	13.9	5	Exceeds
LDCS-1	200	0.5	0.0	0.0	200.51	3.28	0.01	0.000	0.00	3.29	0.4	99.6	0.0	7.82	15.8	5	Exceeds
LDCS-2A	450	13.0	0.0	29	492	7.38	0.37	0.000	0.60	8.35	4.4	88.4	7.2	18.20	8.3	5	Exceeds
LDCS-2B	360	4	0.0	5	369	5.90	0.12	0.000	0.10	6.12	1.9	96.4	1.7	15.41	20.5	5	Exceeds
LDCS-3A	430	5.1	0.0	60	495.1	7.05	0.14	0.000	1.25	8.44	1.7	83.5	14.8	18.96	10.9	5	Exceeds
LDCS-4A	290	3	0.0	3	296	4.76	0.10	0.000	0.06	4.91	2.0	96.9	1.2	12.97	24.3	5	Exceeds
LDCS-4B	360	75	0.0	75	510	5.90	2.12	0.000	1.56	9.58	22.1	61.6	16.3	20.82	8.0	5	Exceeds
LDCS-5	250	63	0.0	73	386	4.10	1.78	0.000	1.52	7.40	24.0	55.4	20.5	16.23	8.9	5	Exceeds
LDCS-6	450	18	0.0	110	578	7.38	0.51	0.000	2.29	10.18	5.0	72.5	22.5	22.95	11.3	5	Exceeds
LDCS-7	320	8.4	0.0	92	420	5.25	0.24	0.000	1.91	7.40	3.2	70.9	25.9	15.95	7.3	5	Exceeds
LDCS-8	430	26	0.0	56	512	7.05	0.73	0.000	1.16	8.95	8.2	78.8	13.0	20.52	12.8	5	Exceeds
LDCS-9	200	5.6	1.6	27	234	3.28	0.16	0.026	0.56	4.03	3.9	81.5	14.0	9.17	12.2	5	Exceeds

Notes:

mg/L = milligrams per liter

meq/L = milliequivalents per liter

Total alkalinity concentration, reported as calcium carbonate (CaCO₃), is converted to the bicarbonate (HCO₃⁻) 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 > = 5.0 meq/liter

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

Parameter	MRL	MW-5A	MW-5A (Duplicate)	RPD (%)
Volatile Organic Compounds (µg/L)				
No Detections	-	-	-	-
Inorganic Parameters (mg/L)				
Alkalinity, Total	10	190	190	0.0
Ammonia	0.1	0.21	0.21	0.0
Chloride	0.2	3.4	3.4	0.0
Sulfate	0.2	3.6	3.6	0.0
Total Dissolved Solids	10	160	130	20.7
Total Organic Carbon	1	1	1.2	18.2
Dissolved Metals (mg/L)				
Calcium	0.2	31	31	0.0
Iron	0.1	0.22	0.24	8.7
Magnesium	0.1	21	21	0.0
Manganese	0.005	0.22	0.23	4.4
Potassium	2.0	5.8	5.9	1.7
Sodium	1.0	15	15	0.0
Total Metals (mg/L)				
Arsenic	0.005	0.0053	0.0057	7.3
Barium	0.005	0.015	0.014	6.9

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

March 16, 2023
File No. 04223001.02

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

NOTES/SAMPLE DECODING:

Event Dates: March 14 & 15, 2023

Field Staff: Jovany Estrada, Jack Faille, and Alex Deszo

- 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 non-dedicated Sample Pro pump was used for purging and sampling well MW-4.
- A round of water level measurements was completed on March 14 & 15, 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
304-031423-01	LDCS-7
304-031523-02	MW-1A
304-031423-03	LDCS-3
304-031423-04	MW-2A
304-031423-05	LDCS-2B
304-031423-06	MW-3
304-031423-07	LDCS-2A
304-031423-08	MW-5A
304-031423-09	LDCS-1
304-031423-10	MW-7 (Duplicate)
304-031423-11	LDCS-4A
304-031423-12	MW-6
304-031523-13	LDCS-6
304-031423-14	MW-7
304-031523-15	QC, FB

304-031423-16	MW-10
304-031523-17	LDCS-5
304-031523-18	MW-9
304-031523-19	LDCS-4B
304-031523-20	LDCS-8
304-031523-21	MW-4
304-031523-29	LCDS-9

SCS ENGINEERS

2405 140th ave NE #107

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02

Site: LRI 304th

Well ID: LDC9-7

Sample ID: 304-031423-01

Date: 3/44/23

Weather: Clear

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

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:

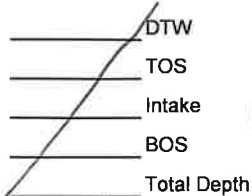
DTW

TOS

Intake

BOS

Total Depth



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

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
10:39		12.22	725	5.00	5.62	-11.8	3.29	
10:44		18.51	749	0.55	6.18	-174.7		
10:47		21.30	796	~~5.40~~ 0.38	5.92	-212.4		
10:50		21.45	797	0.36	5.89	-196.6		
10:53		21.93	795	0.34	5.86	-180.8		
10:56		21.64	793	0.33	5.86	-169.8		
10:59		21.57	791	0.32	5.86	-175.8	3.26	

Stabilization Parameters: pH/DO $\pm$ 0.2, SpC $\pm$ 10%, Temp $\pm$ 0.5°C, Turb. $\pm$ 10% or $\leq$ 5

SAMPLER:

Jack Faile
Printed Name

Signature

Jack Faile

Bellevue, WA 98005

(425) 746-4600

Project #:	04223001.02		Sampling Method:	Dedicated		1.75" QED SamplePro	Bail	Peristaltic	Grab	Other	
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons		
Well ID:	304-031523-02		TOS	MP-20	Refill	9	One Well Volume	Other:			
Sample ID:	MN-1A		Intake	YSI	Discharge	6	(liters)	Flow			
Date:	3/15/23		BOS		Pressure	30	Total Volume Bailed	Setting:			
Weather:	clear		Total Depth		Flow	350 ml/min	(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										
Notes / Observations (color, odor, anomalies, etc):											

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jovany Estrella
Printed Name

Signature

Bellevue, WA 98005

(425) 746-4600

Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	04223001.02		Sampling Method	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other		
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons			
Well ID:	MW-2A		TOS	MP-20	Refill	9	One Well Volume	Other :			
Sample ID:	304-031423-04		Intake	YSI	Discharge	6	(liters)	Flow			
Date:	3/14/23		BOS		Pressure	30	Total Volume Bailed	Setting :			
Weather:	Clear		Total Depth		Flow	400 ml/min	(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	Notes / Observations (color, odor, anomalies, etc):						
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber							
	125 ml NaOH										

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Torand Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Signature _____

Bellevue, WA 98005

Groundwater Sampling Data Sheet

Project #: 04223001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail	Dedicated	Peristaltic	Grab	Other
Site: LRI 304th		DTW: 5.89	Meter: MP-20	CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons		
Well ID: MW-3		TOS: /	YSI	Refill: 9	One Well Volume (liters)		Other:			
Sample ID: 204-031423-06		Intake: /		Discharge: 6			Flow Setting:			
Date: 3/14/23		BOS: /		Pressure: 35	Total Volume Bailed (liters)					
Weather: Clear		Total Depth: /		Flow: 400 ml/min						
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	Notes / Observations (color, odor, anomalies, etc):					
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3	1000 ml Amber						
	125 ml NaOH									

[illegible]

SAMPLER: Jovany Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	04223001.02	Sampling Method:		Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons	
Well ID:	LDCS-2A		TOS	MP-20	Refill	One Well Volume	Other:		
Sample ID:	304-031423-07		Intake	YSI	Discharge	(liters)	Flow		
Date:	3/14/23		BOS		Pressure	Total Volume Bailed	Setting:		
Weather:	Clear		Total Depth		Flow	(liters)			
Filtered?	Y <u>N</u>	Locked?	Y <u>N</u>	Water in Protector?	Y <u>N</u>	Damage?	Y <u>N</u>		
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):									

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jack Faille
Printed Name

Signature John P. Hill

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02		Sampling Method: Dedicated		1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site: LRI 304th	 21.15	DTW	Meter: CONTROL SETTINGS:	1 ft water = 0.62L	1L = 0.26 gallons			
Well ID: MW-SA		TOS	MP-20	Refill 9	One Well Volume	Other:		
Sample ID: 304-C31423-08		Intake	YSI	Discharge 6	(liters)	Flow		
Date: 3/14/23		BOS		Pressure 40	Total Volume Bailed	Setting:		
Weather: Clear		Total Depth		Flow 400ml/min	(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	Notes / Observations (color, odor, anomalies, etc):			
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber				
	125 ml NaOH							

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jovany Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001.02		Sampling Method: Dedicated		1.75" QED Sample Probe		Bail		Peristaltic		Grab		Other	
Site: LRI 304th		DTW		Meter: MP-20		CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons			
Well ID: 4DC9-1		TOS		YSI		Refill		One Well Volume		Other:			
Sample ID: 304-031423-09		Intake				Discharge		(liters)		Flow			
Date: 3/14/23		BOS				Pressure		Total Volume Bailed		Setting:			
Weather: Clear		Total Depth				Flow		(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											
Notes / Observations (color, odor, anomalies, etc):													

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jovane 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: LRI 304th

Well ID: LCDG-41A

Sample ID: 304-031423-11

Date: 3/14/23

Weather: Clear

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

Sampling Method:

Dedicated

1.75" QED SamplePro

Bail

Peristaltic

Grab

Other

Meter:

CONTROL SETTINGS:

MP-20

YSI

Refill

11

Discharge

4

Pressure

40

Flow

1 ft water = 0.62L

1L = 0.26 gallons

One Well Volume (liters)

Other:

Flow

Setting:

Total Volume Bailed (liters)

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

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1442		12.62	786	5.42	5.72	-74.0	4.68	
1447		14.75	791	1.13	5.72	-115.3		
1450		15.69	795	0.77	5.76	-119.2		
1453		16.34	796	0.82	5.73	-115.9		
1456		16.80	802	0.87	5.73	-122.8		
1459		16.82	787	0.59	5.76	-124.6		
1502		17.06	753	0.43	5.73	-124.6	367	
1505		17.48	739	0.35	5.63	-123.9	289	
1508		17.75	741	0.33	5.75	-126.1	239	
1511		17.89	743	0.32	5.73	-126.9	239	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Jack Faile
Printed Name

Signature

[Signature]

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site: LRI 304th		DTW	Meter: MP-20	CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons	
Well ID: MW-6		TOS	YSI	Refill	9	One Well Volume	Other:		
Sample ID: 304-031423-12		Intake		Discharge	6	(liters)	Flow		
Date: 3/14/23		BOS		Pressure	25	Total Volume Bailed	Setting:		
Weather: Clear		Total Depth		Flow	350 ml/min	(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								
Notes / Observations (color, odor, anomalies, etc):									

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jovan + Estrada
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001.02		Sampling Method: <u>Dedicated</u>		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site: LRI 304th		DTW		Meter: <u>CONTROL SETTINGS:</u>		1 ft water = 0.62L		1L = 0.26 gallons	
Well ID: <u>LDC9-6</u>		TOS		MP-20		Refill <u>12</u>		One Well Volume _____ Other: _____	
Sample ID: <u>304-031523-13</u>		Intake <u>YSI</u>		Discharge <u>3</u>		Pressure <u>60</u>		Total Volume Bailed _____ Flow Setting: _____	
Date: <u>3/15/23</u>		BOS		Flow <u>200 mL/min</u>		Total Volume Bailed _____			
Weather: <u>Partially Cloudy</u>		Total Depth							
Filtered? <u>Y</u>	Locked? <u>Y</u>	Water in Protector? <u>Y</u>	Damage? <u>Y</u>						
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):									
<u>water right away</u>									

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1113		7.69	1049	9.94	6.85	~~7.0~~		
1118		22.36	1052	1.15	7.09	-80.2 -128.3		
1121		23.41	1045	0.38	7.04	-131.4		
1124		24.08	1046	0.25	6.96	-134.3		
1127		24.27	1047	0.23	6.91	-135.0		
1130		24.69	1047	0.21	6.82	-136.5	9	
1133		24.56	1047	0.20	6.79	-138.4	8	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jack Faille
Printed Name

John F. Jones

Bellevue, WA 98005

(425) 746-4600

Project #:	04223001.02
Site	LRI 304th
Well ID:	1NW-7
Sample ID:	304-031423-14
Date:	3/14/23
Weather:	Clear

Sample Containers:

1000 ml Poly

500 ml Poly

250 ml Poly

125 ml Poly

500 ml H₂SO₄ x2

40 ml VOA x3 x6

1000 ml Amber

125 ml NaOH

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Jovany Estrada

Printed Name _____

Signature _____

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02		Sampling Method:		Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site: LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons		
Well ID: 304-031523-15		TOS	MP-20	Refill	One Well Volume	Other:			
Sample ID: Field Blank		Intake	YSI	Discharge	(liters)	Flow			
Date: 3/13/23		BOS		Pressure	Total Volume Bailed	Setting:			
Weather: Clear		Total Depth		Flow	(liters)				
Filtered? ☒ N	Locked? Y N NA	Water in Protector? Y N NA	Damage? Y N NA						
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly	Notes / Observations (color, odor, anomalies, etc):				
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber					
	125 ml NaOH								

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jovan Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04223001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site: LRI 304th		24.17 DTW		Meter: CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons	
Well ID: 304-031423-16		TOS		MP-20		Refill 9		One Well Volume (liters)	
Sample ID: MW-10		Intake		YSL		Discharge 6		Other:	
Date: 3/14/23		BOS		Pressure 40		Total Volume Bailed (liters)		Flow Setting:	
Weather: Clear		Total Depth		Flow 200 ml/min					
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):									

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jovanny Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001.02

Site LRI 304th

Well ID: LDCS-5

Sample ID: 304-C31523-17

Date: 3/15/23

Weather: Clear

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

[illegible]

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

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Printed Name

Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site: LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons		
Well ID: MW-09		TOS	MP-20	Refill	9	One Well Volume	Other:		
Sample ID: 304-031523-18		Intake	YSI	Discharge	6	(liters)	Flow		
Date: 3/15/23		BOS		Pressure	45	Total Volume Bailed	Setting:		
Weather: Clear		Total Depth		Flow	300 mg/min	(liters)			
Filtered? ☒ 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):									

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Josany Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	04223001.02	Sampling Method		Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons	
Well ID:	LDC9-4B		TOS	MP-20	Refill	12	One Well Volume	Other :	
Sample ID:	304-031923-19		Intake	YSI	Discharge	3	(liters)	Flow	
Date:	3/19/23		BOS		Pressure	4060	Total Volume Bailed	Setting :	
Weather:	Clear		Total Depth		Flow	140 ml/min	(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								
Notes / Observations (color, odor, anomalies, etc):									
Water show to reach									

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
0930		21.14	1137	4.02	6.93	-98.0		
0935		21.84	1012	1.78	6.60	-90.7	27	
0938		22.19	999	0.81	6.56	-87.8		
0941		22.33	996	0.59	6.57	-89.8		
0944		22.39	995	0.50	6.55	-93.0		
0947		22.40	992	0.42	6.52	-98.2	7	
0950		22.04	994	0.40	6.50	-104.1	3	

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

Water slow to reach surface, ~ 10 min.

$$\frac{35 \text{ mL}}{0.25 \text{ min}} = \frac{140 \text{ mL}}{\text{min}}$$

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jack Faille
Printed Name

Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001.02		Sampling Method:		Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons	
Well ID:	LDCS-8		TOS	MP-20	Refill	One Well Volume	Other:		
Sample ID:	304-031923-20		Intake	YSI	Discharge	(liters)	Flow		
Date:	3/19/23		BOS		Pressure	Total Volume Bailed	Setting:		
Weather:	Partially Cloudy		Total Depth		Flow	(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	Notes / Observations (color, odor, anomalies, etc): Collected as a grab sample				
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber					
	125 ml NaOH								

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jack Faile
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #:	04223001.02		Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:	1 ft water = 0.62L	1L = 0.26 gallons		
Well ID:	MW-4		TOS	MP-20	Refill	9	One Well Volume	Other:	
Sample ID:	304-031523-21		Intake	YSI	Discharge	6	(liters)	Flow	
Date:	3/15/23		BOS		Pressure	90	Total Volume Bailed	Setting:	
Weather:	partly cloudy	97.71	Total Depth	Flow	250 ml/min	(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								
Notes / Observations (color, odor, anomalies, etc):									

[illegible]

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

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jovany Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	04223001.02		Sampling Method:		Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LRI 304th		DTW		Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons	
Well ID:	56 LDCS-9		TOS		MP-20	Refill	One Well Volume	(liters)	Other:	
Sample ID:	304-031523-29		Intake		YSI	Discharge	Total Volume Bailed	(liters)	Flow Setting:	
Date:	3/15/23		BOS			Pressure				
Weather:	Partially Cloudy		Total Depth			Flow				
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):										
Grab sample taken from										

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1400		~~10.55~~ 14.54	455	~~6.78~~ 4.22	~~6.09~~ 6.50	~~-98.9~~ -102.2	2	

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

Grab sample taken from
LDCRS pump discharge outlet.

* Sample NOT filtered!

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Jack Faille
Printed Name

Signature _____

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	3/14/23					
Time	10:02					
Weather (sky or precip, temp)	Clear					
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	1390	4.21	7.12	8.68		
Post Cal Reading	1438	4.00	7.00	8.50		
Discrepancy	No					
Calib. Successful?	Yes					
Calibration by	Jovan Estrada					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental			YSI Pro DDS / HACH2000		
Calibration Location	MN-10					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	3-15-23					
Time	09:00					
Weather (sky or precip, temp)	Clear, 40°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, 0.2 100, 20, <0.1	800,
Pre-Cal Reading	1436	3.24	7.04	8.98	✓	
Post Cal Reading	1413	4.00	7.00	8.90	✓	
Discrepancy	N/A					
Calib. Successful?	Yes					
Calibration by	JTF / AMD					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental			YSI Pro DDS / HACH2000		
Calibration Location	LRI 304th LF					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	3-14-23					
Time	10:08					
Weather (sky or precip, temp)	Clear / Sunny 38°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, 0.2 100, 20, <0.1	800,
Pre-Cal Reading	1363	4.34	7.01	8.19	—	
Post Cal Reading	1413	3.98	7.00	8.90	—	
Discrepancy	N/A					
Calib. Successful?	Yes					
Calibration by	JIF					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental			YSI Pro DDS / HACH2000		
Calibration Location	LRI 304 th					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	3/15/23					
Time	1057					
Weather (sky or precip, temp)	Clear 41° 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	1398	3.85	6.96	9.27		
Post Cal Reading	1413	4.00	7.00	8.5		
Discrepancy						
Calib. Successful?	Yes					
Calibration by	Alex Deszo					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental			YSI Pro DDS / HACH2000		
Calibration Location	MW-4					

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

LRI Landfill
Water Level Data

Date: Mar 14 & 15, 2023

Measured by: JE, JF, AD

	Ground Elevation	PVC Elevation	Total Depth	Depth to Water	Water Level Elevation	Time	Comments
Wells							
W87-2A	662.5	664.01		17.90	644.60		
W88-3M	654.8	656.48		14.93	639.87		
W87-4a	691.9	693.29		5.52	686.38		
W88-7A	631.3	632.51		Lost			
W88-8A	719.7	721.05		dry			
W90-12A	638.6	640.84		30.31	608.29		
MW-1A	653.2	652.57	75.7	17.97	635.19		
MW-2A	652.2	651.93	67.2	17.31	634.89		
MW-3	635.7	637.41	70.4	5.89	629.81		
MW-4	652.4	652.37		21.23	631.14		
MW-5A	654.4	655.55		21.15	633.25		
MW-6	633.4	635.71	52.4	6.98	626.42		
MW-7	654.7	656.03	58.0	21.64	633.06		
MW-9	699.1	701.77	76.8	8.70	690.40		
MW-10	671.5	674.17		24.17	647.33		
Piezometers							
P88-2a	633.0	663.96		Lost			
P88-2b	633.0	663.48		Lost			
P88-3a	655.1	656.20	27.4	17.32	637.78		
P88-3b	655.1	655.98	39.8	20.98	634.12		
P95-8a	721.2	722.07		No access			
P90-12a	638.6	640.79		14.33	624.27		
P90-12b	638.6	640.73		13.74	624.86		
P90-13a	643.5	645.19		Lost			
P90-13b	643.5	643.63		Lost			
P13-14A				24.71			
GP-1P		652.00		5.00			
GP-2P		656.61		15.70			
GP-3P		658.51		9.70			
GP-4P		662.01		9.50			
GP-9P		674.03		11.30			
GP-10P		649.86		N/A			
GP-11P				N/A			
GP-12P				N/A			
GP-13P				N/A			
GP-14P				11.80			
GP-15P				15.00			
GP-16P				19.60			
GP-17P				8.40			
P-1				30.12			
P-2				4.89			
P-3				13.23			
P21-2				22.98			
South Creek							
SWSC-1	632.79	632.79		3.38	629.41		
SWSC-2	629.95	629.95		5.21	624.74		
Leak Detection System							

LDCS-1	657.26	29.19	628.07
LDCS-2A	659.24	26.87	632.37
LDCS-2B	661.70	28.45	633.25



Attachment D

Statistical Calculations

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, First 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		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		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

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, First 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		0.0005		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		0.0005		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.			

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	L 0.005	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	0.002	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	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	0.002	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	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	0.002	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	0.5	L 0.25
	9/18/2015	0.05	L 0.025	0.005	L 0.0025	0.005	L 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	L 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	0.015	0.015	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	0.014	0.014	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</										

Notes: Metals results are for total metals.
mg/L = milligrams per liter.

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

Location ID Monitoring Date	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)	
	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.

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, First 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 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	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	0.005 L	0.016
Beryllium	0.005	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.001 L	0.005 L	0.001 L	0.001 L
Cadmium	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	0.001 L	0.001 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 L	0.010 L	0.010 L	0.010 L	0.004	0.010 L	0.010 L	0.010 L	0.001 L	0.001 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 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	0.020 L
Selenium	0.005	0.500 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	0.500 L
Silver	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	0.005 L	0.005 L
Thallium	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	0.005 L
Vanadium	0.010	0.016	0.010 L	0.010 L	0.010 L	0.014	0.010 L	0.010 L	0.010 L	0.016	0.005 L
Zinc	0.01	0.290	0.032	0.010 L	0.010 L	0.290	0.010	0.010 L	0.010 L	0.010 L	0.019
Nitrate as Nitrogen	0.50	2.50	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	2.50

Notes:

Prediction Limits are shown in bold.

Prediction Limits for metals are for total metals.

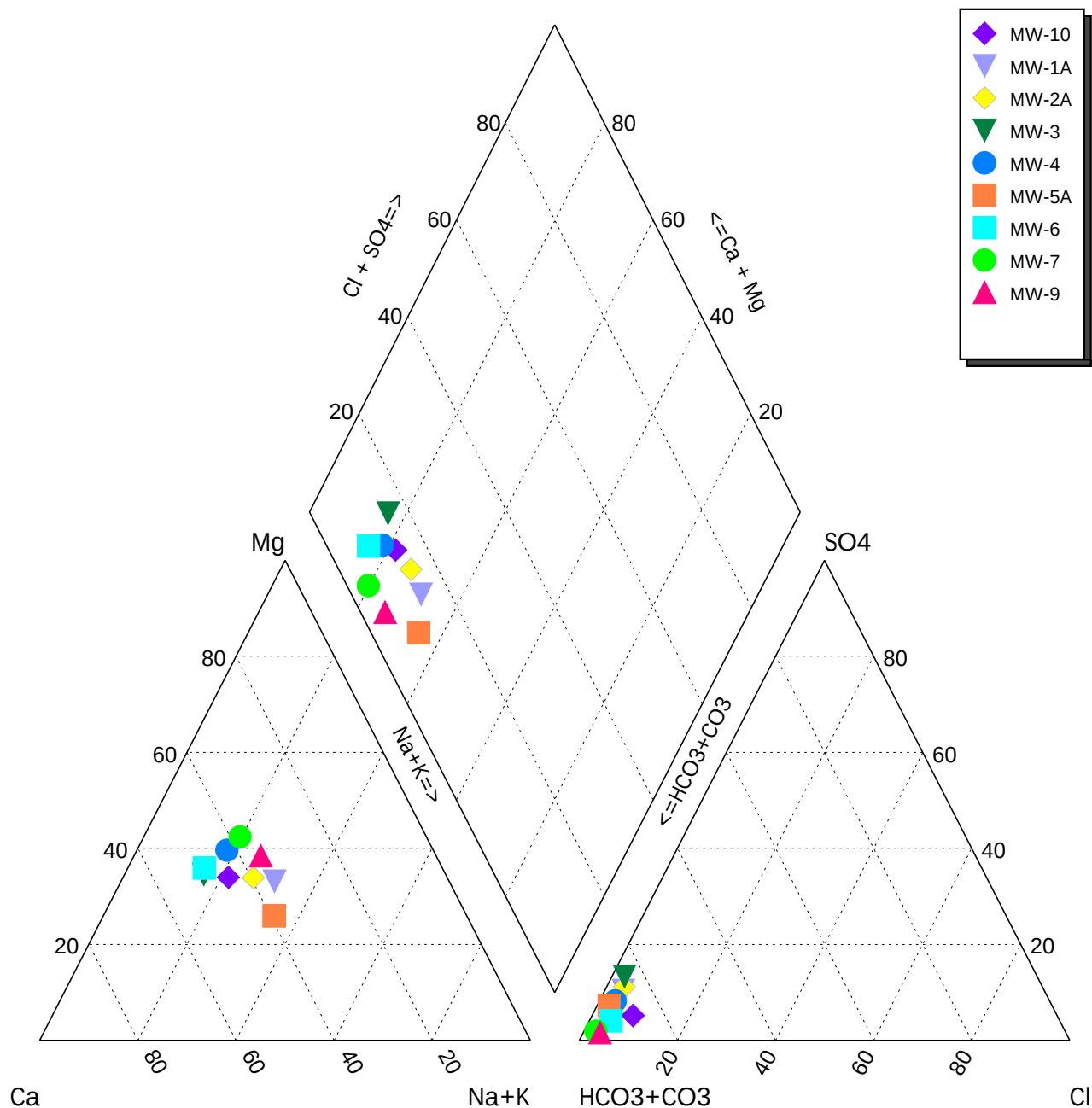
L = not reported at or above the MRL (Method Reporting Limit).

mg/L = milligrams per liter.

Attachment E

Trilinear Diagrams

First Quarter 2023, Groundwater Monitoring Wells



DESCRIPTION: Piper Diagram - 1Q23 Groundwater

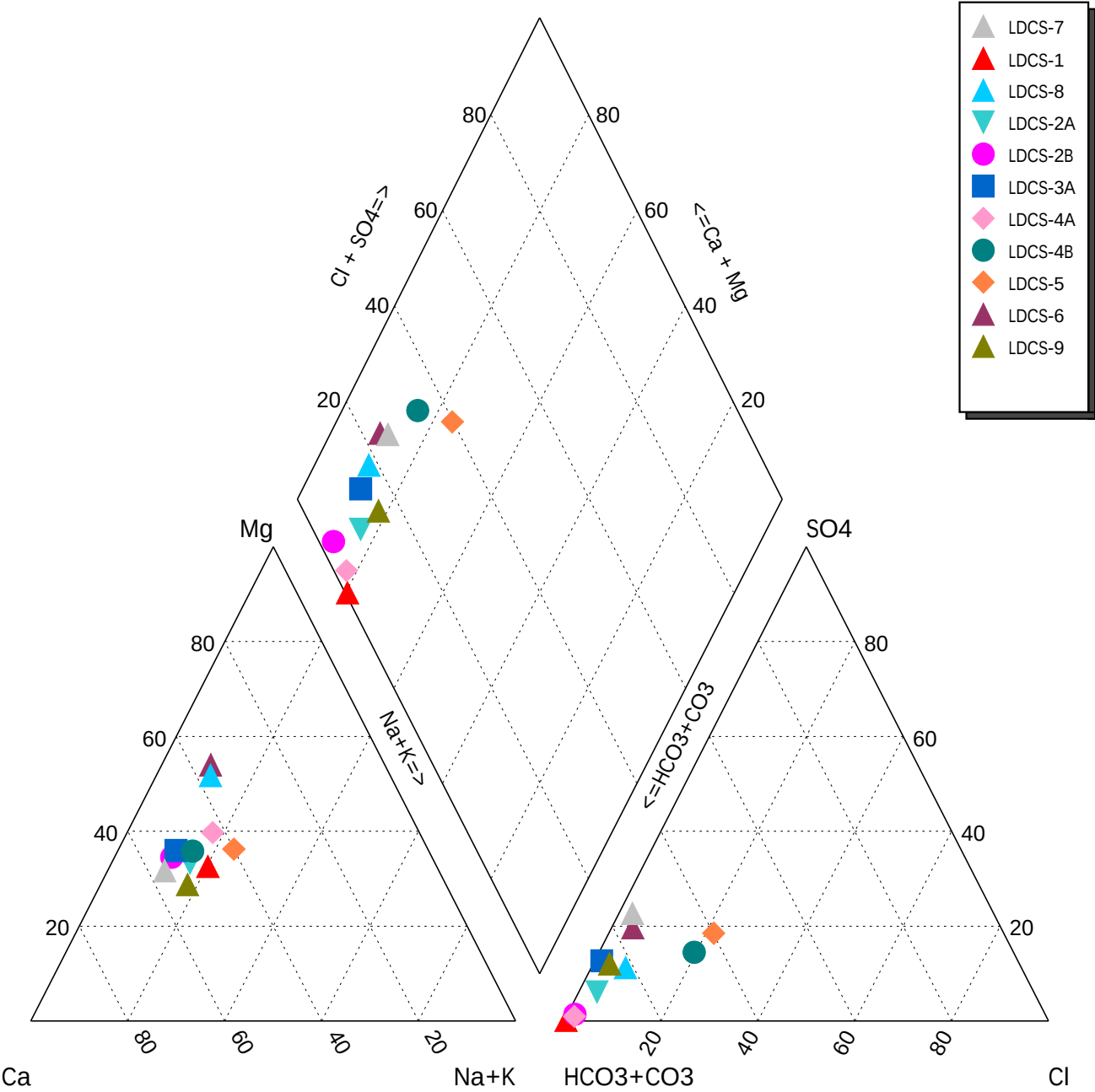
PROJECT: LRI Landfill

PROJECT NO: 04223001.02

CLIENT: LRI, Inc.

DATE: April 2023

First Quarter 2023, Leak Detection Collection Recovery System



DESCRIPTION: Piper Diagram - 1Q23 LDCRS

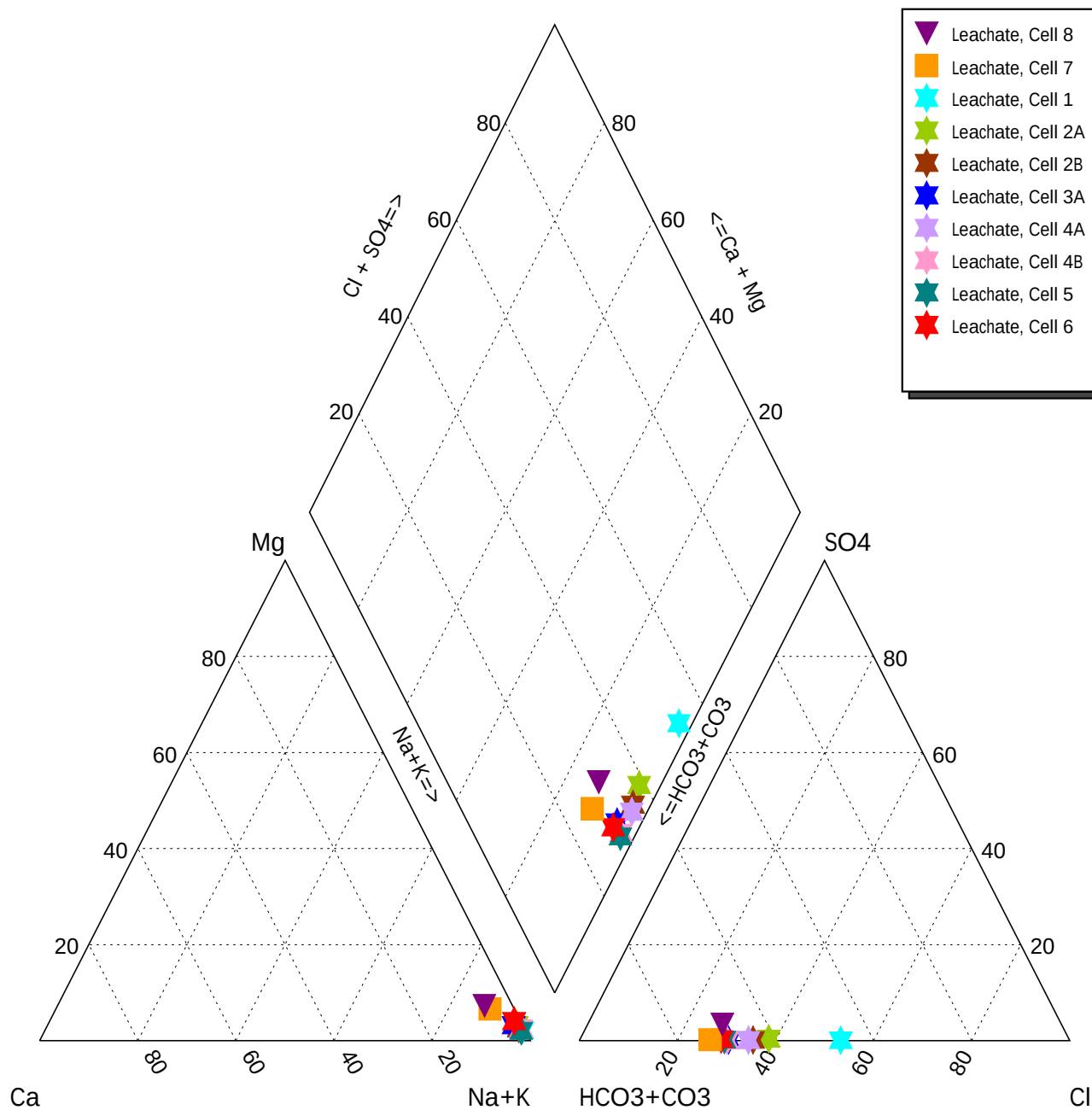
PROJECT: LRI Landfill

PROJECT NO: 04223001.02

CLIENT: LRI, Inc.

DATE: April 2023

Fourth Quarter 2022, Leachate Samples



DESCRIPTION: Piper Diagram - 4Q22 Leachate

PROJECT: LRI Landfill

PROJECT NO: 04223001.02

CLIENT: LRI, Inc.

DATE: April 2023

Attachment F

Analytical Data Validation Report

FIRST QTR. 2023 DATA VALIDATION REPORT – LRI LANDFILL**Project Details**

Project No.	04223001.02	Site Name	LRI 304 th Street LF
Data Validator	Jovany Estrada	Data Level	Level 2
Date	4/13/2023	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)
280-173567-1	None.	TestAmerica, Denver, CO
280-173650-1	None	TestAmerica, Denver, CO

Analytical Summary

Sample Group	Analyses					
	TDS/Alk/NO3	Metals	NH3/TOC	VOCs	Anions	TSS
280-173567-1	X	X	X	X	X	X
280-173650-1	X	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	280-173567-1	None.	
QC-FB	280-173650-1	None.	

Lab Quality Flags

Flag	Sample Groups	Comments
4	280-173567-1, 280-173650-1	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	280-173567-1	Compound was found in the blank and sample.
F1	280-173650-1	MS and/or MSD recovery exceeds control limits.
E	280-173567-1, 280-173650-1	Result exceeded calibration range.
J	280-173567-1, 280-173650-1	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*1	280-173650-1	LCS/LCSD RPD exceeds control limits.

Duplicate Evaluation

Analyte	Units	MW-7 (304-031423-14)	MW-7 DUP (304-031423-10)	RPD (%)
Alkalinity, Total	mg/L	190	190	0.00
Ammonia	mg/L	0.21	0.21	0.00
Arsenic, Total	mg/L	0.0053	0.0057	7.27
Barium, Total	mg/L	0.015	0.014	6.90
Calcium, Dissolved	mg/L	31	31	0.00
Chloride	mg/L	3.4	3.4	0.00
Iron, Dissolved	mg/L	0.22	0.24	8.70
Magnesium, Dissolved	mg/L	21	21	0.00
Manganese, Dissolved	mg/L	0.22	0.23	4.44
Potassium, Dissolved	mg/L	5.8	5.9	1.71
Sodium, Dissolved	mg/L	15	15	0.00
Sulfate	mg/L	3.6	3.6	0.00

Analyte	Units	MW-7 (304-031423-14)	MW-7 DUP (304-031423-10)	RPD (%)
Total Dissolved Solids	mg/L	160	130	20.69
Total Organic Carbon	mg/L	1	1.2	18.18

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

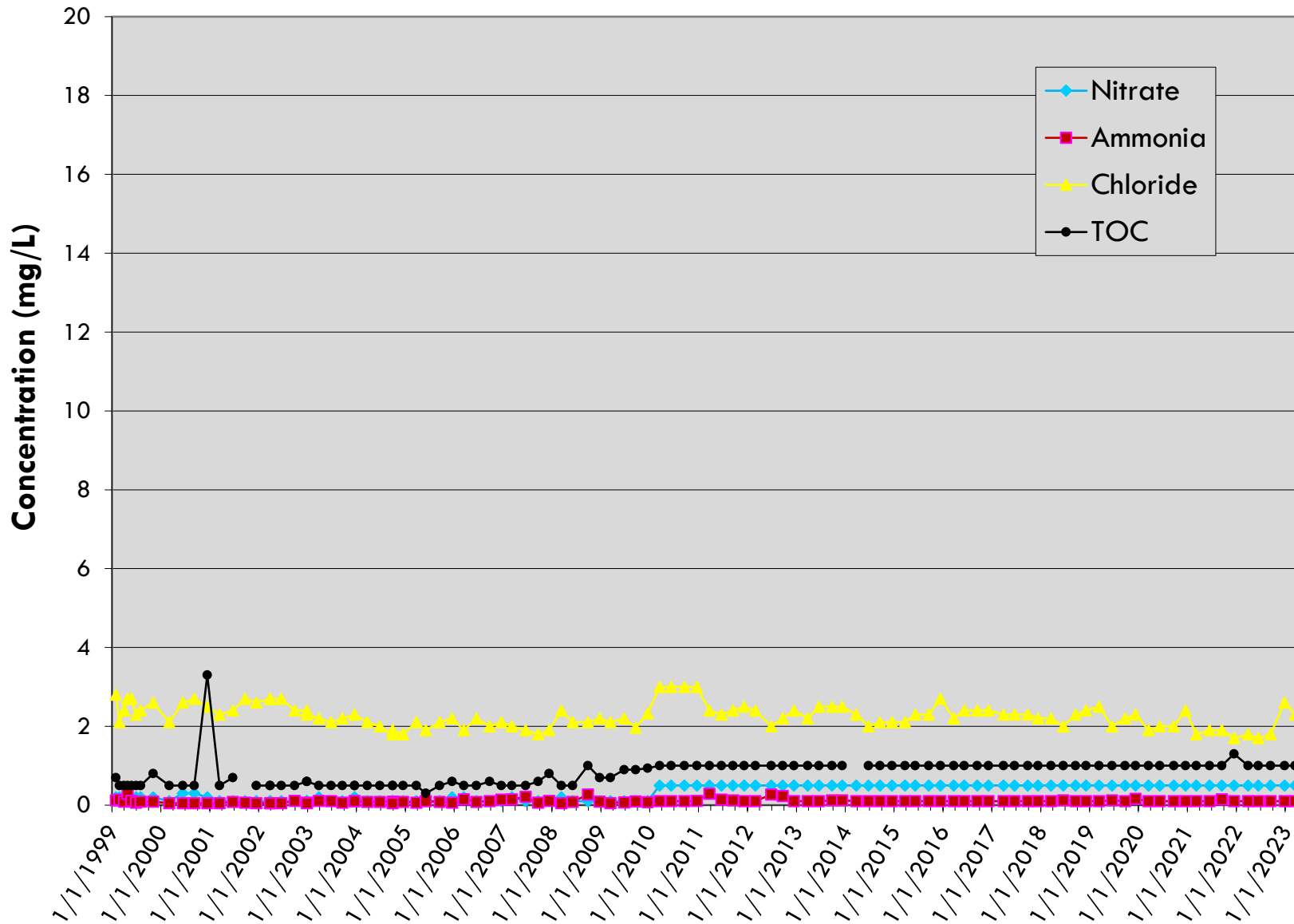
Lab qualifiers are noted. All data, as qualified, are acceptable for use.

Attachment G

Groundwater and LDCS Time Trend Plots

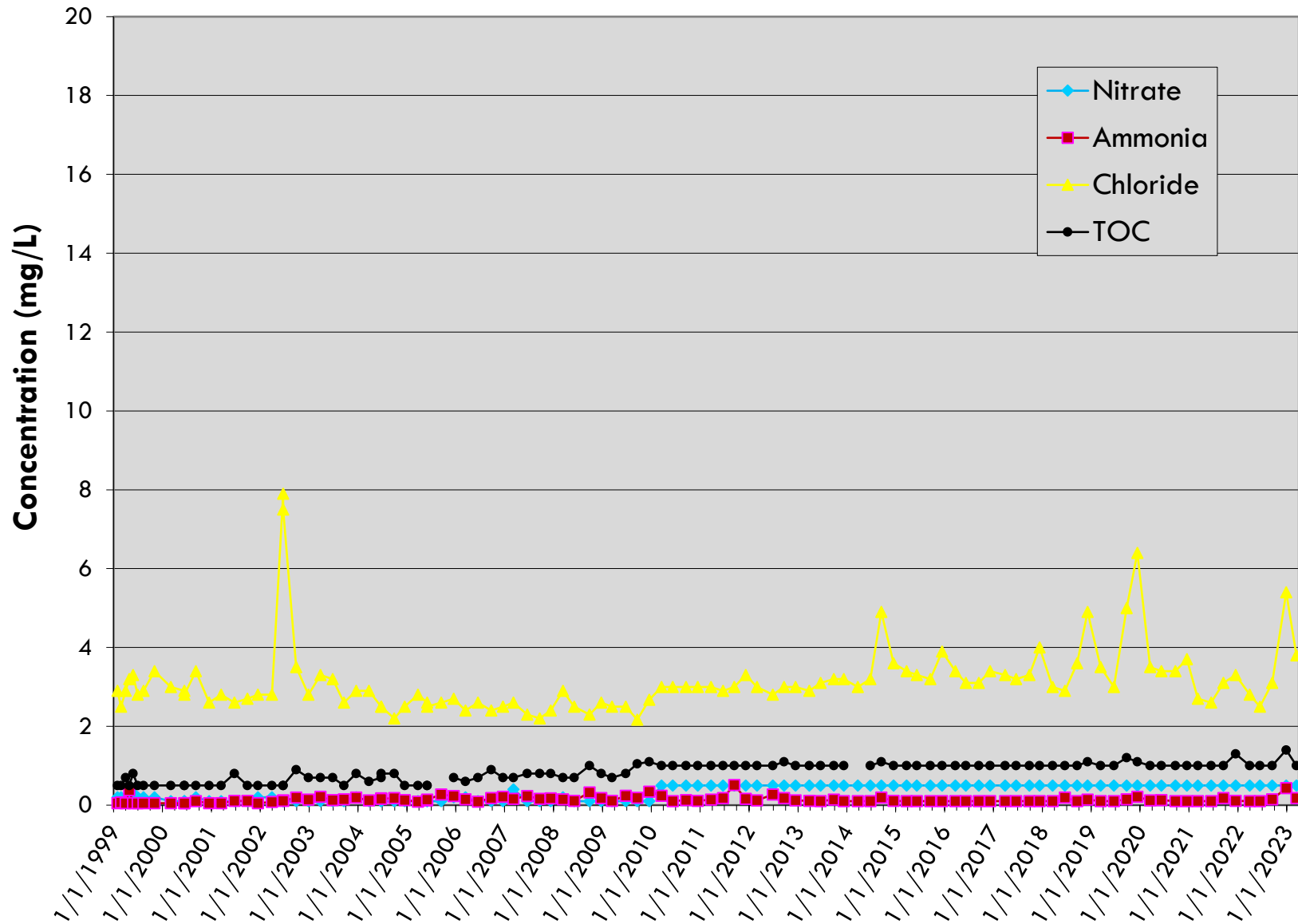
MW-1A

LRI Landfill, Pierce County, Washington



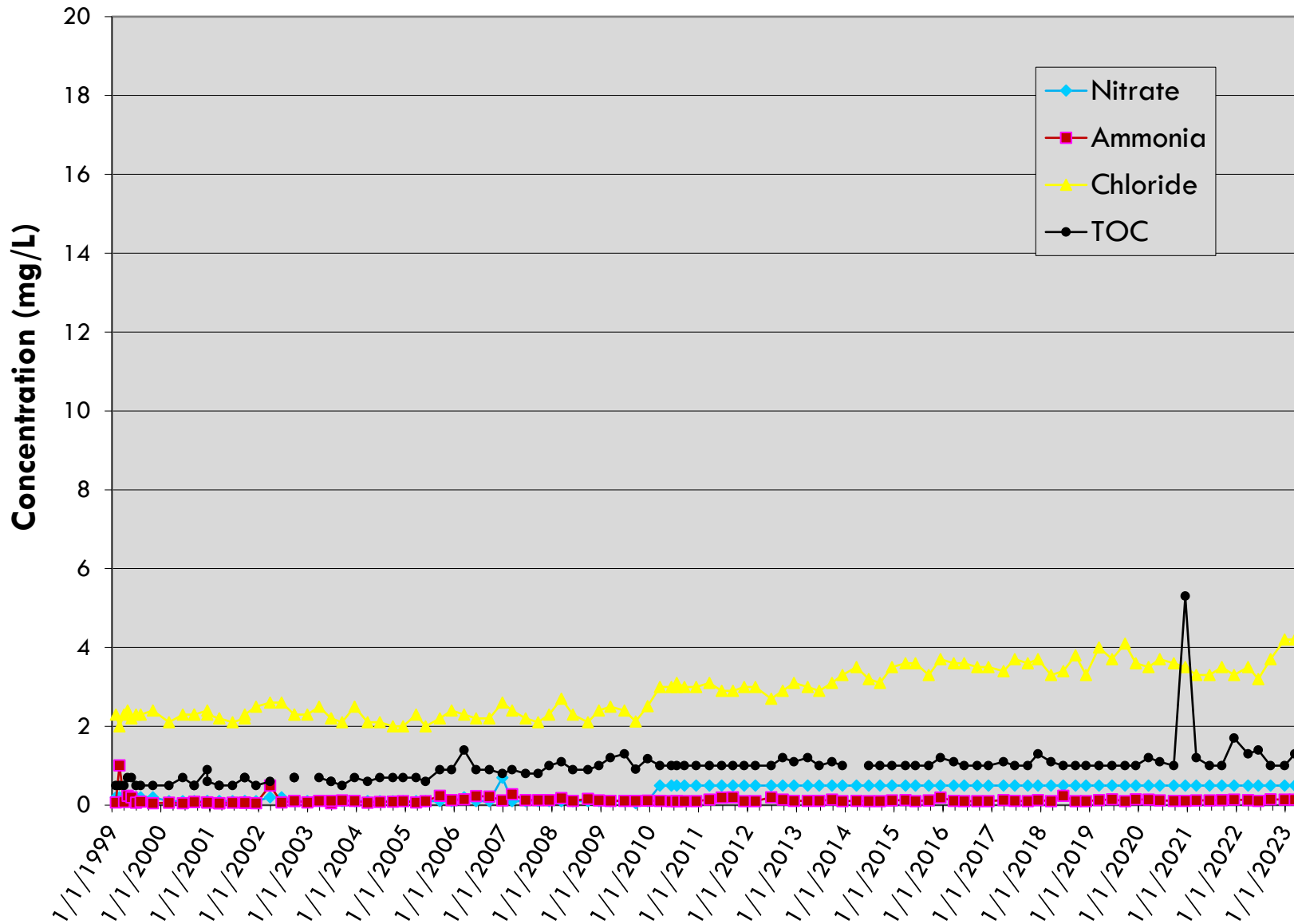
MW-2A

LRI Landfill, Pierce County, Washington



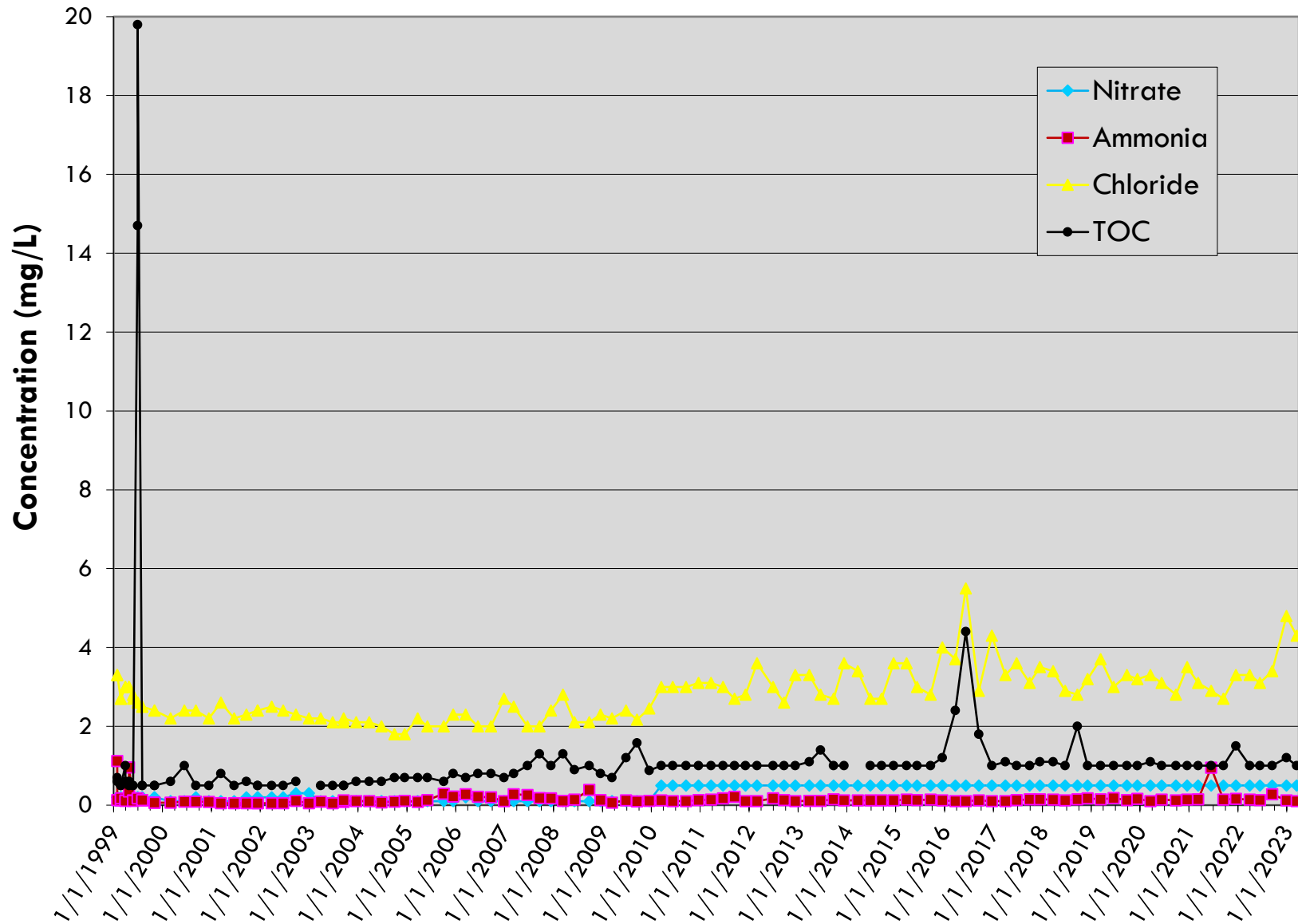
MW-3

LRI Landfill, Pierce County, Washington



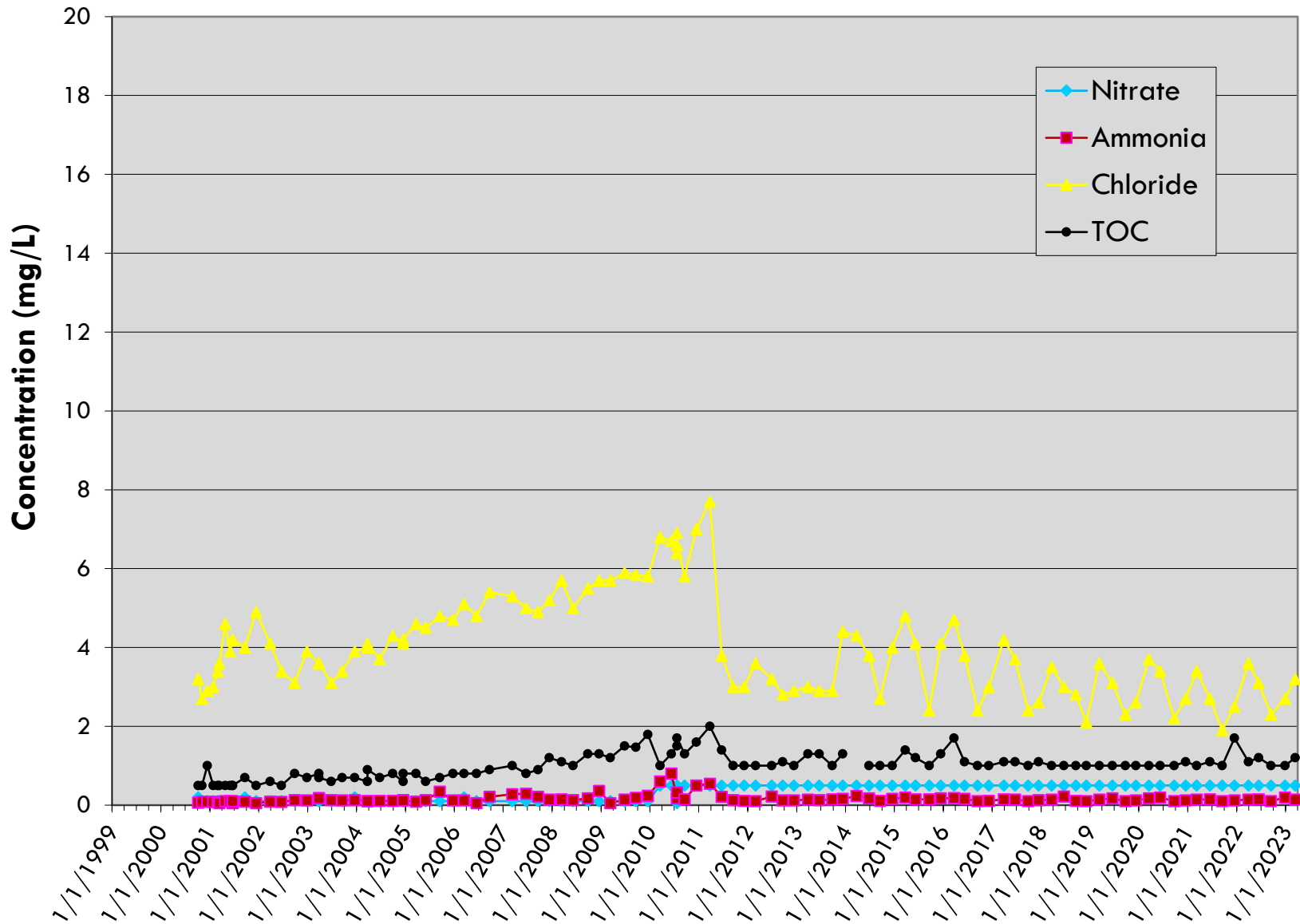
MW-4

LRI Landfill, Pierce County, Washington



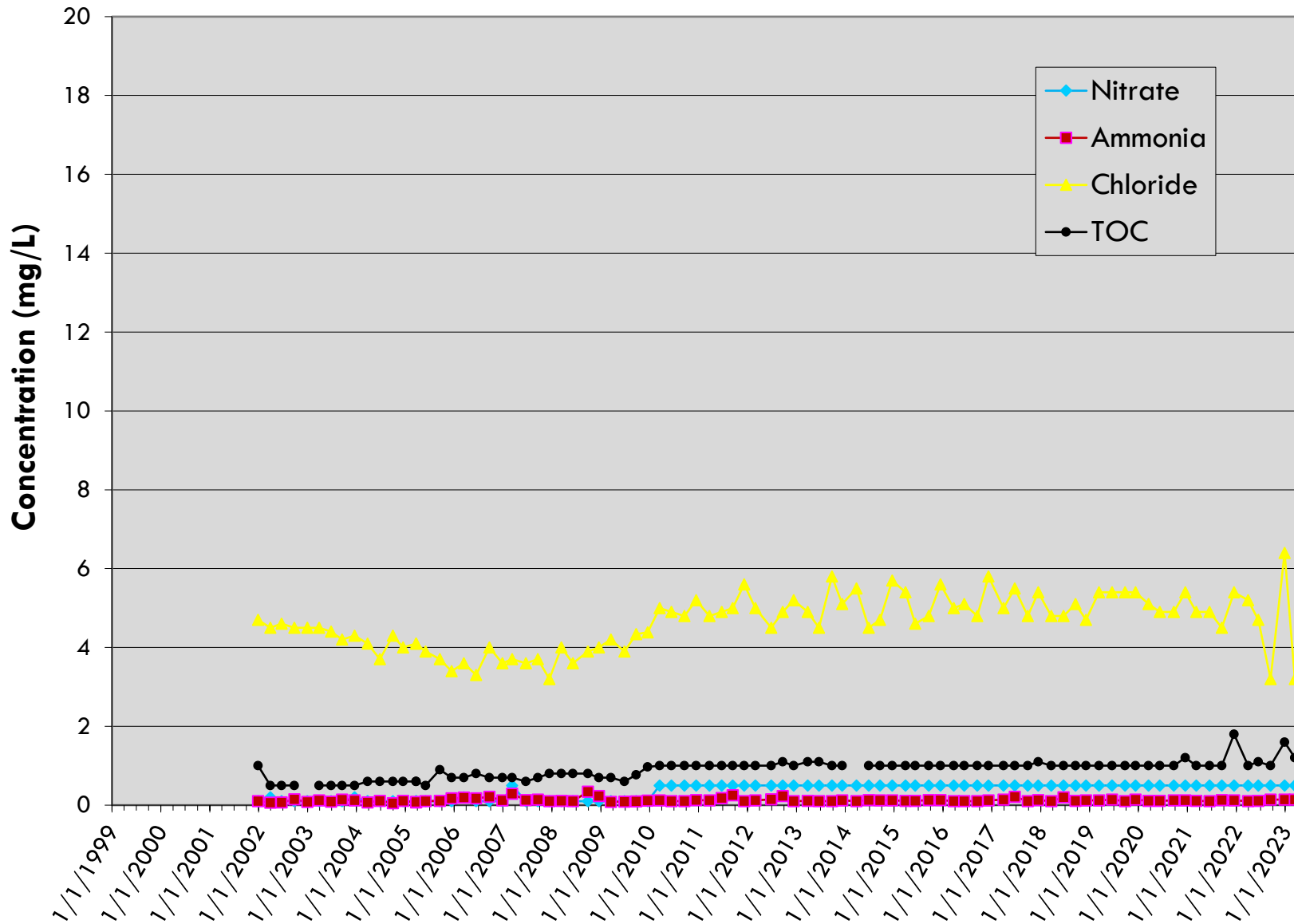
MW-5A

LRI Landfill, Pierce County, Washington



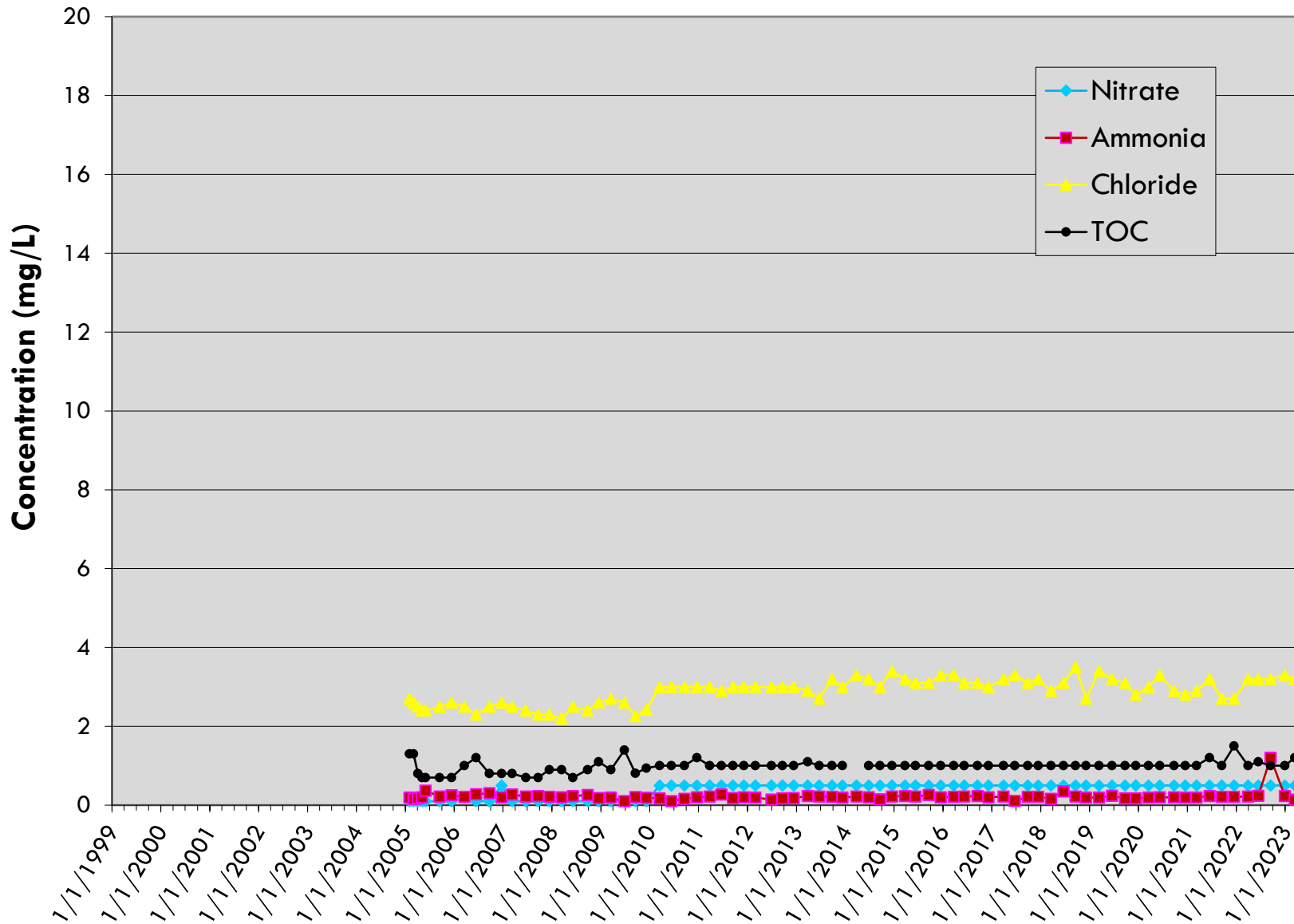
MW-6

LRI Landfill, Pierce County, Washington

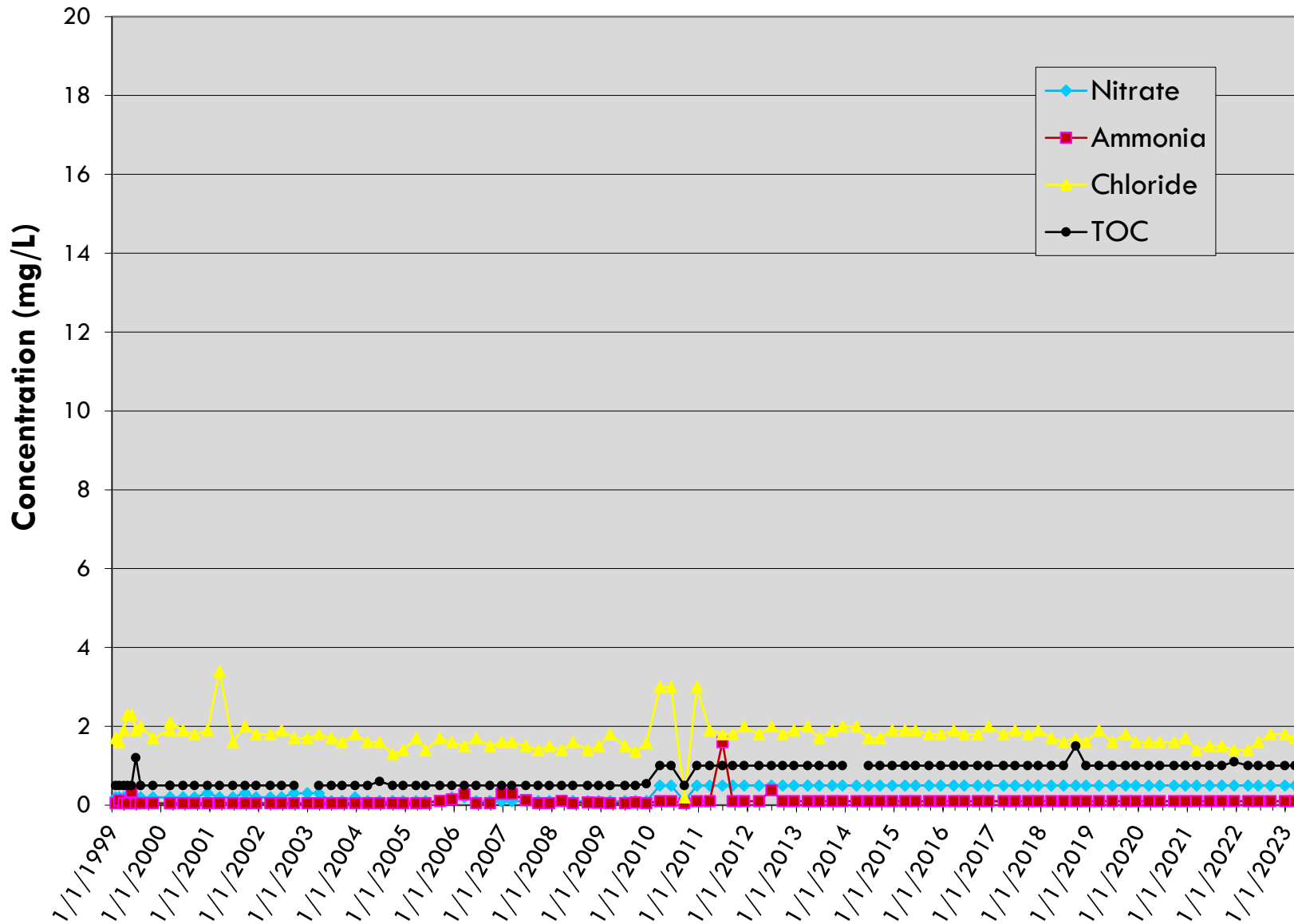


MW-7

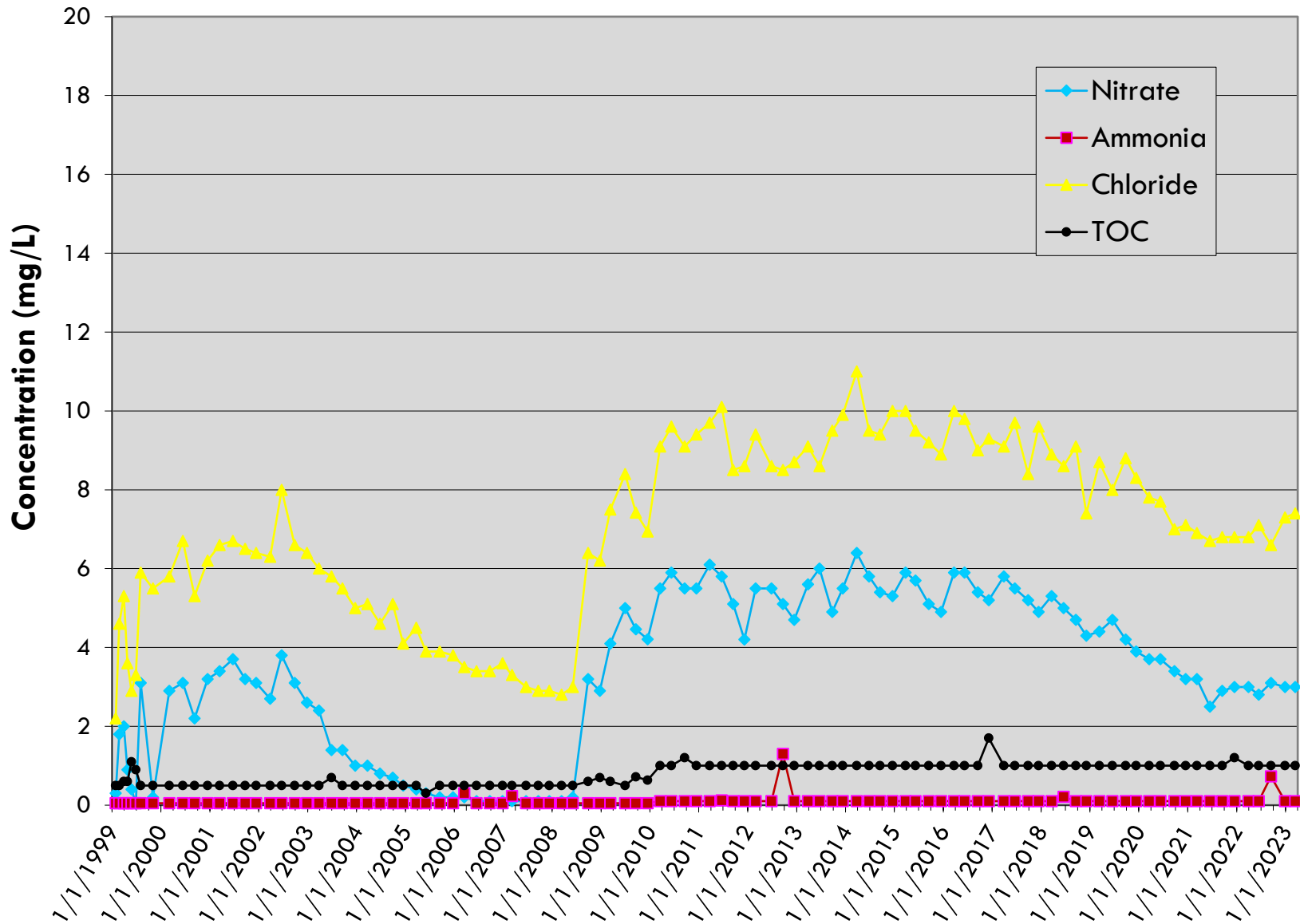
LRI Landfill, Pierce County, Washington



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

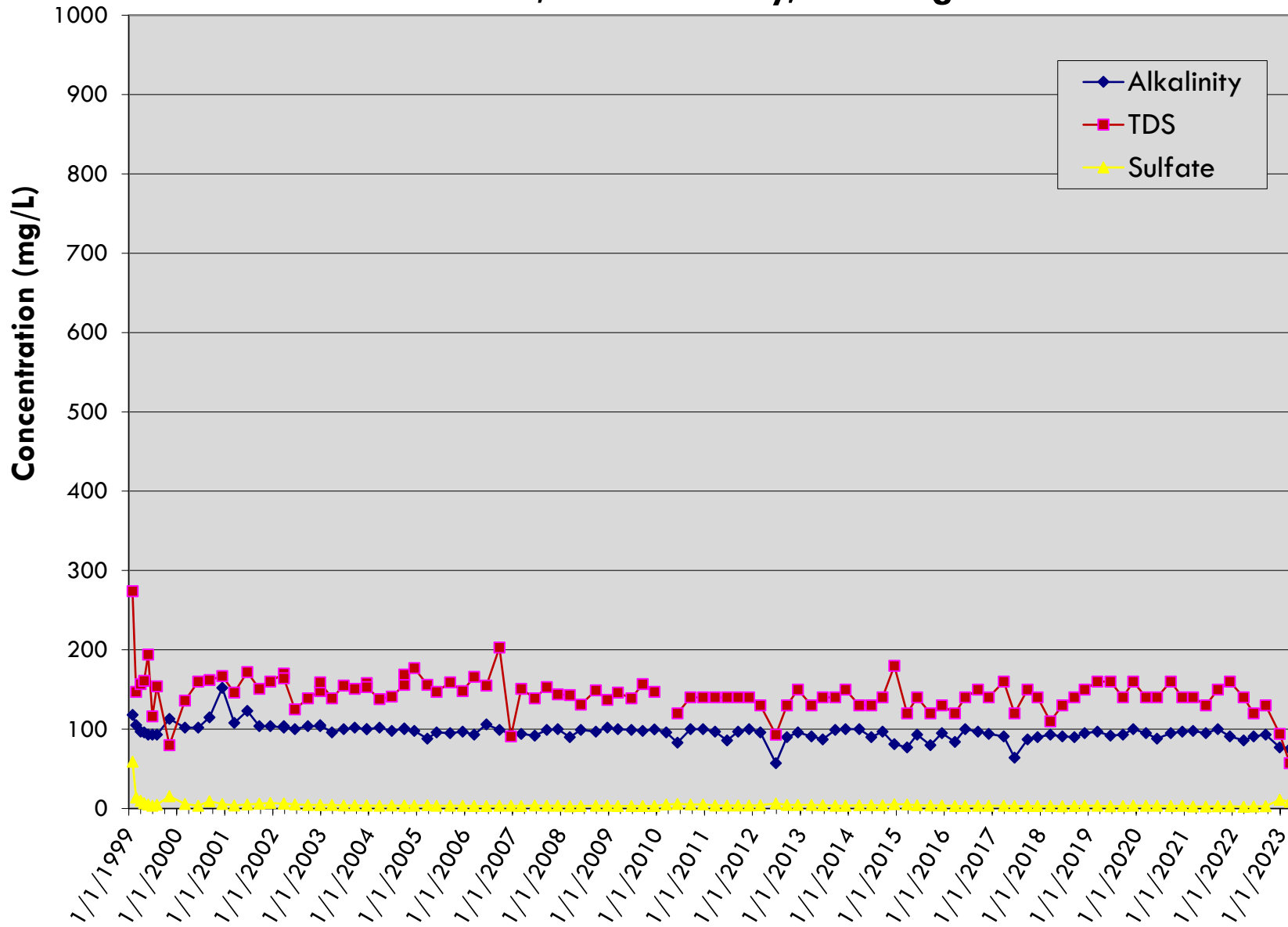


MW-10 (Background) LRI Landfill, Pierce County, Washington

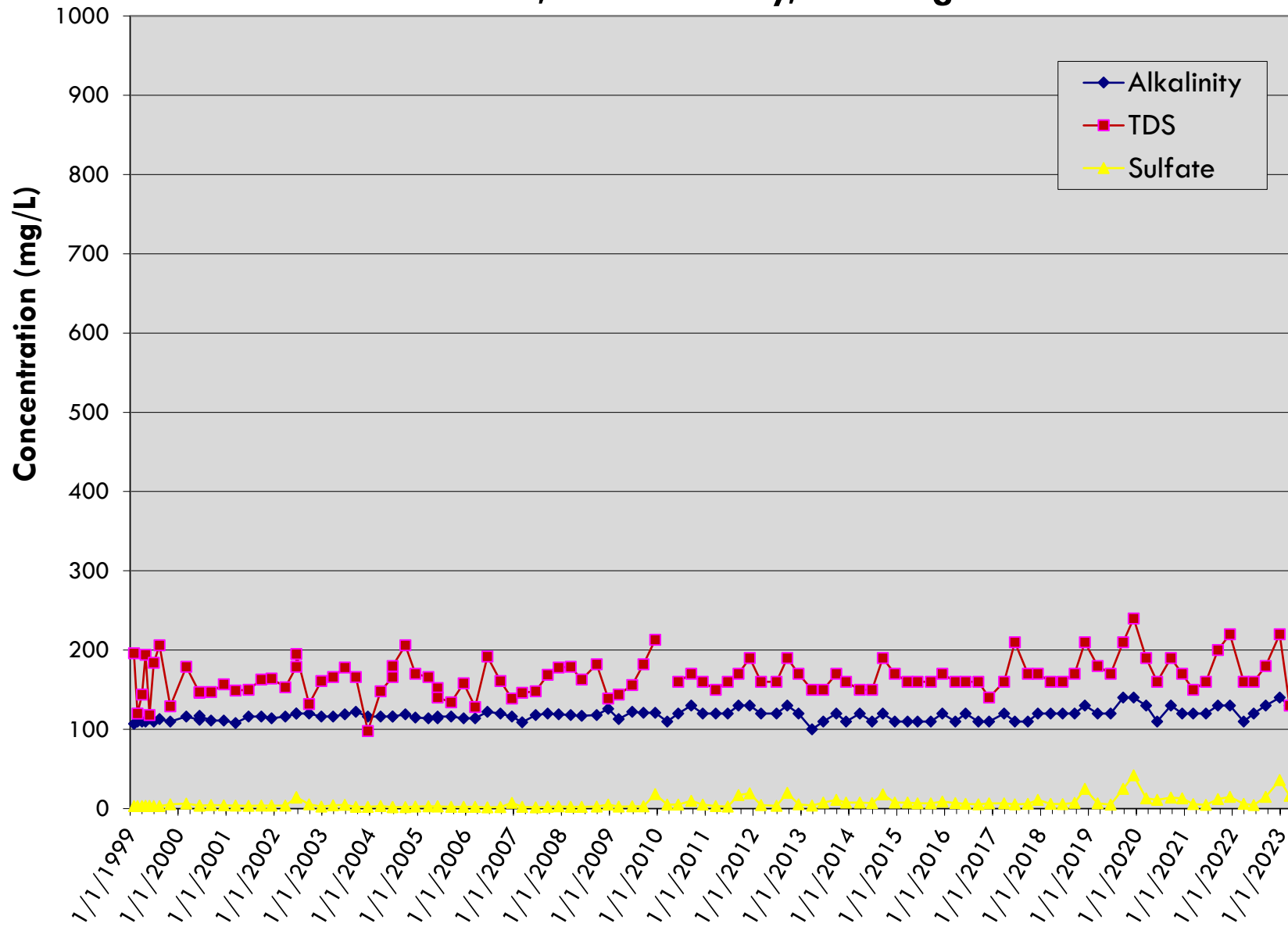


MW-1A

LRI Landfill, Pierce County, Washington

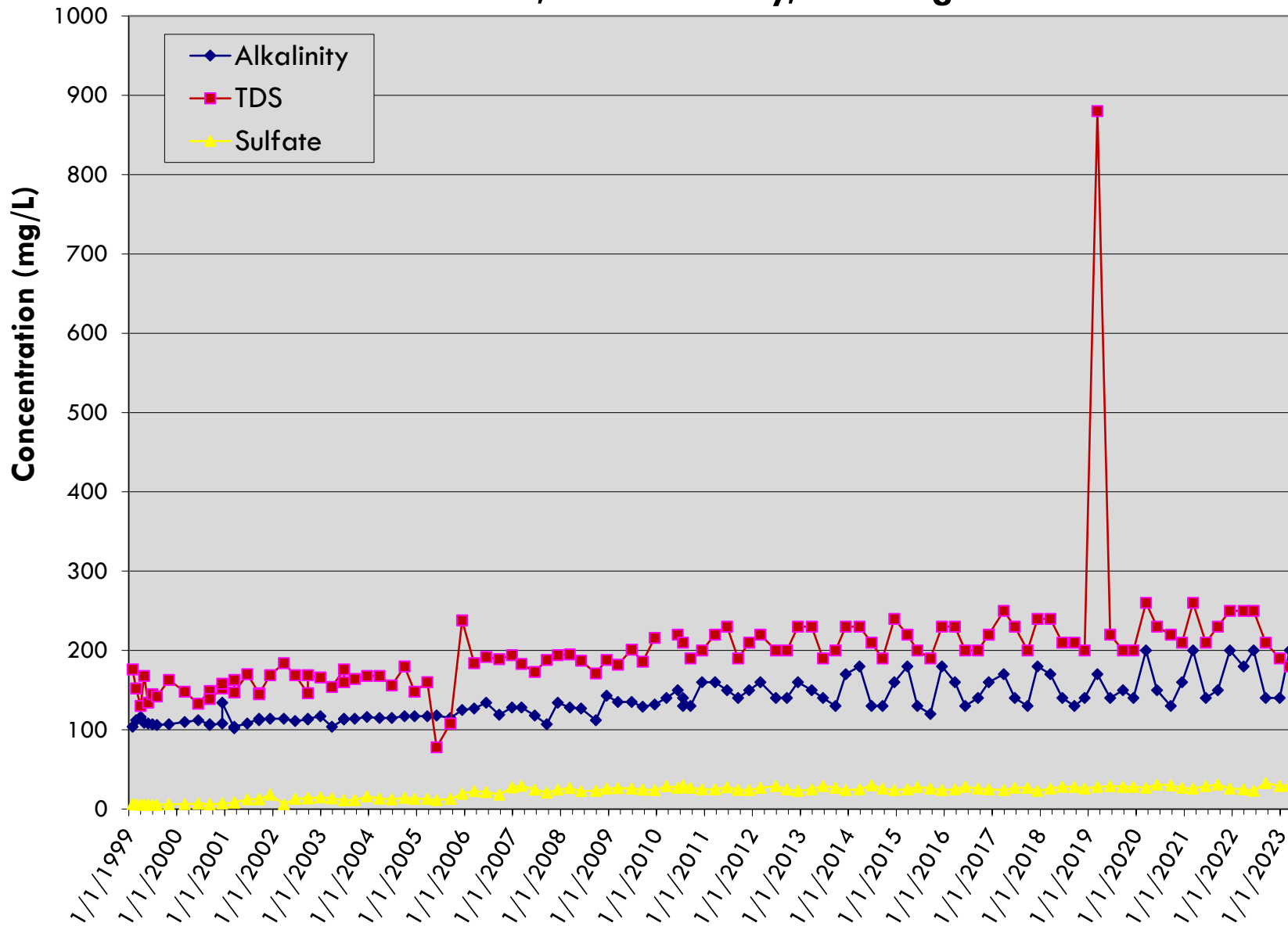


MW-2A
LRI Landfill, Pierce County, Washington

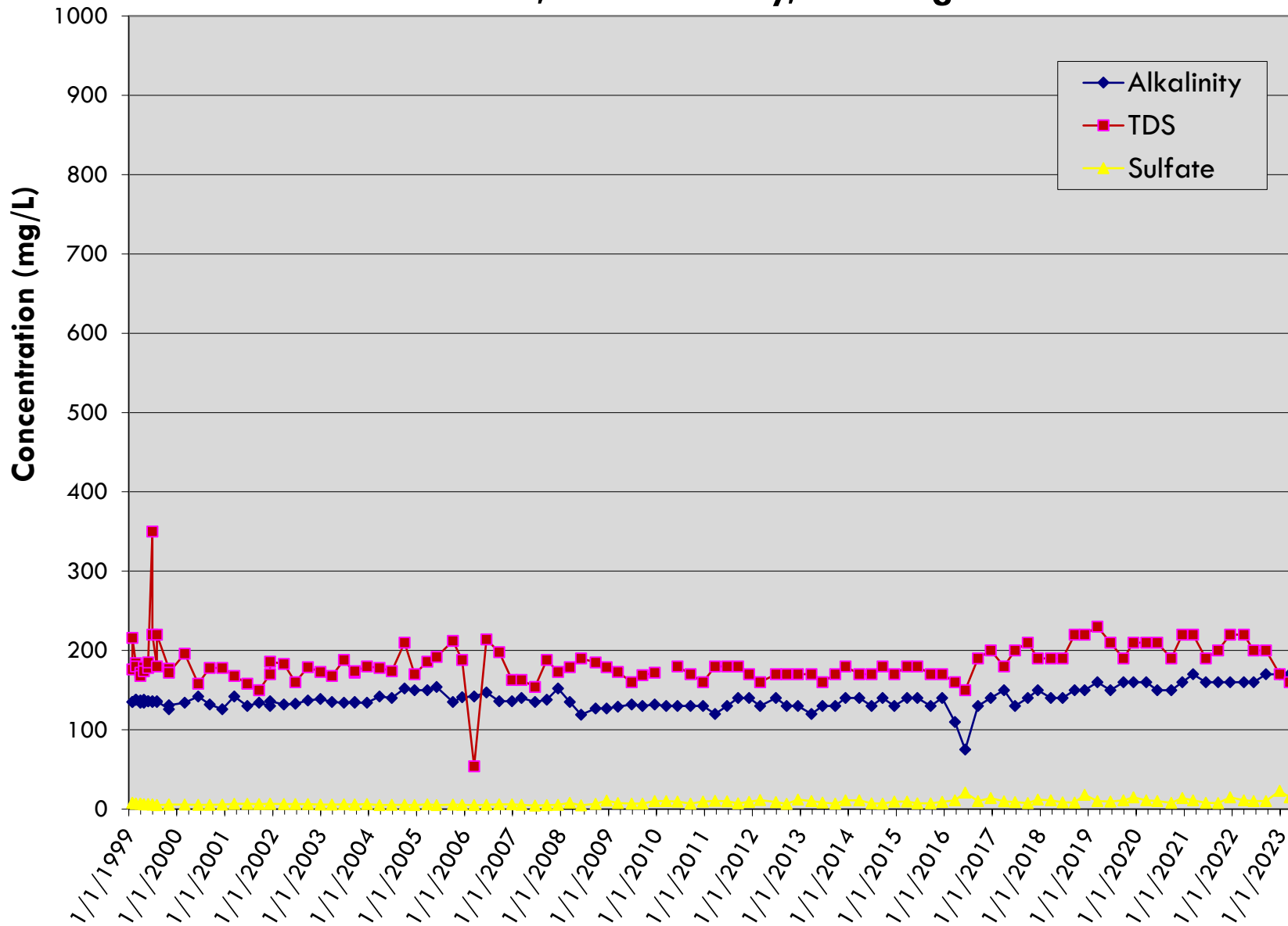


MW-3

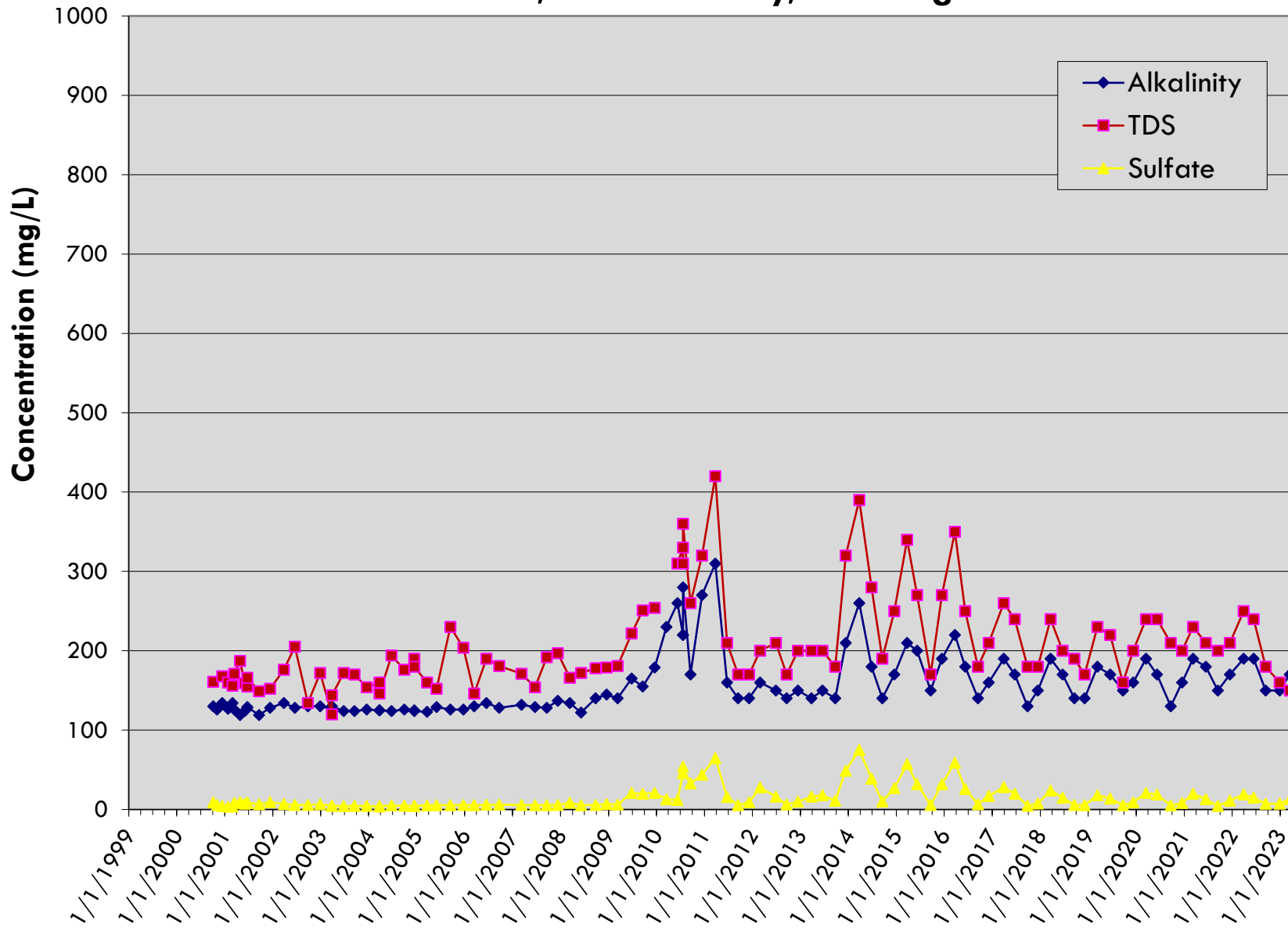
LRI Landfill, Pierce County, Washington



MW-4
LRI Landfill, Pierce County, Washington

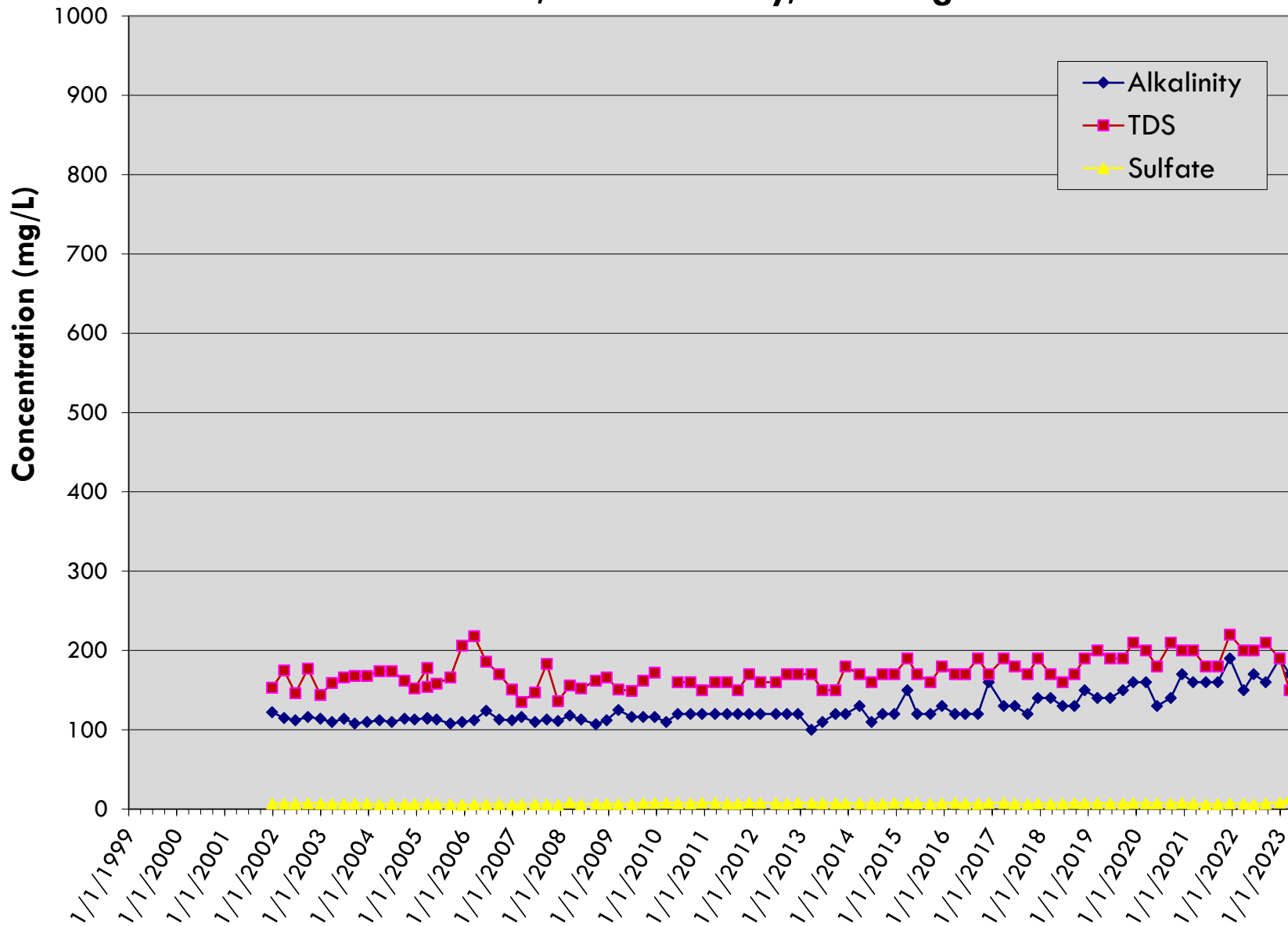


MW-5A
LRI Landfill, Pierce County, Washington

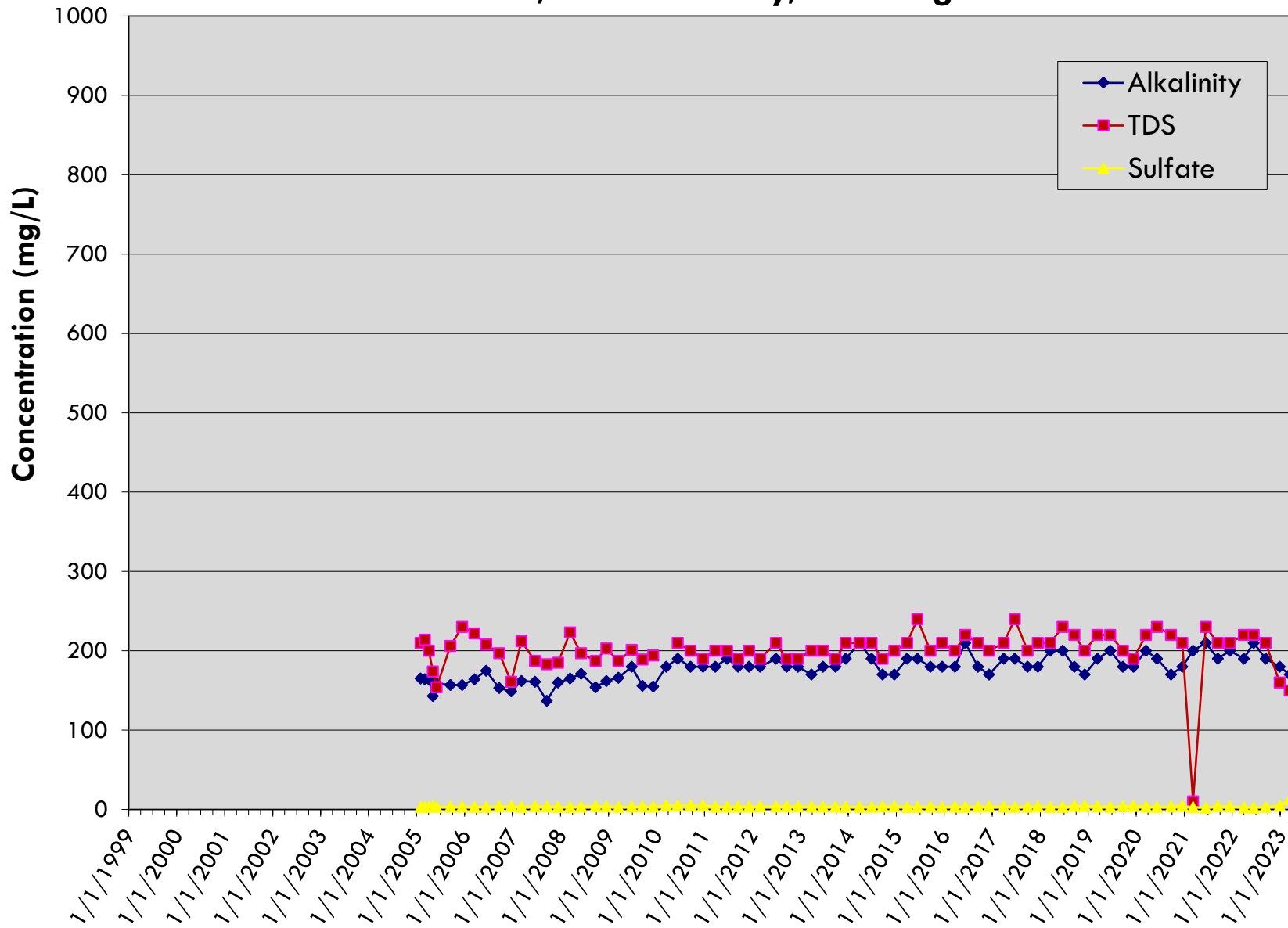


MW-6

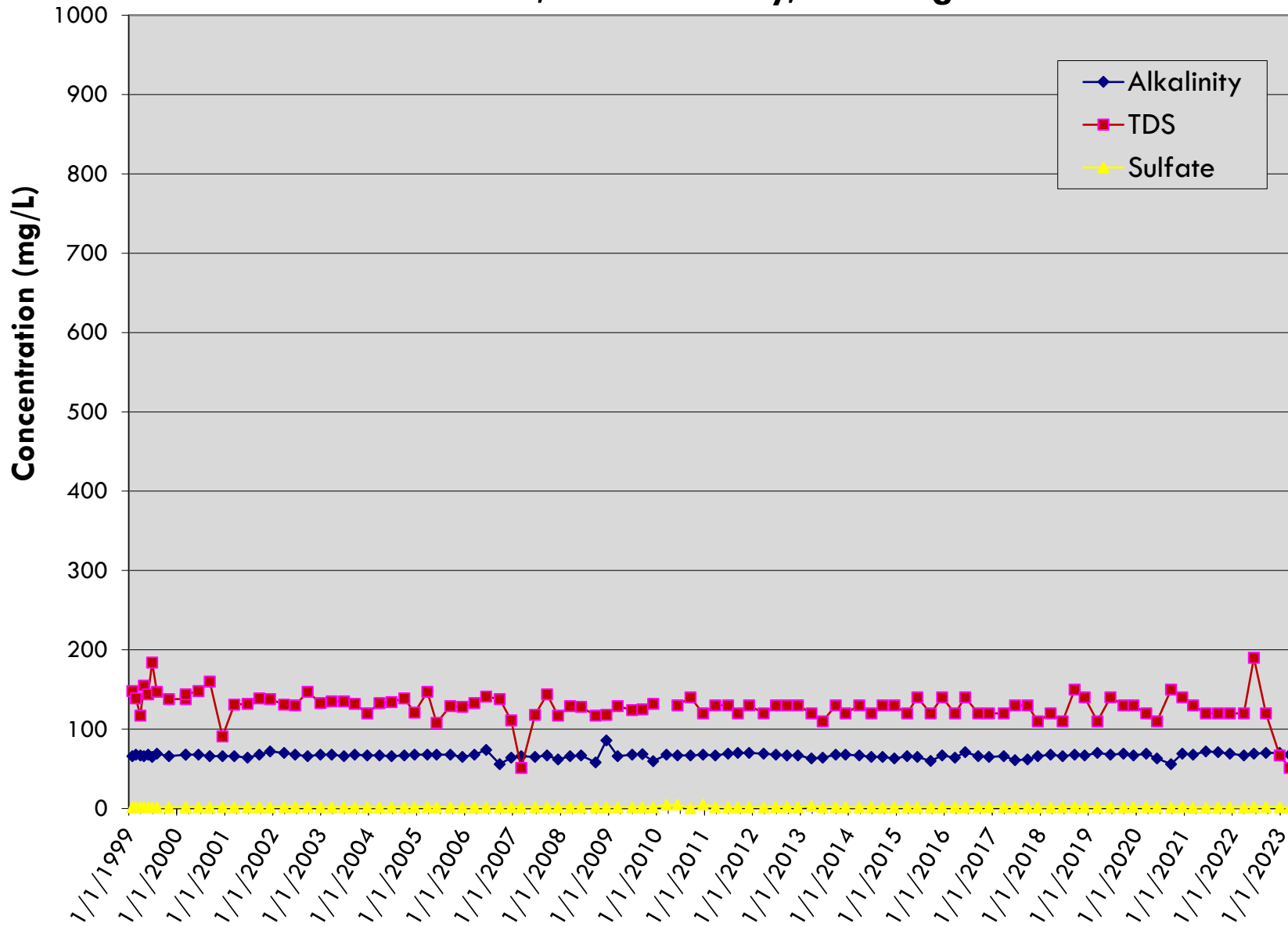
LRI Landfill, Pierce County, Washington



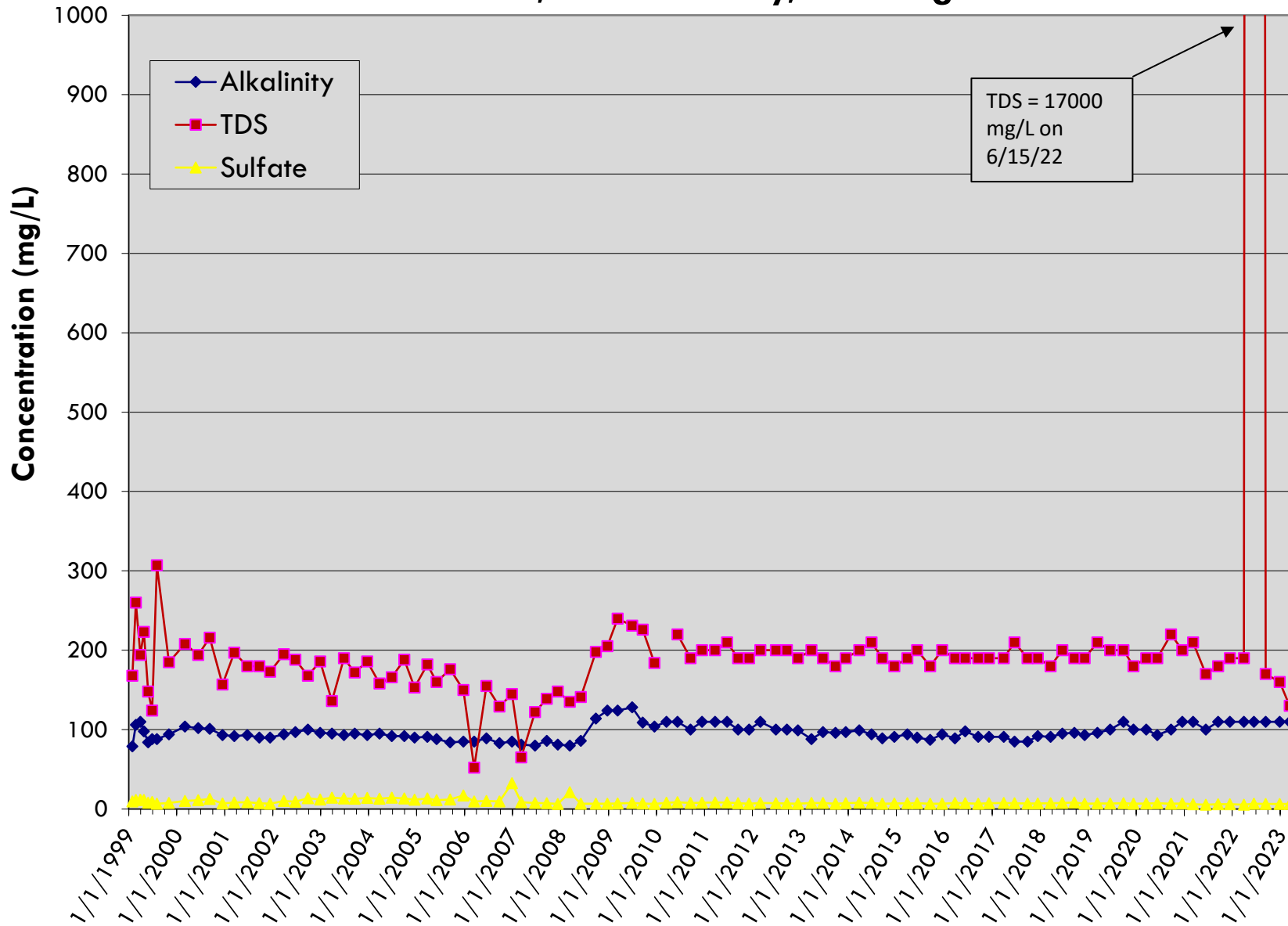
MW-7
LRI Landfill, Pierce County, Washington



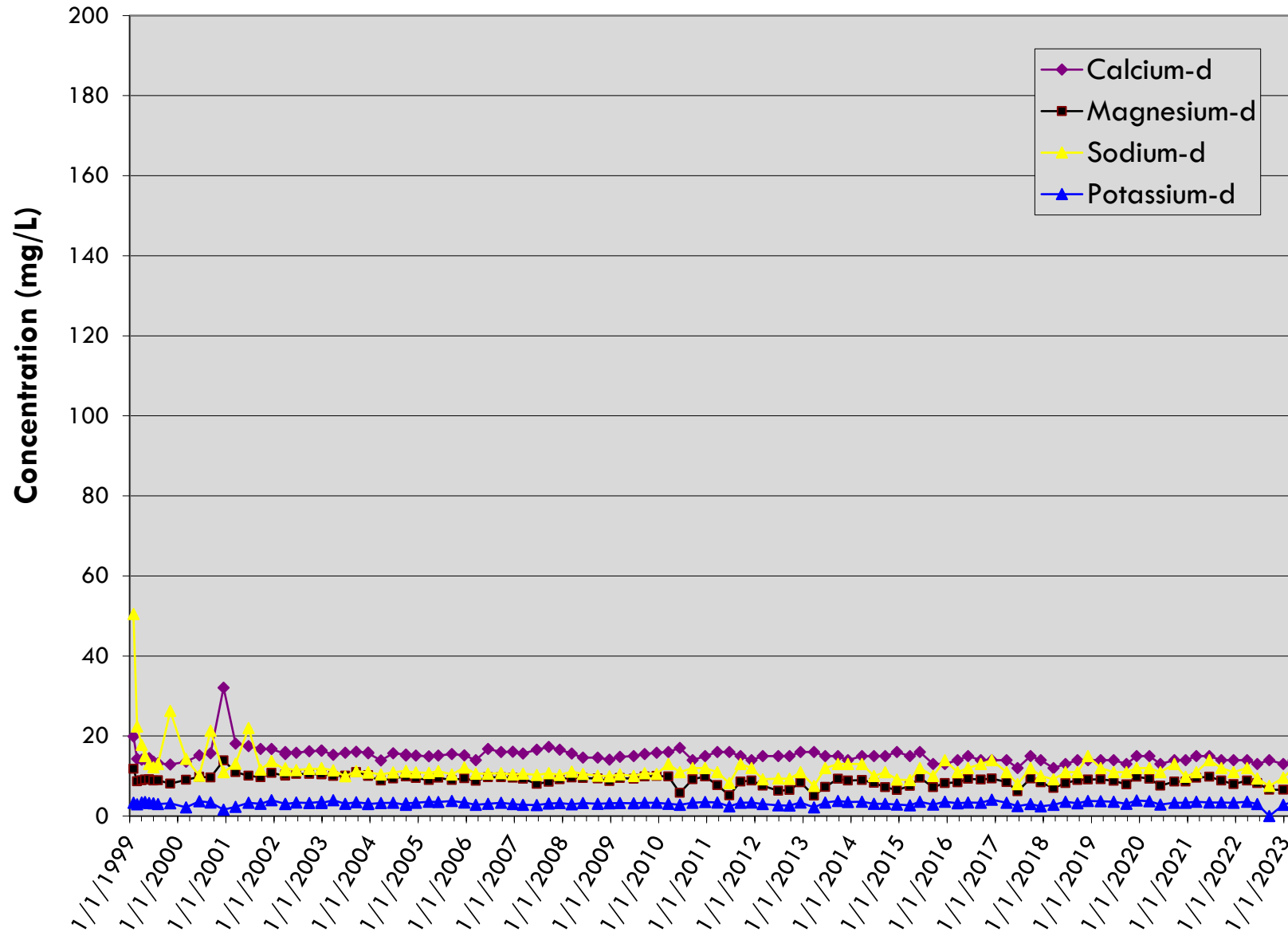
MW-9 (Background)
LRI Landfill, Pierce County, Washington



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

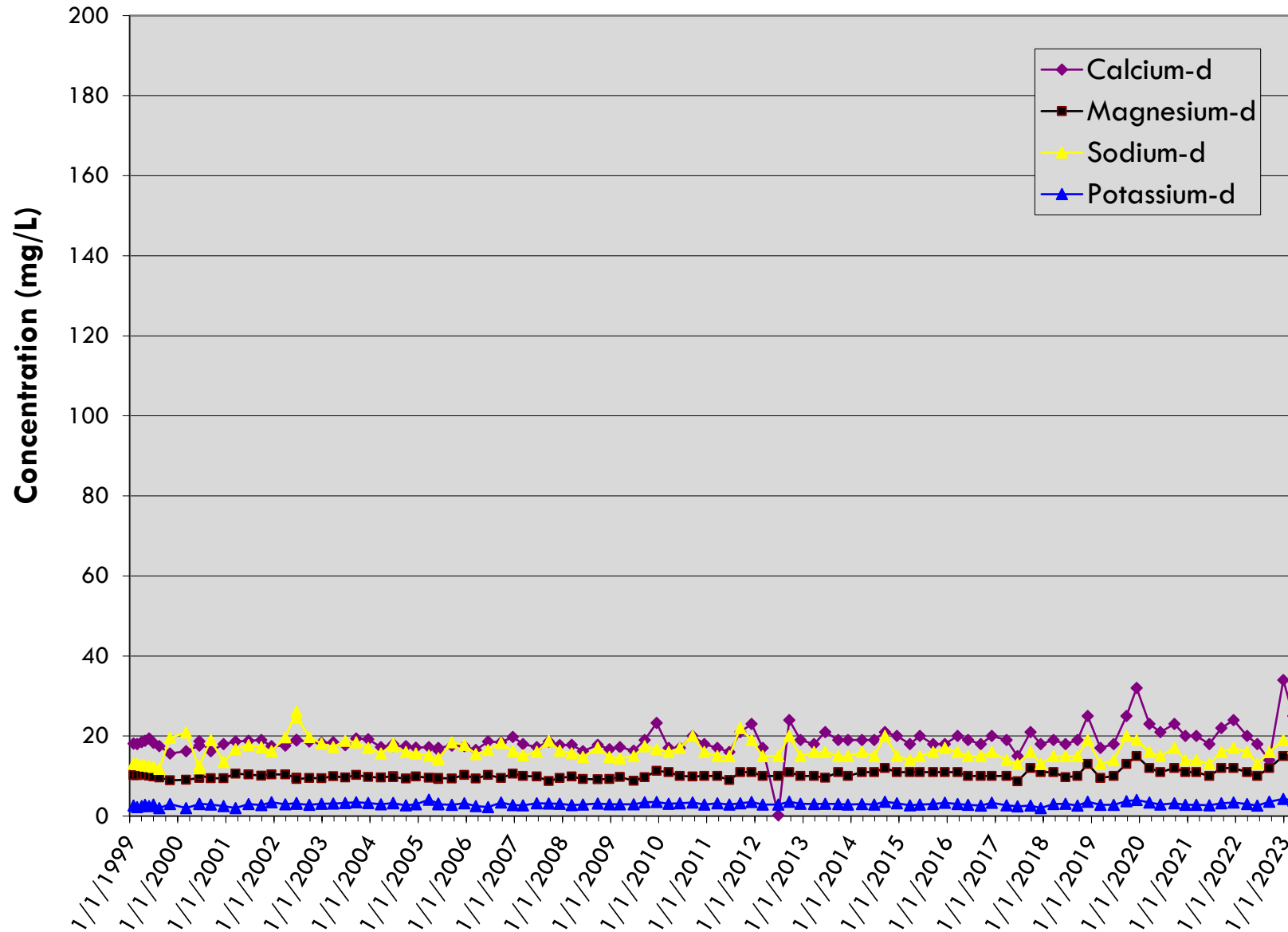


MW-1A
LRI Landfill, Pierce County, Washington



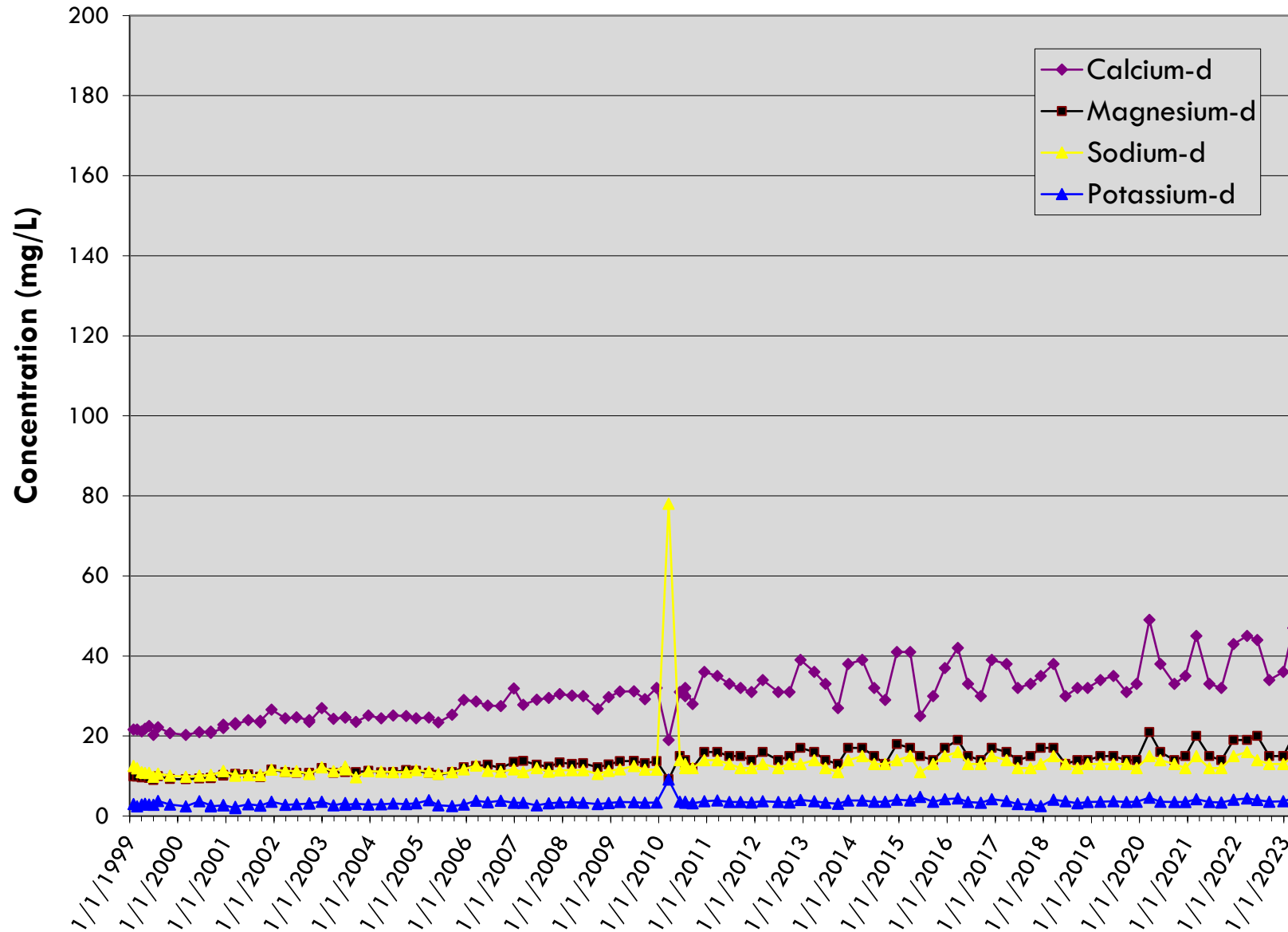
MW-2A

LRI Landfill, Pierce County, Washington



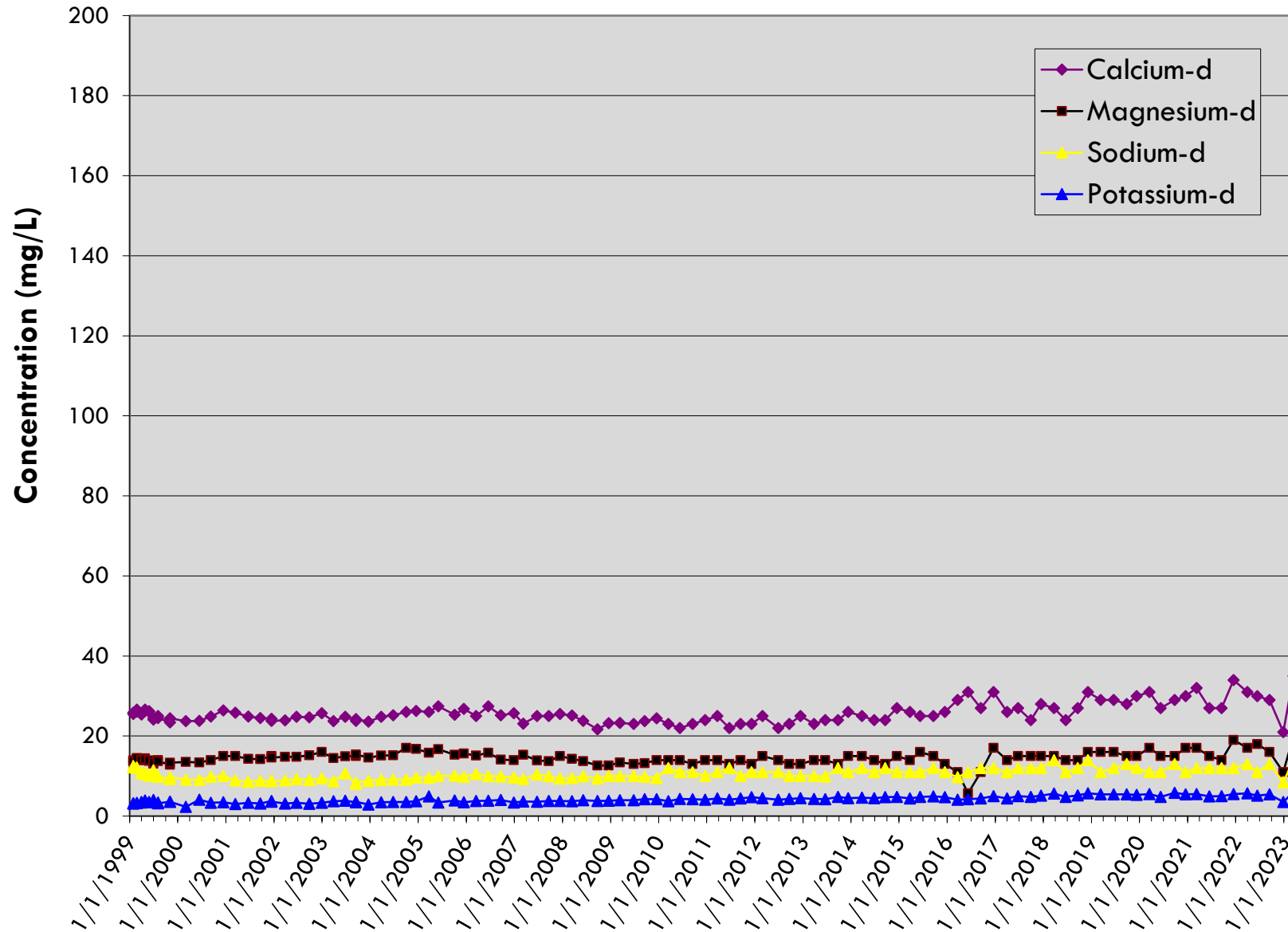
MW-3

LRI Landfill, Pierce County, Washington



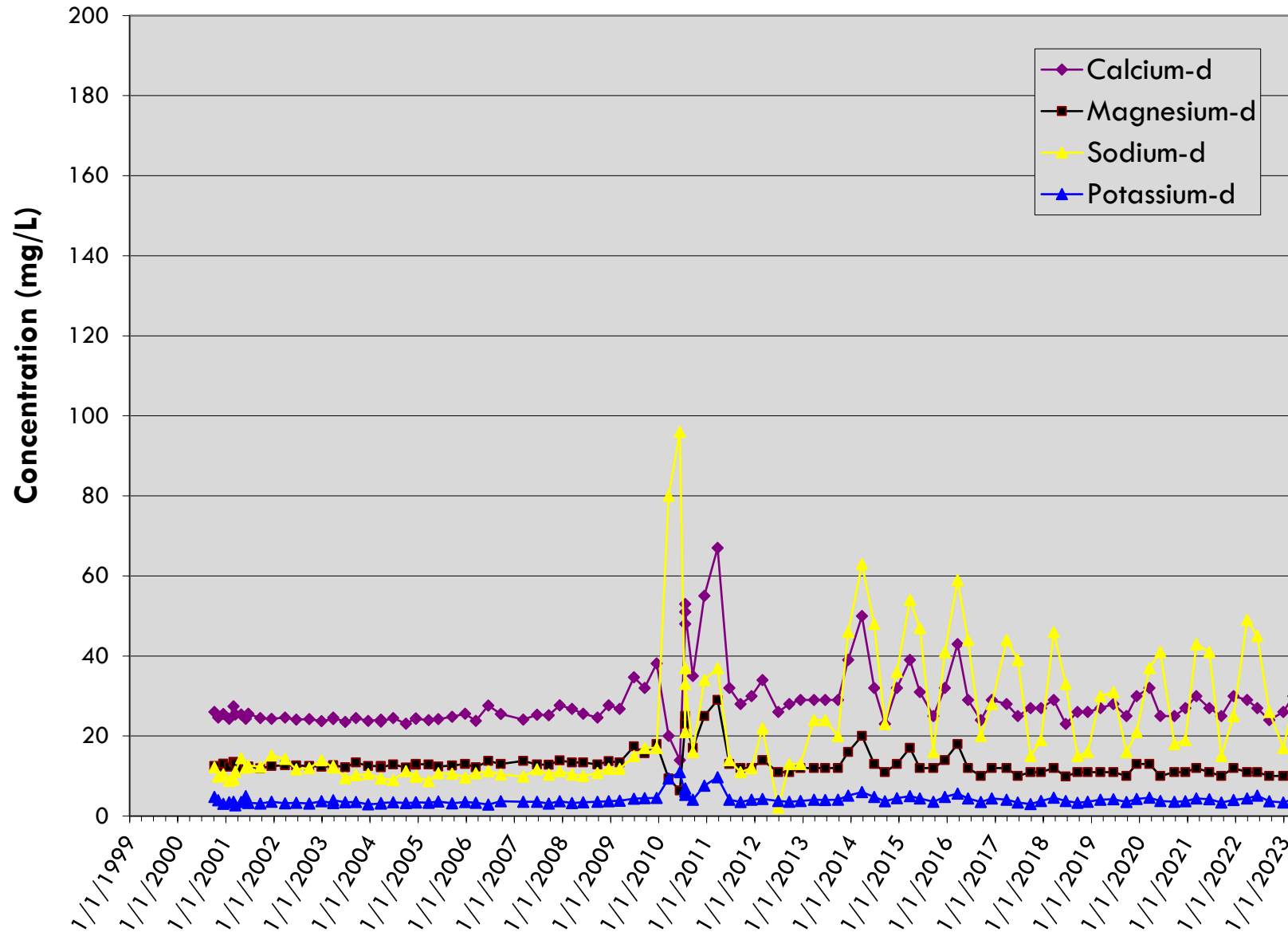
MW-4

LRI Landfill, Pierce County, Washington



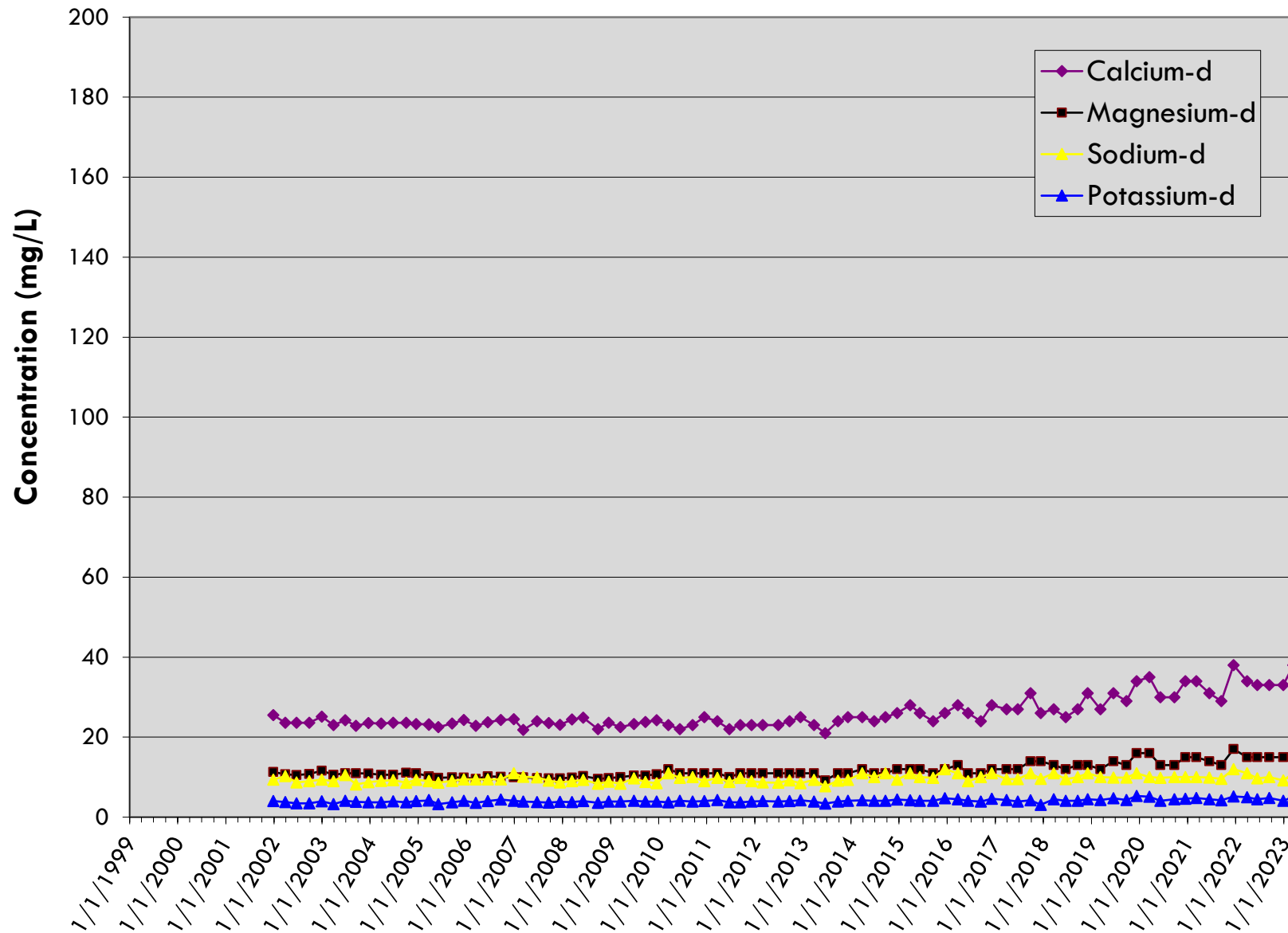
MW-5A

LRI Landfill, Pierce County, Washington



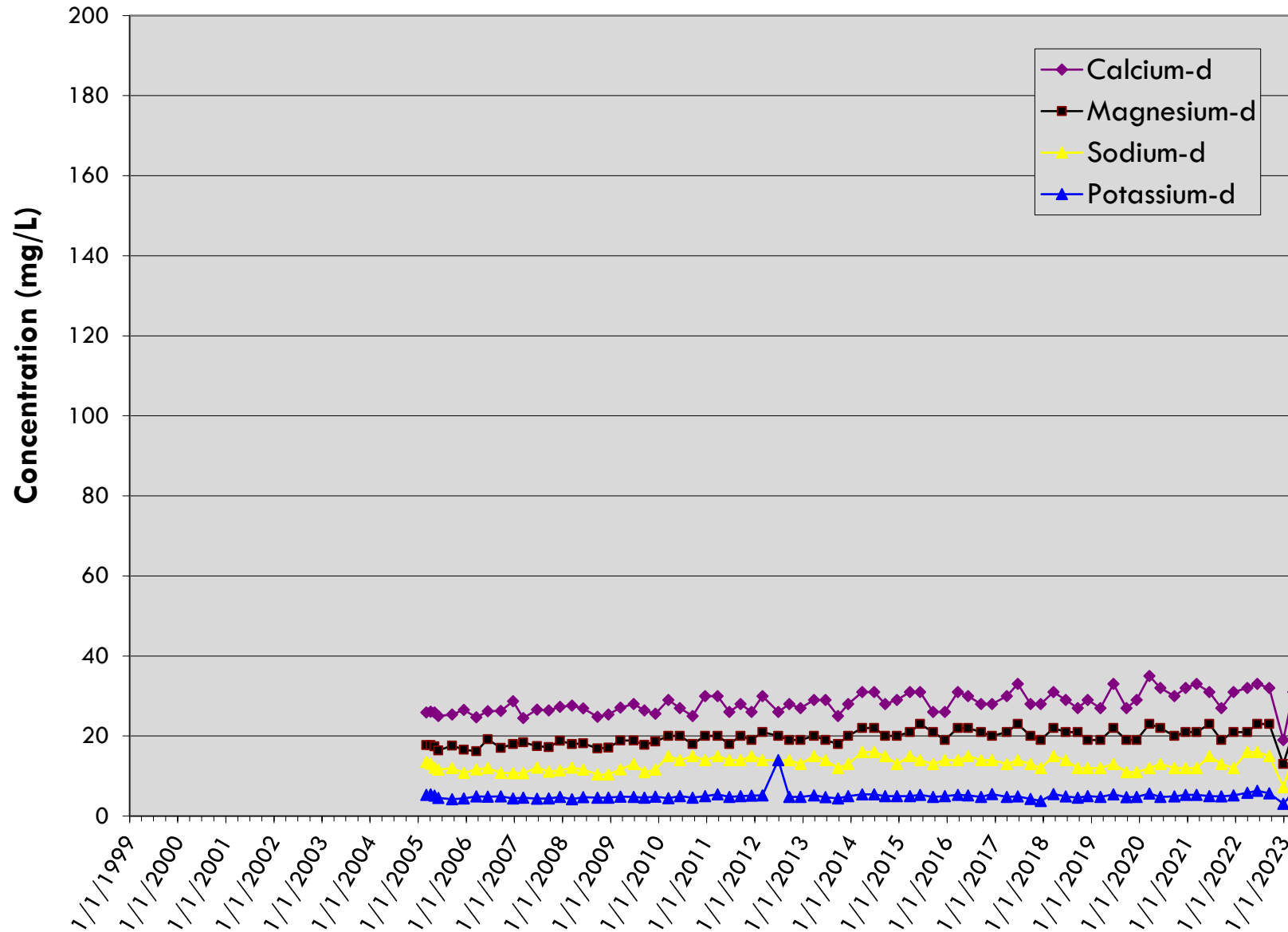
MW-6

LRI Landfill, Pierce County, Washington

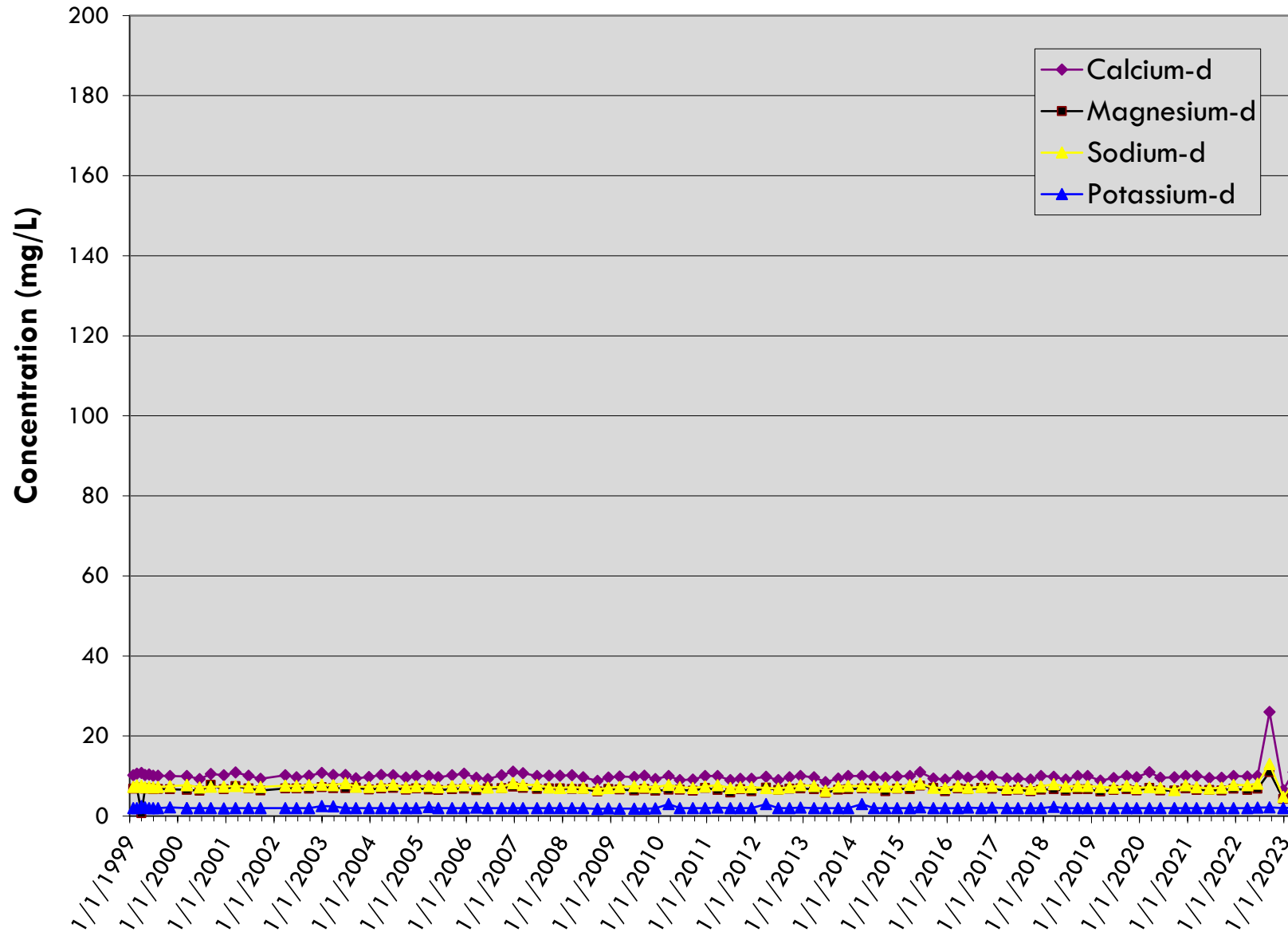


MW-7

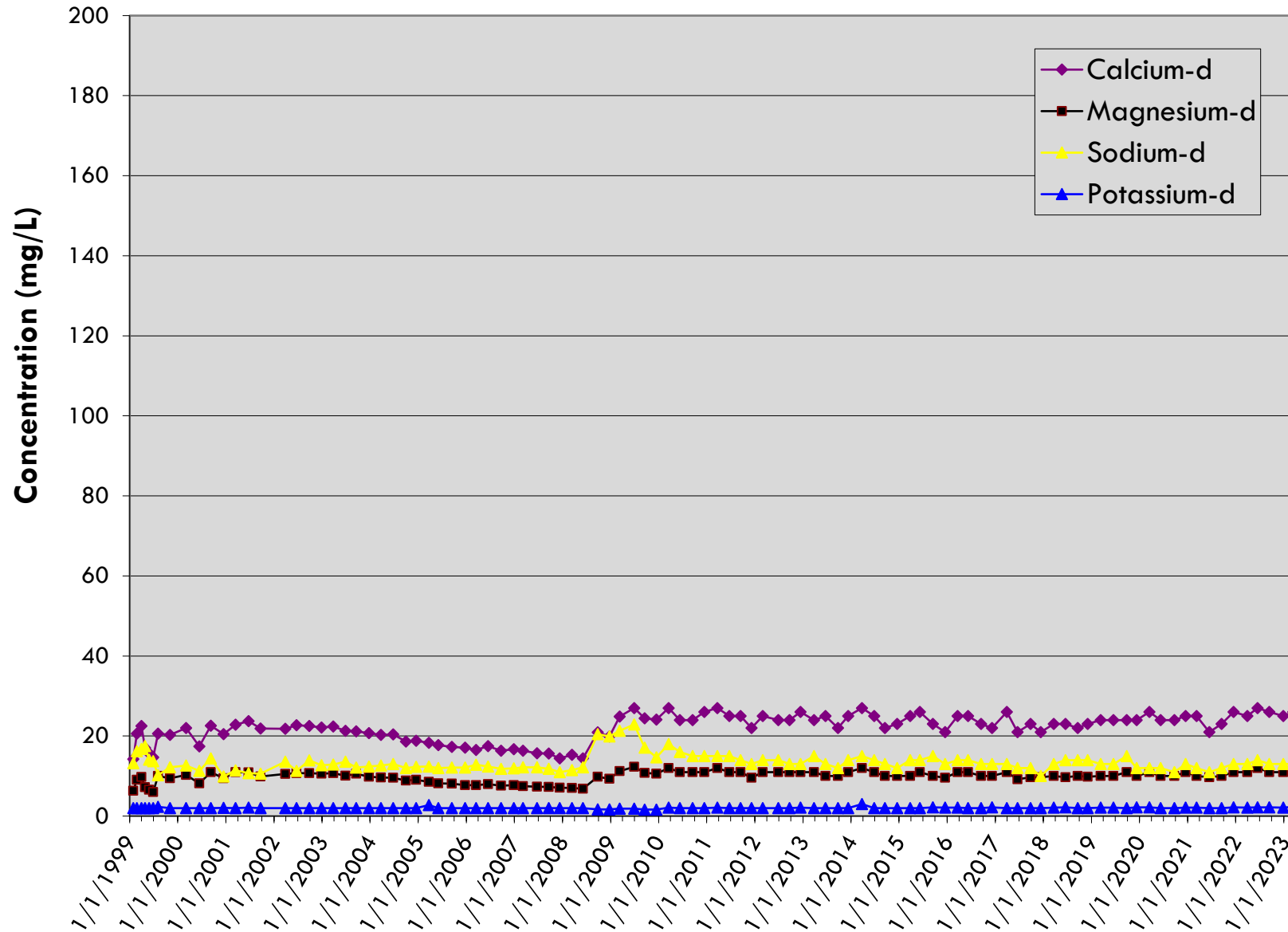
LRI Landfill, Pierce County, Washington



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

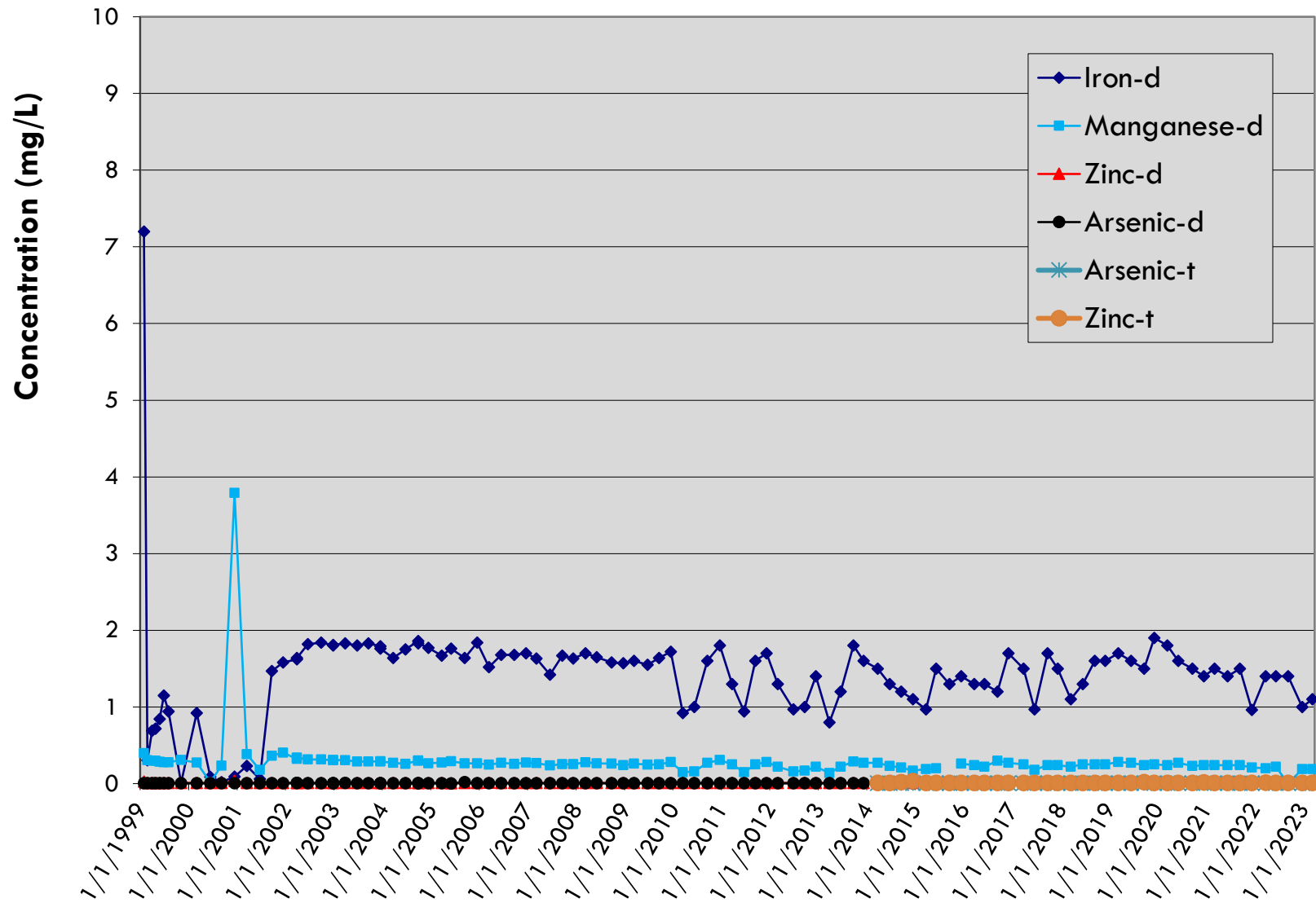


MW-10 (Background) LRI Landfill, Pierce County, Washington



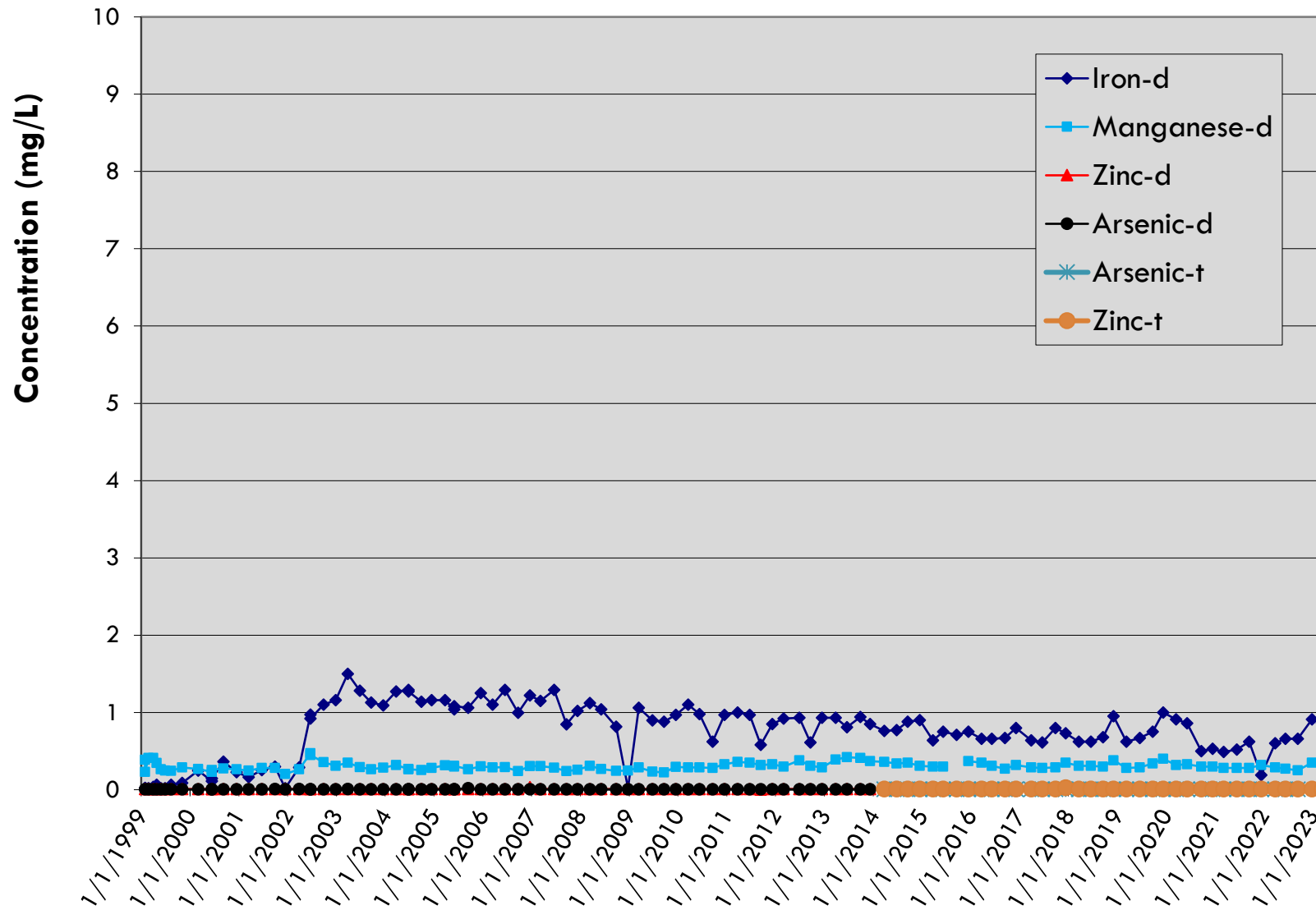
MW-1A

LRI Landfill, Pierce County, Washington

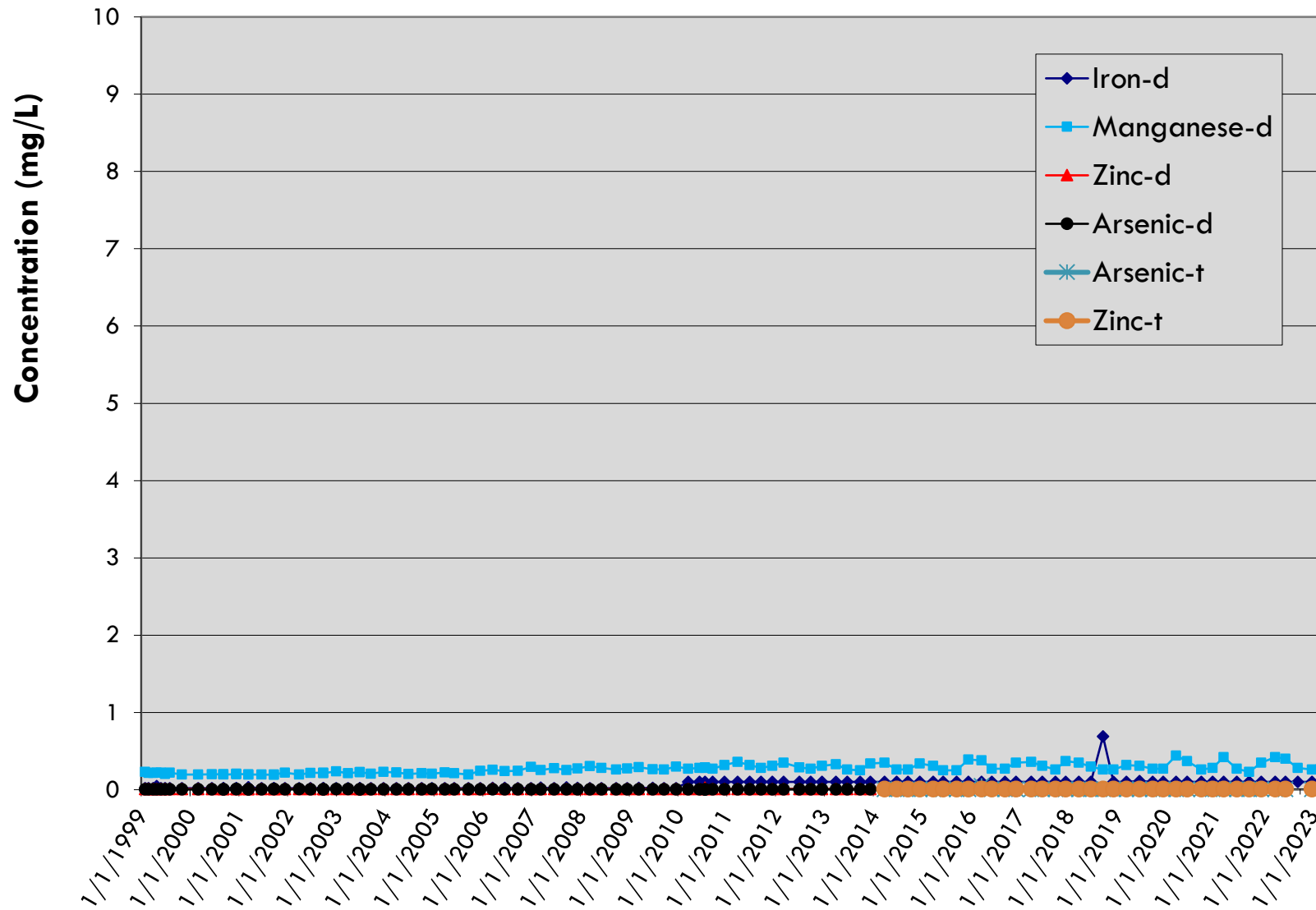


MW-2A

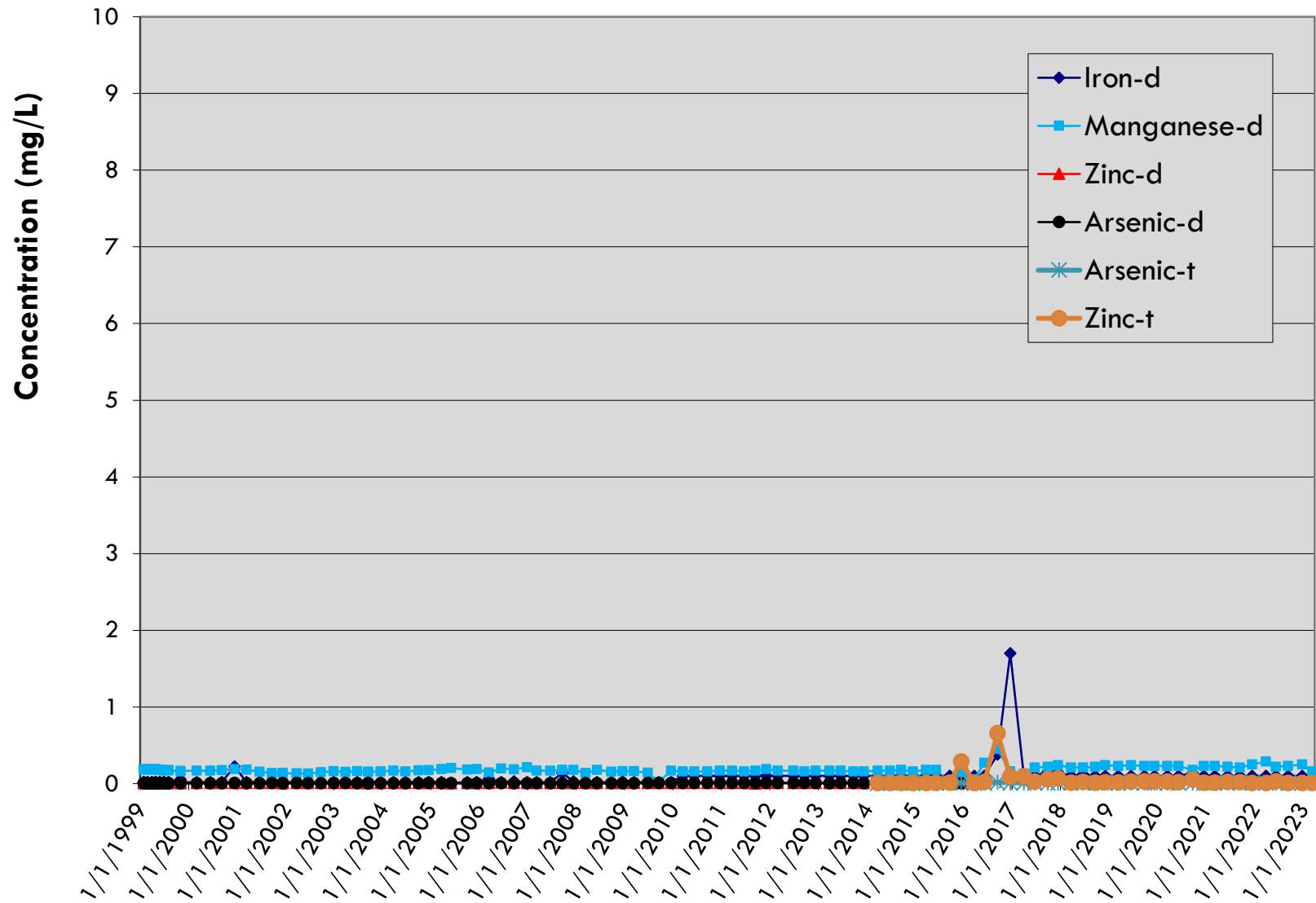
LRI Landfill, Pierce County, Washington



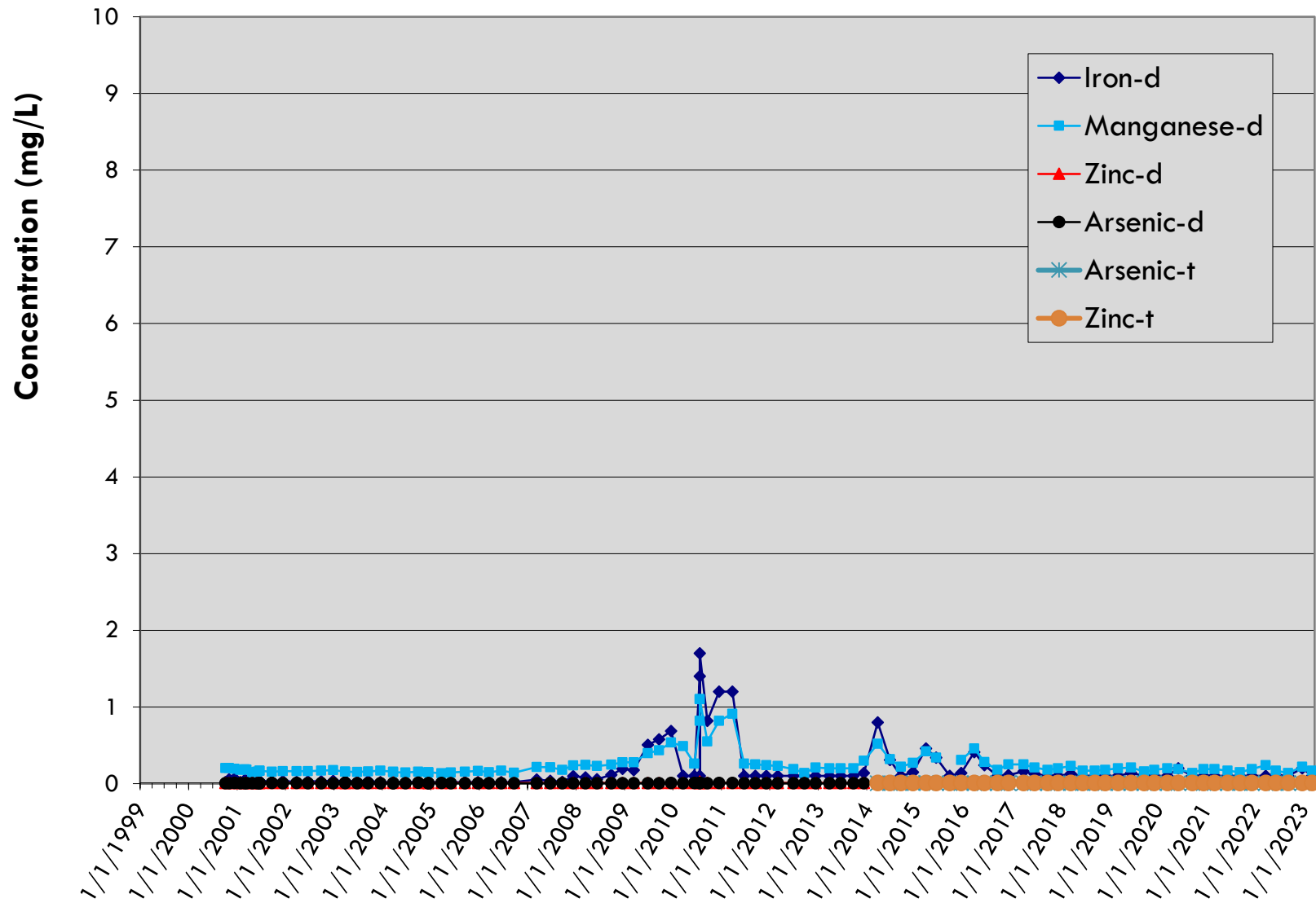
MW-3
LRI Landfill, Pierce County, Washington



MW-4
LRI Landfill, Pierce County, Washington

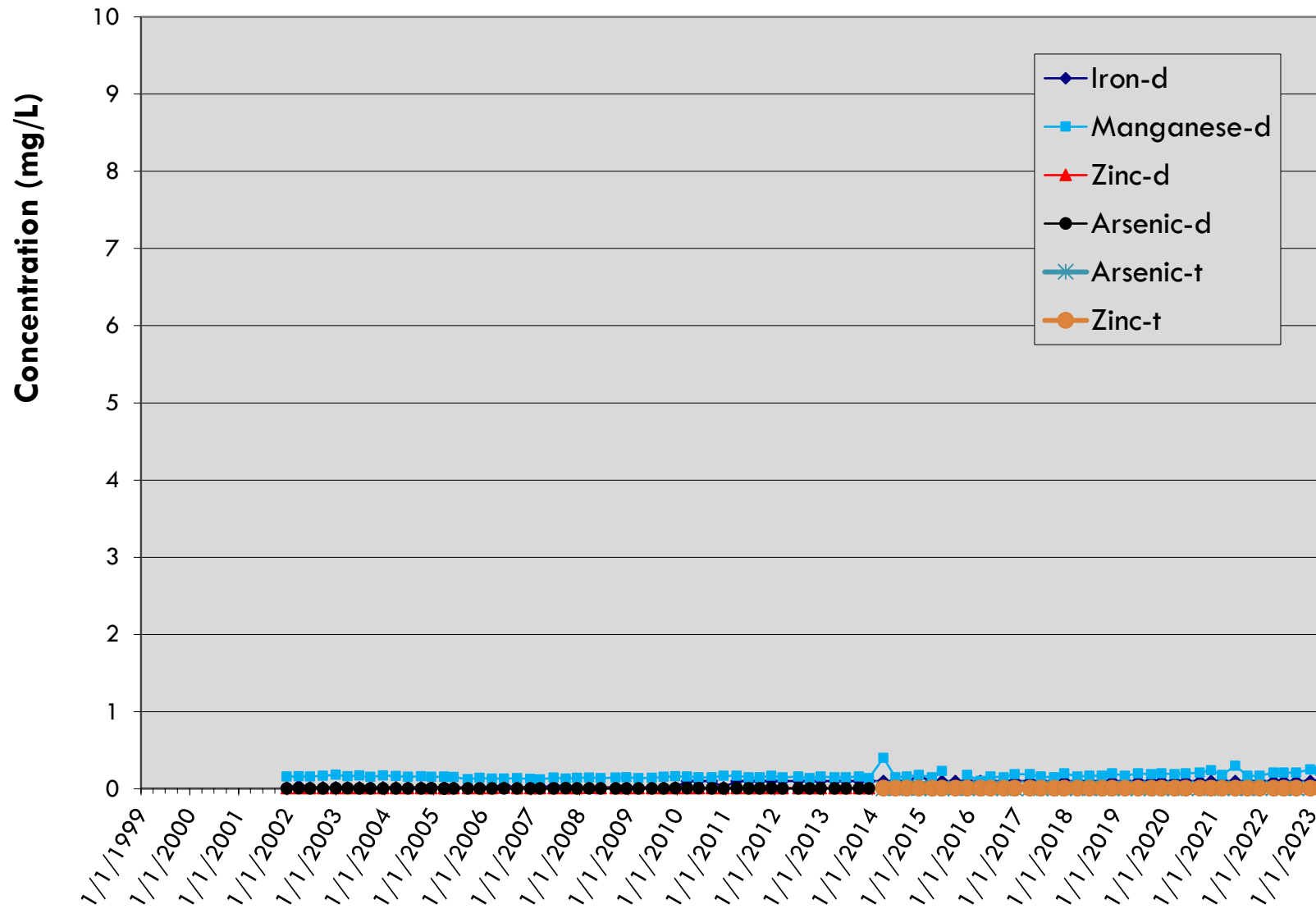


MW-5A
LRI Landfill, Pierce County, Washington

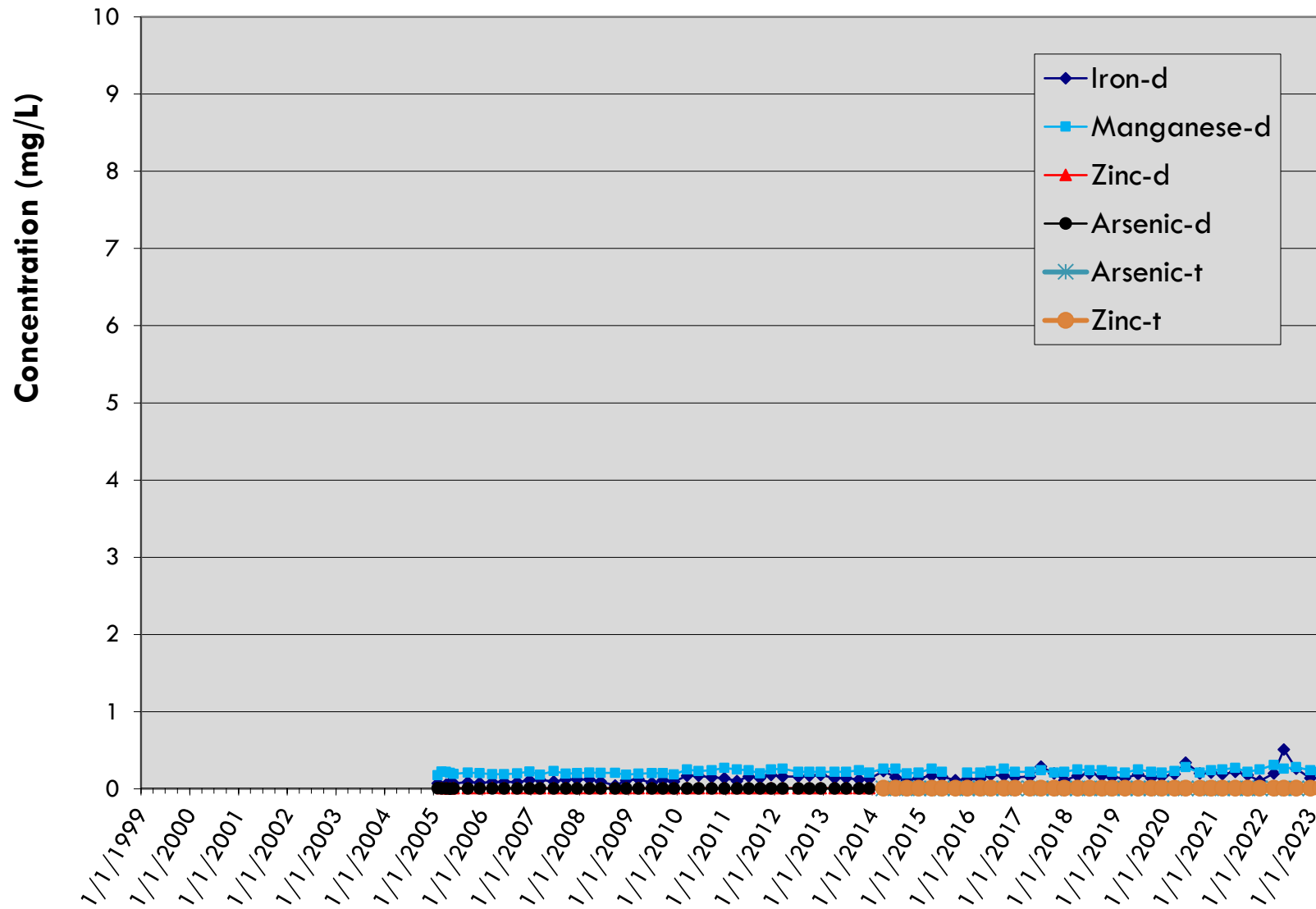


MW-6

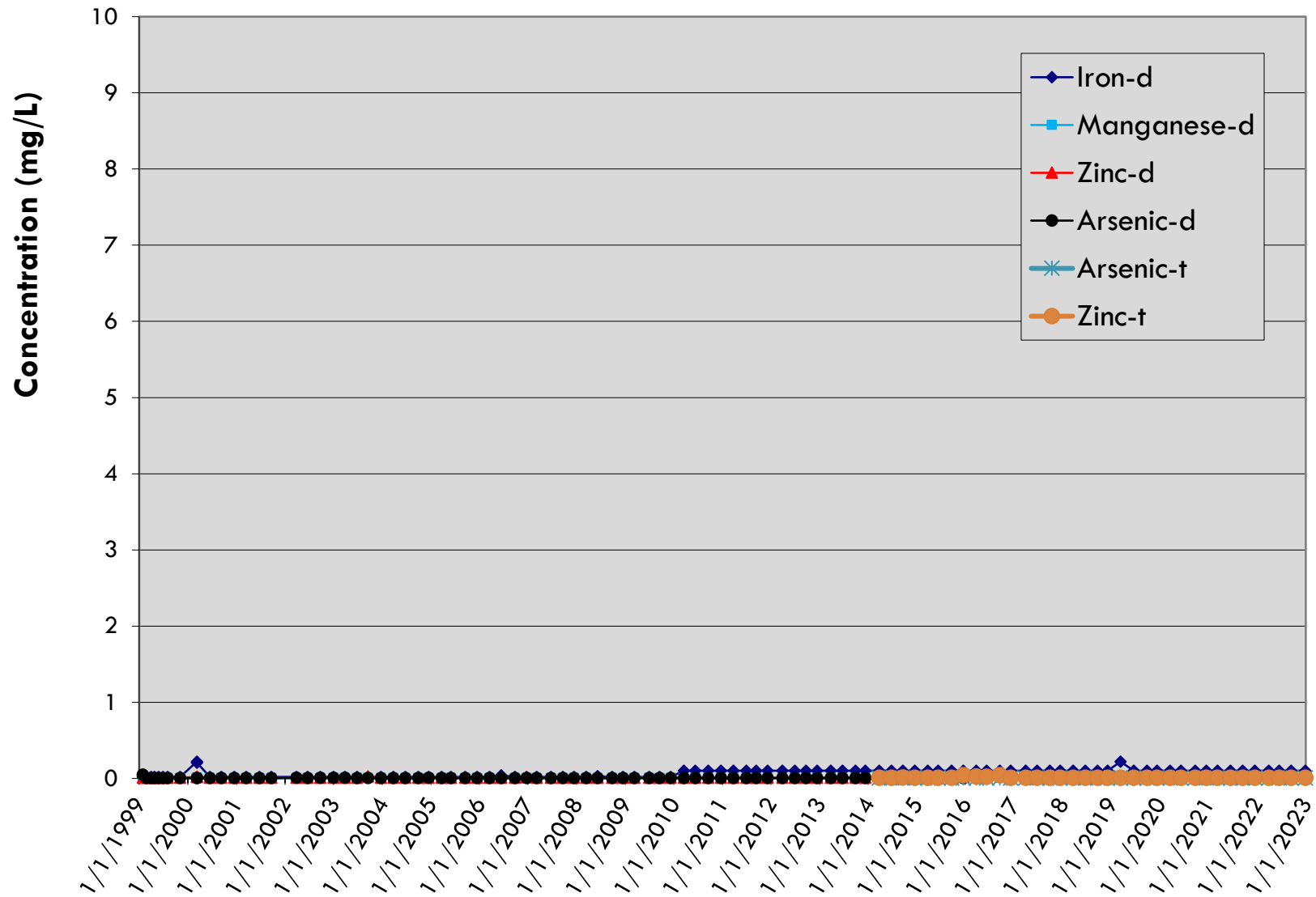
LRI Landfill, Pierce County, Washington



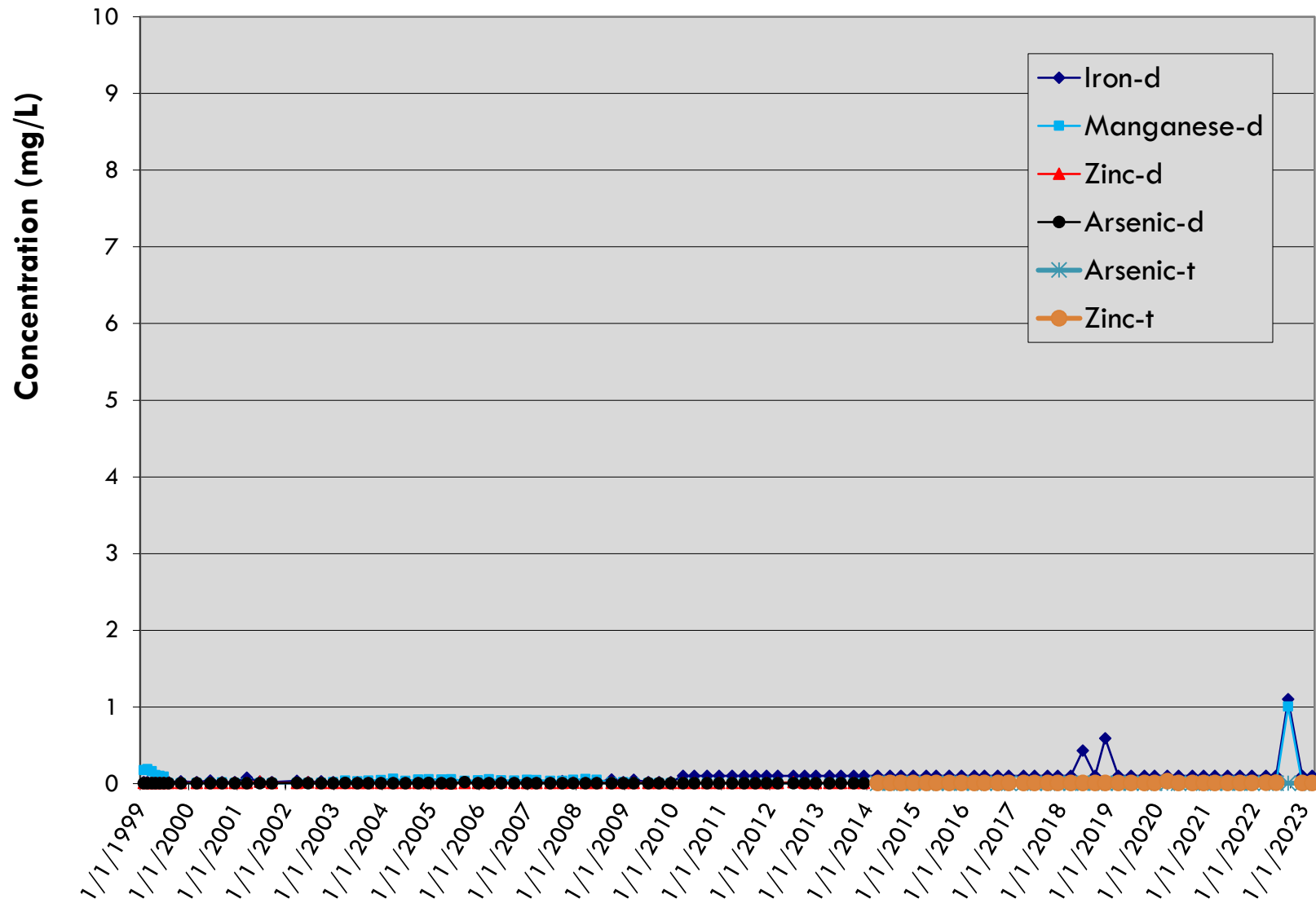
MW-7
LRI Landfill, Pierce County, Washington



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

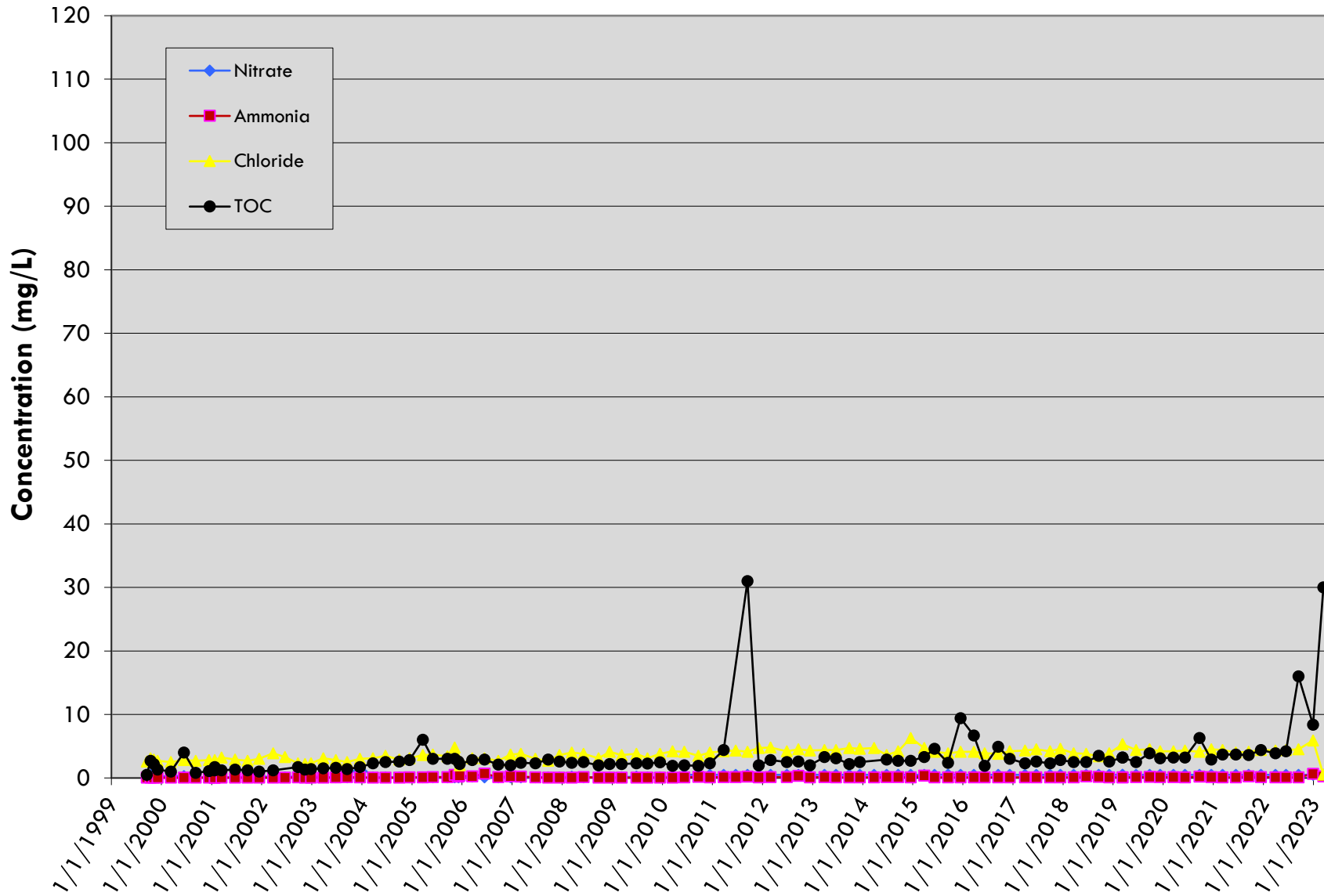


MW-10 (Background) LRI Landfill, Pierce County, Washington



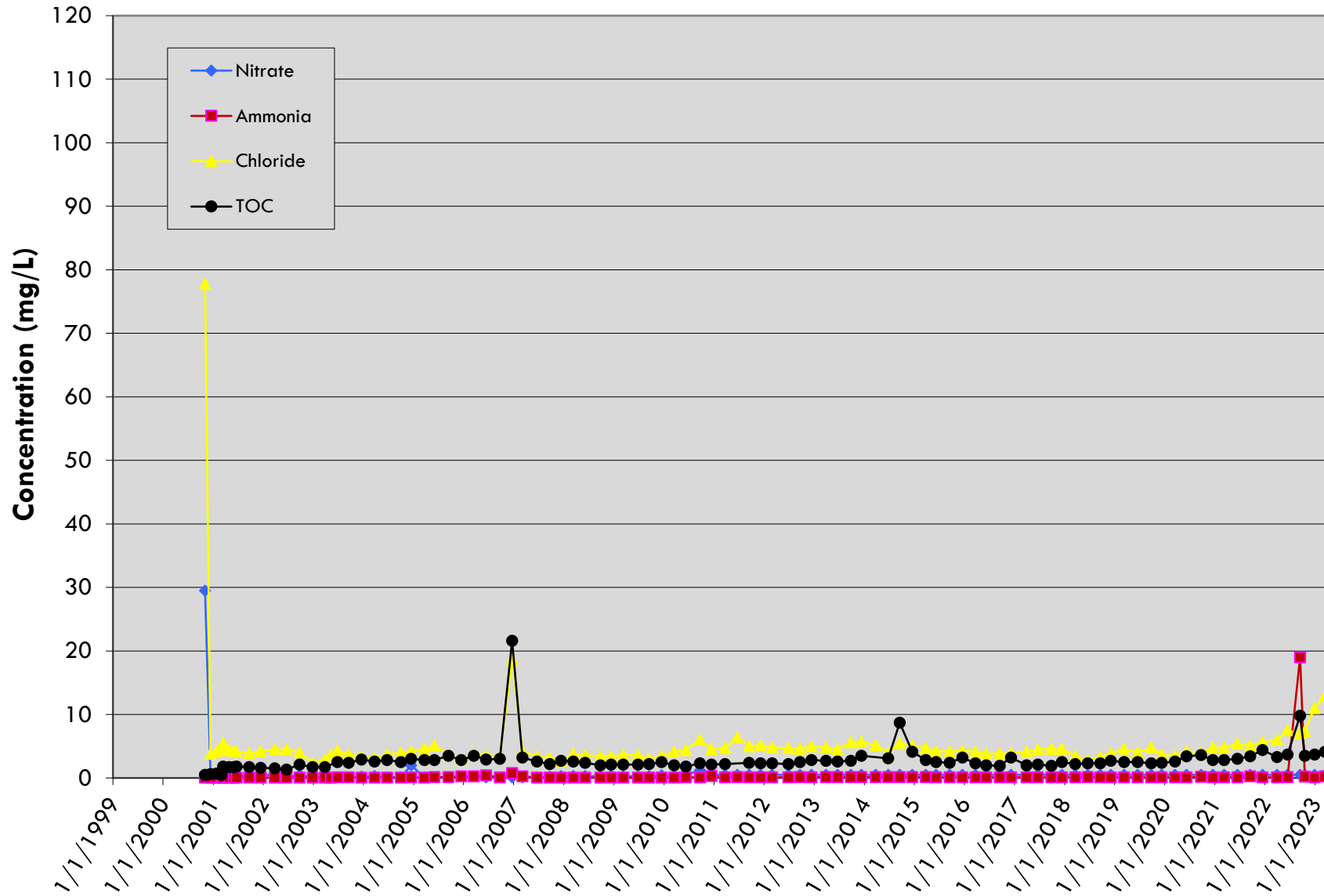
LDCS-1

LRI Landfill, Pierce County, Washington



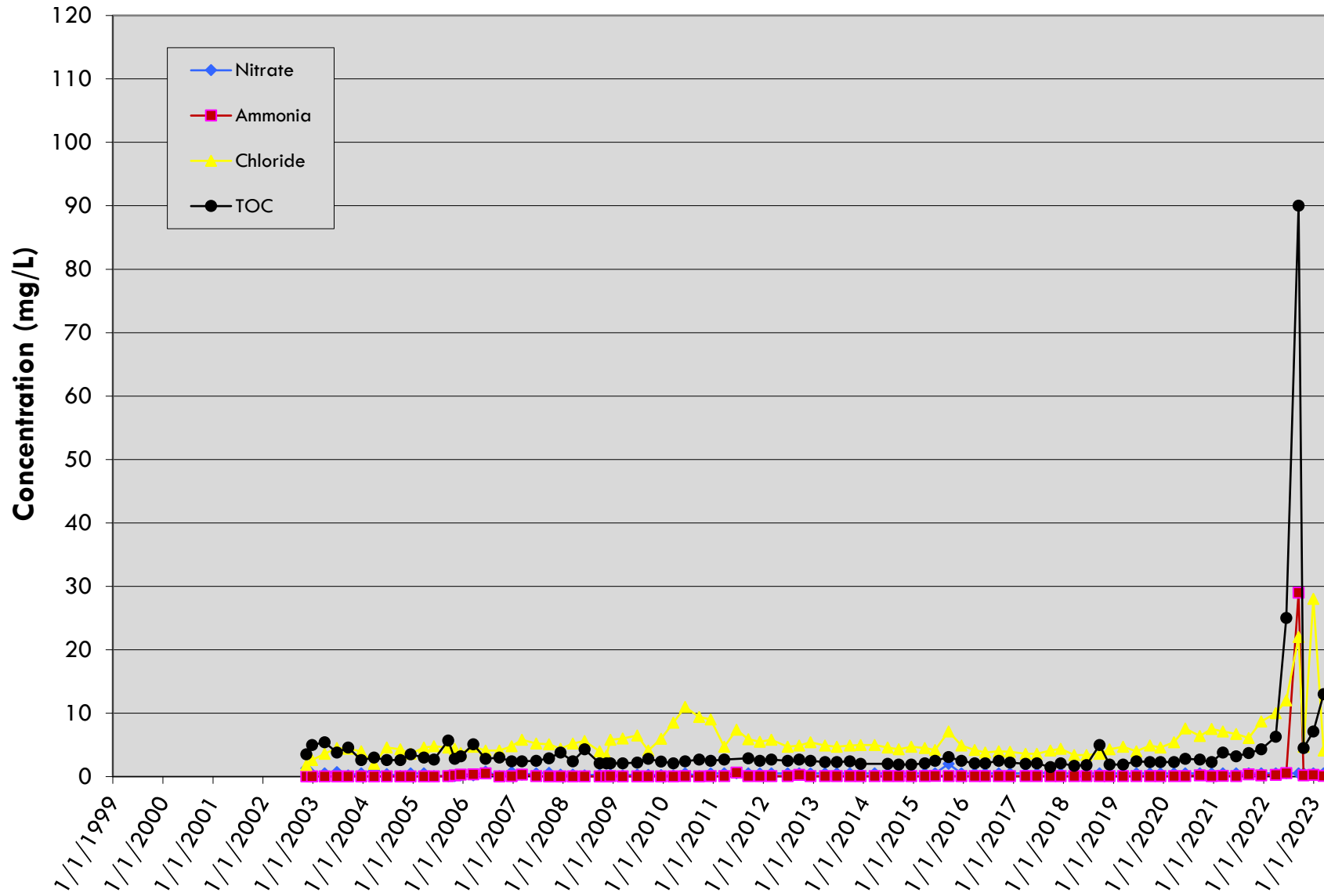
LDCS-2A

LRI Landfill, Pierce County, Washington



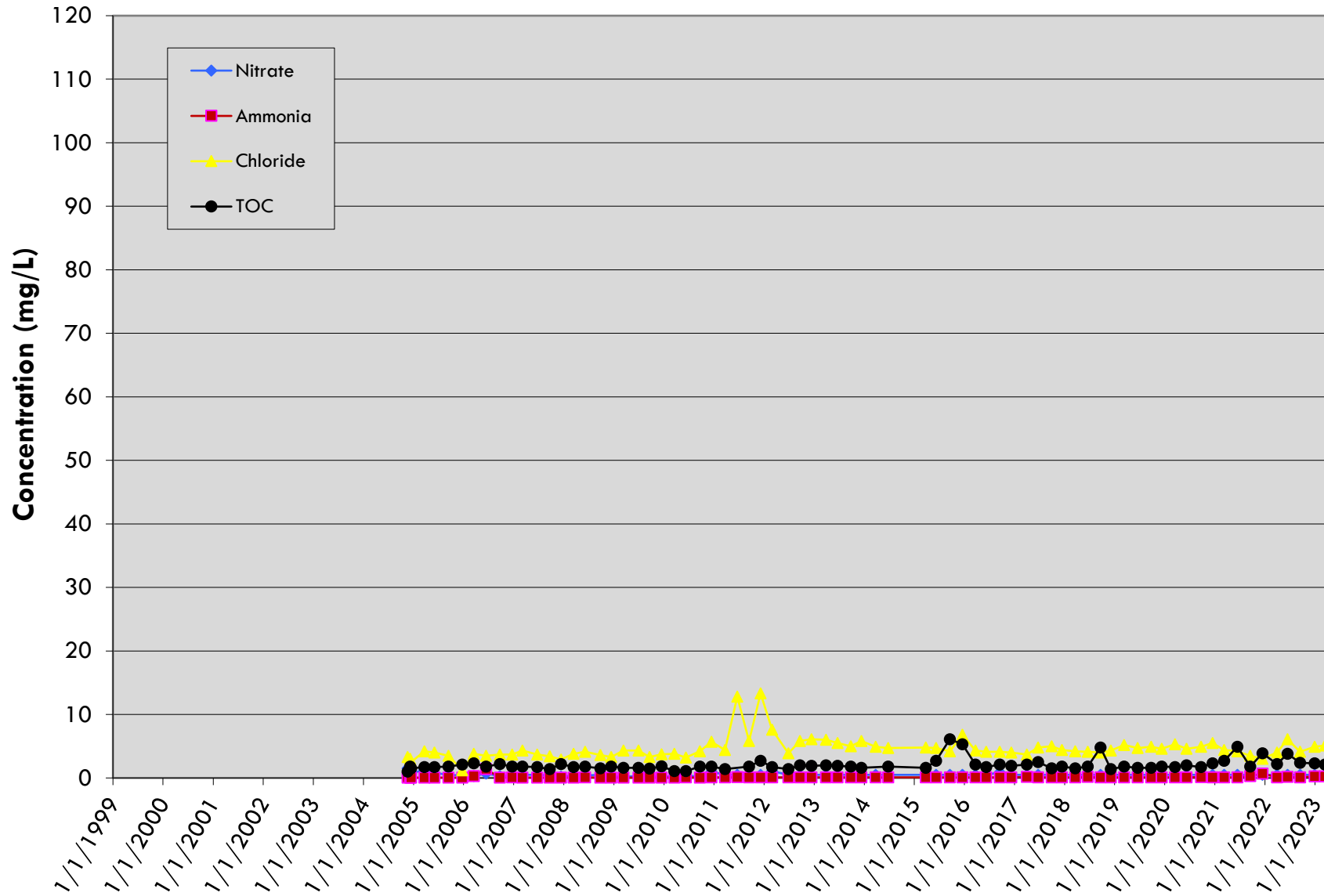
LDCS-2B

LRI Landfill, Pierce County, Washington



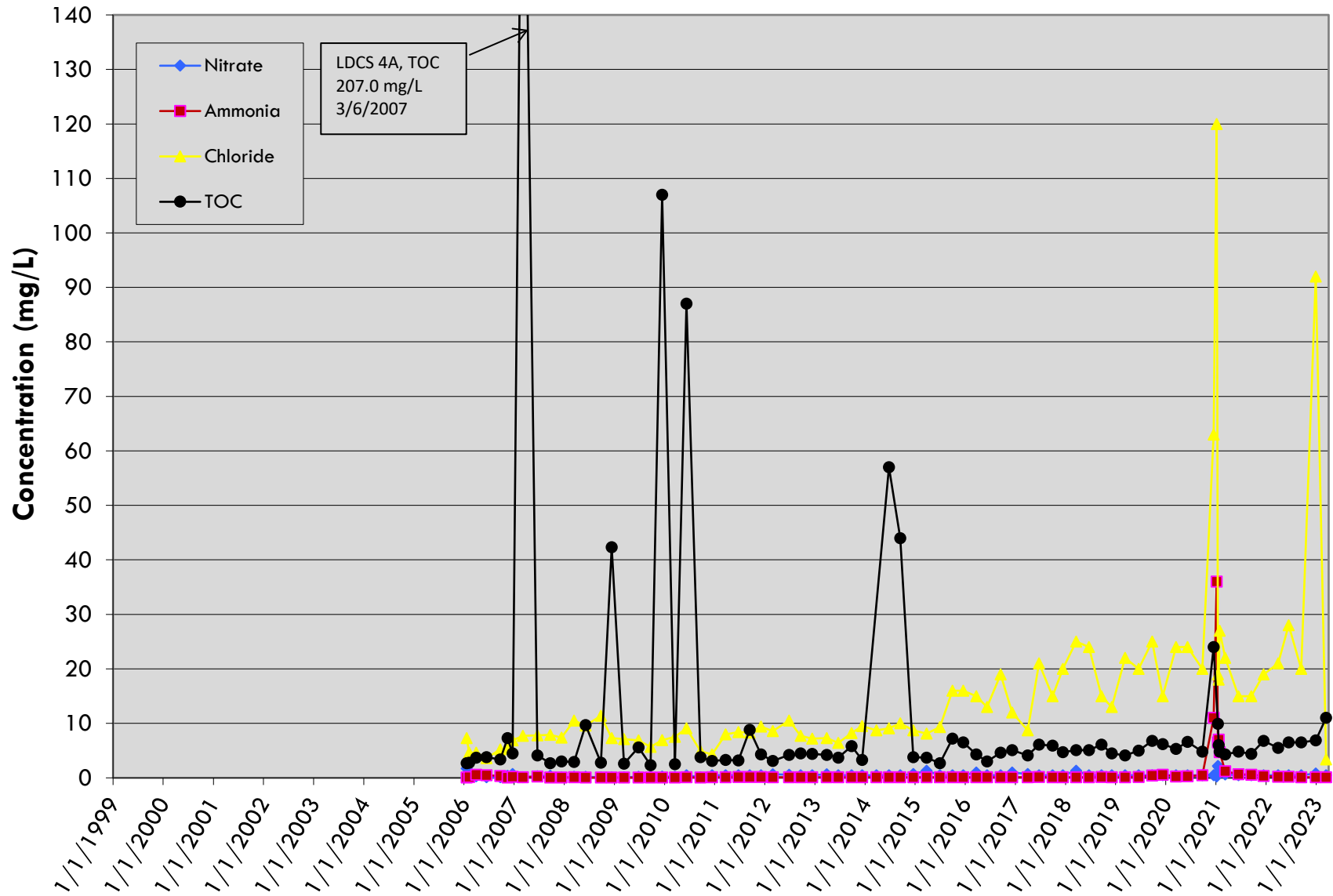
LDCS-3A

LRI Landfill, Pierce County, Washington



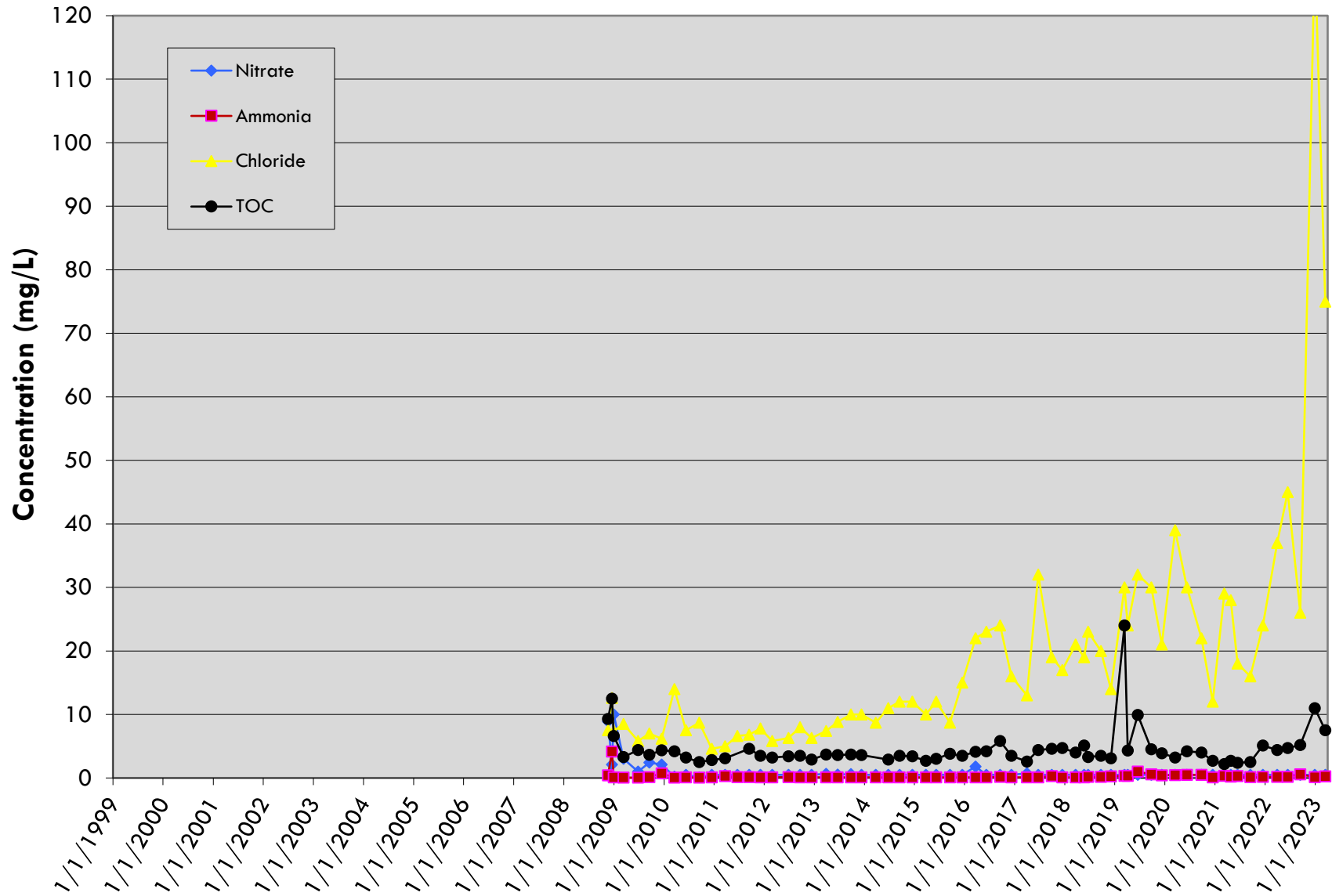
LDCS-4A

LRI Landfill, Pierce County, Washington



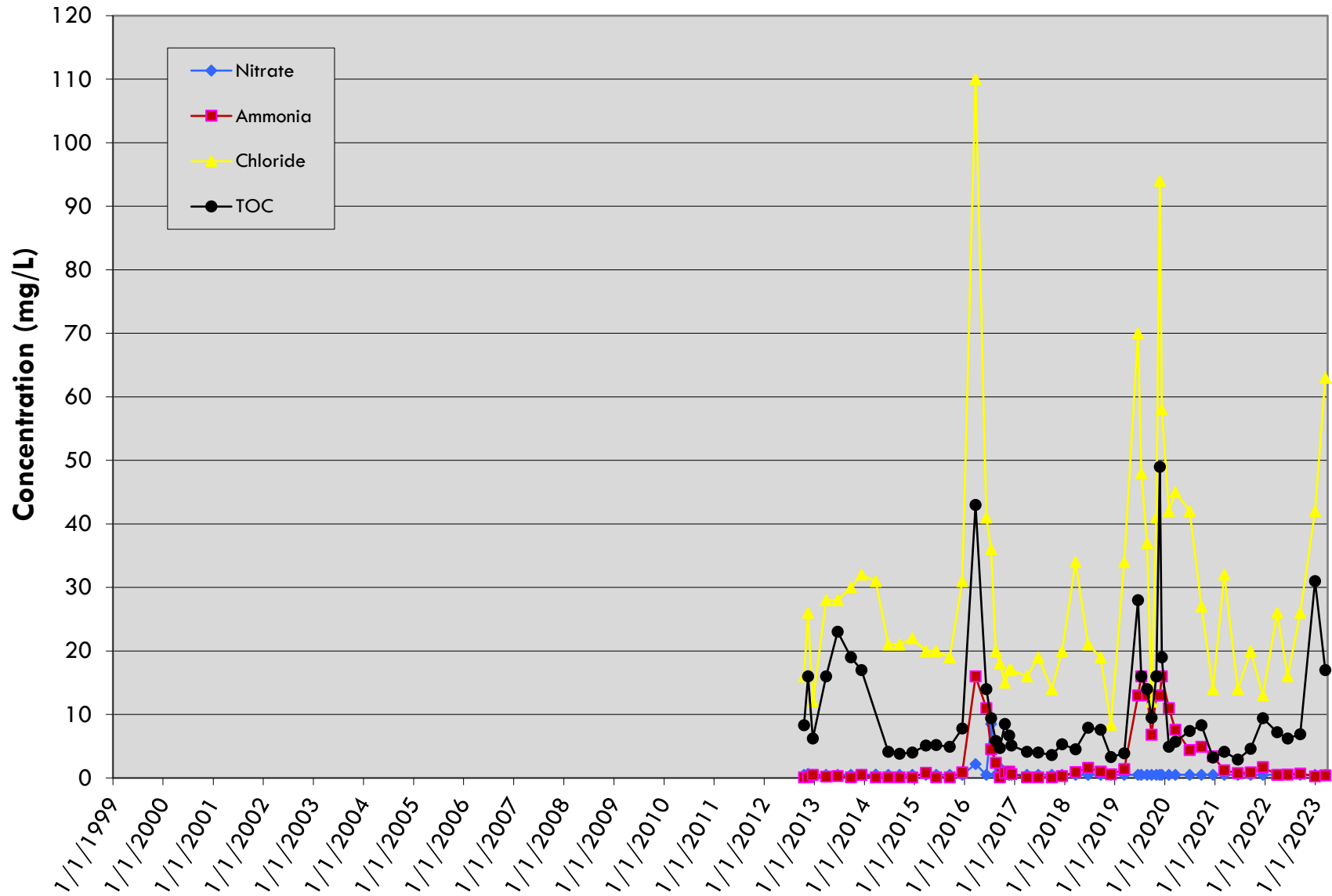
LDCS-4B

LRI Landfill, Pierce County, Washington



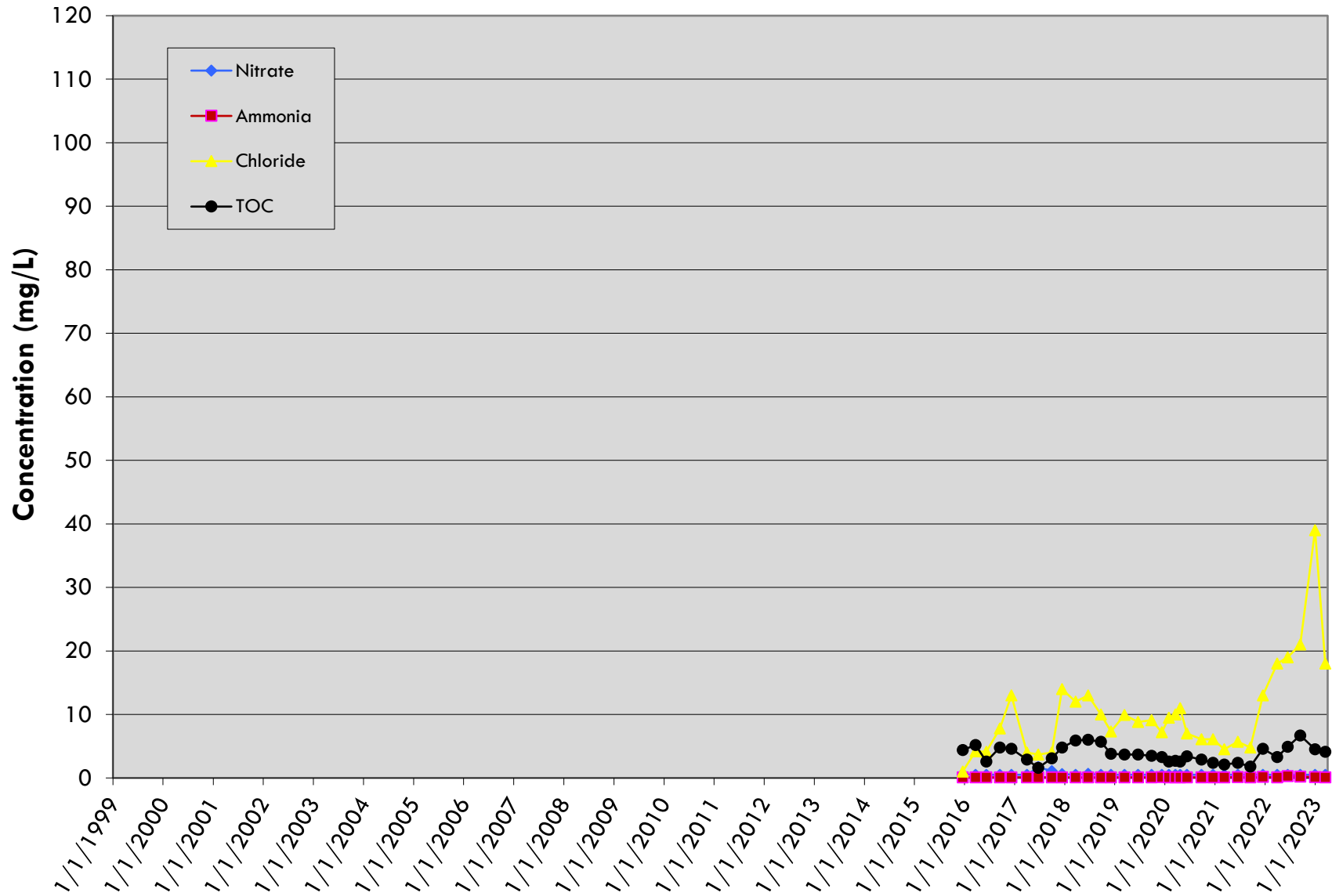
LDCS-5

LRI Landfill, Pierce County, Washington



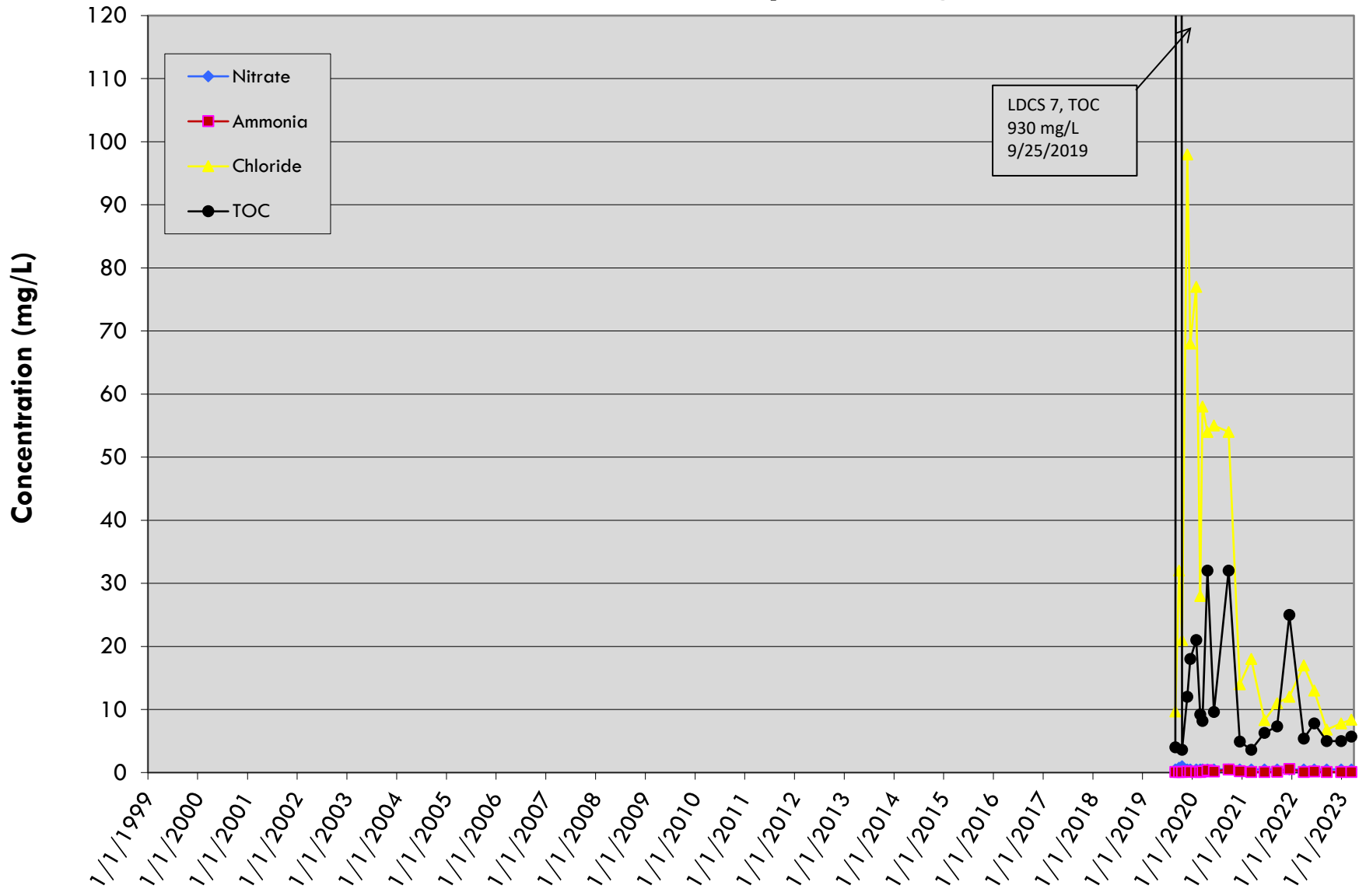
LDCS-6A

LRI Landfill, Pierce County, Washington



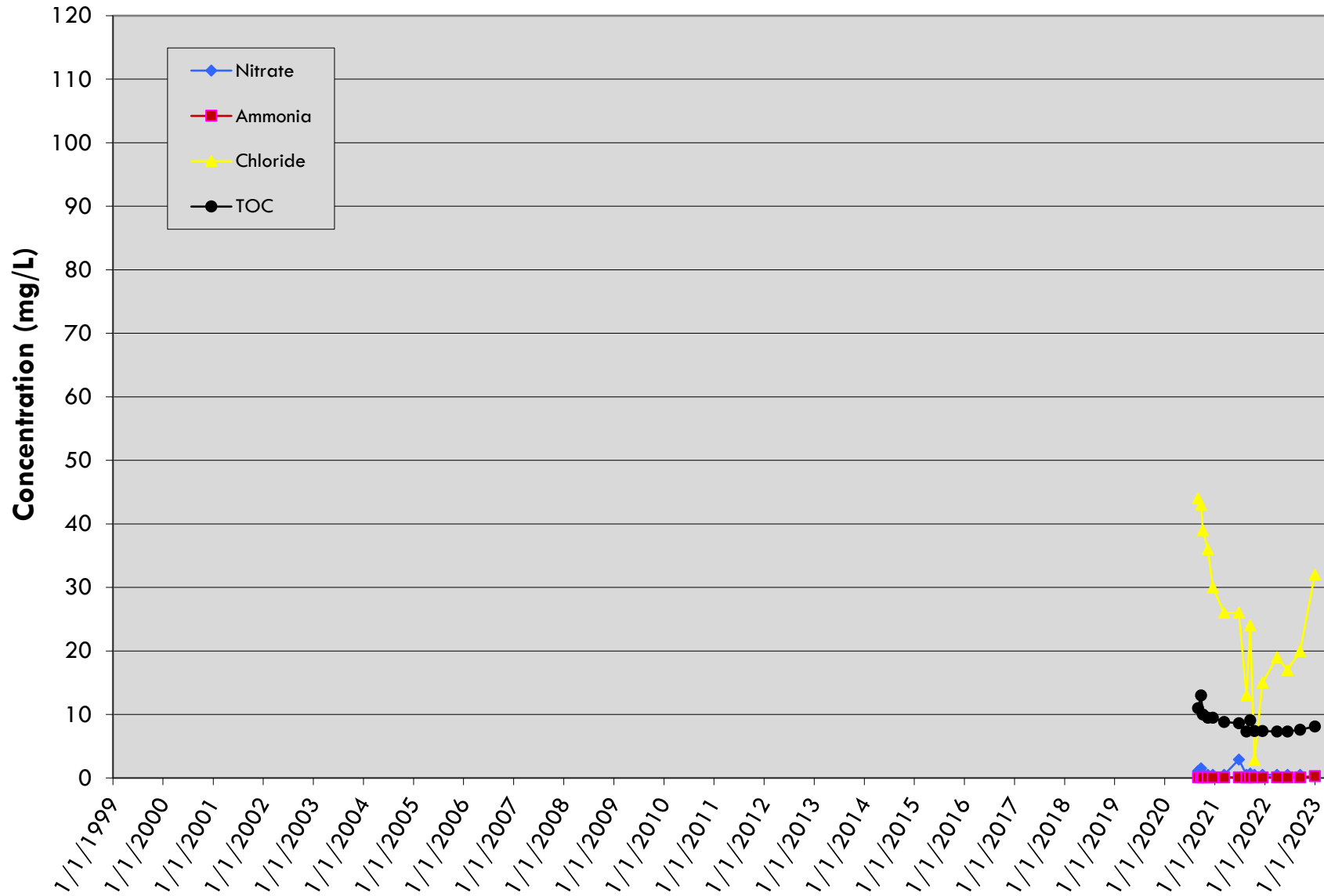
LDCS-7

LRI Landfill, Pierce County, Washington



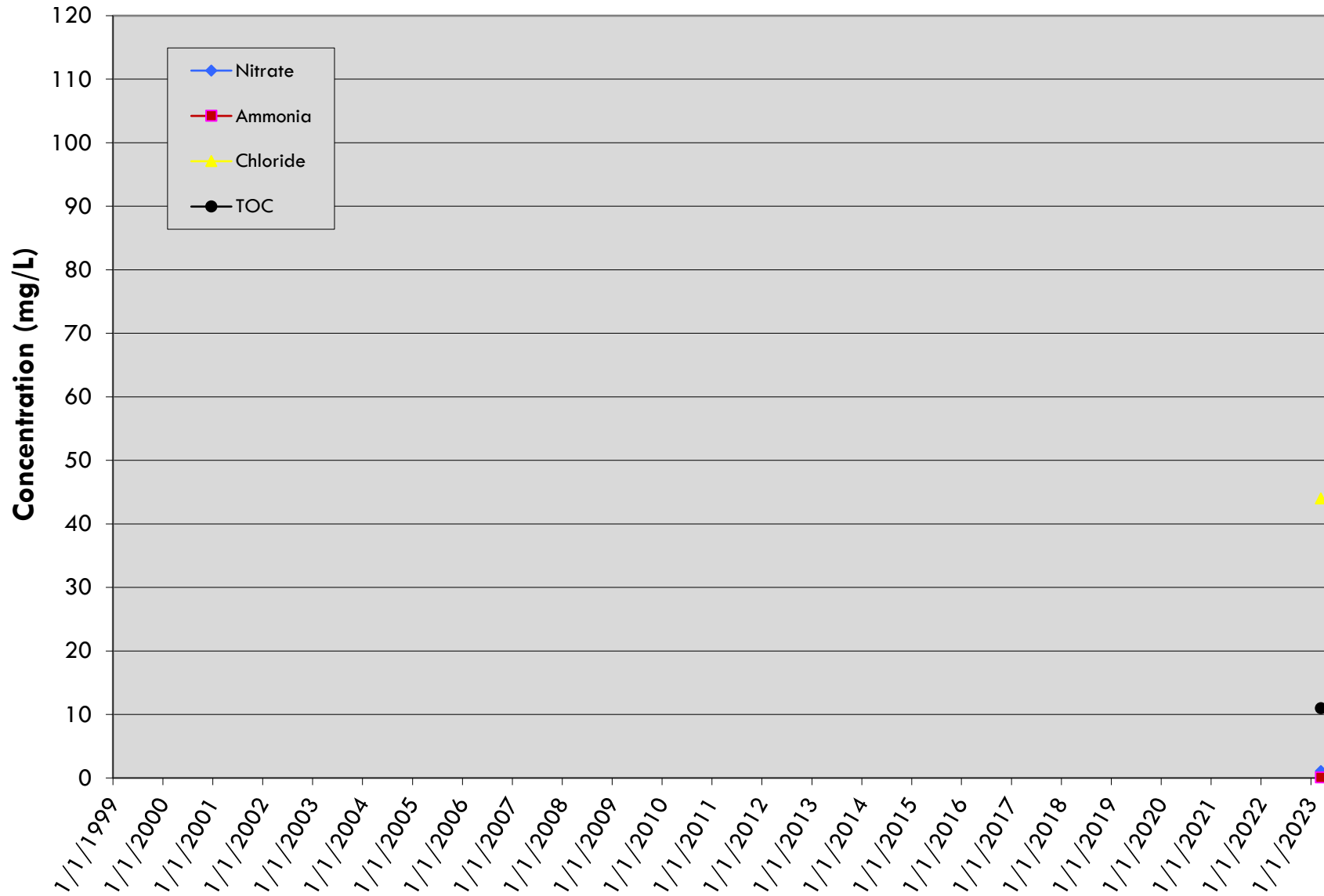
LDCS-8

LRI Landfill, Pierce County, Washington



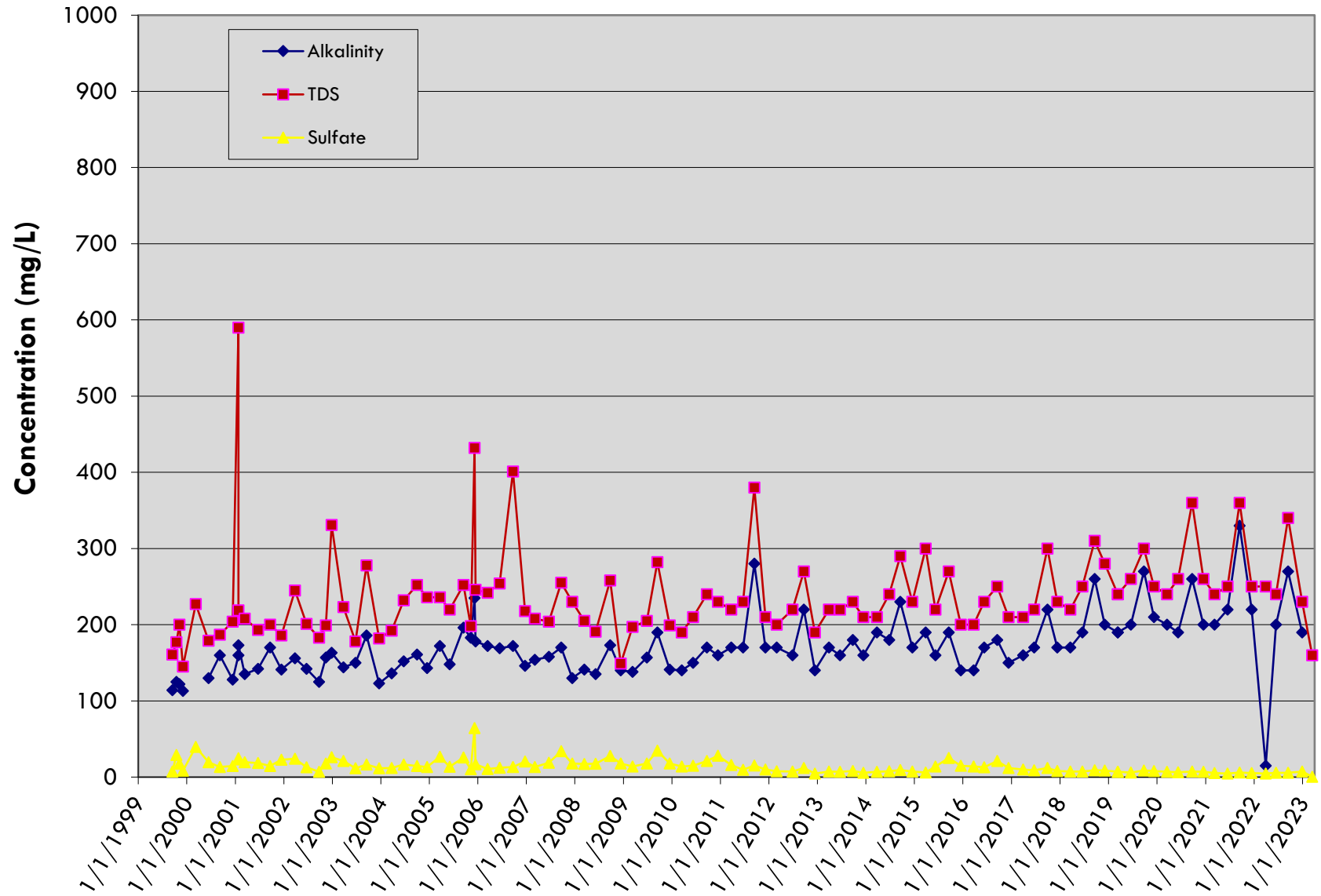
LDCS-9

LRI Landfill, Pierce County, Washington



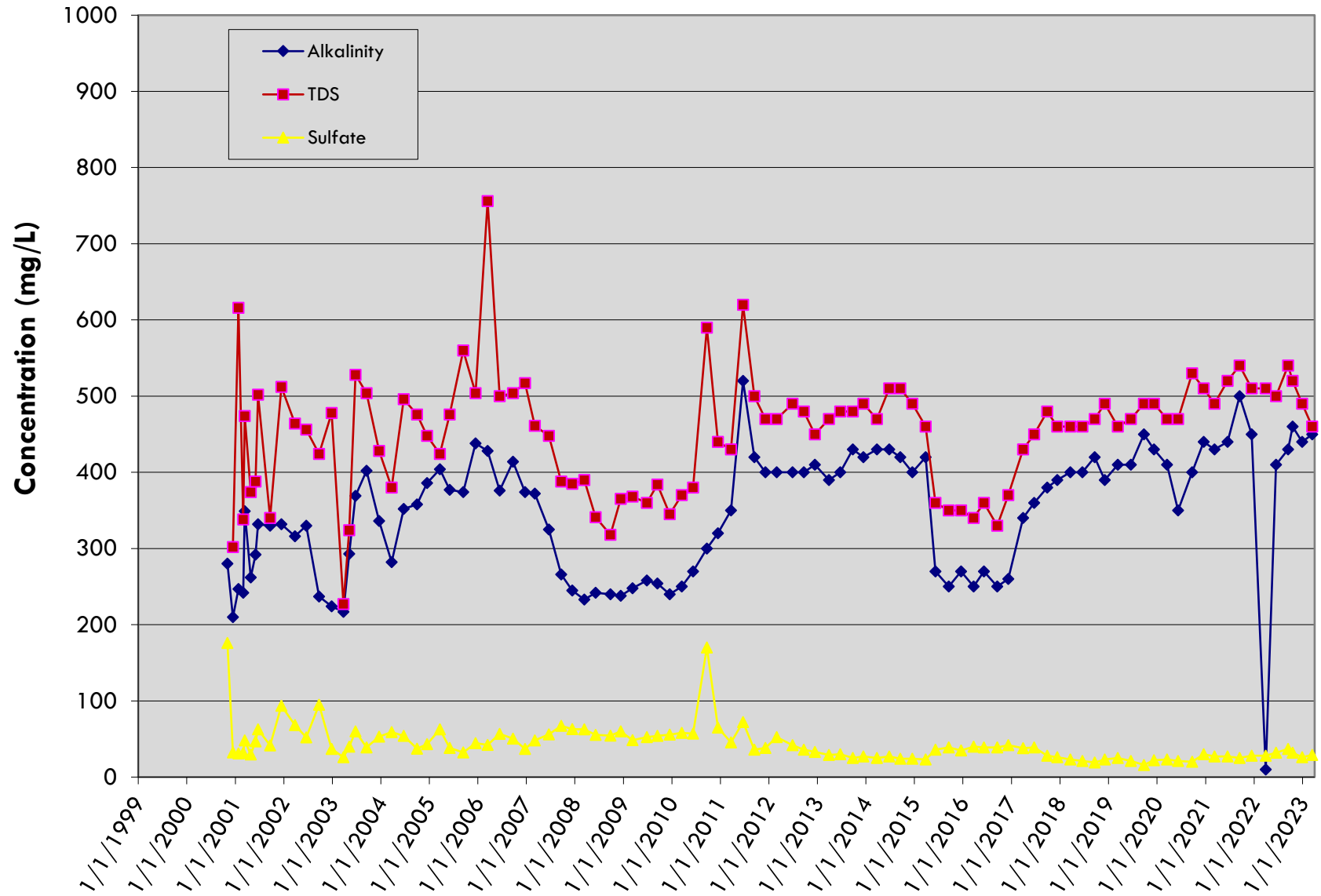
LDCS-1

LRI Landfill, Pierce County, Washington



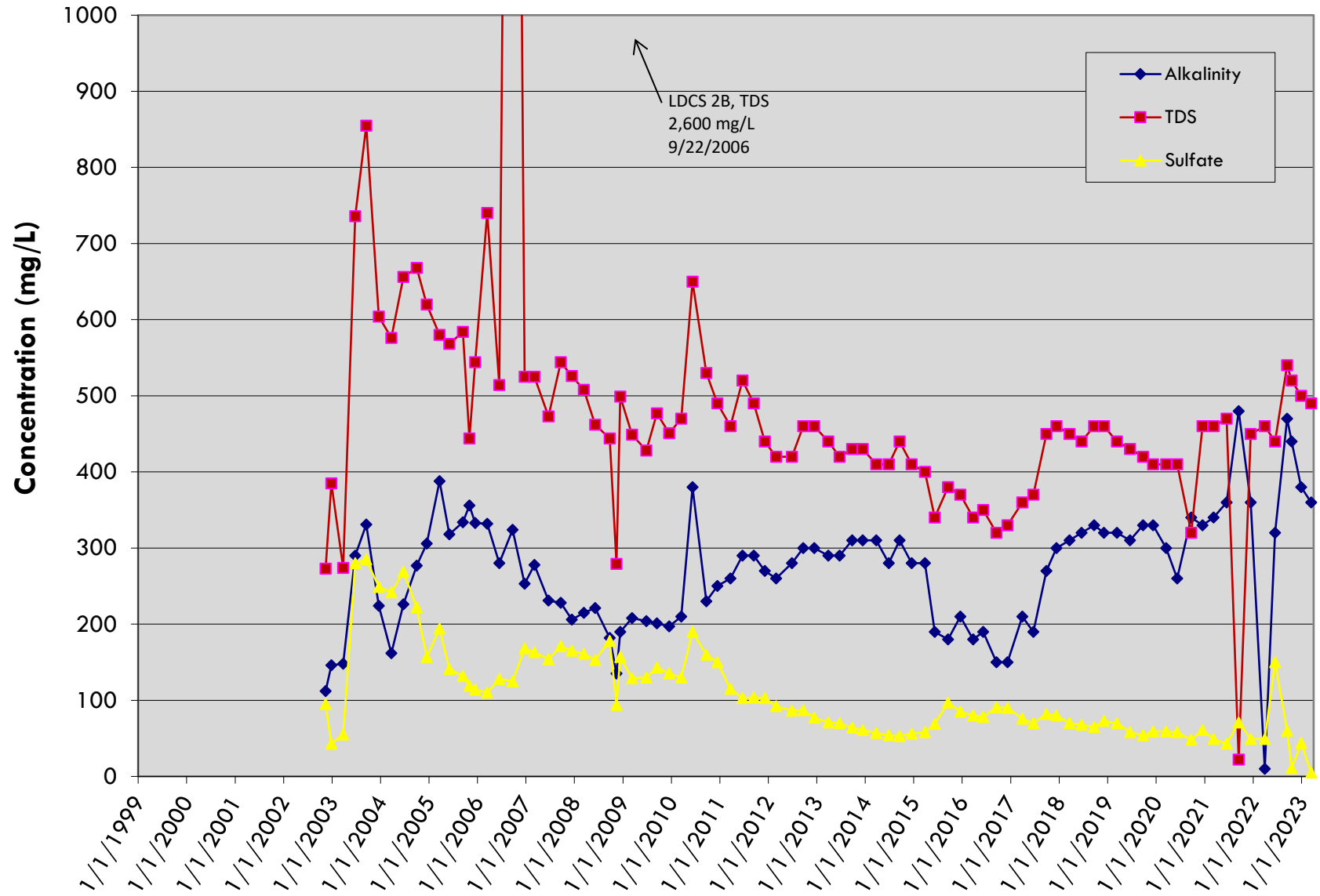
LDCS-2A

LRI Landfill, Pierce County, Washington



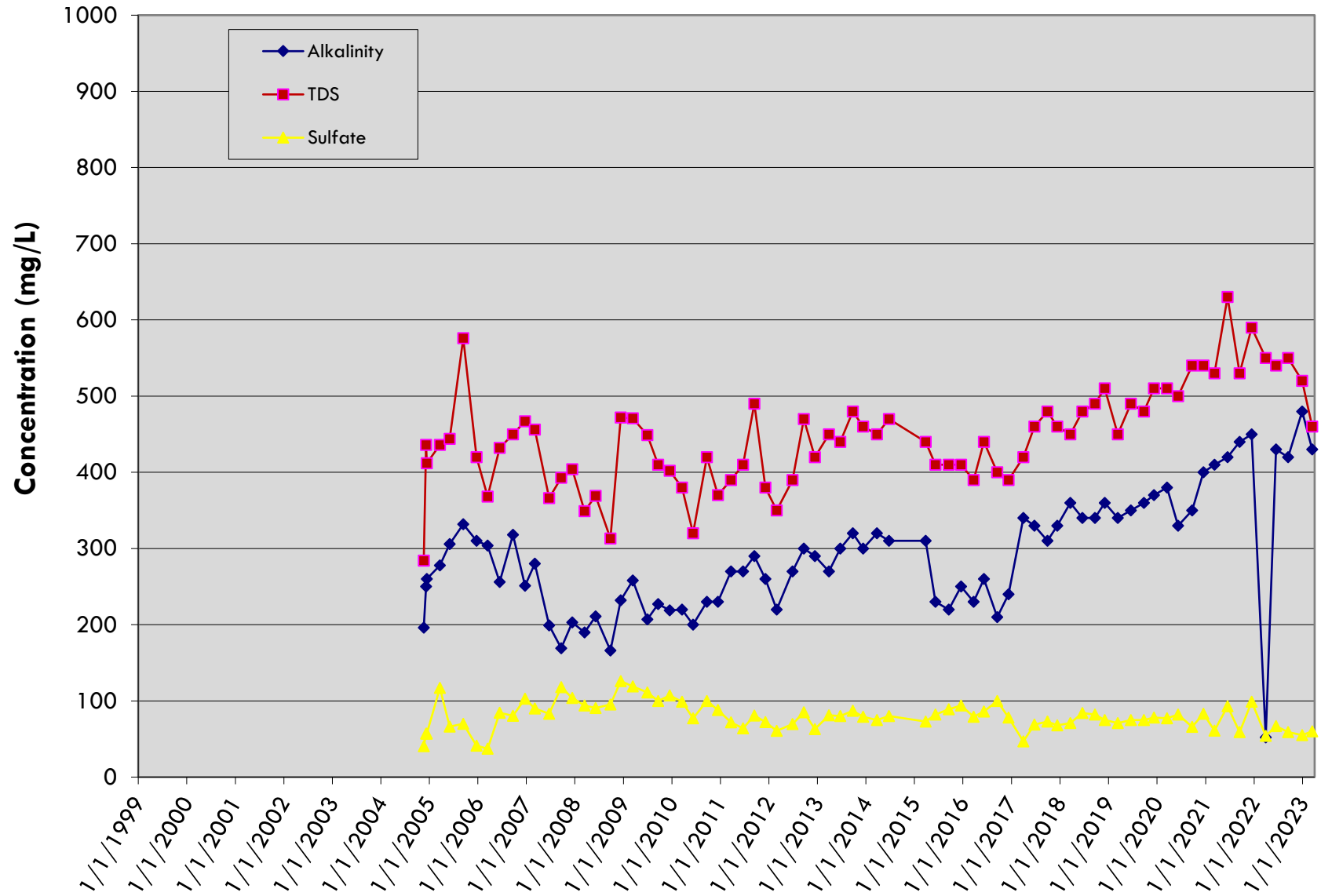
LDCS-2B

LRI Landfill, Pierce County, Washington



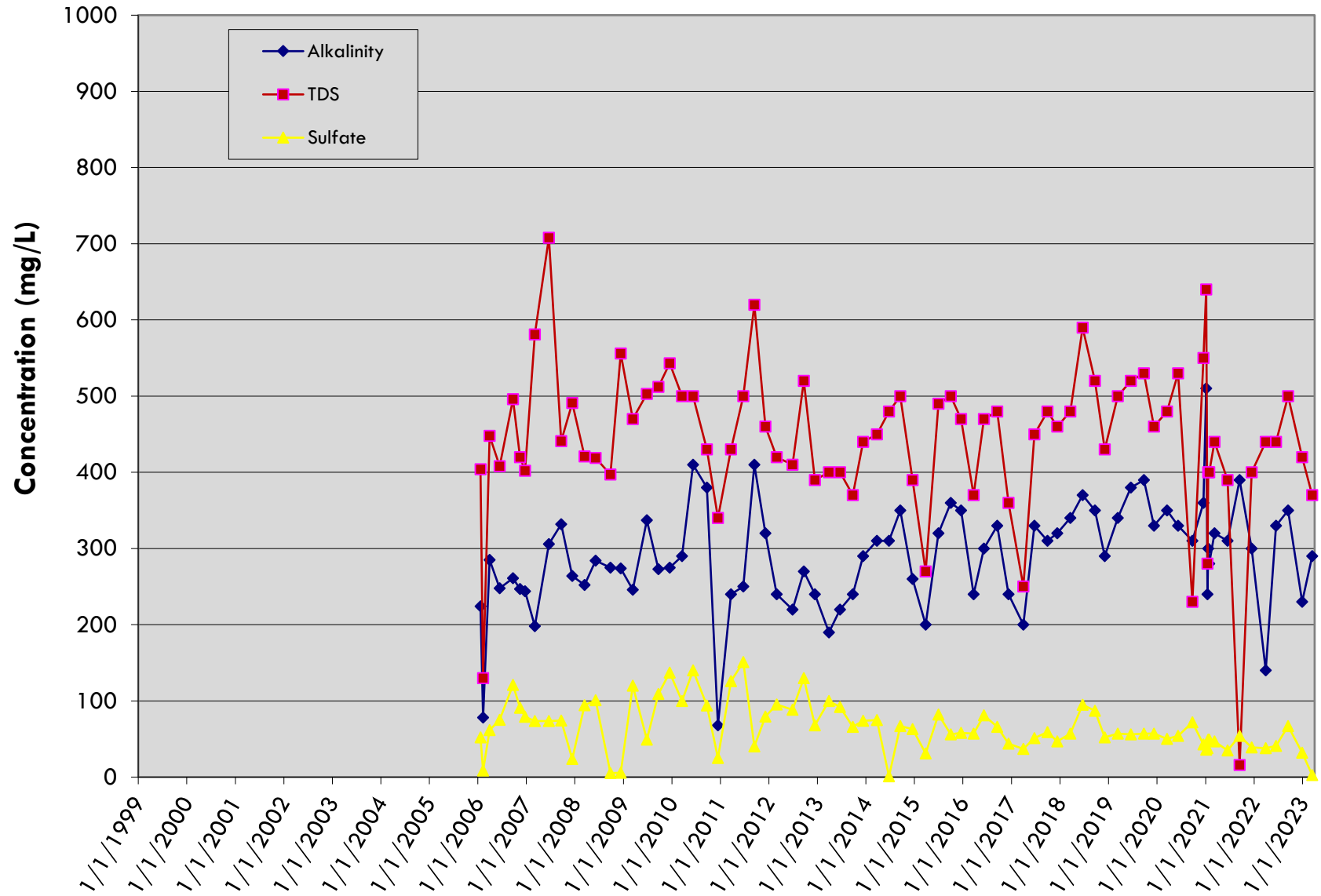
LDCS-3A

LRI Landfill, Pierce County, Washington



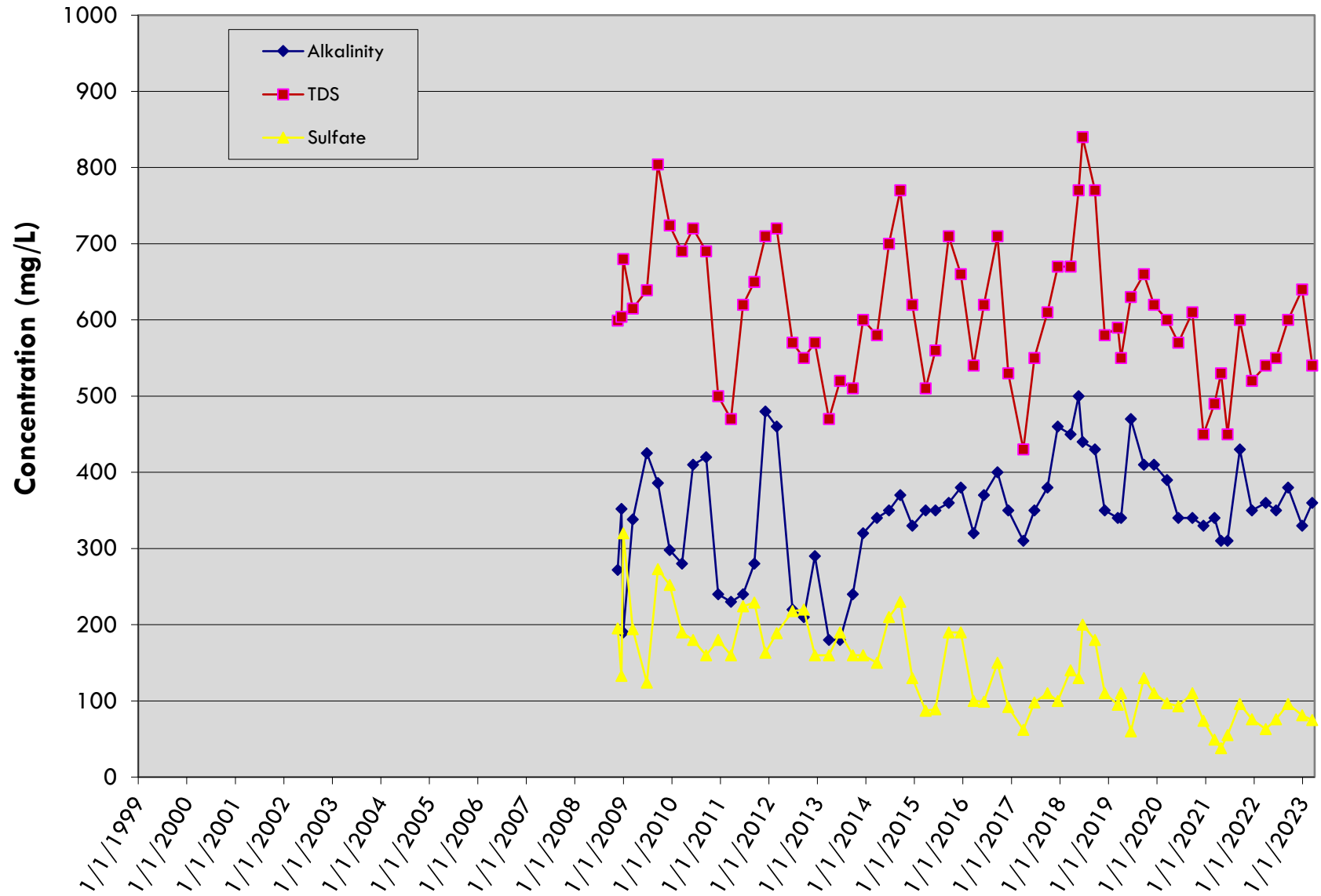
LDCS-4A

LRI Landfill, Pierce County, Washington



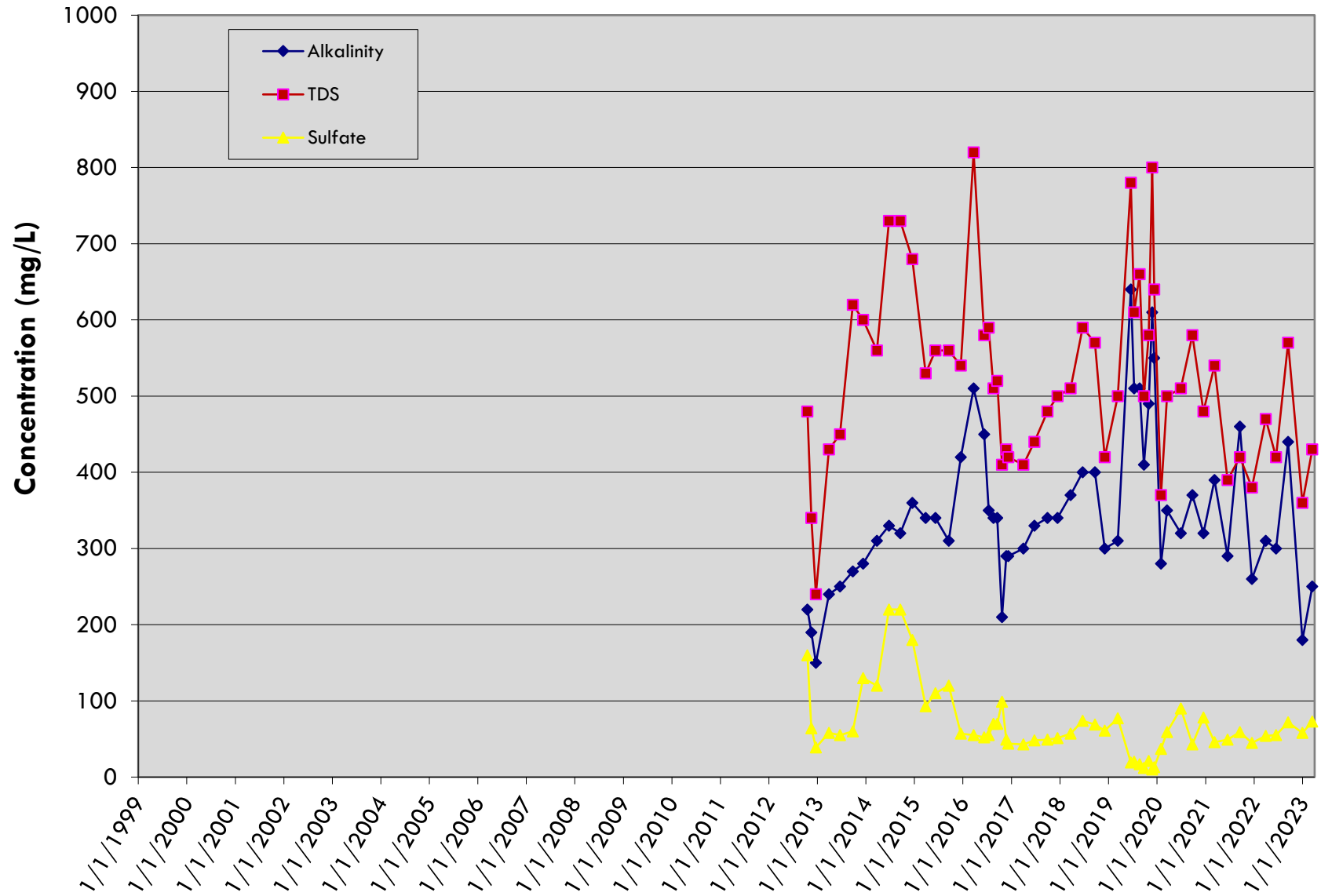
LDCS-4B

LRI Landfill, Pierce County, Washington



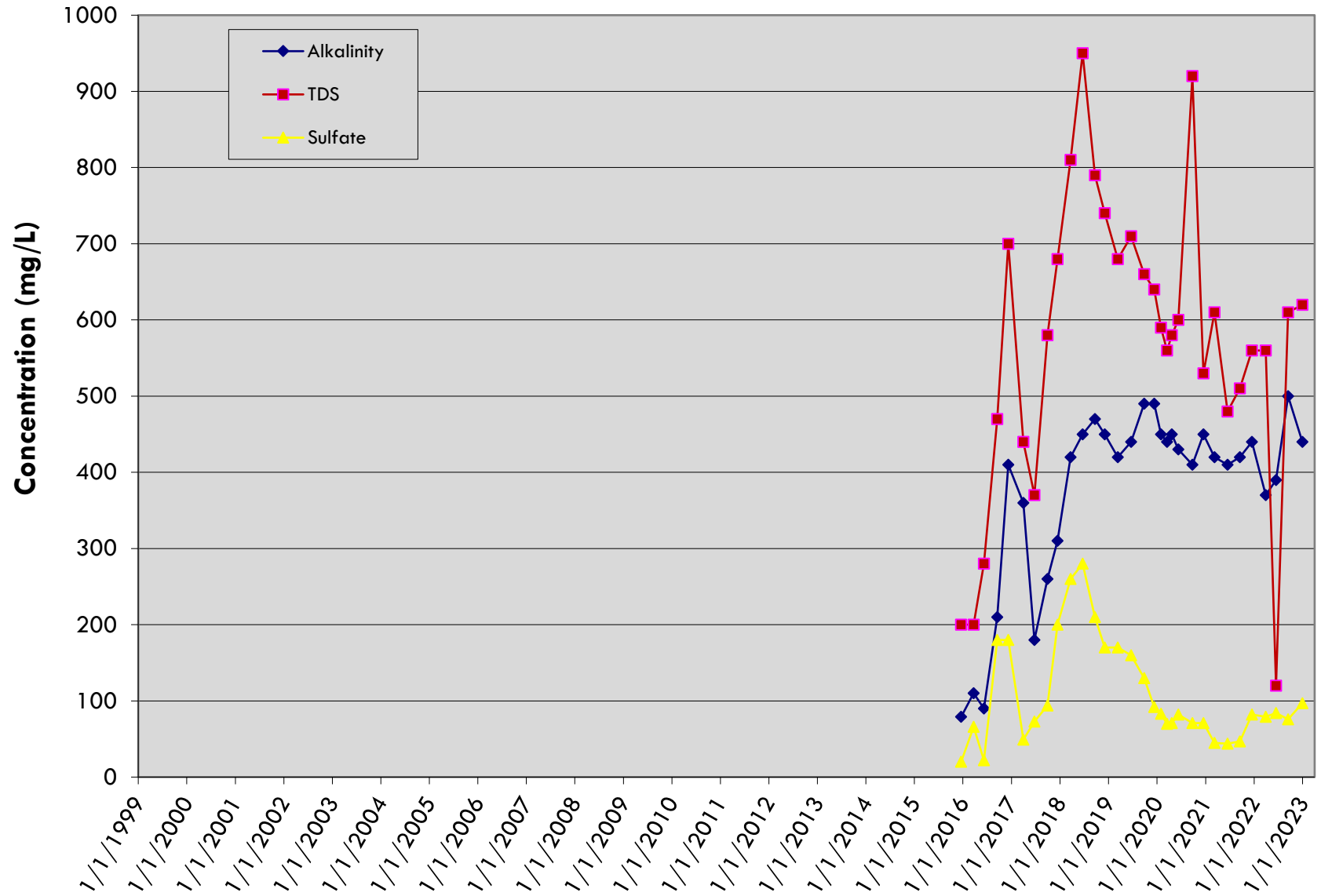
LDCS-5

LRI Landfill, Pierce County, Washington



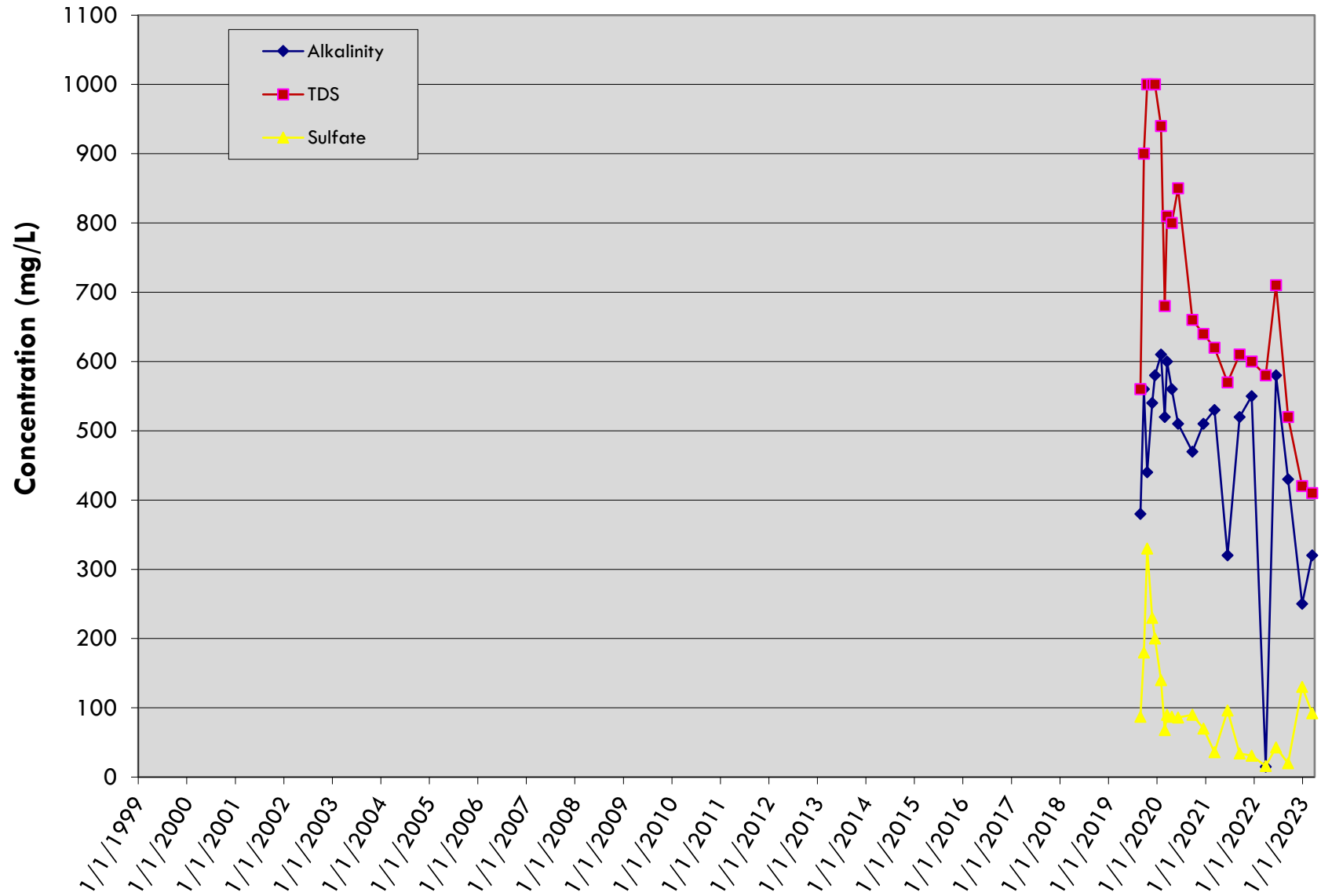
LDCS-6A

LRI Landfill, Pierce County, Washington



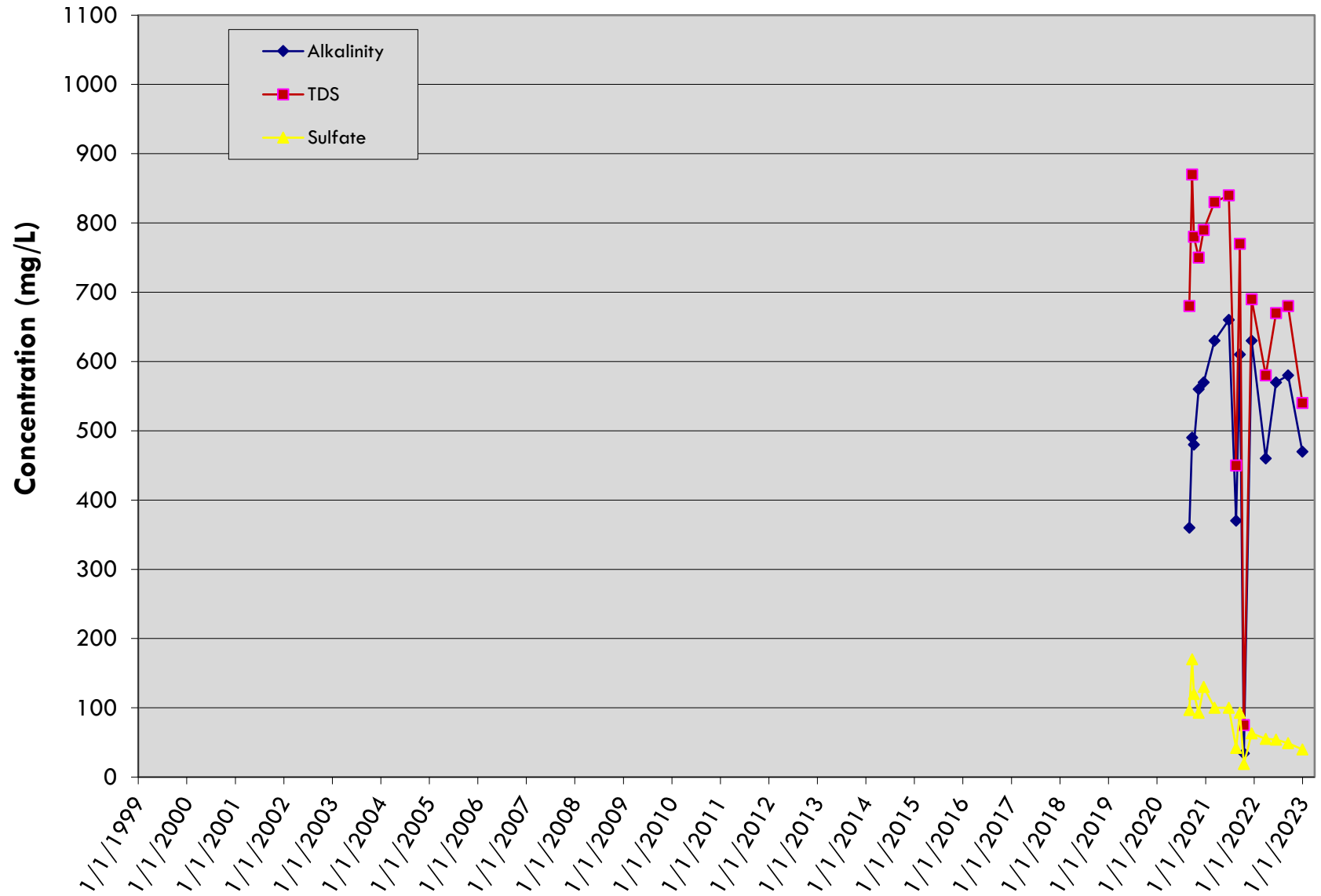
LDCS-7

LRI Landfill, Pierce County, Washington



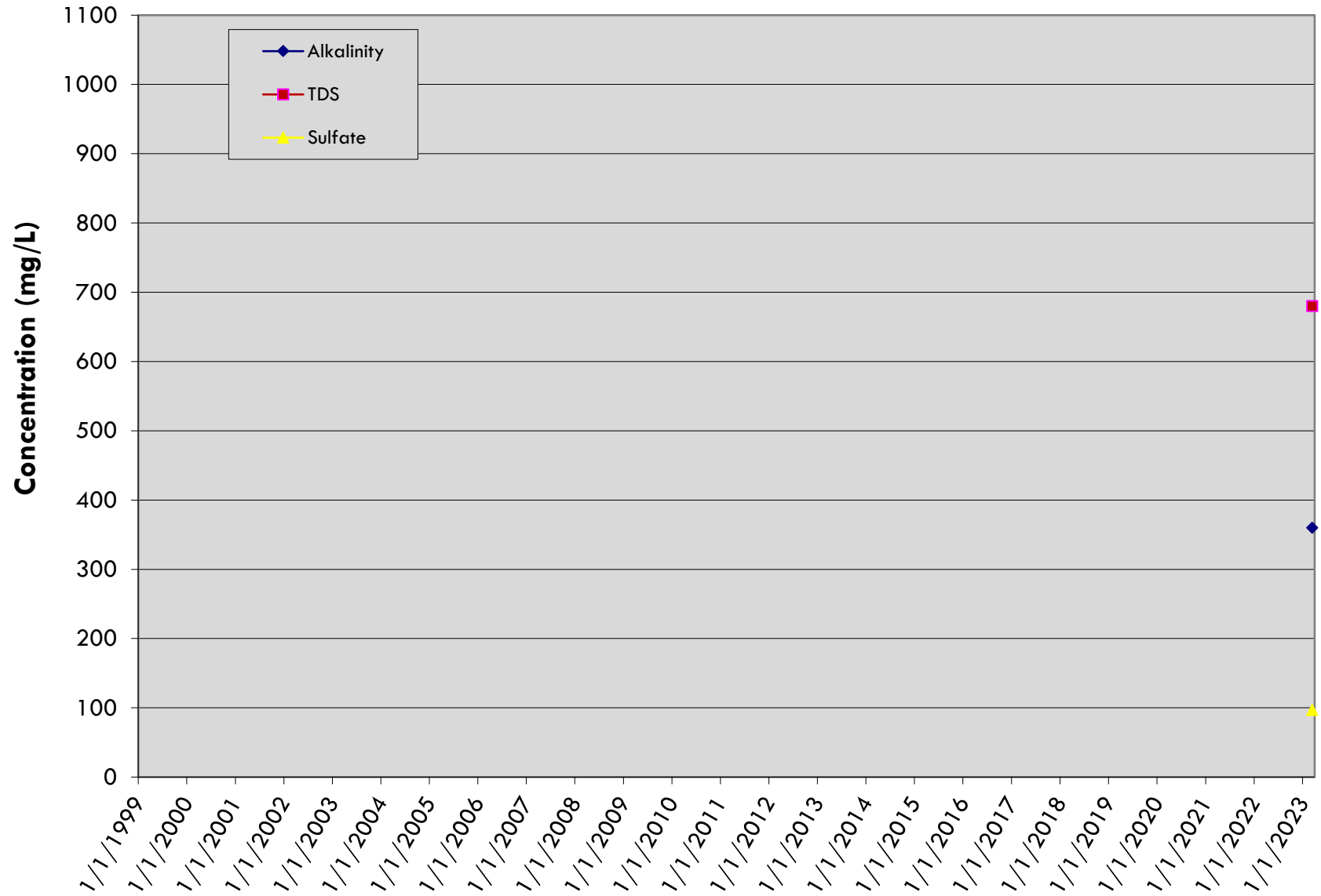
LDCS-8

LRI Landfill, Pierce County, Washington



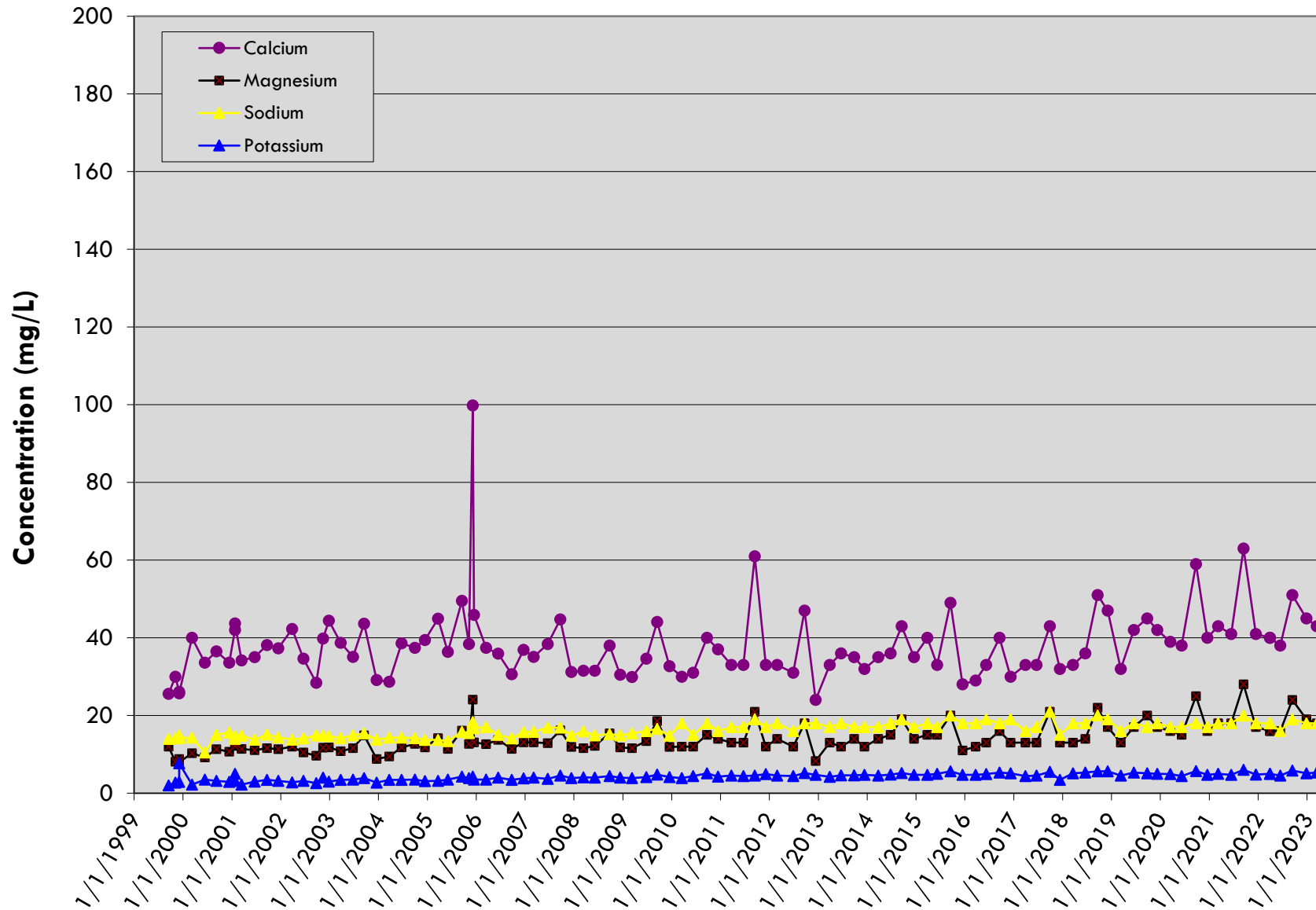
LDCS-9

LRI Landfill, Pierce County, Washington



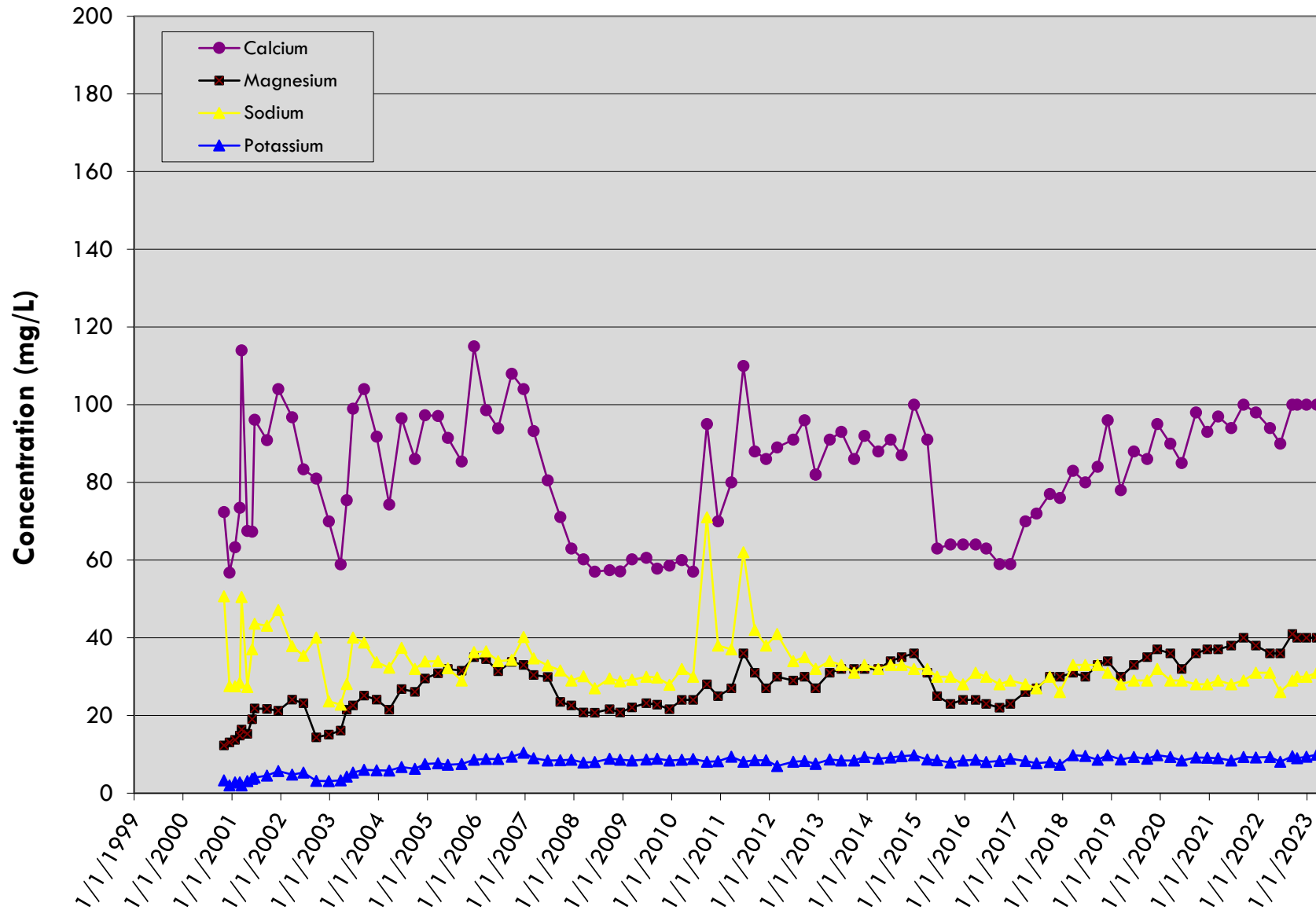
LDCS-1

LRI Landfill, Pierce County, Washington



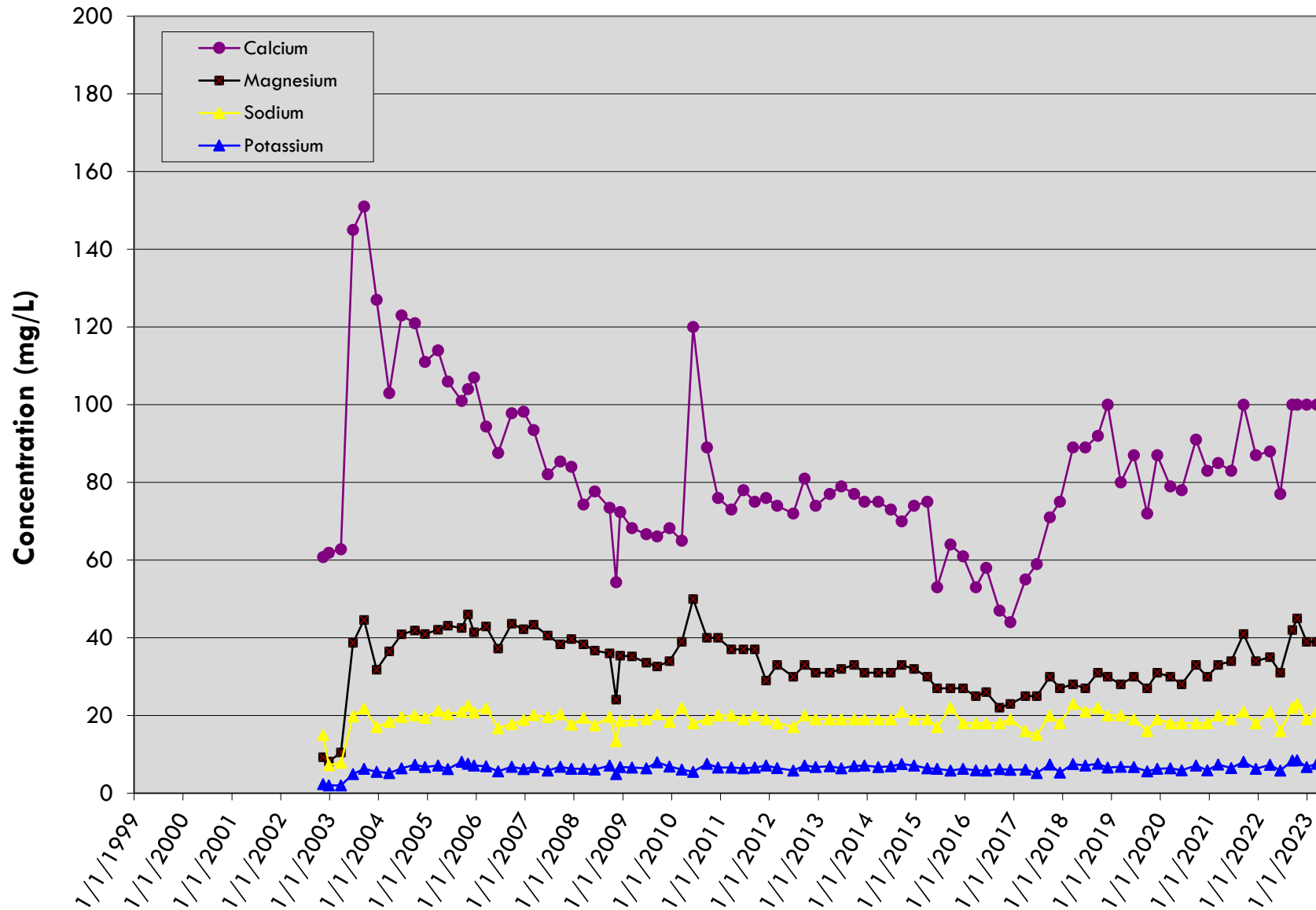
LDCS-2A

LRI Landfill, Pierce County, Washington



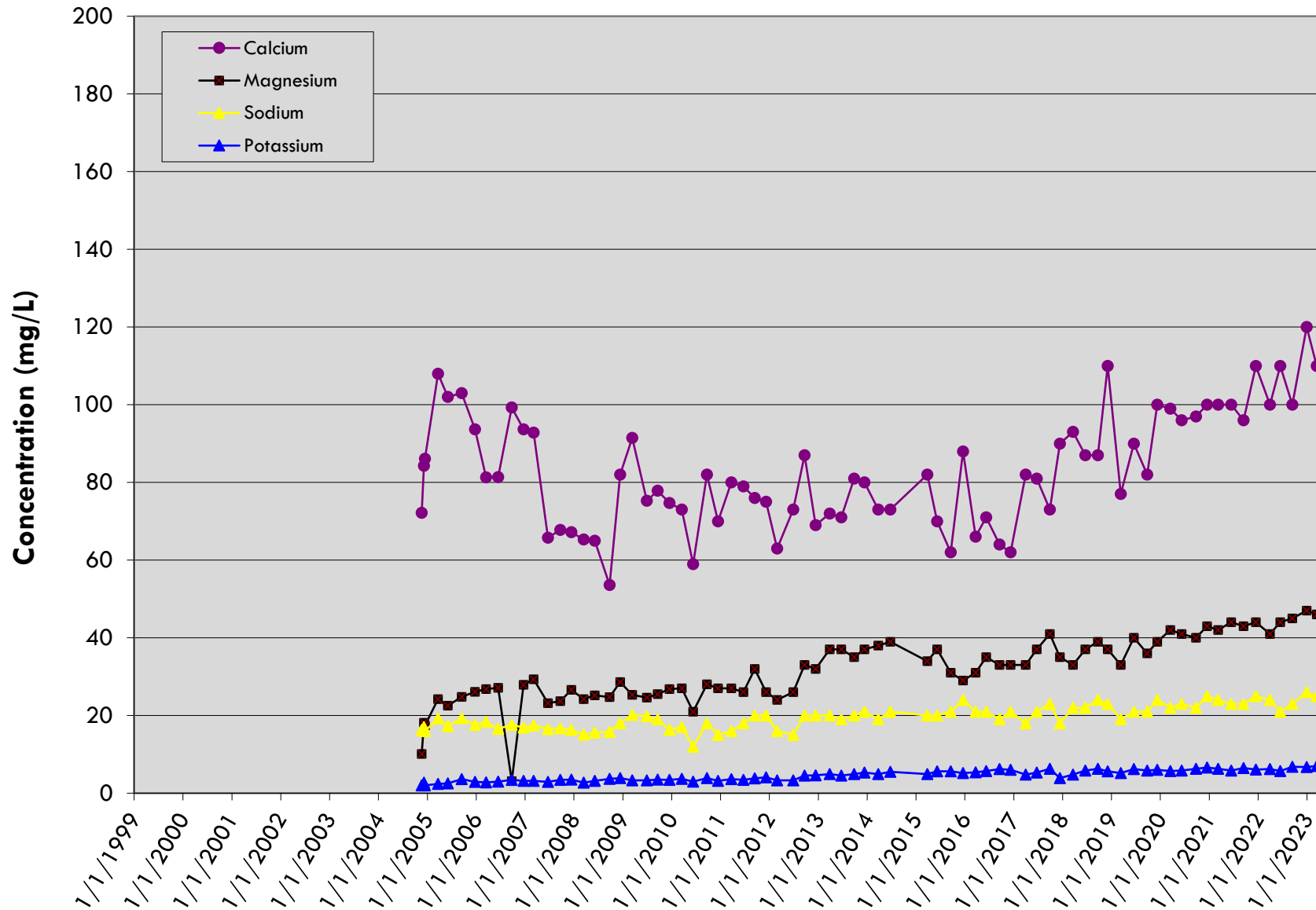
LDCS-2B

LRI Landfill, Pierce County, Washington



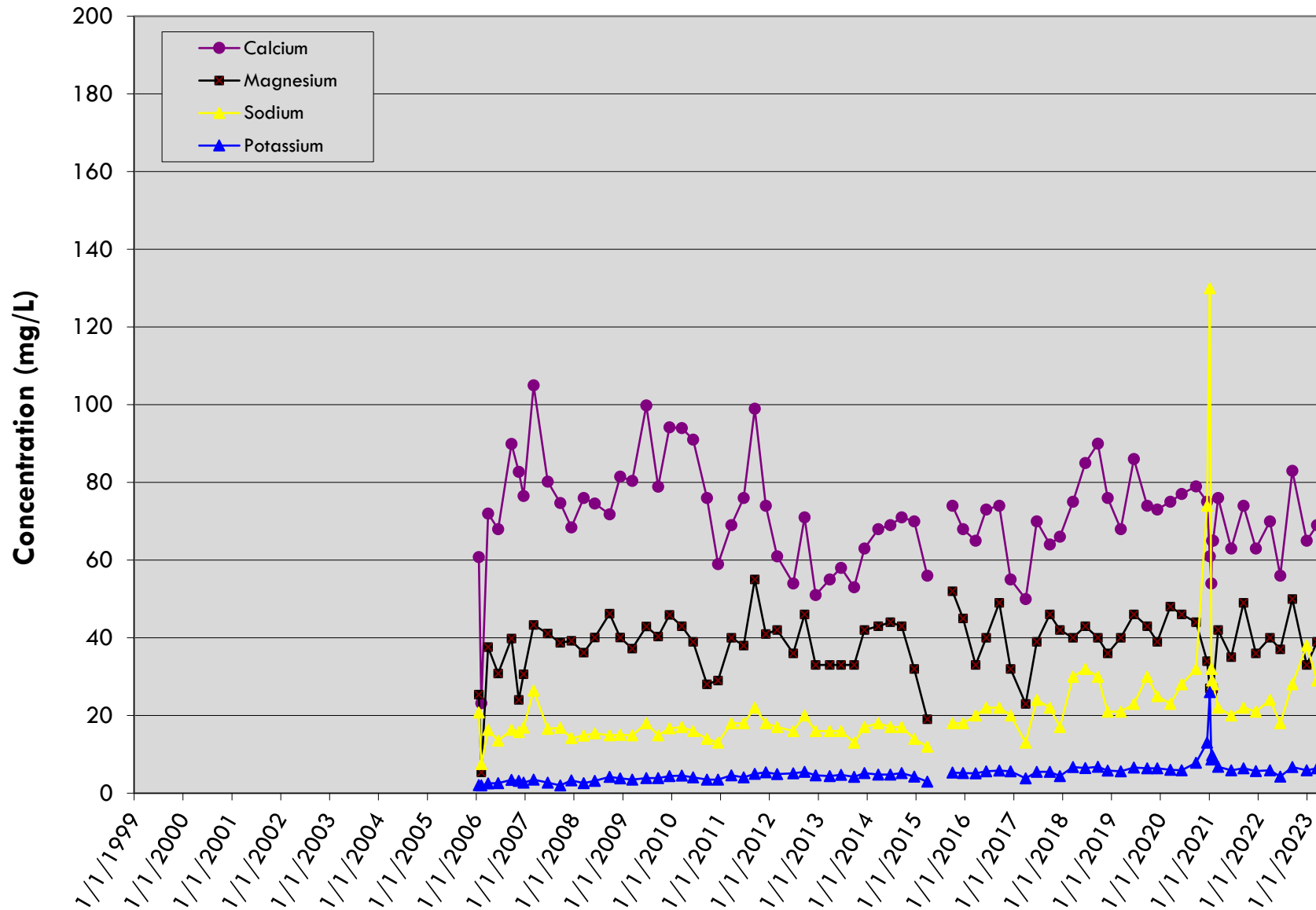
LDCS-3A

LRI Landfill, Pierce County, Washington



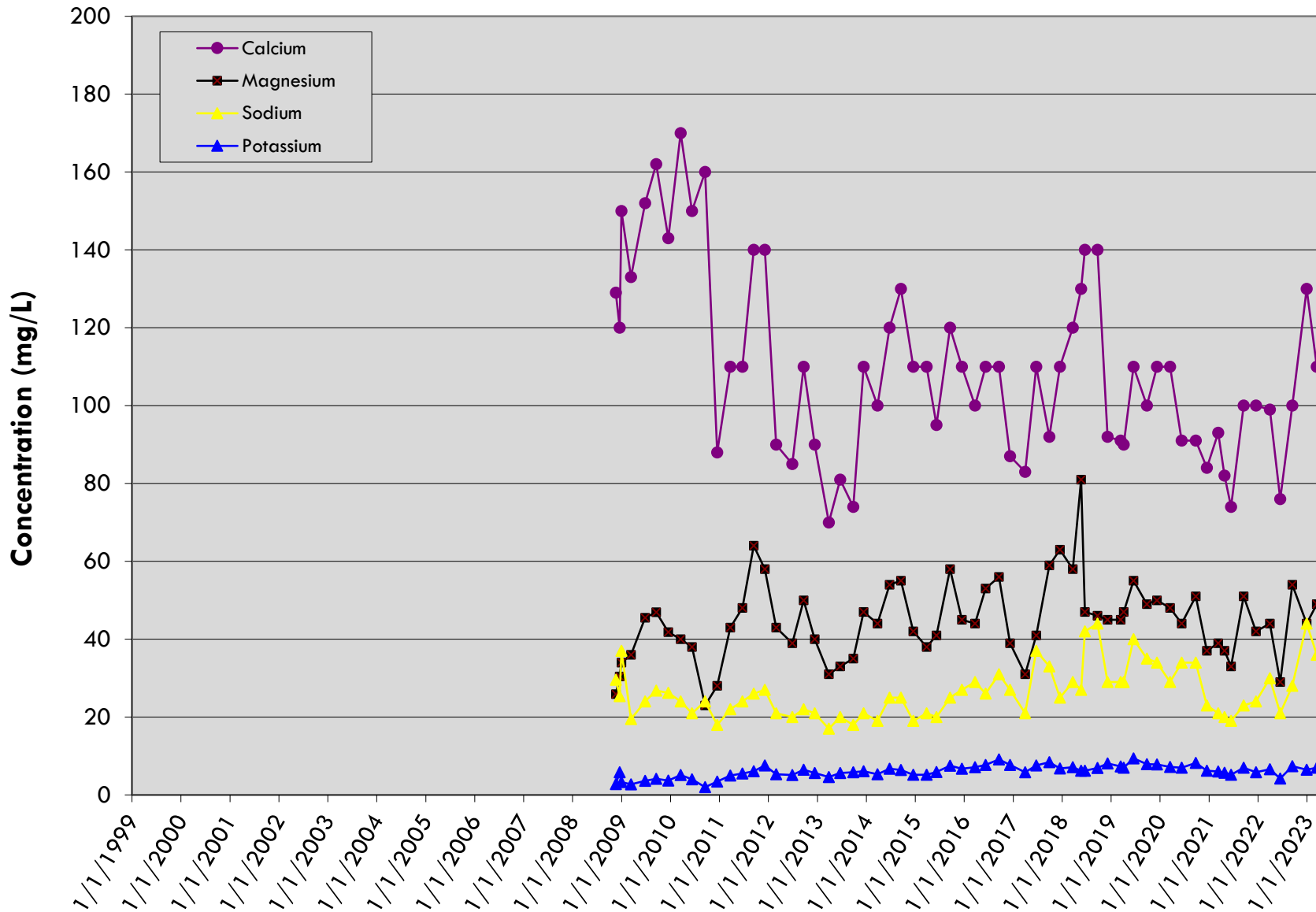
LDCS-4A

LRI Landfill, Pierce County, Washington



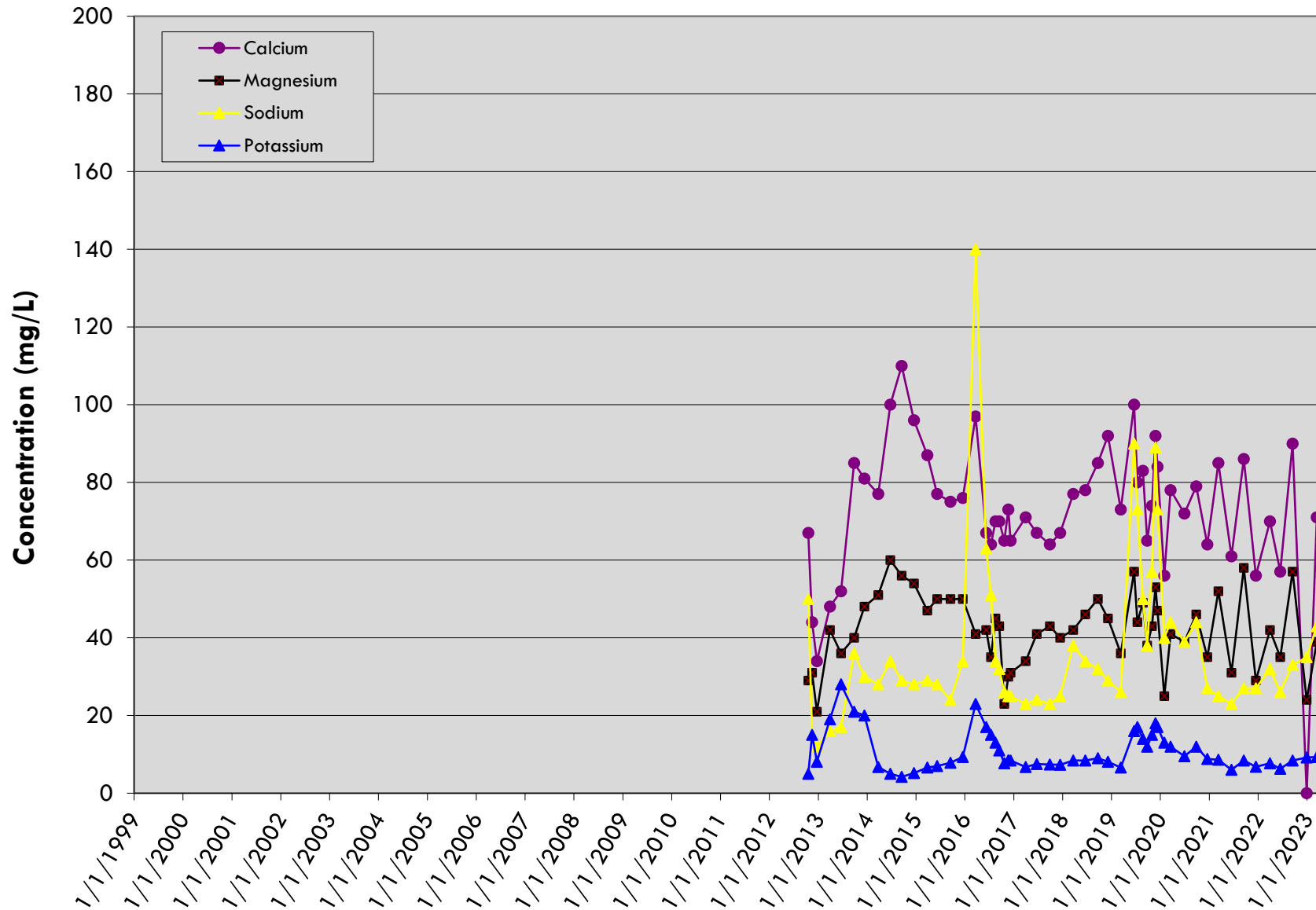
LDCS-4B

LRI Landfill, Pierce County, Washington



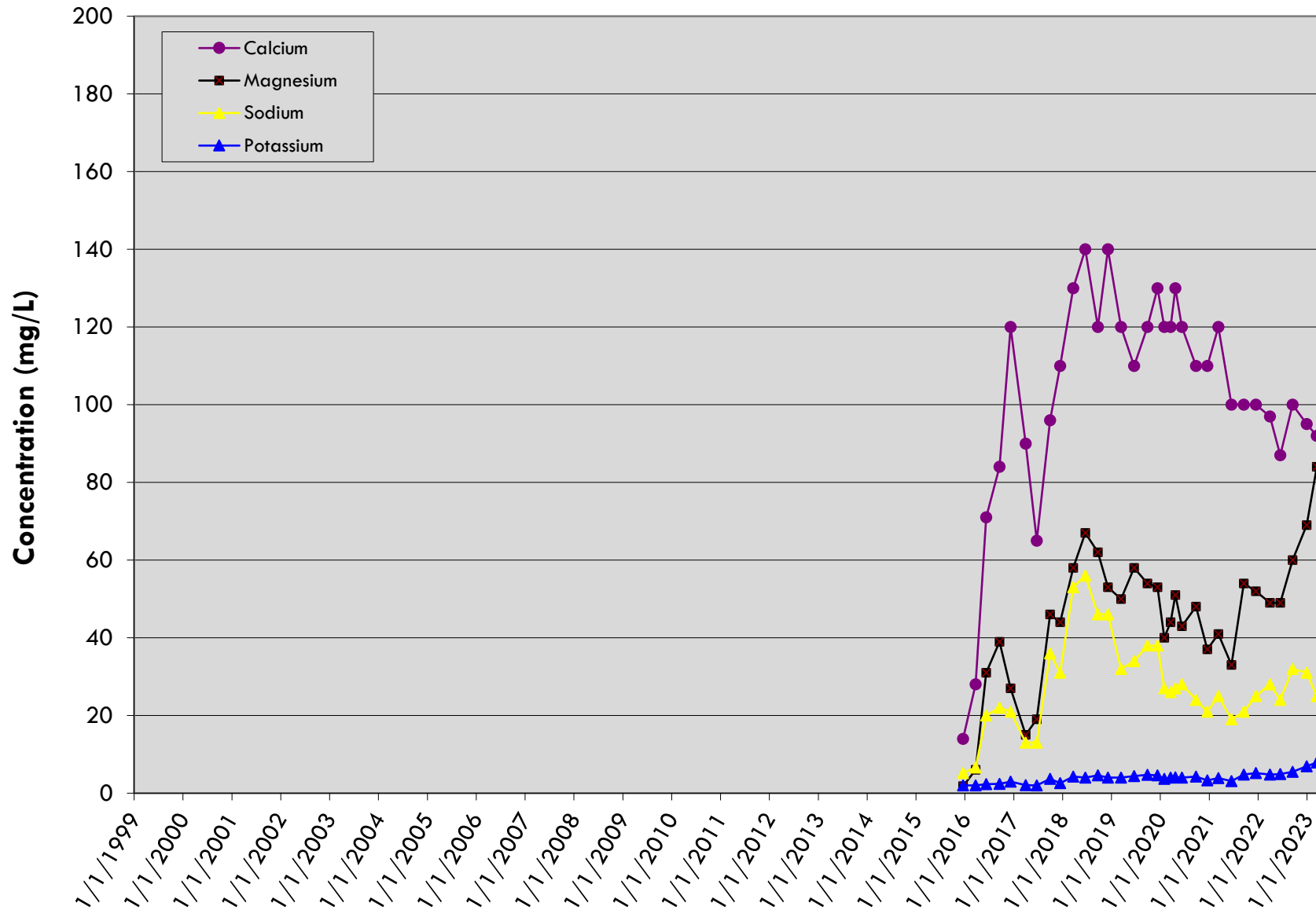
LDCS-5

LRI Landfill, Pierce County, Washington



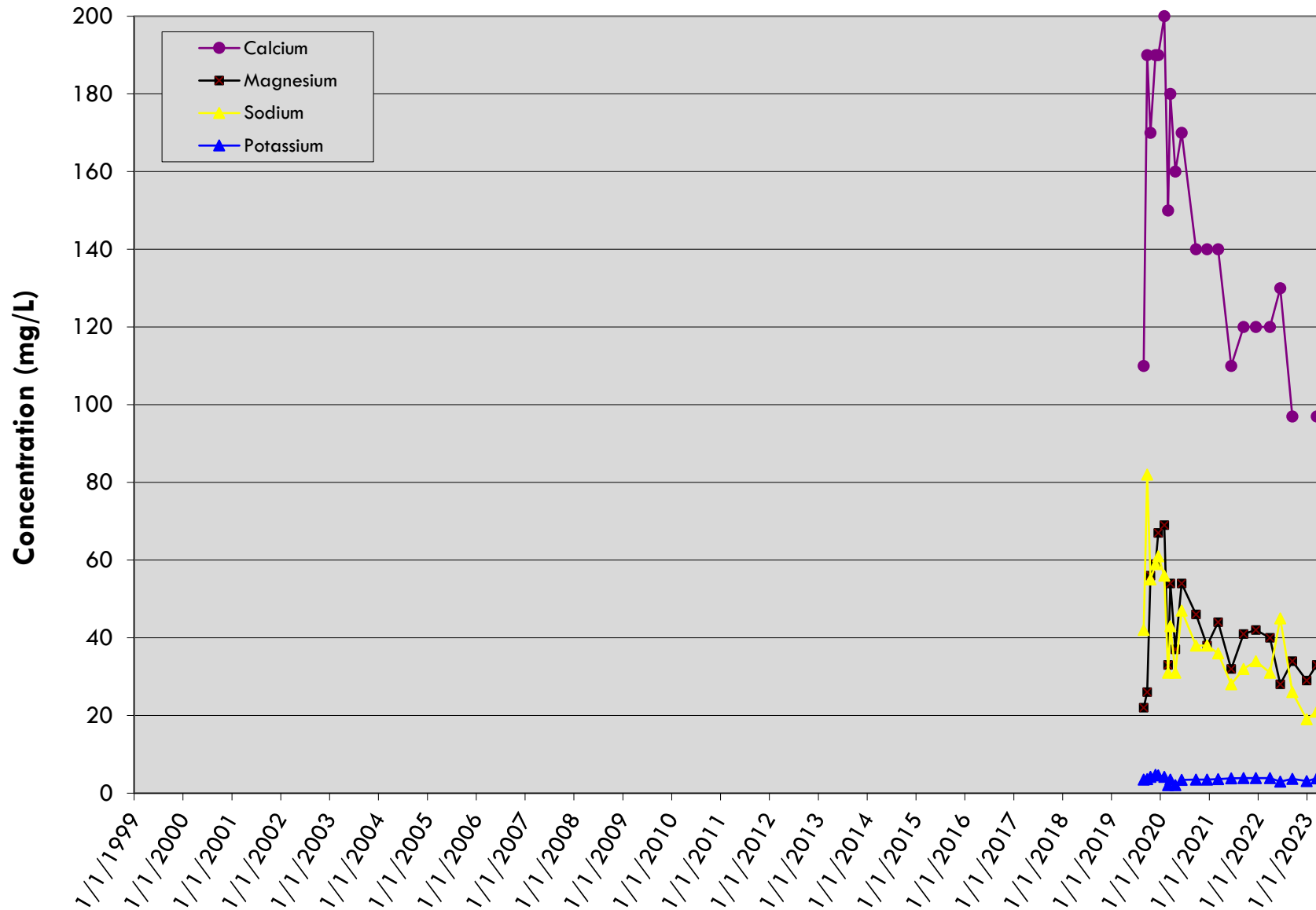
LDCS-6A

LRI Landfill, Pierce County, Washington



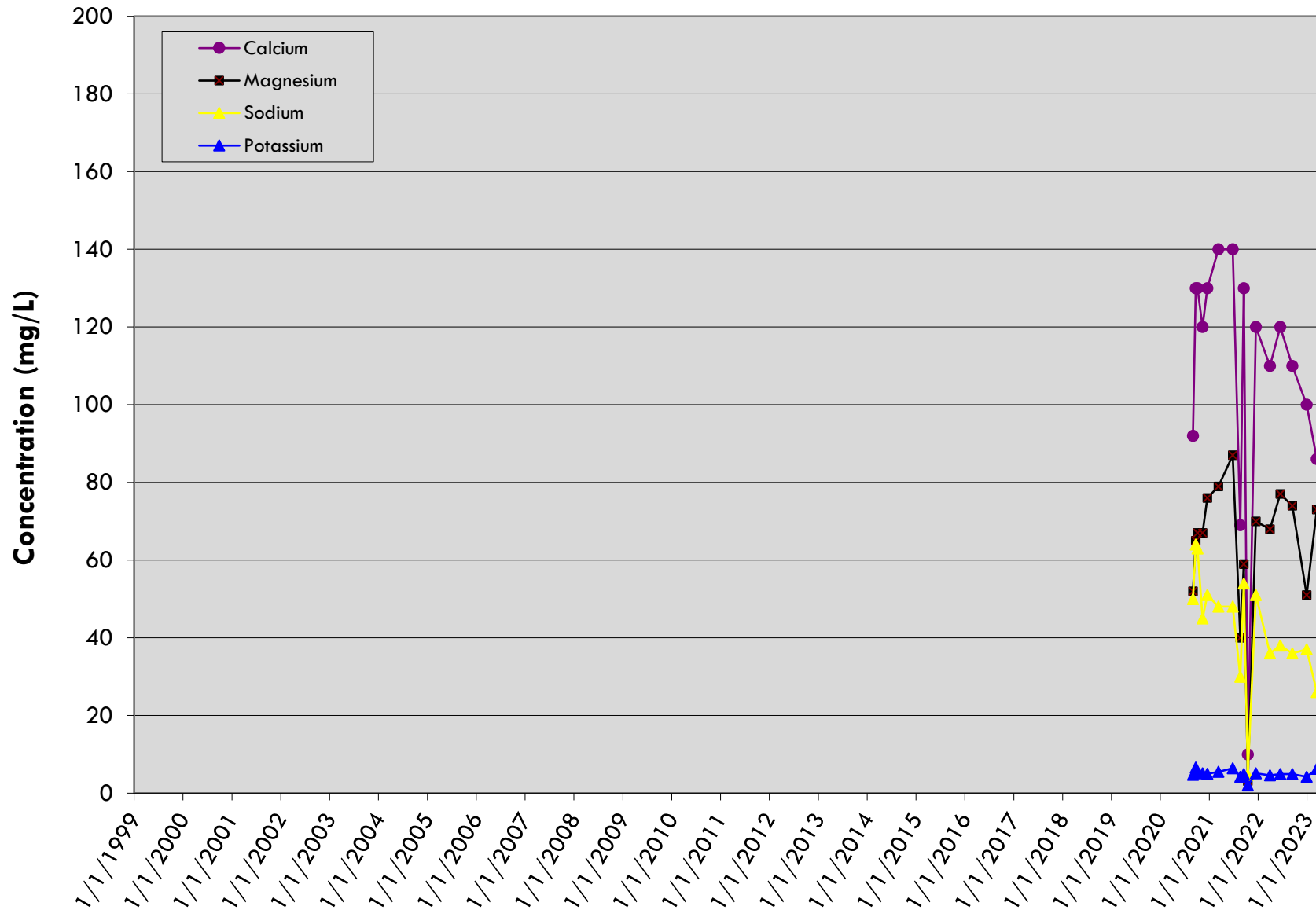
LDCS-7

LRI Landfill, Pierce County, Washington



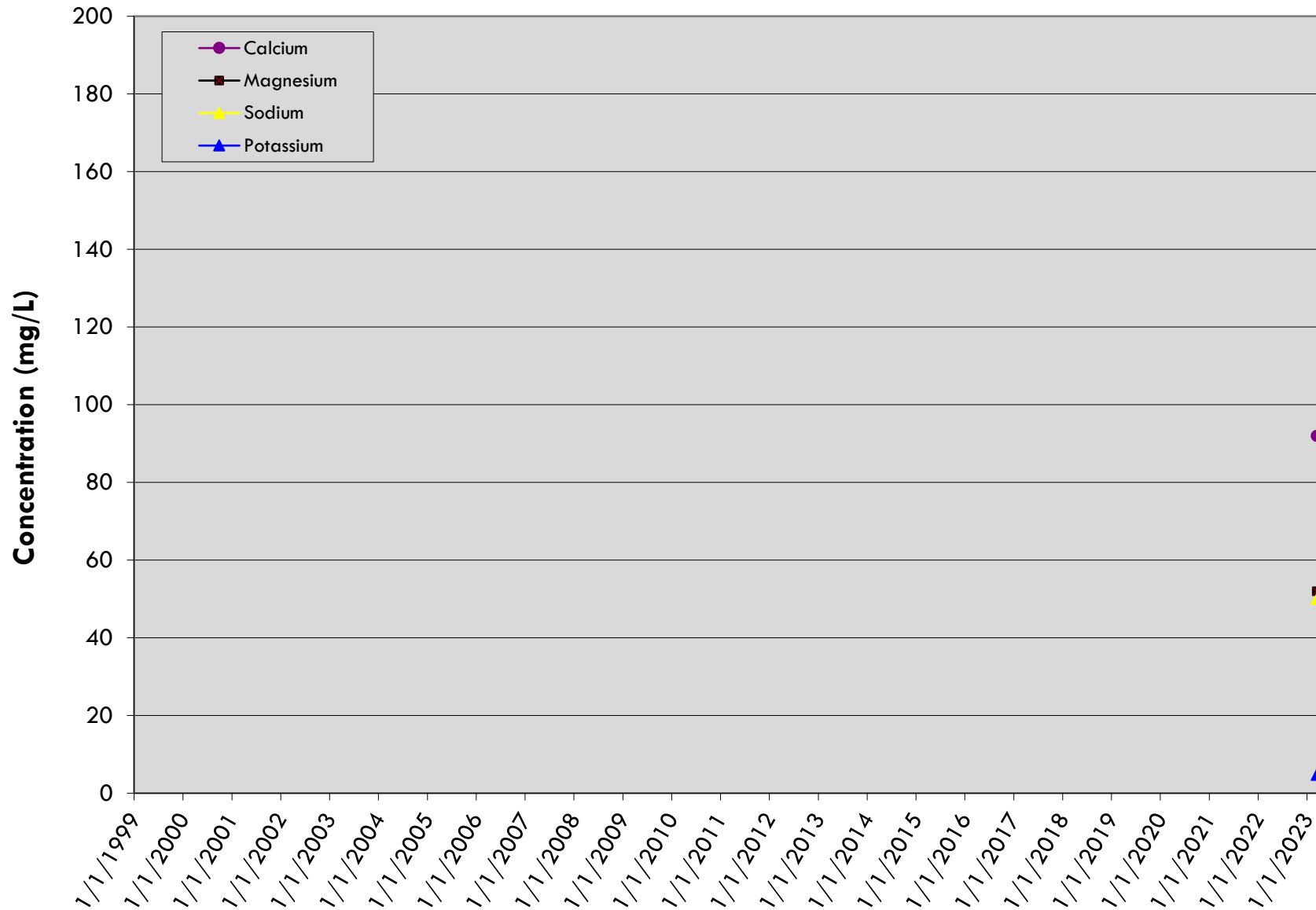
LDCS-8

LRI Landfill, Pierce County, Washington



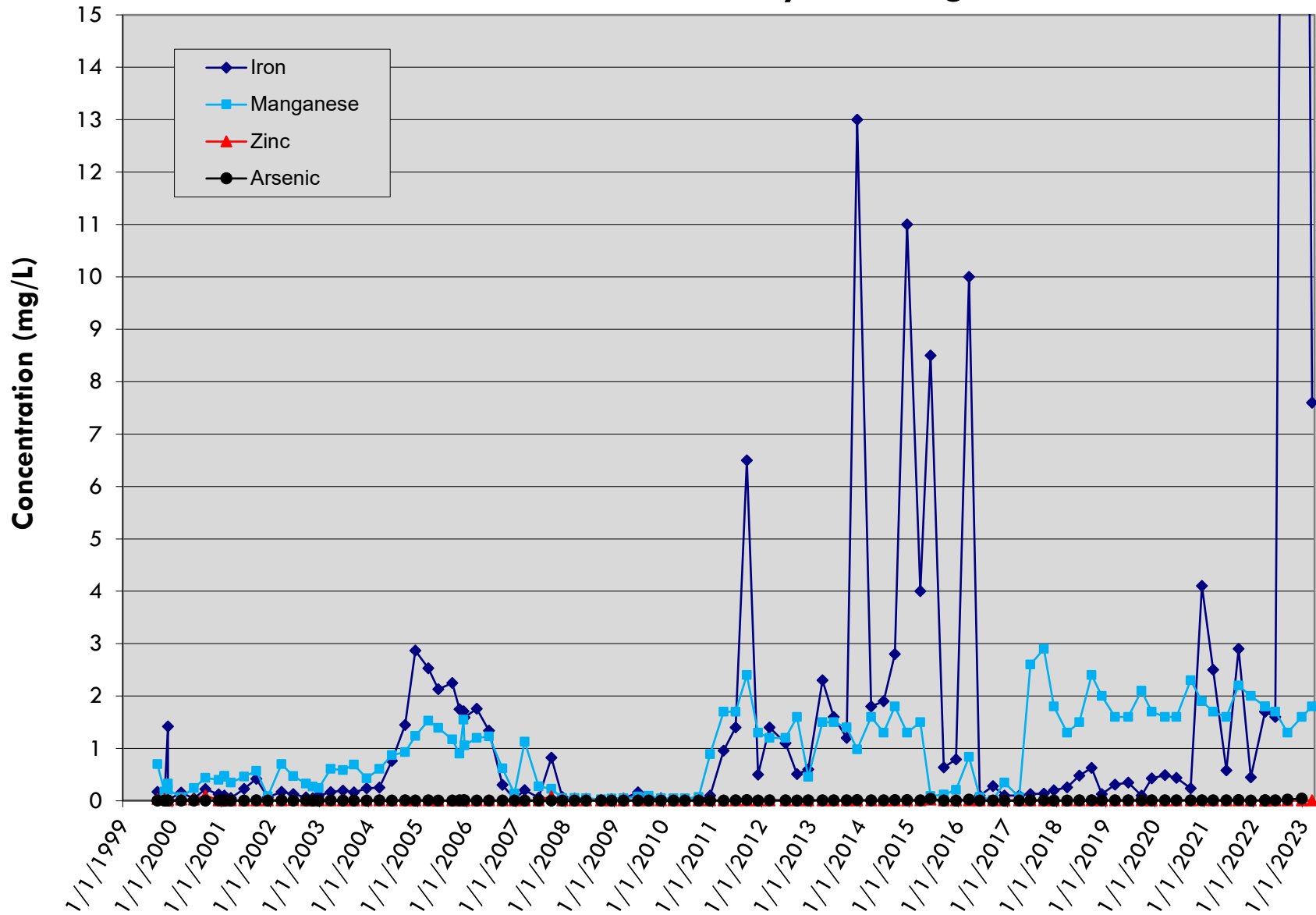
LDCS-9

LRI Landfill, Pierce County, Washington



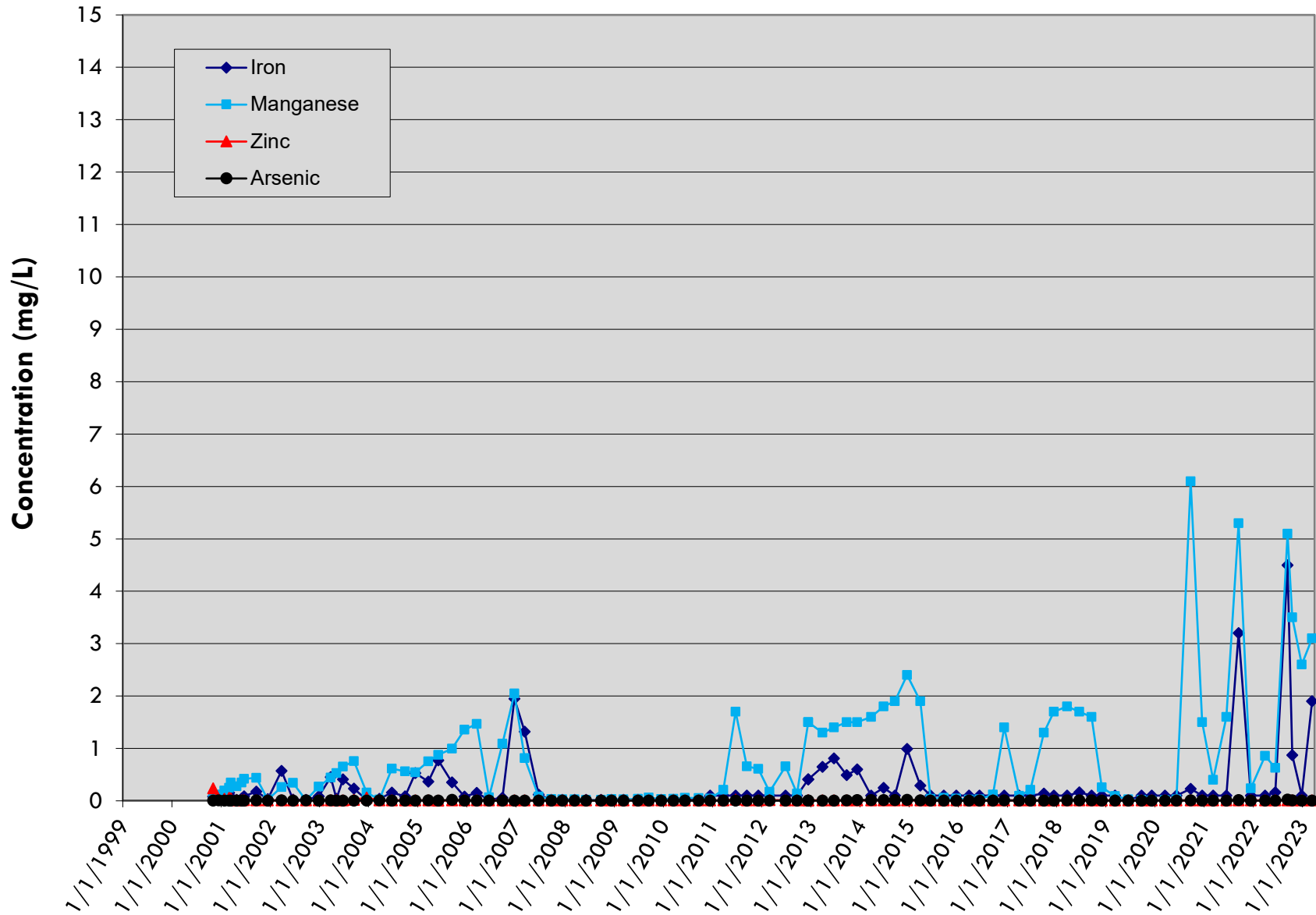
LDCS-1

LRI Landfill, Pierce County, Washington



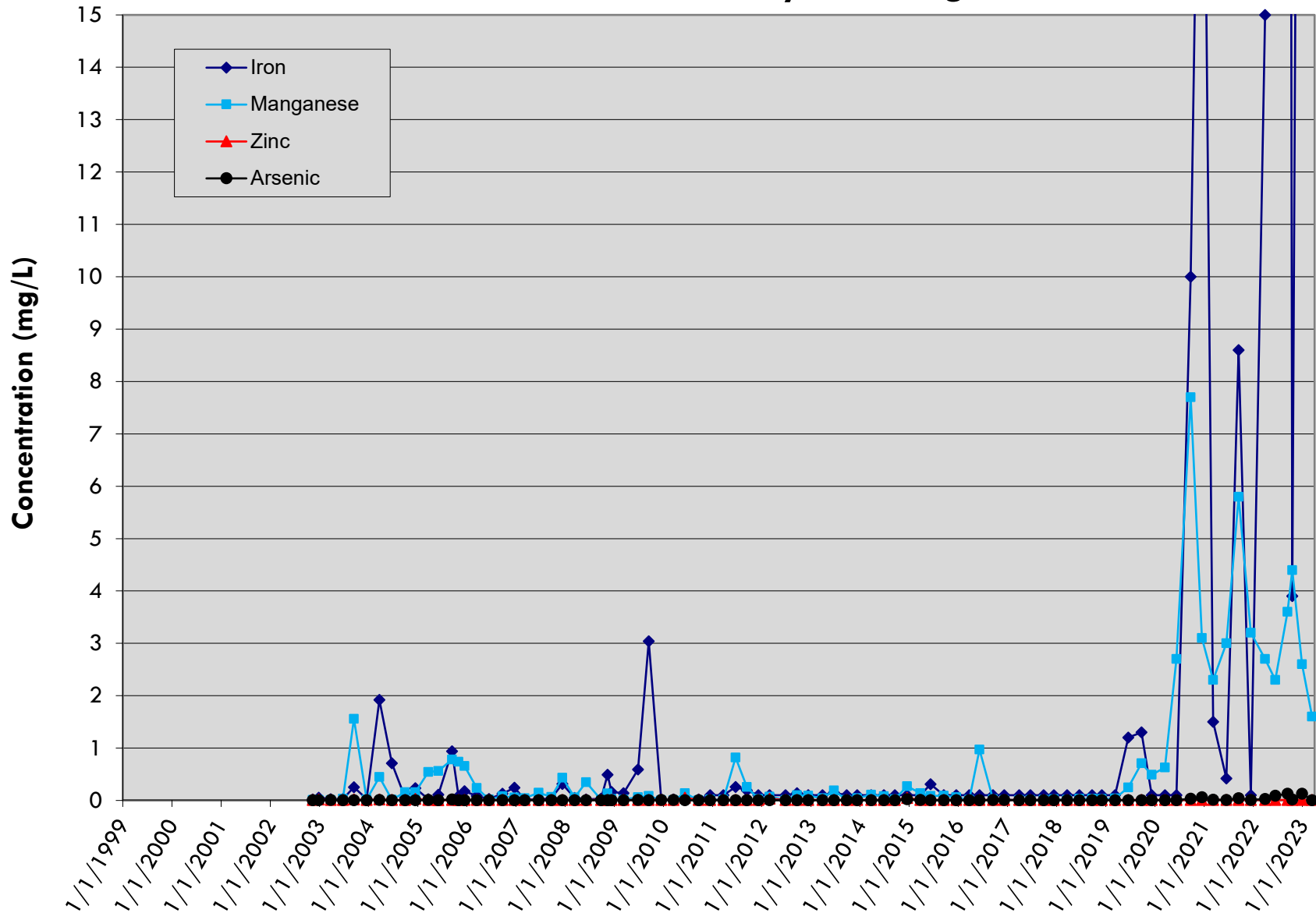
LDCS-2A

LRI Landfill, Pierce County, Washington



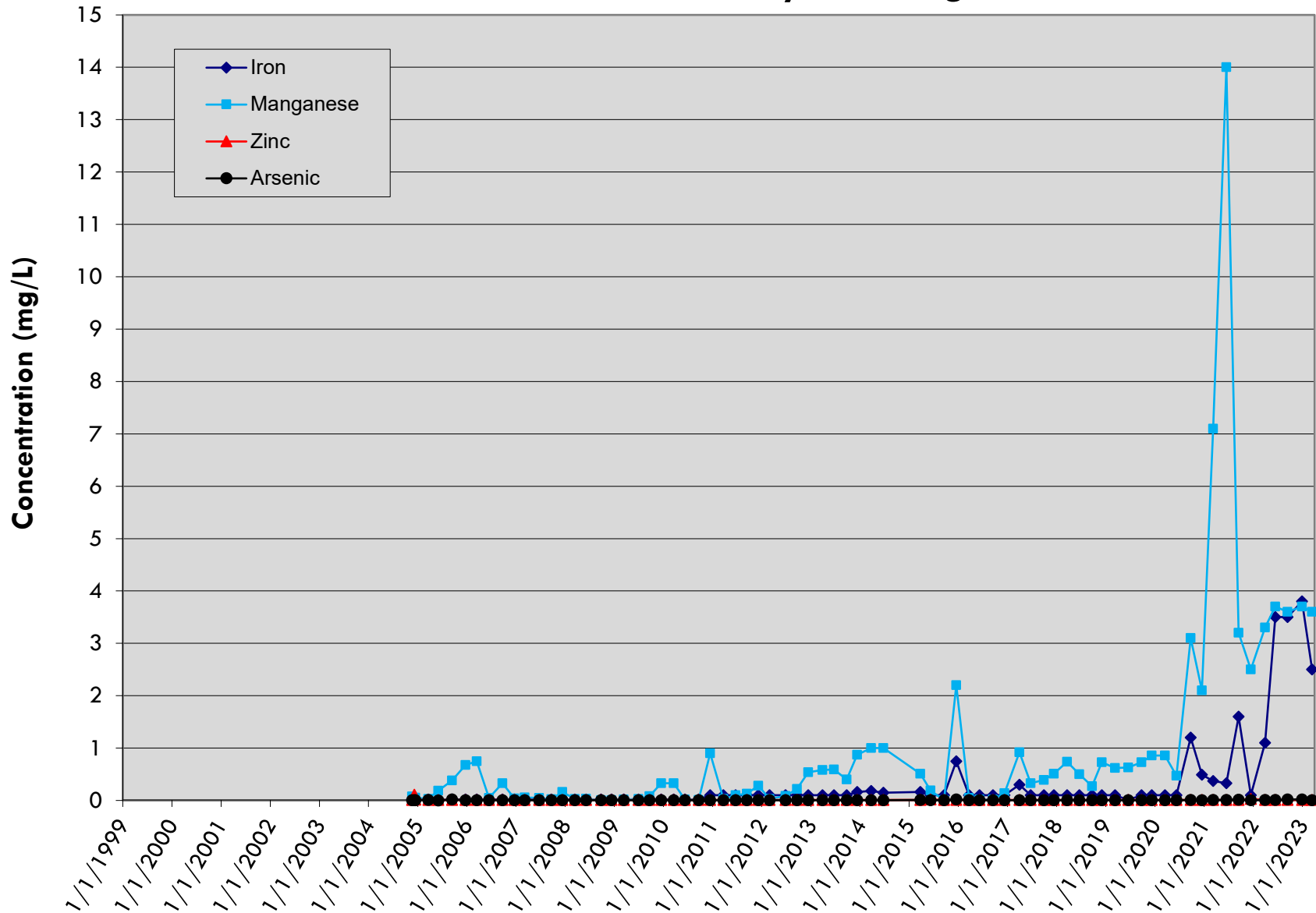
LDCS-2B

LRI Landfill, Pierce County, Washington



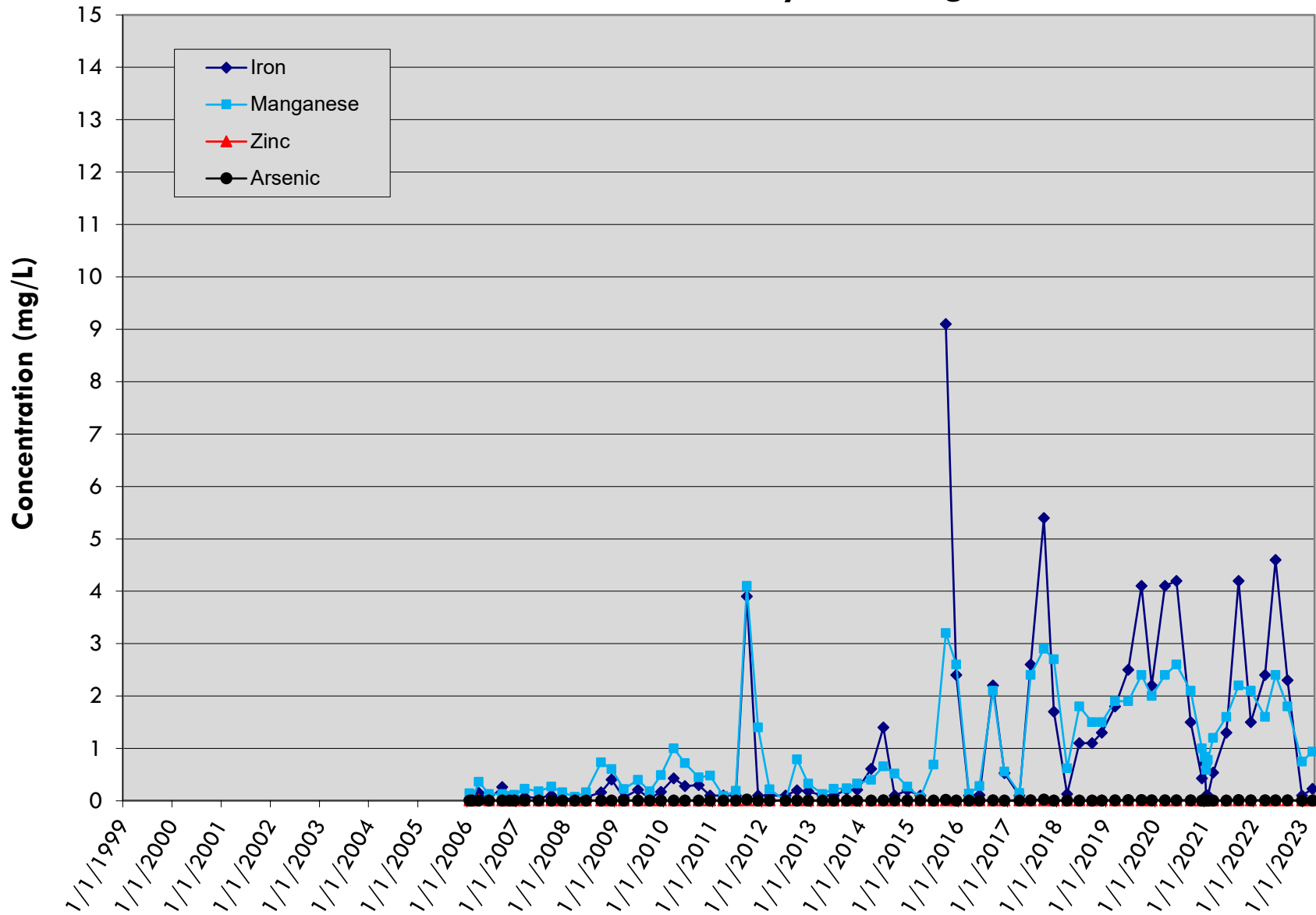
LDCS-3A

LRI Landfill, Pierce County, Washington



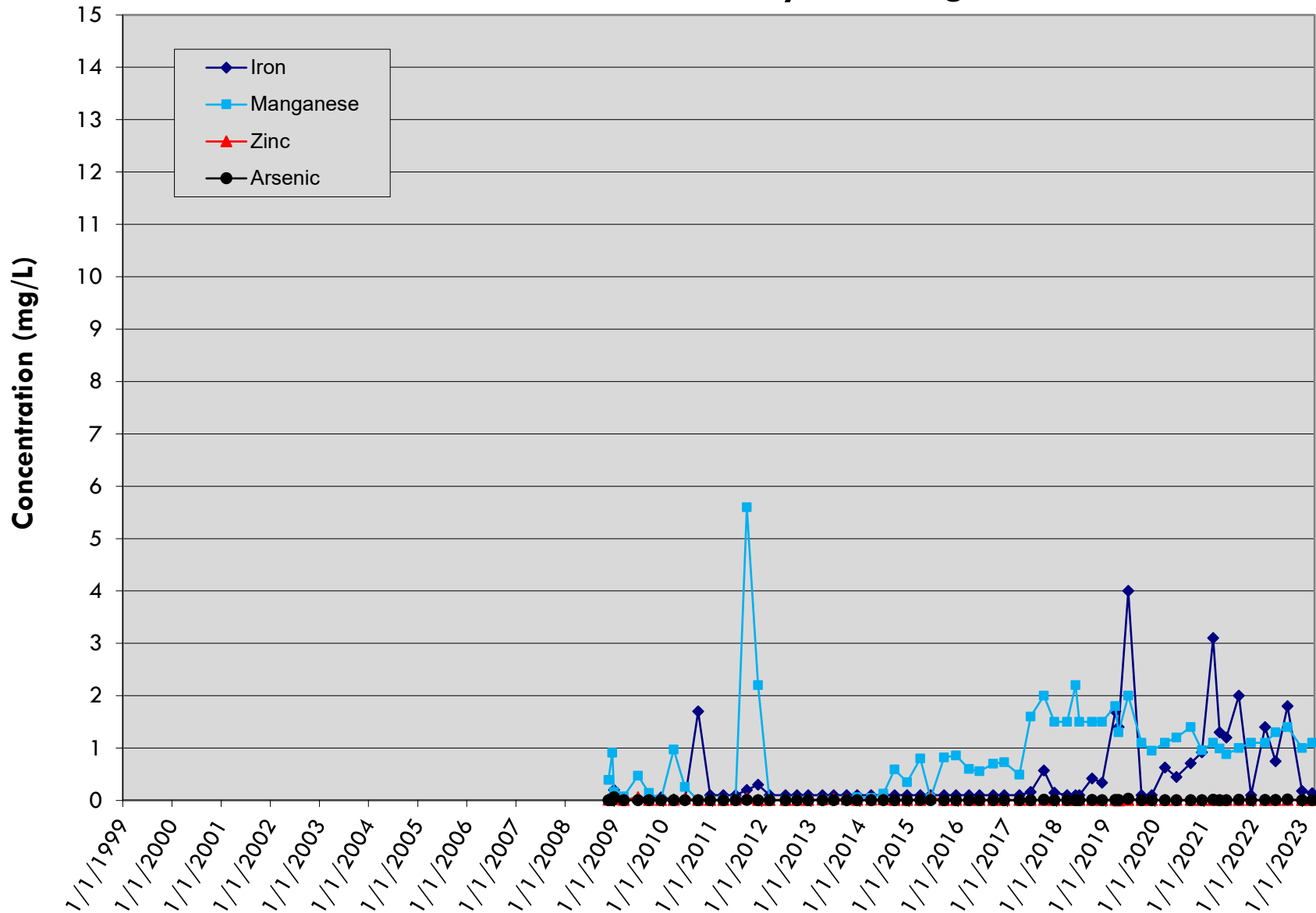
LDCS-4A

LRI Landfill, Pierce County, Washington



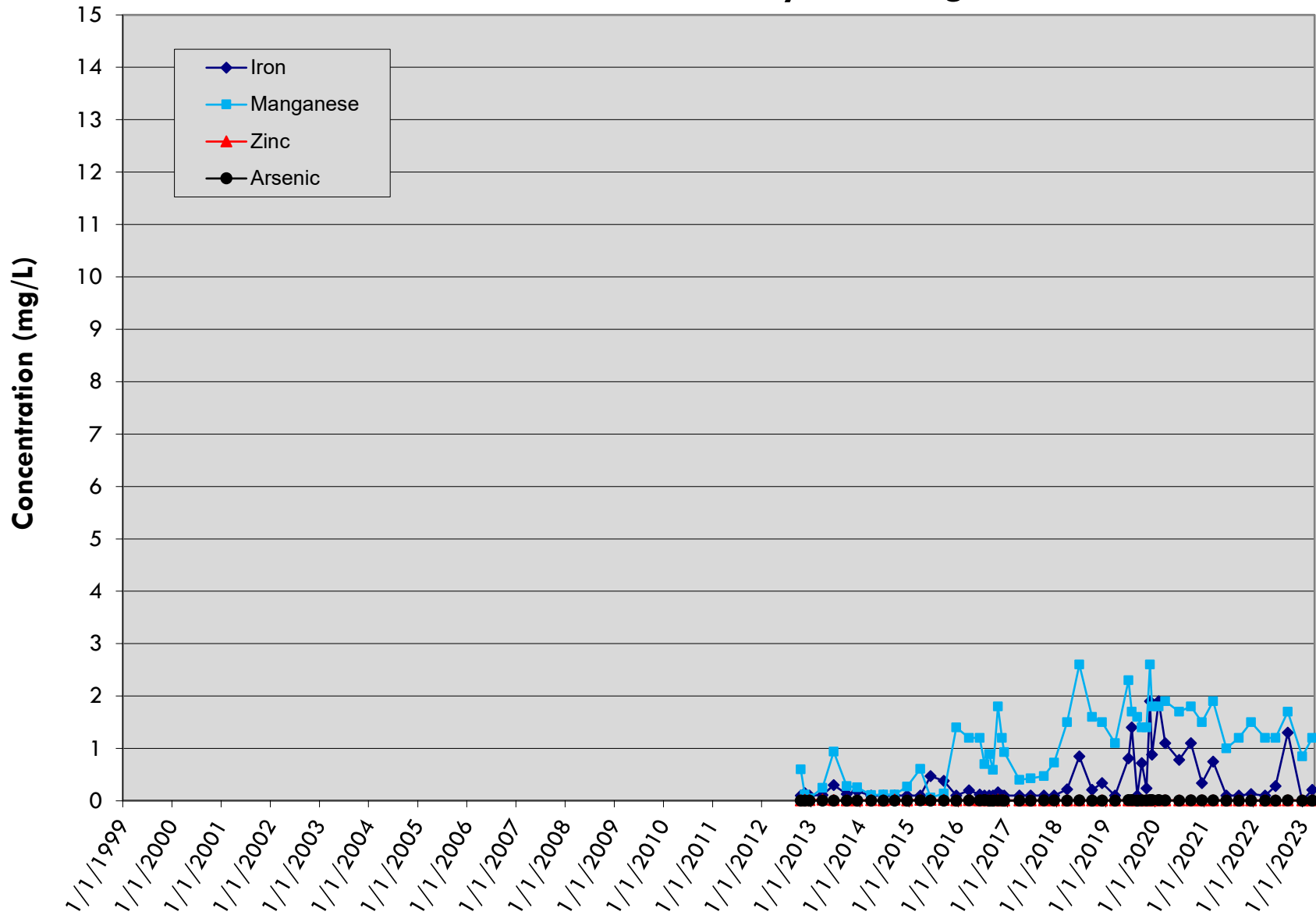
LDCS-4B

LRI Landfill, Pierce County, Washington



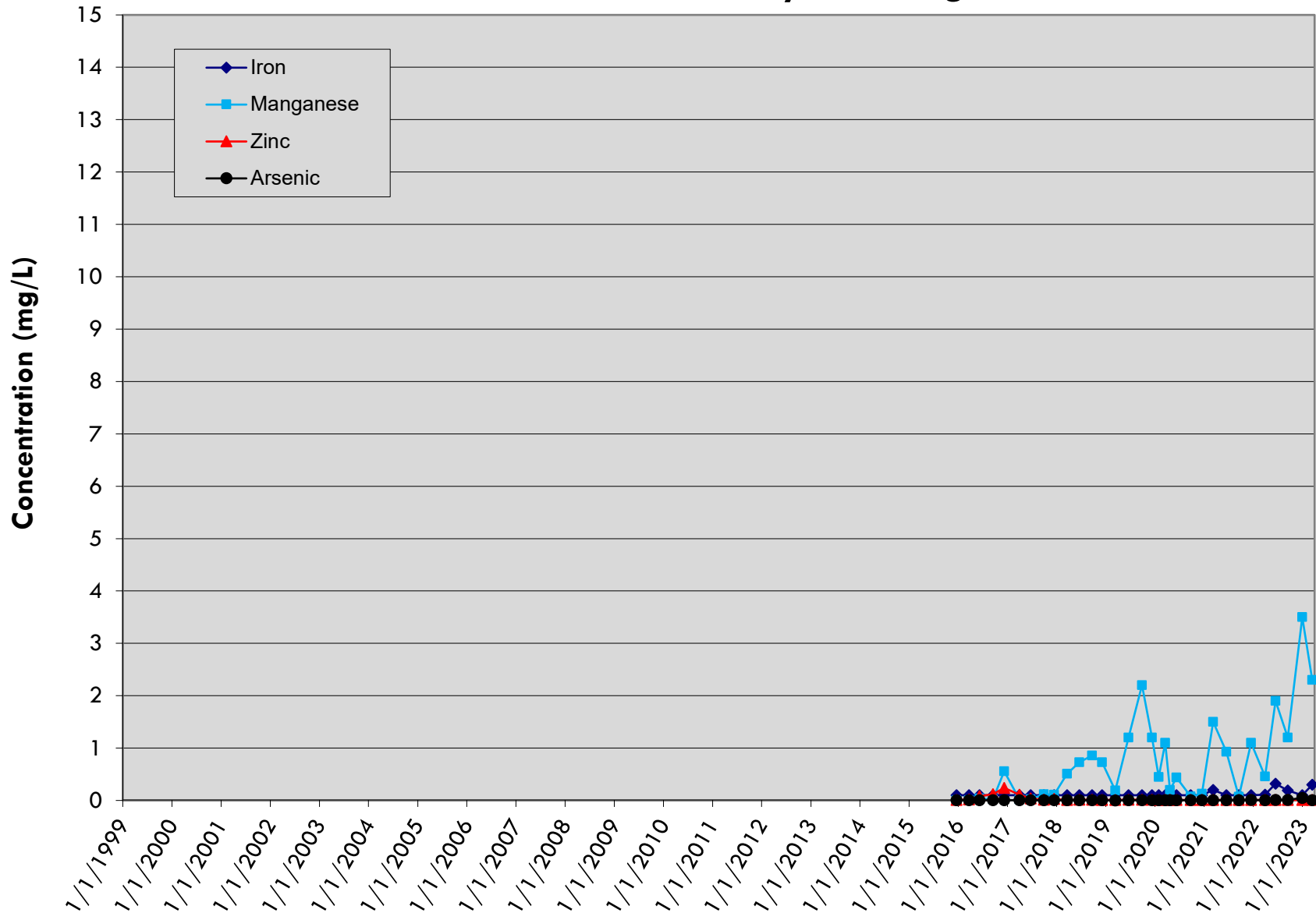
LDCS-5

LRI Landfill, Pierce County, Washington



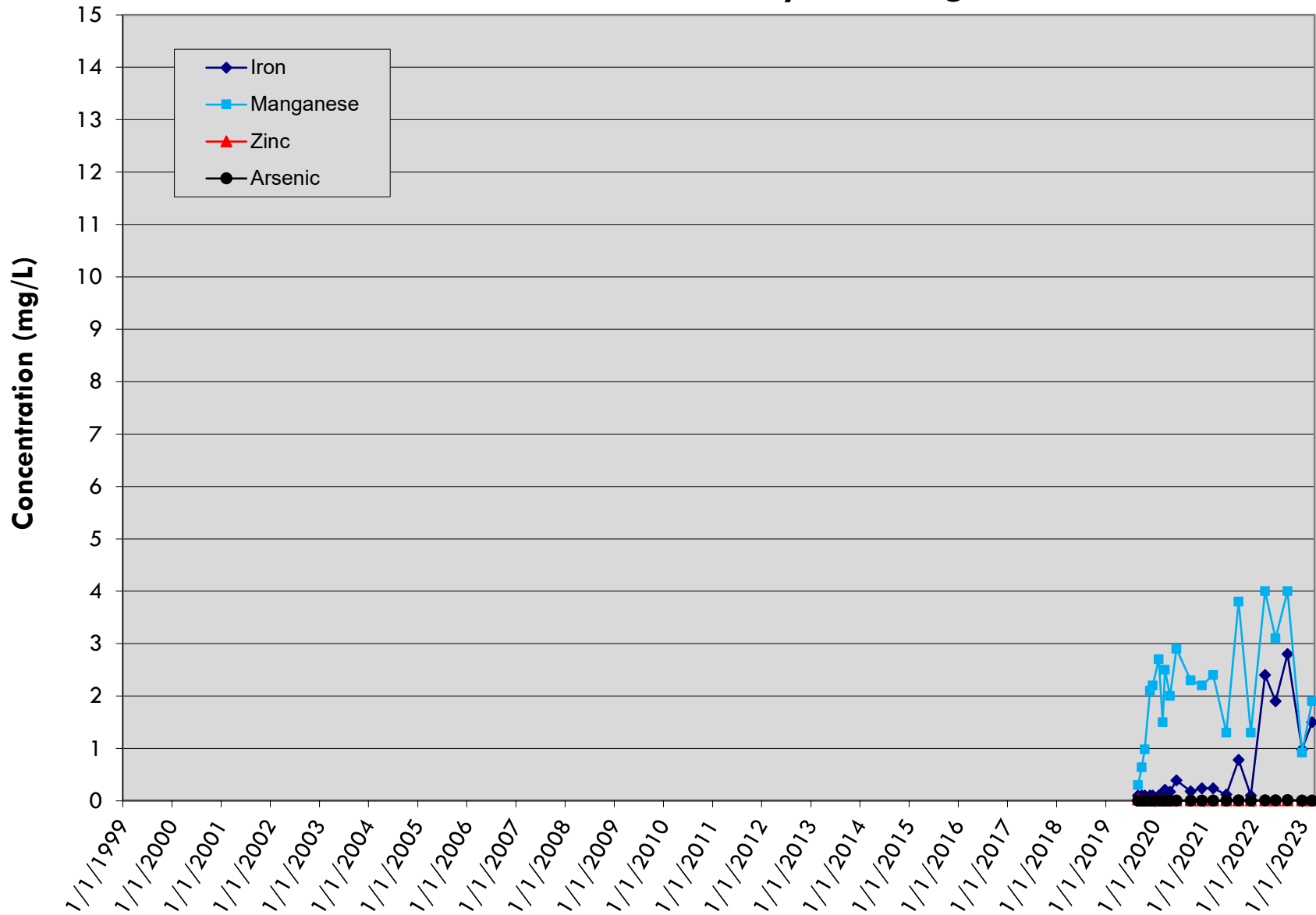
LDCS-6A

LRI Landfill, Pierce County, Washington



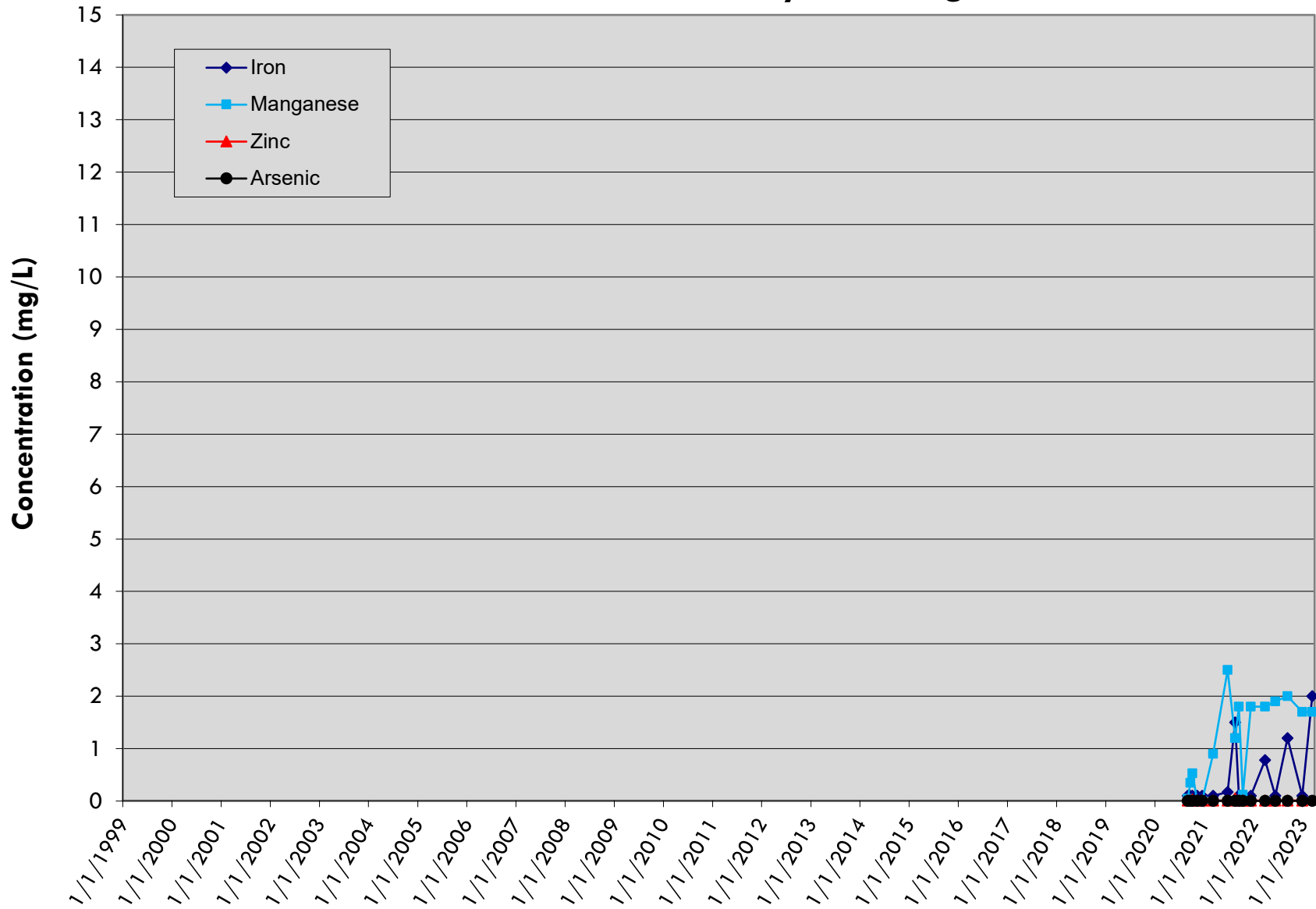
LDCS-7

LRI Landfill, Pierce County, Washington



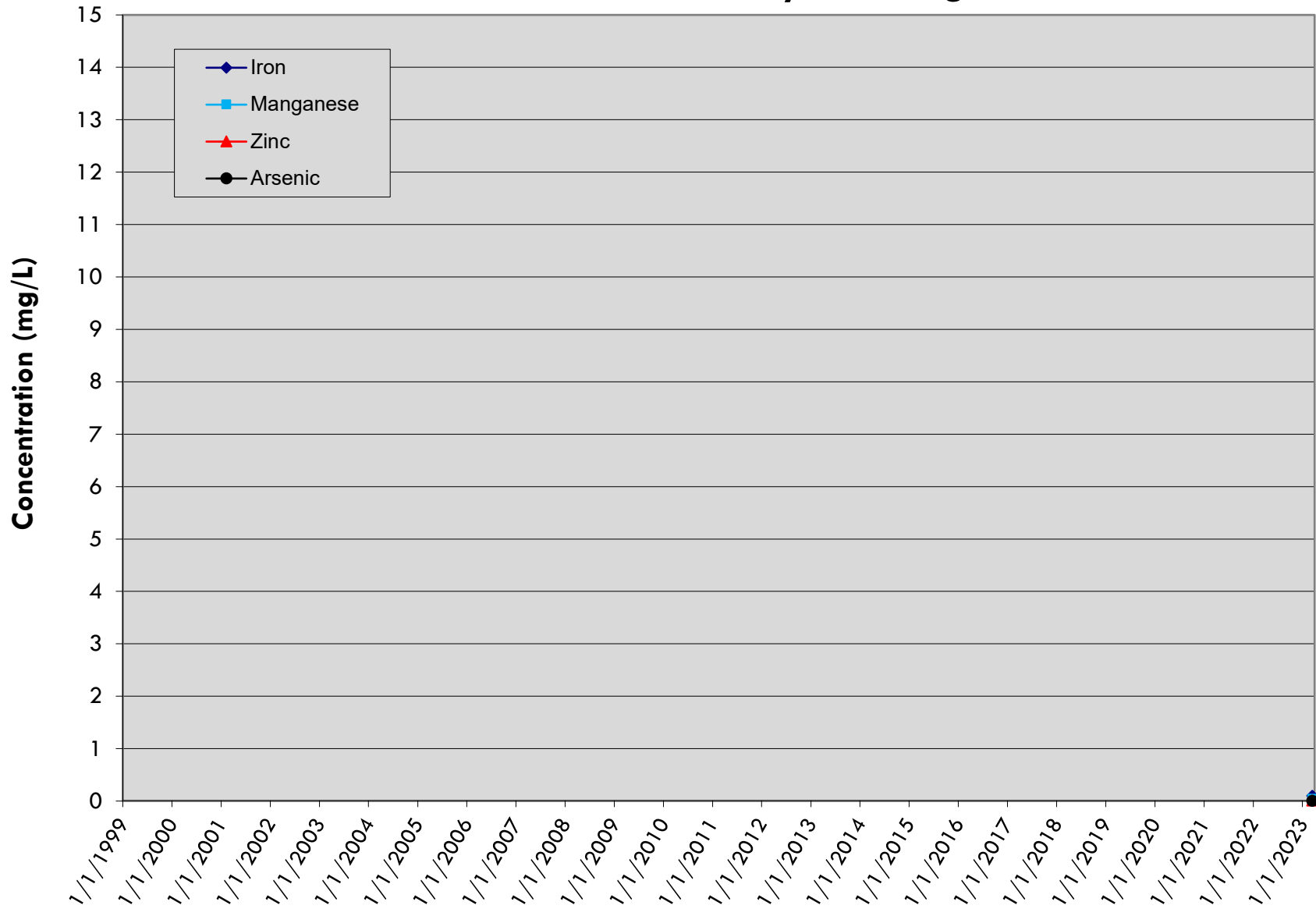
LDCS-8

LRI Landfill, Pierce County, Washington



LDCS-9

LRI Landfill, Pierce County, Washington





Attachment H

LDCS & Leachate Pumping Records and Conductivity Measurements

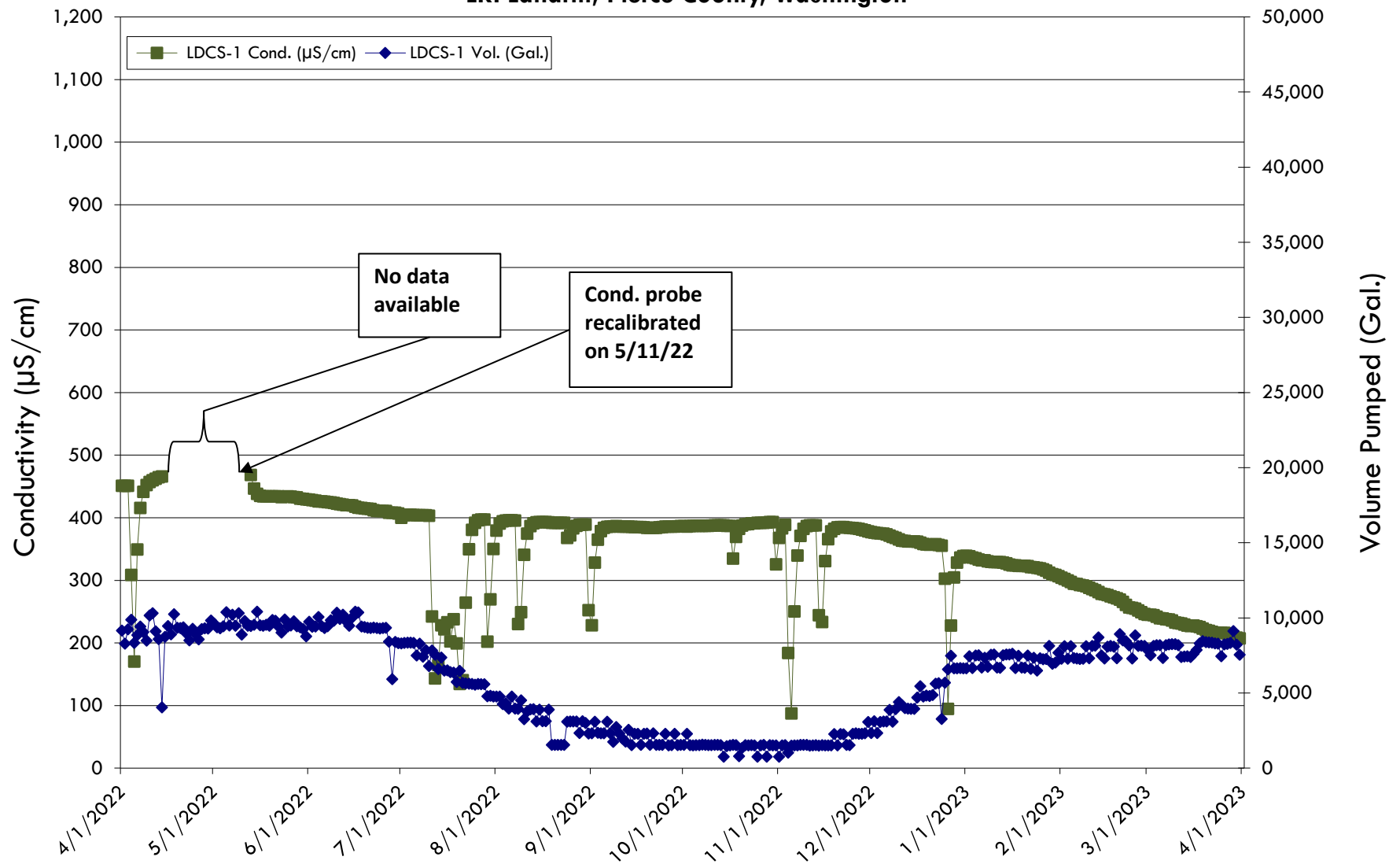
Summary of LDCS Volumes Pumped and Conductivity Data
First Quarter 2023
LRI Landfill, Pierce County, Washington

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)*
1/1/2023	0.10	6,650	339	0	981	0	779	3,070	965	3,060	--	3,960	1,138	766	760	0	1,061	0	582	0	--
1/2/2023	0.04	7,440	338	0	981	0	779	4,570	969	3,070	--	3,358	1,119	505	796	0	1,050	0	583	0	--
1/3/2023	0.00	6,660	336	0	970	4,490	779	3,160	962	2,940	--	3,964	1,104	505	831	0	1,040	11,338	593	0	--
1/4/2023	0.04	7,500	335	0	987	0	779	4,560	956	3,050	--	3,208	1,096	505	851	0	1,033	0	603	0	--
1/5/2023	0.06	7,510	333	0	985	0	779	5,260	947	3,100	--	4,244	1,093	441	866	1	1,028	0	613	548	--
1/6/2023	0.02	6,700	332	0	975	0	779	3,160	940	2,300	--	4,332	1,094	378	879	0	1,022	0	622	273	--
1/7/2023	0.00	7,350	332	0	982	0	779	4,700	941	2,220	--	3,794	1,100	440	886	0	1,019	0	627	297	--
1/8/2023	0.00	6,740	331	0	991	3,831	779	3,070	936	2,260	--	3,540	1,100	377	891	0	1,016	8,117	651	375	--
1/9/2023	0.00	7,540	330	0	984	0	779	4,700	928	2,230	--	3,750	1,098	440	896	0	1,015	0	670	552	--
1/10/2023	0.00	7,560	329	0	904	1,442	779	3,350	922	2,220	--	4,936	1,093	442	900	0	1,014	3,082	658	275	--
1/11/2023	0.07	6,700	329	0	921	0	779	4,820	921	2,210	--	4,986	1,089	441	900	0	1,014	0	662	545	--
1/12/2023	0.48	6,680	329	0	929	0	779	3,200	921	2,560	--	4,552	1,087	505	902	0	1,015	0	656	545	--
1/13/2023	0.03	7,520	328	0	911	0	775	4,810	923	2,540	--	4,944	1,080	568	900	0	1,016	0	663	550	--
1/14/2023	0.02	7,570	327	0	911	0	775	3,660	919	2,920	--	4,846	1,072	764	896	0	1,015	0	677	326	--
1/15/2023	0.00	7,570	325	0	906	4,089	775	4,050	910	3,120	--	4,906	1,064	702	889	0	1,014	7,609	670	555	--
1/16/2023	0.00	7,610	324	0	869	0	775	4,720	909	3,260	--	5,434	1,057	1,036	879	0	1,013	0	664	546	--
1/17/2023	0.00	6,660	324	0	831	1,599	775	3,080	914	2,950	--	5,400	1,048	635	870	0	1,013	5,525	678	272	--
1/18/2023	0.05	7,480	323	0	870	0	775	4,600	920	4,690	--	5,408	1,041	1,125	864	0	1,014	0	688	274	--
1/19/2023	0.02	6,690	323	0	858	0	775	3,020	922	3,720	--	6,104	1,028	1,106	847	0	1,014	0	660	274	--
1/20/2023	0.08	6,670	323	0	836	0	777	3,140	929	2,560	--	5,514	1,019	572	837	0	1,013	0	657	313	--
1/21/2023	0.00	7,500	323	0	880	2,583	777	4,530	930	2,500	--	4,814	1,017	569	844	0	1,014	5,407	663	552	--
1/22/2023	0.00	6,610	321	0	948	0	777	4,600	927	2,990	--	5,194	1,018	969	861	0	1,016	0	663	274	--
1/23/2023	0.00	7,350	321	0	967	1,205	777	3,040	927	2,940	--	5,228	1,019	637	855	0	1,016	0	644	274	--
1/24/2023	0.00	6,500	320	0	955	0	771	3,090	916	2,750	--	5,430	1,011	570	855	0	675	0	653	544	--
1/25/2023	0.00	7,310	319	0	958	1,294	771	4,810	477	2,590	--	5,142	1,005	510	865	0	288	5,444	662	272	--
1/26/2023	0.15	7,240	318	0	958	0	772	3,040	763	2,600	--	4,880	1,002	442	878	0	751	0	654	547	--
1/27/2023	0.22	7,270	315	0	958	0	772	4,680	864	3,200	--	5,000	1,000	442	895	0	920	0	648	272	--
1/28/2023	0.00	8,130	312	0	958	0	776	4,640	892	3,440	--	5,856	996	442	911	0	983	0	661	0	--
1/29/2023	0.22	6,940	310	0	958	2,857	776	3,070	900	2,920	--	5,854	990	507	917	0	1,004	5,412	663	0	--
1/30/2023	0.00	7,030	309	0	958	0	776	4,520	908	2,580	--	6,074	983	504	912	0	1,011	0	647	0	--
1/31/2023	0.00	7,680	307	0	451	0	776	4,630	910	2,630	--	6,702	978	379	911	1	1,012	0	664	277	--
2/1/2023	0.05	7,280	304	0	620	0	0	4,680	907	2,620	--	6,172	980	440	917	0	1,011	0	669	553	--
2/2/2023	0.37	8,120	302	0	816	0	0	3,030	903	2,600	--	4,286	979	378	924	0	1,010	0	656	550	--
2/3/2023	0.02	7,280	300	0	911	0	0	4,560	900	2,600	--	3,848	979	315	933	0	1,010	0	660	274	--
2/4/2023	0.07	8,110	297	0	946	5,412	0	4,670	900	3,000	--	4,394	982	378	951	0	1,012	11,164	674	275	--
2/5/2023	0.00	7,330	295	0	978	0	0	4,660	898	4,220	--	4,108	986	643	958	0	1,012	0	675	552	--
2/6/2023	0.02	7,300	294	0	982	0	0	3,070	902	2,750	--	728,154	1,019	105,774	952	0	1,012	0	653	413	--
2/7/2023	0.15	7,260	293	0	958	0	776	4,630	910	4,040	--	5,026	1,016	2,164	905	0	1,012	0	663	277	--
2/8/2023	0.11	7,280	292	0	909	0	0	4,640	913	5,220	--	6,190	1,004	2,698	819	0	1,011	0	655	273	--
2/9/2023	0.35	8,110	290	0	889	0	0	4,800	913	130	--	220	999	64	791	0	1,010	0	629	544	--
2/10/2023	0.02	7,310	288	0	933	0	0	4,650	908	170	--	326	1,004	67	795	0	1,009	0	623	549	--
2/11/2023	No data	8,140	286	0	965	5,626	0	4,570	906	100	--	358	997	0	766	0	1,008	12,741	621	548	--
2/12/2023	0.66	8,150	284	0	987	0	0	4,700	906	140	--	272	991	64	785	0	1,008	0	617	545	--
2/13/2023	0.00	8,700	281	0	992	1,394	0	4,570	901	140	--	178	986	64	808	0	1,008	5,473	619	276	--
2/14/2023	0.00	7,500	278	0	979	0	776	4,550	895	140	--	282	980	63	821	0	1,008	0	620	551	--
2/15/2023	0.00	7,290	278	0	945	0	0	4,590	901	90	--	236	976	0	827	0	1,008	0	619	275	--
2/16/2023	0.00	8,080	276	0	934	0	775	4,620	906	130	--	204	972	0	838	0	1,007	0	632	547	--
2/17/2023	0.00	8,140	275	0	918	0	0	4,600	905	130	--	174	970	0	858	0	1,006	0	649	275	--
2/18/2023	0.38	8,090	273	0	926	0	0	4,600	902	140	--	140	968	0	879	0	1,007	5,326	652	549	--
2/19/2023	0.49	7,310	271	0	947	0	0	4,620	900	100	--	164	974	65	888	0	1,009	0	645	546	--
2/20/2023	0.01	8,920	269	0	967	0	0	4,570	900	400	--	290	979	133	866	6	1,010	0	654	553	--
2/21/2023	0.39	8,510	266	0	976	6,317	765	4,550	890	130	--	254	975	0	830	0	1,009	5,713	652	553	--
2/22/2023	0.02	8,460	261	0	989	0	0	6,060	881	130	--	224	969	0	824	0	1,007	0	648	276	--
2/23/2023	0.02	8,160	257	0	989	0	0	4,510	881	120	--	202	970	0	828	0	1,007	0	676	554	--
2/24/2023	0.32	7,300	256	0	988	0	758	4,500	888	120	--	184	971	64	831	0	1,007	0	682	275	--
2/25/2023	0.15	8,840	255	0	947	0	0	4,560	895	120	--	182	970	64	842	0	1,010	0	661	273	--
2/26/2023	0.34	8,140	252	0	955	0	0	4,520	890	80	--	168	977	63	858	0	1,013	0	665	397	--
2/27/2023	0.28	8,150	249	0	981	0	0	6,080	886	120	--	164	985	64	872	0	1,016	0	669	275	--
2/28/2023	0.00	8,140	246	0	990	0	0	0	883	90	--	186	988	0	867	0	1,016	0	659	461	--
3/1/2023	0.00	7,860	245	0	992	4,325	0	0	890	40	--	174	988	64	862	0	1,016	10,901	676	322	--
3/2/2023	0.46	7,510	245	0	975	0	760	0	898	60	--	204	987	0	864	0	1,017	0	686	553	--
3/3/2023	0.20	8,130	244	0	971	0	760	0	900	60	--	170	986	0	876	0	1,018	0	662	275	--

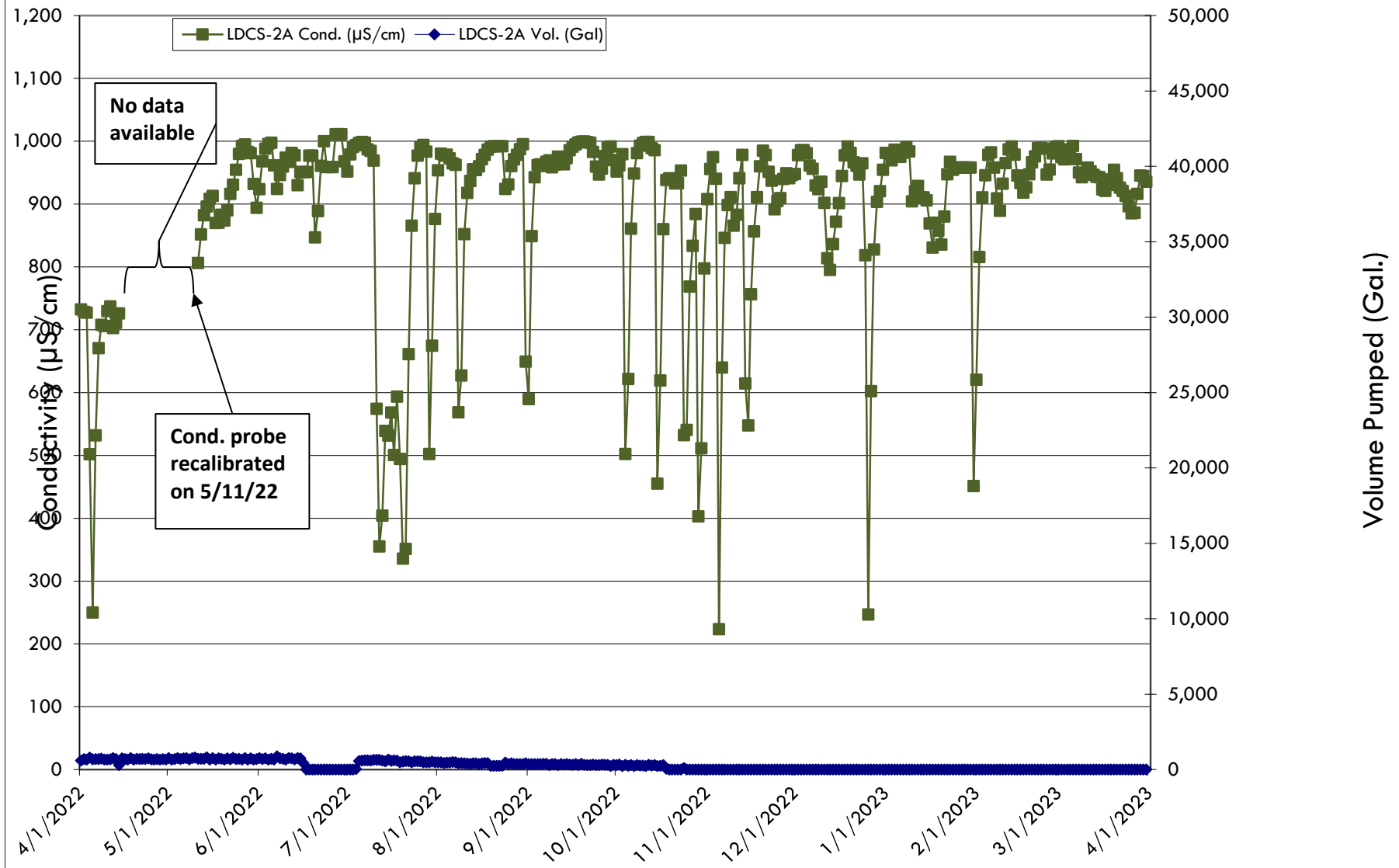
Summary of LDCS Volumes Pumped and Conductivity Data
First Quarter 2023
LRI Landfill, Pierce County, Washington

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)*
3/4/2023	0.13	8,180	242	0	972	0	760	0	893	120	--	274	992	65	901	0	1,019	0	659	551	--
3/5/2023	0.03	8,180	239	0	987	0	760	0	887	20	--	182	994	0	917	0	1,018	0	661	550	--
3/6/2023	0.04	7,330	239	0	993	3,611	760	0	891	110	--	192	995	64	911	0	1,017	10,805	651	273	--
3/7/2023	1.30	8,180	238	0	971	0	751	0	898	110	--	182	998	0	906	0	1,016	0	649	547	--
3/8/2023	0.02	8,240	237	0	950	0	751	4,560	898	120	--	148	1,000	0	908	0	1,016	0	651	547	--
3/9/2023	0.11	8,250	236	0	943	0	751	6,040	896	20	--	168	998	0	917	0	1,017	0	651	549	--
3/10/2023	0.04	8,250	233	0	947	0	751	4,570	887	120	--	156	998	0	927	0	1,017	0	647	548	--
3/11/2023	0.00	8,190	232	0	958	0	751	4,610	886	110	--	174	997	0	938	0	1,015	0	667	547	--
3/12/2023	0.02	7,400	231	0	952	0	751	4,560	888	2,450	--	4,526	994	446	947	0	1,014	0	677	272	--
3/13/2023	0.38	7,430	229	0	947	0	751	4,570	887	4,660	--	5,214	993	3,742	939	0	1,015	0	652	277	--
3/14/2023	0.18	7,440	228	0	943	0	751	6,120	886	3,350	--	6,760	1,003	1,572	875	0	1,015	0	639	273	--
3/15/2023	0.02	7,400	227	0	943	0	751	4,570	888	2,820	--	6,296	1,022	715	870	0	1,013	16,409	623	272	--
3/16/2023	0.00	7,620	228	0	924	0	728	4,660	896	2,730	--	6,240	1,034	578	880	0	1,013	0	617	273	--
3/17/2023	0.00	7,870	227	0	921	0	727	4,760	900	2,890	--	6,614	1,036	512	892	6	1,013	0	619	273	--
3/18/2023	0.00	8,300	225	0	930	0	724	4,730	899	2,820	--	6,714	1,033	447	910	0	1,009	0	620	273	--
3/19/2023	0.18	8,450	223	0	939	0	724	4,630	892	3,010	--	7,222	1,029	446	925	0	1,007	5,479	617	273	--
3/20/2023	0.00	8,390	221	0	955	0	731	4,880	886	4,590	--	6,150	1,024	447	941	0	1,008	0	618	273	--
3/21/2023	0.00	8,370	219	0	941	6,690	733	6,280	885	5,470	--	6,818	1,023	449	955	0	1,010	5,342	635	273	--
3/22/2023	0.00	8,360	218	0	926	0	744	4,700	886	3,020	--	7,186	1,027	513	954	0	1,010	3	632	273	--
3/23/2023	0.00	8,300	216	0	921	0	744	4,530	886	2,770	--	6,632	1,029	384	955	0	1,010	0	643	223	--
3/24/2023	0.05	8,290	216	0	913	0	738	4,470	888	3,070	--	6,238	1,028	447	962	0	1,011	0	655	274	--
3/25/2023	0.20	7,450	216	0	896	0	738	4,480	889	3,000	--	6,330	1,029	448	969	0	1,011	0	638	274	--
3/26/2023	0.69	8,230	216	0	885	0	738	4,520	889	2,860	--	6,468	1,029	447	972	0	1,011	5,343	629	273	--
3/27/2023	0.78	8,270	215	0	886	0	746	4,550	888	2,900	--	7,428	1,026	382	980	0	1,011	0	636	272	--
3/28/2023	0.03	8,330	213	0	916	0	753	6,130	881	2,960	--	7,798	1,024	384	991	0	1,011	5,357	633	273	--
3/29/2023	0.00	9,130	210	0	946	0	757	4,680	877	2,920	--	8,384	1,019	382	997	0	1,011	0	636	274	--
3/30/2023	0.00	8,210	208	0	945	0	768	4,610	878	2,770	--	8,828	1,012	383	999	0	1,011	0	653	272	--
3/31/2023	0.09	7,540	207	0	936	0	775	6,020	881	2,830	--	8,516	1,006	318	1,000	0	1,011	0	660	273	--
All conductivity probes were recalibrated on 5/11/22 by site staff																					
No conductivity data available at LDCS-1, 2A, 2B, 3, 6 or 7 between April 15 and May 11, 2022																					
* = The conductivity probes at LDCS4A and LDCS-8 did not function properly during the second quarter																					
-- Readings not available																					

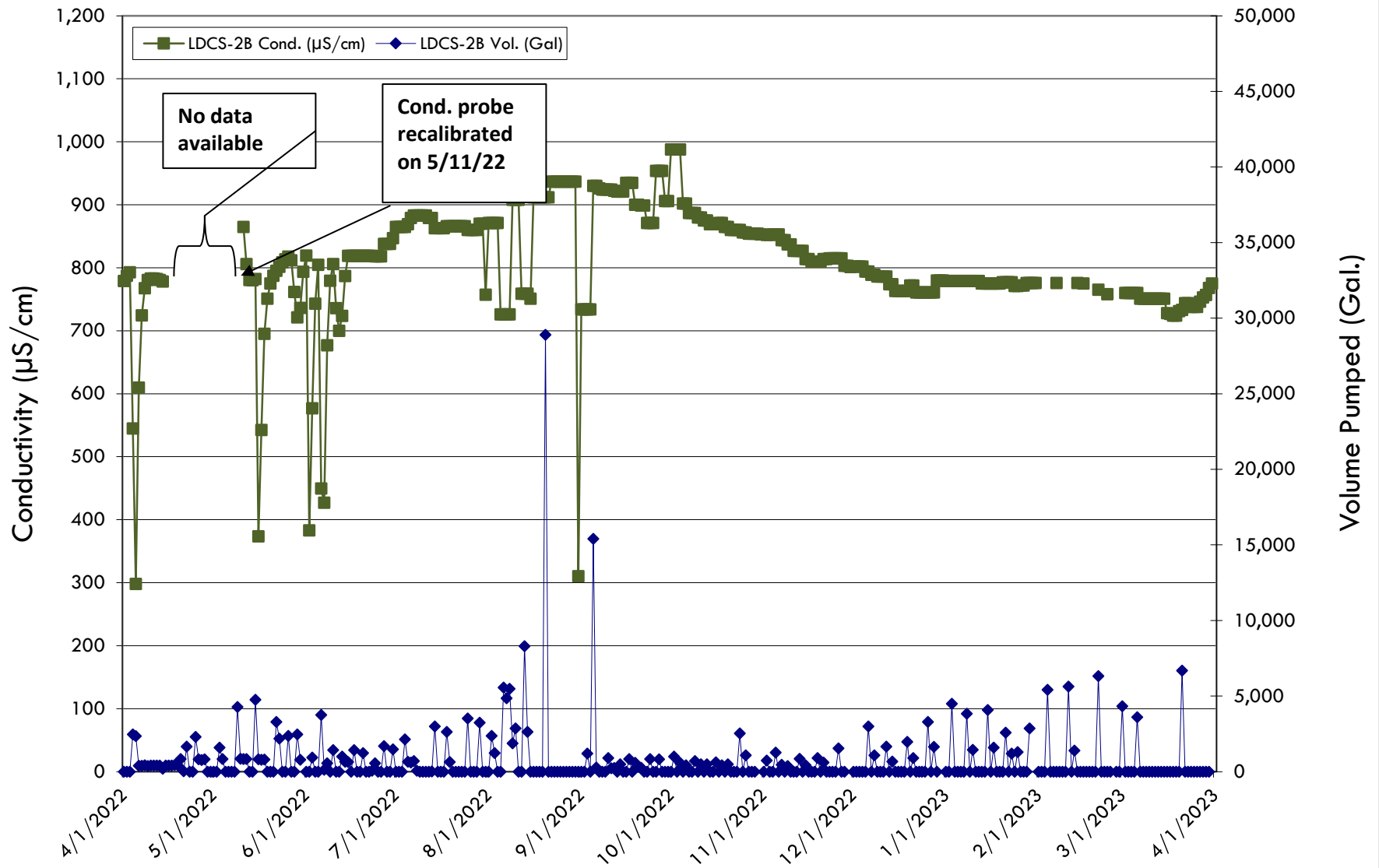
LDCS-1 (DailyTotals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



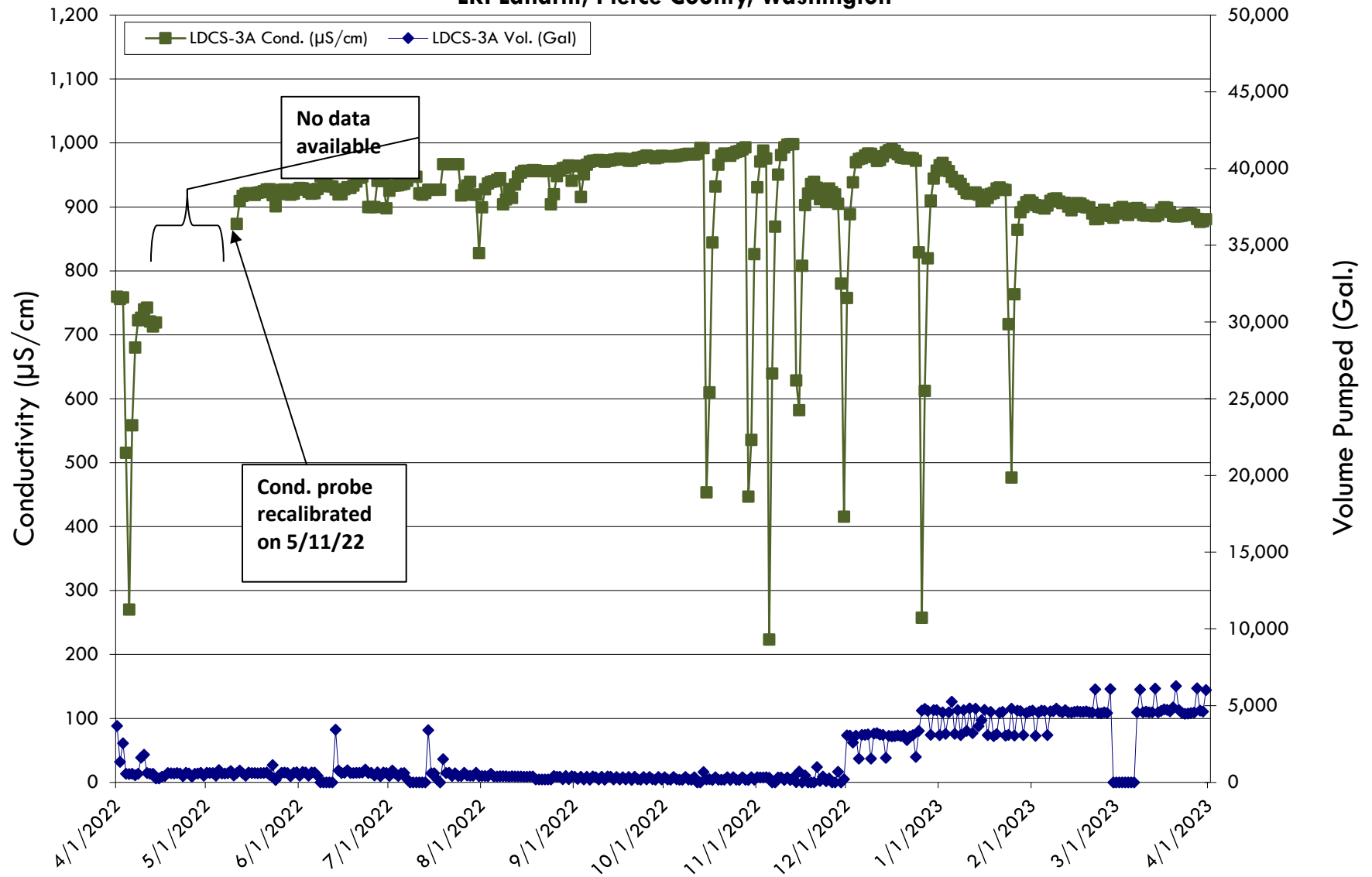
LDCS-2A (Daily Totals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



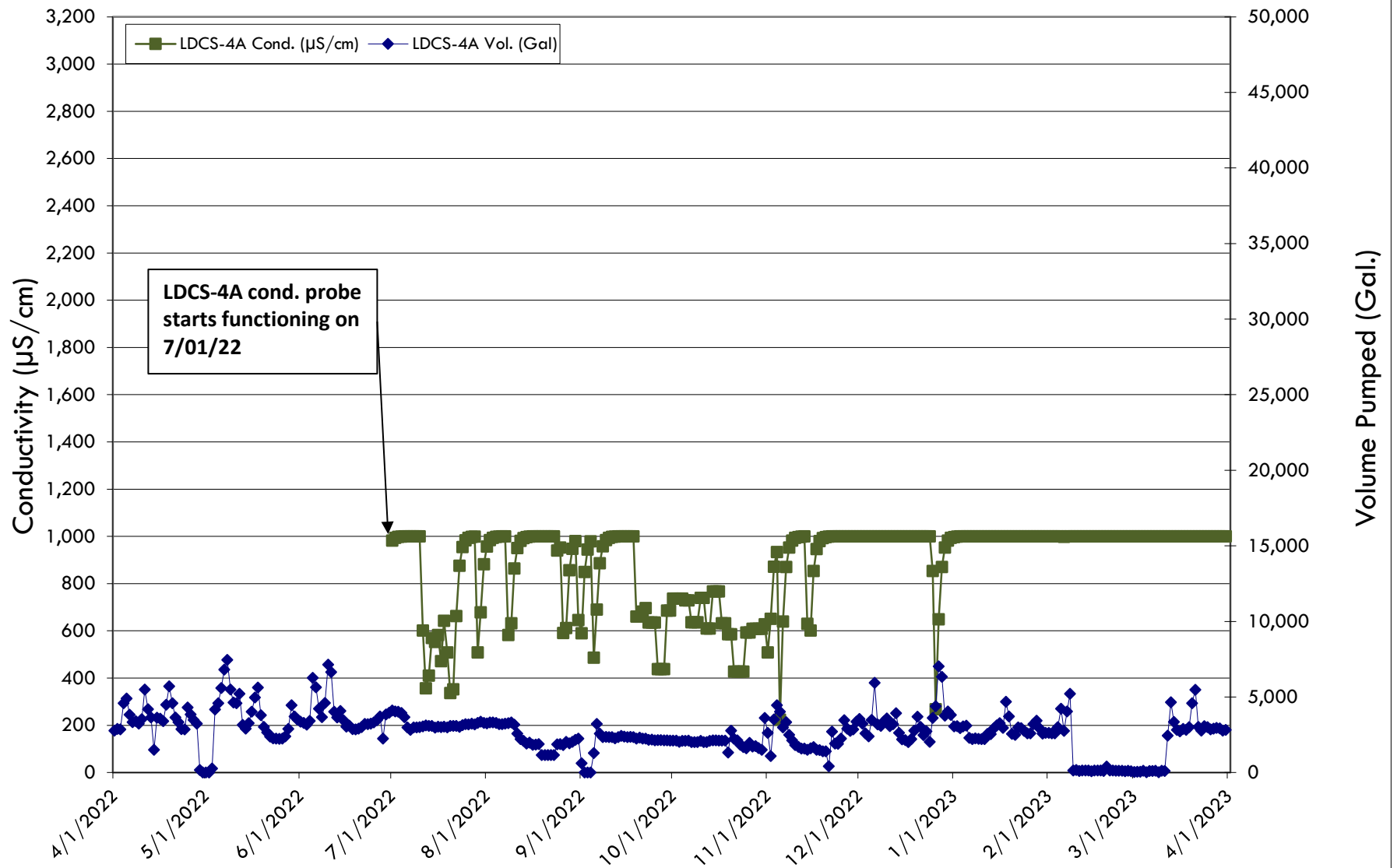
LDCS-2B (Daily Totals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



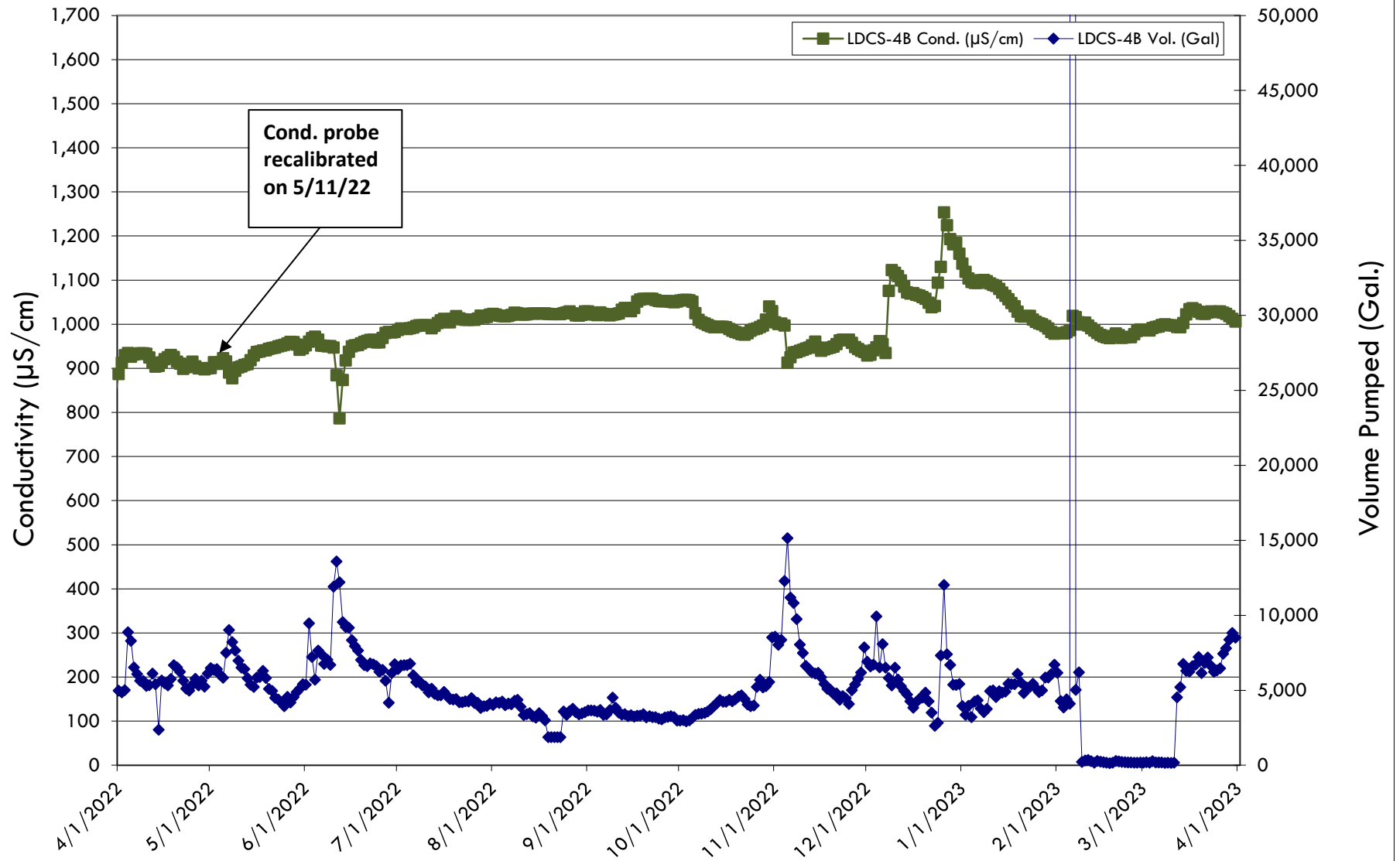
LDCS-3A (Daily Totals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



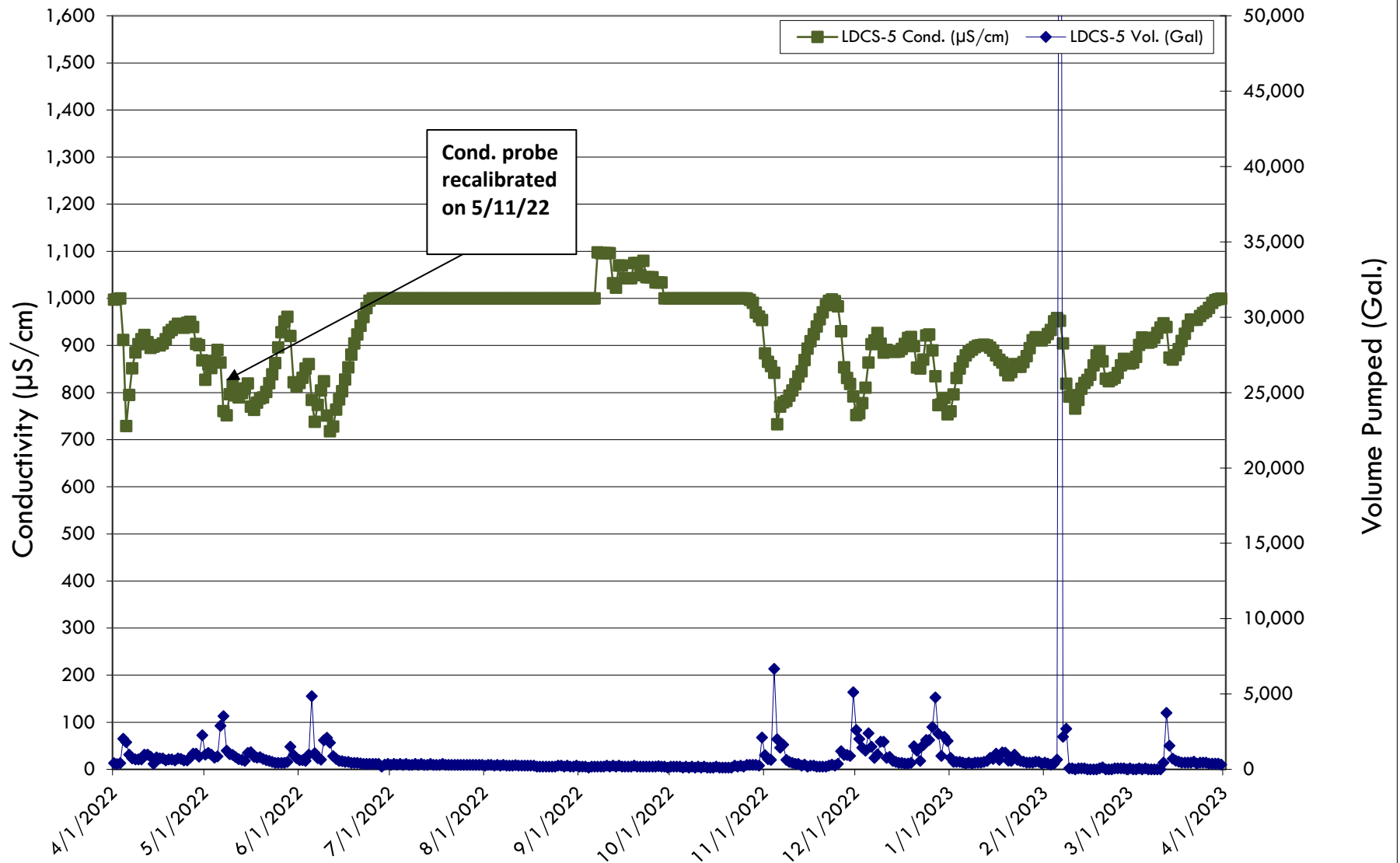
LDCS-4A (Daily Totals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



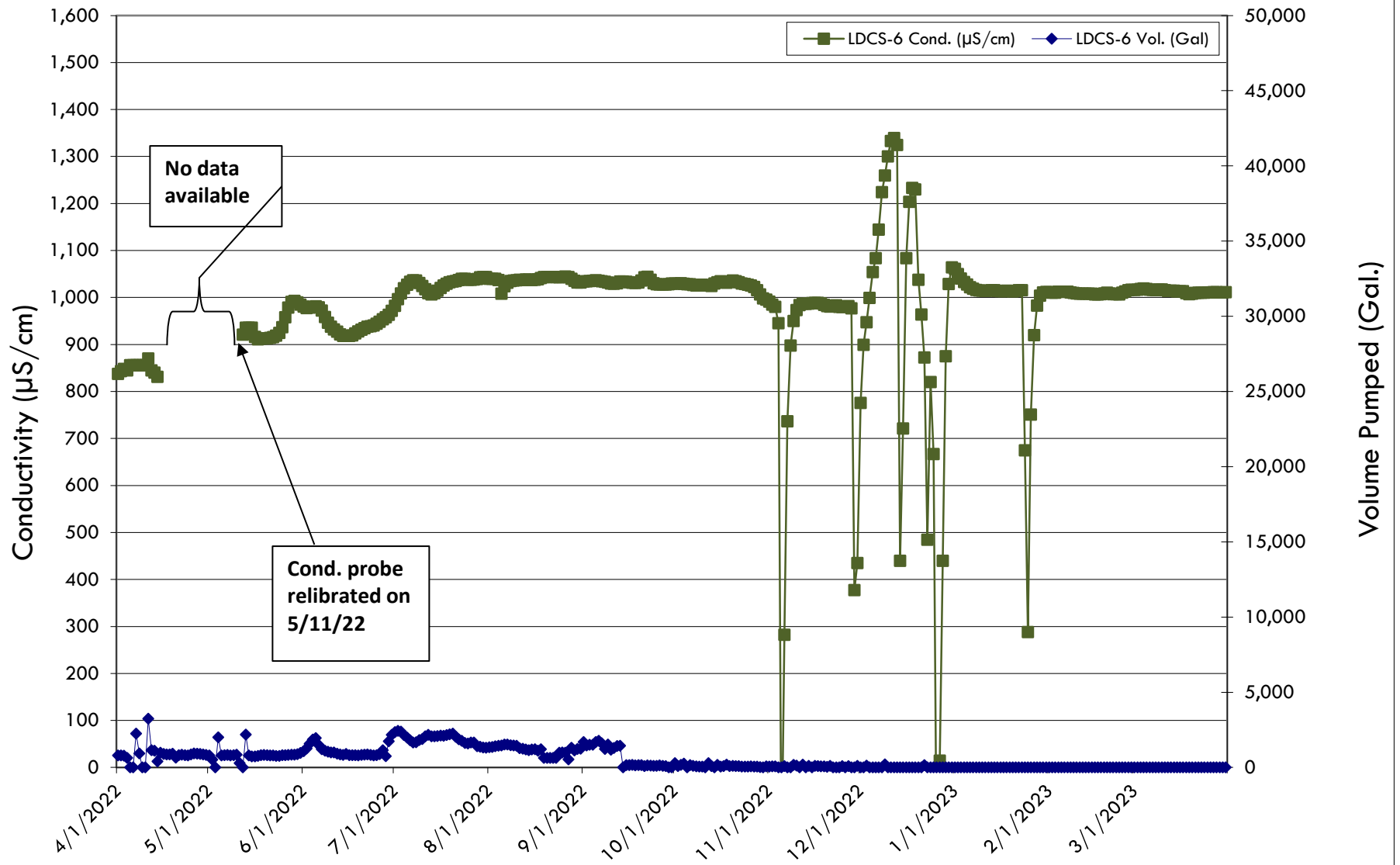
LDCS-4B (Daily Totals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



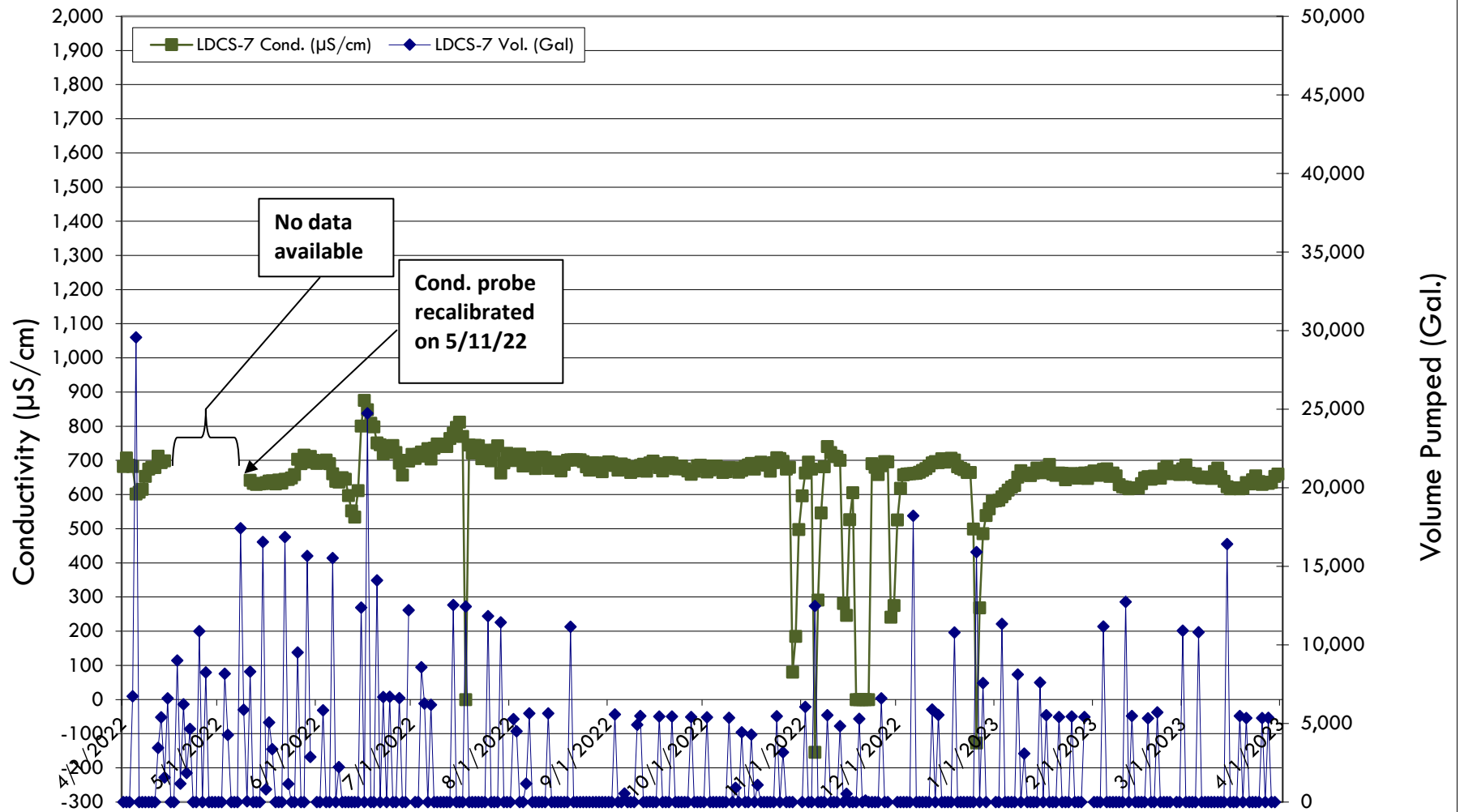
LDCS-5 (Daily Totals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



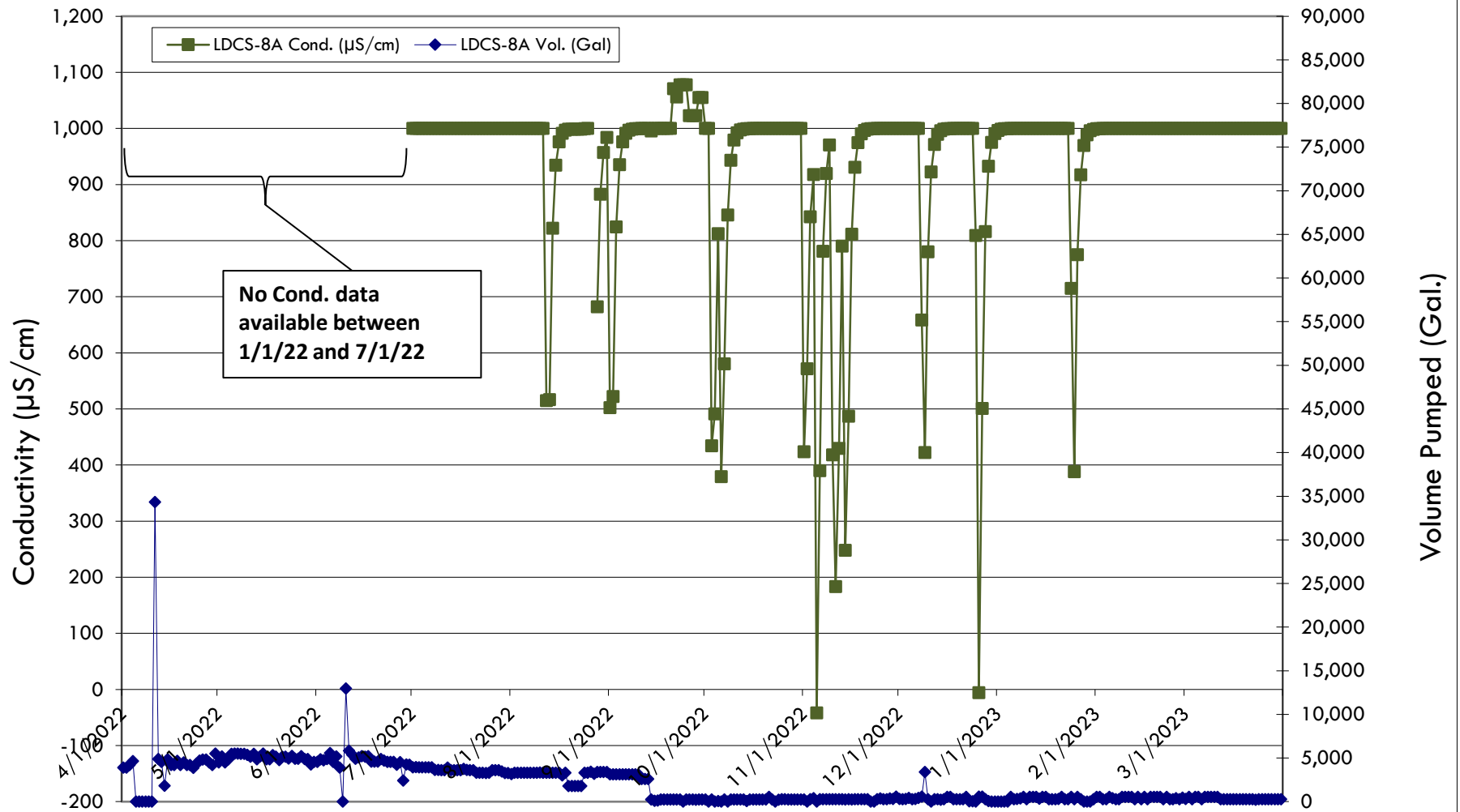
LDCS-6 (Daily Totals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



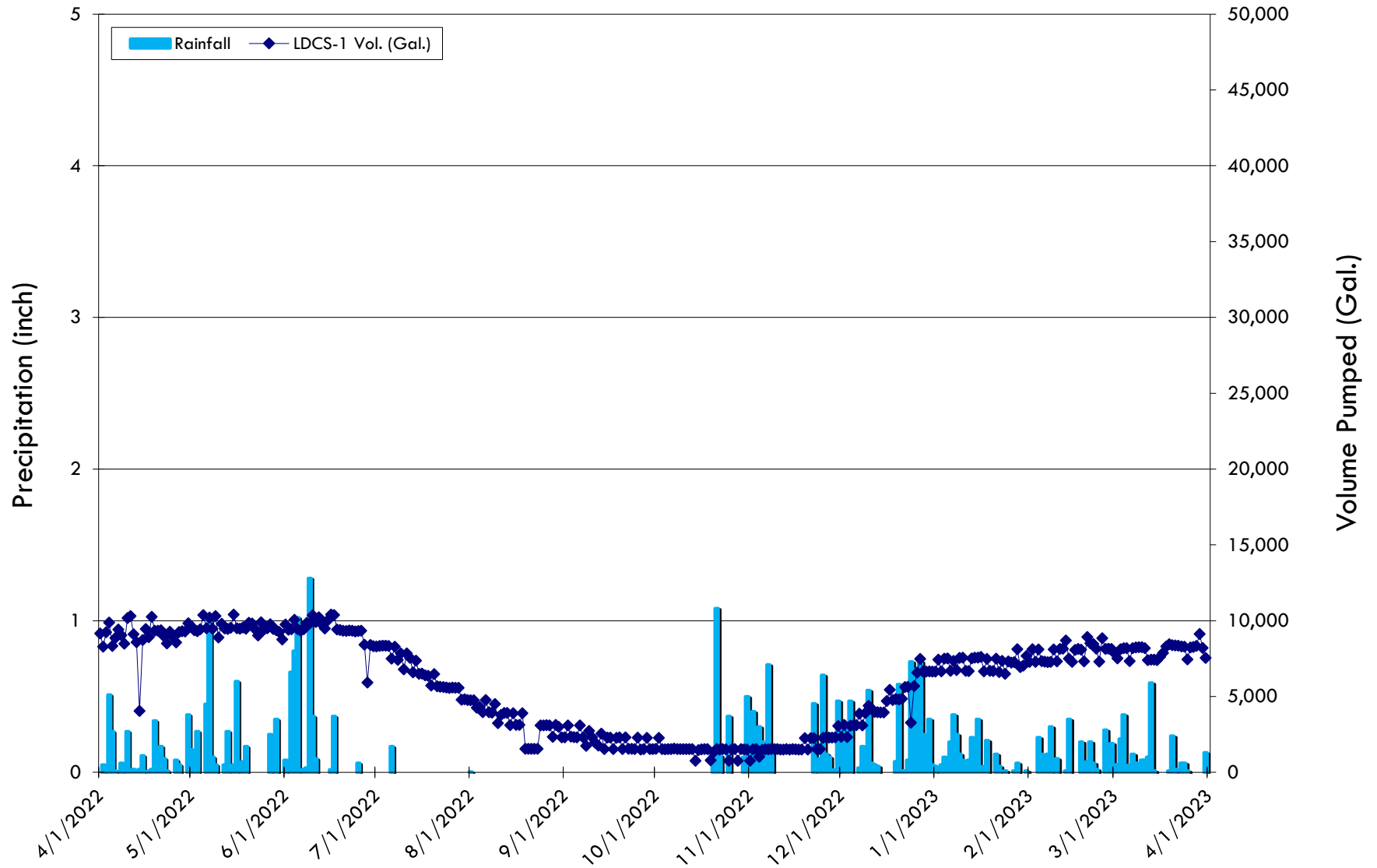
LDCS-7 (Daily Totals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



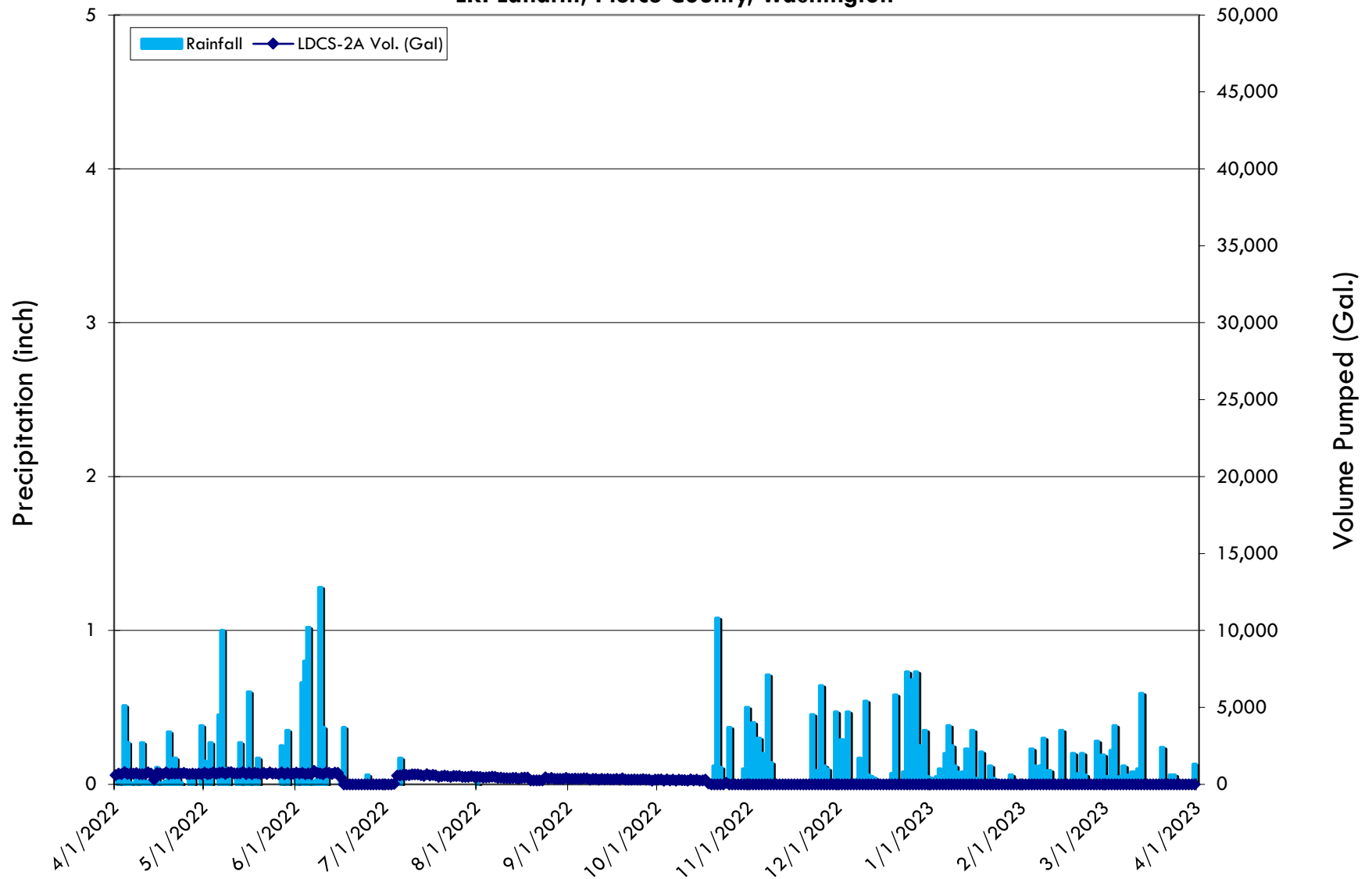
LDCS-8 (Daily Totals)
Conductivity vs Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



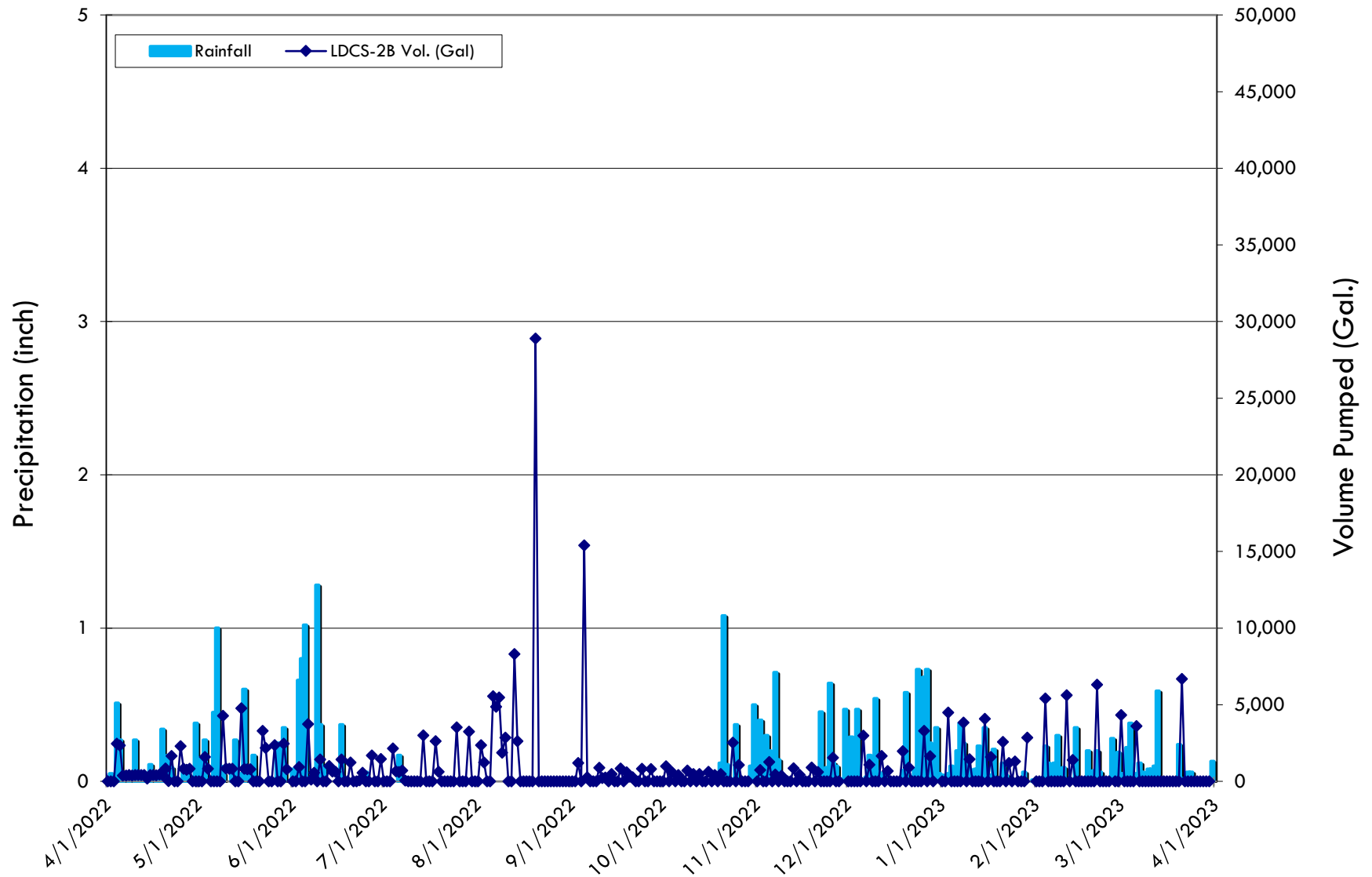
**LDCS-1 (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington**



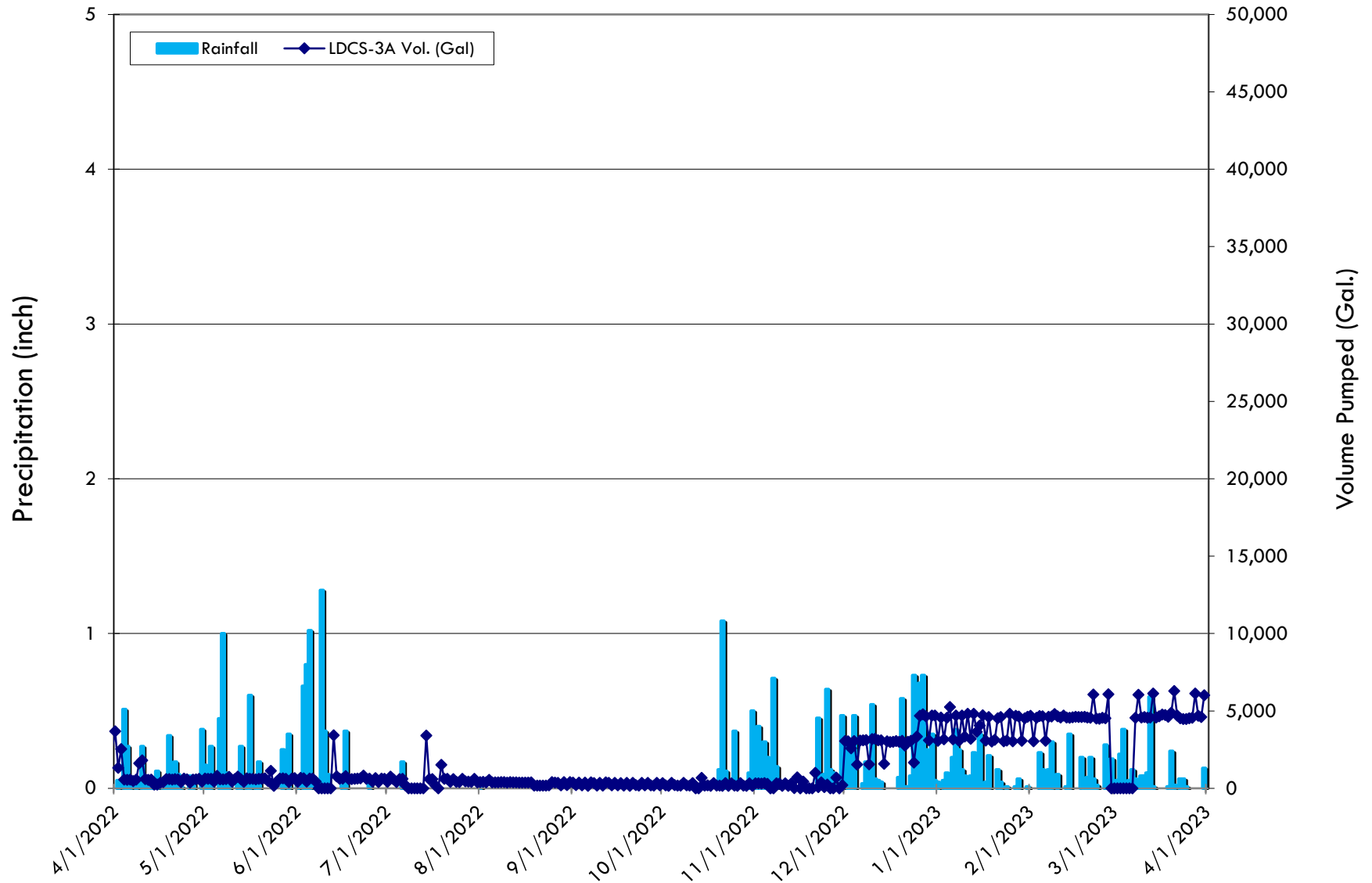
LDCS-2A (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington



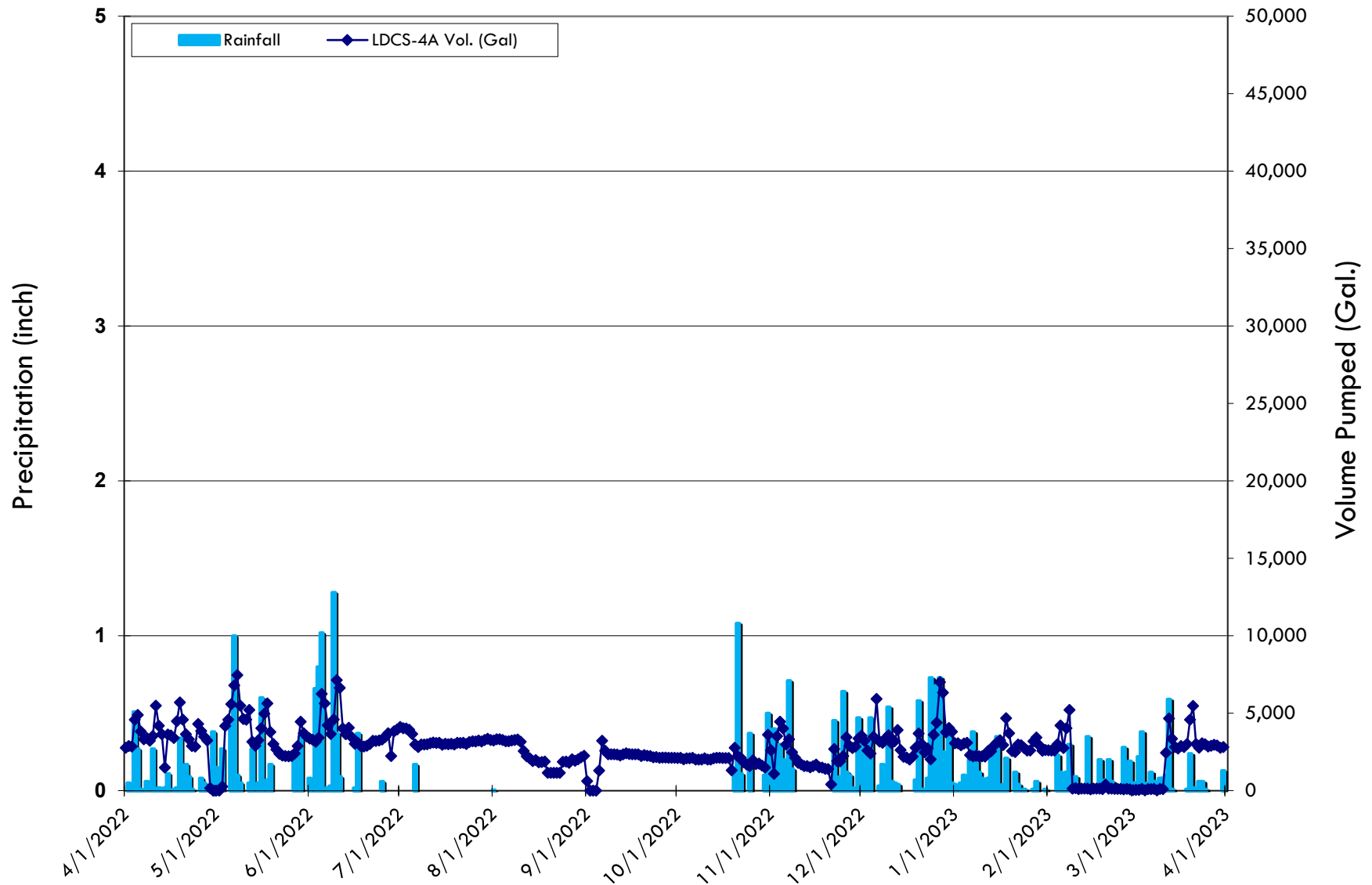
LDCS-2B (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington



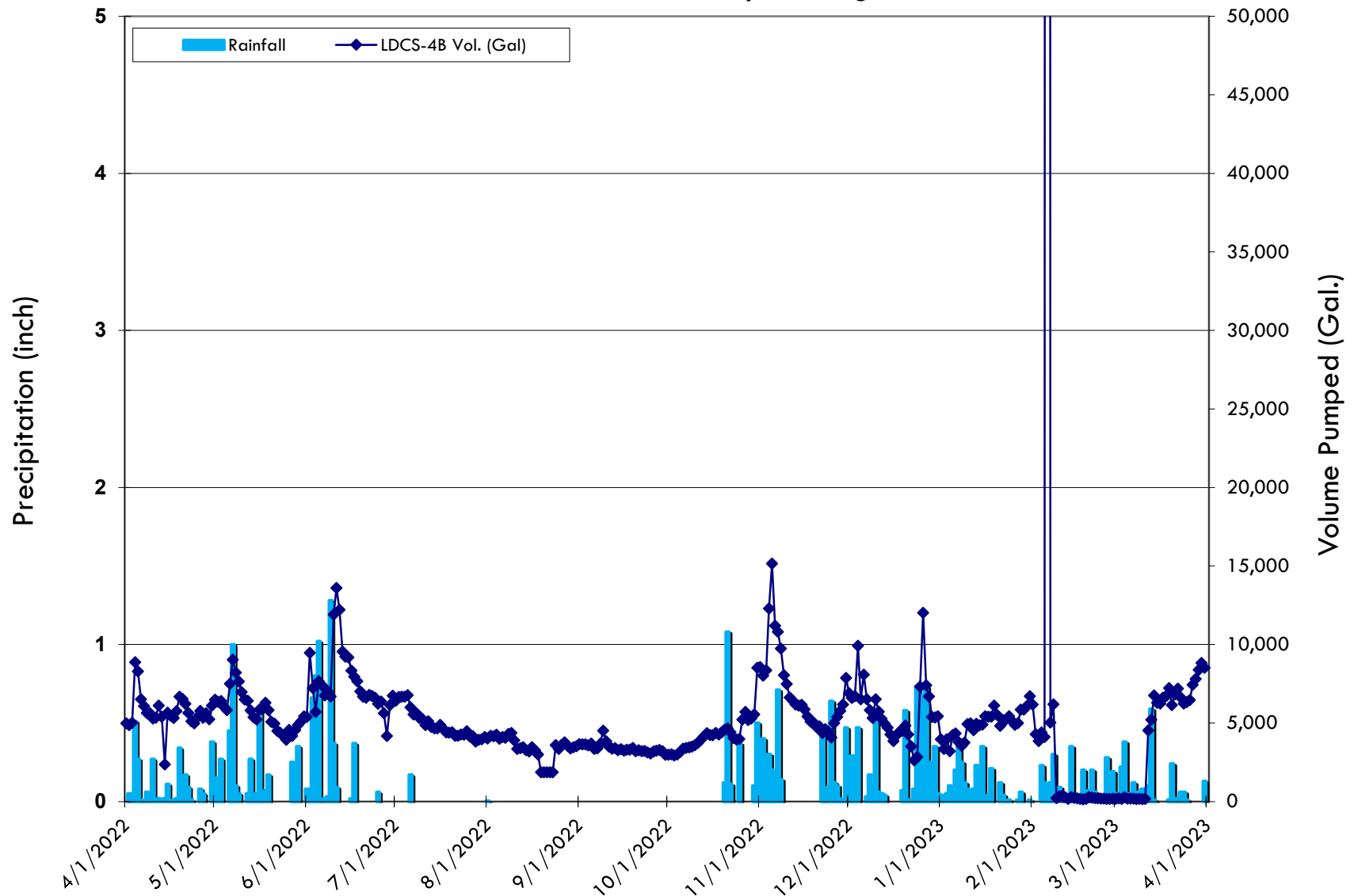
LDCS-3A (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington



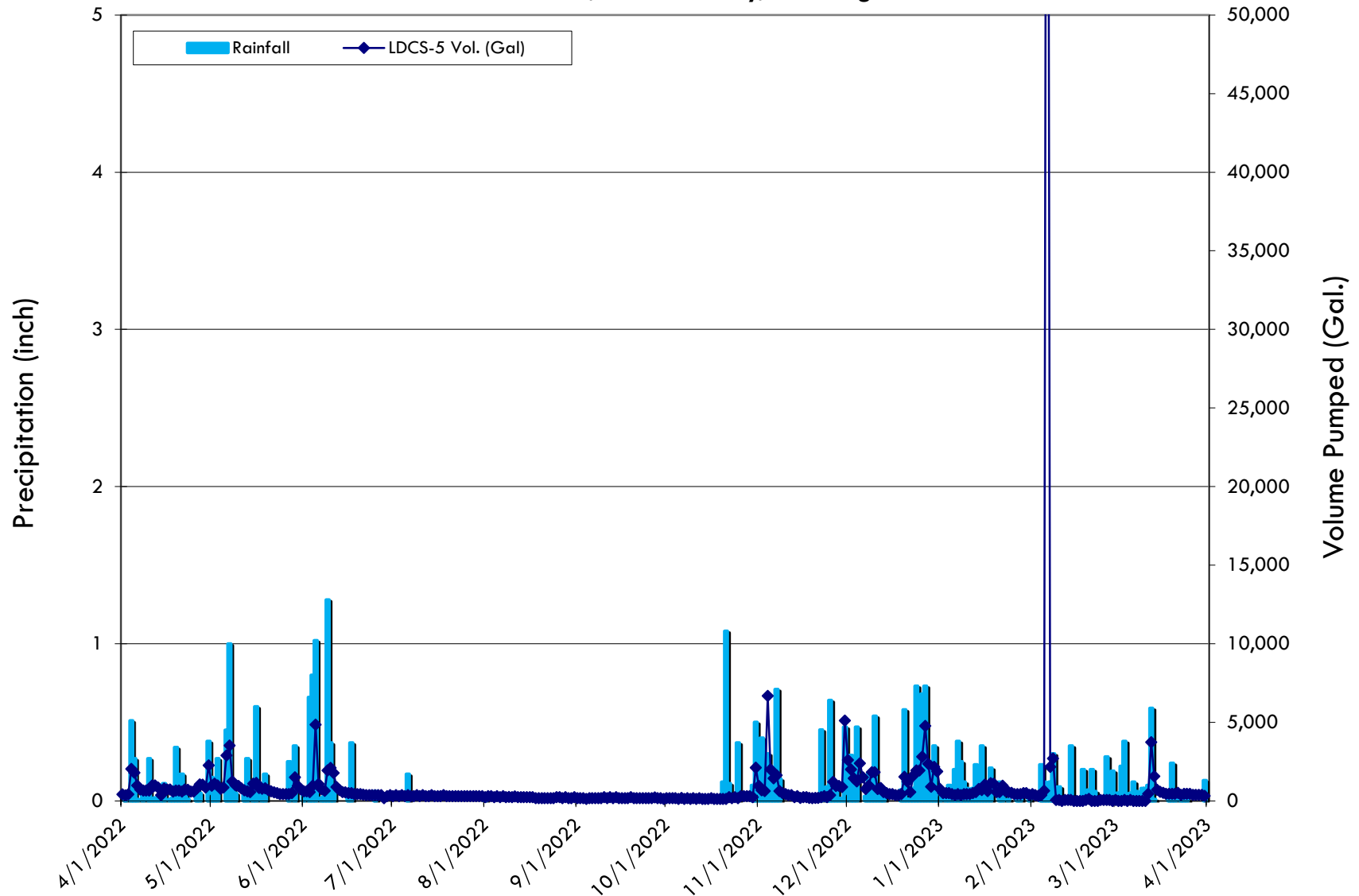
LDCS-4A (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington



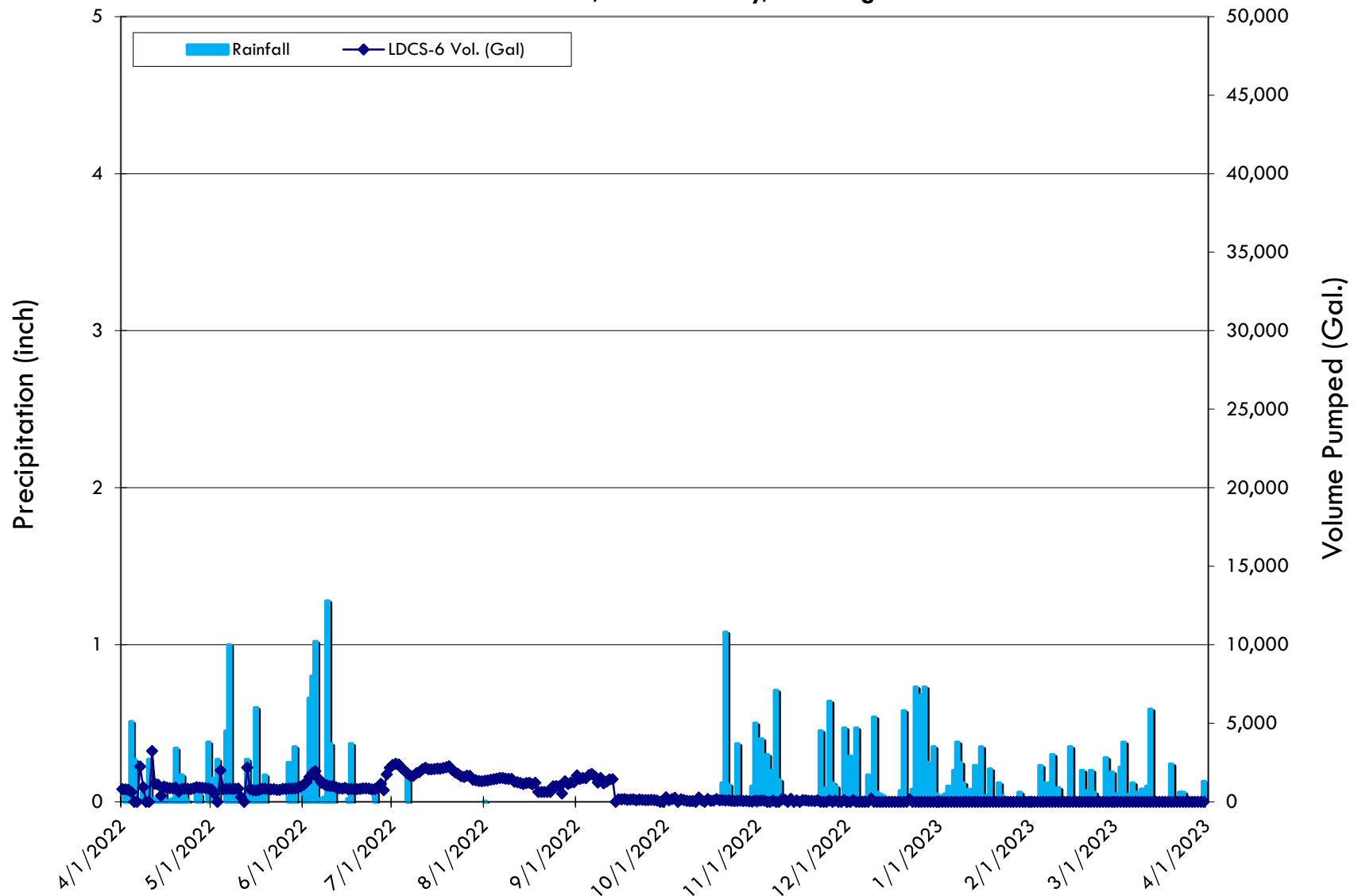
LDCS-4B (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington



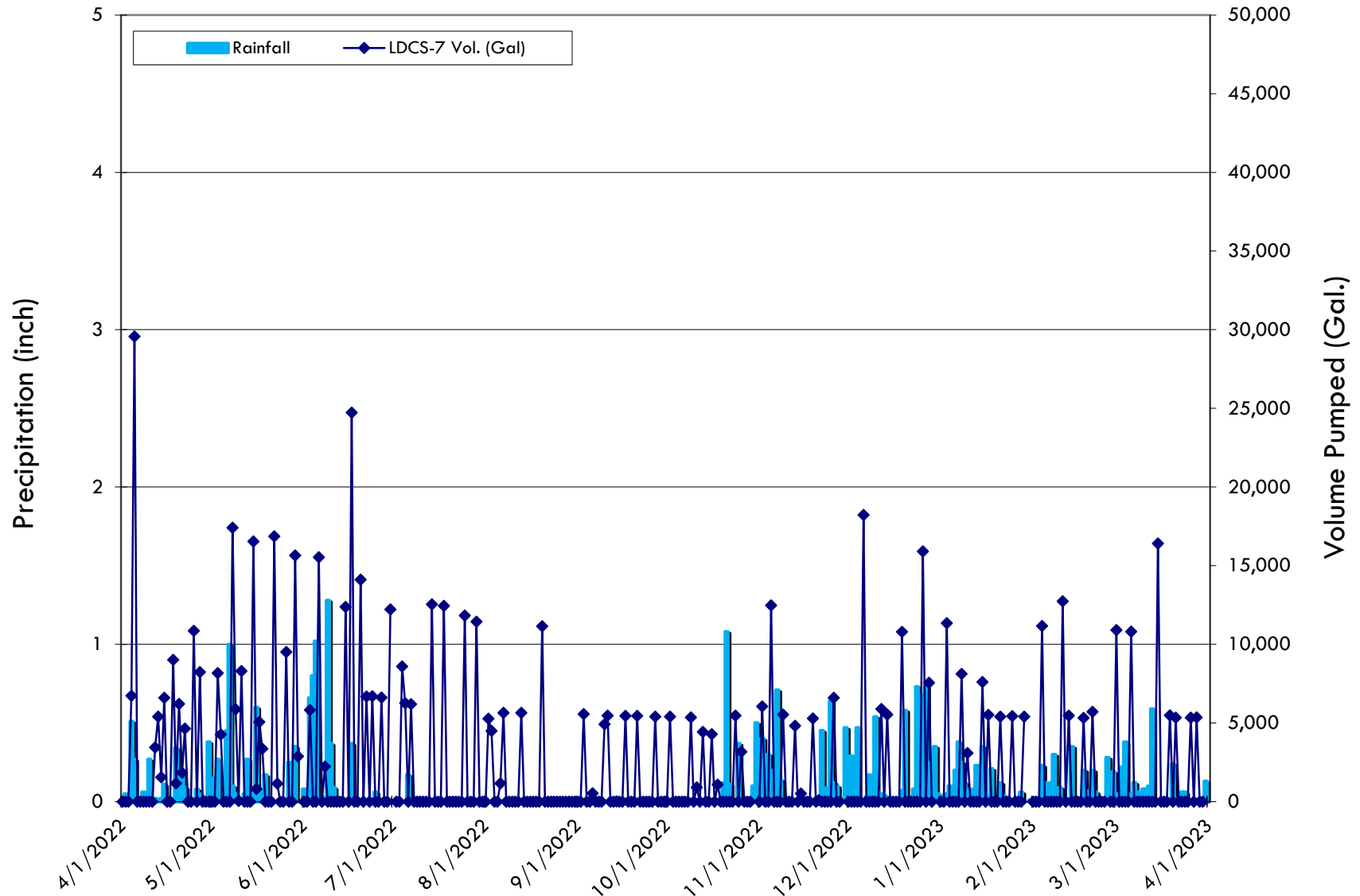
LDCS-5 (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington



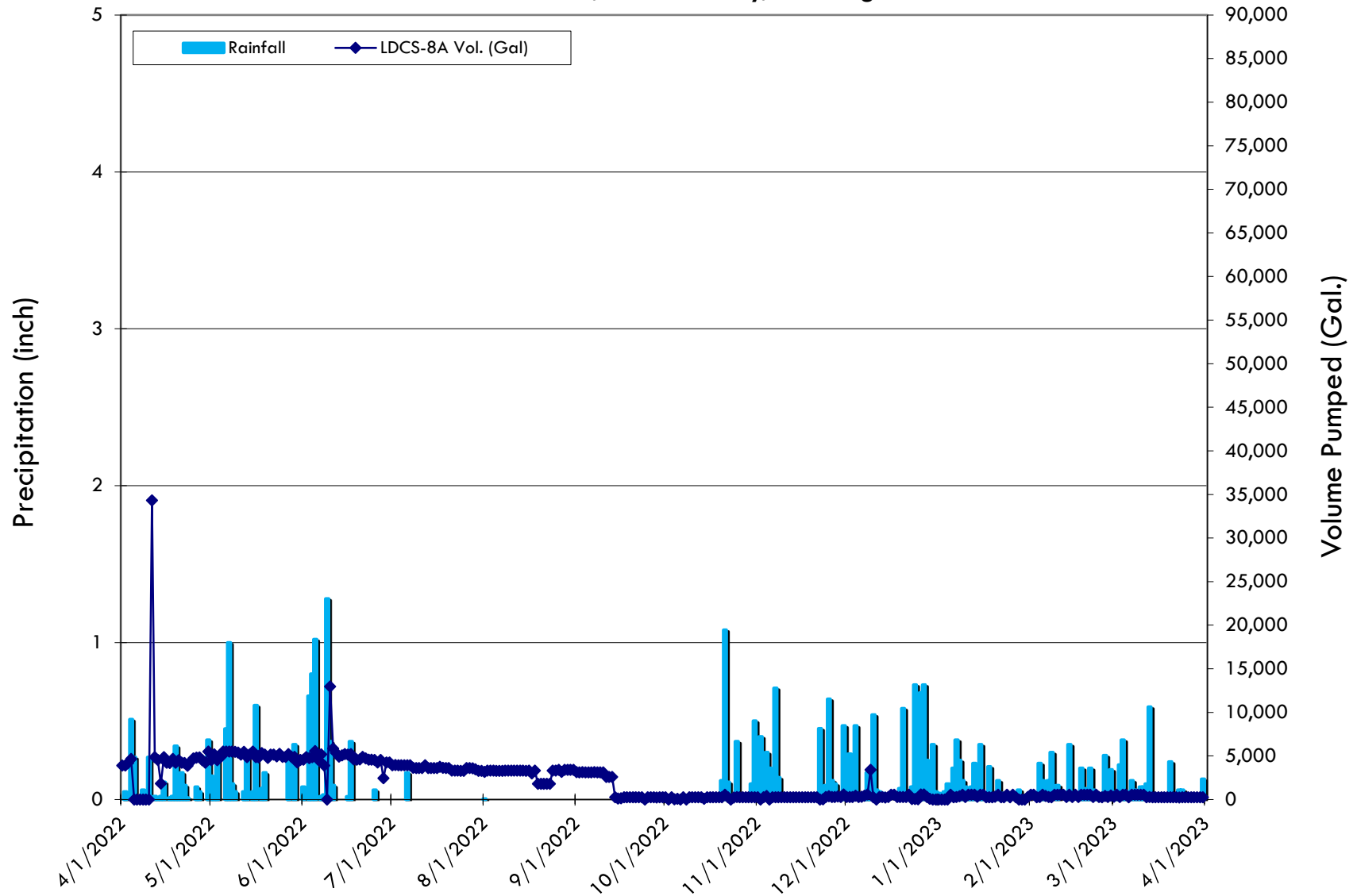
LDCS-6 (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington



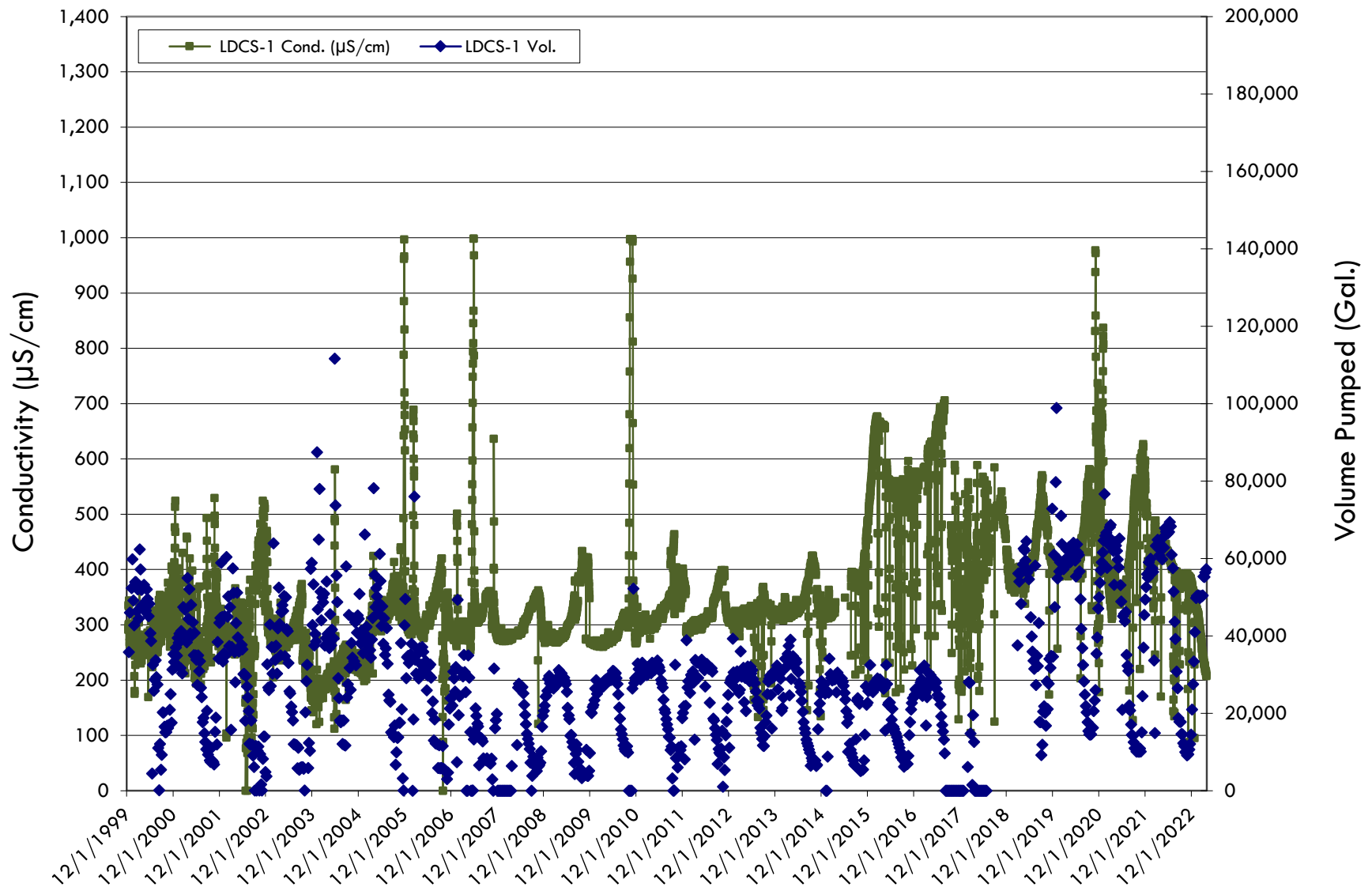
LDCS-7 (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington



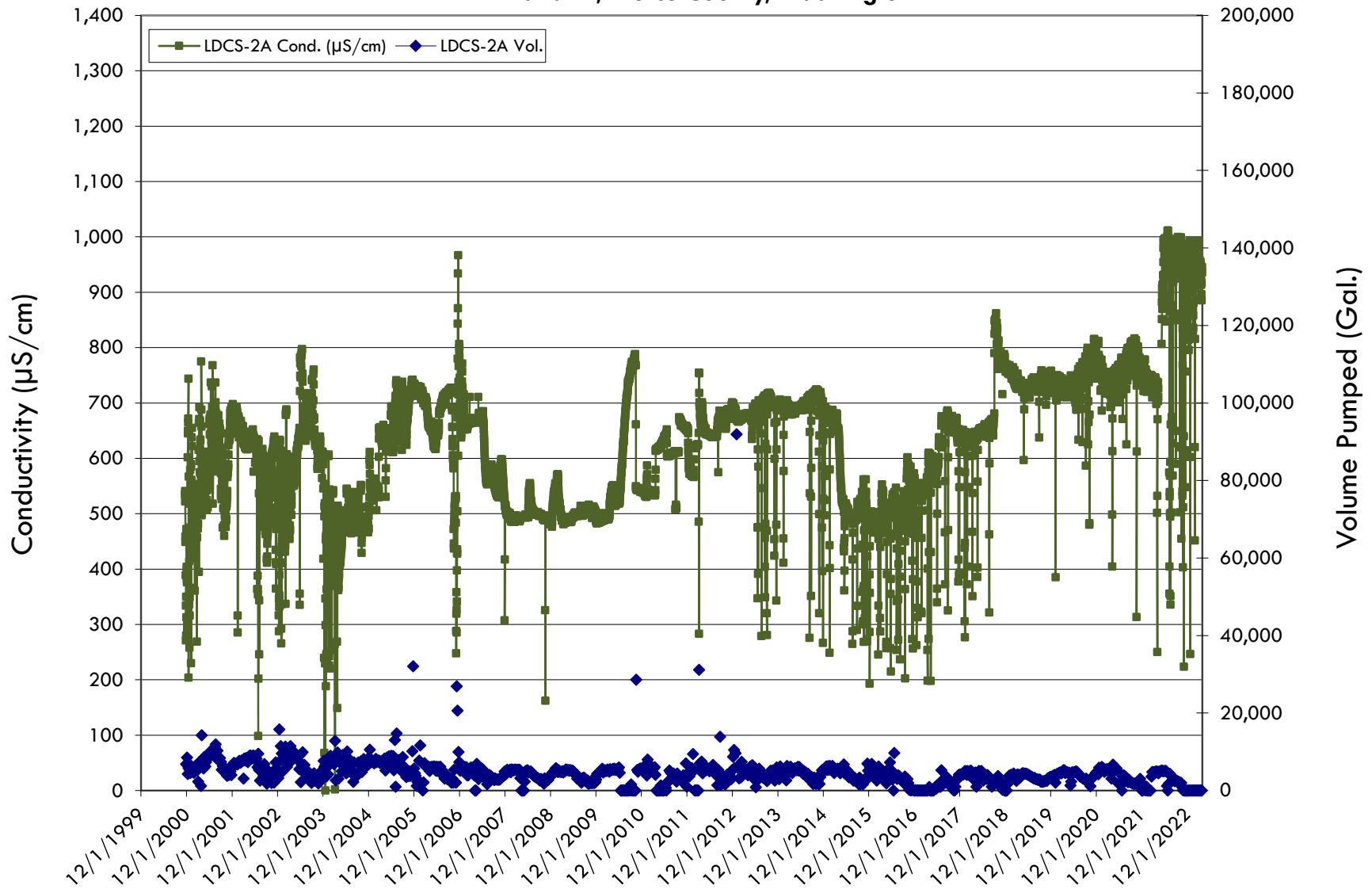
LDCS-8A (Daily Totals)
Volume Pumped vs Precipitation
First Quarter 2023
LRI Landfill, Pierce County, Washington



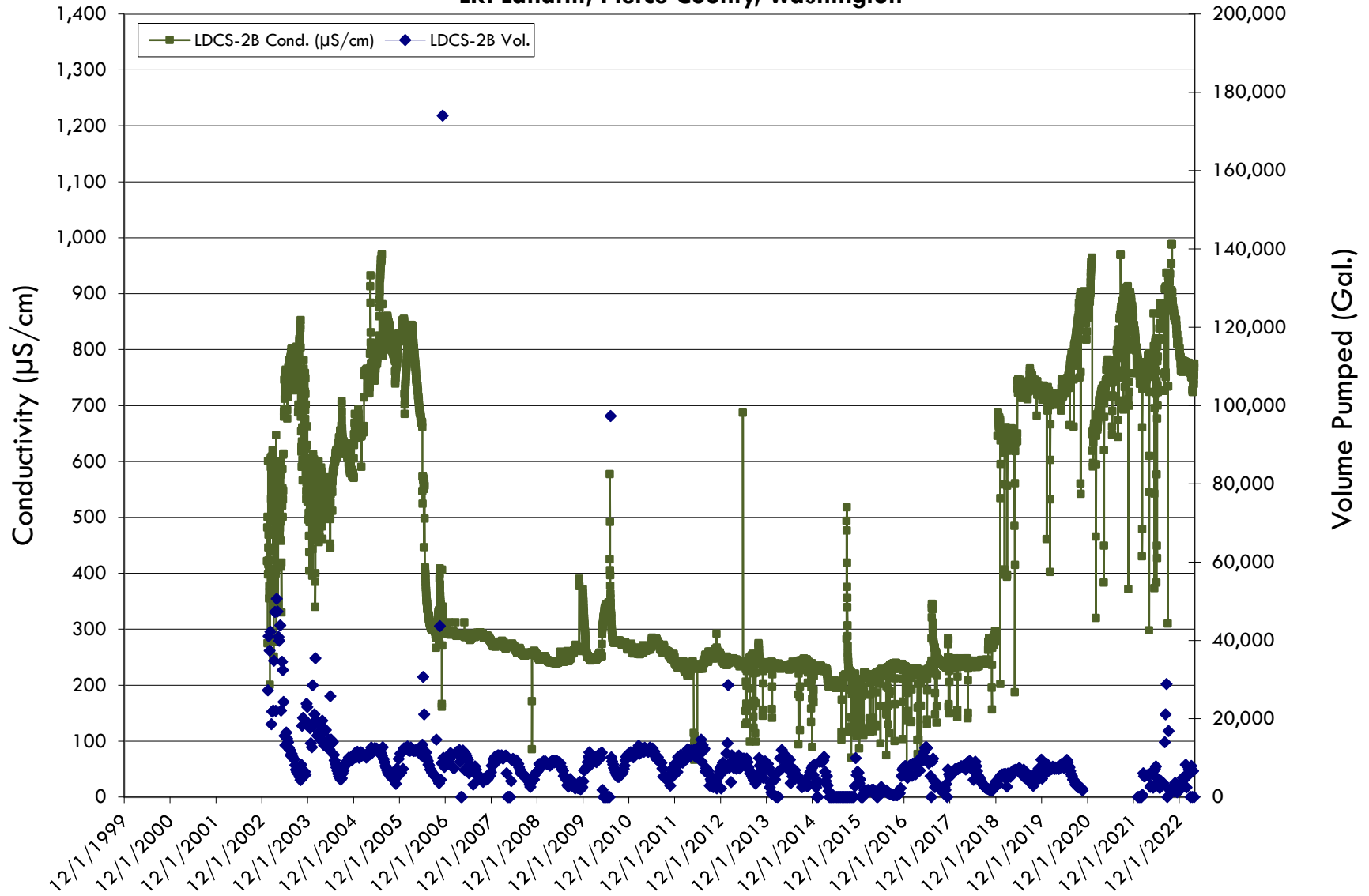
LDCS-1
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



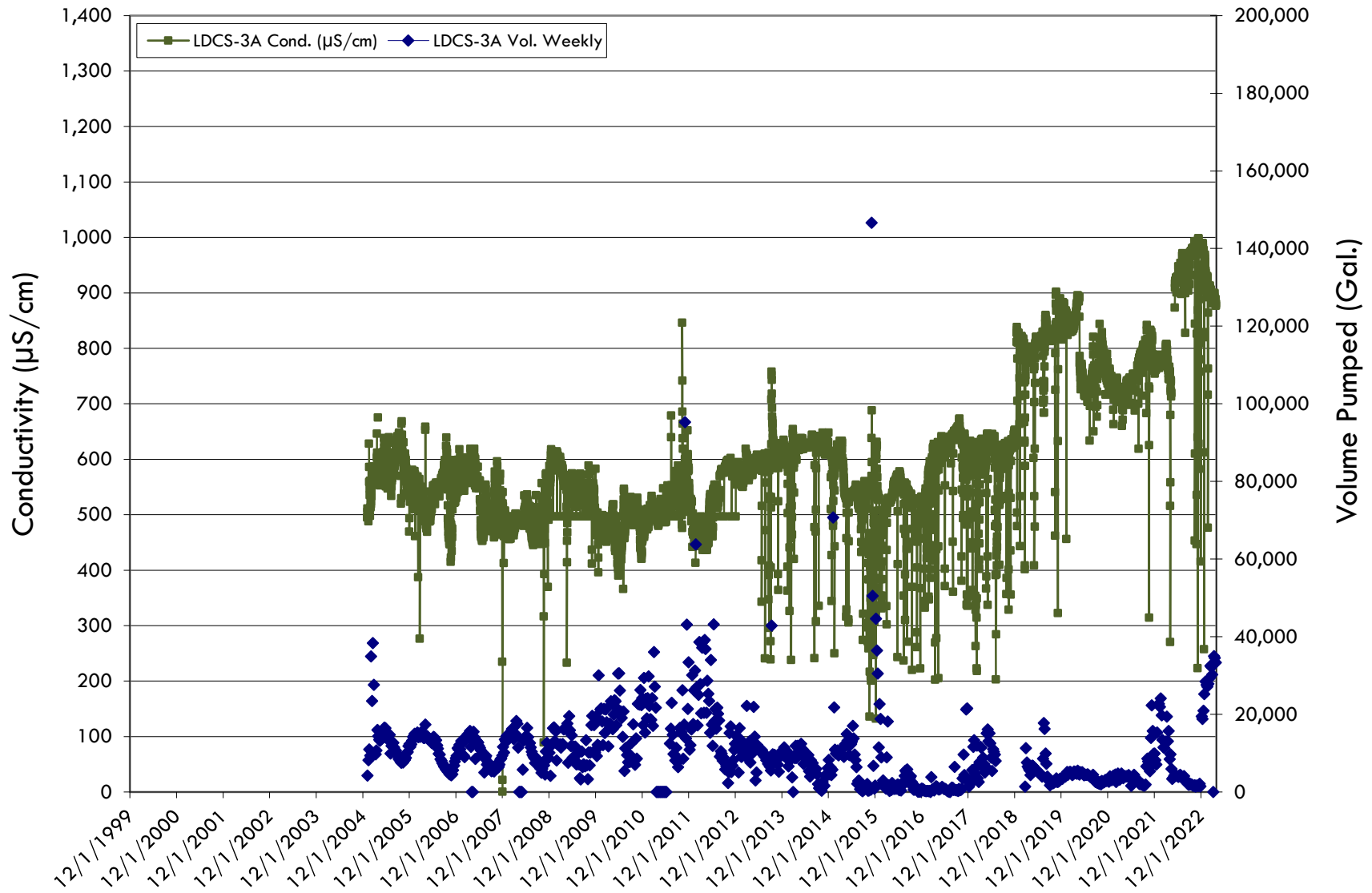
LDCS-2A
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



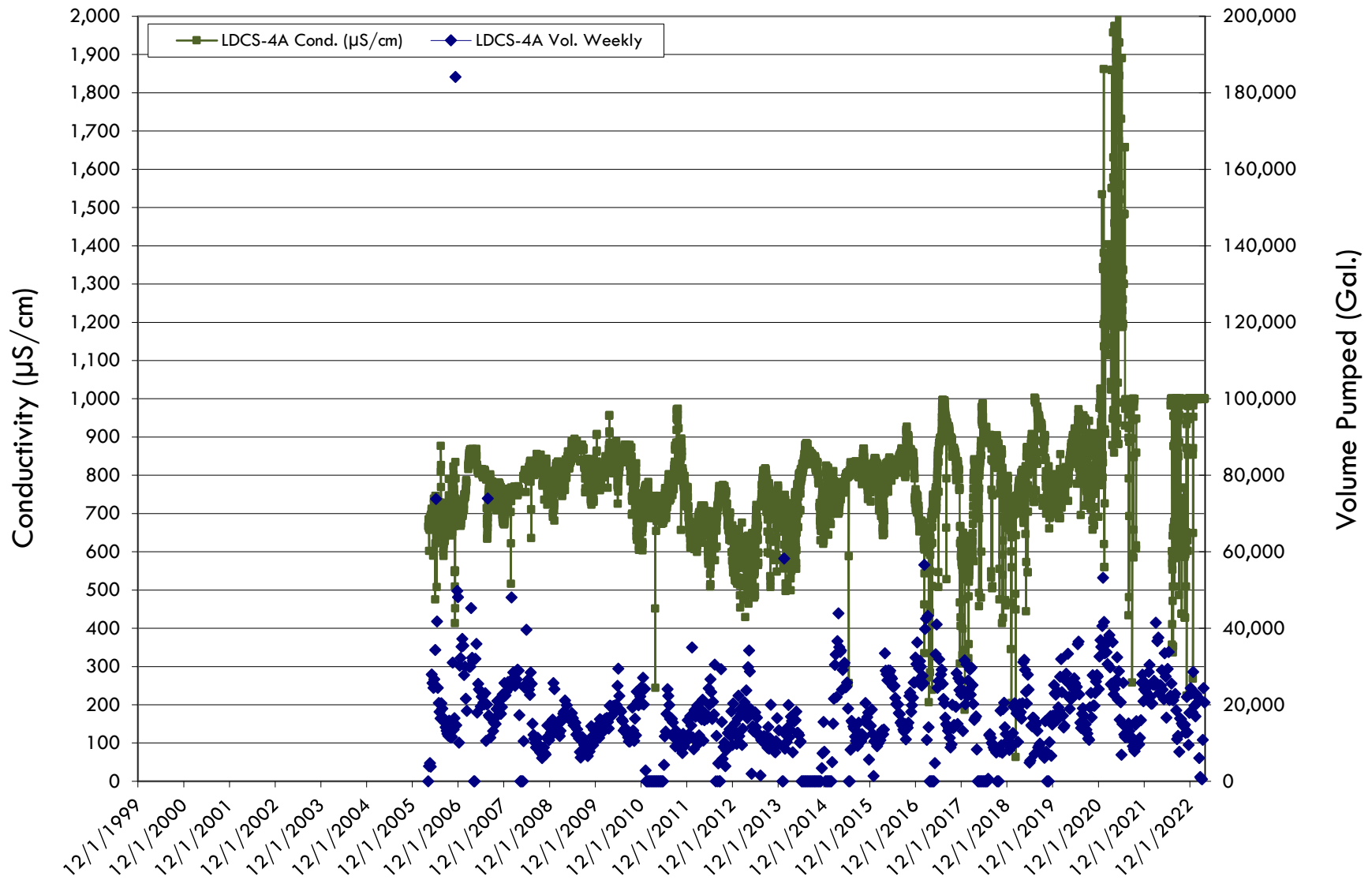
LDCS-2B
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



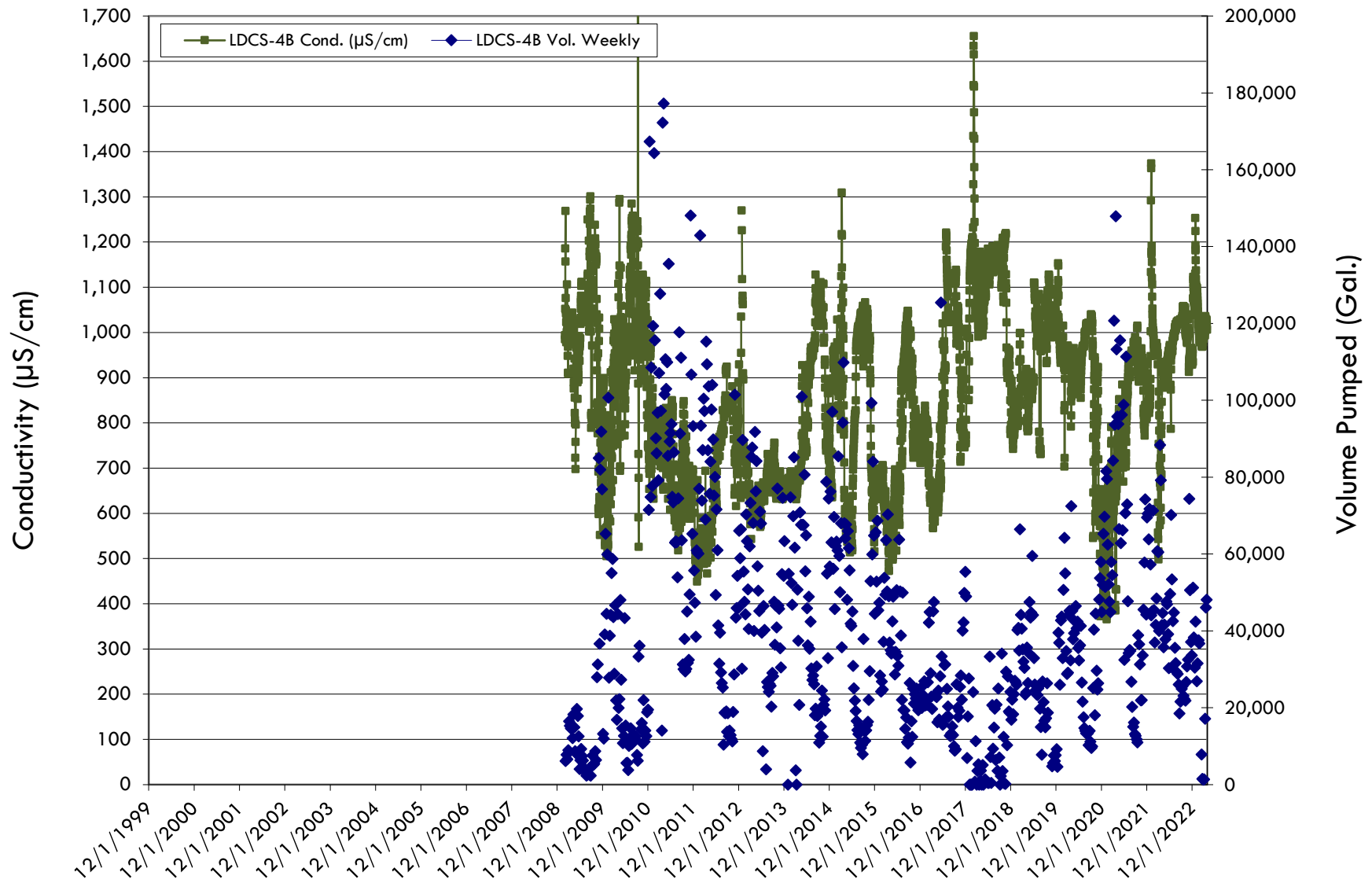
LDCS-3A
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



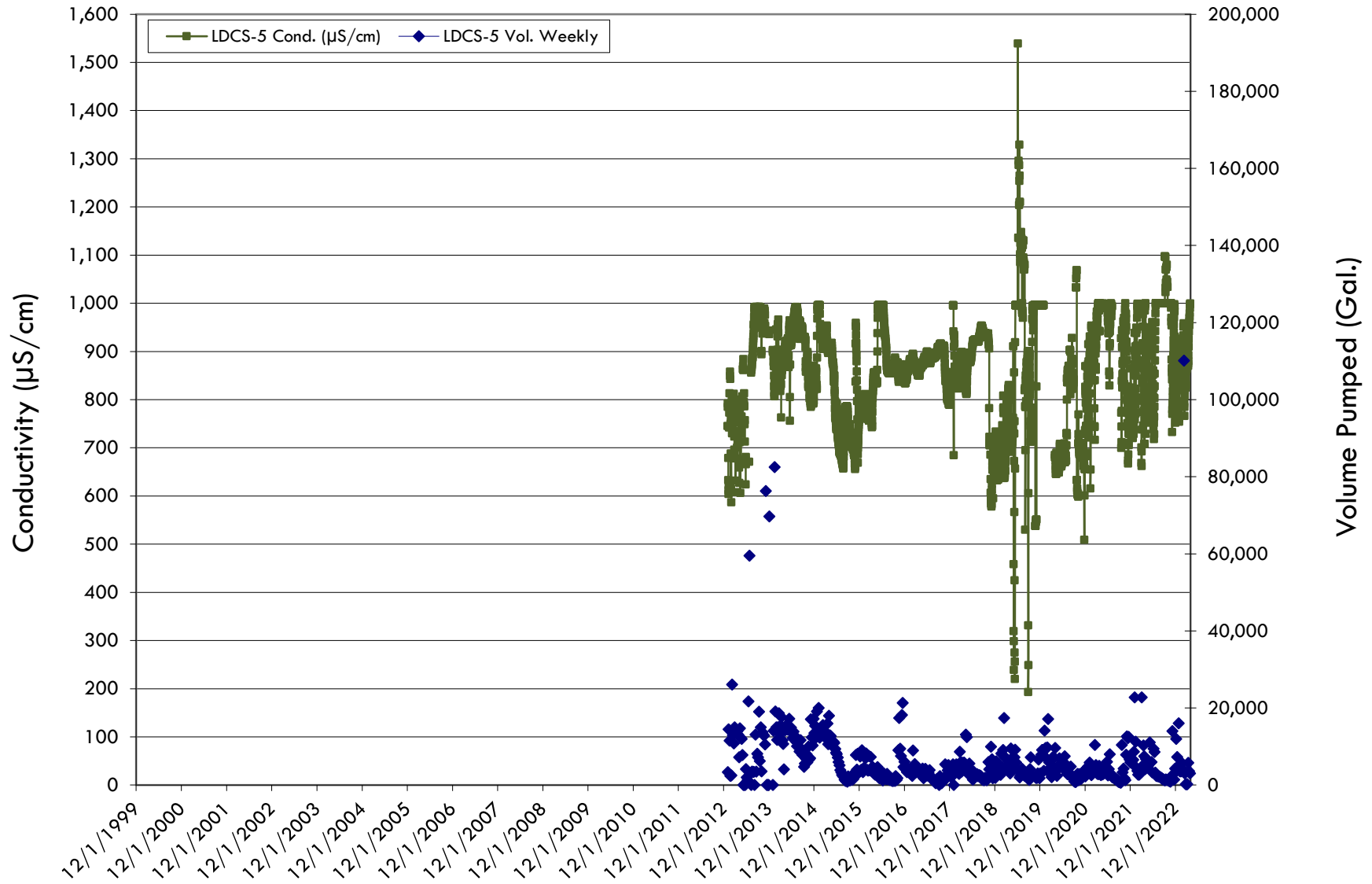
LDCS-4A
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



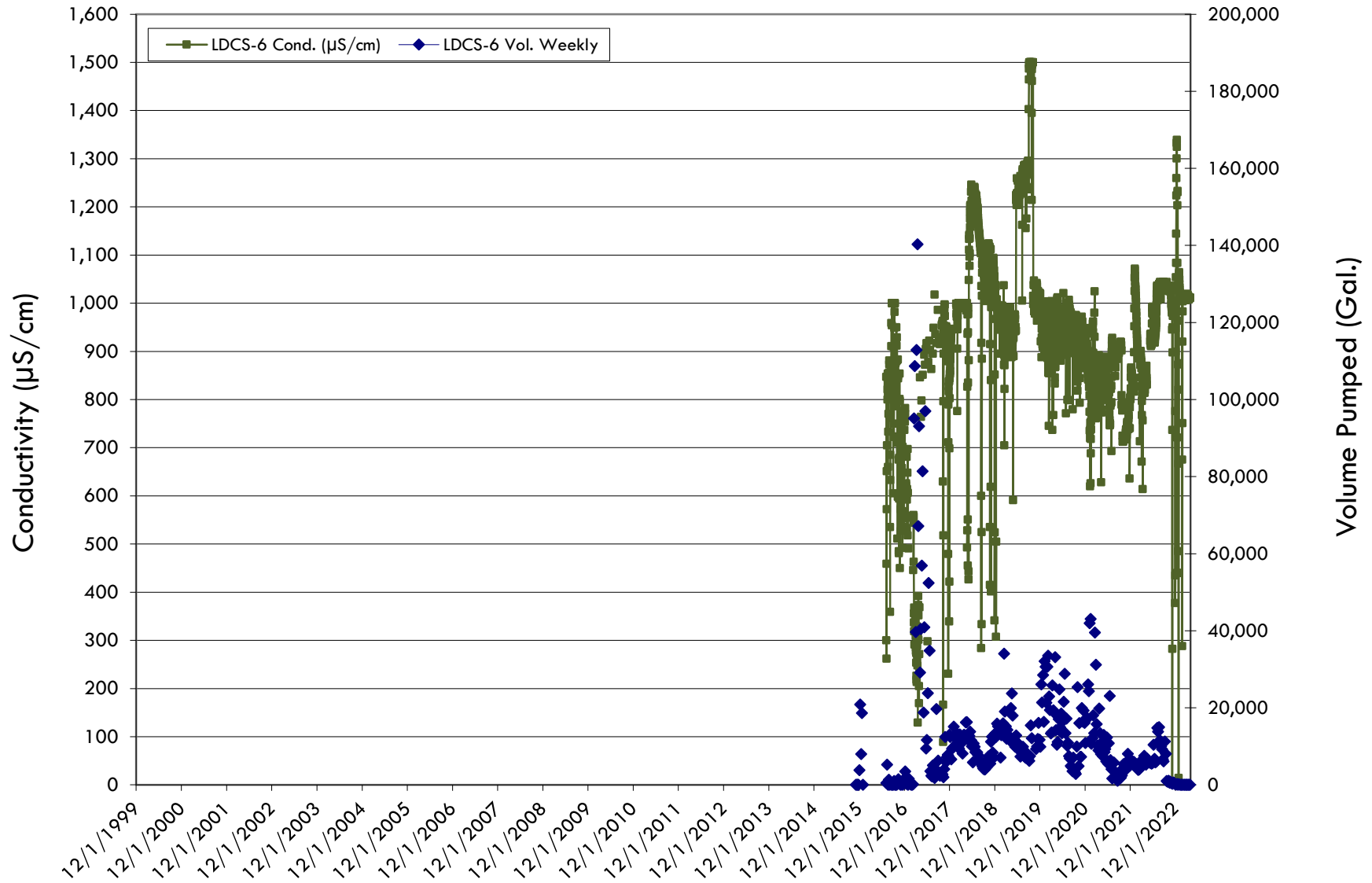
LDCS-4B
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



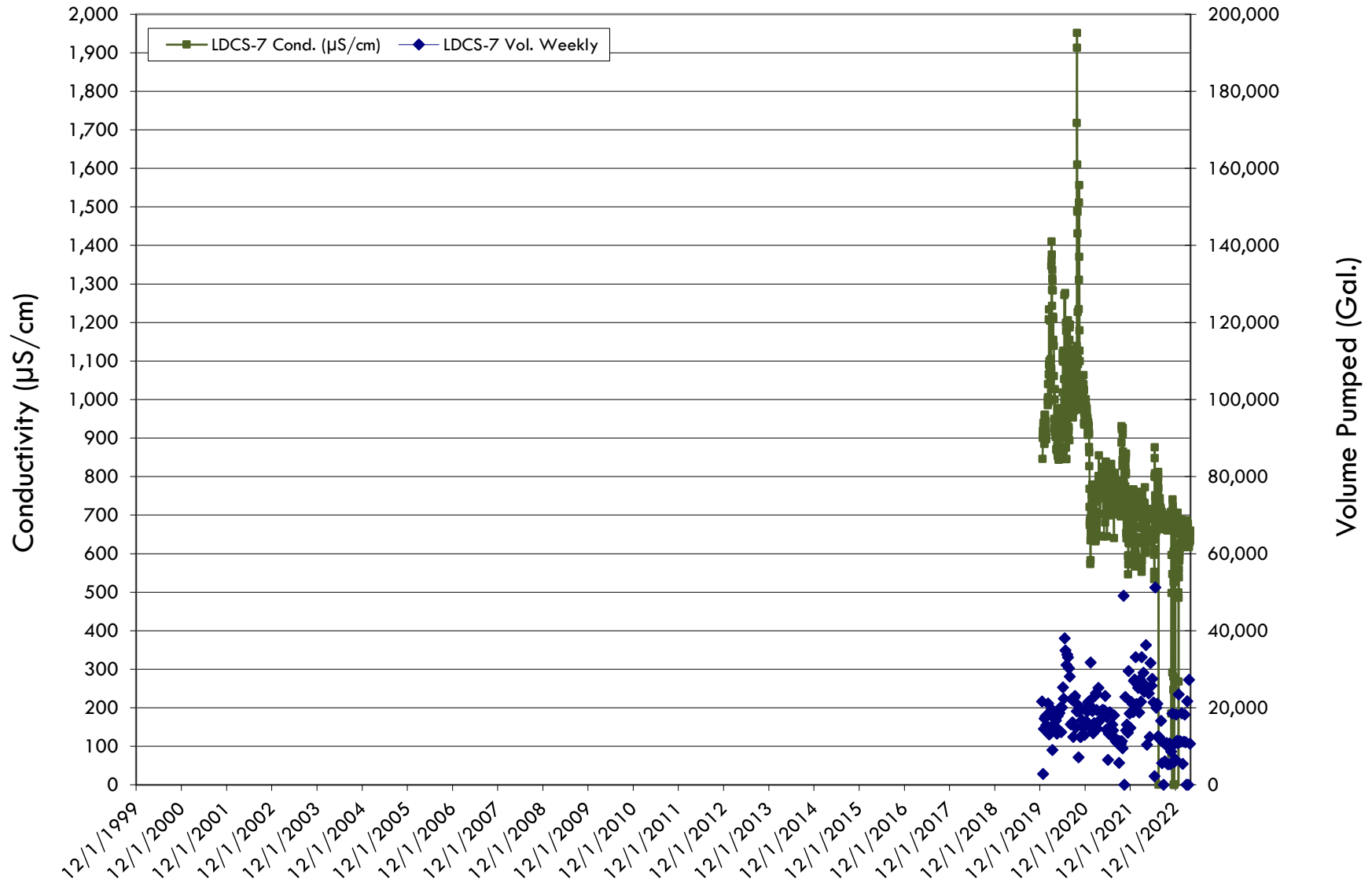
LDCS-5
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



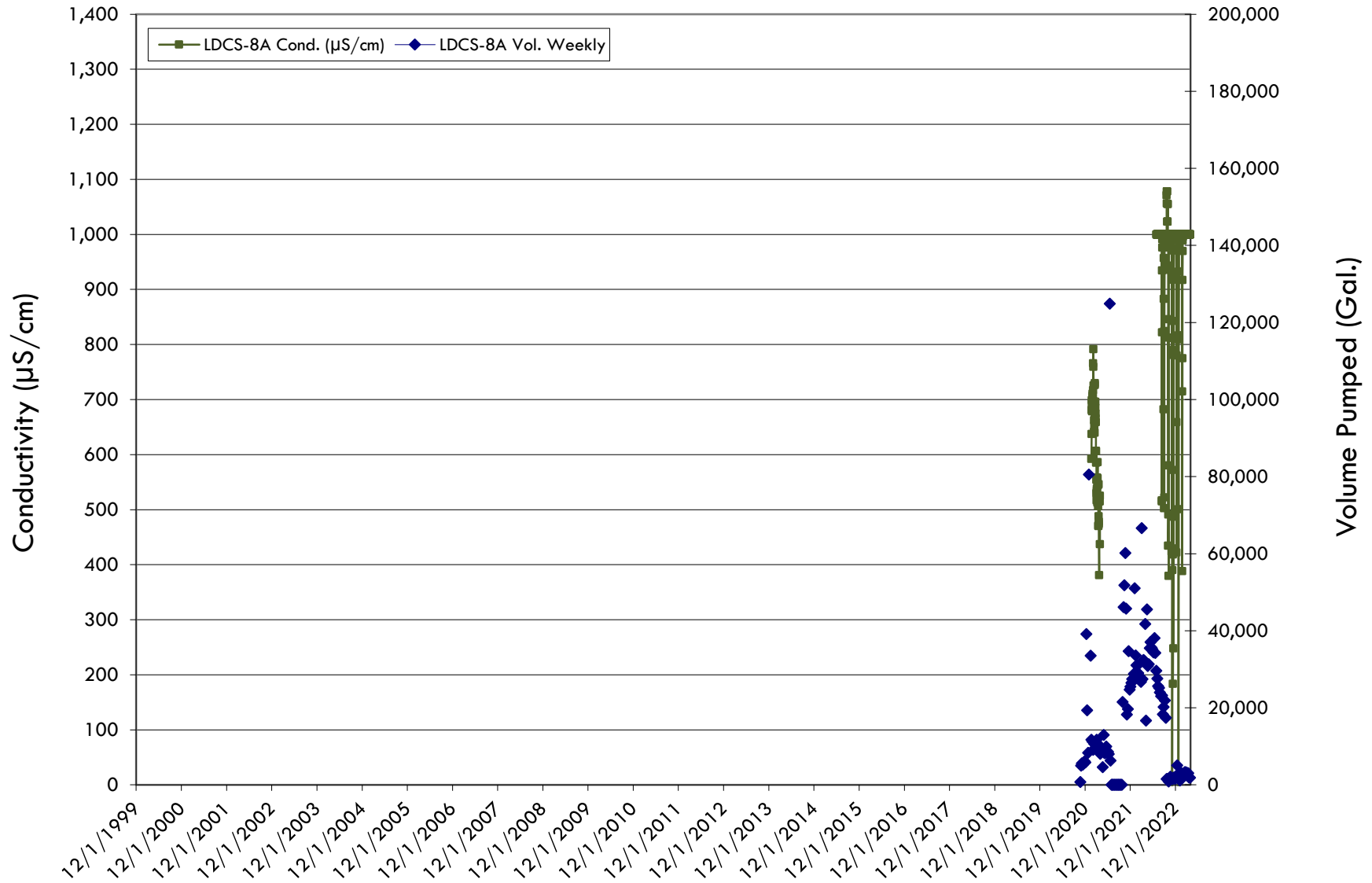
LDCS-6
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



LDCS-7
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



LDCS-8A
Daily Conductivity vs Weekly Volume Pumped
First Quarter 2023
LRI Landfill, Pierce County, Washington



Summary of Leachate Volume and Depth Data
First 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.)
1/1/2023	2,815	10.6	1	7.7	4,704	9.3	9,249	9.9	8,348	8.8	5,615	10.1	14,045	11.3	24,131	12.3	22,325	11.2	0	9.9
1/2/2023	3,396	11.1	0	9.8	4,737	9.5	8,595	12.1	16,363	8.8	5,603	10.3	14,045	11.2	25,269	12.1	22,325	11.2	8,234	10.6
1/3/2023	2,663	10.7	0	10.1	4,573	9.4	8,674	11.3	15,538	8.8	9,338	10.1	14,045	11.3	26,467	12.0	22,325	11.1	0	10.2
1/4/2023	3,673	10.5	7,897	10.2	5,322	9.4	8,367	12.0	7,666	8.8	6,171	10.5	14,045	11.2	22,178	12.0	22,325	11.1	0	10.1
1/5/2023	1,574	10.8	0	6.7	4,969	9.4	12,975	10.8	15,457	8.8	10,171	10.2	7,643	11.2	25,000	12.0	11,360	11.1	4,053	10.7
1/6/2023	1,349	10.9	0	7.6	4,810	9.4	10,377	9.0	9,734	8.8	6,173	10.3	7,643	11.3	16,301	11.2	11,360	11.2	2	9.8
1/7/2023	4,397	10.5	0	9.0	5,058	9.4	8,579	11.4	15,920	8.8	7,750	10.5	7,643	11.3	16,238	11.8	11,360	11.0	2,022	10.7
1/8/2023	2,937	10.7	0	10.0	4,939	9.4	8,365	11.0	10,883	8.8	7,889	10.1	7,643	11.2	19,100	12.7	11,360	11.0	0	10.0
1/9/2023	1,969	10.7	6,860	8.4	5,123	9.4	10,790	11.2	3,562	8.8	6,306	10.5	7,643	11.2	21,361	11.7	11,360	10.9	0	10.2
1/10/2023	2,786	10.7	7,446	3.6	5,015	9.4	11,780	10.6	13,413	8.8	9,149	10.0	7,610	11.2	17,227	11.7	11,600	11.1	8,675	10.5
1/11/2023	1,396	11.0	0	3.3	4,812	9.4	11,230	9.5	12,946	8.8	7,506	10.2	7,610	11.3	17,065	12.5	11,600	11.1	4	10.2
1/12/2023	3,906	10.5	0	4.7	4,547	9.5	7,355	10.3	21,788	8.8	6,856	10.6	7,919	11.1	14,655	12.2	12,110	11.1	2	10.2
1/13/2023	3,048	10.8	0	6.0	4,873	9.4	6,473	11.0	3,513	8.8	12,455	10.1	7,919	11.3	17,911	12.2	12,110	10.9	4,083	10.3
1/14/2023	3,552	10.6	0	7.5	5,304	9.4	9,865	11.5	11,732	8.8	6,026	10.2	7,919	11.2	18,032	10.9	12,110	10.9	1	10.3
1/15/2023	2,929	10.6	0	8.2	5,146	9.4	12,448	10.7	14,528	8.8	7,756	10.5	7,919	11.1	18,801	12.5	12,110	10.8	0	10.3
1/16/2023	1,305	10.8	0	9.0	4,819	9.4	12,963	8.2	15,667	8.8	8,174	10.1	7,919	11.2	15,265	12.0	12,110	11.0	16	10.1
1/17/2023	2,659	10.7	0	10.3	4,768	9.4	11,662	8.7	18,597	8.8	5,259	10.6	7,062	11.3	15,026	12.7	14,967	11.0	0	10.5
1/18/2023	1,293	10.8	0	11.0	4,960	9.4	10,077	9.9	13,995	8.8	8,963	9.8	7,062	11.3	16,322	11.7	14,967	10.6	0	9.9
1/19/2023	1,248	10.8	7,485	8.4	4,277	9.4	4,814	8.9	15,534	8.8	6,562	10.4	6,778	11.2	34,597	11.4	11,327	11.1	8,762	10.6
1/20/2023	2,437	10.7	0	7.7	4,578	9.4	3,294	13.8	10,121	8.8	5,855	10.2	6,778	11.3	16,110	12.2	11,327	11.1	8	10.0
1/21/2023	2,475	10.8	0	9.5	4,169	9.5	3,790	14.7	14,813	8.8	6,497	9.6	6,778	11.3	15,759	12.5	11,327	11.0	10,433	10.5
1/22/2023	1,061	10.7	0	9.5	4,601	9.4	3,660	14.2	7,350	8.7	4,734	10.3	6,778	11.3	33,997	11.1	11,327	11.0	1,786	10.5
1/23/2023	2,310	10.7	0	10.7	4,392	9.5	3,490	14.8	11,765	8.8	6,139	10.3	6,676	11.3	34,899	13.1	10,240	11.1	3	9.9
1/24/2023	2,500	10.6	0	11.2	3,297	9.8	3,343	15.2	12,729	8.8	8,087	10.2	6,676	11.2	23,755	12.6	10,240	11.1	4	10.7
1/25/2023	979	10.9	0	11.0	3,297	11.0	4,678	14.5	11,907	8.8	4,302	10.2	6,888	11.3	14,690	12.8	10,340	11.1	1	9.5
1/26/2023	3,791	10.6	0	11.0	3,297	11.0	3,607	14.6	12,836	8.8	5,511	10.5	6,888	11.3	16,900	12.2	10,340	11.1	0	9.9
1/27/2023	2,954	10.6	0	11.0	3,297	11.0	13,033	11.1	13,385	8.8	8,582	10.4	7,495	11.2	15,600	11.9	11,294	11.0	2,741	10.4
1/28/2023	1,338	10.8	0	11.0	3,297	11.0	13,305	10.9	24,073	8.8	6,307	10.1	7,495	11.1	19,338	11.7	11,294	10.9	4,712	10.5
1/29/2023	2,421	11.0	0	11.0	3,297	11.0	11,778	9.5	26,005	8.8	5,302	10.4	7,495	11.3	17,518	12.2	11,294	11.1	0	9.8
1/30/2023	3,810	10.4	0	11.0	3,297	11.0	11,252	12.5	17,058	8.8	10,279	10.4	7,495	11.3	17,518	11.4	11,294	11.1	1	10.4
1/31/2023	2,814	10.5	0	6.6	3,297	11.0	12,128	12.5	7,468	8.7	7,395	10.1	7,495	11.2	17,518	13.2	11,294	11.0	22	10.1
2/1/2023	7,280	10.9	0	6.1	3,297	11.0	12,791	13.1	16,707	8.1	6,991	10.4	9,009	11.1	48,683	12.7	13,855	11.0	1,421	10.6
2/2/2023	8,120	10.6	1,390	6.5	3,297	11.0	13,677	14.0	18,916	8.7	10,338	10.4	9,009	11.2	48,683	11.9	13,855	11.1	0	9.7
2/3/2023	7,280	10.8	893	6.5	3,297	11.0	12,649	14.7	19,948	7.9	4,813	10.2	9,009	11.2	48,683	11.7	13,855	11.0	4,922	10.4
2/4/2023	8,110	10.6	0	7.5	3,297	11.0	12,414	14.8	15,015	8.4	11,458	10.2	9,009	11.2	48,683	12.4	13,855	10.8	9,144	10.2
2/5/2023	7,330	10.8	0	8.0	3,297	11.0	12,185	12.8	21,612	7.8	5,068	10.2	9,009	11.1	48,683	12.1	13,855	10.7	4,906	10.1
2/6/2023	7,300	10.8	0	9.1	3,297	11.0	12,084	9.2	28,341	8.0	1,124,021	10.3	7,768	11.2	47,355	11.6	15,324	11.0	0	10.3
2/7/2023	7,260	10.7	5	10.0	3,297	11.0	10,370	13.2	24,523	7.6	4,927	10.3	7,768	11.3	47,355	12.1	15,324	10.5	9,947	10.3
2/8/2023	7,280	11.1	0	10.9	3,297	11.0	8,947	11.7	2,678	8.7	8,808	10.2	7,768	11.2	47,355	12.9	15,324	10.6	2	10.0
2/9/2023	8,110	10.7	8,122	7.5	3,297	11.0	10,428	14.9	0	8.8	1	10.2	7,768	11.2	47,355	11.4	15,324	11.0	9,054	10.6
2/10/2023	7,310	10.8	0	7.8	3,297	11.0	10,915	14.1	0	8.7	0	10.4	7,768	11.0	47,355	12.6	15,324	10.3	3	10.4
2/11/2023	8,140	10.6	0	8.4	3,297	11.0	11,332	14.0	774	9.5	0	10.3	7,768	11.1	47,355	11.9	15,324	11.0	12	9.9
2/12/2023	8,150	10.6	0	10.2	3,297	11.0	11,956	14.1	0	7.5	1,260	10.3	7,768	11.1	47,355	12.0	15,324	11.0	8,487	10.6
2/13/2023	8,700	10.9	0	10.6	3,297	11.0	13,082	12.0	798	9.5	0	10.1	7,412	11.1	45,031	12.1	10,050	10.9	7,384	10.3
2/14/2023	7,500	10.5	3	11.0	3,297	11.0	13,813	8.7	2,076	8.3	0	10.5	7,412	11.1	45,031	11.5	10,050	11.0	0	9.9
2/15/2023	7,290	10.9	7,985	8.2	3,297	11.0	13,349	8.5	0	8.2	0	10.1	7,836	11.2	42,688	12.3	12,948	11.1	8,515	10.4
2/16/2023	8,080	10.7	0	8.0	3,297	11.0	11,842	11.3	1,381	8.5	0	10.4	7,836	11.1	42,688	12.2	12,948	11.0	0	10.3
2/17/2023	8,140	10.7	0	8.8	3,297	11.0	12,349	11.5	0	7.8	1,287	10.5	7,836	11.1	42,688	11.2	12,948	11.0	0	10.1
2/18/2023	8,090	10.7	0	9.9	3,297	11.0	13,173	11.4	0	9.1	0	10.1	7,836	11.1	42,688	12.9	12,948	10.8	1,292	10.2
2/19/2023	7,310	10.6	0	10.6	3,297	11.0	13,136	11.3	0	8.1	1,224	10.5	7,836	11.1	42,688	12.4	12,948	10.9	4,647	10.3
2/20/2023	8,920	11.0	9,075	8.9	3,297	11.0	13,759	11.6	477	9.6	0	10.0	8,679	11.0	47,360	11.3	11,195	10.8	3,630	10.3
2/21/2023	8,510	10.5	0	6.8	3,297	11.0	15,606	12.3	244	7.7	1,309	10.4	8,679	10.9	47,360	12.2	11,195	10.8	2,890	10.2
2/22/2023	8,460	10.9	0	8.2	3,297	11.0	15,227	13.1	1,328	7.6	0	10.2	8,679	10.9	47,360	12.7	11,195	10.9	0	10.3
2/23/2023	8,160	10.7	0	9.0	3,297	11.0	15,935	13.1	959	7.9	334	10.0	8,679	10.9	47,360	11.7	11,195	10.9	0	9.8
2/24/2023	7,300	10.8	11,157	4.7	3,297	11.0	14,873	10.8	0	8.2	0	10.0	8,679	11.0	47,360	11.3	11,195	11.0	8,866	10.7
2/25/2023	8,840	10.7	1,304	3.5	3,297	11.0	12,677	14.1	0	9.6	0	10.3	8,679	11.0	47,360	13.0	11,195	11.0	3	10.1
2/26/2023	8,140	10.6	0	3.4	3,297	11.0	14,925	13.7	0	7.5	0	10.5	8,679	10.9	47,360	12.4	11,195	10.8	0	10.4
2/27/2023	8,150	10.5	0	5.4	3,297	11.0	16,242	14.7	0	10.0	0	10.1	8,679	10.9	47,360	12.0	11,195	10.7	19	10.0
2/28/2023	8,140	10.4	71	6.0	3,297	11.0	1	15.3	0	7.0	0	10.4	8,67							

Summary of Leachate Volume and Depth Data
First 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.)
3/5/2023	8,180	10.8	0	11.0	3,297	11.0	13,594	12.6	2,123	9.6	0	10.3	7,761	11.0	42,630	11.5	11,042	10.9	3	10.2
3/6/2023	7,330	10.7	7,719	7.9	3,297	11.0	13,594	10.0	1,508	9.1	0	10.4	7,761	11.1	42,630	12.2	11,042	10.9	0	10.2
3/7/2023	8,180	10.6	0	7.7	0	10.3	12,691	11.6	90	9.2	1,216	10.5	7,761	11.1	41,821	12.6	11,973	10.8	2,472	10.6
3/8/2023	8,240	10.8	0	8.9	5,431	9.4	11,620	13.6	925	8.7	0	10.0	7,761	11.0	41,821	11.3	11,973	10.8	5	9.9
3/9/2023	8,250	10.5	57	10.1	5,798	9.4	11,863	15.7	0	9.0	1,211	10.5	7,761	11.0	41,821	12.3	11,973	10.8	9,900	10.4
3/10/2023	8,250	10.8	0	10.3	5,730	9.3	15,526	11.9	2,069	8.0	0	10.0	7,761	10.9	41,821	11.7	11,973	10.9	9	10.0
3/11/2023	8,190	10.6	8,429	10.8	5,562	9.3	13,619	8.8	606	8.5	0	10.4	7,761	11.1	41,821	12.8	11,973	10.8	8,811	10.6
3/12/2023	7,400	10.7	0	6.9	5,446	9.4	12,213	11.3	3,230	9.6	10,783	10.3	7,761	11.0	41,821	11.6	11,973	10.9	0	10.0
3/13/2023	7,430	10.6	0	8.0	5,379	9.3	11,965	13.4	19,404	8.7	5,490	10.1	7,761	11.0	41,821	12.6	11,973	10.0	11	10.4
3/14/2023	7,440	10.7	0	8.9	5,576	9.3	12,529	14.1	19,181	7.3	6,542	10.5	7,761	11.0	41,821	12.0	11,973	10.7	7	9.8
3/15/2023	7,400	10.9	0	9.6	5,218	9.3	12,386	11.3	22,786	8.9	6,768	10.5	7,761	11.1	41,821	12.6	11,973	10.8	0	10.6
3/16/2023	7,620	10.7	2	11.0	5,219	9.4	10,561	11.9	16,706	8.3	8,365	9.9	7,116	11.1	32,968	11.3	10,190	10.8	10	10.0
3/17/2023	7,870	10.7	8,251	7.3	5,288	9.4	10,816	14.4	22,208	8.5	7,017	10.1	7,216	11.1	41,734	12.8	9,487	10.9	0	10.3
3/18/2023	8,300	10.7	0	7.7	5,413	9.4	10,985	15.2	16,450	7.9	6,818	10.3	8,072	11.1	47,482	12.3	9,453	10.9	4	10.4
3/19/2023	8,450	10.7	0	8.8	5,552	9.4	12,699	13.1	8,175	9.4	6,656	10.3	8,072	11.0	47,482	11.8	9,453	10.9	8	10.2
3/20/2023	8,390	10.7	2	9.5	5,554	9.4	14,510	11.8	19,284	7.9	10,536	10.3	8,120	11.0	30,418	12.2	11,677	10.7	0	10.1
3/21/2023	8,370	10.7	3	10.7	9,275	4.6	14,466	12.0	20,062	8.6	6,485	10.2	9,884	11.0	54,910	12.5	10,489	10.9	8,120	10.7
3/22/2023	8,360	10.6	8,251	9.2	5,319	3.5	14,959	12.5	21,792	7.5	6,577	10.5	5,548	11.0	38,028	11.9	5,668	10.9	0	9.9
3/23/2023	8,300	10.9	0	7.0	5,222	9.4	13,757	10.8	5,049	9.4	6,856	10.5	7,196	11.1	28,626	12.1	11,443	10.9	4,804	10.5
3/24/2023	8,290	10.8	0	8.2	5,043	9.4	12,236	9.8	13,645	8.2	9,206	10.0	6,836	11.1	42,262	12.8	9,161	10.8	2,006	10.2
3/25/2023	7,450	10.6	0	9.2	4,962	9.4	10,556	10.4	7,371	9.4	5,963	10.3	6,836	11.1	42,262	11.8	9,161	10.9	3	9.8
3/26/2023	8,230	10.9	0	10.1	4,920	9.4	10,358	11.2	18,040	8.0	6,062	10.3	3,836	11.2	42,262	12.7	9,161	10.9	1,937	10.7
3/27/2023	8,270	10.7	8,057	10.1	5,158	9.4	10,023	13.8	22,920	7.9	6,885	10.4	7,560	11.1	31,054	11.9	8,767	10.9	0	9.8
3/28/2023	8,330	10.8	7	7.0	5,397	9.5	12,571	14.3	904	9.4	8,520	10.4	8,090	11.0	50,408	13.2	8,815	10.9	4,944	10.7
3/29/2023	9,130	10.6	0	7.9	5,407	9.4	13,448	14.1	15,910	9.0	8,135	9.8	8,090	11.0	42,334	11.6	10,460	11.0	9	9.8
3/30/2023	8,210	10.8	0	9.0	5,365	9.4	14,151	14.7	7,983	8.5	6,414	10.5	0	11.0	0	12.7	0	10.9	417	10.8
3/31/2023	7,540	10.7	0	10.0	5,427	9.4	12,998	14.8	19,096	9.3	10,994	10.1	0	11.1	0	12.1	0	11.0	0	9.8

-- = No data available



Attachment I

Surface Water Monitoring Data



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: NEWB 2

Monitoring Period: 01/01/2023 - 01/31/2023

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-T	1/3/23			C	C	C	C
1-Th	1/5/23	2.3	M				
2-W	1/11/23			12	M	6	M
2-Th	1/12/23	6.6	M				
3-T	1/17/23			8	M	7	M
3-W	1/18/23	5.5	M				
4-T	1/24/23	C	C	C	C	5	M
5-T	1/31/23	C	C	C	C	10	M
Minimum			M		M		M
			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum		6.6	M	12	M	10	M
		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, M - Monitoring Is Conditional/Not Req This MP

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		Other
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

2/8/2023 6:46:53 AM

Date



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: NEWB 2

Monitoring Period: 02/01/2023 - 02/28/2023

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	2/2/23	C	C	C	C	5	M
2-Su	2/5/23	2.7	M				
2-T	2/7/23	8.0	M				
2-W	2/8/23	19.7	M	5	M	8	M
2-F	2/10/23	17.1	M				
3-Su	2/12/23	9.8	M				
3-T	2/14/23			7	M	6	M
3-W	2/15/23	14.4	M				
4-M	2/20/23	19.7	M				
4-T	2/21/23			9	M	5	M
Minimum			M		M		M
			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum		19.7	M	9	M	8	M
		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, M - Monitoring Is Conditional/Not Req This MP

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		Other
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

3/14/2023 9:58:54 PM

Signature

Date



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: NEWB 2

Monitoring Period: 02/01/2023 - 02/28/2023

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	2/2/23	C	C	C	C	5	M
2-Su	2/5/23	2.7	M				
2-T	2/7/23	8.0	M				
2-W	2/8/23	19.7	M	5	M	8	M
2-F	2/10/23	17.1	M				
3-Su	2/12/23	9.8	M				
3-T	2/14/23			7	M	6	M
3-W	2/15/23	14.4	M				
4-M	2/20/23	19.7	M				
4-T	2/21/23			9	M	5	M
Minimum			M		M		M
			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum		19.7	M	9	M	8	M
		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, M - Monitoring Is Conditional/Not Req This MP

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		Other
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

3/14/2023 9:58:54 PM

Date

Permit Number: WAR002557

Permittee: Pierce County Recycling - 304th Street L

Facility County: Pierce

Receiving Waterbody:

Monitoring Period:01/01/2023 - 03/31/2023

Outfall: SWPO - Discharge from SW pond

Version: 1

								</				

Reporting Codes Used: B - Below Detection Limit/No Detection, J - Estimated Value/Below Quantitation Limit

Outfall: SWPO - Discharge from SW pond

Monitoring Point	Parameter	Sample Date/ Statistical Base	Value	Notes/Comment
SWPO	Alpha-terpineol (3-Cyclohexene-1-methanol,,alpha.,alpha.,trime thyl-) Micrograms/L (ug/L)	1/31/2023	B 9.5	Alpha-terpineol was evaluated by the laboratory as a tentatively identified compound (TIC) with a detection limit of 9.5 micrograms per liter. No presence of alpha-terpineol was indicated.

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

5/23/2023 9:38:34 AM

Signature

Date

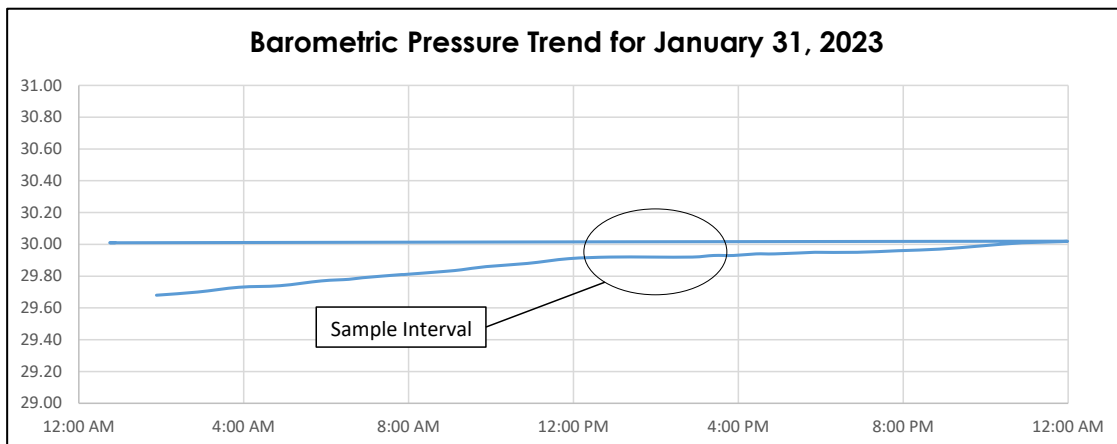
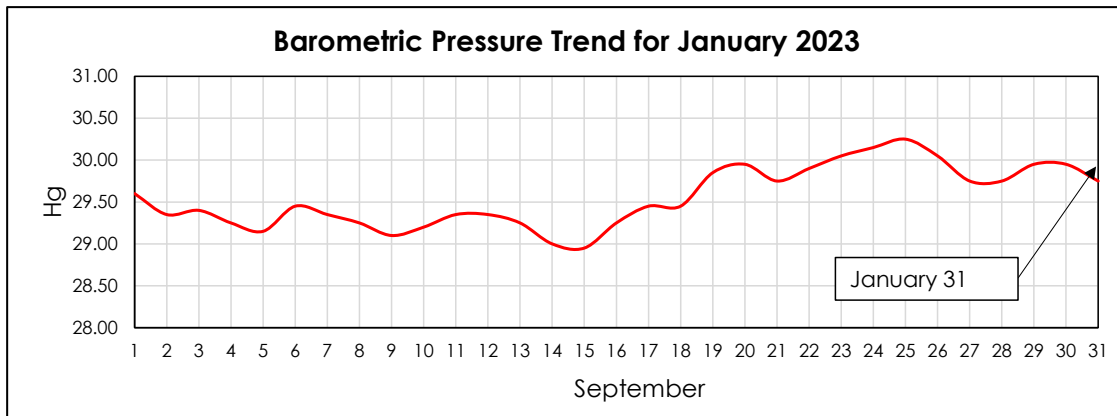


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Attachment J
Landfill Gas Monitoring Data

Barometric Pressure Trend - January 2023

LRI 304th Landfill, Washington



Monthly Data Source: Wunderground.com (Graham)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source:

<https://www.wunderground.com/history/monthly/us/wa/seatac/KSEA/date/2023-1>

Daily Data Source: Wunderground.com (Graham)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source:

<https://www.wunderground.com/history/daily/us/wa/seatac/KSEA/date/2023-1-9>

LRI Landfill

04223001.04

February-23

Location Refer <i>Design.</i>	Date	Time	P _(well) (in W.C.)	Gas Composition - <i>Note 1 and 4</i>					Depth to Water <i>Note 2</i> (ft-TOC)	Exposed Portion of Perforations - <i>Note 3</i>		Comments
				CH ₄ Spike	CH ₄	CO ₂	O ₂	Balance (N ₂ & H ₂ O)		(ft)	(%)	
				(% by vol.)	(% by vol.)	(% by vol.)	(% by vol.)	(% by vol.)				
Normal Operating Range:												
(min)			-	-	0.3	-	-				20.0	
(max)			0.00	-	5.0	5.0	20.3				90.0	

Perimeter Gas Probes

GP-1A	2/15/2023	11:28	N/A	--	3.2	11.5	14.2	71.1	15.0	5.0	100.0	
GP-2	2/15/2023	11:12	N/A	--	3.2	15.3	<<<<	N/A	15.5	0.0	0.0	
GP-3	2/15/2023	10:56	N/A	--	0.0	6.4	11.3	82.3	9.1	4.2	83.2	
GP-4	2/15/2023	10:49	N/A	--	0.0	5.2	14.5	80.3	8.9	0.0	0.0	
GP-9	2/15/2023	10:43	N/A	--	0.0	9.0	6.3	84.7	10.4	0.0	0.0	
GP-10	2/15/2023	11:40	N/A	--	0.0	6.9	15.2	77.9				
GP-10P	2/15/2023	11:47	N/A	18.6	8.7	34.4	<<<<	N/A				
GP-11	2/15/2023	11:58	N/A	--	0.0	7.8	9.6	82.6				
GP-12	2/15/2023	12:08	N/A	15.7	12.0	50.7	<<<<	N/A				
GP-13	2/15/2023	12:16	N/A	--	0.0	25.5	0.0	74.5				
GP-14	2/15/2023	12:42	N/A	--	0.0	0.4	21.0	78.6	11.4	0.0	0.0	
GP-15	2/15/2023	12:49	N/A	--	0.0	0.1	21.0	78.9	15.1	0.0	0.0	
GP-16	2/15/2023	10:26	N/A	--	0.0	0.8	20.9	78.3	19.2	11.9	79.0	
GP-17	2/15/2023	11:19	N/A	--	0.0	0.6	21.2	78.2	5.2	0.0	100.0	
GP-18	2/15/2023	11:02	N/A	--	0.0	0.8	21.3	77.9	3.6	0.0	0.0	
GP-19	2/15/2023	13:04	N/A	--	0.0	0.4	20.4	79.2	5.4	0.0	0.0	
GP-20	2/15/2023	12:29	N/A	--	0.0	0.1	21.1	78.8	5.2	0.0	0.0	
GP-21	2/15/2023	12:21	N/A	--	0.0	0.6	20.4	79.0	9.0	0.0	0.0	

General Data:	
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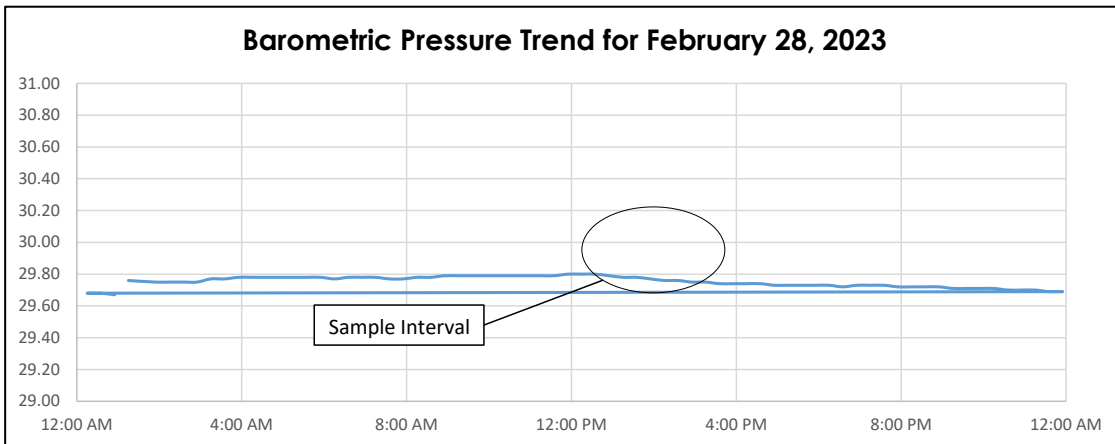
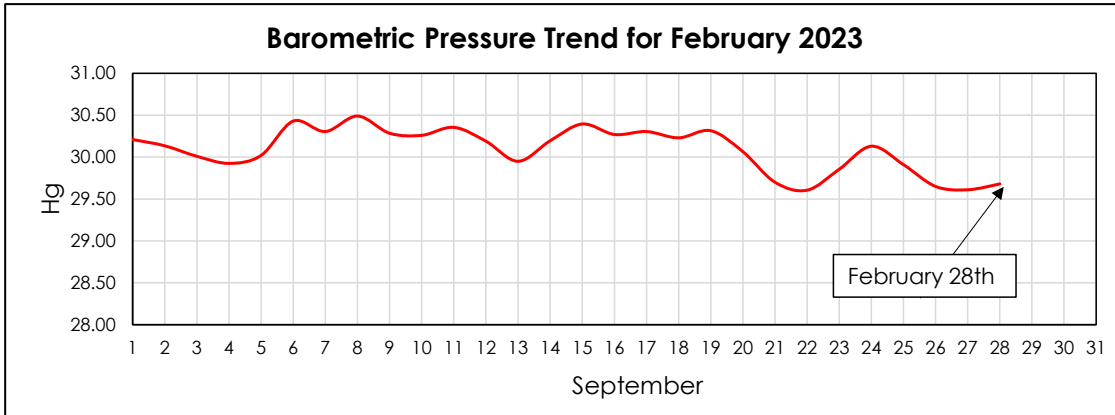
	Beginning	Ending	Average	Starting Date:	2/15/2023
Weather:	Cloudy	Cloudy	Cloudy	Starting Time:	10:26
Temperature, T (deg F):	36	43	39.5	Finishing Date:	2/15/2023
Wind Speed (mph):	5	8	6.5	Finishing Time:	13:04
Wind Direction:	157.5	225	191.25	Monitored by:	J. Faile
Barometric Pressure, P (in Hg):	29.11	29.05	29.08	Instruments:	GEM 2000
24hr Baro.Trend (rising / falling / steady / unsteady)	Falling			Calibration Date:	2/15/2023

Headings:

Notes:

P _(well)	Relative Pressure	1.	Measurement for spike concentrations of CH ₄ and CO ₂ are recorded as a comment if observed during sampling.
CH ₄	Methane		
CO ₂	Carbon Dioxide	2.	Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
O ₂	Oxygen		
H ₂ O	Water Vapor	3.	Exposed Perforation = perforated pipe section not submerged by liquid.
N ₂	Nitrogen		
TOC	Top of Casing	4.	Rental GEM unit used for February 2023 monitoring. Some oxygen readings were not taken due to unknown error.

Barometric Pressure Trend - February 2023 LRI 304th Landfill, Washington



Monthly Data Source: Wunderground.com (Graham)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source:

<https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-02-20/2023-02-20/monthly>

Daily Data Source: Wunderground.com (Graham)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source:

<https://www.wunderground.com/history/daily/us/wa/seatac/KSEA/date/2023-1-9>

LRI Landfill

04223001.04

March-23

Perimeter Gas Probes

General Data:

	Beginning	Ending	Average	Starting Date:	3/23/2023
Weather:	Cloudy	Cloudy	Cloudy	Starting Time:	7:46
Temperature, T (deg F):	44	48	46	Finishing Date:	3/23/2023
Wind Speed (mph):	10	13	11.5	Finishing Time:	11:16
Wind Direction:	202.5	202.5	202.5	Monitored by:	J. Failla
Barometric Pressure, P (in Hg):	29.46	29.43	29.45	Instruments:	GEM 2000
24hr Baro.Trend (rising / falling / steady / unsteady)	Steady			Calibration Date:	3/23/2023

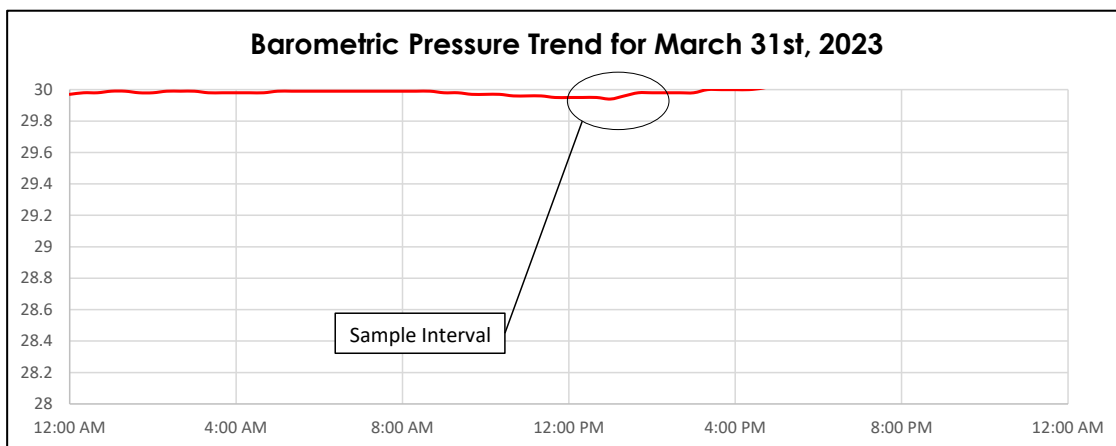
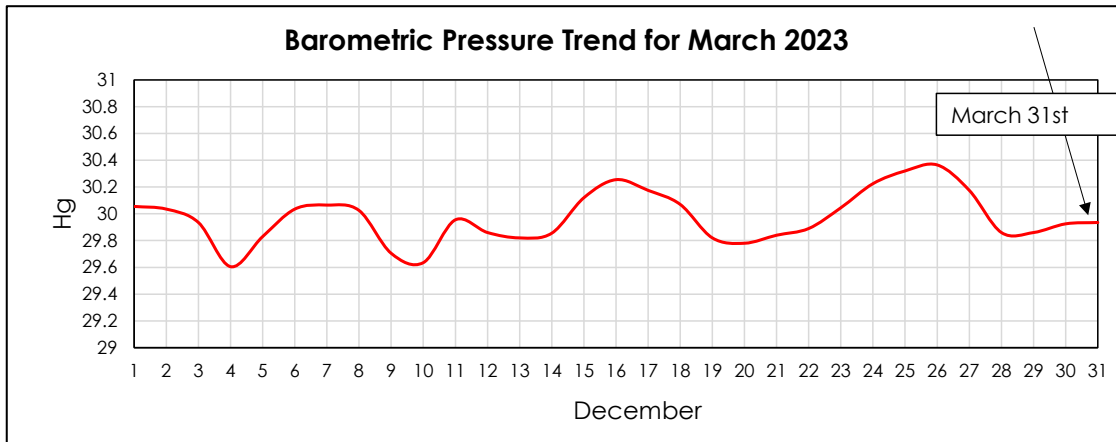
Headings:

Notes:

P _(well)	Relative Pressure	1.	Measurement for spike concentrations of CH ₄ and CO ₂ are recorded as a comment if observed during sampling.
CH ₄	Methane		
CO ₂	Carbon Dioxide	2.	Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
O ₂	Oxygen		
H ₂ O	Water Vapor	3.	Exposed Perforation = perforated pipe section not submerged by liquid.
N ₂	Nitrogen		
TOC	Top of Casing		

Barometric Pressure Trend - December 2022

LRI Landfill, Pierce County, Washington



Monthly Data Source: Wunderground.com (Graham, WA)

Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL

Data Source:

<https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-03-23/2023-03-23/monthly>

Daily Data Source: Wunderground.com (Graham, WA)

Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL

Data Source:

<https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-03-23/2023-03-23/daily>

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

Date: 3-23-23
Weather Conditions: Cloudy / windy
Instrument: micro 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**.

0.2 ppm Max

☐
☒
☒

Main Office - individual office spaces, storage areas and within open crawl-space area.

Repair Shop – survey atmosphere conditions throughout (lower height levels).

Pay/Scale Booth – interior of building.

Background Concentrations:

Upwind 0 ppm
Downwind 0 ppm

Signature

