

Second Quarter 2020 Monitoring Report

LRI Landfill

Graham, Washington

Pierce County Recycling, Composting
& Disposal, LLC dba LRI
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Puyallup, Washington 98375



SCS ENGINEERS

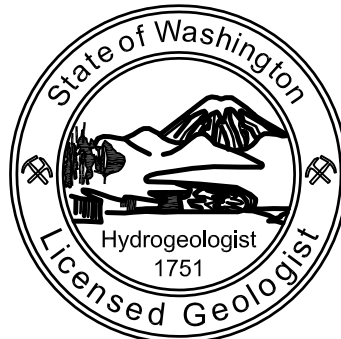
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This document is the Second Quarter 2020 Monitoring Report for the LRI Landfill located in Graham, Washington. Activities this quarter included monitoring the volume and specific conductance of water pumped from the leak detection/collection system, quarterly groundwater monitoring, monthly landfill gas monitoring, and weekly surface water monitoring. This document was prepared by Sam Graber and Kevin Lakey of SCS Engineers and submitted to Mr. David Bosch of the Tacoma-Pierce County Health Department.



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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 Pumping Records and Conductivity Measurements
Attachment I: Surface Water Data
Attachment J: Landfill Gas Data

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GROUNDWATER MONITORING

Second Quarter 2020 groundwater samples were collected on June 8 and 9, 2020. In addition, samples were collected from LDCS-6 and LDCS-7 on April 21, 2020 to track water quality trends noted during the First Quarter 2020 monitoring event. A leachate sample was collected from Cell 7 during the Second Quarter monitoring event. Water level elevations were measured on June 9, 2020. Nine monitoring wells (MW-1A, MW-2A, MW-3, MW-4, MW-5A, MW-6, MW-7, MW-9, and MW-10) were sampled this monitoring period. 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 obtained using low-flow purging and sampling techniques with dedicated pumps at all monitoring wells with the exception of MW-4, where a non-dedicated QED Sample Pro pump was deployed. Samples for laboratory analyses were submitted to TestAmerica, Inc. of Denver, Colorado for the parameters listed in Appendix I and II of WAC 173-351-990. The groundwater sampling locations are shown on Figure 1.

A groundwater surface elevation map for the Second Quarter monitoring event is included as Figure 1 in Attachment A. 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), and quality control samples are summarized on the following tables included 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) and 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 wells monitored 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, TOC
- Plot 2 — alkalinity, sulfate, 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 Second Quarter, except as noted below. The highest concentrations of chloride and nitrate in the uppermost aquifer continue to be observed in background well MW-10.

Increased concentrations of chloride, sulfate, total dissolved solids (TDS), dissolved calcium, and dissolved magnesium noted in the sample collected at MW-2A during the Fourth Quarter of 2019 decreased in the samples collected during the First and Second Quarter monitoring events of 2020. Beginning in 2017, chloride has displayed fluctuating concentrations at MW-2A. However, primary leachate indicator parameters, acetone and 2-butanone, have been non-detect and the secondary indicator parameter, ammonia, has remained low. Therefore, the fluctuation in chloride concentrations does not appear to be related to leachate.

Slight increases in concentrations of alkalinity, TDS, dissolved calcium, and dissolved magnesium noted at MW-3 during the First Quarter 2020 monitoring event decreased to levels more consistent with historic data in the sample collected during the Second Quarter.

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

Table 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	**	**	**	0.0110	0.0062	0.0068	**
Iron, Dissolved	0.30	1.6	0.86	*	*	*	*	0.34
Manganese, Dissolved	0.05	0.27	0.33	0.37	0.23	0.19	0.20	0.28
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 values listed in Table 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.

The measured value for pH at background well MW-10 (6.18 SU) was below the WAC 173-200-040 criteria of 6.5 during the Second Quarter. Since MW-10 is a background (upgradient) monitoring well, the low pH value is interpreted to be representative of natural groundwater quality.

Low-level detections of ammonia (up to 0.20 mg/L) were reported at each downgradient monitoring well, except MW-1A, during the Second Quarter. Similar low-level ammonia detections have been reported in the past, including at background well MW-10 during the Second Quarter 2018 monitoring event. Therefore, the low-level 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. Cation-anion balance evaluations were below the appropriate threshold for all of the monitoring wells this quarter.

Graphical plots of the 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).

Low-level detections of iodomethane (up to 2.3 µg/L) were reported in samples collected from MW-1A, MW-2A, MW-3, and MW-6. No other VOCs were reported in the samples collected from the monitoring wells this quarter, including the primary leachate indicator parameters acetone and 2-butanone. Furthermore, secondary indicator parameters, ammonia and chloride, remained low or were non-detect. Previous detections of iodomethane have not been reported at the LRI Landfill. Therefore, the reported detections of iodomethane appear to be due to a laboratory artifact, and are not considered representative of groundwater quality.

Methylene chloride was reported in the field blank sample at a concentration of 7.0 µg/L. No other detections of methylene chloride were reported.

LEAK DETECTION/COLLECTION SYSTEM (LDCS) MONITORING

LDCS Maintenance. As discussed in the First Quarter monitoring report, the sampling pump from LDCS-5 was removed on March 5, 2020. The sample tubing attached to the pump was found to be damaged. The pump discharge tubing was replaced and the pump was redeployed during September.

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.

The conductivity probe at LDCS-3A was recalibrated on April 24, 2020. Following recalibration, conductivity readings decreased to levels more consistent with historic data and readings measured in the field.

The conductivity readings at LDCS-4A have been slowly increasing since the beginning of 2020. SCS will coordinate with LRI to recalibrate this conductivity probe to ensure it is providing accurate data.

Conductivity probe readings at LDCS-5 malfunctioned beginning on October 4, 2019. LRI is currently addressing the cause of inaccurate data at this location. Beginning on April 1, 2020, LRI staff has been manually recording conductivity levels at LDCS-5 using a portable conductivity meter.

Conductivity data from the remaining LDCS sumps trended within typical historical ranges during the Second Quarter of 2020.

LDCS Quarterly Monitoring. LDCS samples were collected from the leak detection sumps with disposable bailers at LDCS-1, LDCS-2A, and LDCS-2B, and with dedicated QED Sleeper Pumps at LDCS-3A, LDCS-4A, LDCS-4B, LDCS-6, and LDCS-7. The sample from LDCS-5 was collected as a grab sample from the discharge spigot. Additional samples to monitor water quality trends were collected from LDCS-6 and LDCS-7 on April 21, 2020. Samples for laboratory testing were submitted to TestAmerica of Denver, Colorado. Field and laboratory data results are included on the groundwater summary tables in Attachment B.

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

A low-level detection of 1,4-Dichlorobenzene was reported in the sample collected from LDCS-1 (0.66 µg/L). 1,4-Dichlorobenzene was also reported in samples collected from LDCS-1 during the First Quarter of 2020 (0.51 µg/L) and Third Quarter of 2019 (0.58 µg/L). Similar to the previous quarters when 1,4-dichlorobenzene was detected at this location, the primary leachate indicator parameters of acetone and 2-butanone were non-detect and the secondary indicator parameters ammonia and chloride remained low. Therefore, the sporadic VOC detections at LDCS-1 do not appear to be related to leachate.

An elevated concentration of dissolved manganese (2.7 mg/L) was reported in the sample collected from LDCS-2B. Acetone was also reported in the sample collected from LDCS-2B at a concentration of 12 µg/L. However, primary leachate indicator parameter 2-butanone was non-detect and secondary indicator parameters ammonia and chloride were non-detect and remained low, respectively. Therefore, the elevated dissolved manganese and acetone detections do not appear to be related to leachate.

The sample collected from LDCS-4A displayed elevated concentrations of dissolved iron (4.2 mg/L) and dissolved manganese (2.6 mg/L). The LDCS-4A results for chloride display a slowly increasing trend (see Attachment G). However, the primary leachate indicator parameters, acetone and 2-

butanone, were non-detect, and the overall water quality results do not indicate a leachate impact (see the summary tables in Attachment B and the piper plots in Attachment E).

The LDCS-4B results for chloride continue to display a slowly increasing trend. However, the primary leachate indicator parameters, acetone and 2-butanone, were non-detect, and the overall water quality results do not indicate a leachate impact (see the piper plots in Attachment E). As a precautionary measure, water from LDCS-4B has been discharged into the leachate collection system since July 26 of 2019 and is not being discharged through the concrete channel.

Water quality at LDCS-5 continues to display fluctuating, but elevated, concentrations of secondary leachate indicator parameters ammonia and chloride, as well as alkalinity, iron, manganese, sodium, potassium, TDS, and TOC (see summary tables in Attachment B and time trend plots in Attachment G). Primary leachate indicator parameters acetone and 2-butanone have not been detected at LDCS-5 since 2018. However, elevated concentrations of the inorganic parameters and metals listed above are indicative of a potential leachate leak.

Recent pressure testing of the leachate forcemains adjacent to Cell 5 indicate that the forcemain piping is not leaking. Additional improvements to prevent a potential leak at Cell 5 included replacement of the stormwater flap along the concrete channel, and replacement of the geomembrane boot surrounding the three leachate riser pipes. This work was completed as part of the soil placement project associated with the construction of Cell 8A. Groundwater withdrawn from LDCS-5 continues to be directed to the leachate collection system, as it has been since May of 2016, and is not being discharged through the concrete channel.

As reported in the 2019 Annual Monitoring Report, the background water quality at LDCS-7 includes detections of VOC's and elevated concentrations of inorganic parameters and metals. Therefore, an additional groundwater sample was collected from LDCS-7 on April 21, as well as the normal Second Quarter sample obtained on June 9, 2020. Low level concentrations of carbon disulfide (up to 10 µg/L) were reported in each of the samples. In addition, relatively elevated concentrations were reported for alkalinity, chloride, ammonia, sulfate, TDS, total organic carbon, dissolved calcium, manganese, magnesium, and sodium. Since carbon disulfide, toluene, and elevated concentrations of general chemistry parameters were detected at LDCS-7 prior to the placement of refuse in the cell, the reported detections appear to be related to background water quality. No detections of the primary leachate indicator parameters acetone and 2-butanone have been detected at this location.

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. Construction stormwater treatment using Chitosan Sand Enhanced Filtration (CESF) was not necessary during the Second Quarter. Industrial stormwater treatment using CESF was utilized during the Second Quarter. Discharge Monitoring Reports (DMR's) were submitted to Ecology on a monthly (Construction Permit) and quarterly (Industrial Permit) basis. Copies of the Second Quarter 2020 DMR's are included in Attachment I. No surface water benchmarks or water quality standards 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 Table 2.

Table 2. 2020 Leachate Volume Data

Month	Leachate Trucked Offsite for Proper Disposal (gallons)	Monthly Rainfall (inches)
January	3,876,603	8.04
February	4,125,075	3.73
March	3,388,407	5.13
April	3,145,820	1.55
May	2,569,708	3.54
June	2,489,078	4.01
Totals	19,594,691	26.00
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 performance probes was conducted during the Second Quarter on April 17, May 27, and June 17 using a Landtec GEM2000 portable gas monitor. Methane measurements were less than the lower explosive limit (LEL) of five percent by volume during the Second Quarter except at performance probes GP-2, GP-10, GP-10P, and GP-12 (see Table 3). Previous barhole monitoring surveys, such as the survey conducted on December 18, 2019 along the base of the perimeter berm adjacent to gas probe GP-2, have shown that similar methane levels at these probes does not result in the migration of landfill gas to the property line.

Table 3. 2020 Landfill Gas Probe Monitoring Summary (Percent Methane)

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 23	5.0	17.7	0.0	0.0	0.0	0.0	21.2	0.0	19.1	0.6	0.0	0.0	0.0
February 10	1.5	16.6	0.1	0.1	0.1	0.1	21.5	0.0	0.1	0.8	0.1	0.1	0.1
March 19	0.7	15.3	0.0	0.0	0.0	0.9	18.8	0.0	0.1	0.8	0.0	0.0	0.0
April 17	0.8	14.8	0.0	0.0	0.0	5.2	8.0	0.1	12.8	1.4	0.0	0.0	0.0
May 27	2.8	16.4	0.0	0.0	0.0	2.0	21.3	0.0	29.6	1.2	0.0	0.0	0.0
June 17	2.0	16.2	0.0	0.0	0.0	8.3	25.9	0.0	31.7	0.9	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 .													

Indoor air was tested for the presence of methane on June 18. The office, maintenance building, scale house, and work shed located next to the stormwater treatment ponds were tested with a portable flame ionization detector (MicroFID). Low levels of methane were indicated, but attributed to air fresheners and/or cleaners.

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

LANDFILL GAS EXTRACTION WELL CONSTRUCTION

Two horizontal extraction wells were installed on the east side of Cell 7 in May. Three new temporary odor control wells were installed on the south side of Cell 7 in June.

No other construction activity related to the landfill gas extraction wells was performed during this quarter.

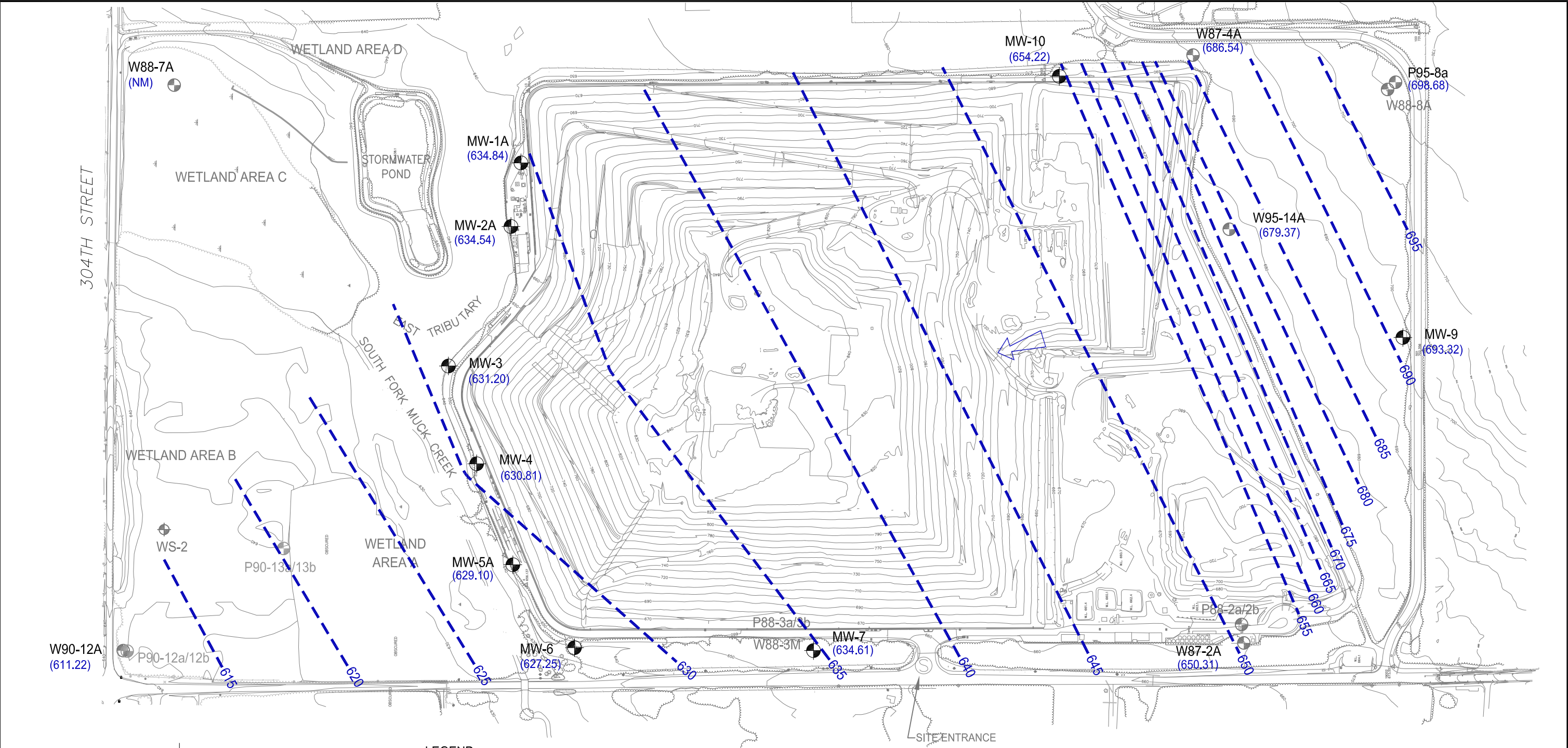
GROUNDWATER MONITORING WELL CONSTRUCTION AND MAINTENANCE

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
- (650.31) GROUNDWATER ELEVATION (IN FEET ABOVE MSL)
- INFERRED GROUNDWATER FLOW DIRECTION
- (NM) NOT MEASURED

Attachment B

Groundwater Data Summary Tables



Table 1. Groundwater Level Elevations
June 9, 2020
LRI Landfill, Pierce County, Washington

Location	Well Casing Elevation (ft)	Depth to Water (ft)	Water Level Elevation (ft, NGVD29)
Wells			
W87-2A	664.01	13.70	650.31
W87-4A	693.29	6.75	686.54
W88-3M	658.11	13.28	644.83
W88-7A	632.51	NM*	--
W88-8M	721.05	39.37	681.68
W90-12A	640.84	29.62	611.22
W95-14A	680.49	1.12	679.37
MW-1A	652.57	17.73	634.84
MW-2A	651.93	17.39	634.54
MW-3	637.41	6.21	631.20
MW-4	652.37	21.56	630.81
MW-5A	655.55	26.45	629.10
MW-6	635.71	8.46	627.25
MW-7	656.03	21.42	634.61
MW-9	701.77	8.45	693.32
MW-10	678.37	24.15	654.22
Piezometers			
P13-14A	665.96	20.20	645.76
P88-2A	663.96	NM*	--
P88-2B	663.48	NM*	--
P88-3A	656.20	13.85	642.35
P88-3B	655.98	16.70	639.28
P95-8A	722.07	23.39	698.68
P90-12A	640.79	4.05	636.74
P90-12B	640.73	2.70	638.03
P90-13A	645.19	NM*	--
P90-13B	643.63	NM*	--
GP-1P ^b	652.00	16.09	635.91
GP-2P ^b	658.61	16.08	642.53
GP-3P ^b	658.51	11.30	647.21
GP-4P ^b	662.01	8.87	653.14
GP-9P ^b	674.03	11.66	662.37
GP-16 ^b	689.51	19.97	669.54
South Creek			
SWSC-1	632.68	0.80	631.88
SWSC-2	629.98	5.93	624.05
Leak Detection System			
LDCS-1 ^a	657.26	26.10	631.16
LDCS-2A ^a	659.24	29.12	630.12
LDCS-2B ^a	661.70	28.15	633.55

Notes:

NM= not measured

-- = not applicable

Measurements taken on 6/9/2020 unless otherwise noted

a = LDCS measurements taken on 6/8/2020

b = Gas probe measurements taken on 6/17/2020

* = Water level wells W88-7A, P88-2A, P88-2B, P90-13A, and P90-13B cannot be located

Table 2. Field Parameters
Second Quarter 2020
LRI Landfill, Pierce County, Washington

Location	Sample Number	Sample Date	Sampling Method	pH	Conductivity	Temperature
Units WAC 173-200 Criteria				(SU) 6.5-8.5	(µS/cm) 700 ^b	(°C) —
Monitoring Wells						
MW-1A	304-060820-01	6/8/2020	DP	6.78	172	13.1
MW-2A	304-060820-03	6/8/2020	DP	7.02	268	12.7
MW-3	304-060820-05	6/8/2020	DP	7.06	390	10.2
MW-4	304-060920-14	6/9/2020	SP	7.55	330	12.6
MW-5A	304-060820-09	6/8/2020	DP	7.61	389	12.1
MW-6	304-060820-07	6/8/2020	DP	7.62	305	10.3
MW-7	304-060820-13	6/8/2020	DP	7.52	396	10.3
MW-9	304-060820-15	6/8/2020	DP	6.87	137	10.0
MW-10	304-060920-17	6/9/2020	DP	6.18	273	11.1
Leak Detection System						
LDCS-1	304-060820-08	6/8/2020	DB	6.40	411	21.4
LDCS-2A	304-060820-06	6/8/2020	DB	7.58	779	21.0
LDCS-2B	304-060820-02	6/8/2020	DB	7.40	658	16.7
LDCS-3A	304-060820-10	6/8/2020	DP	6.77	729	19.7
LDCS-4A	304-060820-12	6/8/2020	DP	6.43	873	22.4
LDCS-4B	304-060920-18	6/9/2020	DP	6.34	951	24.4
LDCS-5	304-062920-01	6/29/2020	GB*	6.52	841	25.1
LDCS-6^ (4/21/20)	304-042120-01	4/21/2020	DP	7.01	878	11.5
LDCS-6	304-060920-20	6/9/2020	DP	6.80	1,048	20.1
LDCS-7^ (4/21/20)	304-042120-02	4/21/2020	DP	6.59	1,279	10.7
LDCS-7	304-060820-04	6/8/2020	DP	6.38	1,231	13.4
Leachate Collection System						
Leachate, Cell 7	304-060920-19	6/9/2020	GB	6.08	12,386	17.2

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

b = Secondary Drinking Water Standard

°C = degrees celcius

DB = disposable bailer

DP = dedicated pump

GB = grab sample

SP = submersible pump

SU = standard units

µS/cm = microsiemens per centimeter

* = Sample from LDCS-5 collected as a grab sample because the pump was not operational during the monitoring event

^ = Additional samples collected from LDCS-6 and LDCS-7 to monitor water quality trends

**Table 3. Inorganic Parameters
Second Quarter 2020
LRI Landfill, Pierce County, Washington**

Parameter	Alkalinity, Total	Ammonia	Chloride	Nitrate	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
MRL	10	0.1-4.4	0.2-120	0.50	0.2-2.5	10-94	1.0-41	4.0
WAC 173-200 Criteria	—	—	250	10	250	500	—	—
Prediction Limit	—	—	—	6.4	—	—	—	—
Monitoring Wells								
MW-1A	88	*	2.0	*	3.5	140	*	11
MW-2A	110	0.13	3.4	*	11	160	*	*
MW-3	150	0.12	3.7	*	31	230	1.1	*
MW-4	150	0.14	3.1	*	10	210	*	*
MW-5A	170	0.19	3.4	*	19	240	*	*
MW-6	130	0.11	4.9	*	7.3	180	*	*
MW-7	190	0.20	3.3	*	3.3	230	*	*
(BG) MW-9	63	*	1.6	*	1.8	110	*	*
(BG) MW-10	93	*	7.7	3.7	7.2	190	*	8.0
Leak Detection System								
LDCS-1	190	0.10	4.3	*	6.4	260	3.2	—
LDCS-2A	350	*	4.2	*	21	470	3.4	—
LDCS-2B	260	*	7.6	*	58	410	2.8	—
LDCS-3A	330	*	4.6	*	82	500	2.0	—
LDCS-4A	330	0.29	24	*	54	530	6.6	—
LDCS-4B	340	0.49	30	*	93	570	4.2	—
LDCS-5	320	4.4	42	*	90	510	7.4	—
LDCS-6^ (4/21/20)	450	*	11	*	71	580	2.6	—
LDCS-6 (6/9/20)	430	*	7.0	*	82	600	3.4	—
LDCS-7^ (4/21/20)	560	0.37	54	*	87	800	32	—
LDCS-7 (6/8/20)	510	0.17	55	*	86	850	9.6	—
Leachate Collection System								
Leachate, Cell 7	4,200	580	970	0.61	22	12,000	5,100	—

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 TestAmerica of Denver, Colorado

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

^ = Additional samples collected from LDCS-6 and LDCS-7 to monitor water quality trends

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

— = not applicable or not performed

BG = Background

Table 4. WAC 173-351 Appendix I Metals
Second Quarter 2020
LRI Landfill, Pierce County, Washington

Parameter	Antimony-D Antimony-T		Arsenic-D Arsenic-T		Barium-D Barium-T		Beryllium-D Beryllium-T		Cadmium-D Cadmium-T		Chromium-D Chromium-T		Cobalt-D Cobalt-T		Copper-D Copper-T		Lead-D Lead-T		Nickel-D Nickel-T		Selenium-D Selenium-T		Silver-D Silver-T		Thallium-D Thallium-T		Vanadium-D Vanadium-T		Zinc-D Zinc-T	
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL	0.05	0.05	0.005	0.005	0.005	0.005-0.015	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.01	0.01	0.002	0.002	0.02	0.02	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.01
WAC 173-200 Criteria	—	—	—	0.00005	—	1.0	—	—	—	0.01	—	0.05	—	—	—	1.0	—	0.05	—	—	—	0.01	—	0.05	—	—	—	—	—	5.0
Prediction Limit	—	0.05	—	0.011	—	0.091	—	0.005	—	0.005	—	0.011	—	0.01	—	0.063	—	0.042	—	0.020	—	0.005	—	0.01	—	0.005	—	0.016	—	0.290
Monitoring Wells	—	*	—	*	—	0.022	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-1A	—	*	—	*	—	0.014	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-2A	—	*	—	*	—	0.014	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-3	—	*	—	*	—	0.016	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-4	—	*	—	0.0110	—	0.012	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.019
MW-5A	—	*	—	0.0062	—	0.011	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-6	—	*	—	0.0068	—	0.015	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
MW-7	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
(BG) MW-9	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.014	—	*
(BG) MW-10	—	*	—	*	—	0.016	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
Leak Detection System	*	—	0.0080	—	0.020	—	—	—	—	—	*	—	*	—	*	—	*	—	*	—	—	—	—	—	—	—	*	—	*	—
LDCS-1	*	—	0.0064	—	0.010	—	—	—	—	—	*	—	*	—	*	—	*	—	*	—	—	—	—	—	—	—	*	—	*	—
LDCS-2A	*	—	*	—	0.018	—	—	—	—	—	*	—	0.0034	—	*	—	*	—	*	—	—	—	—	—	—	—	*	—	*	—
LDCS-2B	*	—	*	—	0.016	—	—	—	—	—	*	—	*	—	0.021	—	*	—	*	—	—	—	—	—	—	—	*	—	*	—
LDCS-3A	*	—	0.0110	—	0.035	—	—	—	—	—	*	—	0.0028	—	*	—	*	—	*	—	—	—	—	—	—	—	*	—	*	—
LDCS-4A	*	—	*	—	0.043	—	—	—	—	—	*	—	*	—	*	—	*	—	*	—	—	—	—	—	—	—	*	—	*	—
LDCS-4B	*	—	0.0070	—	0.058	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-5	*	—	*	—	0.017	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-6^ (4/21/20)	*	—	*	—	0.020	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-6 (6/9/20)	*	—	*	—	0.027	—	*	—	*	—	*	—	0.0054	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-7^ (4/21/20)	*	—	*	—	0.045	—	*	—	*	—	*	—	0.0065	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
LDCS-7 (6/8/20)	*	—	*	—			*	—	*	—	*	—			*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—
Leachate Collection System	—	*	—	0.031	—	1.0	—	*	—	*	—	0.14	—	0.047	—	0.026	—	0.016	—	0.19	—	0.022	—	*	—	*	—	0.089	—	0.37
Leachate, Cell 7																														

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 **ibold**

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 TestAmerica of Denver, Colorado

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

^ = Additional samples collected from LDCS-6 and LDCS-7 to monitor water quality trends

* = 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)
Second Quarter 2020
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	2.0-2.4	1.0-3.7
WAC 173-200 Criteria	—	0.30	—	0.050	—	—
Monitoring Wells						
MW-1A	13	1.6	7.6	0.27	2.9	11
MW-2A	21	0.86	11	0.33	2.9	15
MW-3	38	*	16	0.37	3.6	14
MW-4	27	*	15	0.23	4.8	11
MW-5A	25	0.20	10	0.19	3.8	41
MW-6	30	*	13	0.20	4.1	9.8
MW-7	32	0.34	22	0.28	4.8	13
(BG) MW-9	9.6	*	6.4	*	*	7.1
(BG) MW-10	24	*	10	*	*	12
Leak Detection System						
LDCS-1	38	0.44	15	1.6	4.4	17
LDCS-2A	85	*	32	0.029	8.4	29
LDCS-2B	78	*	28	2.7	5.9	18
LDCS-3A	96	*	41	0.47	5.8	23
LDCS-4A	77	4.2	46	2.6	5.9	28
LDCS-4B	91	0.45	44	1.2	7.0	34
LDCS-5	72	0.78	39	1.7	9.5	39
LDCS-6^ (4/21/20)	130	*	51	0.20	4.1	27
LDCS-6 (6/9/20)	120	*	43	0.44	4.0	28
LDCS-7^ (4/21/20)	160	0.17	37	2.0	2.1	31
LDCS-7 (6/8/20)	170	0.39	54	2.9	3.4	47
Leachate Collection System**						
Leachate, Cell 7	900	88	210	28	320	930

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 TestAmerica of Denver, Colorado

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

^ = Additional samples collected from LDCS-6 and LDCS-7 to monitor water quality trends

* = 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)
Second Quarter 2020
LRI Landfill, Pierce County, Washington**

Parameter	1,4-Dichlorobenzene	2-Butanone (MEK)	4-Methyl-2-pentanone (MIBK)	Acetone	Carbon Disulfide	Chloroform	Iodomethane	Methylene Chloride	m-Xylene & p-Xylene	Toluene
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MRL	0.5-16	6-200	5-98	10-190	0.5-17	0.5-16	1-23	2-94	0.5-15	0.5-17
WAC 173-200 Criteria	4.0	—	—	—	—	7.0	—	5.0	—	—
Monitoring Wells										
MW-1A	*	*	*	*	*	*	2.3^^	*	*	*
MW-2A	*	*	*	*	*	*	1.4^^	*	*	*
MW-3	*	*	*	*	*	*	1.1^^	*	*	*
MW-4	*	*	*	*	*	*	*	*	*	*
MW-5A	*	*	*	*	*	*	*	*	*	*
MW-6	*	*	*	*	*	*	1.2^^	*	*	*
MW-7	*	*	*	*	*	*	*	*	*	*
(BG) MW-9	*	*	*	*	*	*	*	*	*	*
(BG) MW-10	*	*	*	*	*	*	*	*	*	*
Leak Detection System										
LDCS-1	0.66	*	*	*	*	*	*	*	*	*
LDCS-2A	*	*	*	*	*	*	*	*	*	*
LDCS-2B	*	*	*	12	*	*	*	*	*	*
LDCS-3A	*	*	*	*	*	*	*	*	*	*
LDCS-4A	*	*	*	*	*	*	*	*	*	*
LDCS-4B	*	*	*	*	*	*	*	*	*	*
LDCS-5	*	*	*	*	*	*	*	*	*	*
LDCS-6^ (4/21/20)	*	*	*	*	*	*	*	*	*	*
LDCS-6 (6/9/20)	*	*	*	*	*	*	*	*	*	*
LDCS-7^ (4/21/20)	*	*	*	*	10	*	*	*	*	*
LDCS-7 (6/8/20)	*	*	*	*	7.2	*	*	*	*	*
Leachate Collection System										
Leachate, Cell 7	*	26,000	210	27,000	*	29	*	*	32	280
Quality Control Samples										
Field Blank	*	*	*	*	*	*	*	7.0	*	*

Notes:

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

Analyses performed by TestAmerica of Denver, Colorado

^ = Additional samples collected from LDCS-6 and LDCS-7 to monitor water quality trend:

^^ = The LCS or LCSD exhibited recoveries of Iodomethane below the lower control limits. See data validation report for additional detail:

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

— = not applicable or not performed

BG = Background

**Table 7. Cation-Anion Balance
Second Quarter 2020
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	13	7.6	2.9	11	34.5	0.65	0.63	0.07	0.48	1.82	30	36	34
MW-2A	21	11	2.9	15	49.9	1.05	0.91	0.07	0.65	2.67	27	39	34
MW-3	38	16	3.6	14	71.6	1.90	1.32	0.08	0.61	3.90	18	49	34
MW-4	27	15	4.8	11	57.8	1.35	1.23	0.11	0.48	3.17	19	43	39
MW-5A	25	10	3.8	41	79.8	1.25	0.82	0.09	1.78	3.94	47	32	21
MW-6	30	13	4.1	9.8	56.9	1.50	1.07	0.09	0.43	3.09	17	49	35
MW-7	32	22	4.8	13	71.8	1.60	1.81	0.11	0.57	4.08	17	39	44
MW-9	9.6	6.4	2.0	7.1	25.1	0.48	0.53	0.05	0.31	1.36	26	35	39
MW-10	24	10	2.0	12	48.0	1.20	0.82	0.05	0.52	2.59	22	46	32
LDCS-1	38	15	4.4	17	74.4	1.90	1.23	0.10	0.74	3.97	21	48	31
LDCS-2A	85	32	8.4	29	154.4	4.24	2.63	0.19	1.26	8.33	17	51	32
LDCS-2B	78	28	5.9	18	129.9	3.89	2.30	0.13	0.78	7.11	13	55	32
LDCS-3A	96	41	5.8	23	165.8	4.79	3.37	0.13	1.00	9.30	12	52	36
LDCS-4A	77	46	5.9	28	156.9	3.84	3.79	0.13	1.22	8.98	15	43	42
LDCS-4B	91	44	7.0	34	176	4.54	3.62	0.16	1.48	9.80	17	46	37
LDCS-5	72	39	10	39	159.5	3.59	3.21	0.21	1.70	8.71	22	41	37
LDCS-6^ (4/21/20)	130	51	4.1	27	212.1	6.49	4.20	0.09	1.17	11.95	11	54	35
LDCS-6 (6/9/20)	120	43	4.0	28	195.0	5.99	3.54	0.09	1.22	10.84	12	55	33
LDCS-7^ (4/21/20)	160	37	2.1	31	230.1	7.98	3.05	0.05	1.35	12.43	11	64	25
LDCS-7 (6/8/20)	170	54	3.4	47	274.4	8.48	4.44	0.08	2.04	15.05	14	56	30
Leachate, Cell 7	900	210	320	930	2,360	44.91	17.28	7.23	40.46	109.87	43	41	16

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	105.6	2.0	0.5	3.5	111.6	1.73	0.06	0.008	0.07	1.87	3	93	4	3.69	1.4	10	O
MW-2A	132	3.4	0.5	11	146.9	2.16	0.10	0.008	0.23	2.50	4	87	9	5.17	3.4	5	O
MW-3	180	3.7	0.5	31	215.2	2.95	0.10	0.008	0.64	3.71	3	80	17	7.61	2.5	5	O
MW-4	180	3.1	0.5	10	193.6	2.95	0.09	0.008	0.21	3.26	3	91	6	6.42	1.4	5	O
MW-5A	204	3.4	0.5	19	226.9	3.35	0.10	0.008	0.40	3.84	2	87	10	7.78	1.2	5	O
MW-6	156	4.9	0.5	7.3	168.7	2.56	0.14	0.008	0.15	2.86	5	90	5	5.94	3.9	5	O
MW-7	228	3.3	0.5	3.3	235.1	3.74	0.09	0.008	0.07	3.91	2	96	2	7.99	2.2	5	O
MW-9	75.6	1.6	0.5	1.8	79.5	1.24	0.05	0.008	0.04	1.33	3	93	3	2.69	1.1	10	O
MW-10	111.6	7.7	3.7	7.2	130.2	1.83	0.22	0.060	0.15	2.26	10	81	7	4.84	6.8	10	O
LDCS-1	228	4.3	0.5	6.4	239.2	3.74	0.12	0.008	0.13	4.00	3	93	3	7.97	0.4	5	O
LDCS-2A	420	4.2	0.5	21	445.7	6.89	0.12	0.008	0.44	7.45	2	92	6	15.78	5.5	5	Exceeds
LDCS-2B	312	7.6	0.5	58	378.1	5.12	0.21	0.008	1.21	6.55	3	78	18	13.66	4.2	5	O
LDCS-3A	396	4.6	0.5	82	483.1	6.49	0.13	0.008	1.71	8.34	2	78	20	17.63	5.4	5	Exceeds
LDCS-4A	396	24	0.5	54	474.5	6.49	0.68	0.008	1.12	8.30	8	78	14	17.28	3.9	5	O
LDCS-4B	408	30	0.5	93	532	6.69	0.85	0.008	1.93	9.48	9	71	20	19.28	1.7	5	O
LDCS-5	384	42	0.5	90	517	6.30	1.18	0.008	1.87	9.36	13	67	20	18.08	3.6	5	O
LDCS-6^ (4/21/20)	540	11	0.5	71	623	8.86	0.31	0.008	1.48	10.65	3	83	14	22.60	5.8	5	Exceeds
LDCS-6 (6/9/20)	516	7.0	0.5	82	606	8.46	0.20	0.008	1.71	10.37	2	82	16	21.21	2.2	5	O
LDCS-7^ (4/21/20)	672	54	0.5	87	814	11.02	1.52	0.008	1.81	14.36	11	77	13	26.79	7.2	5	Exceeds
LDCS-7 (6/8/20)	612	55	0.5	86	754	10.04	1.55	0.008	1.79	13.38	12	75	13	28.43	5.9	5	Exceeds
Leachate, Cell 7	5,040	970	0.61	22	6,033	82.66	27.35	0.010	0.46	110.48	25	75	0	220.35	0.3	5	O

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].

^ = Additional samples collected from LDCS-6 and LDCS-7 to monitor water quality trend:

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/lite

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

**Table 8. Duplicate Sample Results
Second Quarter 2020 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	10	170	170	0.0
Ammonia	0.1	0.19	0.15	23.5
Chloride	0.2	3.4	3.4	0.0
Sulfate	0.2	19	19	0.0
Total Dissolved Solids	10	240	240	0.0
Dissolved Metals (mg/L)				
Calcium	0.2	25	25	0.0
Iron	0.1	0.20	0.31	43.1
Magnesium	0.1	10	10	0.0
Manganese	0.005	0.19	0.19	0.0
Potassium	2.0	3.8	3.8	0.0
Sodium	1.0	41	39	5.0
Total Metals (mg/L)				
Arsenic	0.005	0.0062	0.0059	5.0
Barium	0.005	0.012	0.013	8.0

Notes:

Analyses performed by TestAmerica of Denver, Colorado

VOCs 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

Attachment C

Field Sampling Documentation



June 10, 2020

File No. 04220001.02

Subject: **Second Quarter 2020 Groundwater Monitoring Event**
LRI Landfill, Pierce County, Washington

NOTES/SAMPLE DECODING:

Event Dates: June 8 & 9, 2020

Field Staff: Sam Graber & Travis Berndahl

- 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-6, and LDCS-7.
- Disposable bailers were used to sample leak detection/collection system points LDCS-1, LDCS-2A, and LDCS-2B.
- A non-dedicated Sample Pro pump was used for purging and sampling well MW-4.
- The sample collected from LDCS-5 in June was collected as a grab sample from the channel discharge spigot. The sampling pump was not operational during the monitoring event.
- A round of water level measurements was completed on June 9, 2020.
- Additional samples were collected from LDCS-6 and LDCS-7 on April 21, 2020 to monitor water quality trends.
- A leachate sample was collected from Cell 7 during the Second Quarter in order to monitor leachate quality.
- 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
304-060820-01	MW-1
304-060820-02	LDCS-2B
304-060820-03	MW-2A
304-060820-04	LDCS-7
304-060820-05	MW-3
304-060820-06	LDCS-2A
304-060820-07	MW-6

304-060820-08	LDCS-1
304-060820-09	MW-5A
304-060820-10	LDCS-3
304-060820-11	MW-5A (Duplicate)
304-060820-12	LDCS-4A
304-060820-13	MW-7
304-060920-14	MW-4
304-060820-15	MW-9
304-060920-16	Field Blank
304-060920-17	MW-10
304-060920-18	LDCS-4B
304-060920-19	Leachate, Cell 7**
304-060920-20	LDCS-6
304-062920-01	LDCS-5

Additional Samples

Sample Number	Well Number
304-042120-01	LDCS-6^
304-042120-02	LDCS-7^

Notes:

^ = Additional sample collected to monitor water quality trends.

** = Additional sample collected from Leachate, Cell 7 to monitor leachate quality.

SCS ENGINEERS

2405 140th ave NE #107
Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04220001.02

Site: LRI 304th

Well ID: MW-1

Sample ID: 304-06 08 20-01

Date: 6/8/2020

Weather: Overcast

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

Sampling Method: Dedicated

1.75" QED SamplePro

Bail

Peristaltic

Grab

Other

Meter:

CONTROL SETTINGS:

1 ft water = 0.62L

1L = 0.26 gallons

MP-20

Refill 8

One Well Volume (liters)

Other:

YSI

Discharge 7

Flow

BOS

Pressure 25

Total Volume Bailed (liters)

Setting:

Total Depth

Flow 300 mL/min



17.90

DTW

TOS

Intake

BOS

TIME	DTW	Temp.	Sp. Cond.	DO	pH	Eh	Turbidity	Q / Vol.
909		13.8	215.19	7.54	6.24	222.4	3.29	
914		13.3	108	1.82	6.50	154.7	3.92	
917		13.2	125	1.38	6.56	128.5	3.75	
920		13.1	135	1.17	6.62	113.3	3.61	
923		13.1	149	0.92	6.64	150.0	3.54	
926		13.1	158	0.79	6.70	-17.4	3.42	
929		13.1	172	0.62	6.78	-41.3	3.33	

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: Travis Berndahl
Printed Name

Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04220001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail		Peristaltic		Grab		Other	
Site: LRI 304th		DTW: 28.15		Meter: MP-20		CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons			
Well ID: LDCS-2B		TOS		MP-20		Refill		One Well Volume (liters)		Other:			
Sample ID: 304-06 08 20-02		Intake		YSI		Discharge		Total Volume Bailed (liters)		Flow Setting:			
Date: 6/3/20		BOS				Pressure							
Weather: 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):													
brown particulates in sample. Heavier than normal.													
D.O. meter malfunctioned. D.O. will not be reported.													
Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5													
SAMPLER: Sam Graber													
Signature													

Bellevue, WA 98005

(425) 746-4600

Project #: 04220001.02		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 8		One Well Volume (liters)	
Sample ID: 304-06 08 20-03		Intake		YSI		Discharge 7		Other:	
Date: 6/08/20		BOS		re n/a		Pressure 25		Flow Setting:	
Weather: Overcast		Total Depth		Flow		300 ml/min.		Total Volume Bailed (liters)	
Filtered? ☒ N	Locked? ☒ Y	Water in Protector? ☒ Y	Damage? ☒ Y						
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: Travis Bendahl
Printed Name


Signature

Bellevue, WA 98005

Groundwater Sampling Data Sheet

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

water level at 11.3

water right away,

D.O. meter malfunctioned. D.O. will not be reported.

Signature 

Bellevue, WA 98005

(425) 746-4600

Project #: 04220001.02		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-3		TOS	Refill	NO 9		One Well Volume	Other:		
Sample ID: 304-0608 20-05		Intake	Discharge	5 6		(liters)	Flow		
Date: 6/08/20		BOS	Pressure	30		Total Volume Bailed	Setting:		
Weather: Overcast		Total Depth	Flow	300 ml/min		(liters)			
Filtered? ☒ N	Locked? ☒ N	Water in Protector? ☒ N	Damage? ☒ 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: Travis Berndahl
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #:	04220001.02		Sampling Method:	Dedicated	1.75" QED SamplePro	<u>Bail</u>	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 (liters)	Other:	
Sample ID:	304-06 08-20-06		Intake	<u>YSI</u>	Discharge		Total Volume Bailed (liters)	Flow Setting:	
Date:	6/08/20		BOS		Pressure				
Weather:	rainy	Total Depth		Flow					
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:

Printed Name _____

Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04220001.02		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-6		TOS	MP-20	Refill	10	One Well Volume		Other:	
Sample ID: 304-06 08 20- 07		Intake	YSI	Discharge	5	(liters)		Flow	
Date: 6/08/20		BOS	Pen	Pressure	30	Total Volume Bailed		Setting:	
Weather: Overcast / Rainy		Total Depth		Flow	300 ml / hr.	(liters)			
Filtered? ☒ N	Locked? Y ☒ N	Water in Protector? ☒ 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								

TIME	DTW	Temp.	Sp. Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1132		10.1	322	1.67	7.46	-5.0	3.28	
1137		10.3	306	0.22	7.33	-10.3	3.36	
1140		10.3	305	0.10	7.60	-16.0	3.31	
1143		10.3	305	0.05	7.63	-31.7	3.34	
1146		10.3	305	0.03	7.62	-37.6	3.27	
1149		10.3	305	0.02	7.62	-41.1	3.31	
1152		10.3	305	0.02	7.62	-44.0	3.30	

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

SAMPLER: Travis Berndahl
Printed Name


Signature

Bellevue, WA 98005

Groundwater Sampling Data Sheet

Project #: 04220001.02		Sampling Method :		Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LRI 304th		Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons		
Well ID:	LDOS-1		MP-20	Refill	One Well Volume		Other :		
Sample ID:	304-06 08 20- 08		YSI	Discharge	(liters)		Flow		
Date:	6/ 3 /20			Pressure	Total Volume Bailed		Setting :		
Weather:	cloudy			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):				
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber					
	125 ml NaOH								

[illegible]

SAMPLER:

Printed Name

Signature _____

Signature _____

SCS ENGINEERS

2405 140th ave NE #107

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04220001.02

Site: LRI 304th

Well ID: ~~LDCS-3~~ LDCS-3

Sample ID: 304-0603 20-10

Date: 6/3/20

Weather: rainy

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

Sampling Method: Dedicated

1.75" QED SamplePro

Bail

Peristaltic

Grab

Other

Meter:

CONTROL SETTINGS:

1 ft water = 0.62L

1L = 0.26 gallons

Refill 12

One Well Volume (liters)

Other:

Discharge 3

Pressure 50

Total Volume Bailed (liters)

Flow Setting:

Flow 150 ml/min



DTW

TOS

Intake

BOS

Total Depth

MP-20

YSI

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

level at 11.08. water after a couple minutes. Unable to get water w/ level at 7.0 earlier in day.

D.O. meter malfunctioned. D.O. will not be reported.

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	SpC panel Q/Vol.
1330		16.17	731	0.72	6.63	164.3		
1335		16.81	716	0.61	6.71	163.8		
1338		17.48	704	0.50	6.78	163.0		
1341		17.88	706	0.47	6.79	162.1		
1344		19.00	734	0.49	6.77	162.5		
1347		19.39	730	0.48	6.77	163.7		
1350		19.71	729	0.47	6.77	164.4	11.3	693

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

SAMPLER:

Printed Name

Sam Graber

Signature

[Signature]

SCS ENGINEERS

2405 140th ave NE #107
Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04220001.02

Site: LRI 304th

Well ID: LDCS-4A

Sample ID: 304-06 08 20-12

Date: 6/ 8 /20

Weather: Cloudy

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:

1 ft water = 0.62L

1L = 0.26 gallons

Refill 11.5

One Well Volume (liters)

Other:

Discharge 3.5

Pressure 35

Total Volume Bailed (liters)

Flow Setting:

Flow 200 mL/min



DTW

TOS

Intake

BOS

Total Depth

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

D.O. meter malfunctioned. D.O. will not be reported.

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1437		17.96	792	0.56	6.74	178.4		
1442		20.99	845	0.37	6.39	17.0		
1445		21.81	871	0.42	6.44	14.0		
1448		22.39	872	0.24	6.43	8.8		
1451		22.50	872	0.20	6.43	1.9		
1454		22.42	873	0.27	6.43	-3.3		
1457		22.40	873	0.25	6.43	-10.1	2.09	

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

SAMPLER:

Printed Name

Sam Graber

Signature

[Signature]

Bellevue, WA 98005

(425) 746-4600

Project #:	04220001.02		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-7		TOS	MP-20	Refill	10	One Well Volume	Other:		
Sample ID:	304-06 08 20-13		Intake	YSI	Discharge	5	(liters)	Flow		
Date:	6/8/20		BOS	rental	Pressure	40	Total Volume Bailed	Setting:		
Weather:	Rainy		Total Depth		Flow	300 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):										

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1332		10.4	391	0.75	6.77	39.6	6.86	
1337		10.3	397	0.14	7.43	-77.9	4.66	
1340		10.3	394	0.15	7.35	-69.2	4.71	
1343		10.3	394	0.24	7.39	-74.0	4.72	
1346		10.3	394	0.38	7.43	-76.4	4.81	
1349		10.3	394	0.39	7.49	-81.2	4.55	
1352		10.3	396	0.36	7.52	-86.1	4.56	

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

SAMPLER: Travis Berndt
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #:	04220001.02	Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LRI 304th	DTW	21.56	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:	304-06 09 20- 14	Intake	/	YSI	Discharge	6	(liters)	Flow
Date:	6/ 9 /20	BOS	/		Pressure	55	Total Volume Bailed	Setting:
Weather:	cloudy	27.75	Total Depth		Flow	250 mL/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):								

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1045		12.73	330	1.31	6.89	245.9		
1053		12.55	331	0.64	7.39	99.1	6.31	
1056		12.57	330	0.41	7.49	32.6		
1101		12.55	330	0.40	7.50	16.1		
1104		12.53	330	0.32*	7.52	6.2		
1107		12.55	330	0.27	7.54	-5.0		
1110		12.54	330	0.27	7.54	-8.8		
1113		12.56	330	0.24	7.55	-12.5	2.22	

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

SAMPLER: Sam Graber
Printed Name

Signature _____

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

21.55 @ 1002

D.O. meter malfunctioned. D.O. will not be reported.

Bellevue, WA 98005

Groundwater Sampling Data Sheet

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

Collected near LDCS-6

D.O. meter malfunctioned. D.O. will not be reported.

Signature 

Bellevue, WA 98005

(425) 746-4600

Project #: 04220001.02		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-10		TOS	MP-20	Refill	One Well Volume		Other:		
Sample ID: 304-06 09 20-17		Intake	YSI	Discharge	(liters)		Flow		
Date: 6/09/20		BOS	ren191	Pressure	Total Volume Bailed		Setting:		
Weather: cloudy		Total Depth		Flow	(liters)				
Filtered? ☒ N	Locked? ☒ N	Water in Protector? ☒ N	Damage? ☒ Y						
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly	Notes / Observations (color, odor, anomalies, etc): Swirled contents @ 1025				
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber					
	125 ml NaOH								

TIME	DTW	Temp.	Sp. Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1011		11.5	302	2.01	6.18	130.5	3.96	
1016		10.5	276	0.35	6.05	115.4		
1019		11.2	275	0.21	6.14	81.5		
1022		11.4	279	0.26	6.16	71.5		
1025		11.5	279	0.26	6.12	65.0		
1028		11.0	273	0.16	6.14	62.8		
1031		10.7	223	0.21	6.16	62.7	4.91	
1034		10.8	222	0.22	6.17	61.3	4.82	
1037		11.1	273	0.23	6.18	58.6	4.81	

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

Switched controllers @ 1025

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

SAMPLER: Travis Berndahl
Printed Name

Signature

Bellevue, WA 98005

Groundwater Sampling Data Sheet

Project #: 04220001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site: LRI 304th		Meter: CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons			
Well ID: LDCS-4B		MP-20		Refill 11		One Well Volume		Other:	
Sample ID: 304-06 09 20- 18		YSI		Discharge 4		(liters)		Flow	
Date: 6/ 9 /20				Pressure 40		Total Volume Bailed		Setting:	
Weather: Rainy				Flow 250 mL/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):									

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1220		21.34	912	0.58	6.39	189.5		
1225		22.15	953	0.42	6.28	47.8		
1228		22.82	958	0.26	6.32	34.6		
1231		23.36	963	0.18	6.36	22.0		
1234		24.14	949	0.15	6.35	48.4		
1237		24.38	951	0.16	6.35	53.3		
1240		24.41	951	0.14	6.34	57.3	1.46	900

level at 23, water right away.

D.O. meter malfunctioned. D.O. will not be reported.

SAMPLER: Sam Greber
Printed Name

Signature

(425) 746-4600

Signature _____

SCS ENGINEERS

2405 140th ave NE #107

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04220001.02	Sampling Method: <u>Dedicated</u>	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site: LRI 304th	Meter: <u>CONTROL SETTINGS:</u>	1 ft water = 0.62L		1L = 0.26 gallons		
Well ID: <u>LDCS-6</u>	MP-20	Refill: <u>16.5</u>	One Well Volume (liters)		Other:	
Sample ID: <u>304-0609 20-20</u>	<u>YSI</u>	Discharge: <u>3.5</u>	Total Volume Bailed (liters)		Flow Setting:	
Date: <u>6/9/20</u>	BOS	Pressure: <u>50</u>				
Weather: <u>rainy</u>	Total Depth	Flow: <u>125 mL/min</u>				
Filtered? <u>N</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					

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1320		16.80	1045	0.86	7.48	123.6		
1330		17.20	1044	0.82	7.16	122.6		
1340		18.82	1042	0.63	6.86	132.5		
1343		19.33	1044	0.67	6.84	131.6		
1346		19.81	1045	0.69	6.83	130.8	11.6	
1349		20.08	1048	0.61	6.80	131.4	10.4	

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

D.O. meter malfunctioned. D.O. will not be reported.

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

SAMPLER: Sam Graber
Printed Name

Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	0922000102	Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LR2304	DTW	Meter:	CONTROL SETTINGS:				
Well ID:	LDCS-5	TOS	MP-20	1 ft water = 0.62L	1L = 0.26 gallons			
Sample ID:	304-062920-01	Intake	YSI	Refill	One Well Volume	Other:		
Date:	6-29-20	BOS		Discharge	(liters)	Flow		
Weather:	Cloudy	Total Depth		Pressure	Total Volume Bailed	Setting:		
				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):								
1 LDCS-5-29-20-01								

TIME	DTW	Temp.	Sp. Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1040		25.05	841	1.46	6.52	61.7	24.3	167

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

SAMPLER: Travis Berndahl
Printed Name

Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04220001.02		Sampling Method: <u>Dedicated</u>		1.75" QED SamplePro		Bail		Peristaltic		Grab		Other	
Site: ER2304				Meter: CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons					
Well ID: L005-6				MP-20		Refill 16.0		One Well Volume		Other:			
Sample ID: 304-042120-01				YSI		Discharge 349.0		(liters)		Flow			
Date: 4-21-20						Pressure 50		Total Volume Bailed		Setting:			
Weather: Cloudy						Flow 100 gpm		(liters)					
Filtered? ☒ N		Locked? Y ☒		Water in Protector? Y ☒		Damage? Y ☒							
Sample Containers:		1000 ml Poly		500 ml Poly		250 ml Poly		125 ml Poly					
		500 ml HNO3 x2		500 ml H2SO4 x2		40 ml VOA x3 x6		1000 ml Amber					
		125 ml NaOH											
Notes / Observations (color, odor, anomalies, etc):													

TIME	DTW	Temp.	Sp. Cond.	DO	pH	Eh	Turbidity	Q / Vol.
902		12.33	869	1.77	7.09	283.0		
907		12.09	877	1.65	7.10	276.3		
910		11.92	878	1.74	7.10	272.4	10.0	
913		11.84	878	1.66	7.10	270.3		
916		11.73	878	1.75	7.10	269.1	8.39	
919		11.64	878	1.83	7.10	267.7		
(922)		11.47	878	1.63 1.63	7.01	266.7	8.48	

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

SAMPLER: Travis Berndahl
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #: 042202102		Sampling Method: Dedicated		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site: LRI 304		DTW		Meter: CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons	
Well ID: LDC-7		TOS		MP-20		Refill: 12.0		One Well Volume: _____	
Sample ID: 304-042120-02		Intake		YSI		Discharge: 3.0		Other: _____	
Date: 4-21-26		BOS				Pressure: 45		Flow Setting: _____	
Weather: Cloudy		Total Depth				Flow: 1.50 ml/min		Total Volume Bailed: _____	
Filtered? (Y) N		Locked? Y (N)		Water in Protector? Y (N)		Damage? Y (N)			
Sample Containers:		1000 ml Poly		500 ml Poly		250 ml Poly		125 ml Poly	
		500 ml HNO3 x2		500 ml H2SO4 x2		40 ml VOA x3 x6		1000 ml Amber	
		125 ml NaOH							
Notes / Observations (color, odor, anomalies, etc):									

TIME	DTW	Temp.	Sp. Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1033		11.45	1267	2.32	6.60	273.0		
1038		11.27	1281	1.26	6.59	268.4		
1041		10.99	1283	0.91	6.59	263.3		
1044		10.94	1280	1.16	6.59	259.3	7.32	
1047		10.83	1281	0.94	6.59	257.7		
1050		10.89	1280	1.03	6.59	254.9	5.85	
1053		10.70	1279	0.96	6.59	253.9	4.96	

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

SAMPLER: travis Berndahl
Printed Name

Signature _____

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	6/8/20					
Time	030					
Weather (sky or precip, temp)	Cloudy					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1390	3.98	7.02			
Post Cal Reading	1413	4.01	7.00	0.75 *		
Discrepancy	N/A D.O. meter not calibrating					
Calib. Successful?	Yes					
Calibration by	SEB					
Instrument Type, ID	MP20 / YSI 556			MicoTPW / HACH2000		
Calibration Location	304th					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	6/8/20					
Time	920					
Weather (sky or precip, temp)	Cloudy					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1395	3.95	6.93			
Post Cal Reading	1413	4.01	7.00	8.5		
Discrepancy	No					
Calib. Successful?	Yes					
Calibration by	SEB					
Instrument Type, ID	MP20 / YSI 556 (rental)			MicoTPW / HACH2000 (rental)		
Calibration Location	304th					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	6/9/20					
Time	830					
Weather (sky or precip, temp)	fss cloudy					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1400	3.90	7.05			
Post Cal Reading	1413	4.06	7.00	8.5		
Discrepancy	No					
Calib. Successful?	yes					
Calibration by	SEB					
Instrument Type, ID	MP20 / YSI 556			rental	MicoTPW / HACH2000	
Calibration Location	304th					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	6/9/20					
Time	830					
Weather (sky or precip, temp)	overcast					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1391	4.21	6.89			
Post Cal Reading	1413	4.01	7.00	6.10*		
Discrepancy	D.O. meter not calibrating					
Calib. Successful?	yes					
Calibration by	SEB					
Instrument Type, ID	MP20 / YSI 556			MicoTPW / HACH2000		
Calibration Location	304th					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	6-29-20					
Time	1010					
Weather (sky or precip, temp)	Cloudy					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1454	3.99	7.03			
Post Cal Reading	1413	4.01	7.00	8.5	746, 101, 20.2, 1.0	
Discrepancy	No					
Calib. Successful?	Yes					
Calibration by	TAB					
Instrument Type, ID	MP20 / YSI 556			MicoTPW / HACH2000		
Calibration Location	LR1 304					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	4-21-20					
Time	840					
Weather (sky or precip, temp)	cloudy					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1392	4.08	6.98	5.1		
Post Cal Reading	1413	4.01	7.00	8.5	788, 10, 21, 0	
Discrepancy	No					
Calib. Successful?	Yes					
Calibration by	TAB					
Instrument Type, ID	MP20 / YSI 556			MicoTPW / HACH2000		
Calibration Location	LRI 304					

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



Attachment D

Statistical Calculations



Groundwater Prediction Limits (mg/L)
Appendix I Parameters, Second Quarter 2020
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	0.0057	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	0.005 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	0.005 L	0.005 L
Chromium	0.005	0.011	0.005 L	0.005 L	0.005 L	0.011	0.005	0.005 L	0.005 L	0.005 L	0.005 L
Cobalt	0.010	0.010 L	0.010 L	0.010 L	0.010 L	0.004	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L
Copper	0.010	0.063	0.010 L	0.010 L	0.010 L	0.063	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L
Lead	0.002	0.042	0.002 L	0.002 L	0.002 L	0.042	0.002 L	0.002 L	0.002 L	0.002 L	0.002 L
Nickel	0.020	0.020 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	0.005 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
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	0.010 L	0.010 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	0.010 L
Zinc	0.01	0.290	0.032	0.010 L	0.010 L	0.290	0.010	0.010 L	0.010 L	0.043	0.034
Nitrate as Nitrogen	0.50	6.40	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	6.40

Notes:

Prediction Limits are shown in bold.

Prediction Limits for metals are for total metals.

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

mg/L = milligrams per liter.

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Second Quarter 2020
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.							
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	0.01	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	0.001	L	0.0005	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	0.001	L	0.005	0.002	L	0.001	0.002	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	0.001	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	0.005	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	0.001	L	0.005	0.001	L	0.005	0.002	L	0.001	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	0.001	L	0.0005	0.001	L	0.005	0.002	L	0.001	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	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	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	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.01	L	0.005	0.5	L	0.25			
Number Analyzed	8			8			8			8			8			8			8			8			8			8			8			8			8			8			8			8					
Number Detected	0			0			8			0			0			0			0			0			0			0			0			0			0			2			0								
Minimum Concentration			0.001			0.0025			0.02			0.0005			0.0005						0.0005			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			0.005			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			
6/25/2014	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	0.001	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	0.005	L	0.0025	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	0.001	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	0.005	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	0.001	L	0.0005	0.001	L	0.005	0.002	L	0.001	0.005	L	0.0025	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	0.001	L	0.0005	0.001	L	0.005	0.002	L	0.001	0.005	L	0.0025	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																																			

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Second Quarter 2020
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	0.001	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	0.001	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	0.005	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	0.001	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	0.005	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	0.001	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	0.005	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	0.001	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	0.005	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		0.0025		0.0005		0.0025		0.005		0.25		
Maximum Concentration		0.025		0.011		0.091		0.0025		0.0025		0.011		0.005		0.063		0.042		0.01		0.0025		0.005		0.0025		0.014		0.29		0.25		
Average Concentration		NC		0.0089		0.02275		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Variance		NC		1.6E-06		0.00076		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Standard Deviation		NC		0.00125		0.02763		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
oefficient 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	L 0.005	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	0.001	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	0.005	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	0.001	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	0.005	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	0.001	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	0.005	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	0.001	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	0.005	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	0.001	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	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8																																	

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Second Quarter 2020
LRI Landfill, Pierce County, Washington

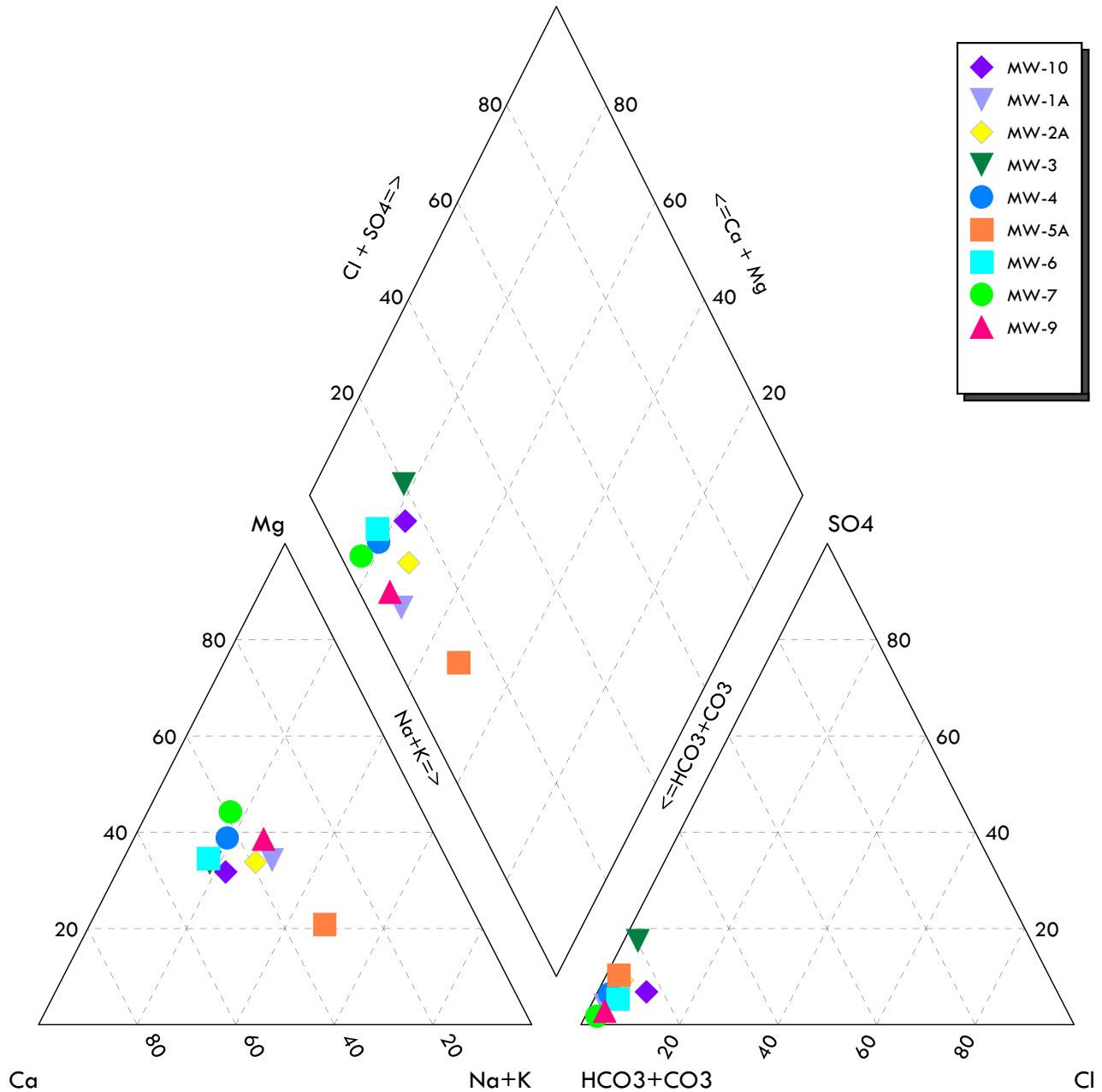
Location ID	Antimony (Sb)			Arsenic (As)			Barium (Ba)			Beryllium (Be)			Cadmium (Cd)			Chromium (Cr)			Cobalt (Co)			Copper (Cu)			Lead (Pb)			Nickel (Ni)			Selenium (Se)			Silver (Ag)			Thallium (Tl)			Vanadium (V)			Zinc (Zn)			Nitrate (NO ₃)					
Monitoring Date	Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.		Result	Conc.										
MW-9																																																			
3/25/2014	0.002	L	0.001	0.005	L	0.0025	0.0047		0.0047	0.001	L	0.0005	0.005	L	0.0025	0.002	L	0.001	0.01	L	0.005	0.002	L	0.001	0.001	L	0.0005	0.002	L	0.001	0.005	L	0.0025	0.01	L	0.005	0.001	L	0.0005	0.016		0.016	0.01		0.01	0.5	L	0.25			
6/24/2014	0.002	L	0.001	0.005	L	0.0025	0.0045		0.0045	0.001	L	0.0005	0.005	L	0.0025	0.002	L	0.001	0.01	L	0.005	0.002	L	0.001	0.001	L	0.0005	0.002	L	0.001	0.001	L	0.0005	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	0.001	L	0.0005	0.005	L	0.0025	0.01	L	0.005	0.001	L	0.0005	0.014		0.014	0.014	L	0.014	0.5	L	0.25
12/17/2014	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014		0.014	0.01	L	0.005	0.5	L	0.25			
3/24/2015	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.013		0.013	0.01	L	0.005	0.5	L	0.25			
6/9/2015	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014		0.014	0.01	L	0.005	0.5	L	0.25			
9/18/2015	0.05	L	0.025	0.005	L	0.0025	0.005		0.005	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014		0.014	0.01	L	0.005	0.5	L	0.25			
12/16/2015	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014		0.014	0.042		0.042	0.5	L	0.25			
3/22/2016	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014		0.014	0.028		0.028	0.5	L	0.25			
6/8/2016	0.05	L	0.025	0.005	L	0.0025	0.005		0.005	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014		0.014	0.023		0.023	0.5	L	0.25			
9/16/2016	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.015		0.015	0.043		0.043	0.5	L	0.25			
12/6/2016	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014		0.014	0.01	L	0.005	0.5	L	0.25			
3/29/2017	0.05	L	0.025	0.005	L	0.0025	0.0056		0.0056	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014		0.014	0.01	L	0.005	0.5	L	0.25			
6/22/2017	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014		0.014	0.01	L	0.005	0.5	L	0.25			
9/26/2017	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.012		0.012	0.01	L	0.005	0.5	L	0.25			
12/13/2017	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.013		0.013	0.01	L	0.005	0.5	L	0.25			
3/21/2018	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.016		0.016	0.01	L	0.005	0.5	L	0.25			
6/19/2018	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.005	L	0.0025	0.001	L	0.0005	0.01	L	0.005	0.002	L	0.001	0.02	L	0.01	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.013		0.013	0.01	L	0.005	0.5	L	0.25			
9/19/2018	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L																																					

Attachment E

Trilinear Diagrams



Second Quarter 2020, Groundwater Monitoring Wells



DESCRIPTION: Piper Diagram - Groundwater - 2Q20

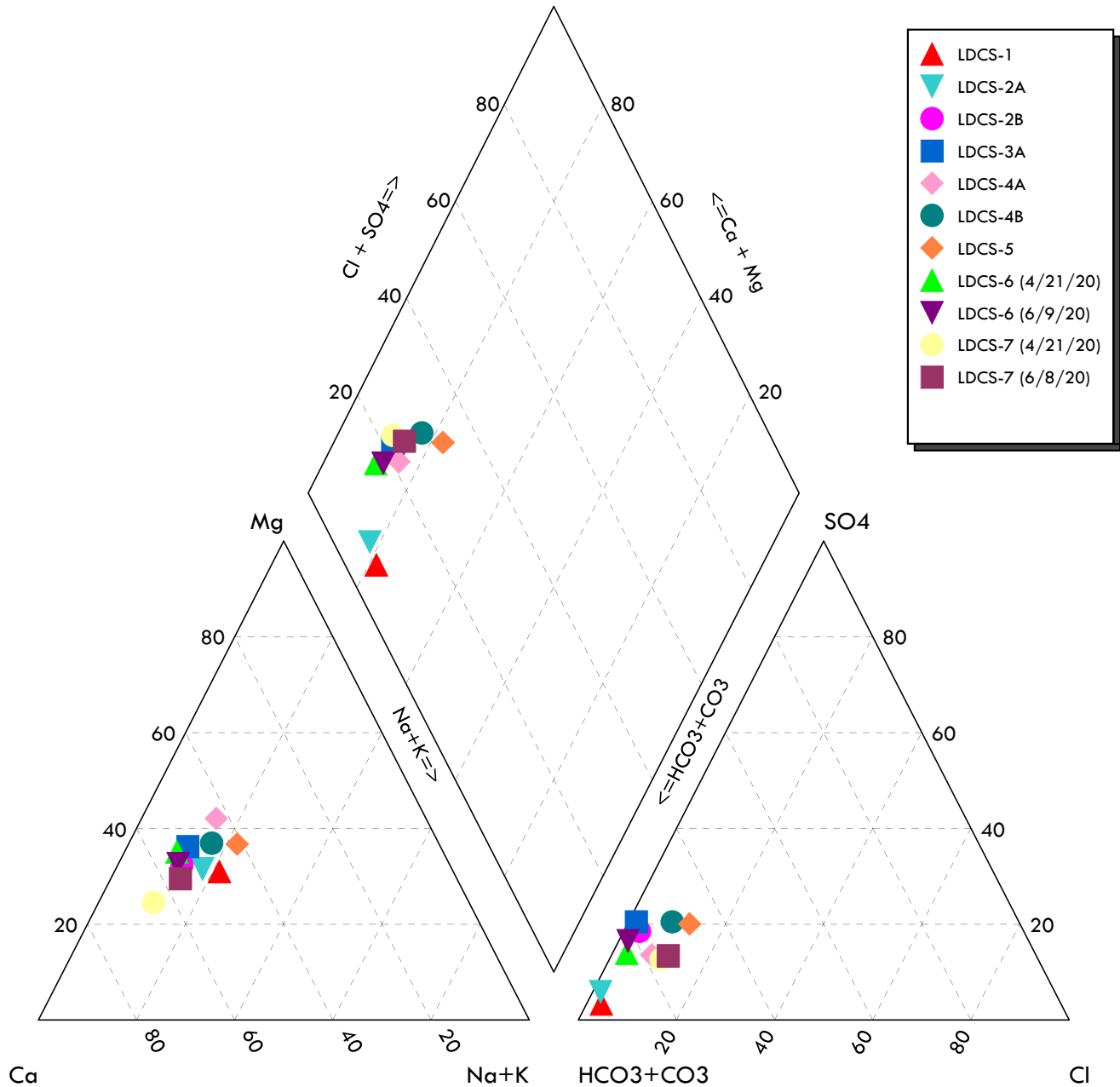
PROJECT: LRI Landfill

PROJECT NO: 04220001.02

CLIENT: LRI, Inc.

DATE: July 2020

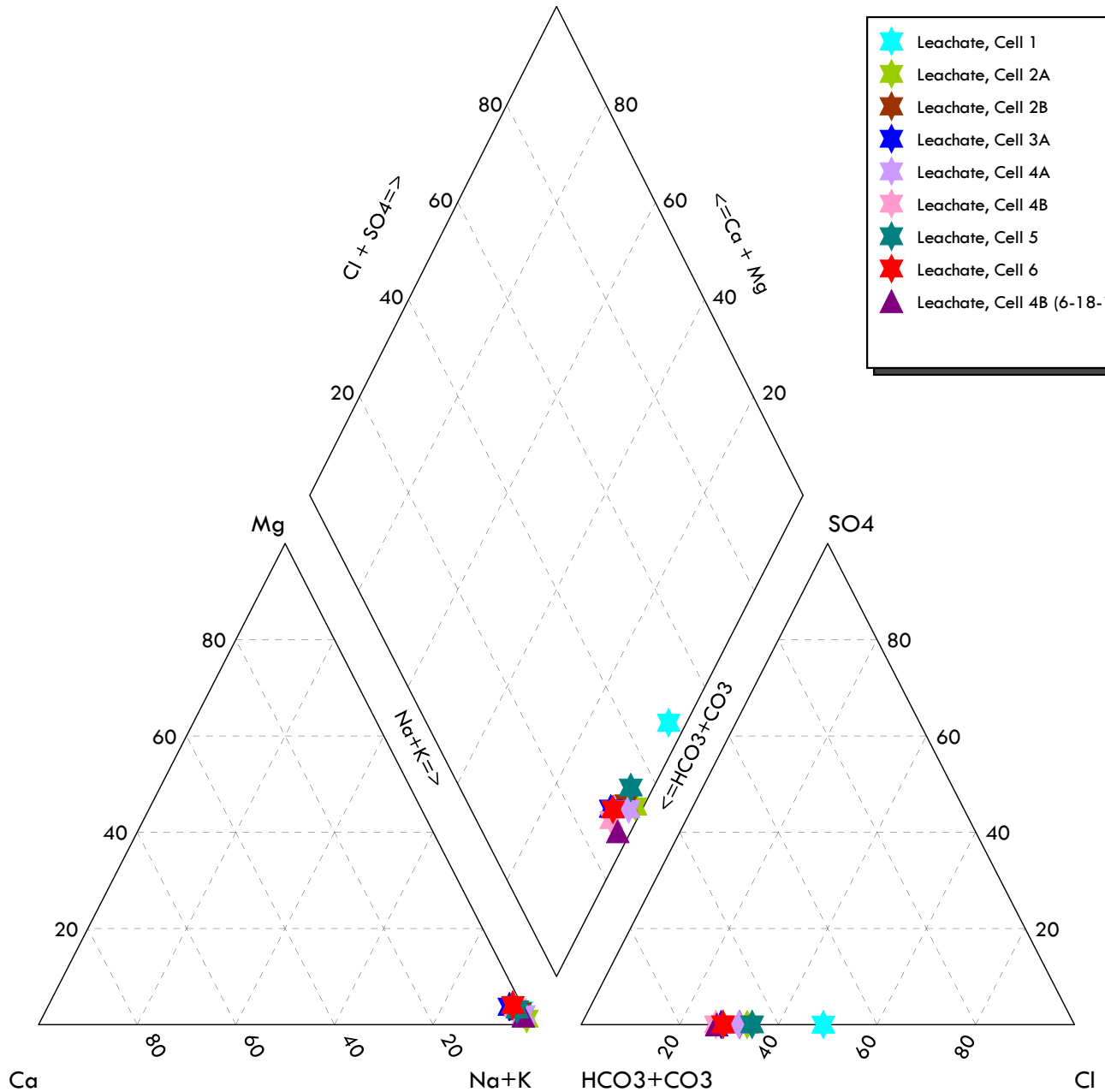
Second Quarter, Leak Detection Collection Recovery System



DESCRIPTION: Piper Diagram - LDCRS - 2Q20

	PROJECT: LRI Landfill	PROJECT NO: 04220001.02
	CLIENT: LRI, Inc.	DATE: July 2020

Fourth Quarter 2019, Leachate



DESCRIPTION: Piper Diagram - Leachate - 4Q19

PROJECT: LRI Landfill

PROJECT NO: 04219001.02

CLIENT: LRI, Inc.

DATE: March 2020

Attachment F

Analytical Data Validation Report



SECOND QTR. 2020 DATA VALIDATION REPORT – LRI LANDFILL

Project Details

Project No.	04220001.02	Site Name	LRI 304 th Street LF
Data Validator	Sam Graber	Data Level	Level 2
Date	7/17/2020	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)
280-137420-1	No comments.	TestAmerica, Denver, CO
280-137421-1	No comments.	TestAmerica, Denver, CO
280-137466-1	No comments.	TestAmerica, Denver, CO
280-137468-1	The cooler did not have a custody seal on it at the time of receipt.	TestAmerica, Denver, CO
280-137469-1	No comments.	TestAmerica, Denver, CO
280-138116-1	No comments.	TestAmerica, Denver, CO
280-135796-1	No comments.	TestAmerica, Denver, CO

Analytical Summary

Sample Group	Analyses					
	TDS/Alk/NO3	Metals	NH4/TOC	VOCs	Anions	TSS
280-137420-1	X	X ²	X	X	X	X
280-137421-1	X	X ¹	X	X	X	--
280-137466-1	X	X ²	X	X	X	X
280-137468-1	X	X ¹	X	X	X	--
280-137469-1	X	X ³	X	X	X	--
280-138116-1	X	X ¹	X	X	X	--
280-135796-1	X	X ¹	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.	Method 8260B LCS or LCSD exhibited recoveries of Iodomethane below the lower control limits (control limits 65%-142%). Because this analyte recovered within marginal exceedance limits, corrective action was deemed unnecessary. (280-137420-1, 280-137421-1, 280-137466-1, 280-137468-1, 280-137469-1). See case narratives for additional details.
MS/MSD	Acceptable.	See case narratives.
Metals	Acceptable.	See case narratives.
Duplicates	Acceptable.	See case narratives.
Organics	Acceptable.	Samples 304-060820-08 and 304-060920-19 were analyzed at a dilution for Method 8260B due to a high concentration of target compounds. As a result, the reporting limits were elevated (280-137421-1, 280-137469-1). Sample 304-060920-19 was analyzed with significant headspace in the vials received for method 8260B (280-137469-1).
General Comments	Acceptable.	See case narratives.

Field Quality Assurance Samples

Field QA Samples	Sample Group	Analytes	Notes
QC-FB	280-137466-1	Methylene Chloride (7.0 ug/L) Dissolved Calcium (0.30 mg/L) Total Dissolved Solids (31 mg/L)	
QC-TB	280-137420-1	None.	
QC-TB	280-137421-1	None.	
QC-TB	280-137466-1	None.	
QC-TB	280-137468-1	None.	
QC-TB	280-135796-1	None.	

Lab Quality Flags

Flag	Sample Groups	Comments
*	280-137420-1, 280-137421-1, 280-137466-1, 280-137468-1, 280-137469-1	LCS or LCSD is outside acceptance limits.
4	280-137420-1, 280-137421-1, 280-137466-1, 280-137469-1, 280-138116-1, 280-135796-1	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		Compound was found in the blank and sample.
E	280-137466-1, 280-135796-1	Result exceeded calibration range.
F1	280-137421-1, 280-137466-1, 280-137468-1, 280-137469-1, 280-138116-1, 280-135796-1	MS and/or MSD recovery exceeds the control limits.
F2	280-137466-1	MS/MSD RPD exceeds control limits.
F3		Duplicate RPD exceeds the control limit.
F5		Duplicate RPD exceeds limit, and one or both sample results are less than 5 times the RL. The data are considered valid because the absolute difference is less than the RL.
H		Sample was prepped or analyzed beyond specified holding time.
J	280-137420-1, 280-137421-1, 280-137466-1, 280-137468-1, 280-137469-1, 280-138116-1, 280-135796-1	Result is less than RL but greater than or equal to the MDL and concentration is an approximate value.
^	280-137466-1, 280-137468-1, 280-137469-1	ICV, CCV, ICB, CCB, ISA, ISB, CRI, CRA, DLCK, or MRL standard: instrument related QC is outside acceptance limits.

Duplicate Evaluation

Analyte	Units	MW-5A (304-060820-09)	MW-5A DUP (304-060820-11)	RPD (%)
Alkalinity	mg/L	170	170	0.0
Ammonia	mg/L	0.19	0.15	23.5
Arsenic, Total	mg/L	0.0062	0.0059	5.0
Barium, Total	mg/L	0.012	0.013	8.0
Calcium, Dissolved	mg/L	25	25	0.0
Chloride	mg/L	3.4	3.4	0.0
Iron, Dissolved	mg/L	0.2	0.31	43.1
Magnesium, Dissolved	mg/L	10	10	0.0
Manganese, Dissolved	mg/L	0.19	0.19	0.0
Potassium, Dissolved	mg/L	3.8	3.8	0.0
Sodium, Dissolved	mg/L	41	39	5.0
Sulfate	mg/L	19	19	0.0
Total Dissolved Solids	mg/L	240	240	0.0

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.

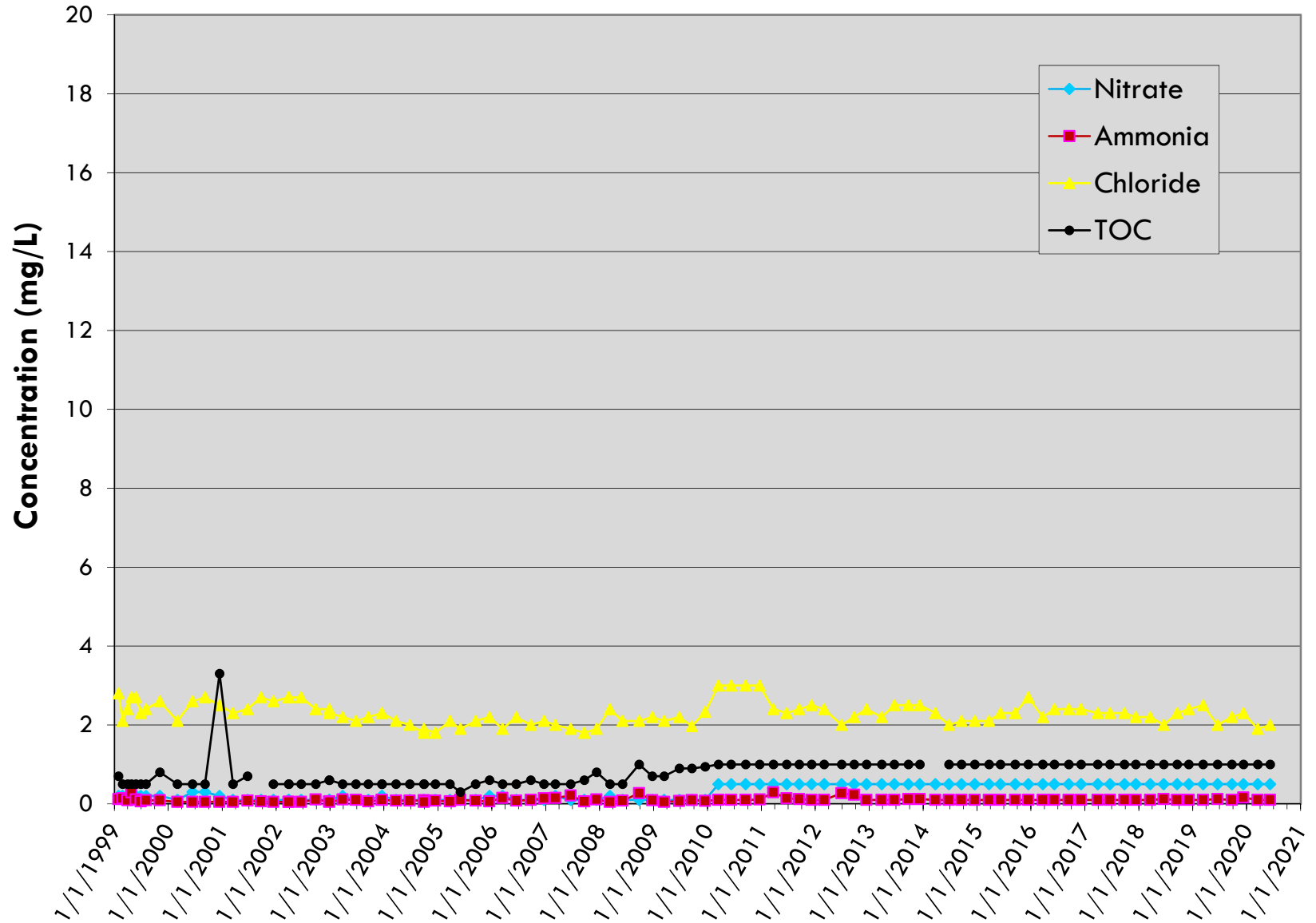
Attachment G

Groundwater and LDCS Time Trend Plots



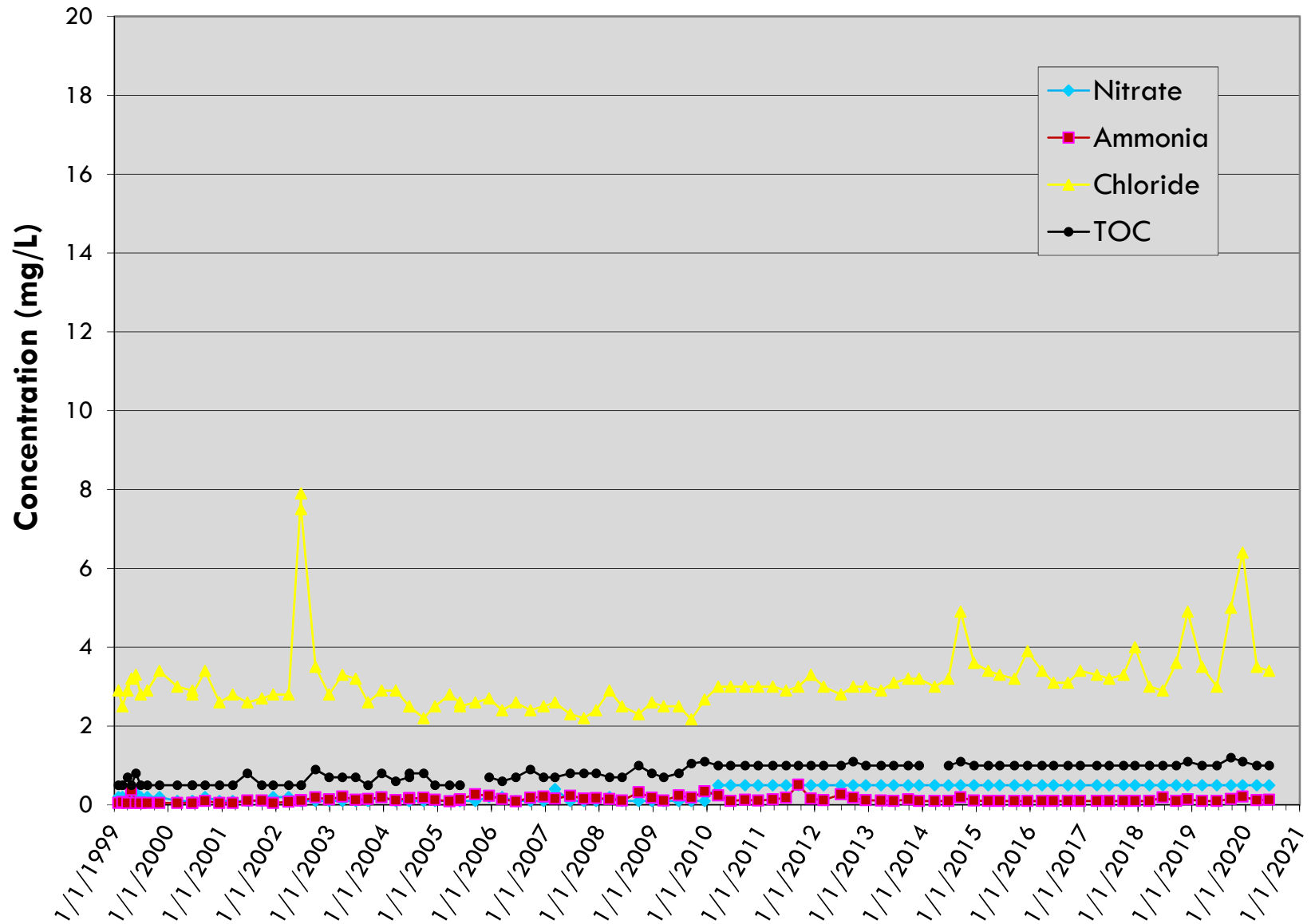
MW-1A

LRI Landfill, Pierce County, Washington



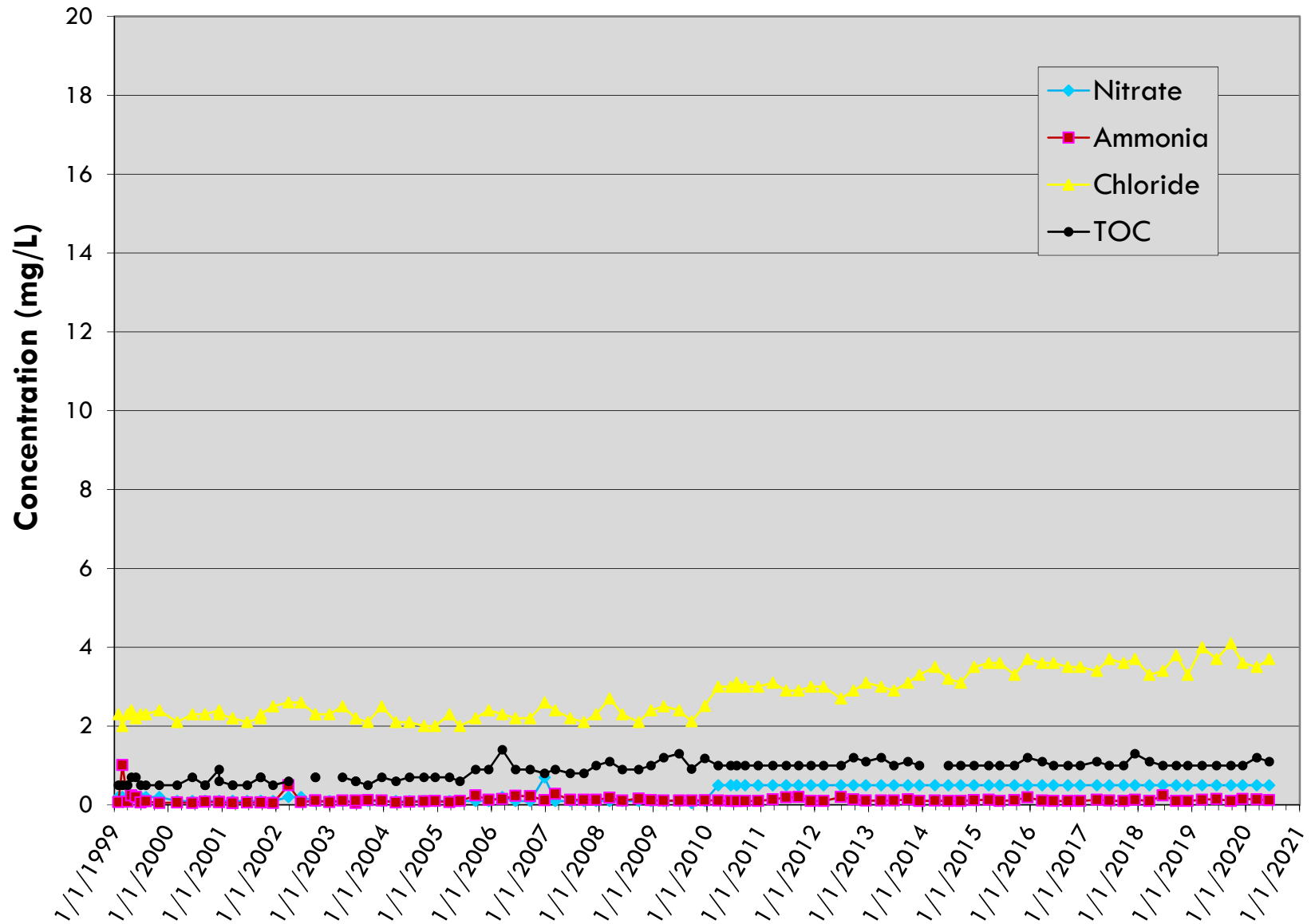
MW-2A

LRI Landfill, Pierce County, Washington



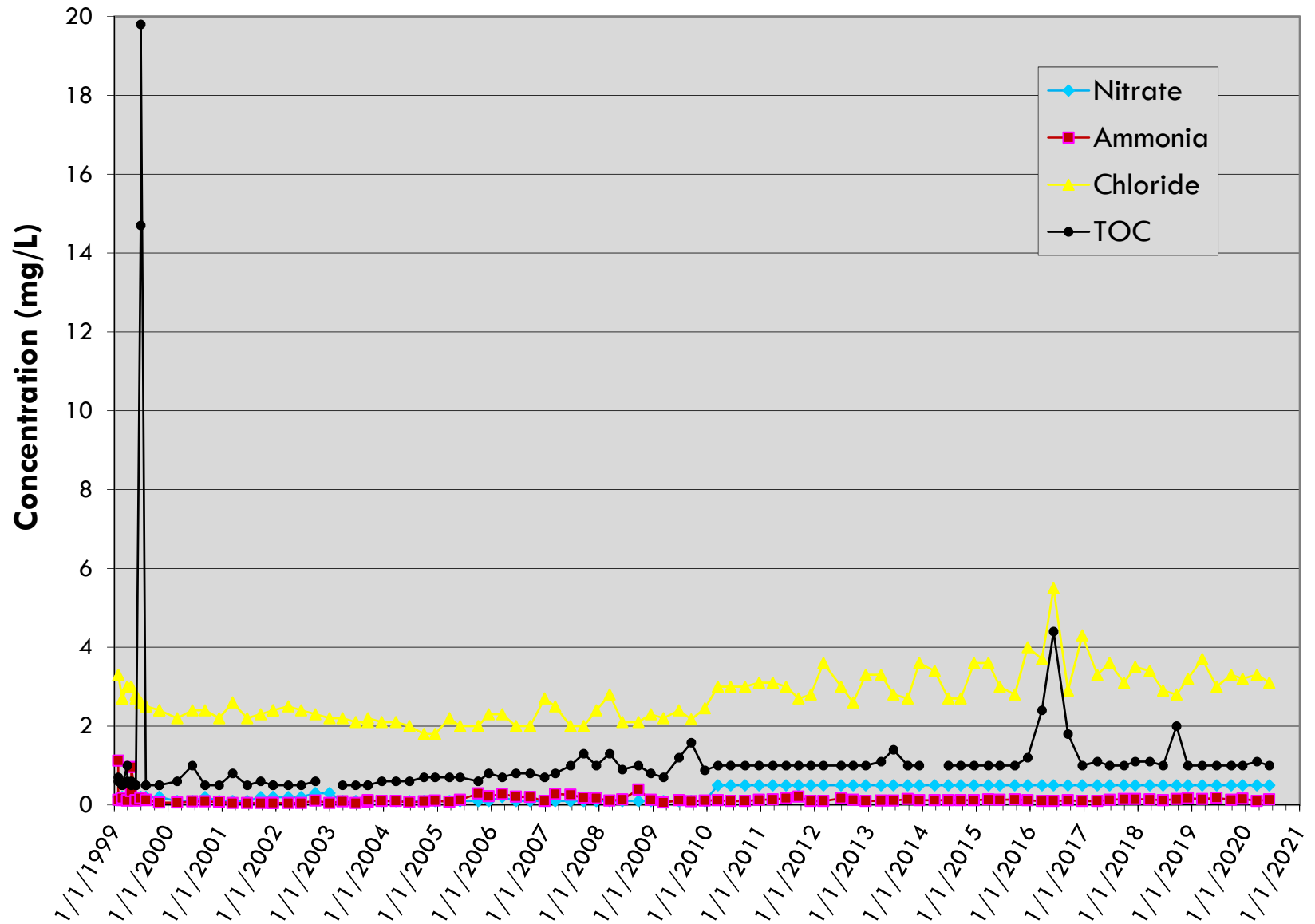
MW-3

LRI Landfill, Pierce County, Washington



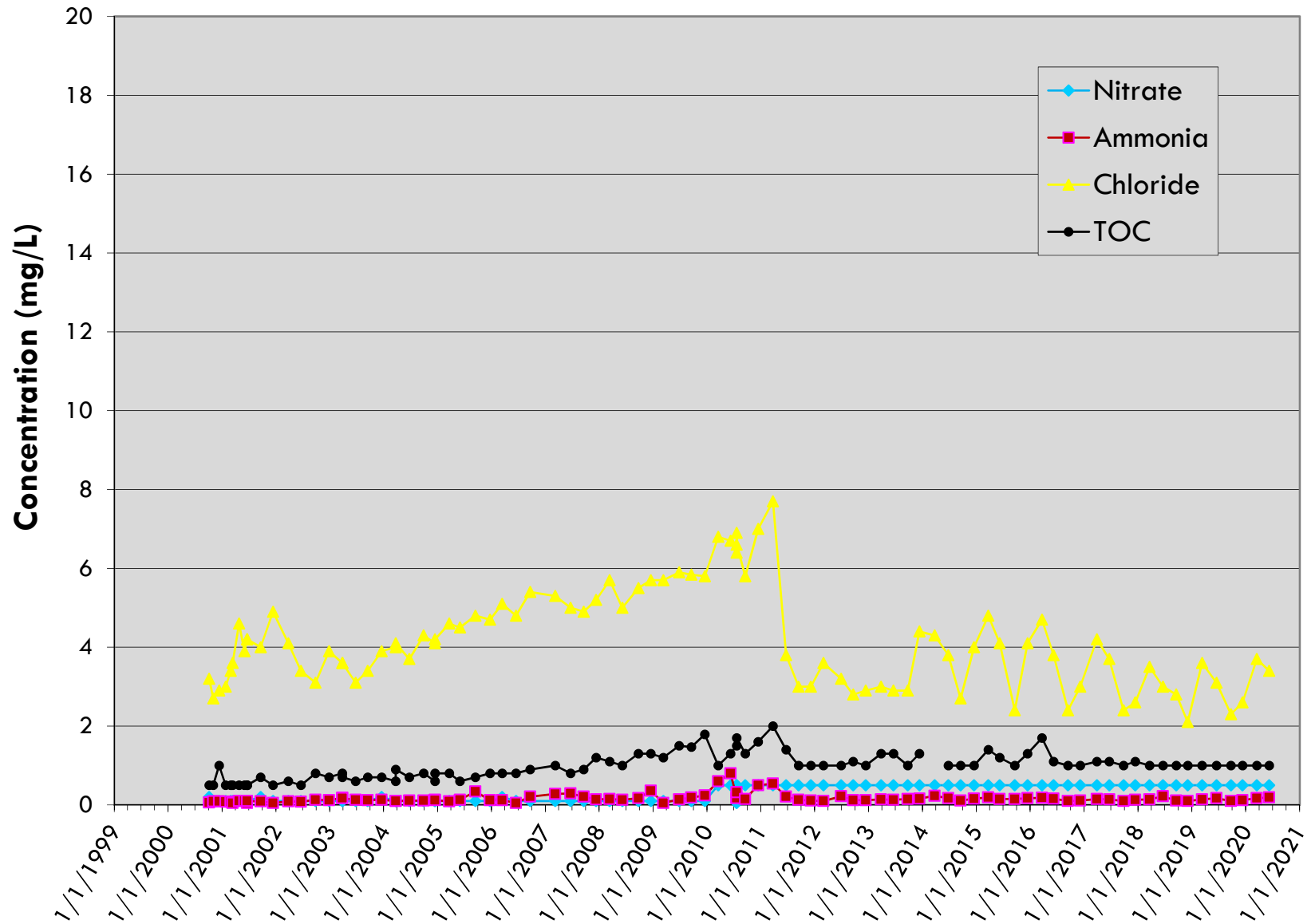
MW-4

LRI Landfill, Pierce County, Washington



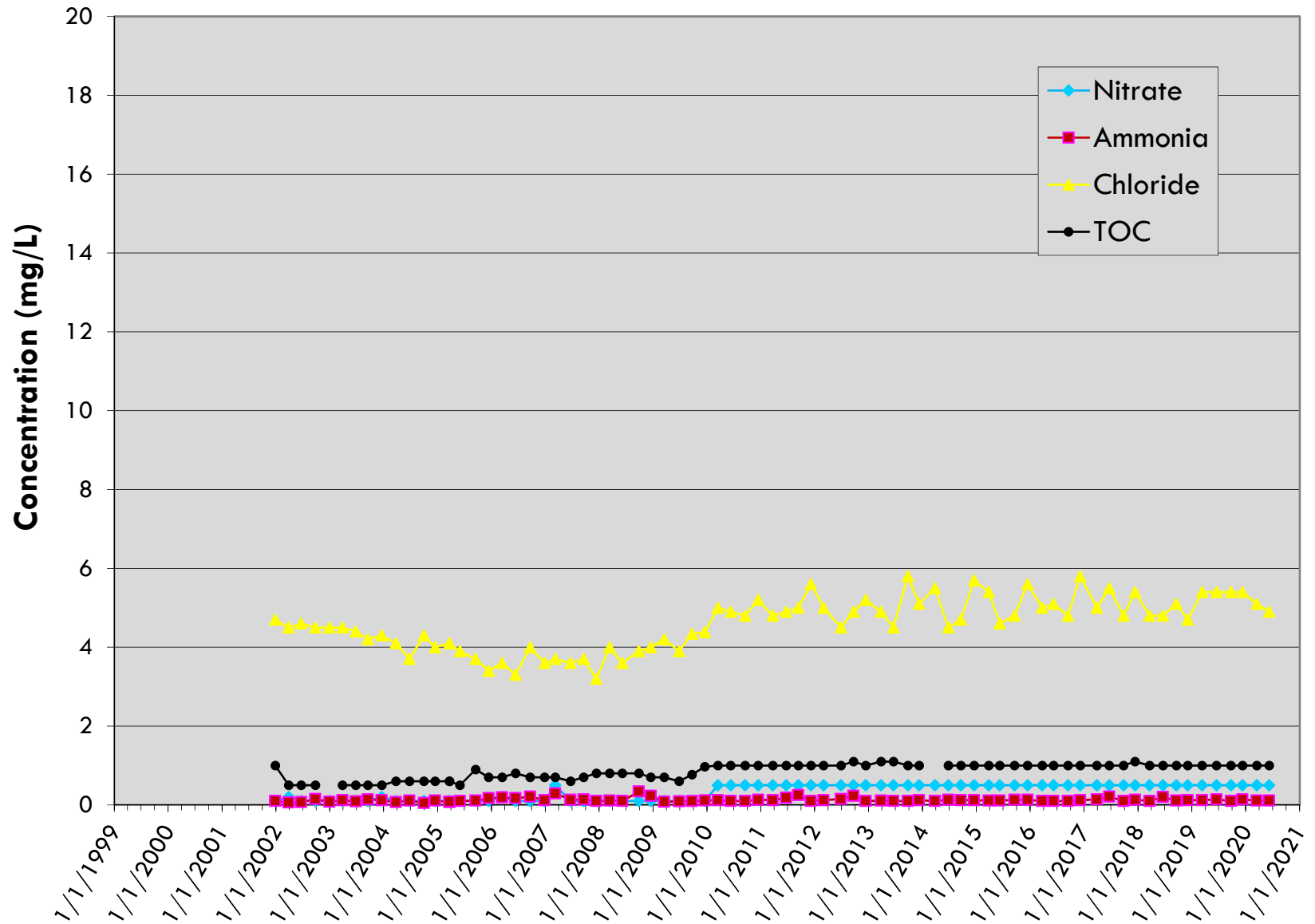
MW-5A

LRI Landfill, Pierce County, Washington



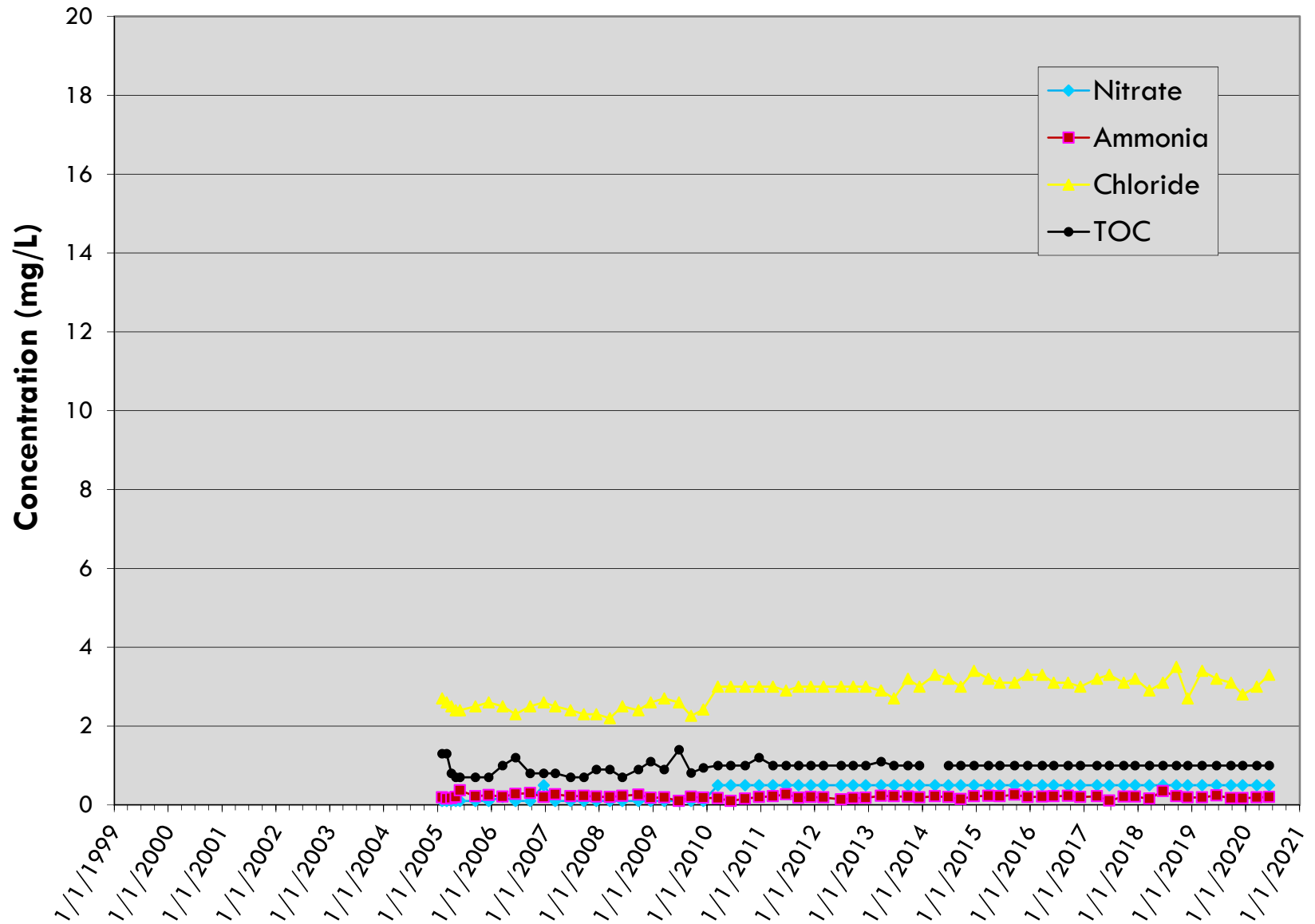
MW-6

LRI Landfill, Pierce County, Washington

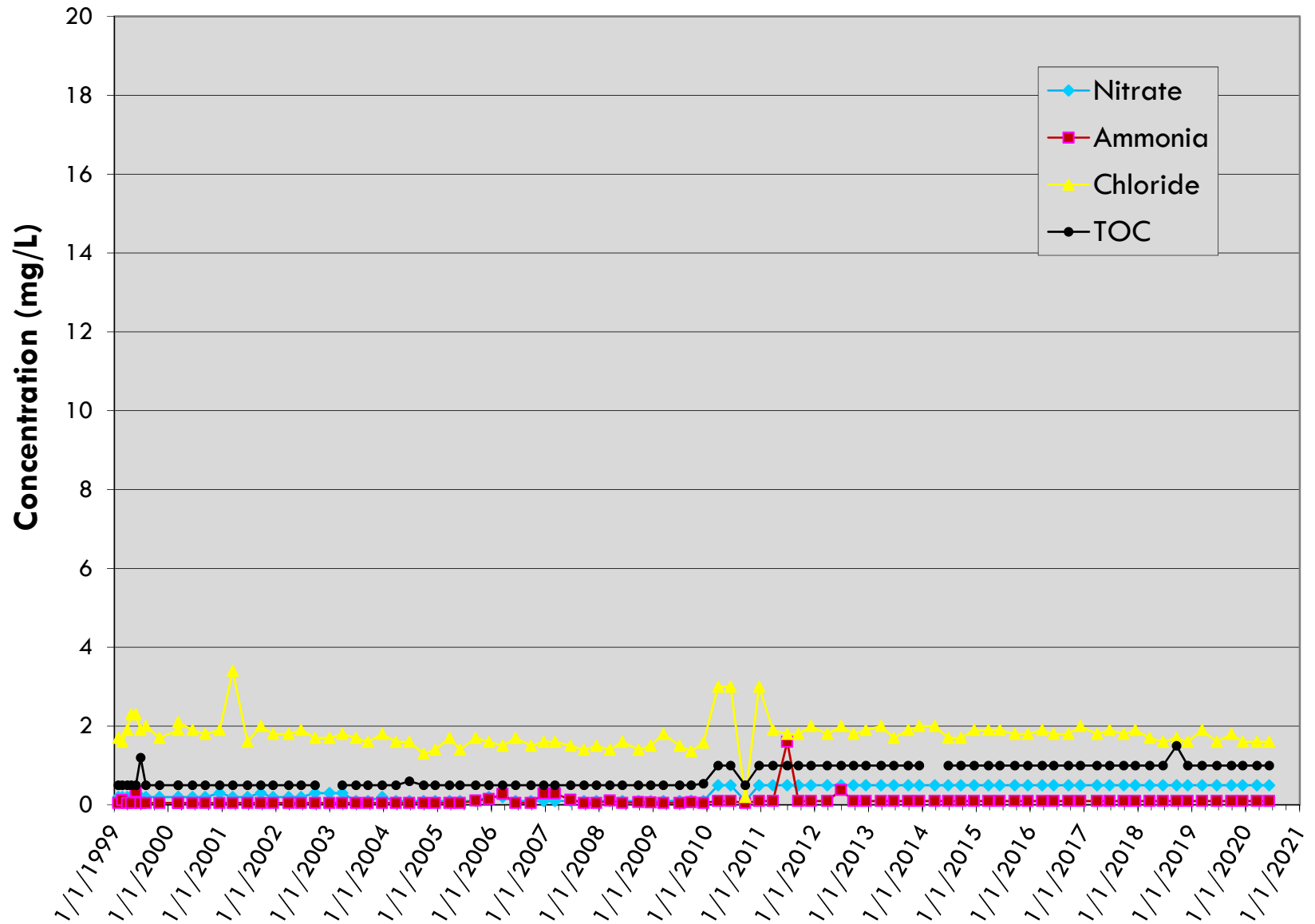


MW-7

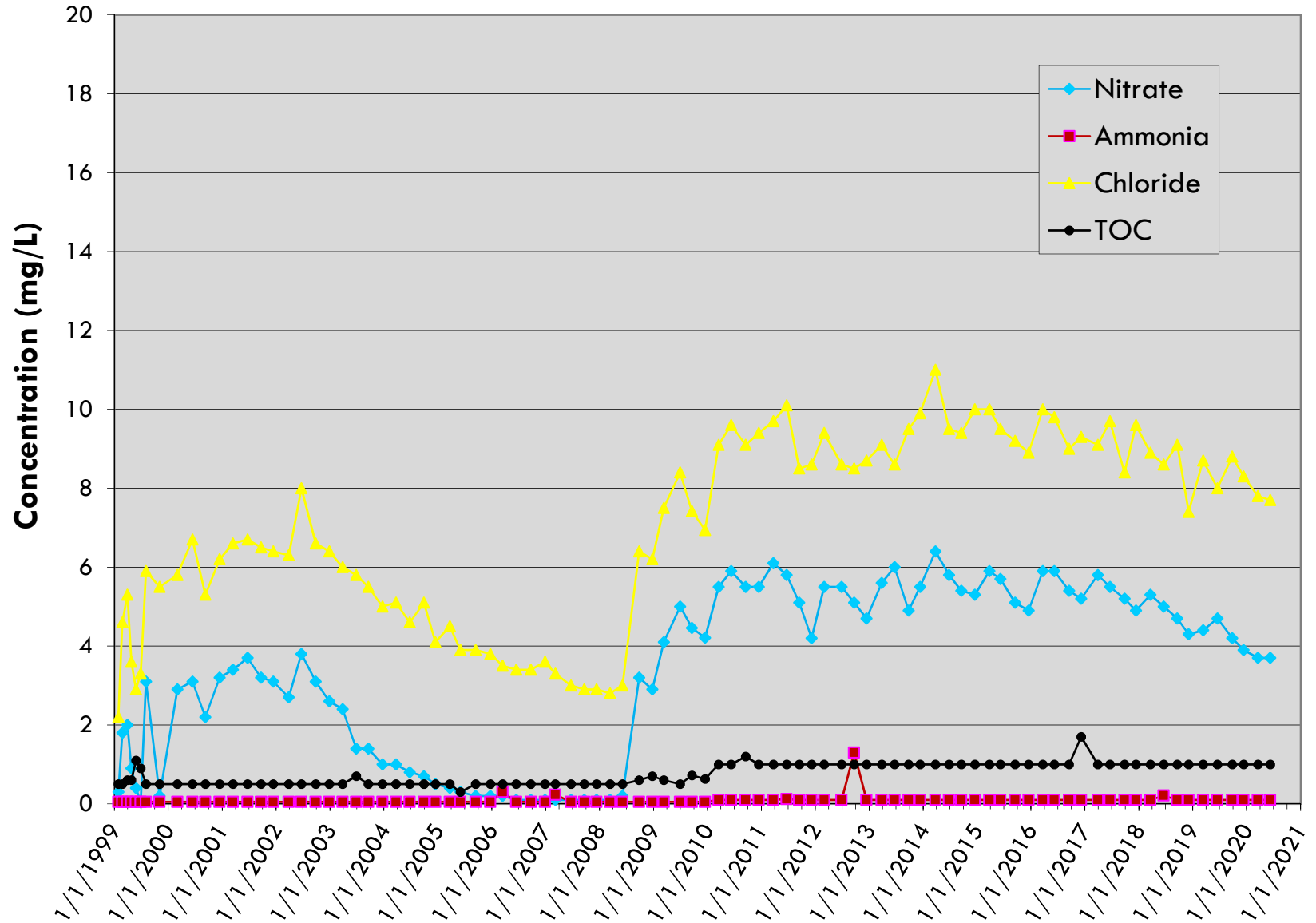
LRI Landfill, Pierce County, Washington



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

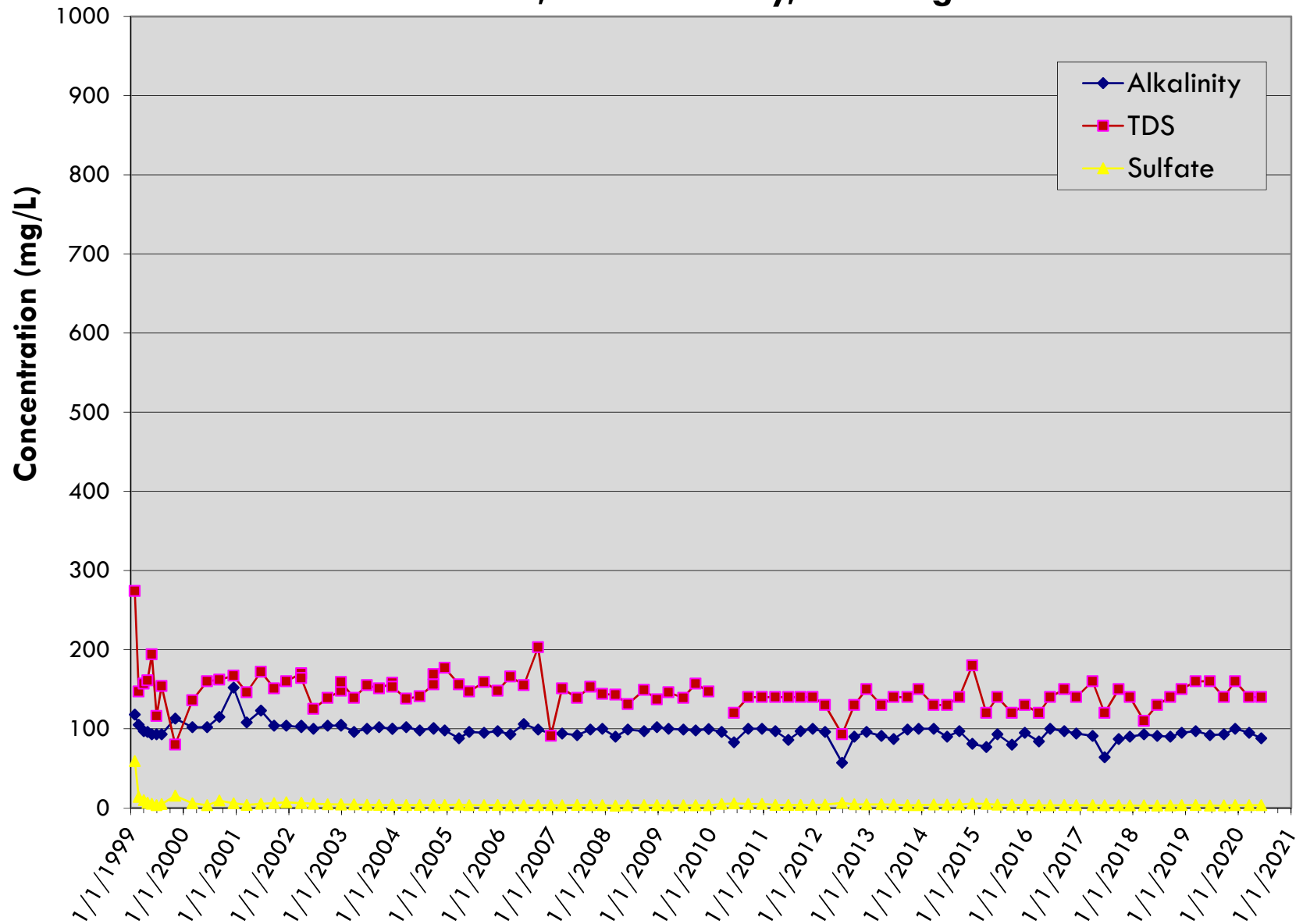


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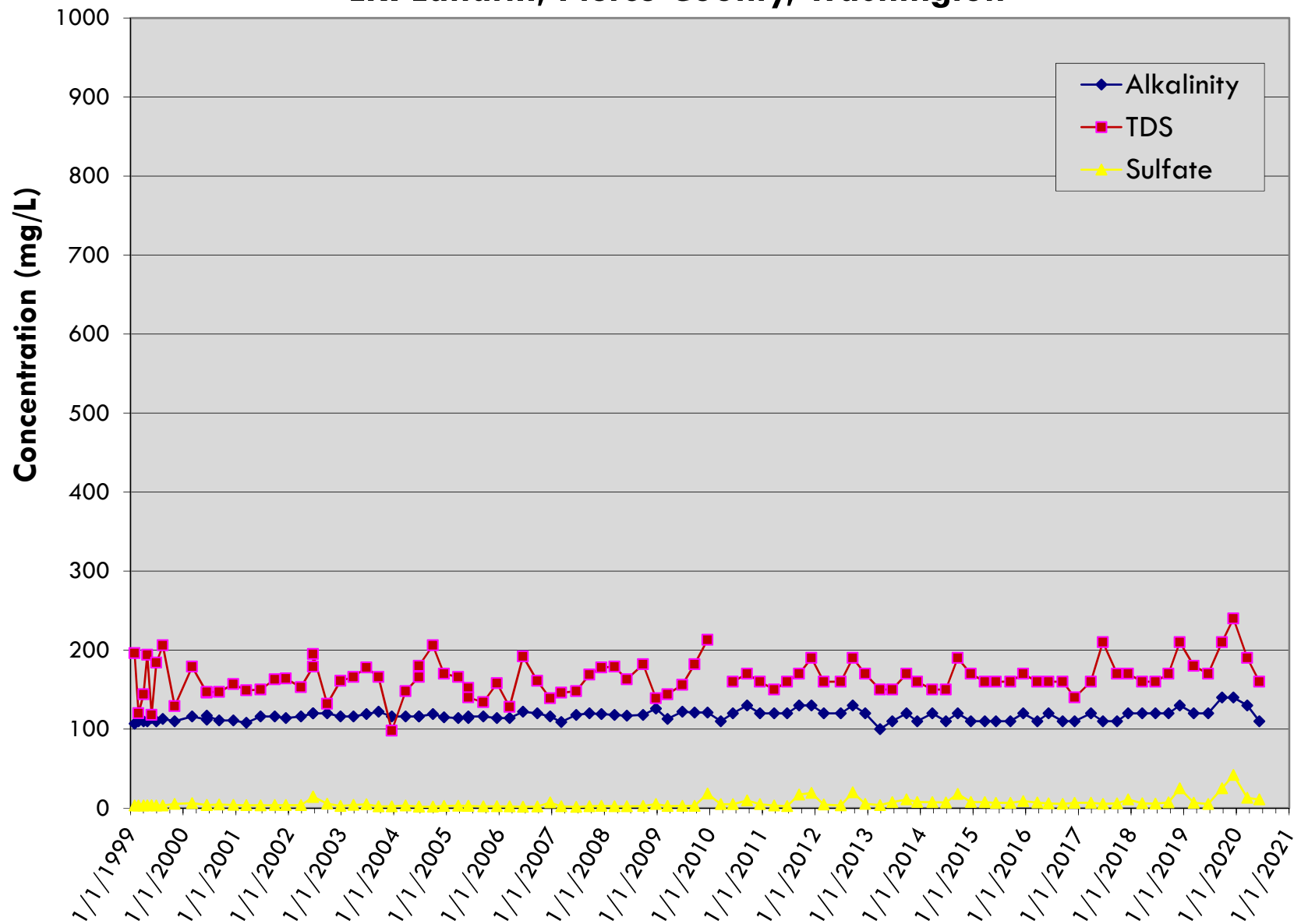
MW-1A

LRI Landfill, Pierce County, Washington



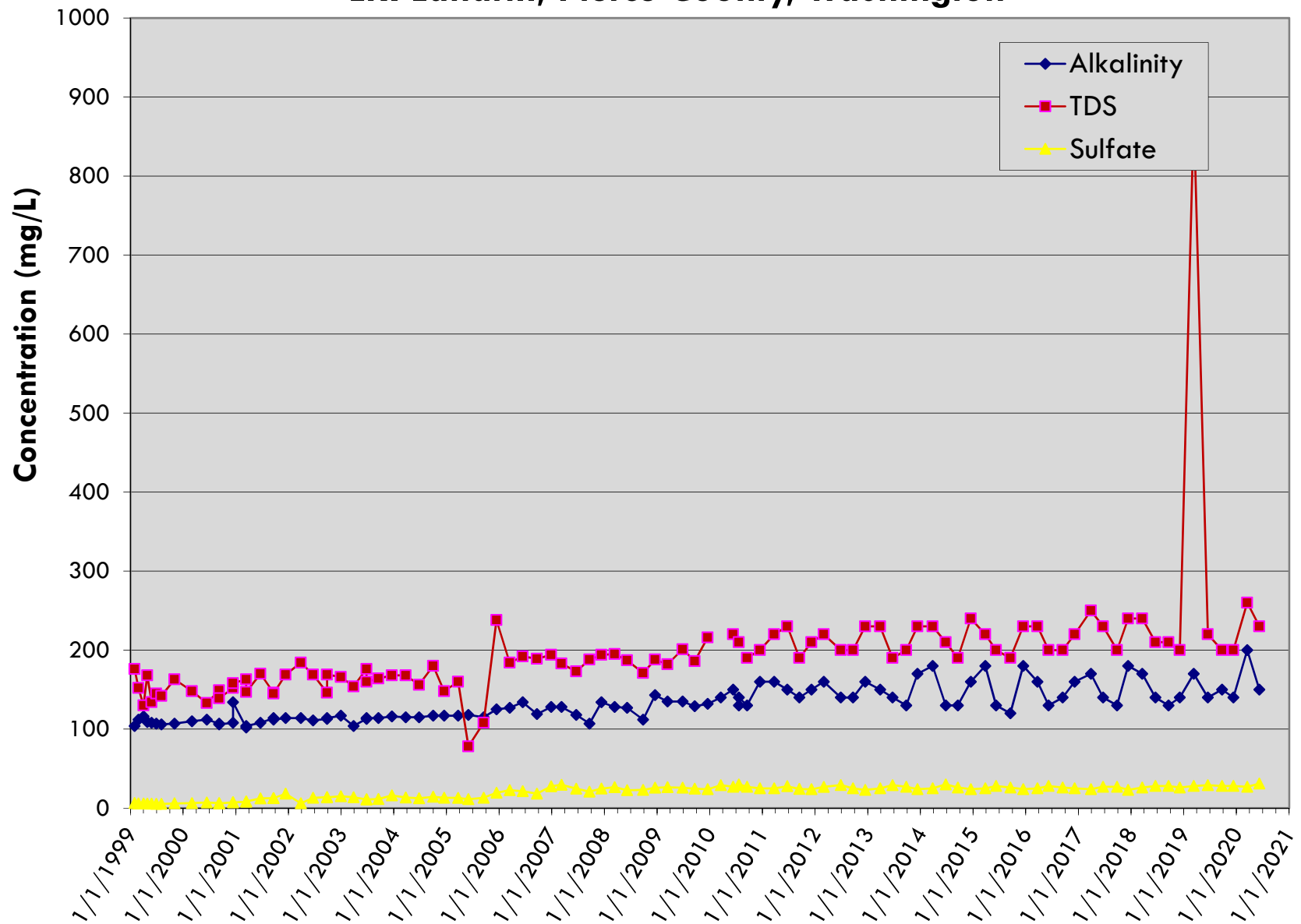
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LRI Landfill, Pierce County, Washington



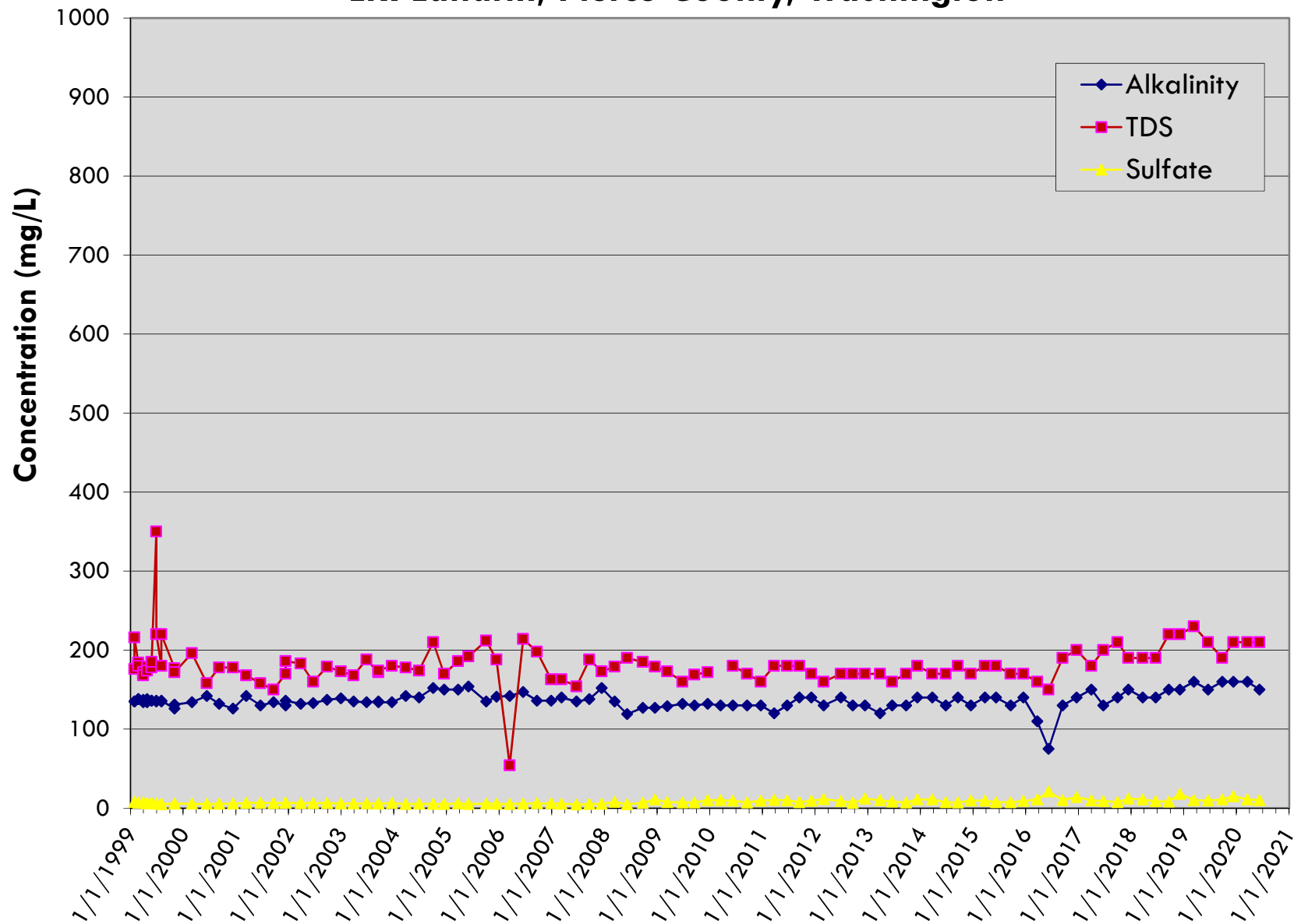
MW-3

LRI Landfill, Pierce County, Washington



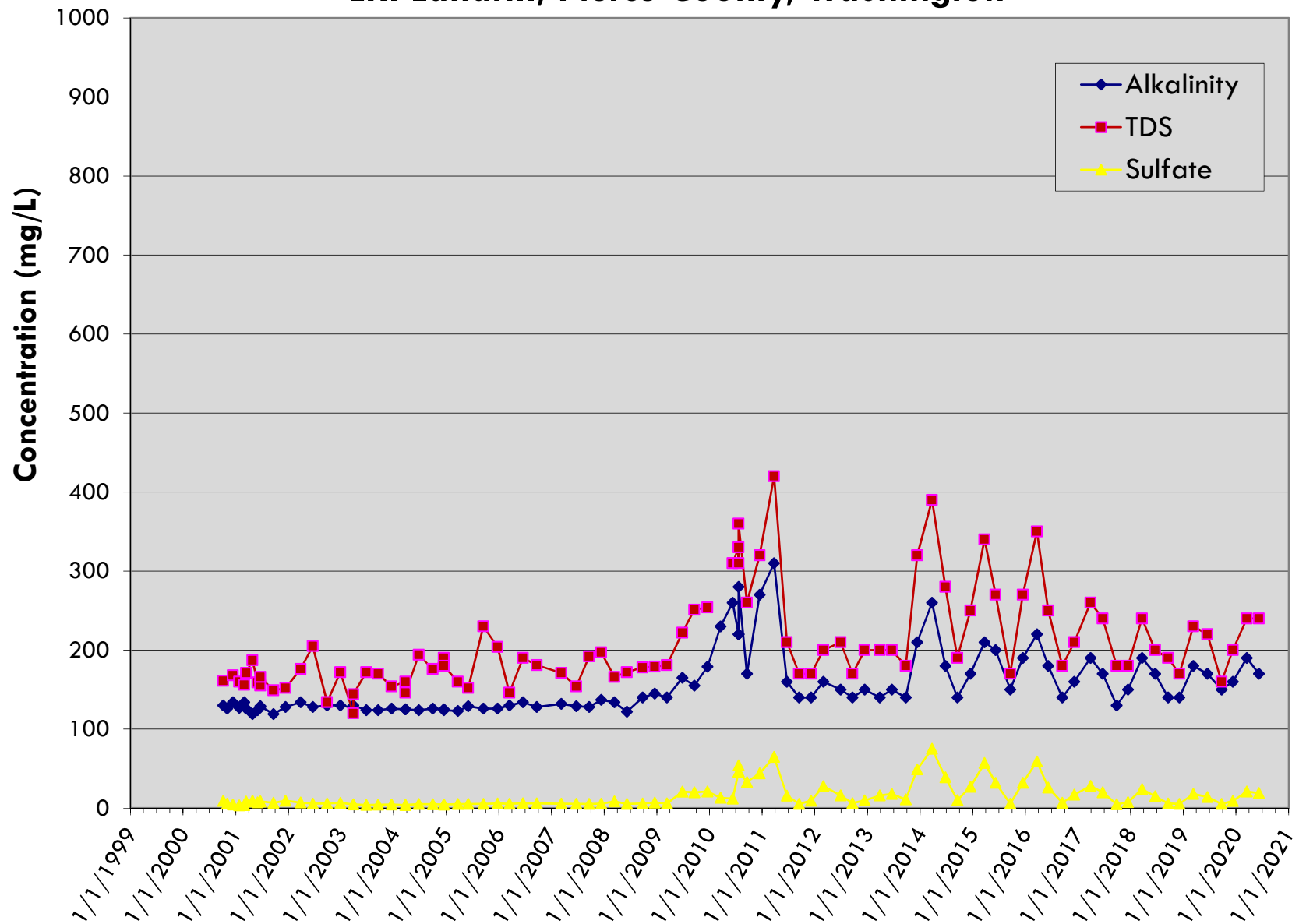
MW-4

LRI Landfill, Pierce County, Washington



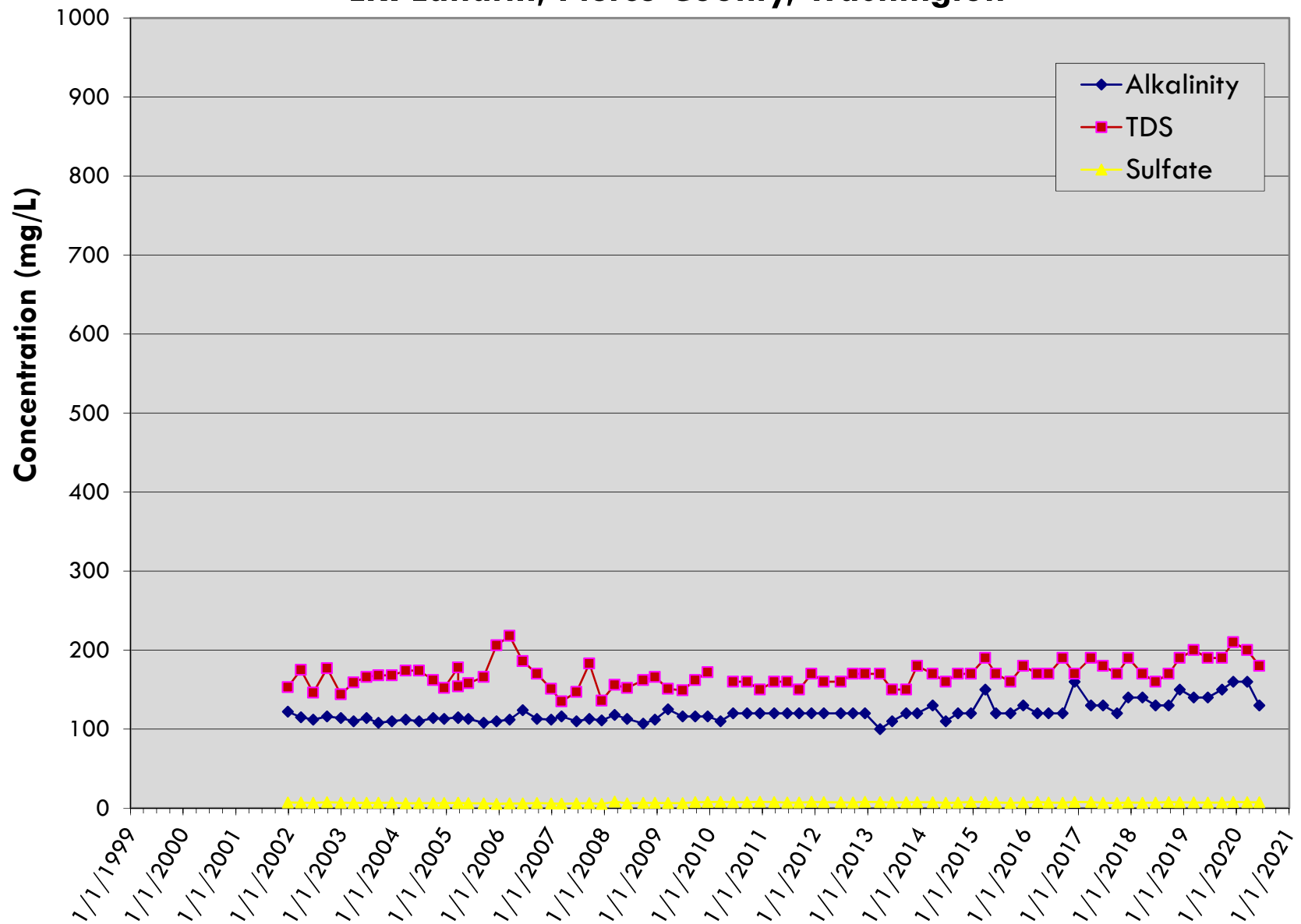
MW-5A

LRI Landfill, Pierce County, Washington



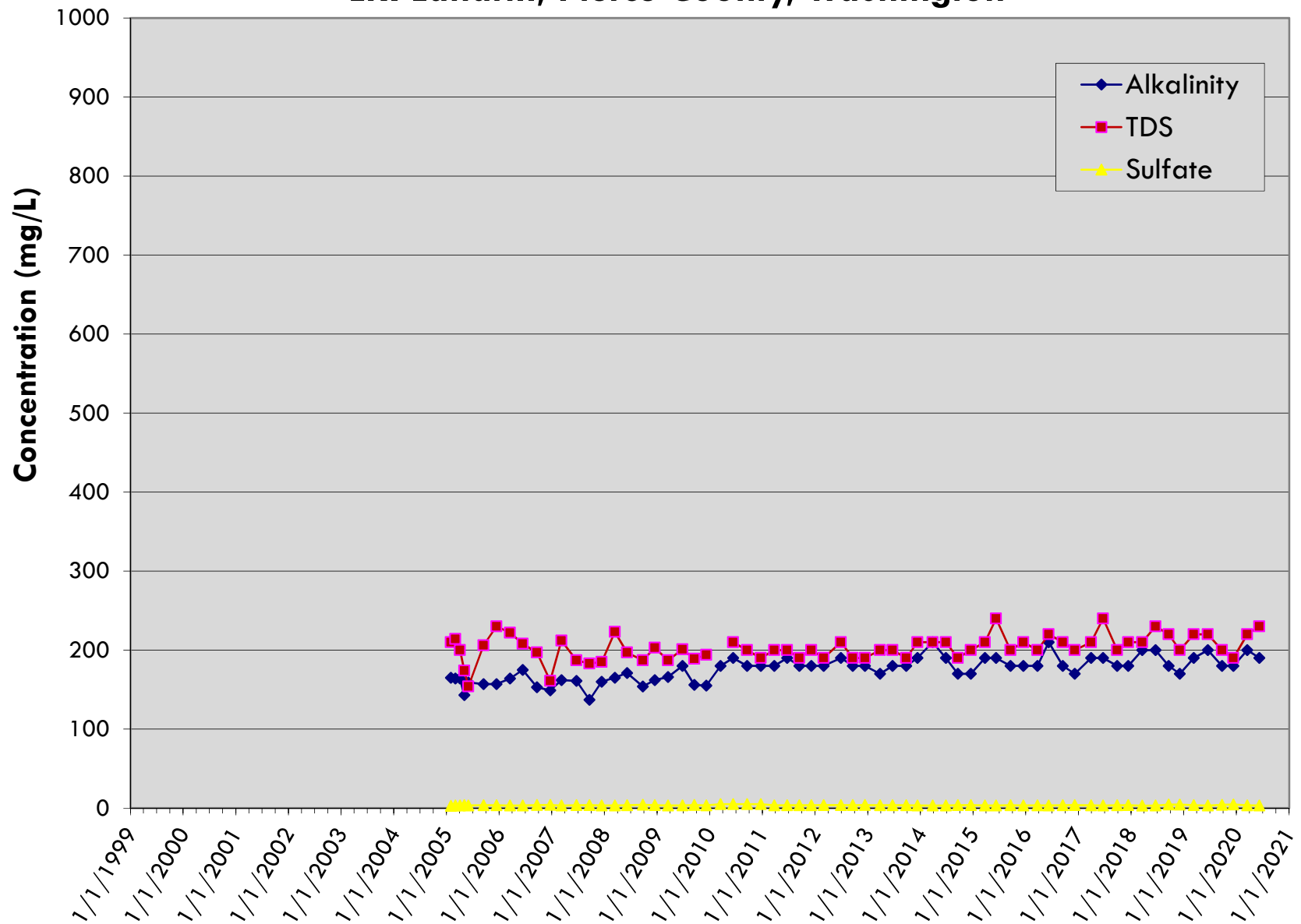
MW-6

LRI Landfill, Pierce County, Washington

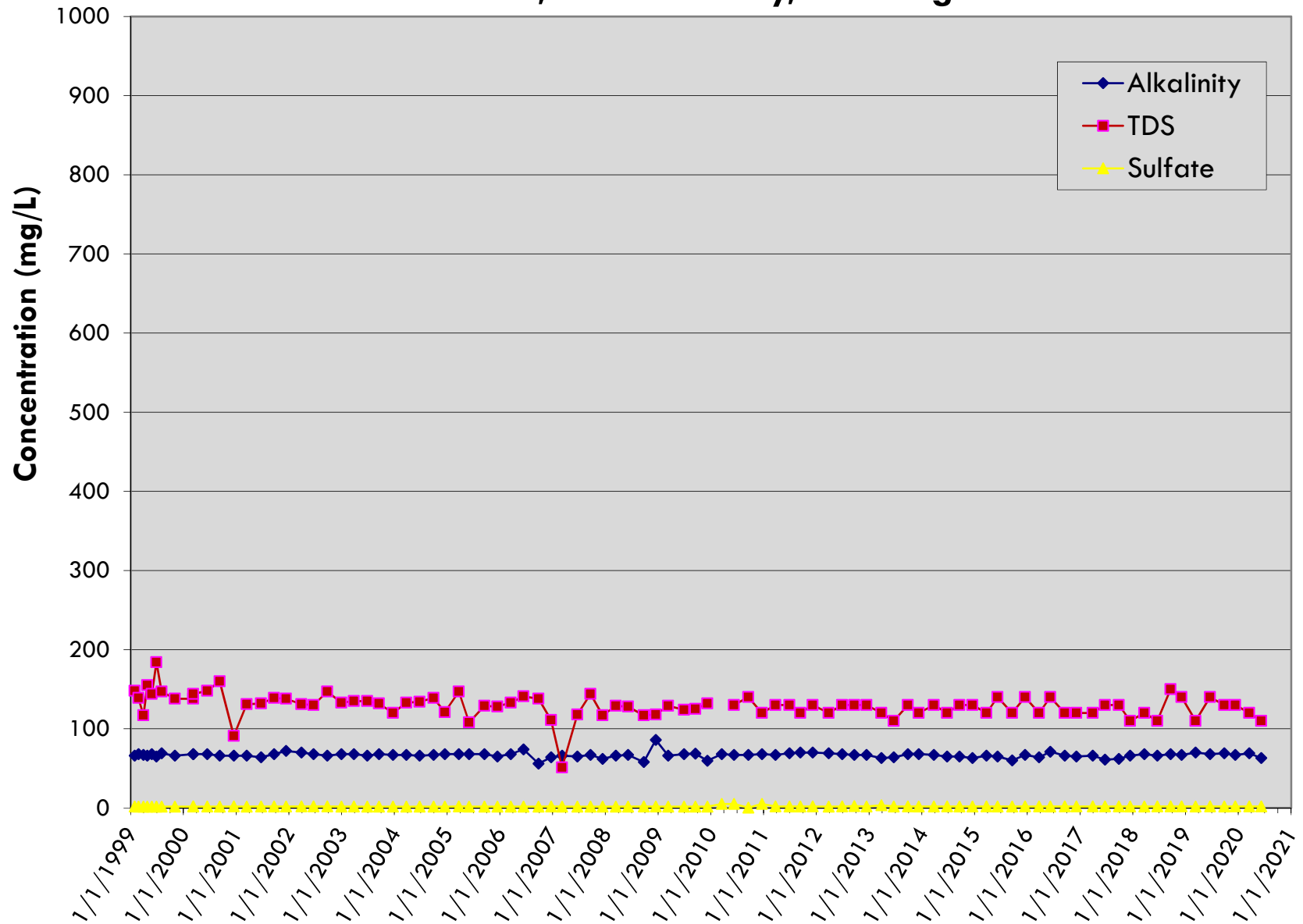


MW-7

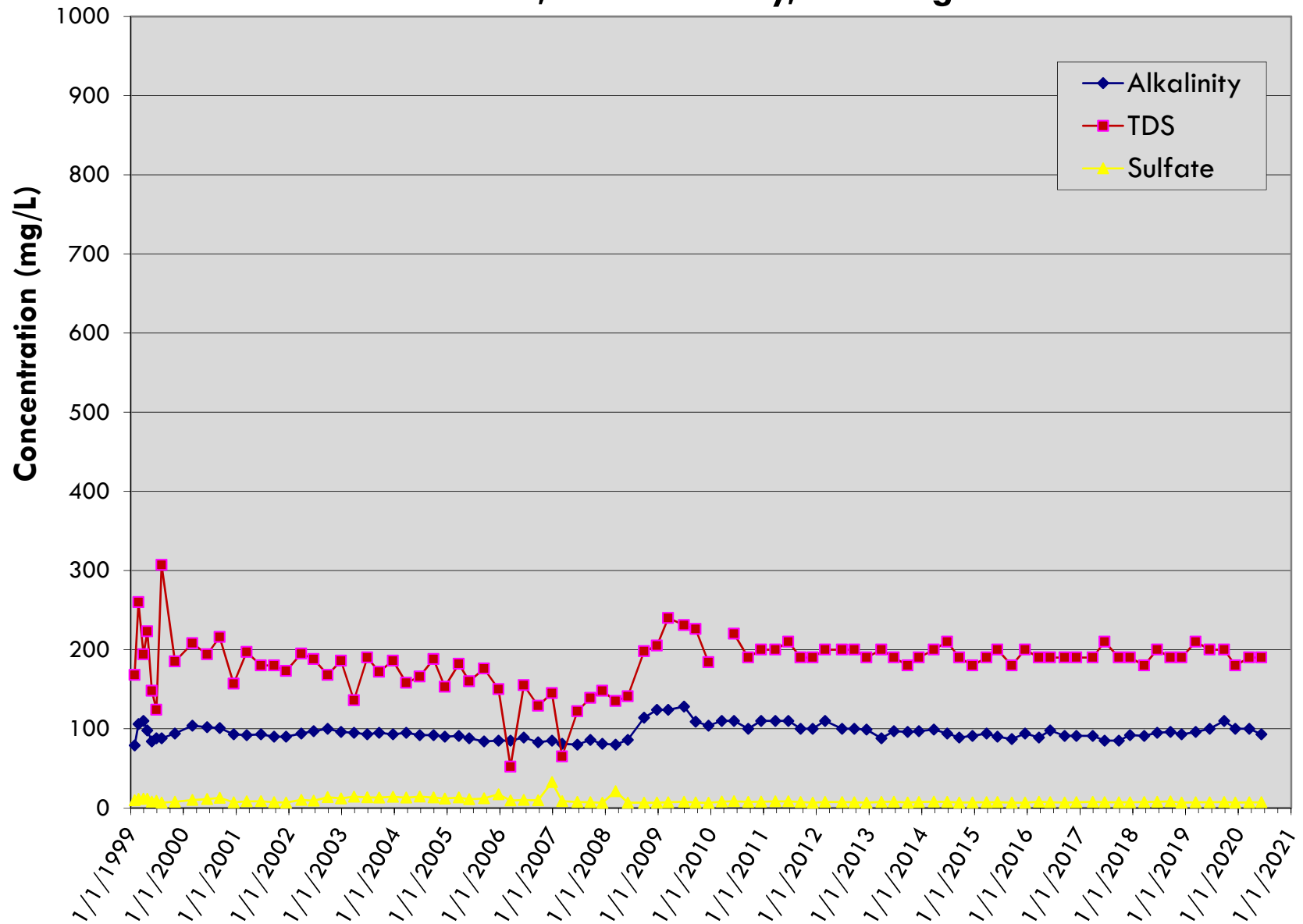
LRI Landfill, Pierce County, Washington



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

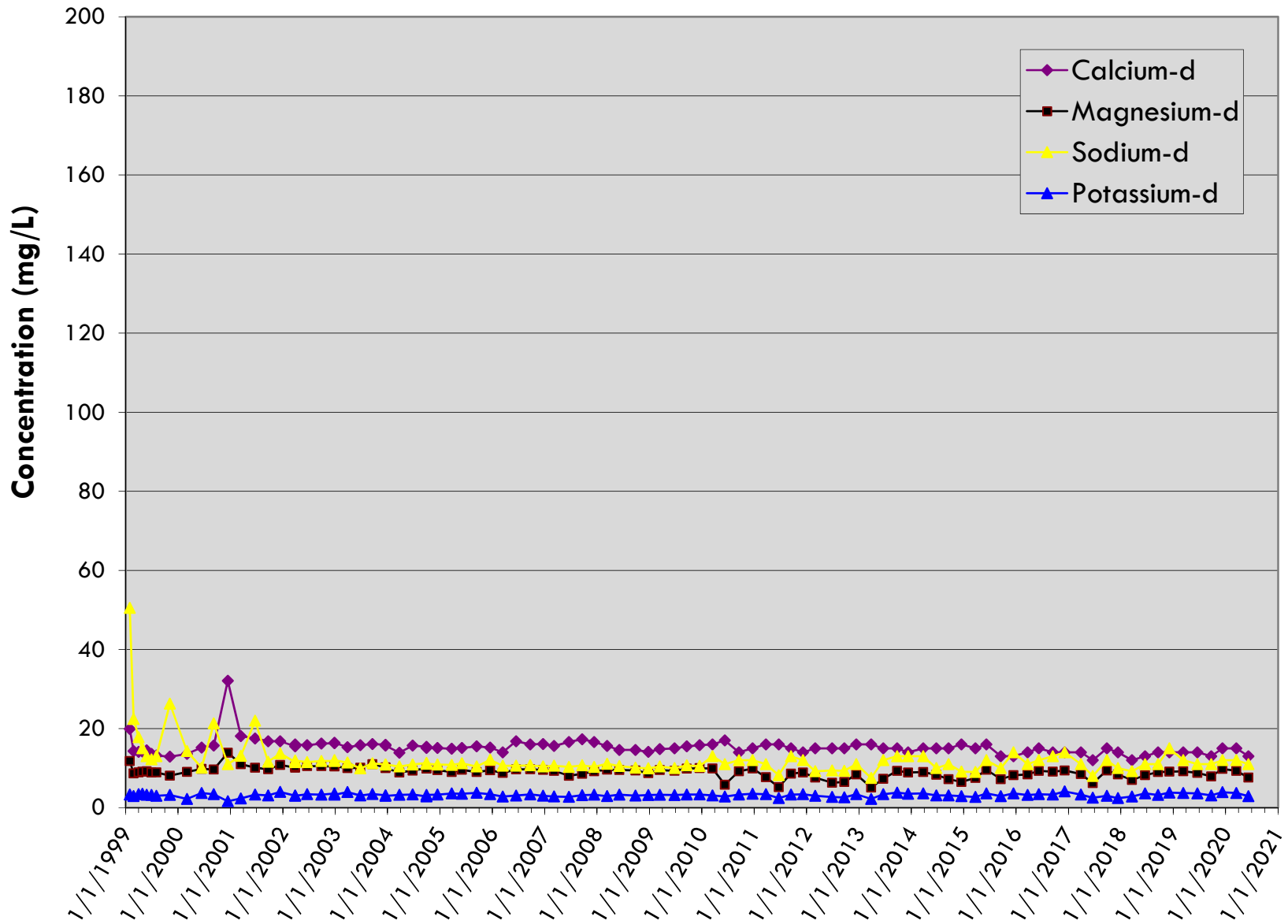


MW-10 (Background) LRI Landfill, Pierce County, Washington



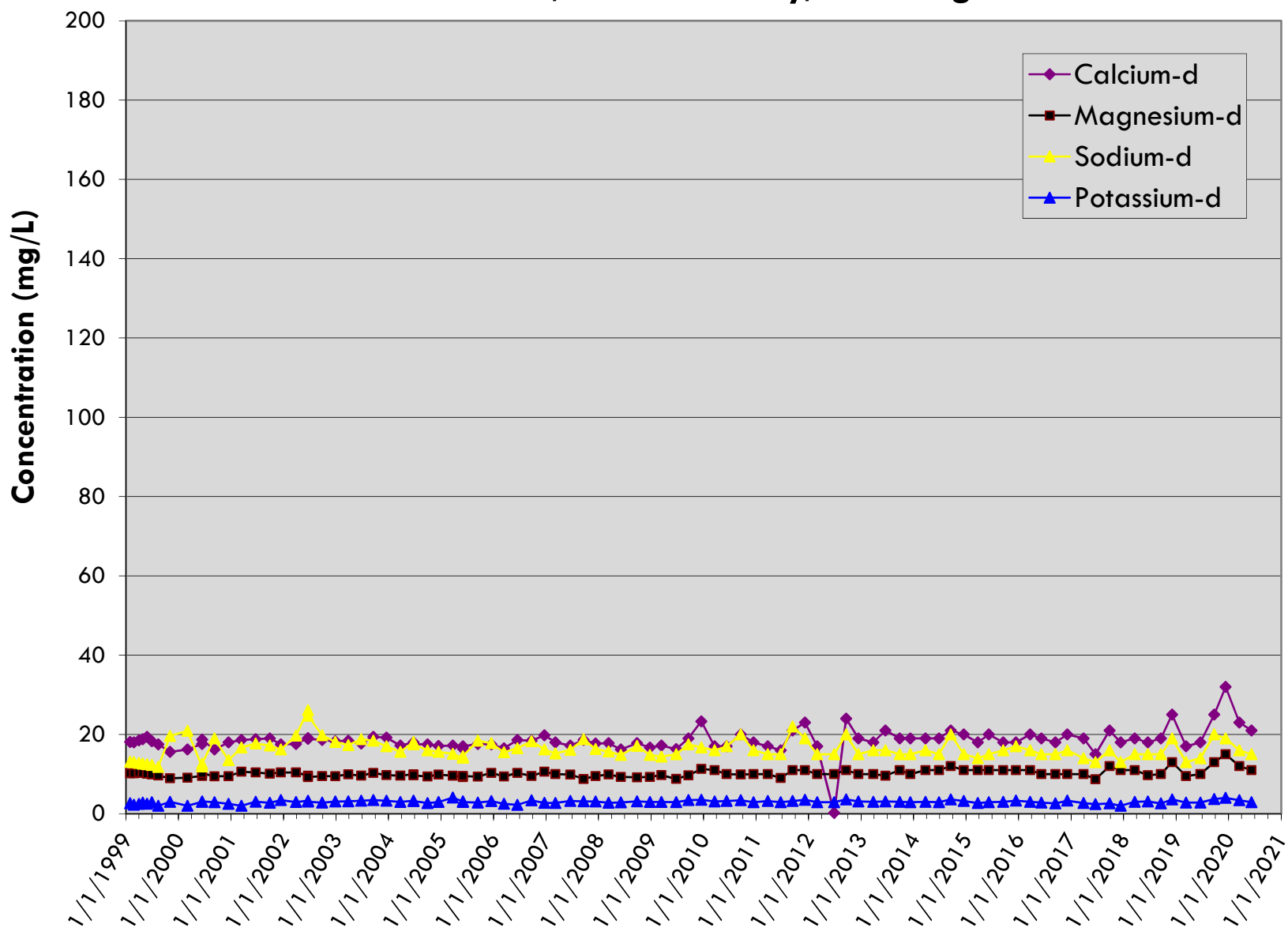
MW-1A

LRI Landfill, Pierce County, Washington



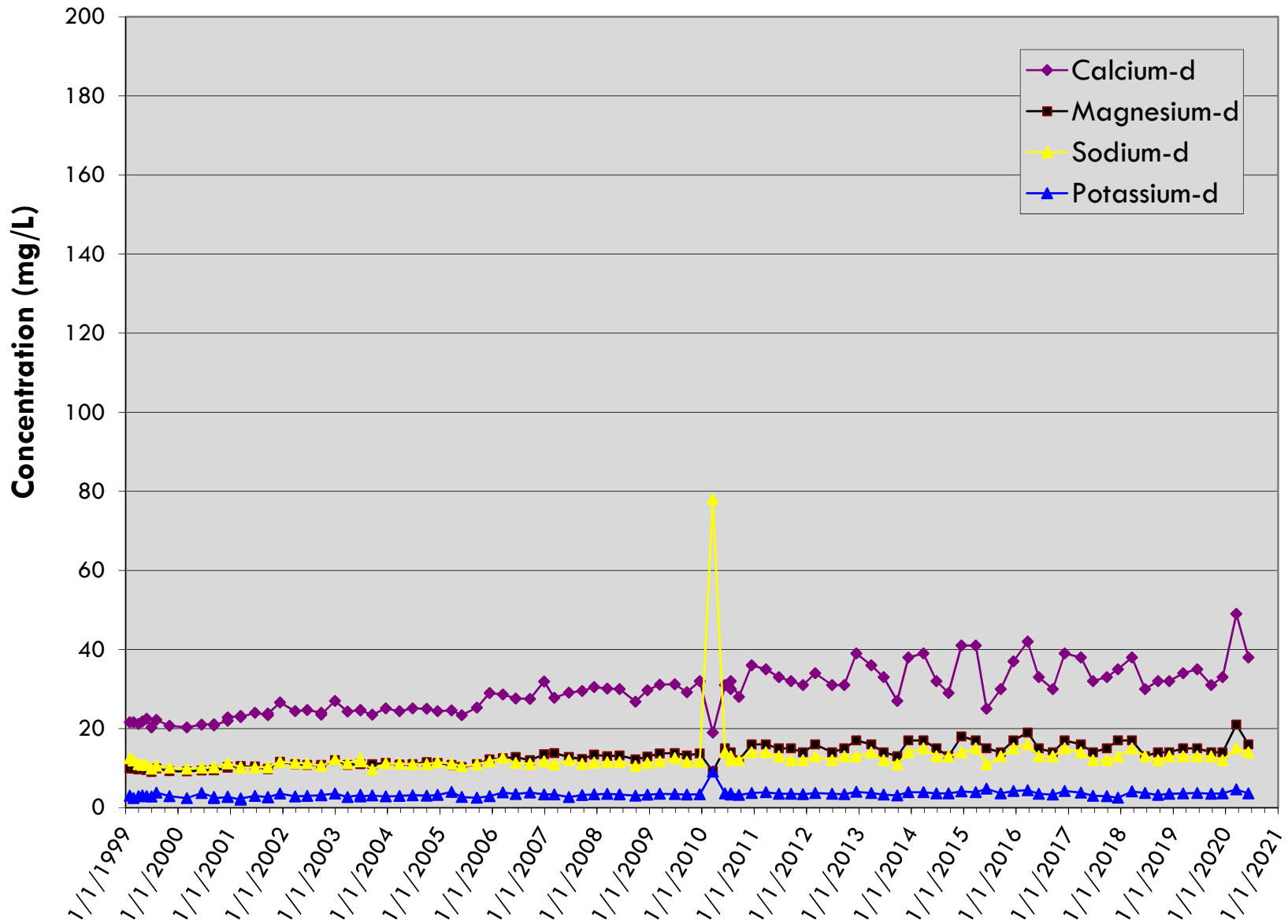
MW-2A

LRI Landfill, Pierce County, Washington



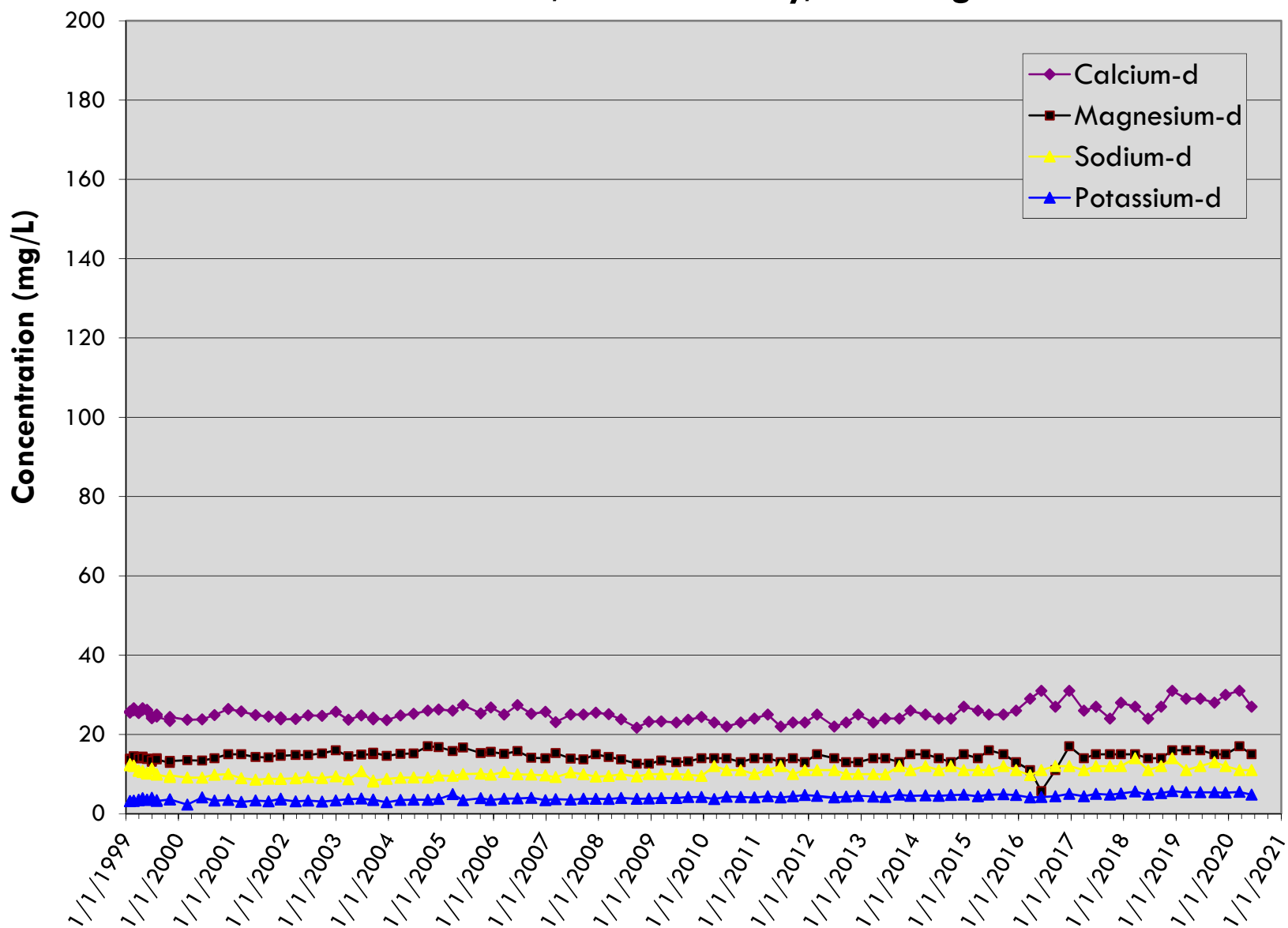
MW-3

LRI Landfill, Pierce County, Washington



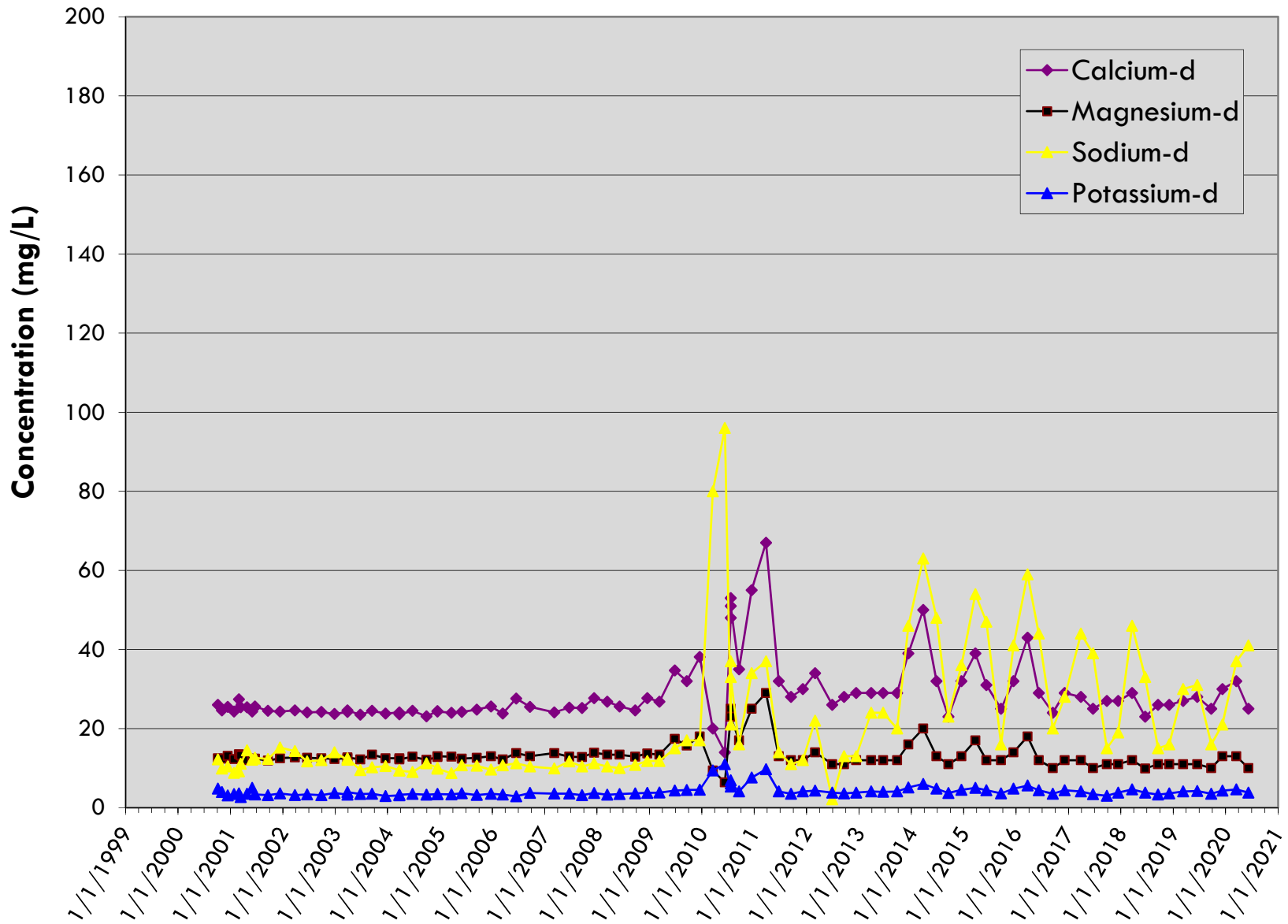
MW-4

LRI Landfill, Pierce County, Washington



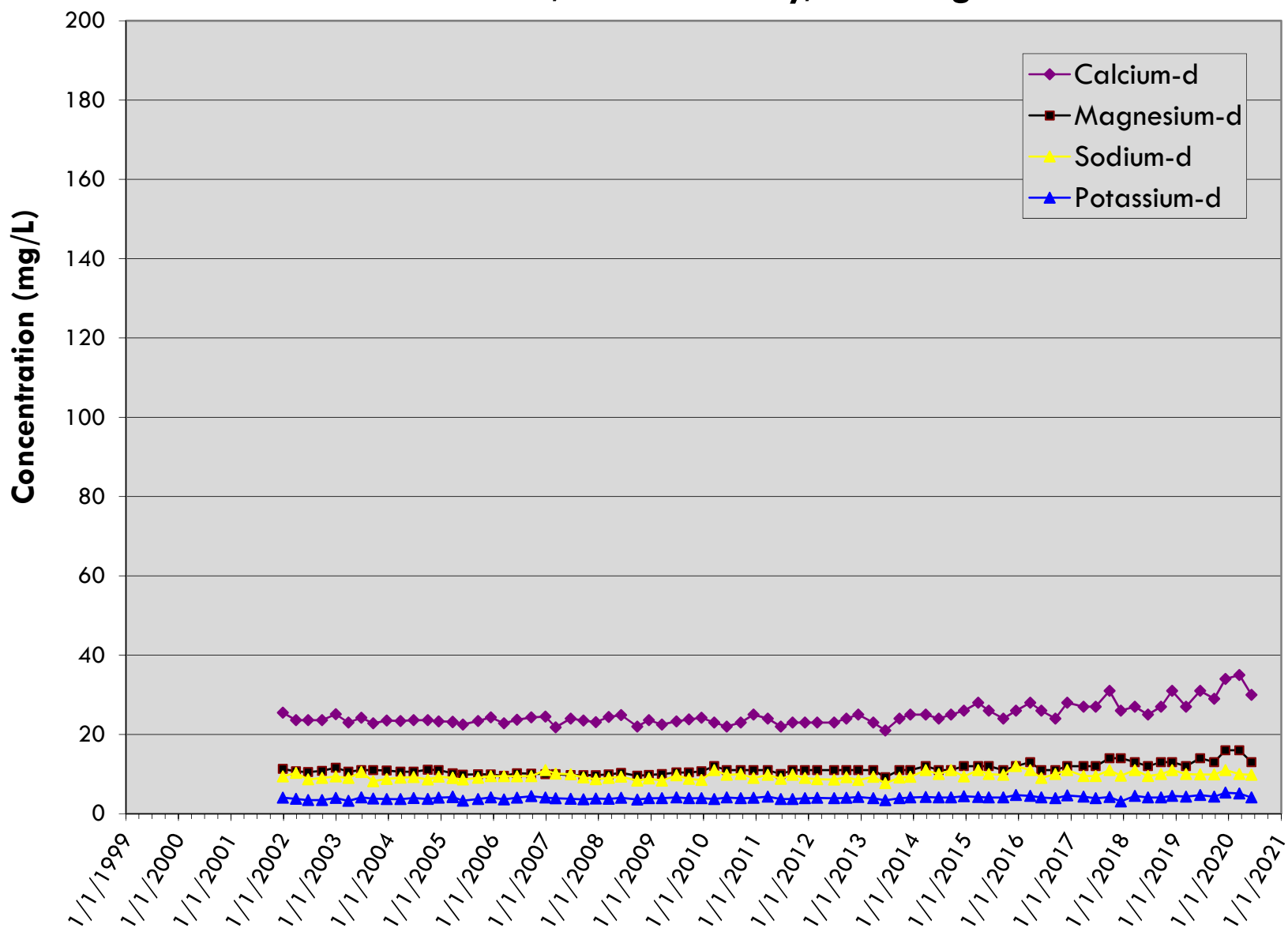
MW-5A

LRI Landfill, Pierce County, Washington



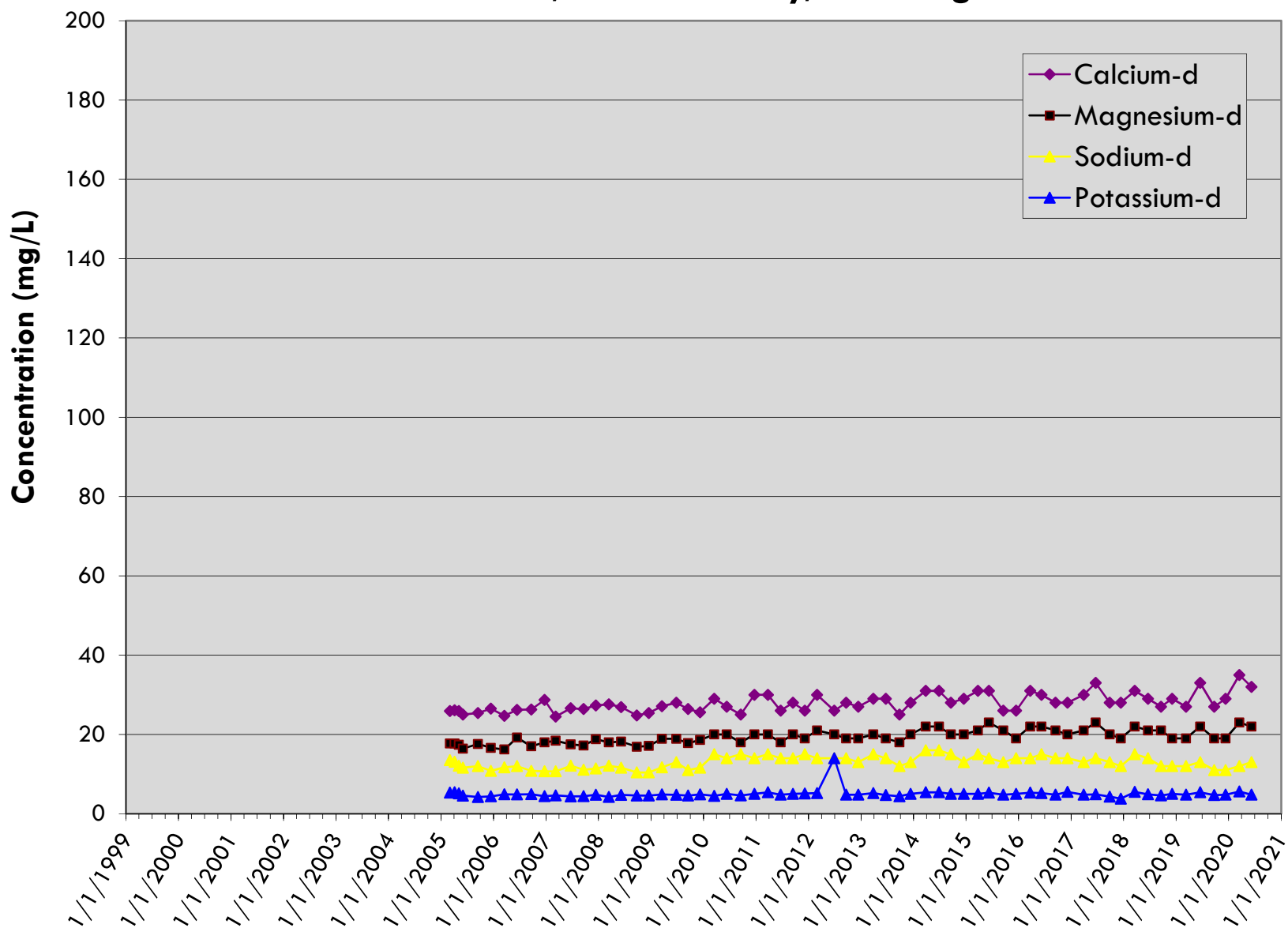
MW-6

LRI Landfill, Pierce County, Washington

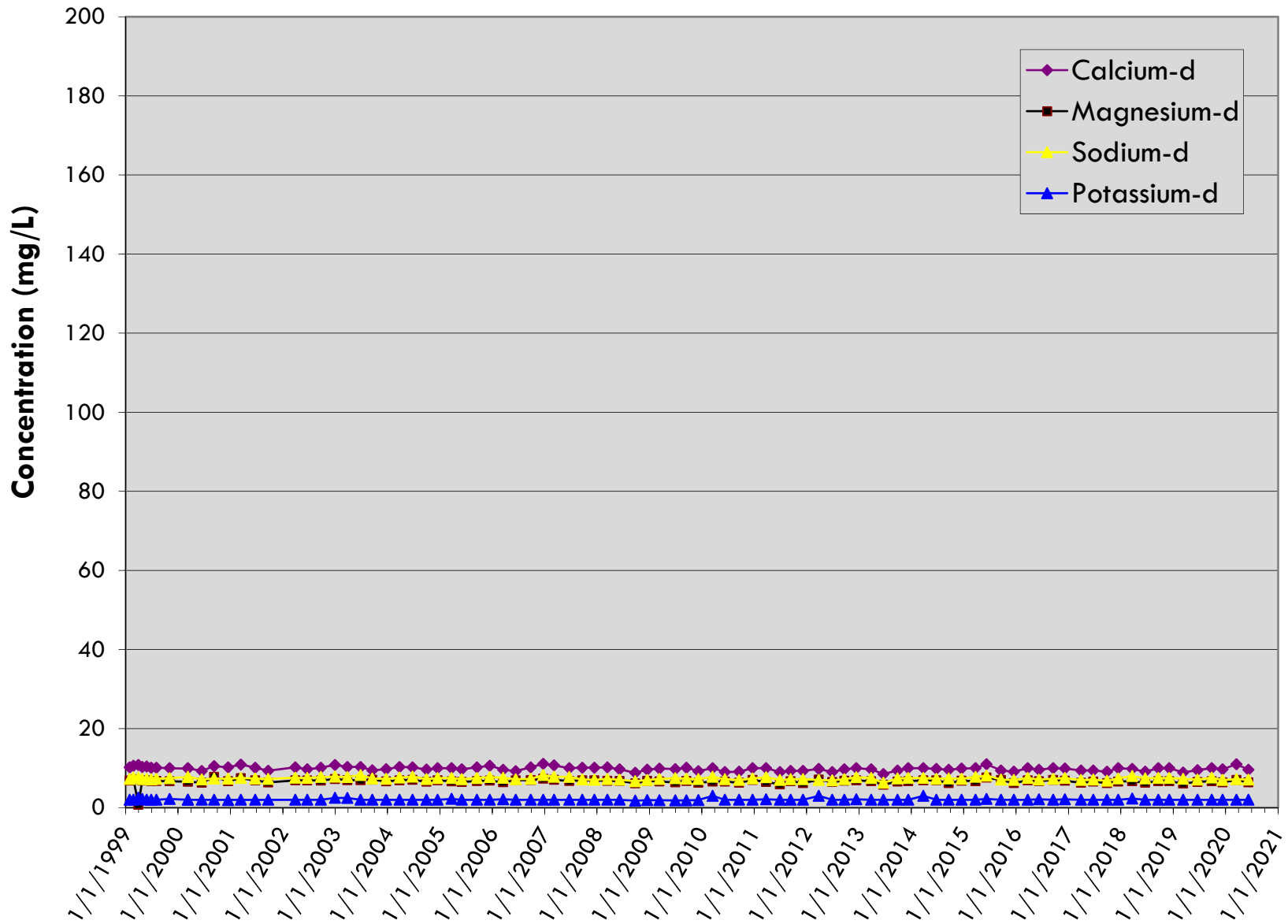


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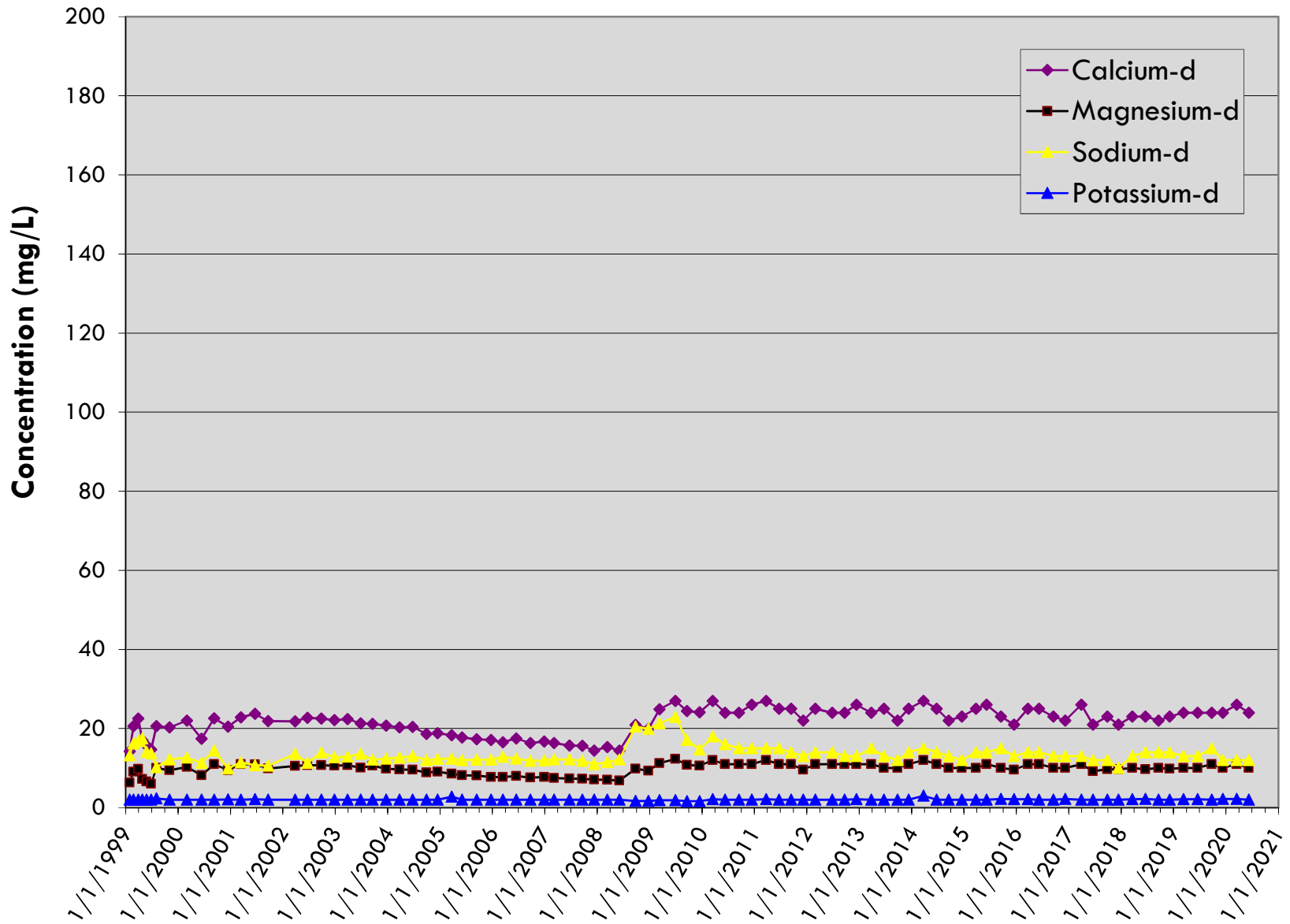
LRI Landfill, Pierce County, Washington



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

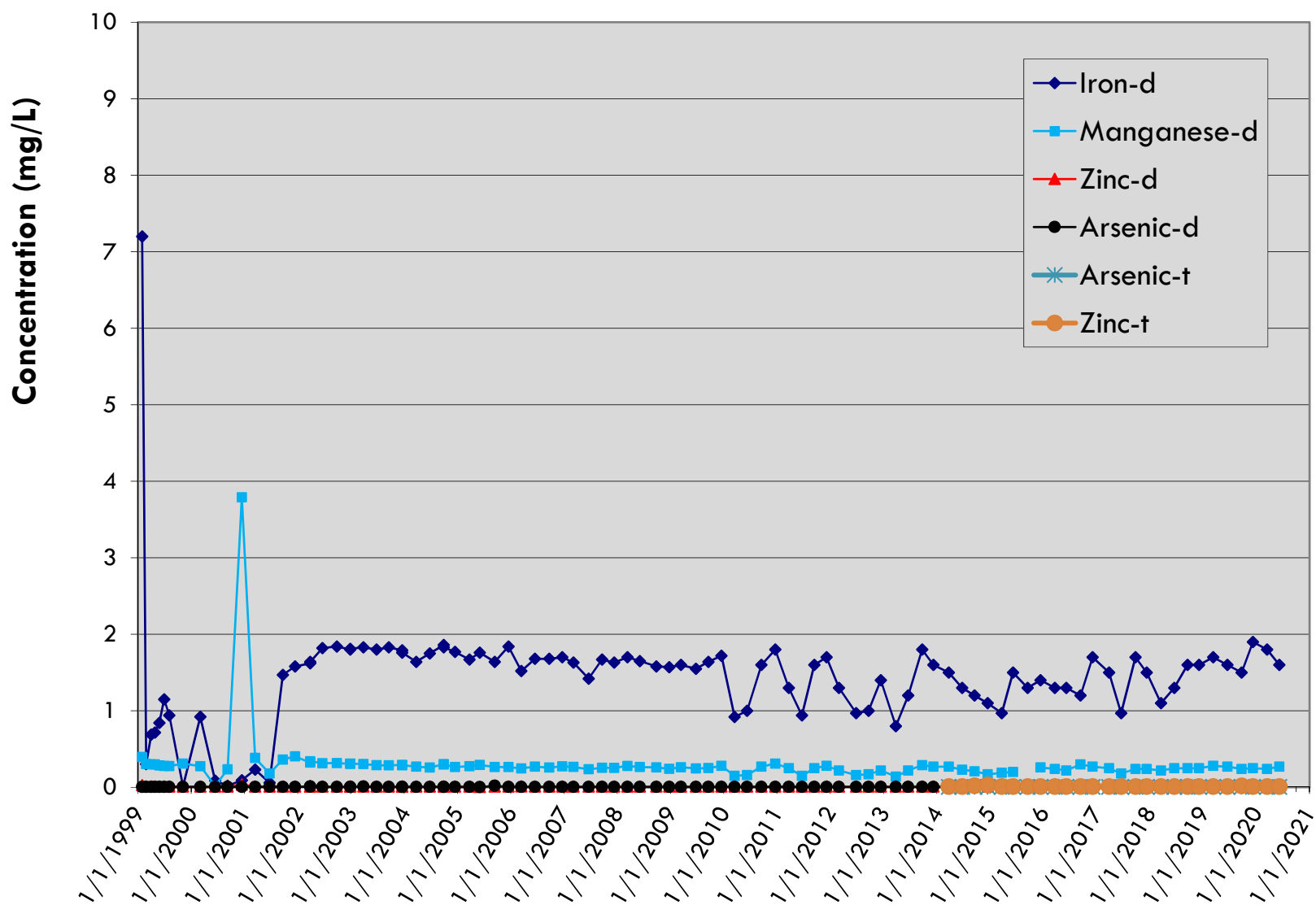


MW-10 (Background) LRI Landfill, Pierce County, Washington



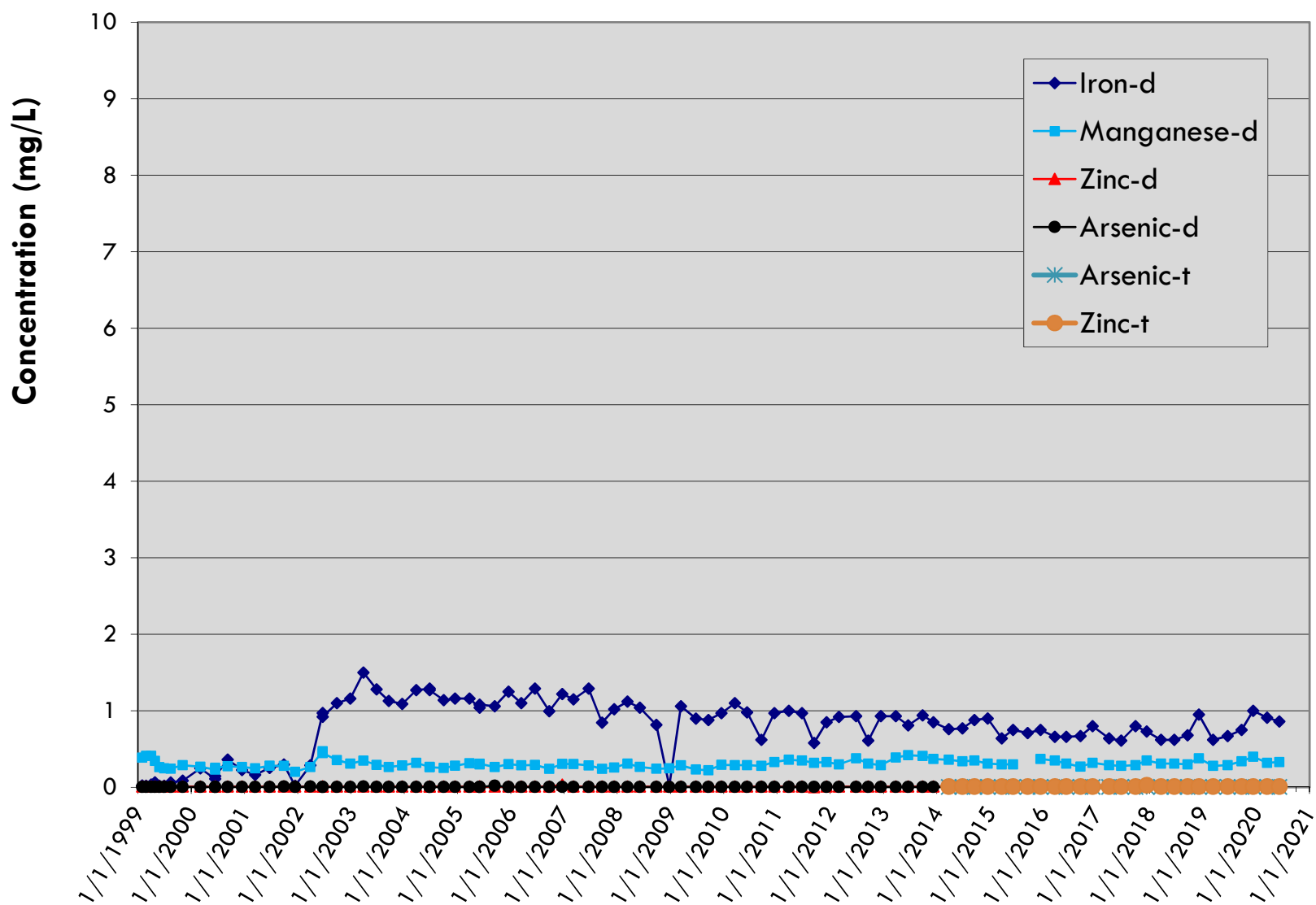
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LRI Landfill, Pierce County, Washington



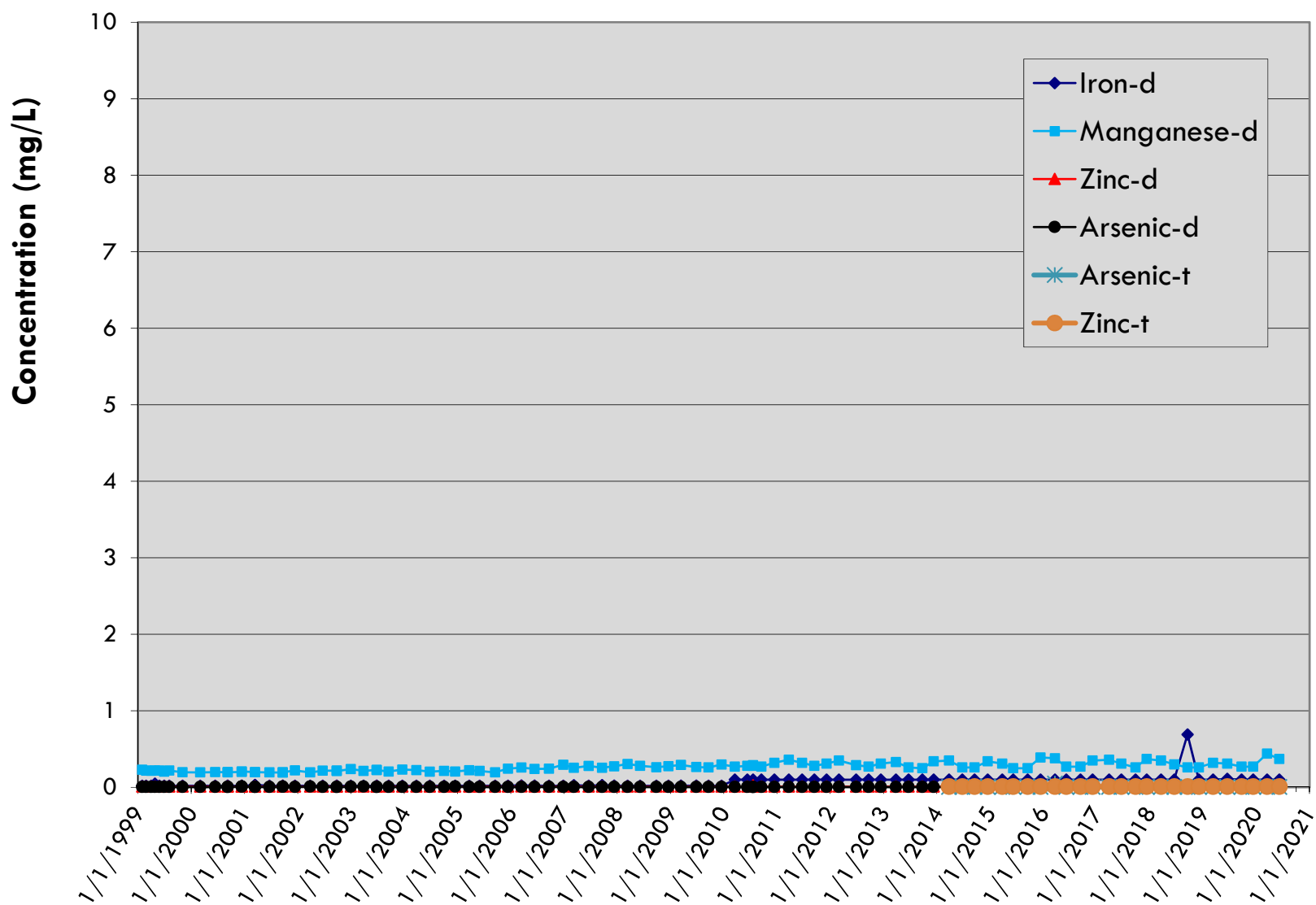
MW-2A

LRI Landfill, Pierce County, Washington



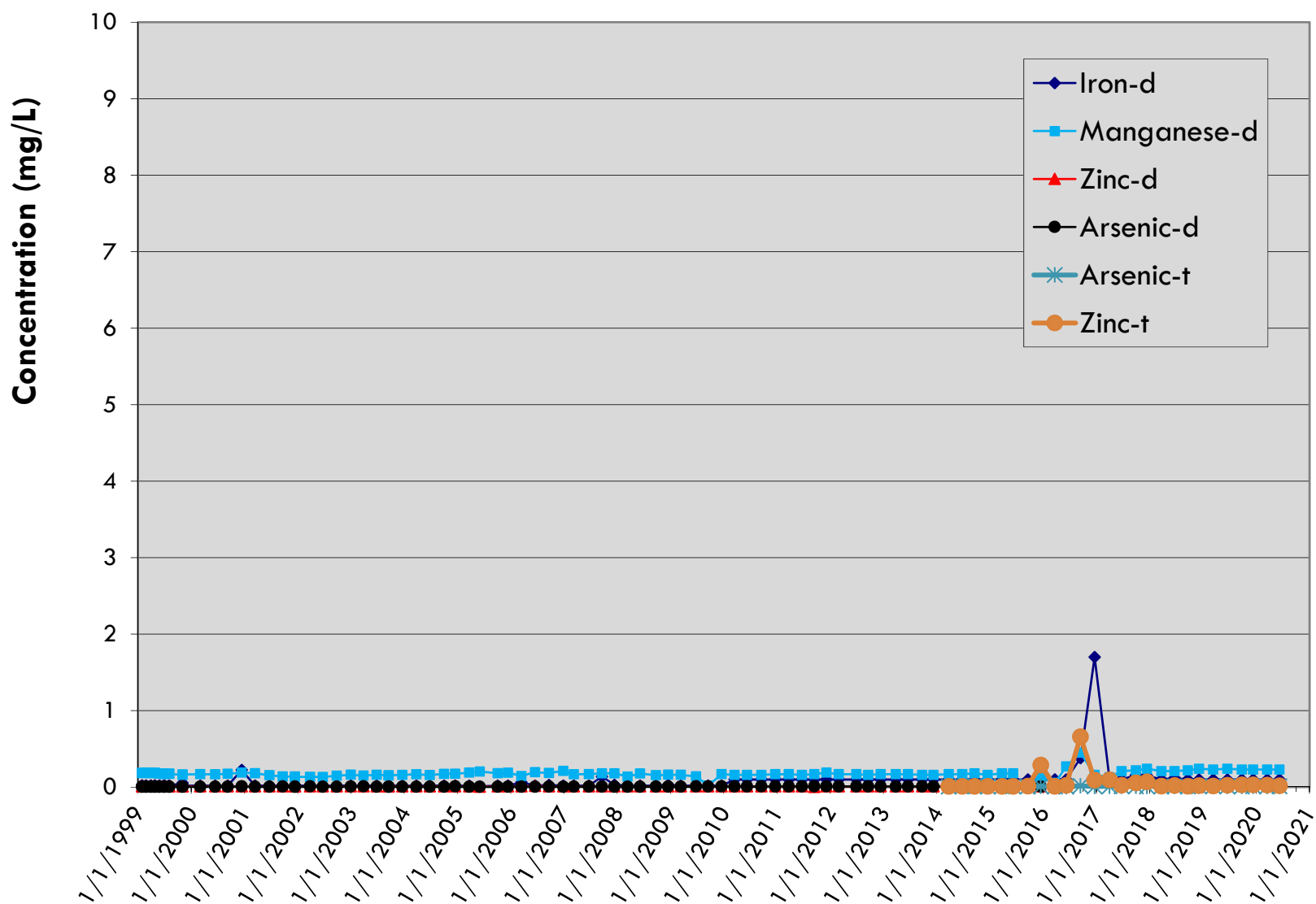
MW-3

LRI Landfill, Pierce County, Washington



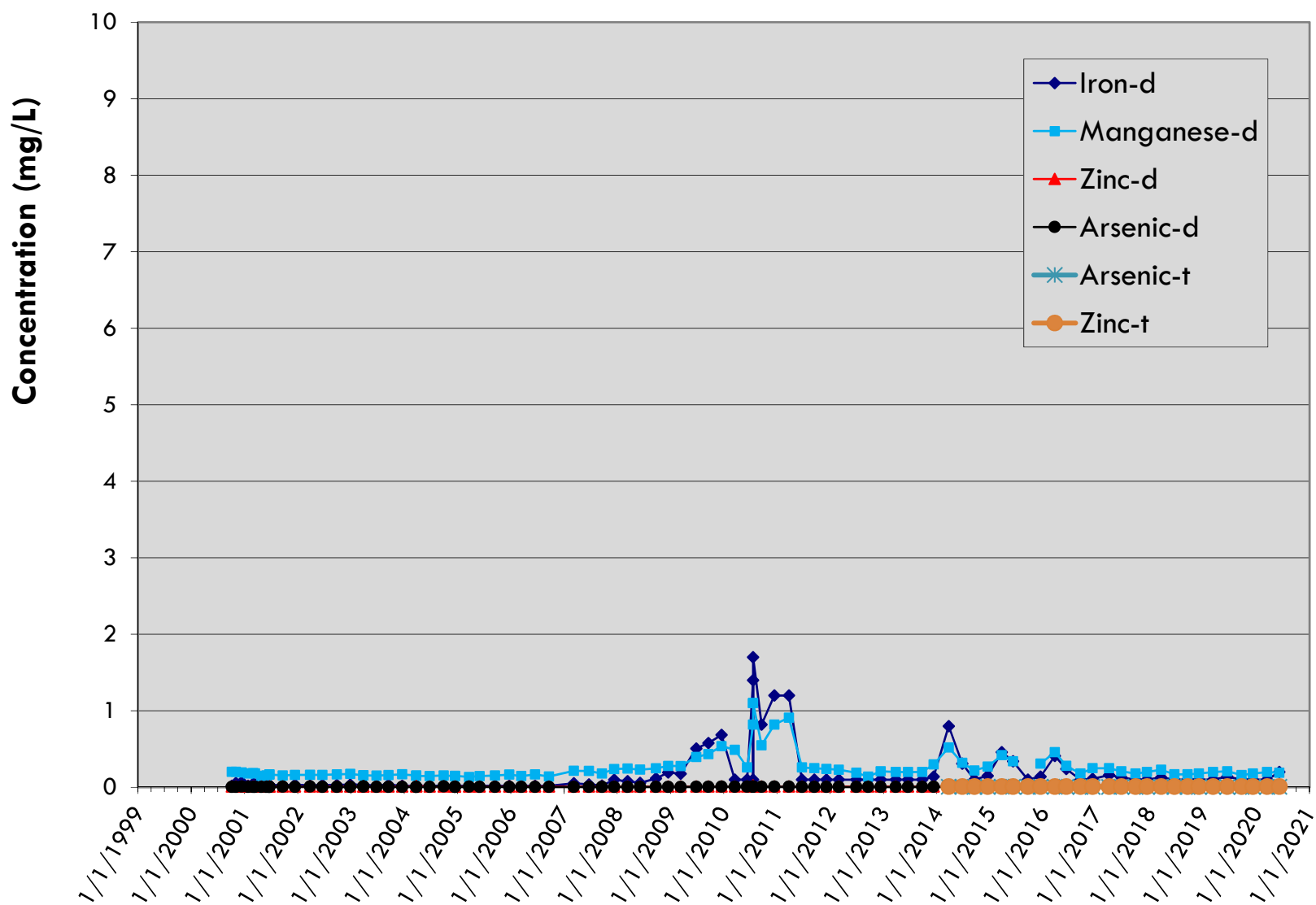
MW-4

LRI Landfill, Pierce County, Washington



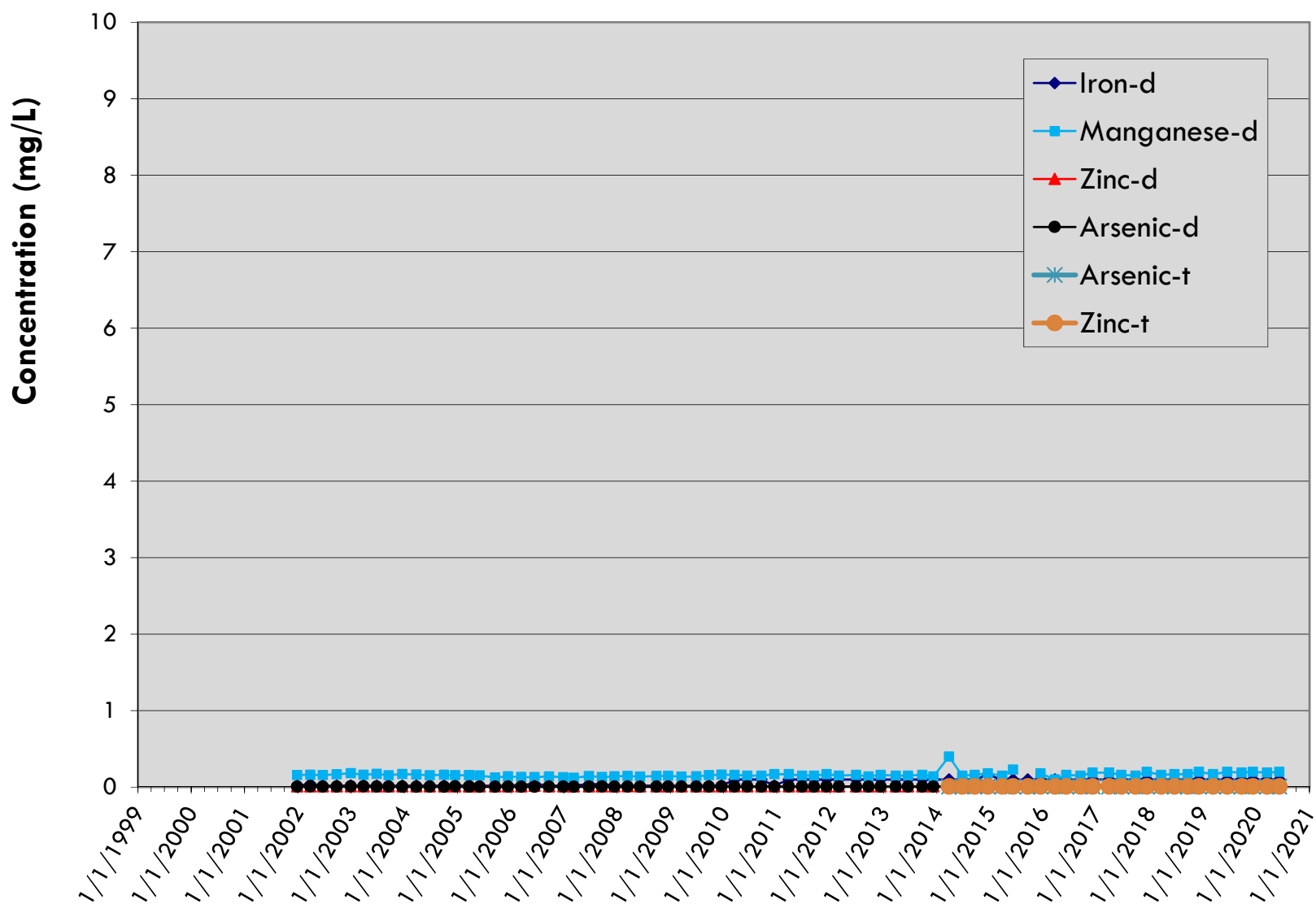
MW-5A

LRI Landfill, Pierce County, Washington

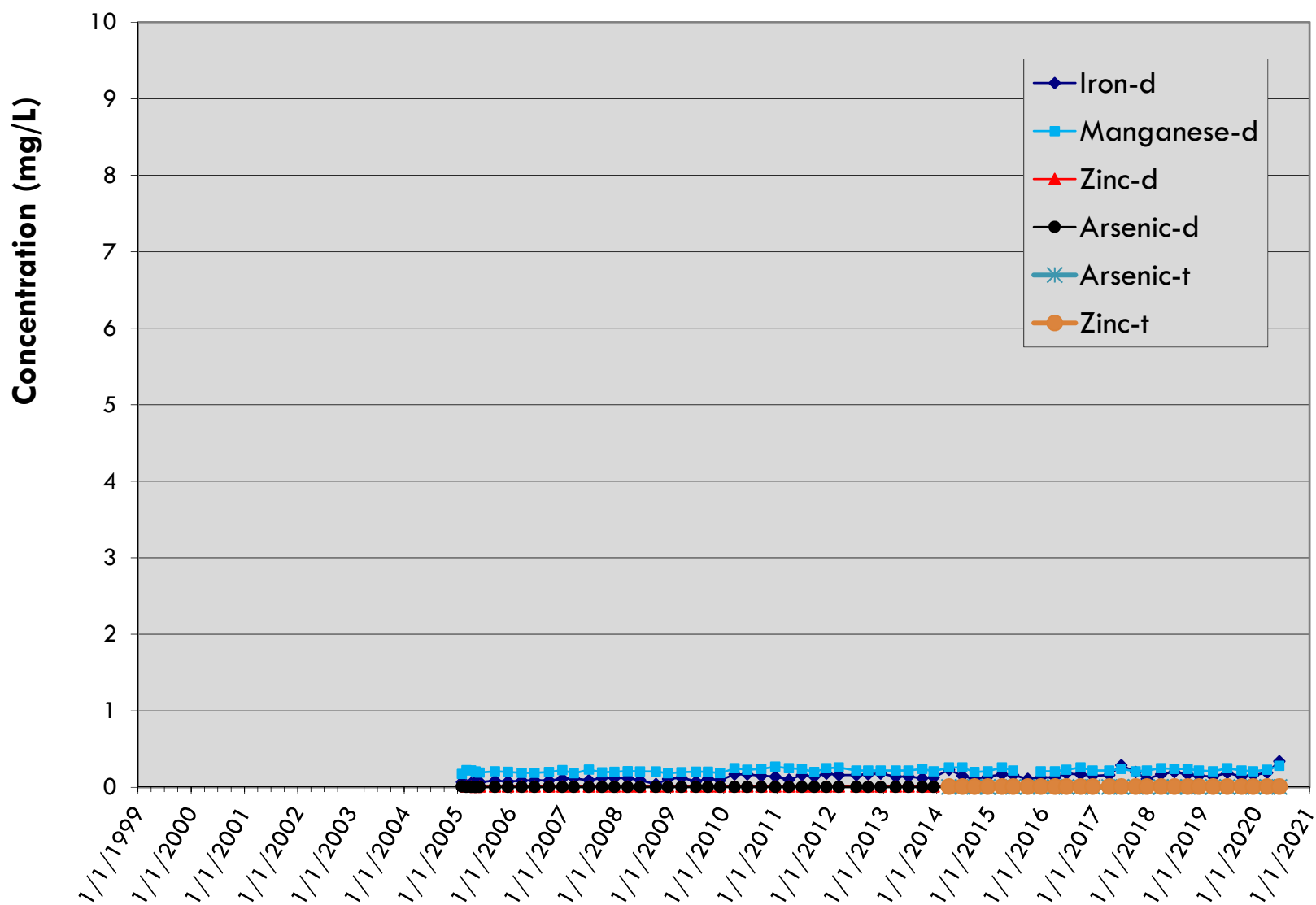


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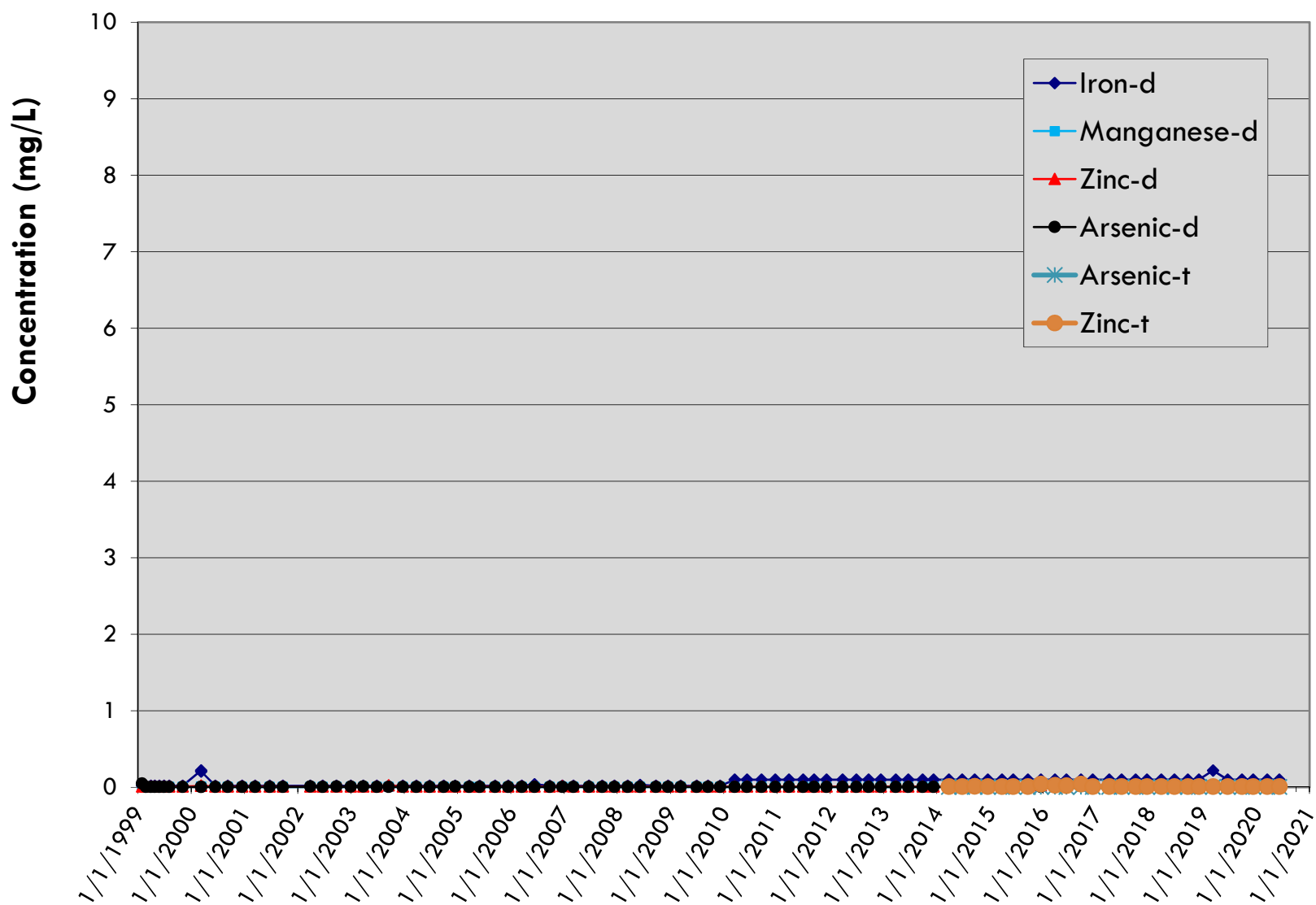
LRI Landfill, Pierce County, Washington



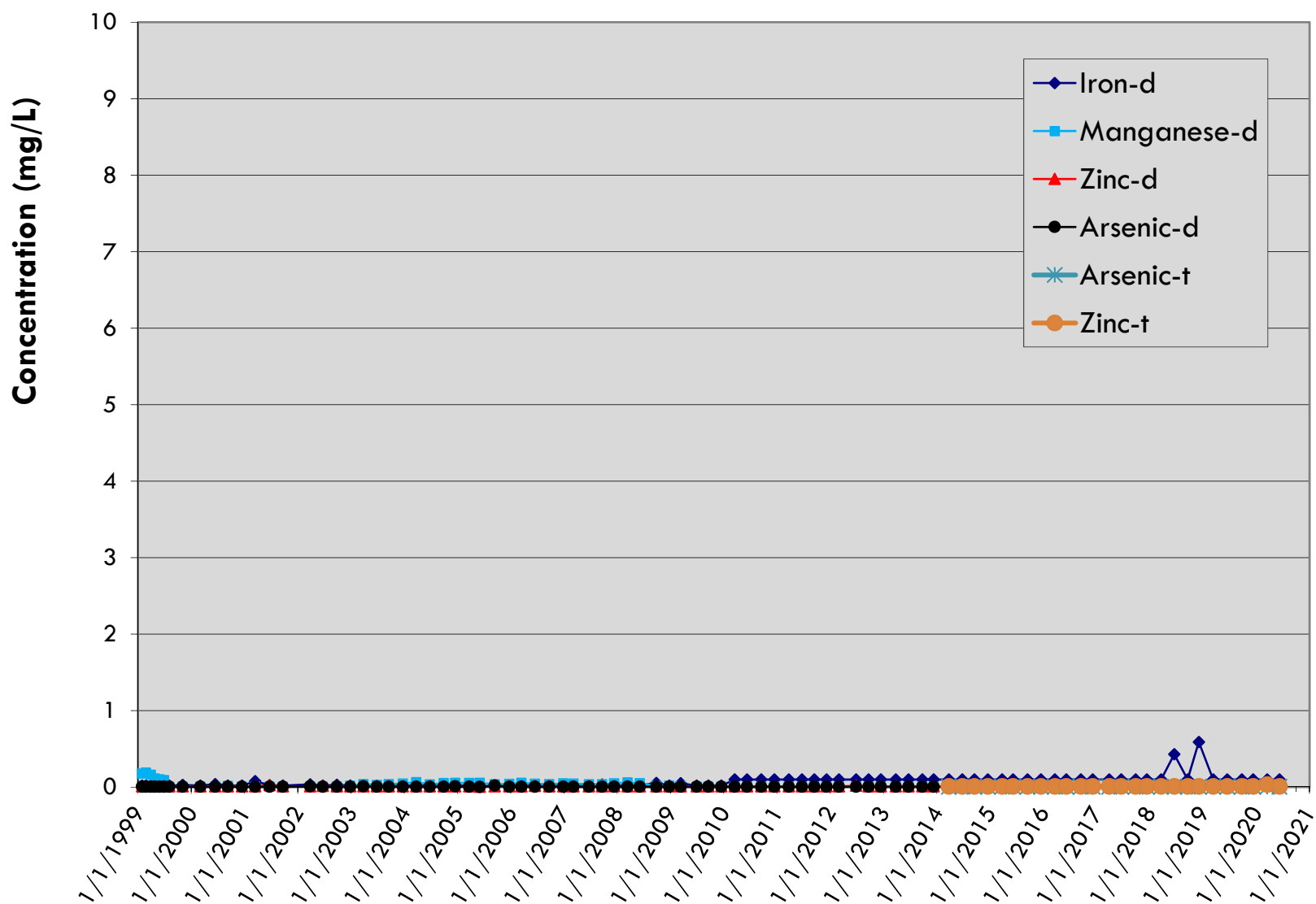
MW-7
LRI Landfill, Pierce County, Washington



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

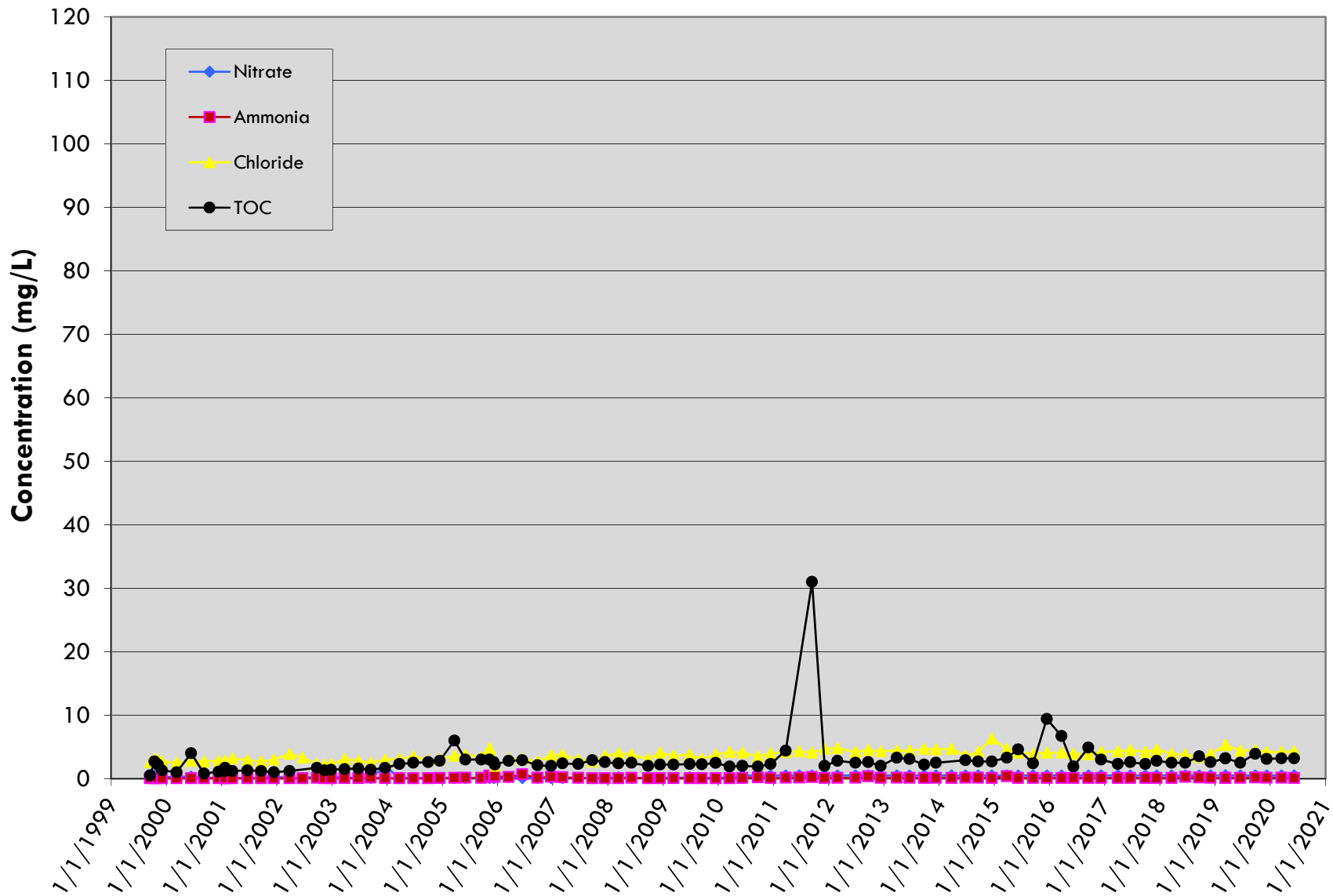


MW-10 (Background) LRI Landfill, Pierce County, Washington



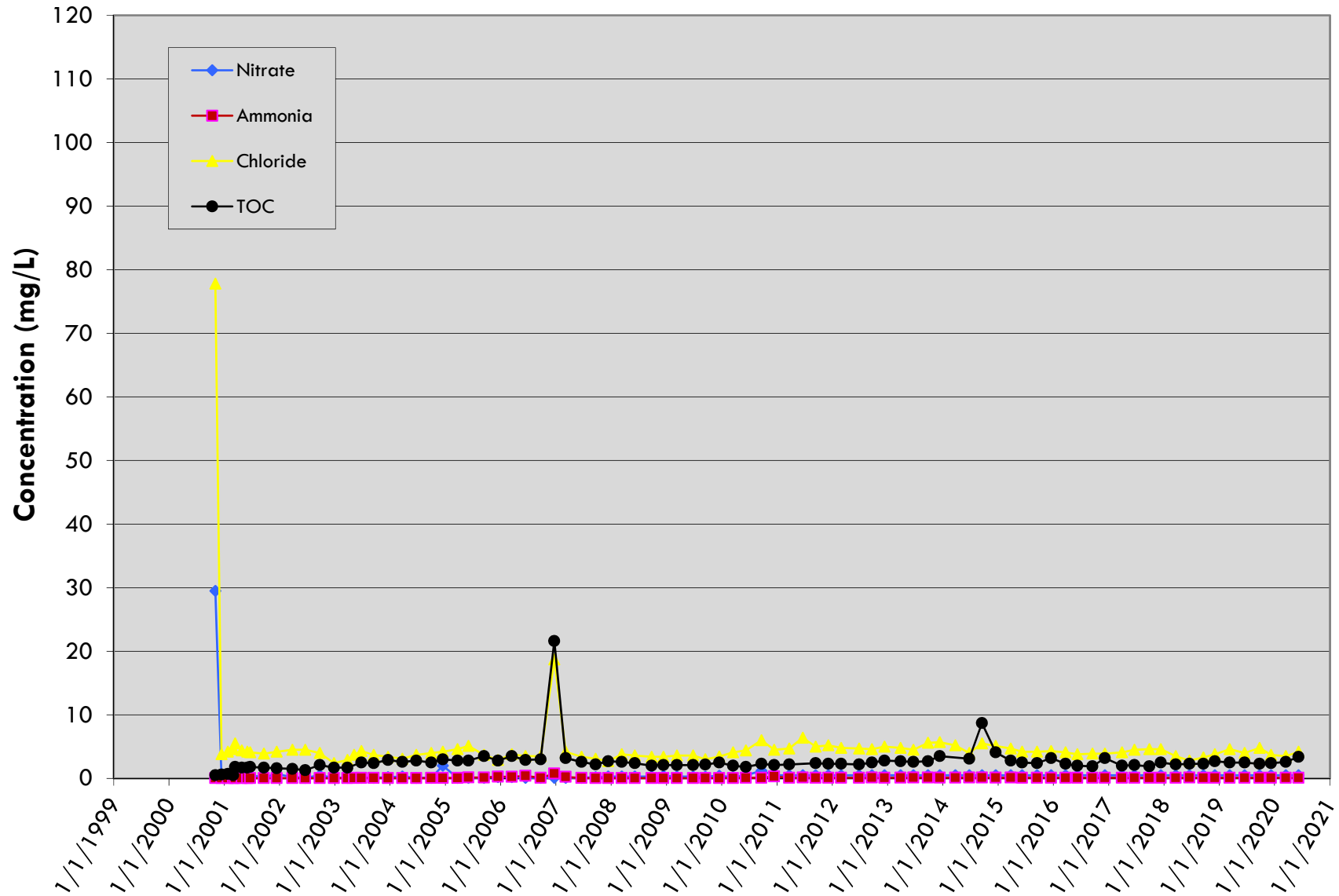
LDCS-1

LRI Landfill, Pierce County, Washington



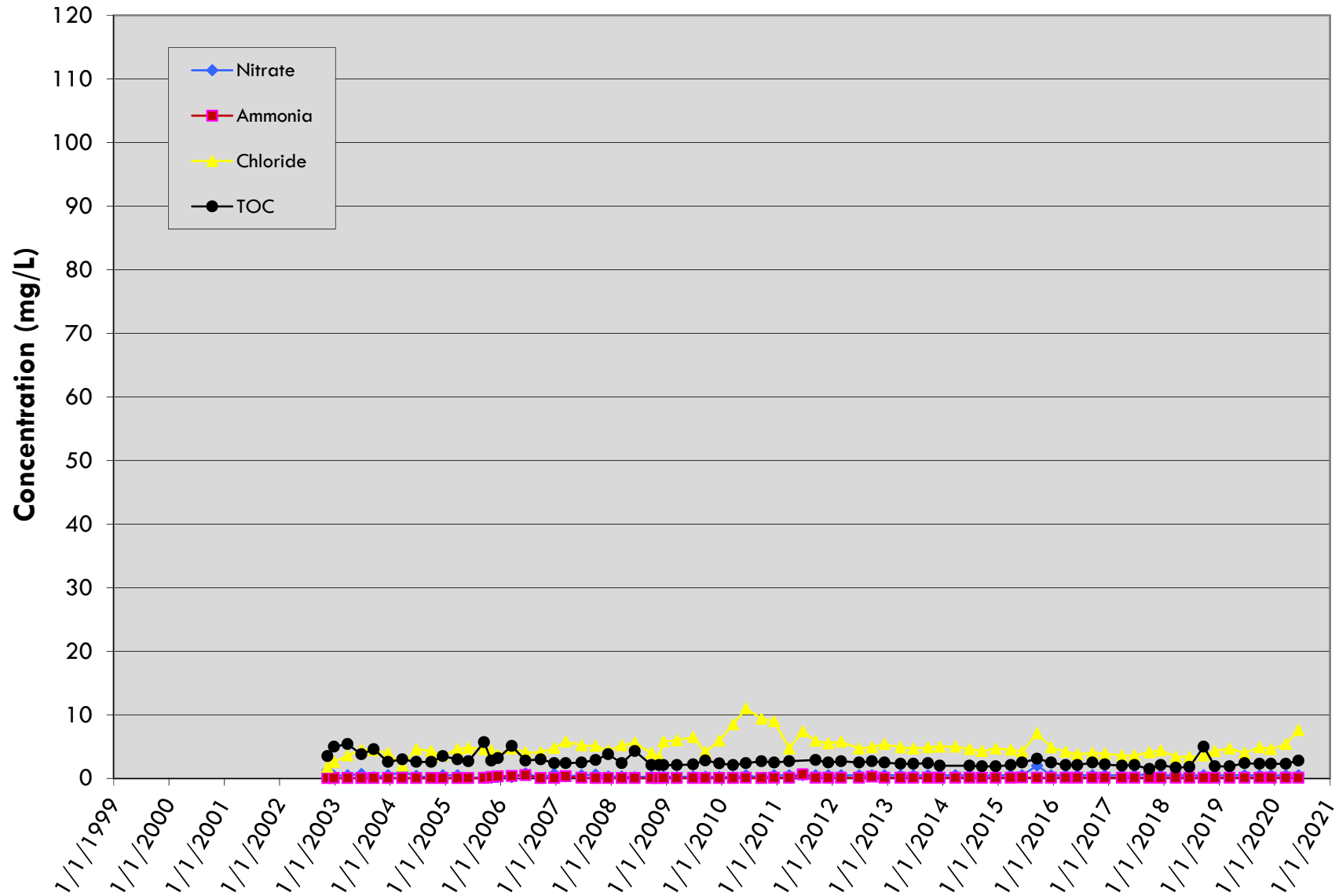
LDCS-2A

LRI Landfill, Pierce County, Washington



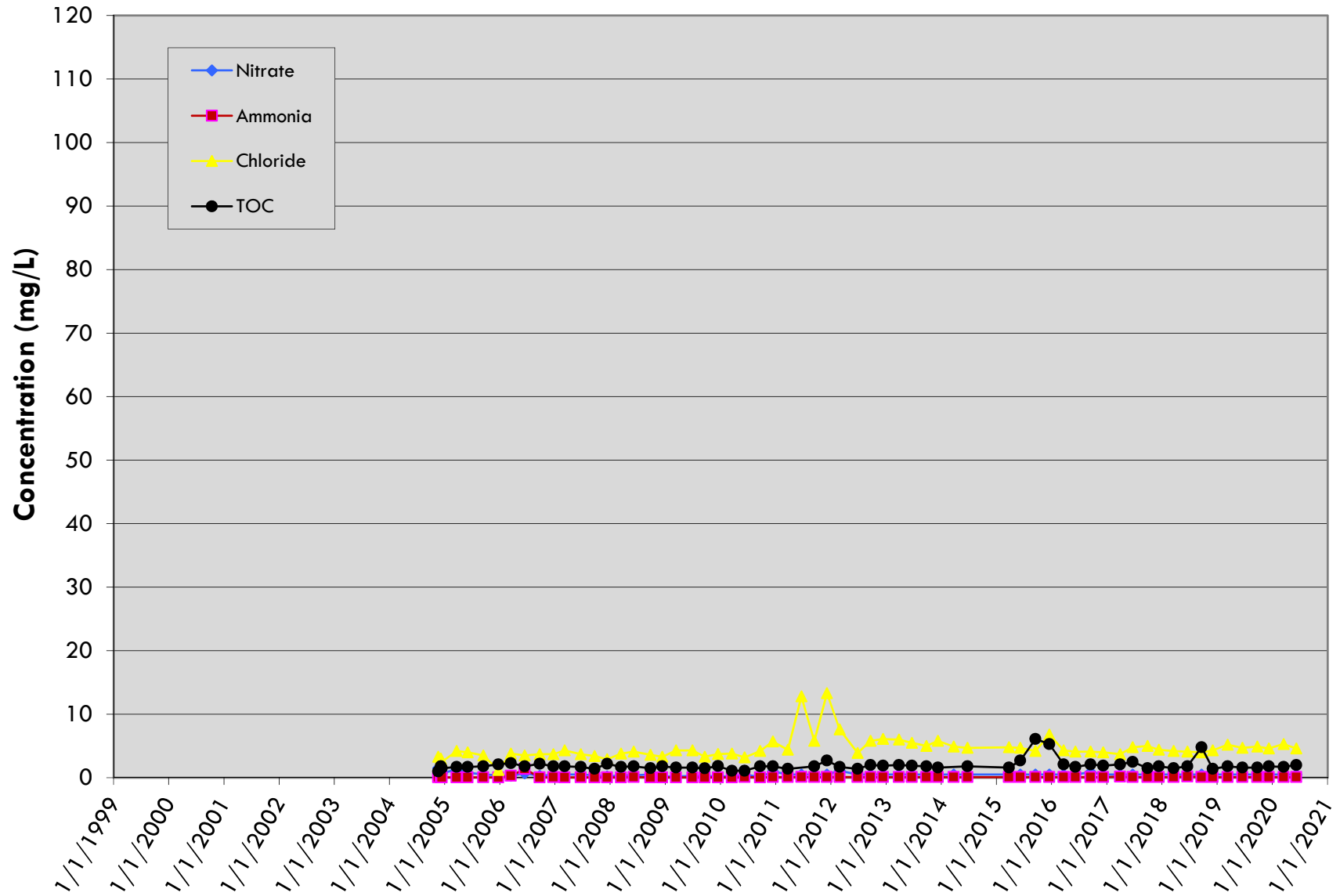
LDCS-2B

LRI Landfill, Pierce County, Washington



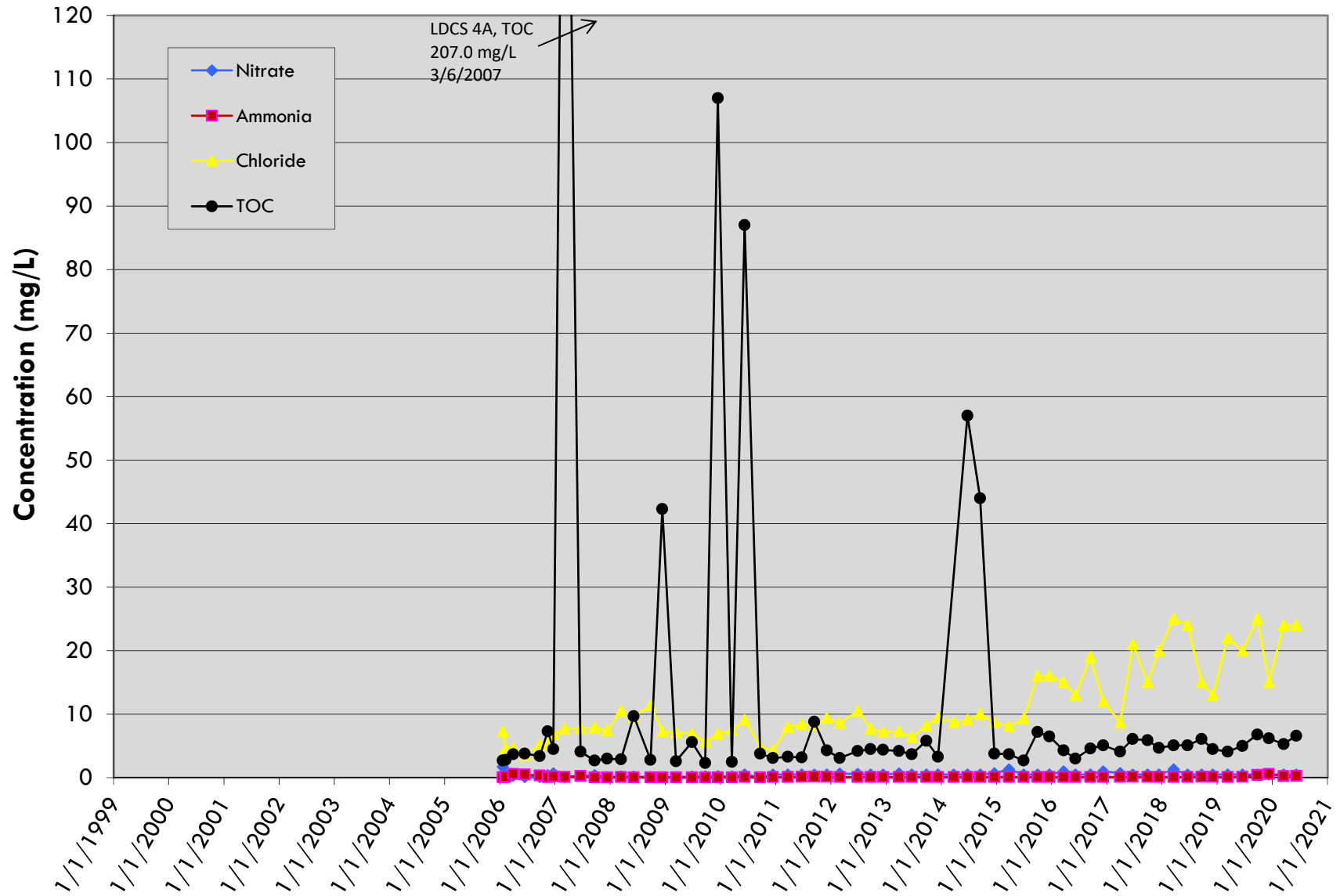
LDCS-3A

LRI Landfill, Pierce County, Washington



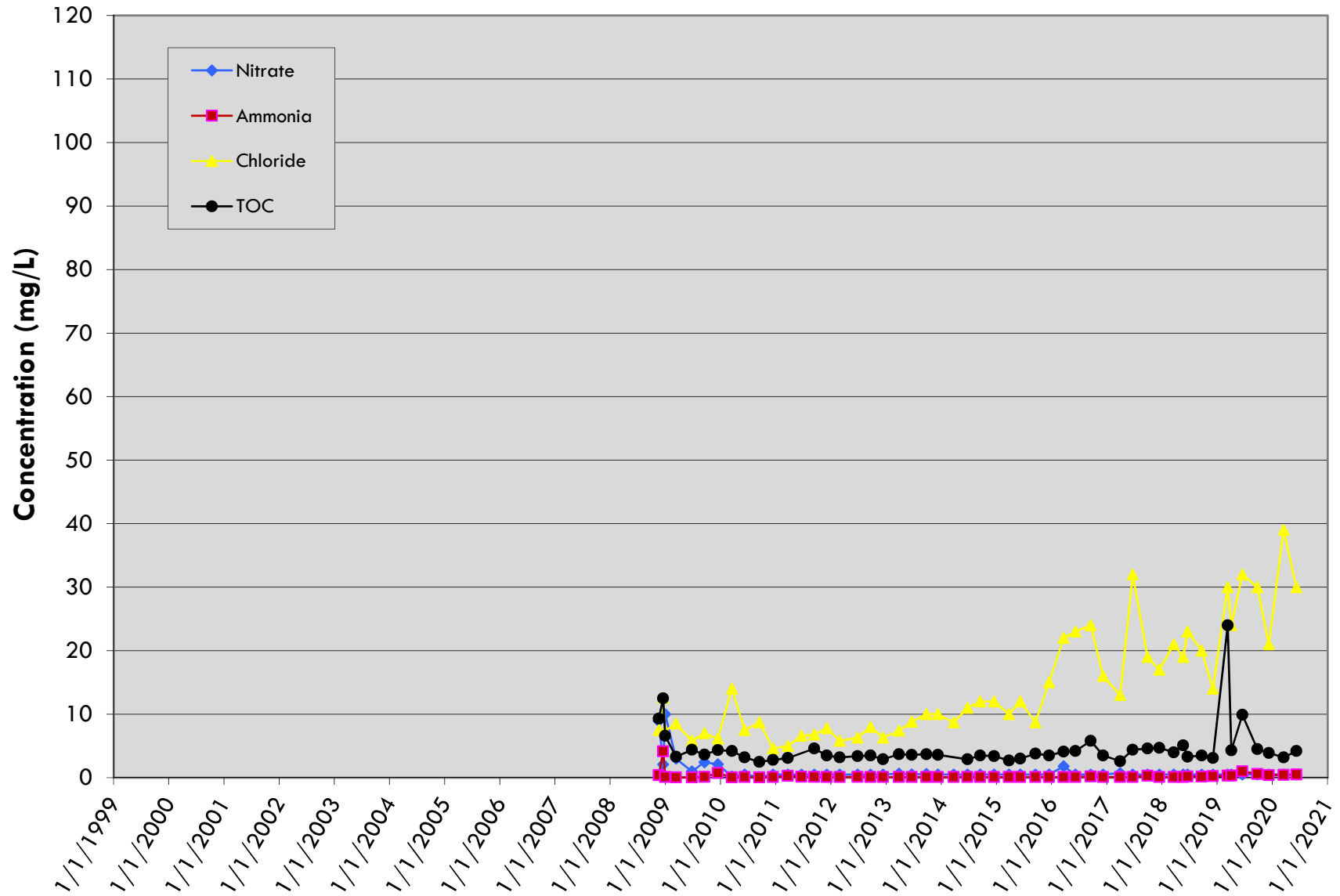
LDCS-4A

LRI Landfill, Pierce County, Washington



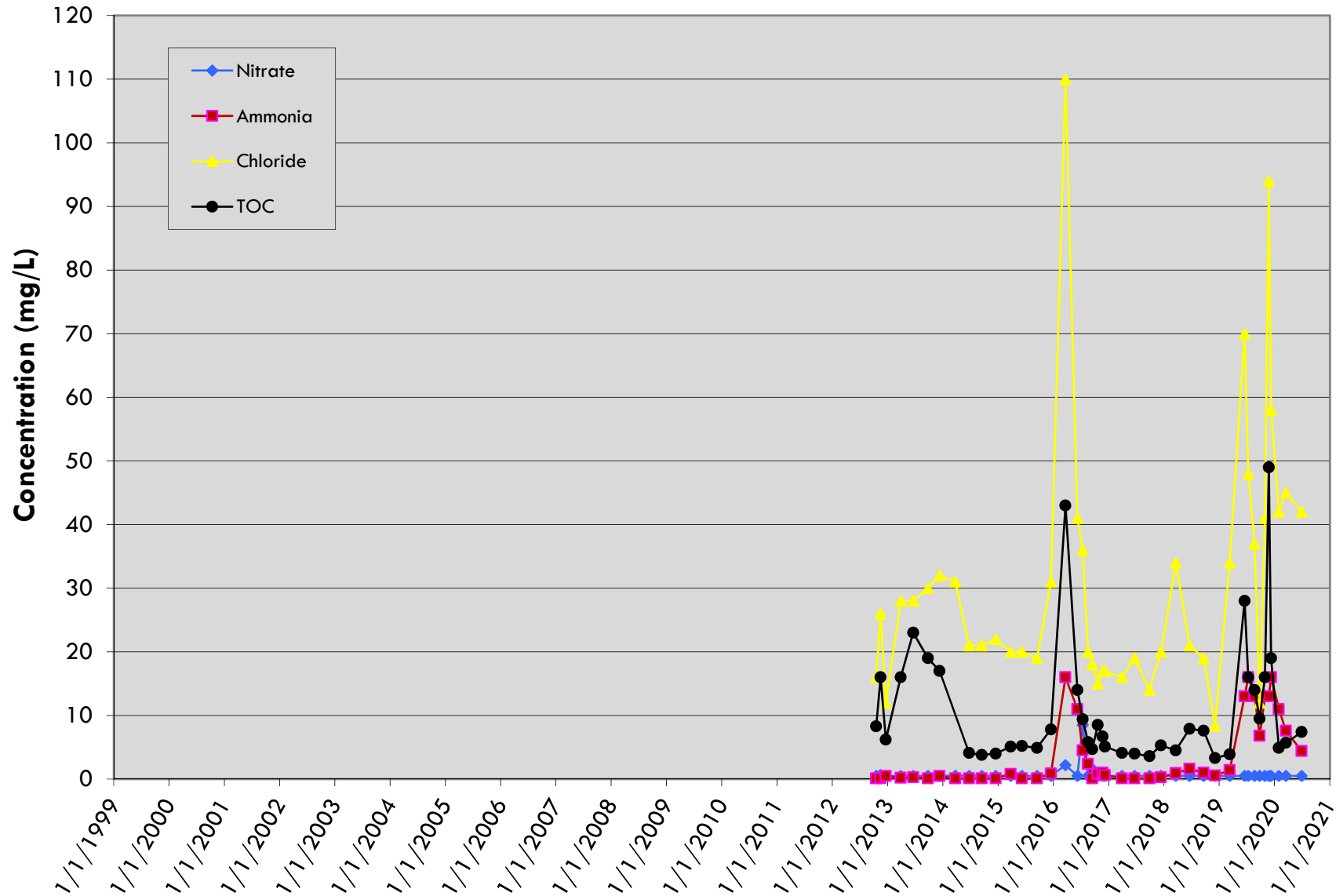
LDCS-4B

LRI Landfill, Pierce County, Washington



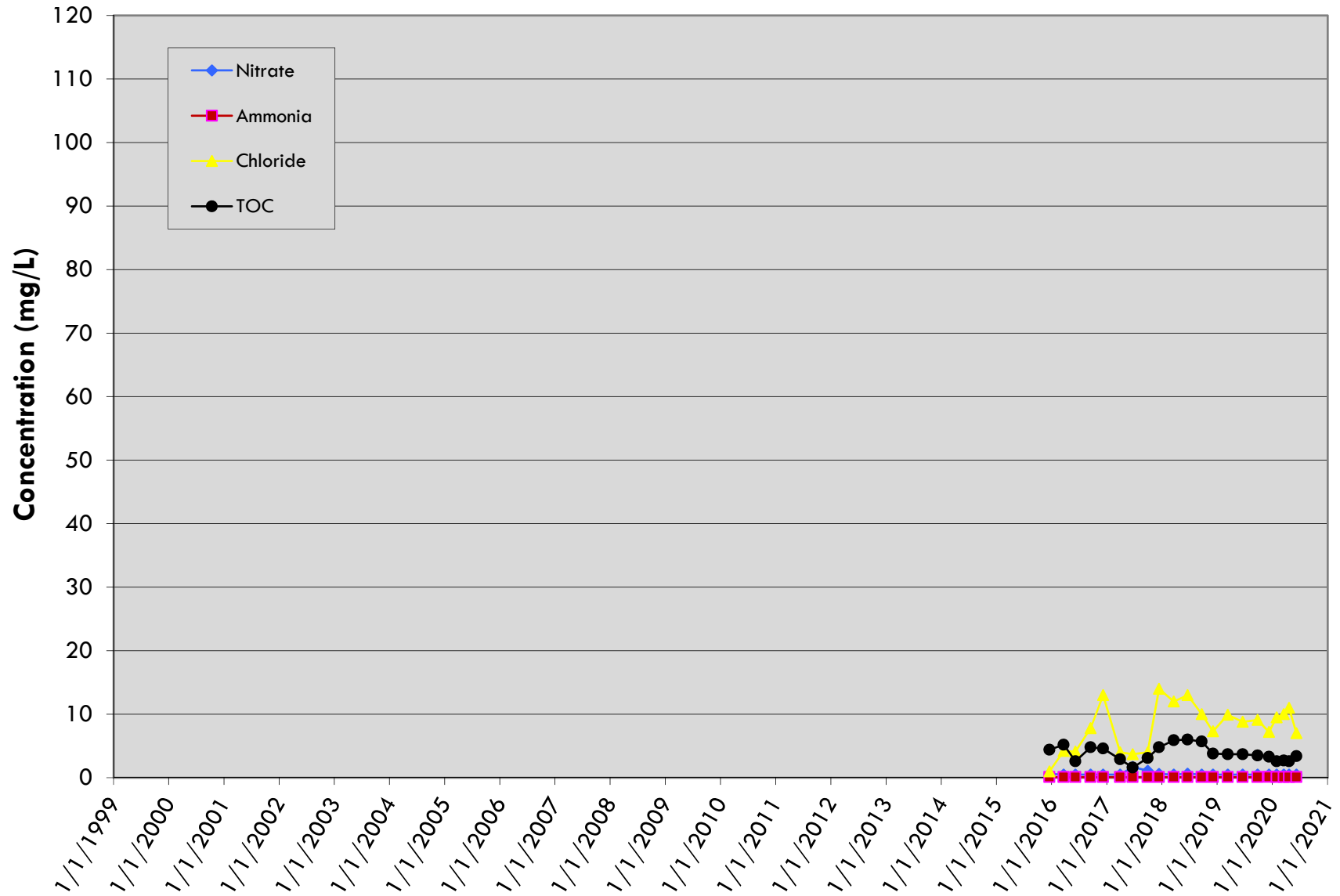
LDCS-5

LRI Landfill, Pierce County, Washington



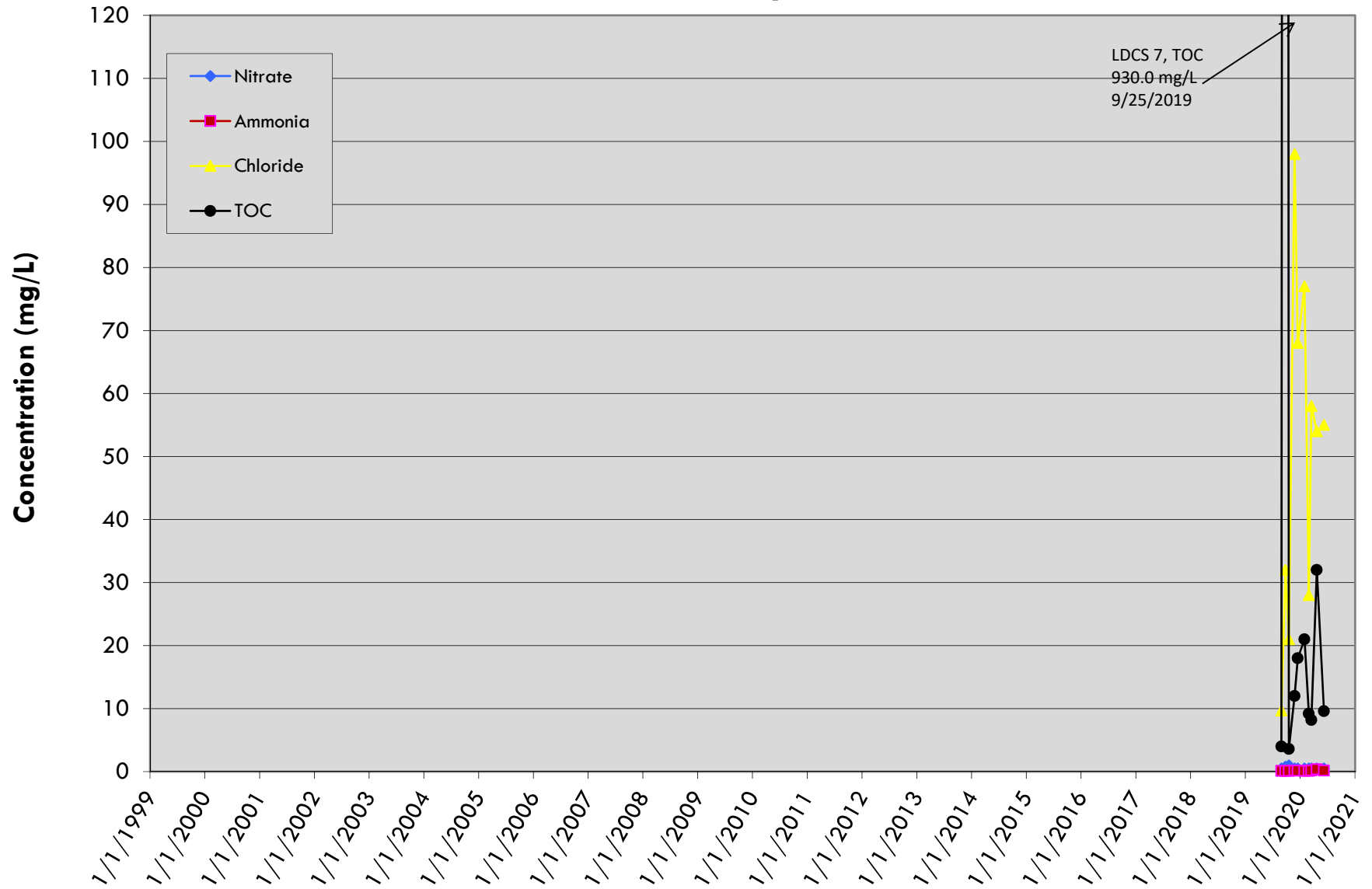
LDCS-6A

LRI Landfill, Pierce County, Washington



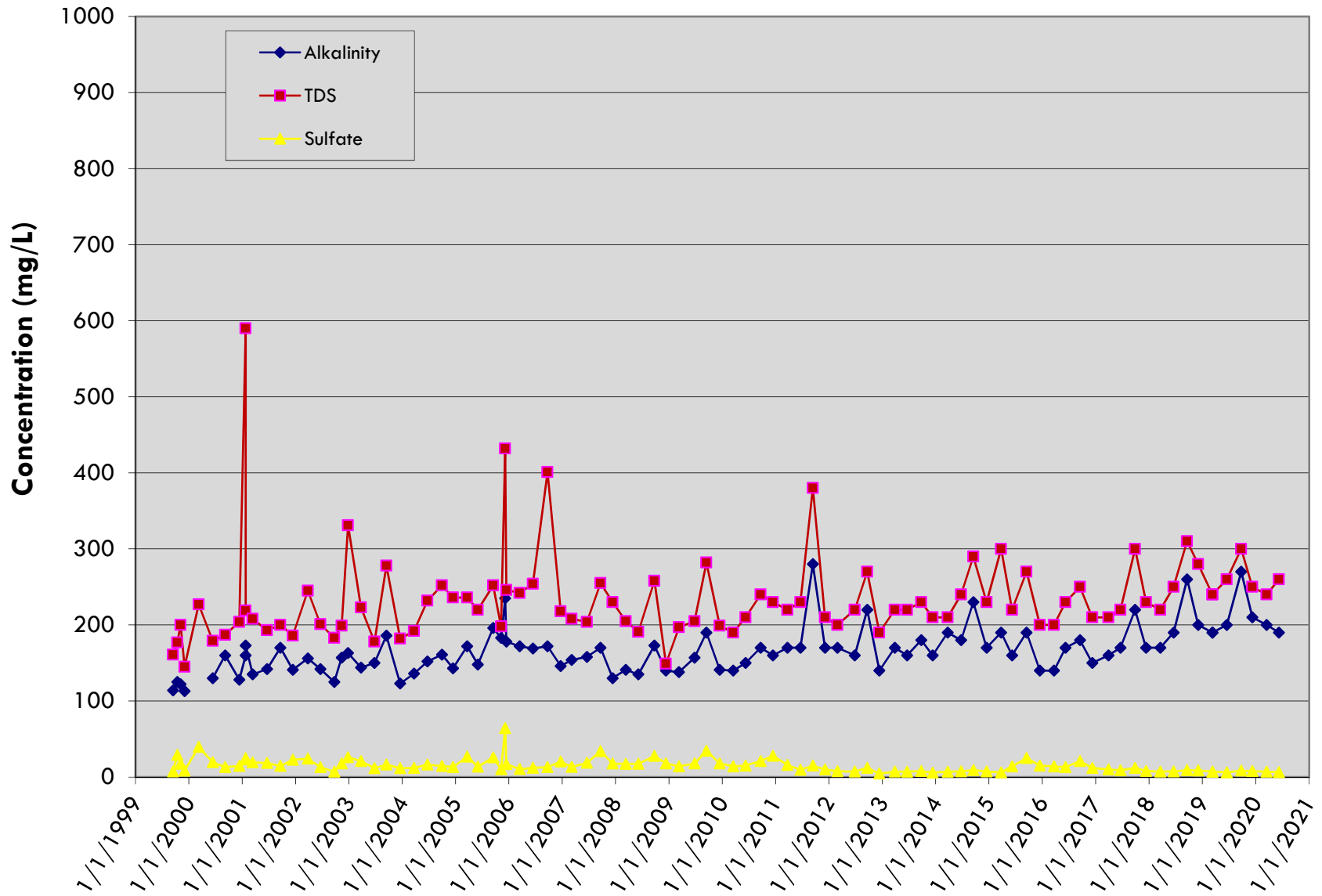
LDCS-7

LRI Landfill, Pierce County, Washington



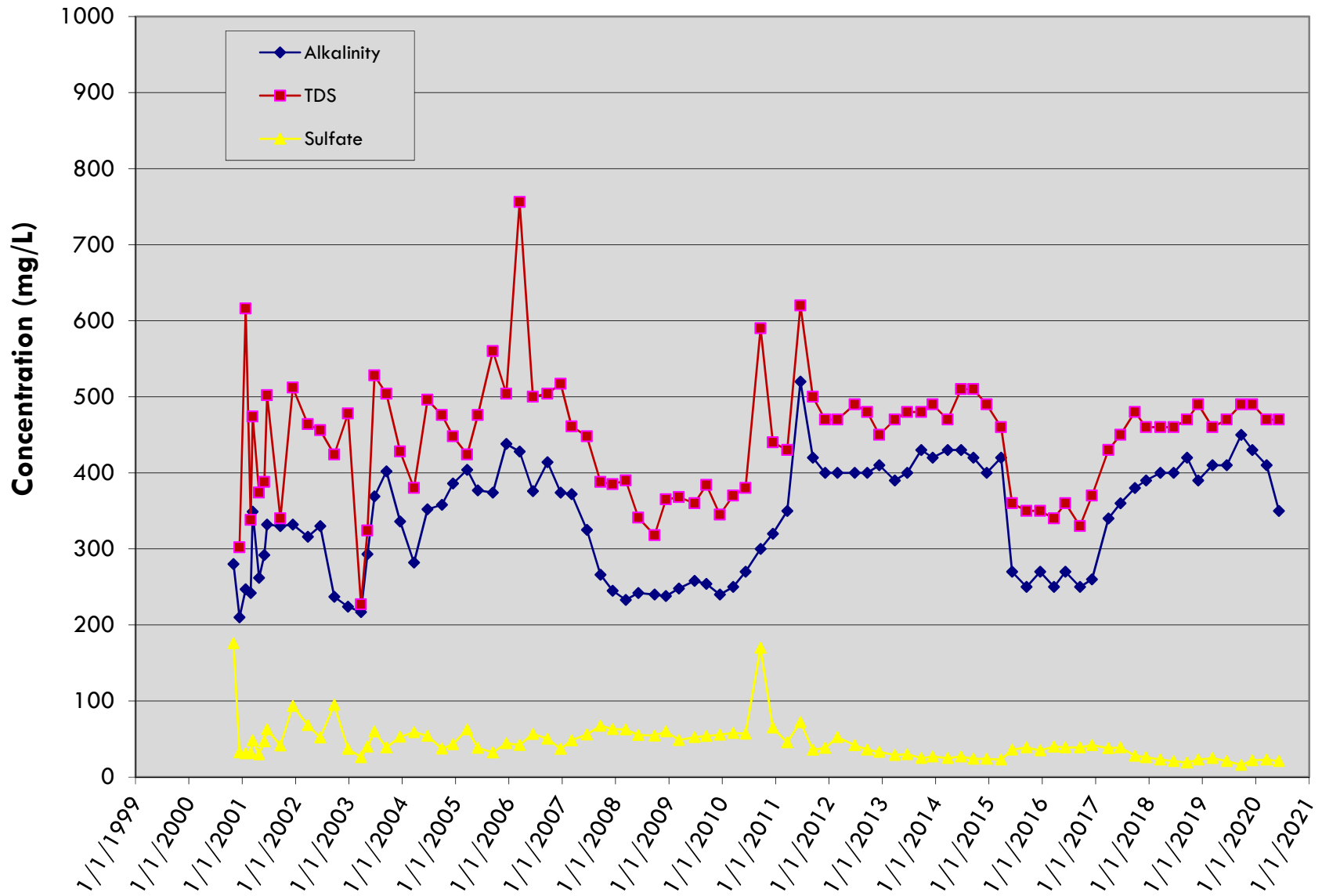
LDCS-1

LRI Landfill, Pierce County, Washington



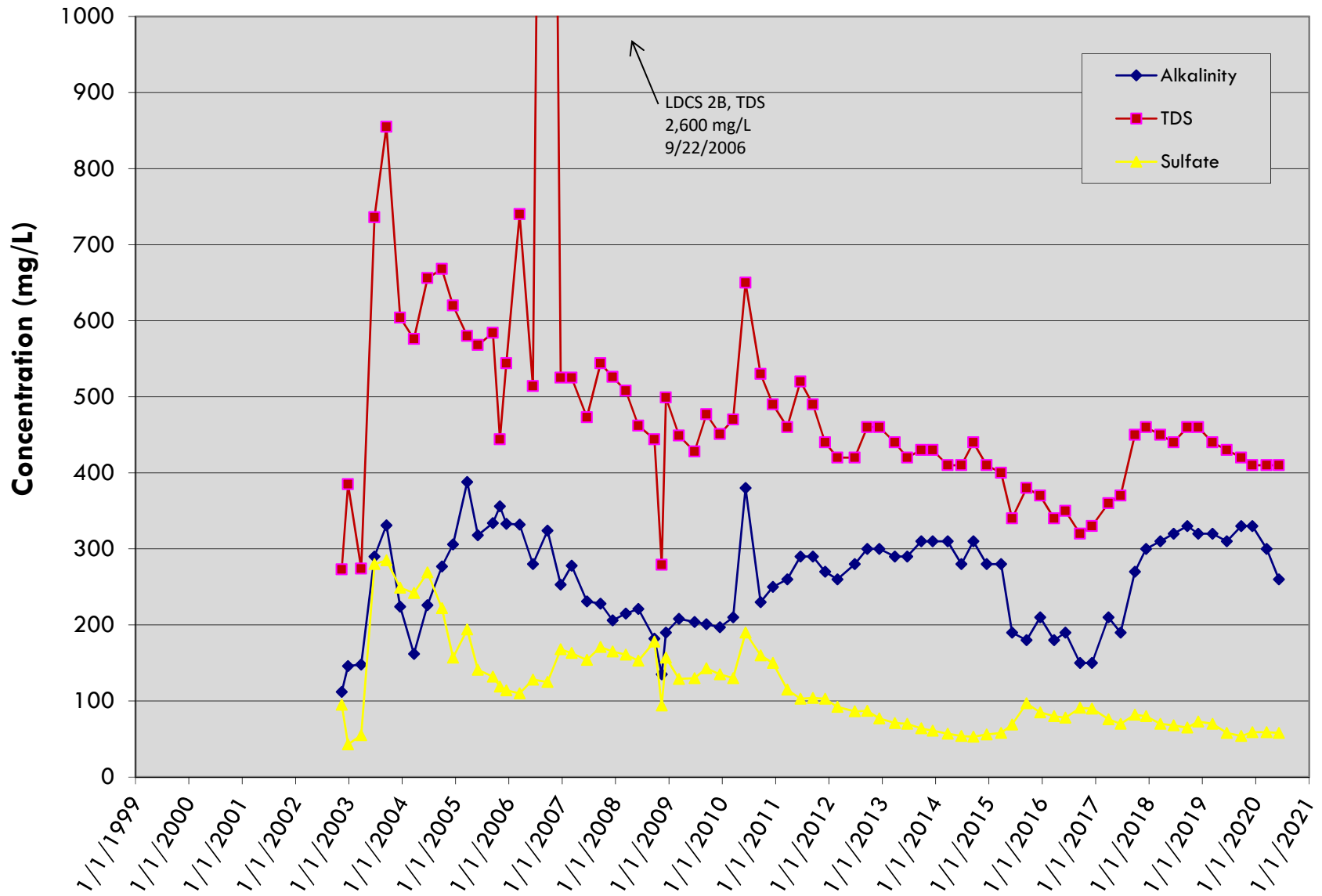
LDCS-2A

LRI Landfill, Pierce County, Washington



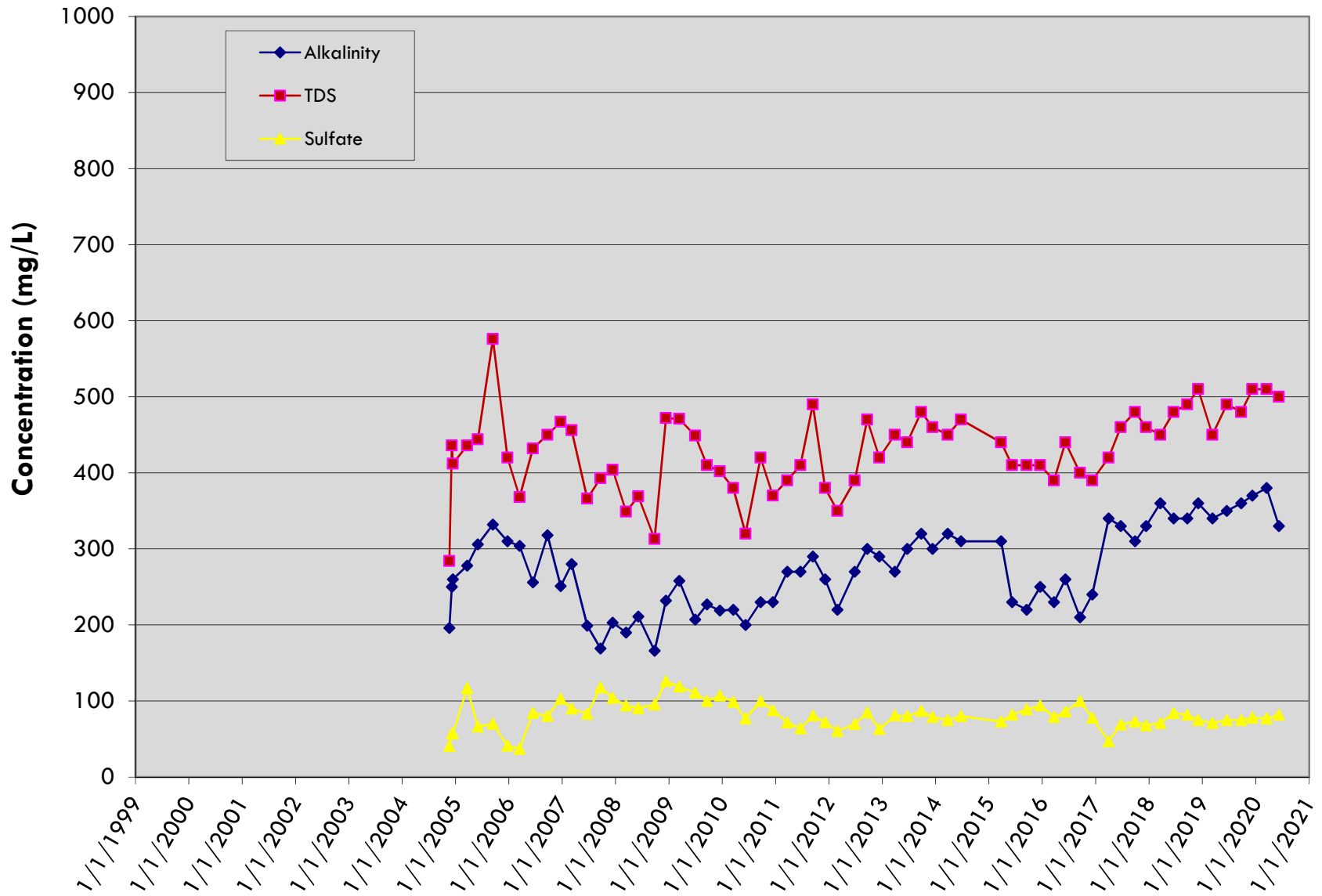
LDCS-2B

LRI Landfill, Pierce County, Washington



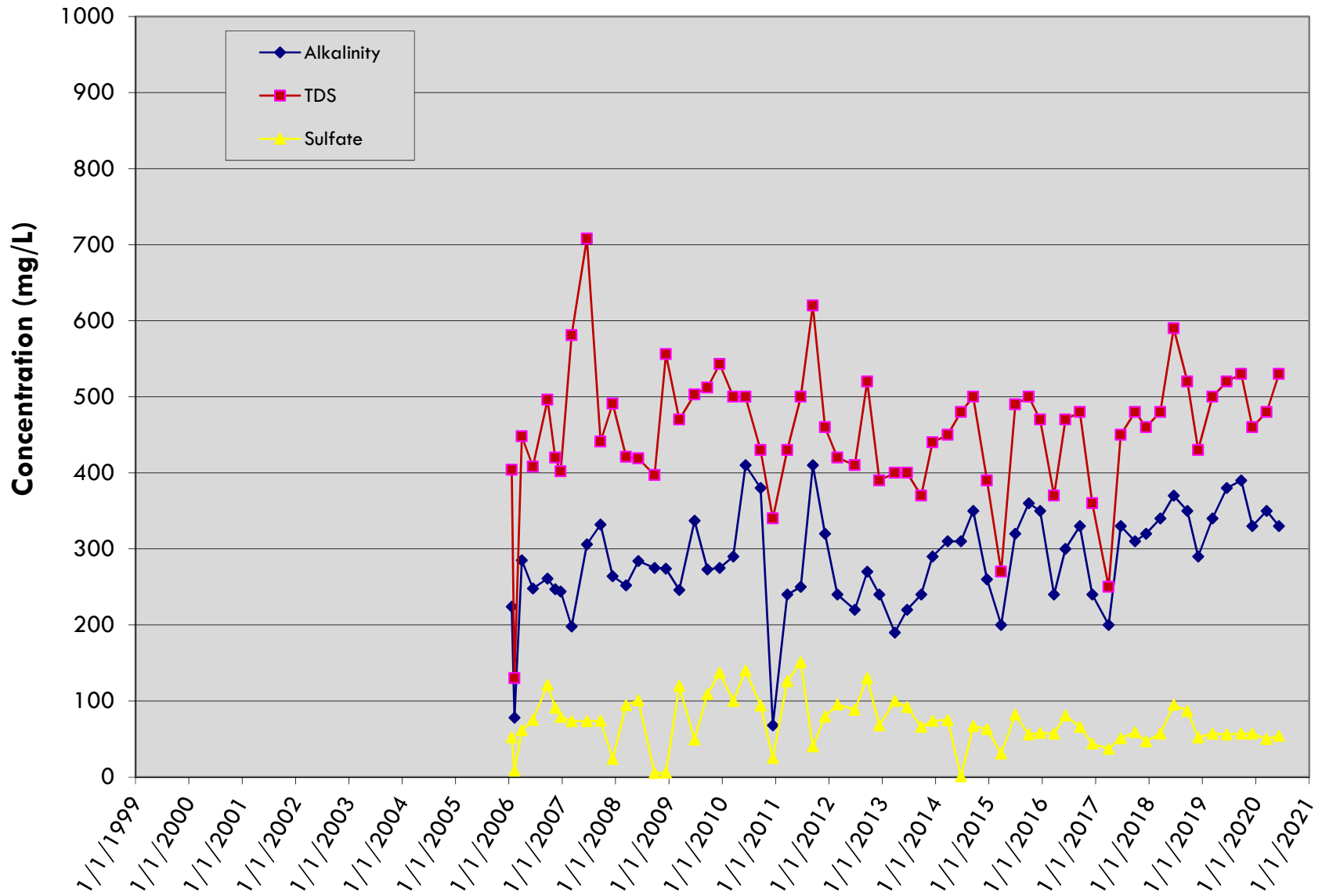
LDCS-3A

LRI Landfill, Pierce County, Washington



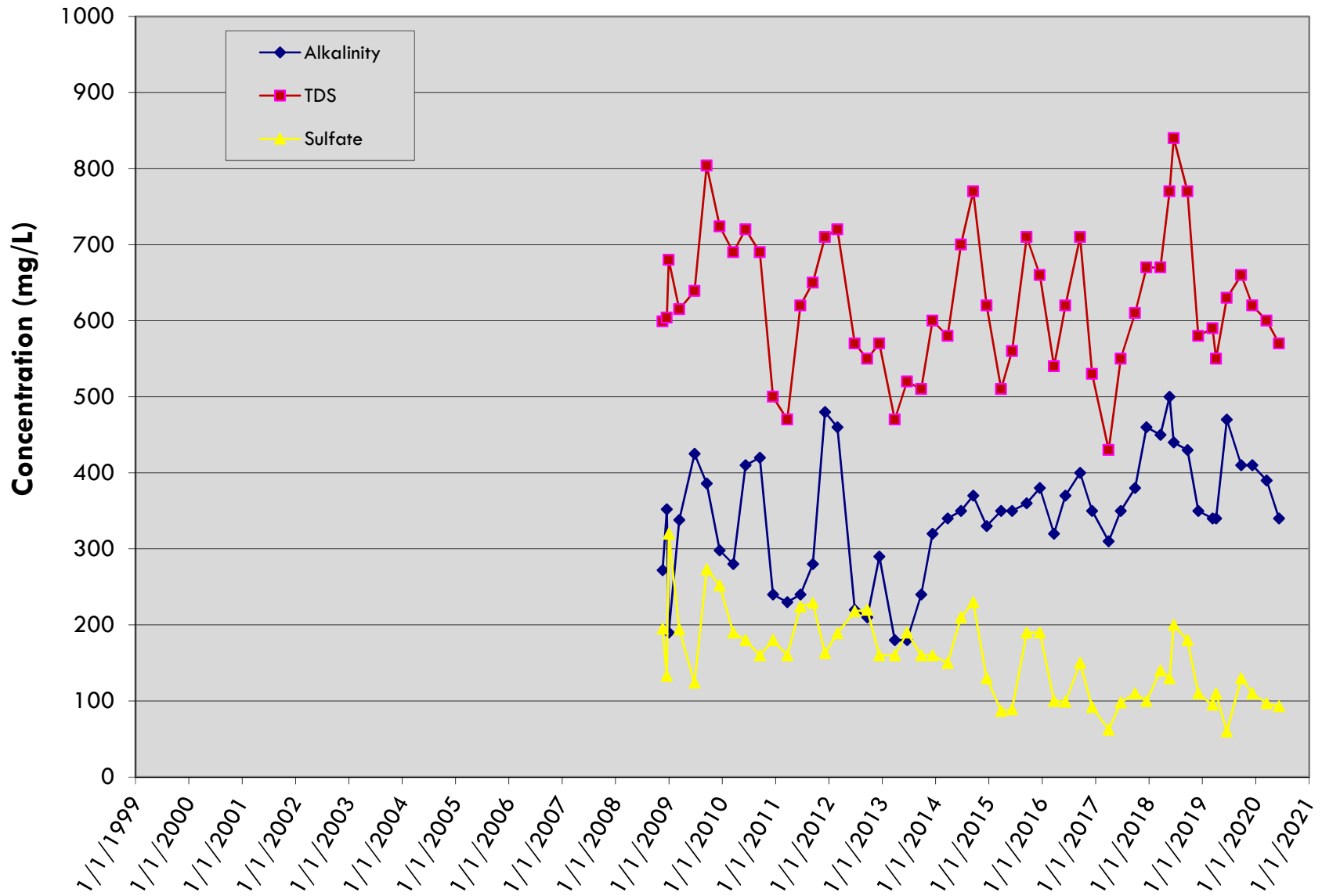
LDCS-4A

LRI Landfill, Pierce County, Washington



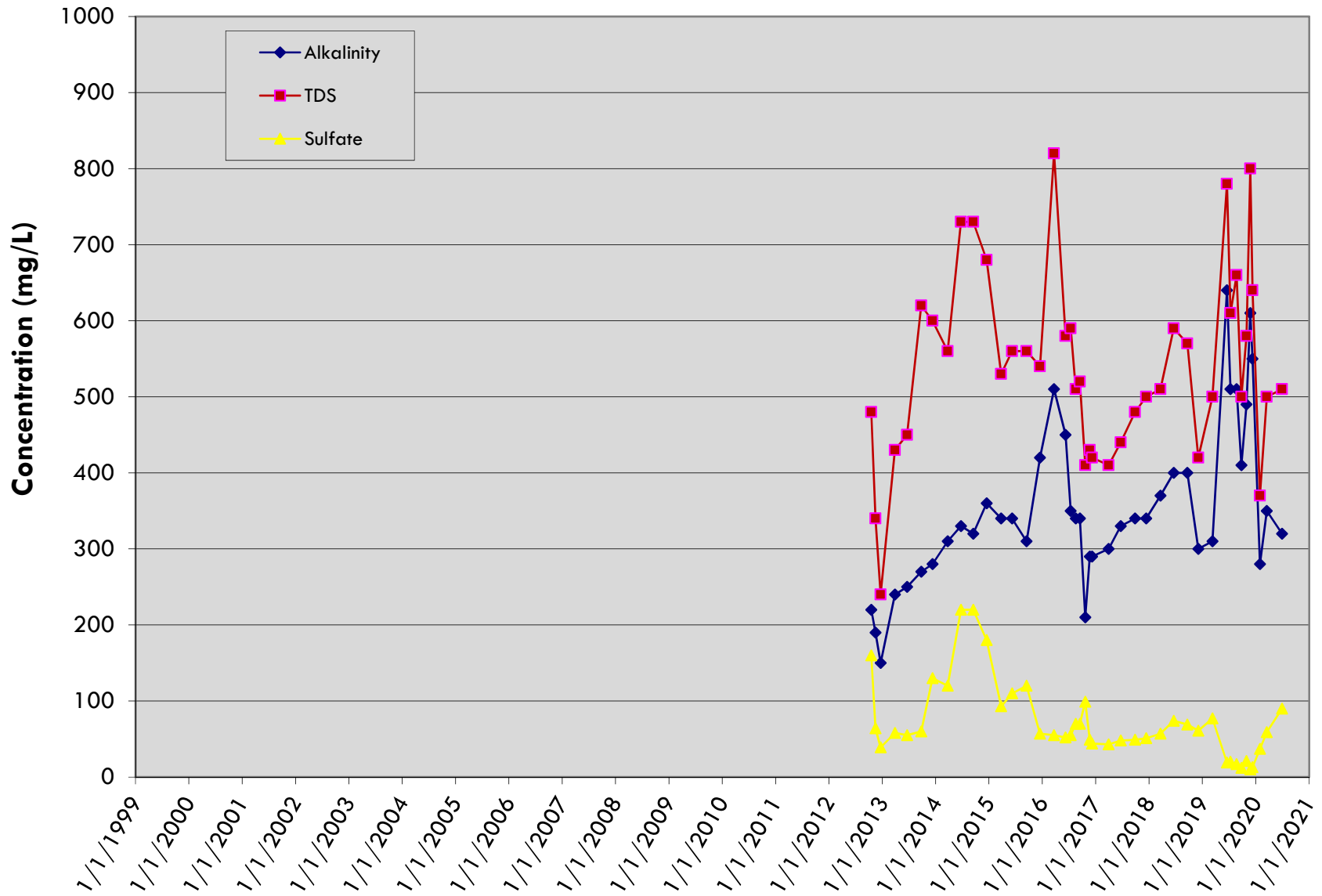
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LRI Landfill, Pierce County, Washington



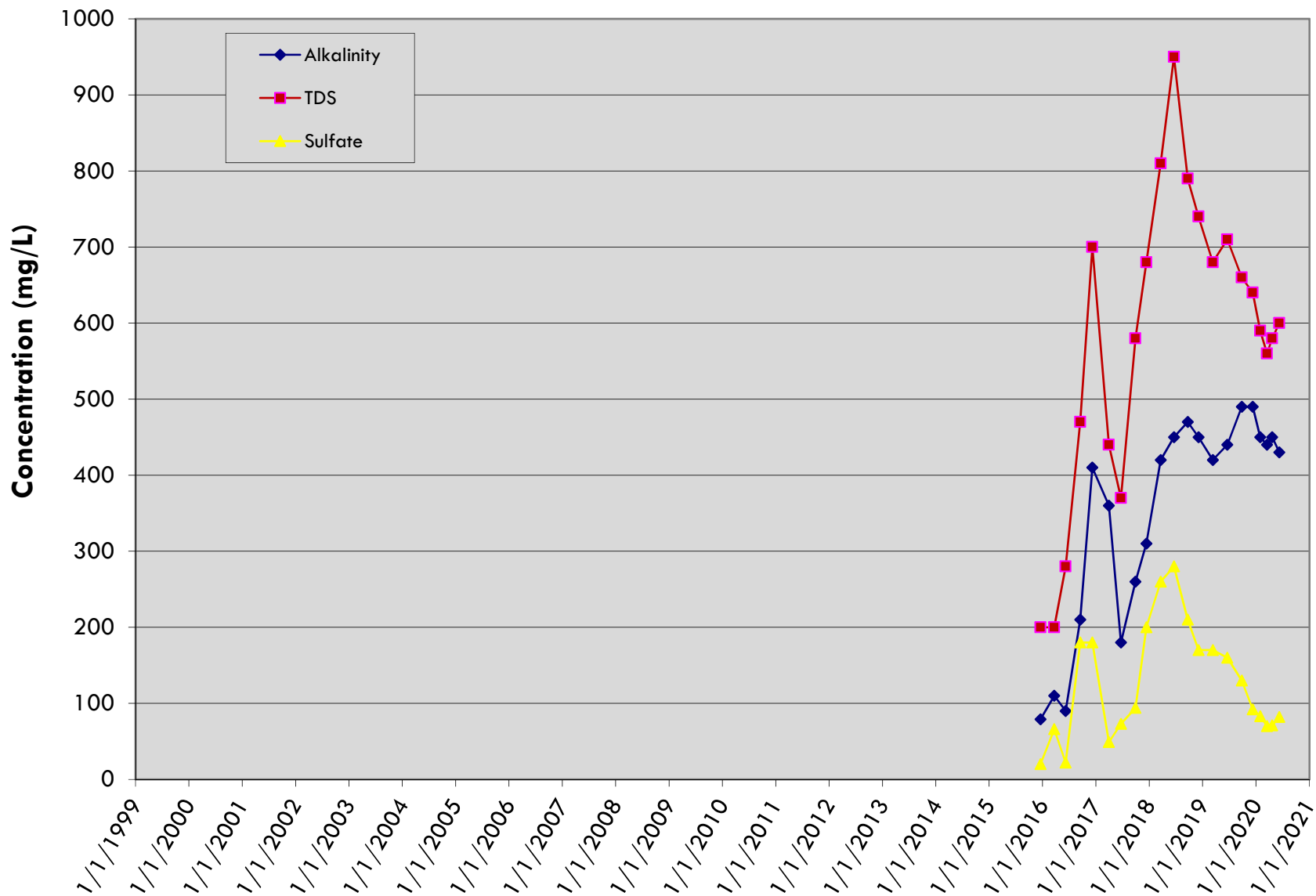
LDCS-5

LRI Landfill, Pierce County, Washington



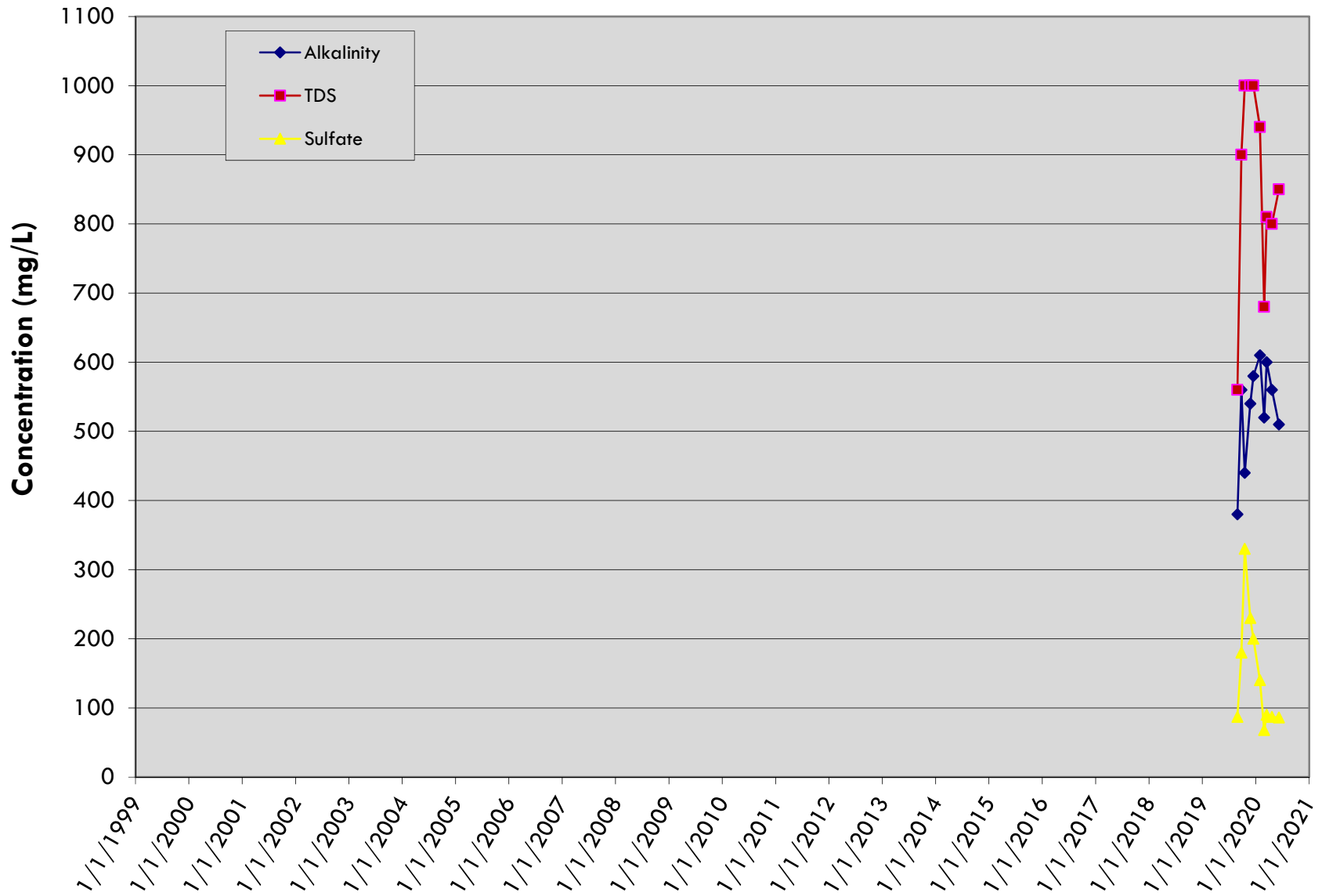
LDCS-6A

LRI Landfill, Pierce County, Washington



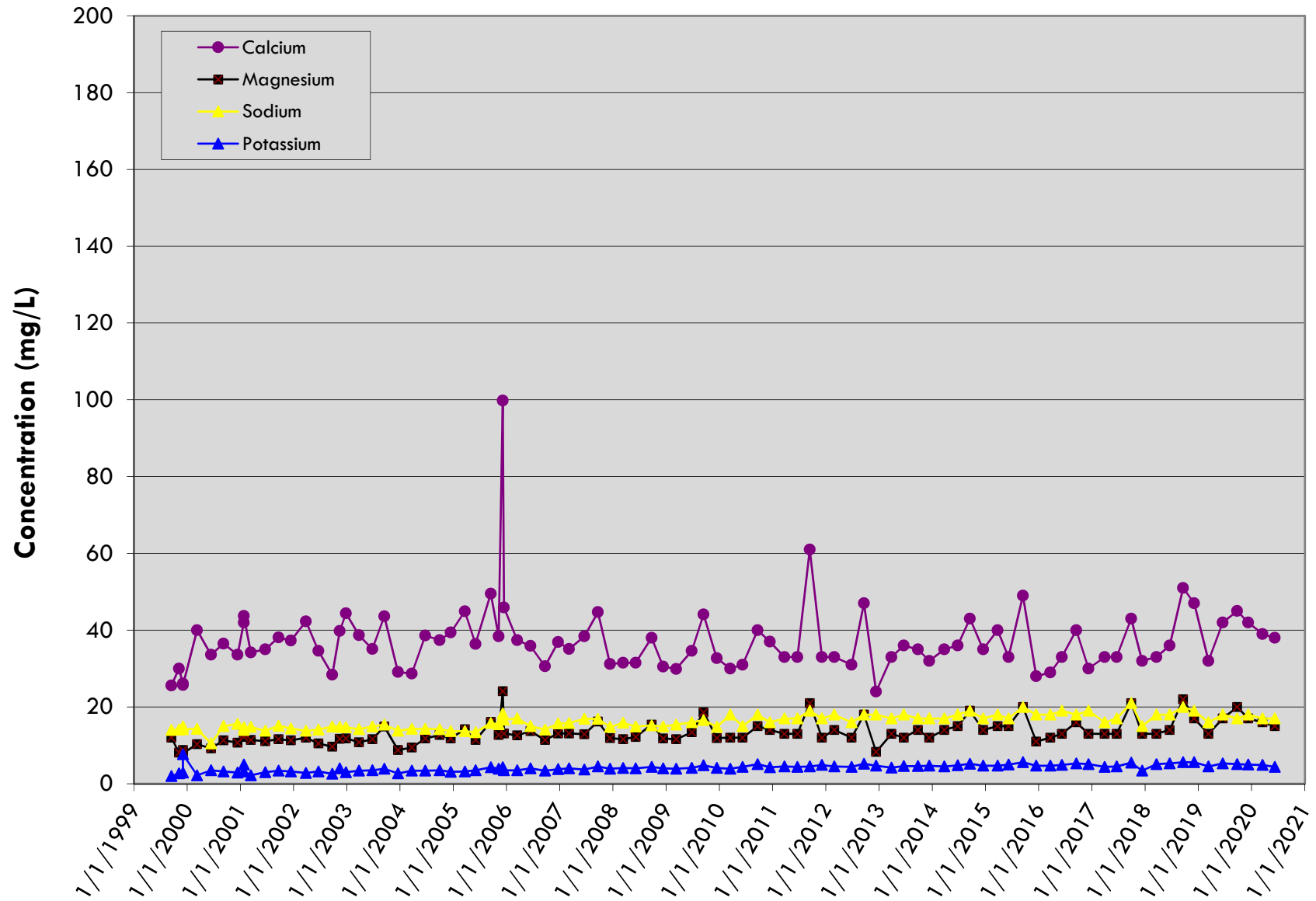
LDCS-7

LRI Landfill, Pierce County, Washington



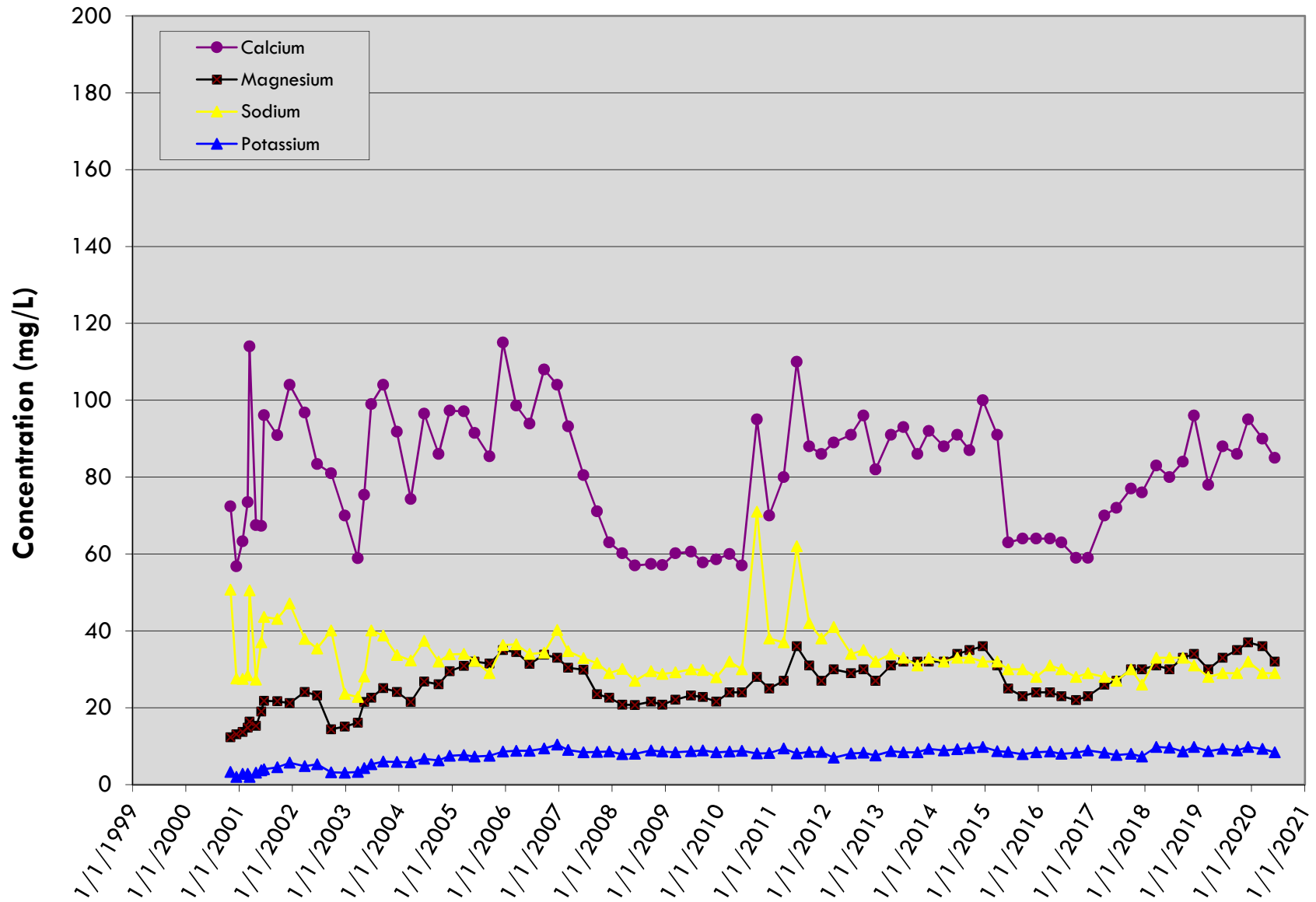
LDCS-1

LRI Landfill, Pierce County, Washington



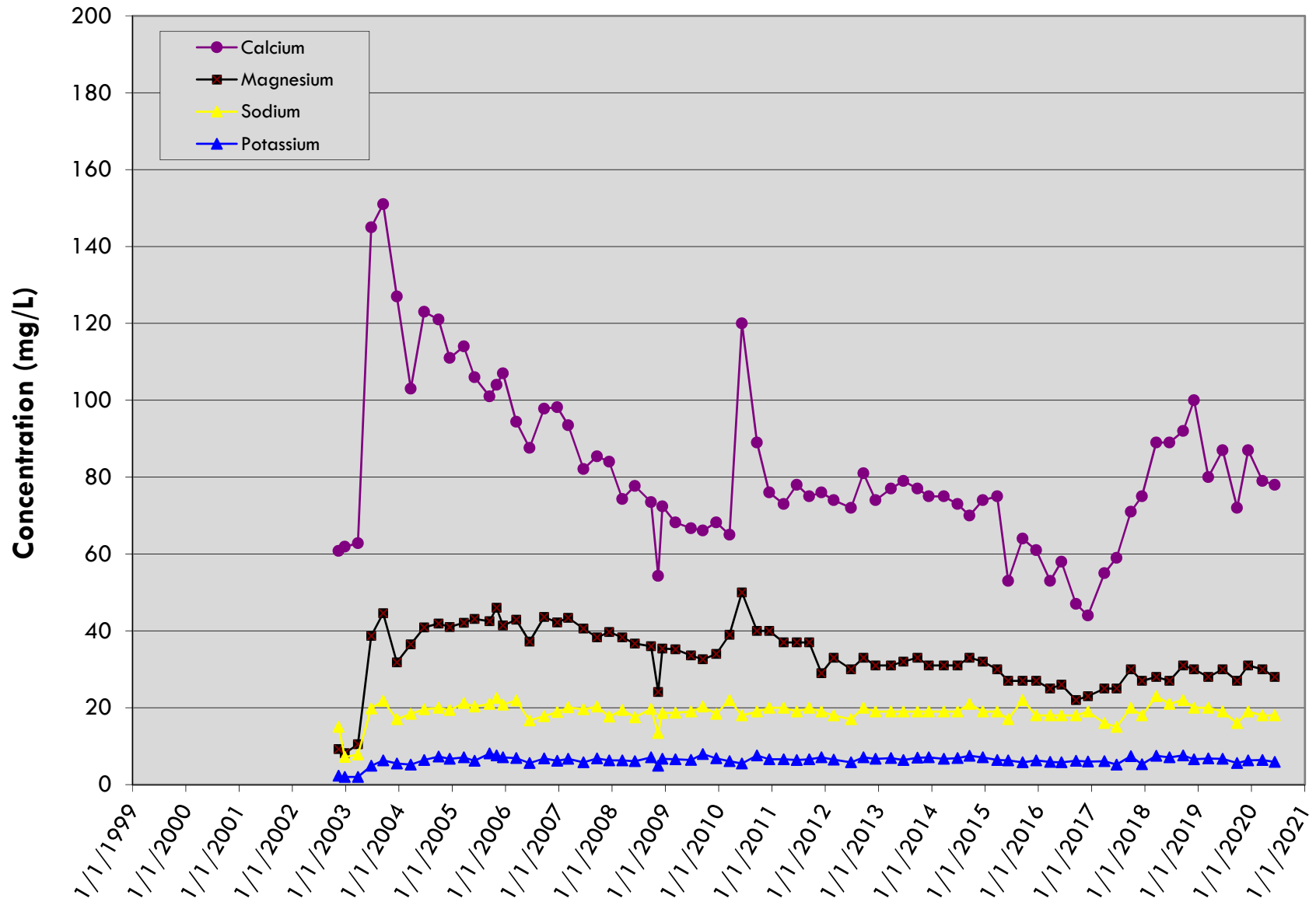
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LRI Landfill, Pierce County, Washington



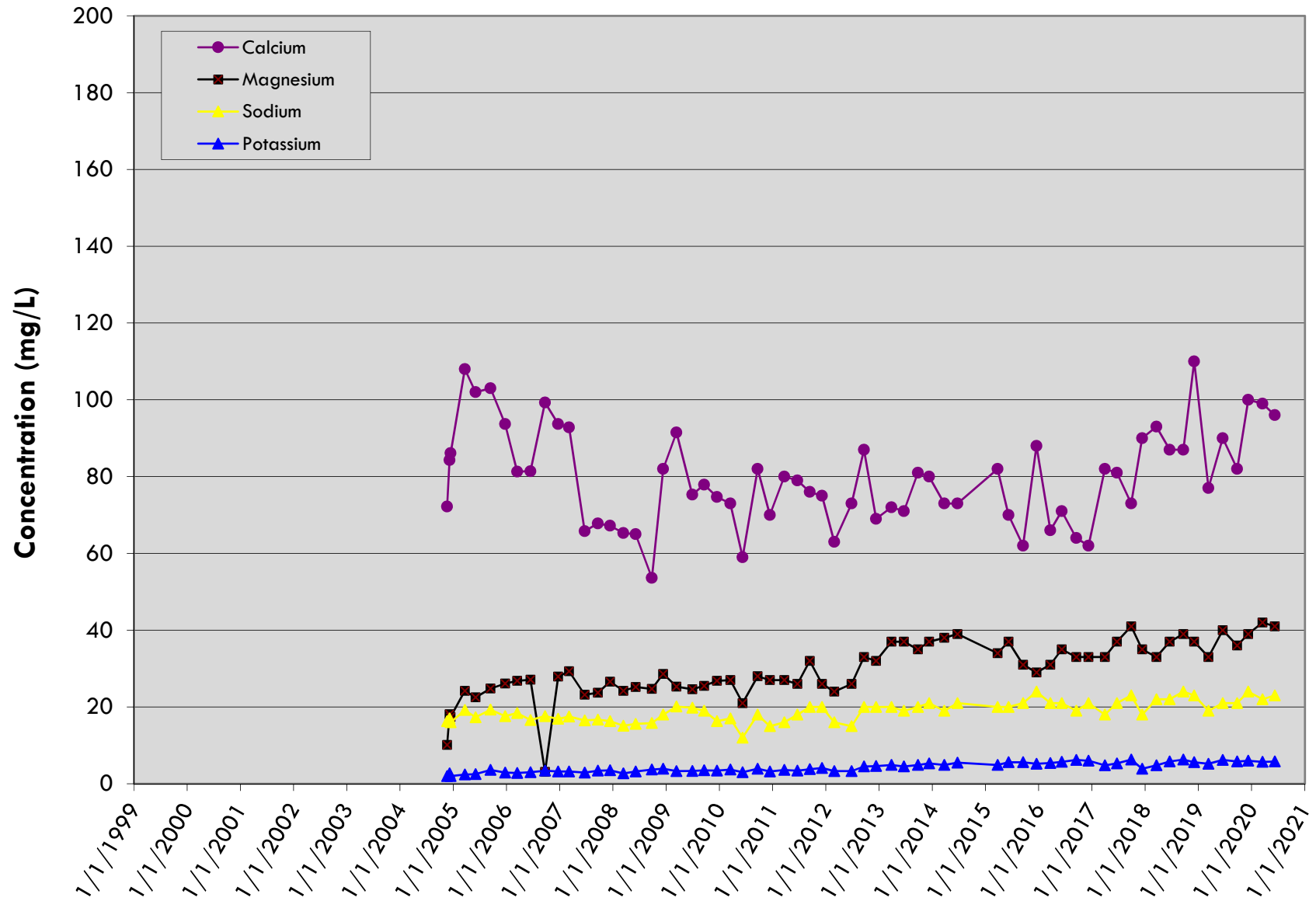
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LRI Landfill, Pierce County, Washington



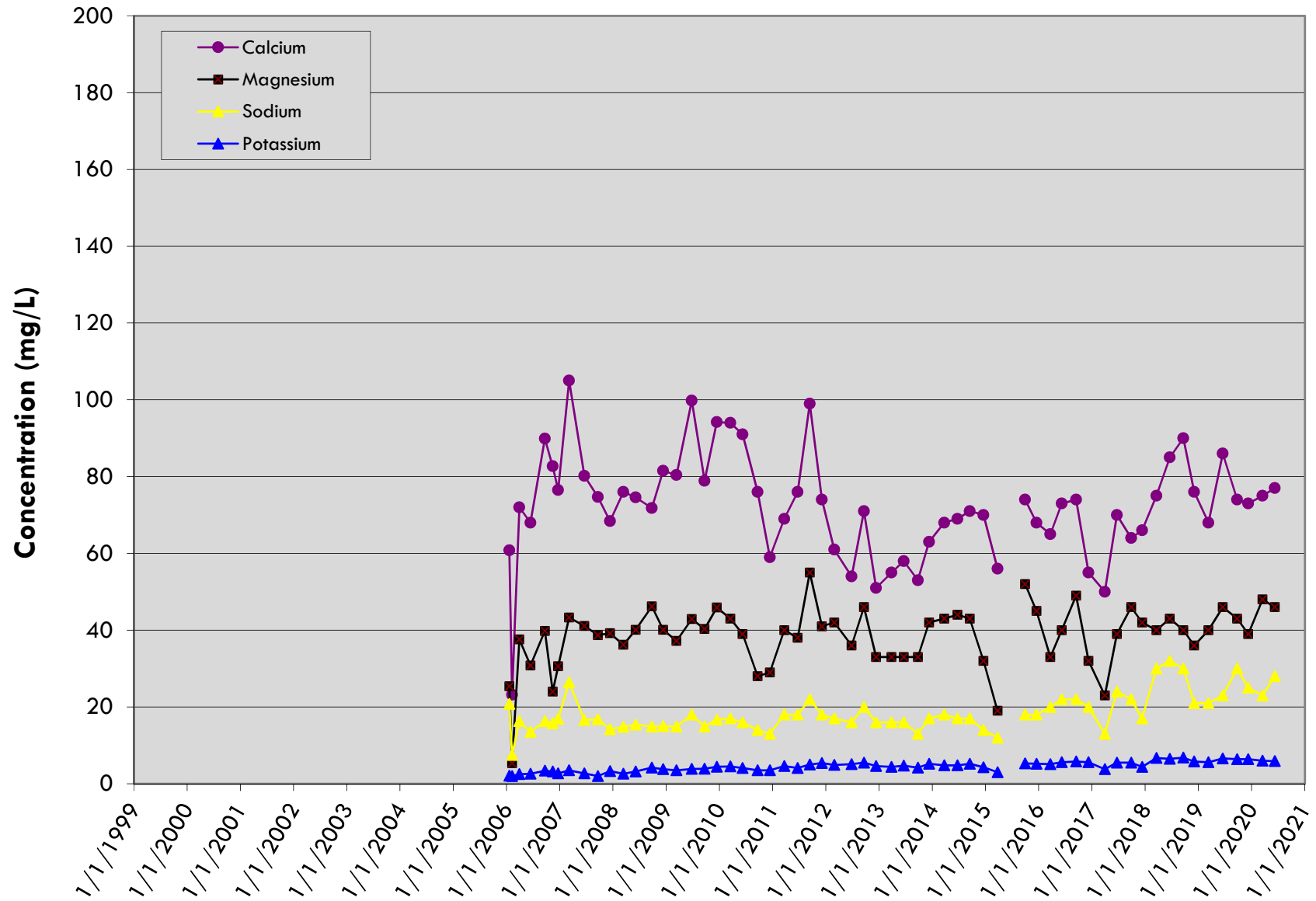
LDCS-3A

LRI Landfill, Pierce County, Washington



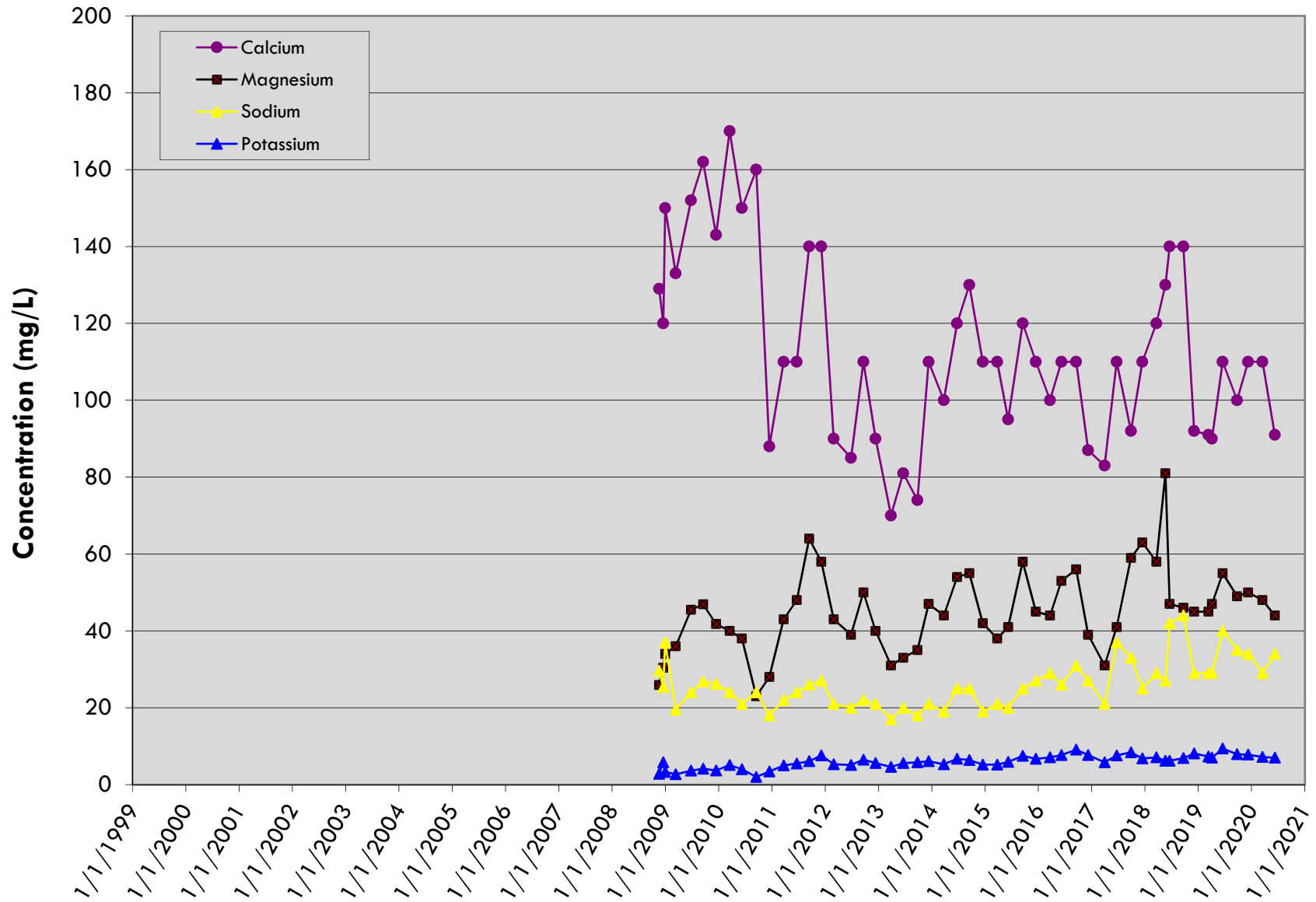
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LRI Landfill, Pierce County, Washington



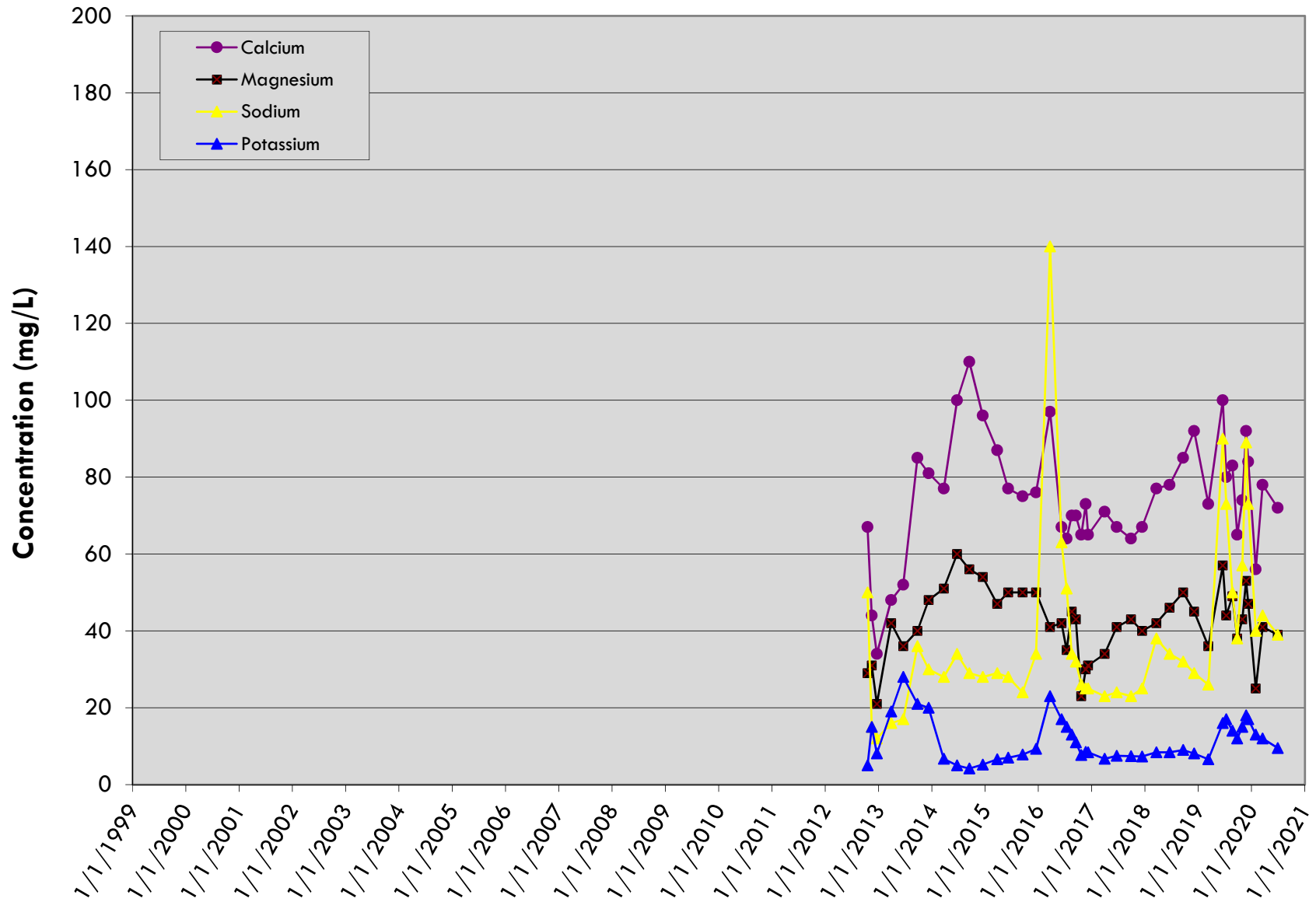
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LRI Landfill, Pierce County, Washington



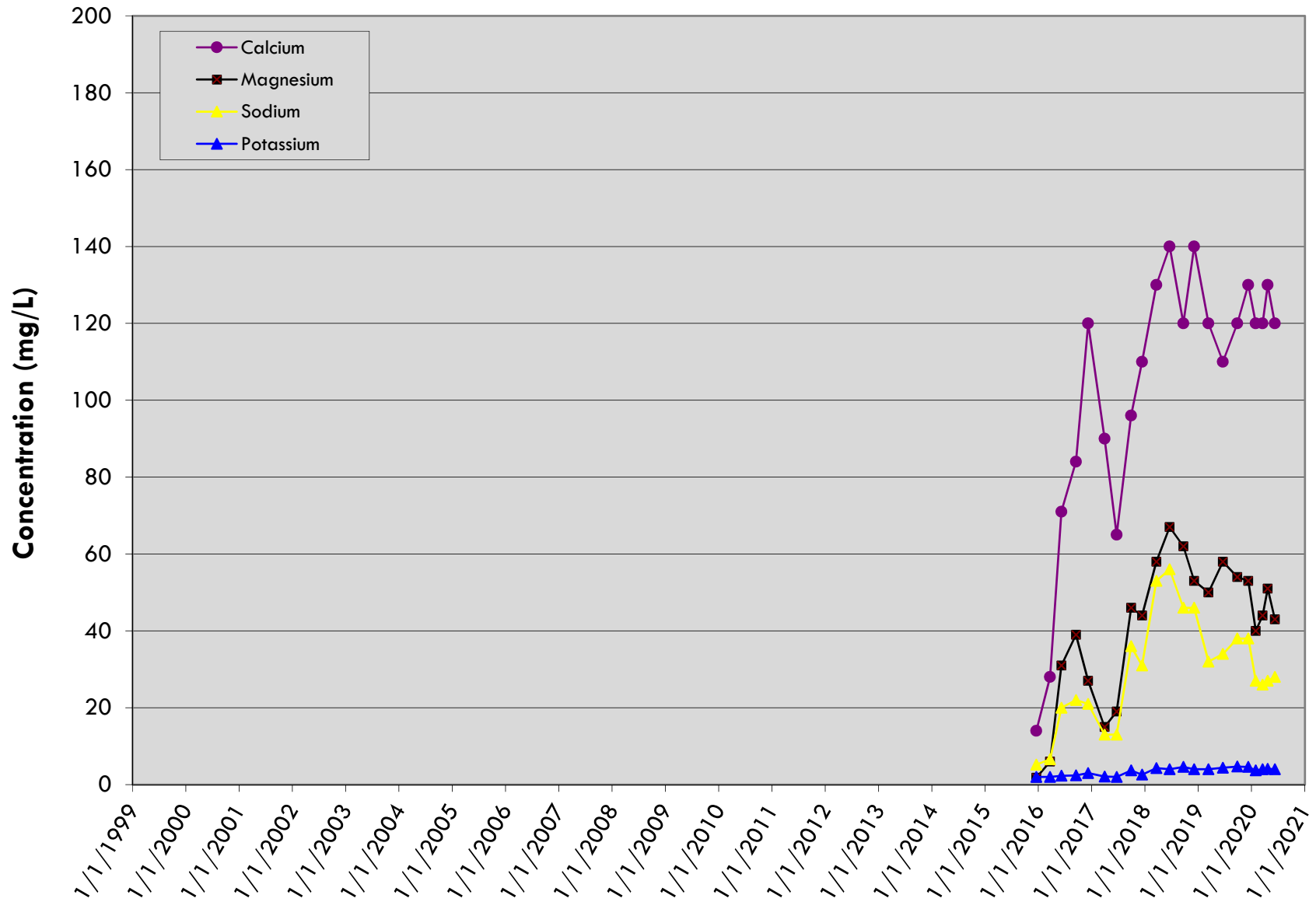
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LRI Landfill, Pierce County, Washington



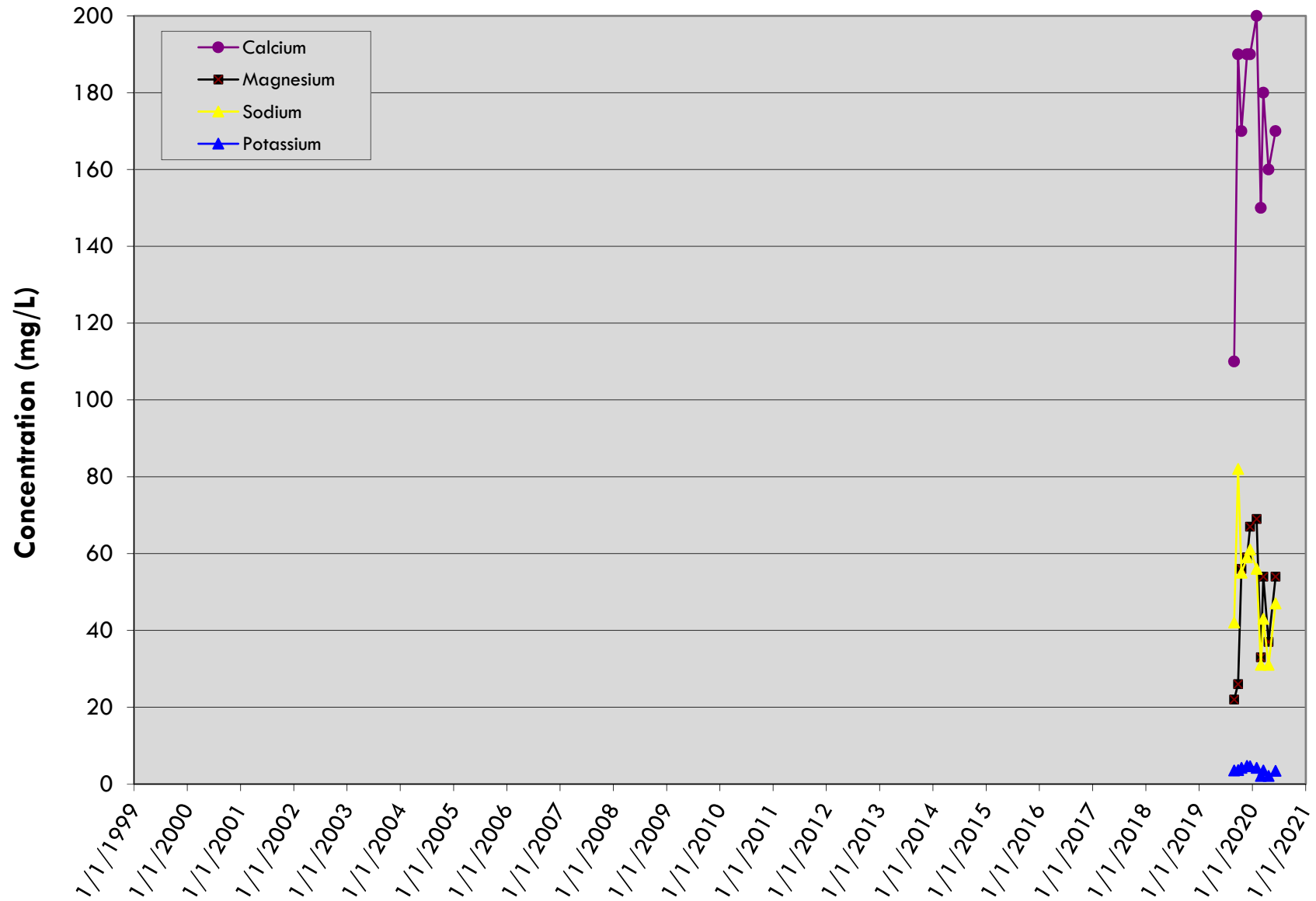
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LRI Landfill, Pierce County, Washington



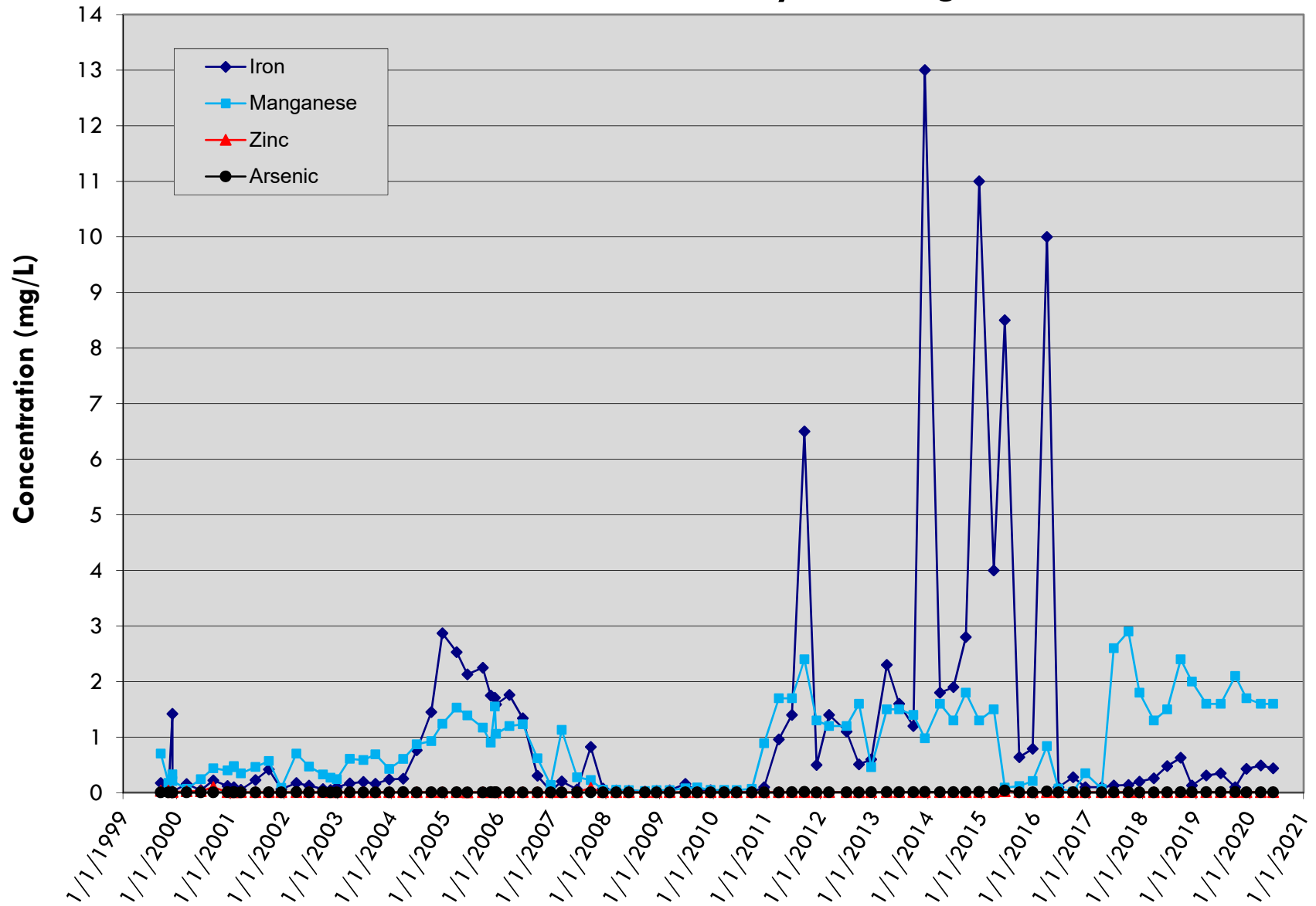
LDCS-7

LRI Landfill, Pierce County, Washington



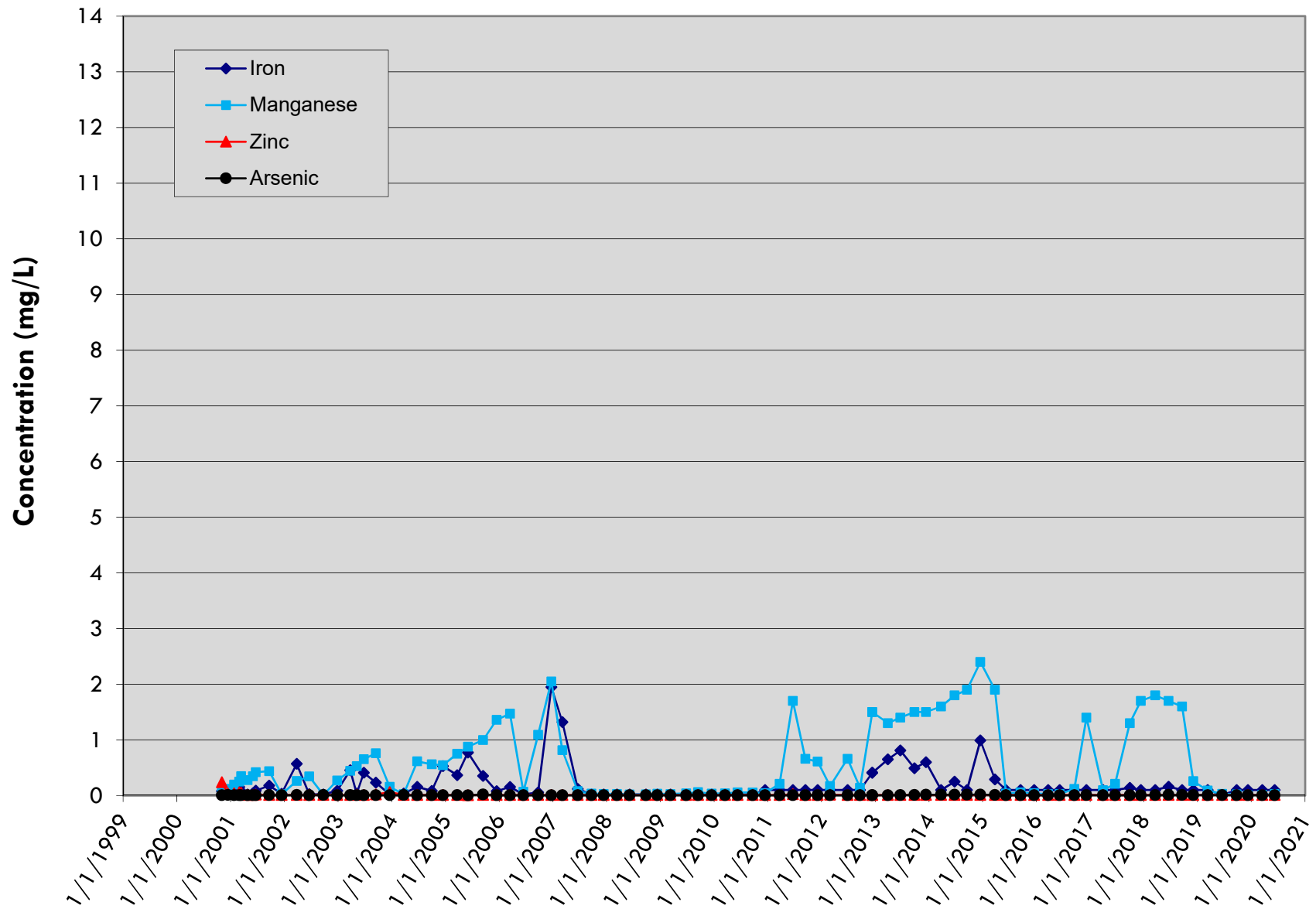
LDCS-1

LRI Landfill, Pierce County, Washington



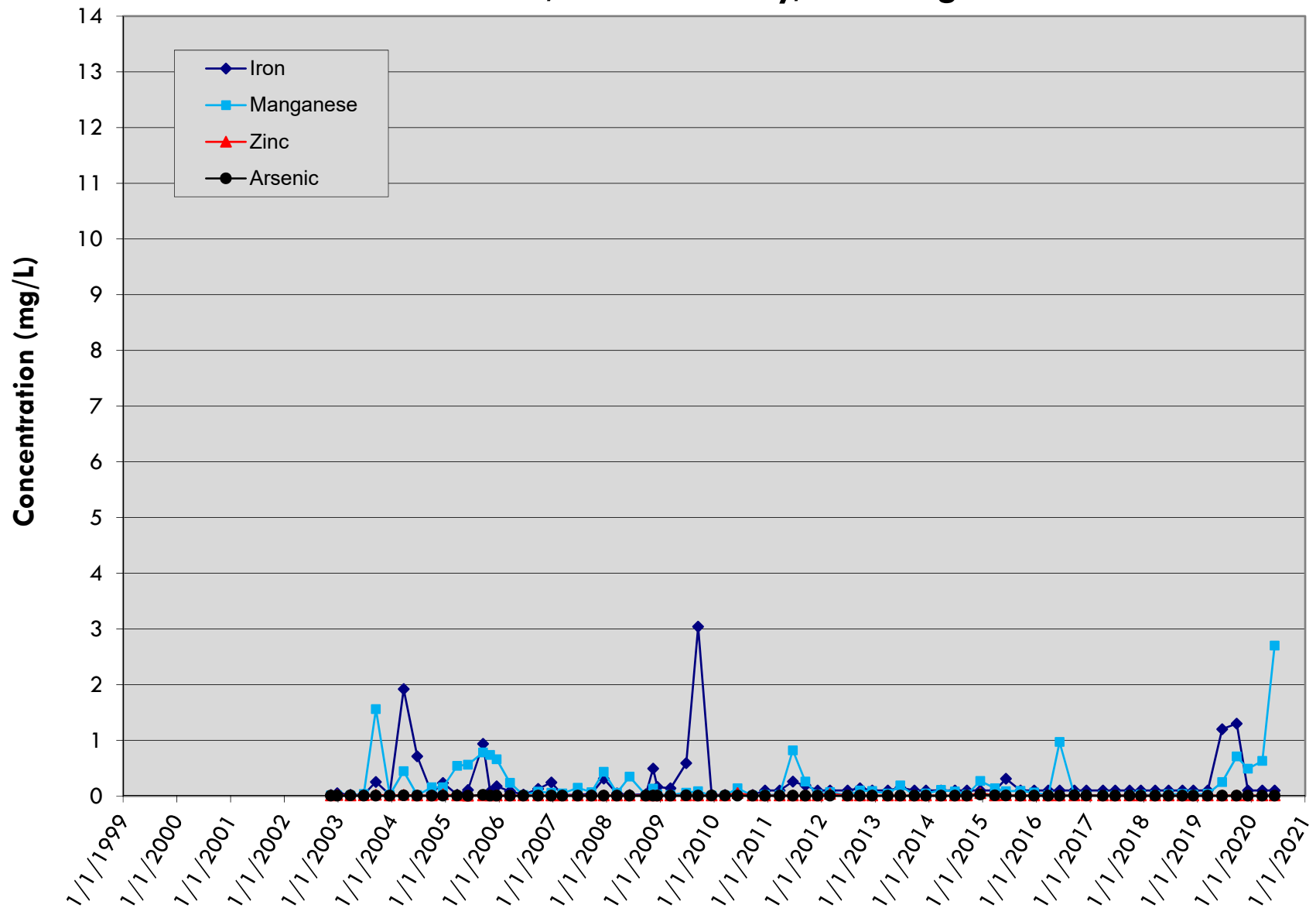
LDCS-2A

LRI Landfill, Pierce County, Washington



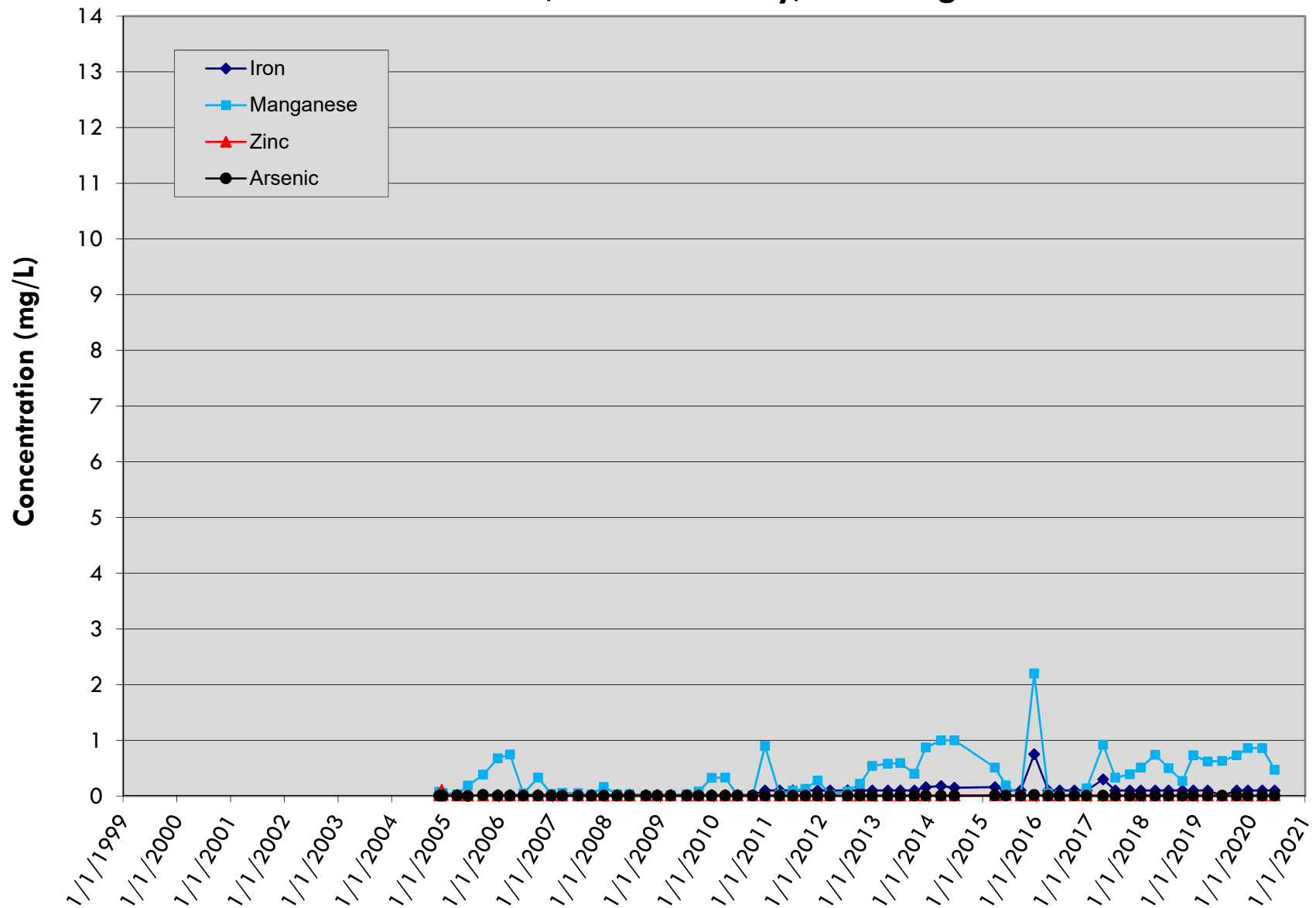
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LRI Landfill, Pierce County, Washington



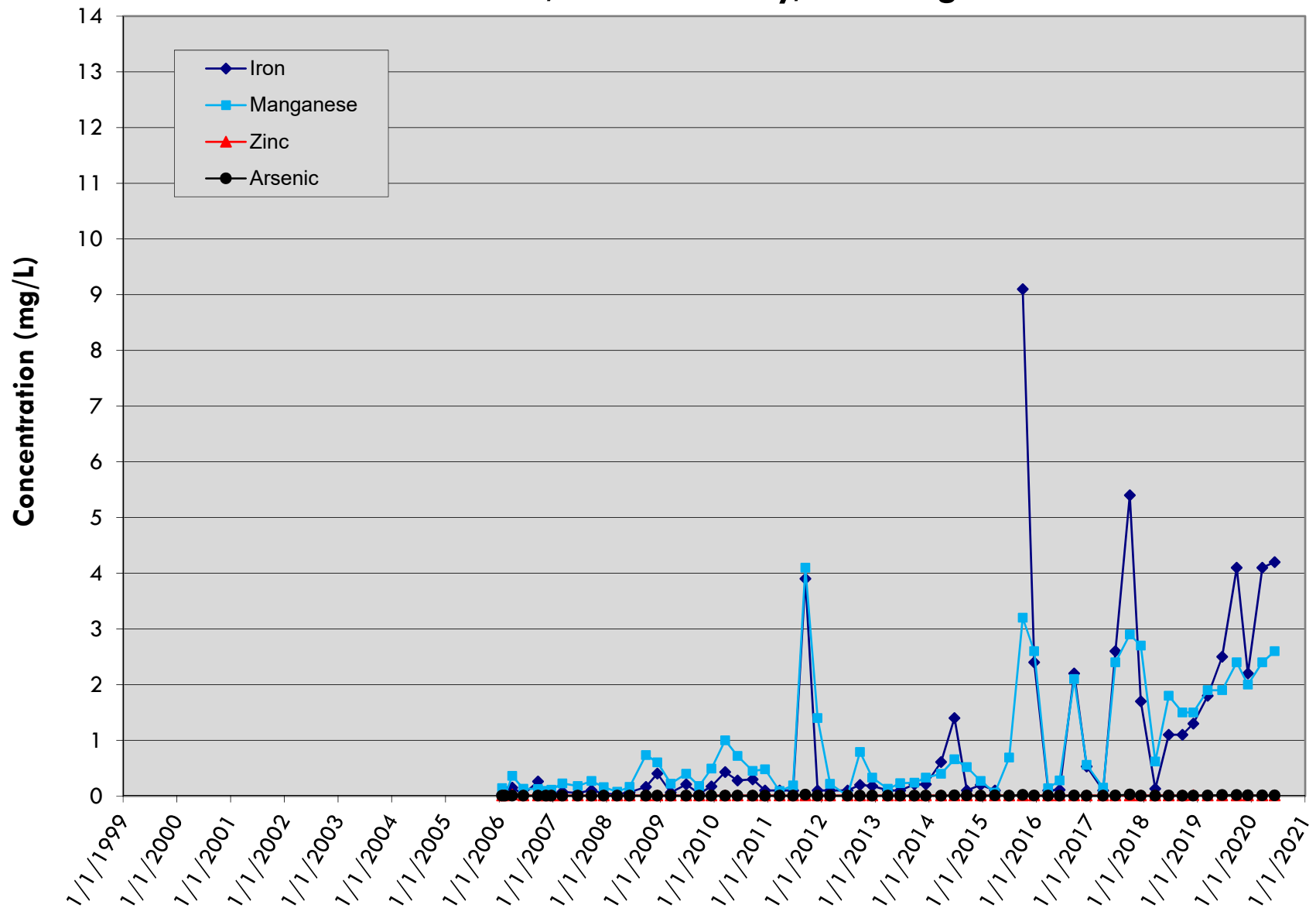
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LRI Landfill, Pierce County, Washington



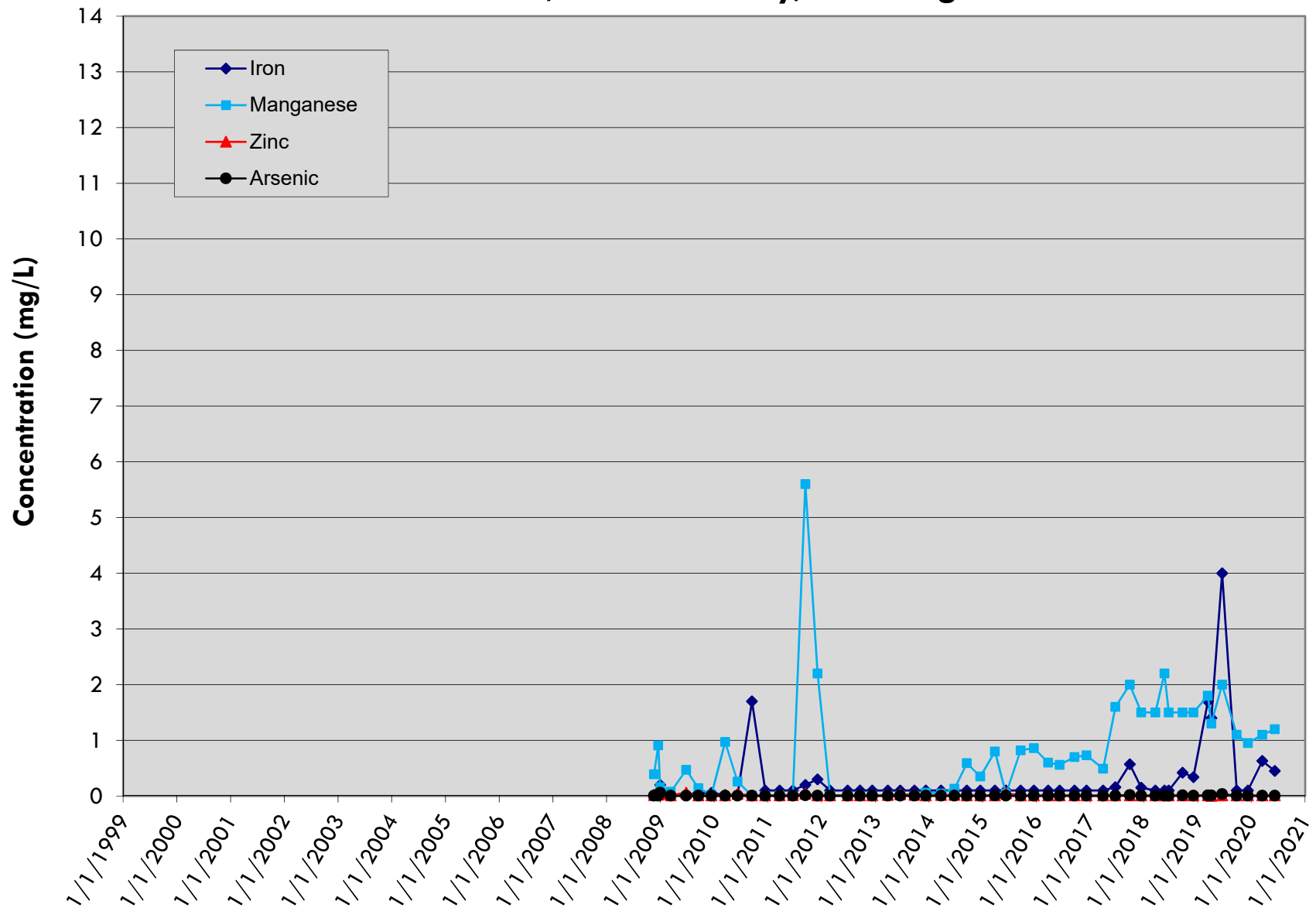
LDCS-4A

LRI Landfill, Pierce County, Washington



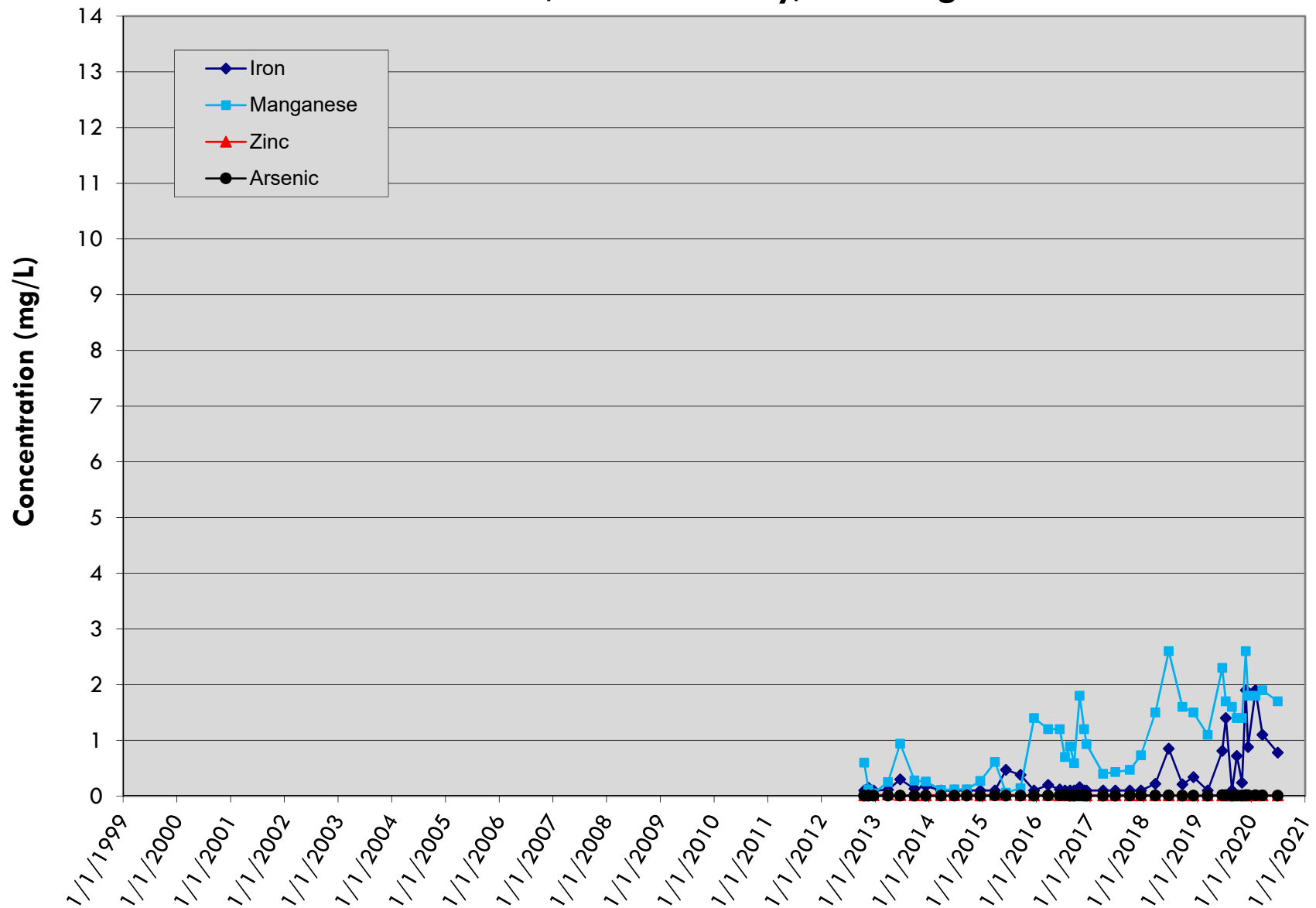
LDCS-4B

LRI Landfill, Pierce County, Washington



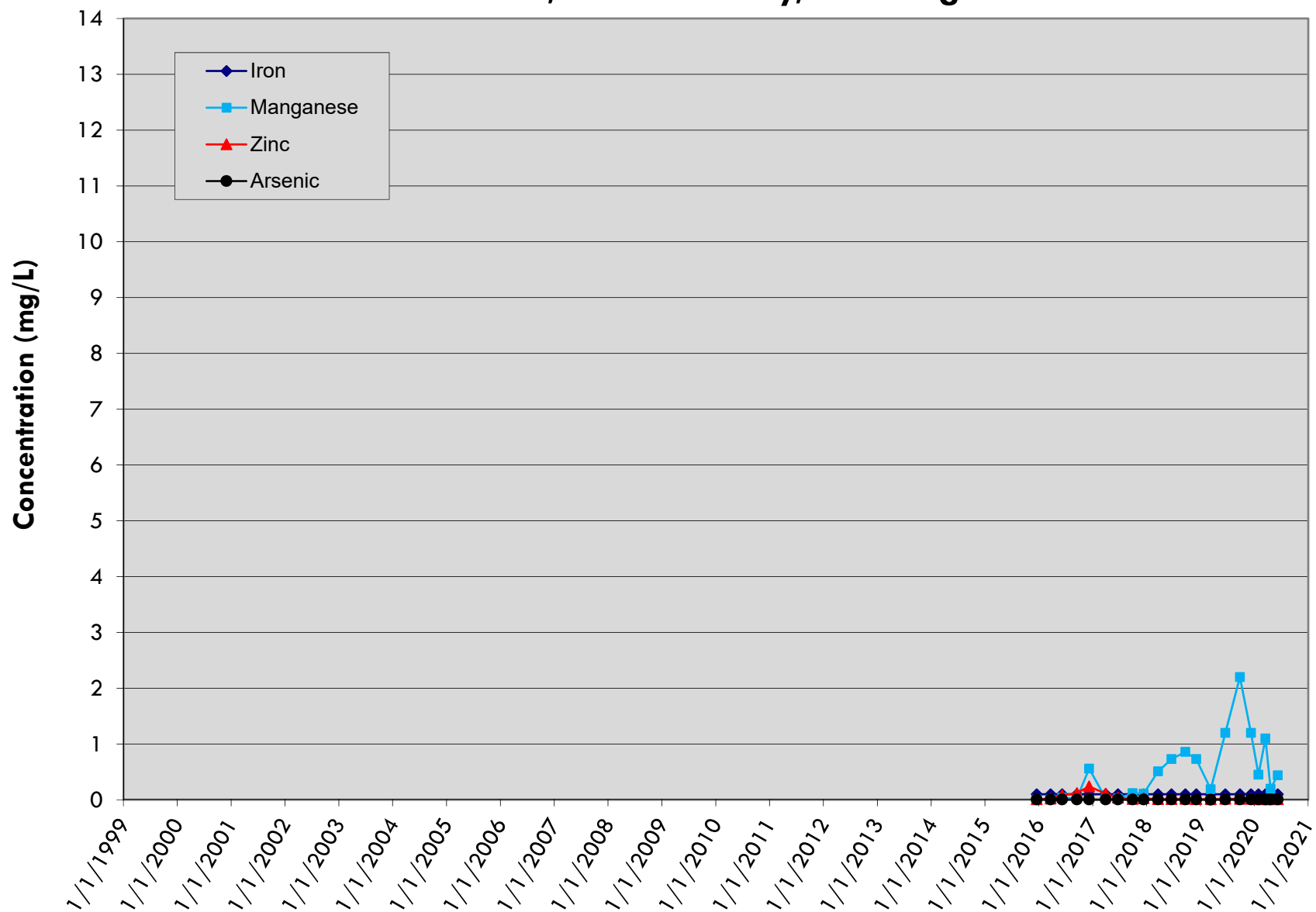
LDCS-5

LRI Landfill, Pierce County, Washington



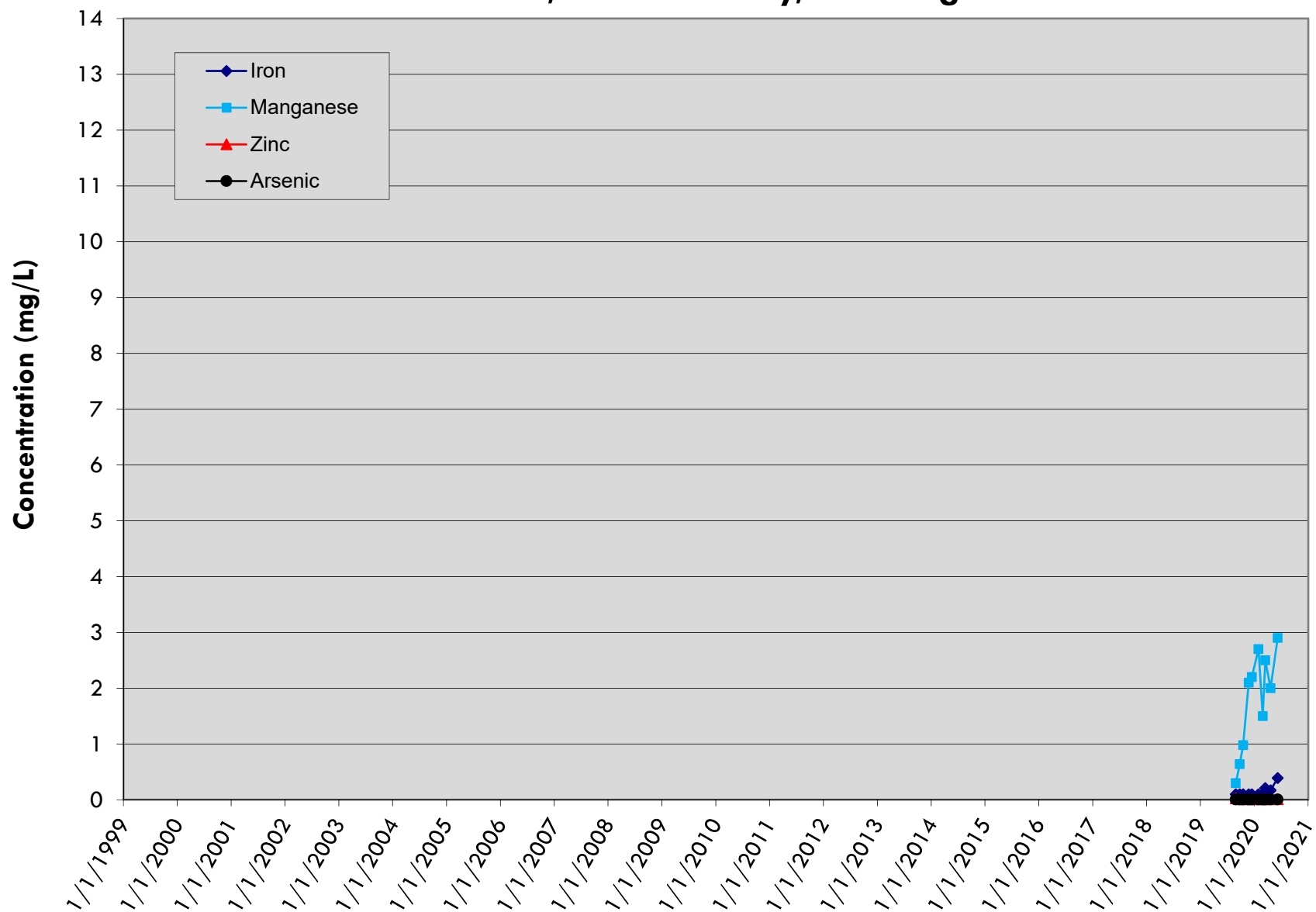
LDCS-6A

LRI Landfill, Pierce County, Washington



LDCS-7

LRI Landfill, Pierce County, Washington





Attachment H

LDCS Pumping Records and Conductivity Measurements



Summary of LDCS Volumes Pumped and Conductivity Data
Second Quarter 2020
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)
4/1/2020	0.01	9,580	390	670	724	1100	703	733	880	3,810	808	9,521	816	186	685	3,576	846	6,520	930
4/2/2020	0.16	8,320	388	610	724	1050	702	734	881	3,710	785	8,419	847	1,057	680	2,988	867	0	915
4/3/2020	0.00	9,380	394	700	734	1150	709	836	876	3,410	733	7,206	872	745	680	2,483	868	0	915
4/4/2020	0.00	9,230	398	690	733	1100	717	836	878	3,300	778	7,256	858	745	680	2,483	868	3,246	915
4/5/2020	0.00	10,150	405	730	735	1200	720	837	876	3,430	786	6,992	878	746	680	2,200	897	0	915
4/6/2020	0.00	8,360	402	680	724	1050	717	587	882	3,240	790	6,226	890	475	674	1,984	918	6,638	906
4/7/2020	0.00	8,310	394	670	710	1100	707	734	892	3,010	782	5,909	902	415	661	1,811	931	0	923
4/8/2020	0.00	8,880	391	630	717	1050	702	734	896	2,830	788	5,826	914	355	655	1,623	941	0	923
4/9/2020	0.00	8,590	396	670	729	1100	711	929	893	2,810	807	5,825	924	433	646	1,603	945	6,765	903
4/10/2020	0.00	8,420	400	630	733	1050	717	929	889	2,790	820	5,750	931	433	646	1,551	948	0	905
4/11/2020	0.01	8,530	401	690	726	1100	716	930	889	2,600	840	5,412	932	434	646	2,013	948	0	905
4/12/2020	0.00	8,800	399	610	717	950	708	589	892	2,620	826	5,450	930	295	646	1,716	948	6,605	905
4/13/2020	0.00	7,990	396	660	716	1100	707	734	894	2,720	820	5,140	931	355	690	1,146	979	0	870
4/14/2020	0.00	8,080	397	630	722	950	711	732	895	2,610	831	5,328	934	296	676	1,372	976	0	902
4/15/2020	0.00	8,550	402	710	727	1100	714	733	891	2,790	822	5,470	934	296	676	1,299	988	6,677	870
4/16/2020	0.00	8,610	403	670	725	950	713	514	890	2,800	832	5,309	934	282	655	1,310	920	0	873
4/17/2020	0.20	9,010	407	670	727	1100	717	514	888	3,000	832	5,695	936	282	655	1,361	969	1,028	873
4/18/2020	0.01	8,330	409	680	721	1050	721	514	885	3,030	846	5,597	939	282	655	1,359	989	5,413	873
4/19/2020	0.00	8,040	404	690	716	1100	714	515	889	3,030	853	5,306	944	282	655	1,407	1,001	0	873
4/20/2020	0.00	8,810	405	700	722	1050	711	735	891	2,630	843	5,113	950	416	655	1,494	1,008	2,446	866
4/21/2020	0.40	8,430	403	600	722	1000	708	588	892	2,490	843	4,944	957	415	670	1,406	1,011	3,702	881
4/22/2020	0.07	8,140	402	610	727	1050	709	742	893	3,600	842	5,603	965	1,726	670	1,544	1,012	3	866
4/23/2020	0.00	8,440	405	670	730	1000	715	886	857	3,750	861	7,148	950	1,234	663	2,543	1,009	5,263	860
4/24/2020	0.00	8,850	406	610	729	1100	714	734	786	2,810	860	5,760	941	924	665	2,409	999	1,105	854
4/25/2020	0.35	8,960	407	680	736	1050	718	734	773	3,830	845	6,674	940	924	665	2,794	985	0	854
4/26/2020	0.17	8,390	407	670	731	1200	714	735	773	3,010	857	6,218	924	924	665	2,877	975	6,825	854
4/27/2020	0.00	8,650	410	670	732	1050	716	697	767	3,280	874	6,884	917	913	662	2,666	969	3	868
4/28/2020	0.01	8,960	402	610	722	1100	708	714	758	2,660	875	5,547	919	545	668	2,347	961	618	869
4/29/2020	0.05	8,940	403	680	730	1150	715	815	762	2,710	884	5,666	926	417	668	2,013	961	5,709	872
4/30/2020	0.11	8,070	406	680	730	1200	720	682	758	3,280	883	5,811	932	484	675	1,967	963	0	881
5/1/2020	0.01	8,850	404	690	727	1050	715	723	746	3,000	873	5,542	933	1,538	649	2,117	967	4,262	844
5/2/2020	0.84	8,990	409	560	737	1200	722	723	737	4,040	854	6,853	929	1,538	649	2,545	971	2,091	844
5/3/2020	0.11	8,630	403	0	730	100	707	723	726	4,440	864	8,556	866	1,538	649	7,016	958	1,222	844
5/4/2020	0.01	8,870	398	0	727	0	691	727	738	3,370	840	7,002	863	602	656	6,080	912	5,056	861
5/5/2020	0.12	9,220	400	0	733	3300	699	815	752	3,380	852	6,299	885	537	664	2,528	890	0	864
5/6/2020	0.10	8,630	398	0	732	1400	712	547	751	3,280	859	6,280	901	723	660	2,226	892	4,751	886
5/7/2020	0.00	9,050	395	70	722	1400	711	690	744	3,050	856	5,926	906	505	678	2,250	900	1,279	900
5/8/2020	0.00	9,450	400	0	734	1200	731	738	761	3,090	866	5,698	910	397	673	2,064	908	0	950
5/9/2020	0.00	9,060	404	20	739	1250	742	738	768	3,170	885	5,483	922	397	673	1,926	918	6,957	950
5/10/2020	0.00	9,950	408	20	744	1200	746	738	772	3,250	899	5,196	933	397	673	1,864	933	0	950
5/11/2020	0.01	8,780	411	180	747	1100	747	825	768	3,140	905	5,078	940	356	704	1,758	946	2,899	971
5/12/2020	0.39	9,740	413	650	750	1150	744	700	757	3,630	890	5,164	943	831	708	1,541	957	3,441	978
5/13/2020	0.13	8,550	412	760	735	1100	739	677	748	4,390	890	7,567	944	1,471	691	2,845	967	0	915
5/14/2020	0.07	8,480	412	680	720	1100	733	681	744	3,550	883	6,483	936	785	685	2,910	962	6,730	900
5/15/2020	0.00	8,520	405	600	714	1250	727	685	745	3,260	880	5,611	935	1,090	700	2,391	950	0	854
5/16/2020	0.38	9,730	406	680	732	1550	731	685	755	3,500	866	5,606	936	1,090	700	2,129	950	960	870
5/17/2020	0.12	8,920	408	760	744	1100	735	685	756	5,160	884	8,629	920	1,090	700	4,850	881	6,156	860
5/18/2020	0.00	8,670	405	670	740	1100	735	679	751	3,770	891	6,595	865	662	703	3,059	918	0	870
5/19/2020	0.03	8,750	402	670	722	1050	726	542	746	3,500	891	5,298	871	477	699	2,281	927	5,653	860
5/20/2020	0.05	8,580	398	670	720	1100	716	677	745	3,710	889	5,049	885	478	675	1,950	931	911	878
5/21/2020	0.10	8,540	401	650	735	1100	719	681	746	4,040	884	5,601	894	601	661	1,873	934	0	905
5/22/2020	0.01	8,280	406	640	739	1050	726	630	743	3,270	877	5,372	897	499	662	2,024	939	6,654	947
5/23/2020	0.00	8,720	404	680	724	1050	724	630	741	3,250	872	4,804	904	499	662	1,882	944	0	947
5/24/2020	0.00	8,830	402	620	727	1050	723	630	741	3,510	874	4,749	910	499	662	1,760	951	379	947
5/25/2020	0.25	7,900	405	660	734	1050	730	542	738	4,600	922	5,399	916	985	673	1,703	957	6,284	955
5/26/2020	0.02	8,860	409	660	734	1050	734	676	734	4,100	920	5,831	920	976	665	2,028	963	2	936
5/27/2020	0.01	8,700	409	620	730	1100	735	182	733	3,330	896	4,842	924	600	670	2,092	967	4,267	866
5/28/2020	0.00	8,180	410	660	734	1100	739	1035	731	3,520	901	4,541	925	539	668	1,942	970	2,468	900
5/29/2020	0.00	9,190	412	690	739	1150	743	640	729	3,350	917	4,627	927	1,189	674	1,866	973	0	915
5/30/2020	0.78	8,140	413	730	743	1100	744	640	725	3,630	917	5,424	927	1,189	674	2,001	975	6,677	915
5/31/2020	0.00	8,670	410	680	721	1150	734	640	715	3,100	897	6,277	920	1,189	674	3,873	974	0	915

**Summary of LDCS Volumes Pumped and Conductivity Data
Second Quarter 2020
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)
6/1/2020	0.02	7,990	406	680	712	1100	727	674	715	3,000	887	4,411	927	537	684	2,463	968	5,264	954
6/2/2020	0.00	8,600	404	620	714	1200	723	539	719	3,220	880	3,991	931	418	678	2,463	962	5,280	1,018
6/3/2020	0.02	8,280	404	680	722	1200	726	695	721	3,250	885	3,833	934	417	692	2,093	958	1,312	1,120
6/4/2020	0.38	4,480	406	660	732	1150	734	660	724	3,460	904	3,771	939	417	688	1,817	959	6,764	1,105
6/5/2020	0.40	12,670	415	690	740	1250	742	633	723	3,470	912	3,887	944	603	684	1,684	963	0	1,100
6/6/2020	0.54	8,770	426	720	739	1250	745	633	721	2,990	904	4,312	949	603	684	1,704	969	3,427	1,100
6/7/2020	0.22	8,720	413	690	724	1150	736	633	721	3,230	893	4,918	957	603	684	1,888	977	3,285	1,100
6/8/2020	1.08	7,500	406	690	708	1200	722	540	714	3,090	895	5,032	947	762	685	853	990	4,331	1,127
6/9/2020	0.05	8,860	406	680	730	1250	725	676	714	4,510	897	6,627	931	1,824	678	5,889	1,021	4,348	1,114
6/10/2020	0.00	8,490	407	680	735	1350	734	676	716	3,810	883	6,243	901	899	680	5,889	961	2,521	1,100
6/11/2020	0.05	8,620	408	670	740	1250	741	676	720	3,590	857	5,269	899	600	673	3,681	893	4,477	1,098
6/12/2020	0.29	9,140	409	670	743	1350	744	632	723	3,550	778	5,321	927	1,000	675	2,584	932	4,477	1,100
6/13/2020	0.21	8,780	410	680	740	1400	744	632	722	3,860	829	5,933	937	1,000	675	3,553	942	6,713	1,100
6/14/2020	0.01	8,330	409	760	739	1300	743	632	724	4,170	862	6,233	929	1,001	675	3,876	938	6,713	1,100
6/15/2020	0.46	9,190	411	680	738	1400	744	675	723	7,480	881	6,631	924	2,122	709	5,291	933	6,883	1,053
6/16/2020	0.03	9,060	408	740	718	1350	741	629	714	6,590	896	7,085	884	0	701	5,336	915	6,883	998
6/17/2020	0.00	8,770	402	660	700	1350	726	629	715	5,230	916	5,505	855	1,832	698	5,347	904	2,474	1,271
6/18/2020	0.00	8,290	404	760	722	1350	733	629	724	4,970	919	4,593	874	486	691	2,819	910	3,878	968
6/19/2020	0.00	9,200	410	680	741	1350	744	642	726	5,170	924	4,332	891	553	670	2,244	920	3,878	951
6/20/2020	0.05	9,260	413	740	740	1300	749	642	724	5,630	944	4,152	903	553	670	2,097	927	6,550	951
6/21/2020	0.02	8,380	410	660	715	1300	738	642	721	5,860	943	3,982	915	553	670	1,970	932	6,550	951
6/22/2020	0.00	8,480	407	740	712	1250	730	642	719	5,310	939	3,739	925	553	681	1,807	938	5,784	1,276
6/23/2020	0.00	9,050	410	680	731	1200	739	677	720	4,950	944	3,585	933	579	688	1,814	946	5,821	935
6/24/2020	0.00	8,200	415	740	740	1300	747	676	722	4,920	973	3,547	939	623	684	1,746	955	1,762	912
6/25/2020	0.00	8,330	411	700	688	1150	736	643	704	4,650	962	3,254	945	540	678	1,743	967	4,557	875
6/26/2020	0.00	8,560	411	650	688	1200	736	643	704	4,190	962	3,081	951	540	678	862	967	4,557	875
6/27/2020	0.00	7,670	411	740	688	1150	736	643	704	4,210	962	3,165	954	540	678	2,752	967	2,403	875
6/28/2020	0.14	8,190	411	680	688	1200	736	643	704	3,910	962	3,376	954	539	678	2,752	967	6,461	875
6/29/2020	0.00	8,360	419	690	700	1100	741	676	720	2,720	818	3,133	956	537	684	3,717	771	6,461	1,199
6/30/2020	0.04	7,970	421	660	739	1150	747	540	738	2,550	871	3,027	960	420	673	3,727	908	4,851	1,178

== No data collected

**Summary of Leachate Volume and Depth Data
Second Quarter 2020
LRI Landfill, Pierce County, Washington**

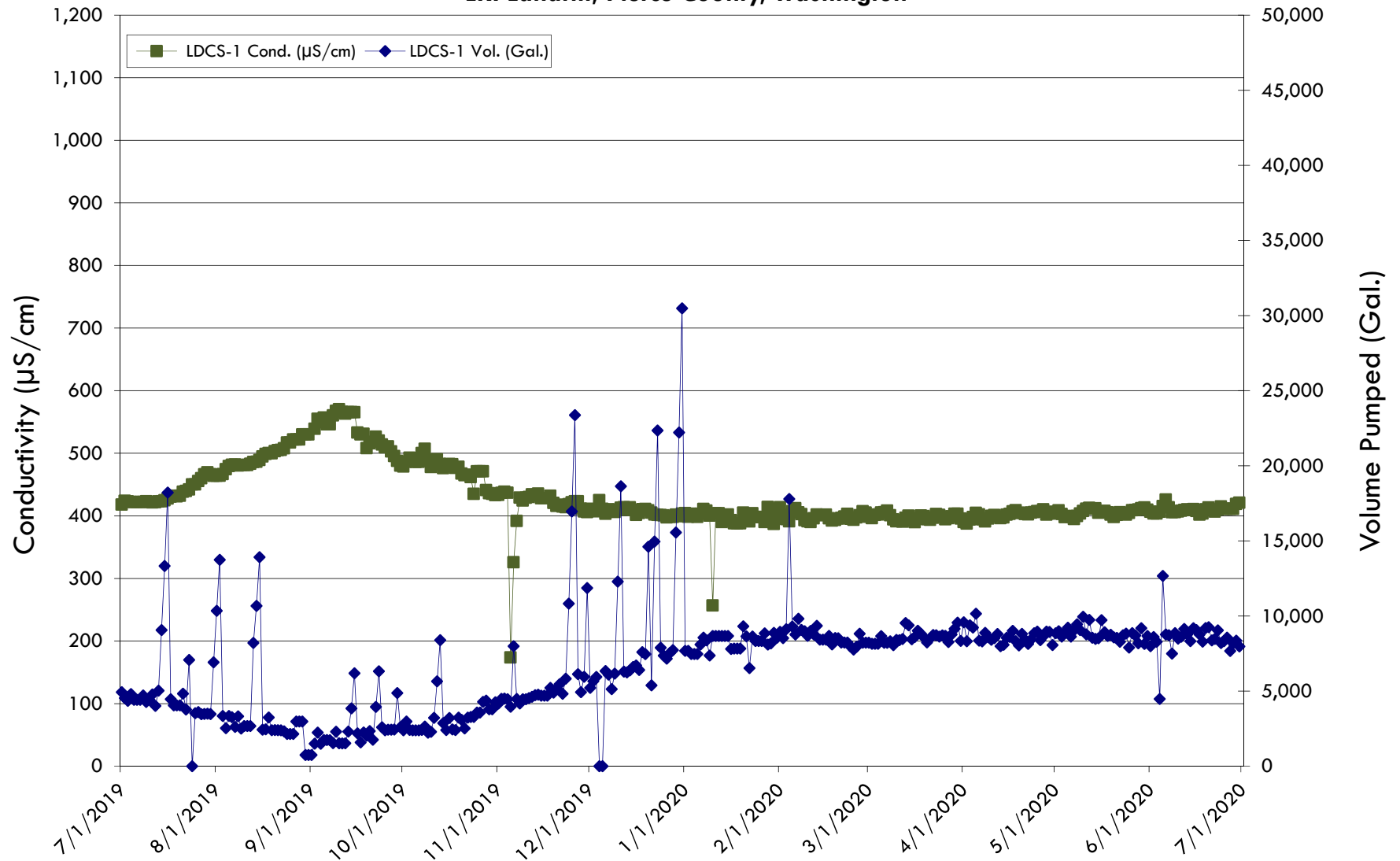
Date	Cell 1 Leachate Volume (GPD)	Cell 1 Leachate Level (in.)	Cell 2A Leachate Volume (GPD)	Cell 2A Leachate Level (in.)	Cell 2B Leachate Volume (GPD)	Cell 2B Leachate Level (in.)	Cell 3A Leachate Volume (GPD)	Cell 3A Leachate Level (in.)	Cell 4A Leachate Volume (GPD)	Cell 4A Leachate Level (in.)	Cell 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.)
4/1/2020	1,515	11.0	0	8.3	3,410	9.6	8,182	10.2	19,679	15.4	13,630	45.0	13,228	17.9	13,557	32.7	37,496	20.9
4/2/2020	2,966	11.1	0	9.8	3,154	11.9	11,109	11.0	10,802	18.2	19,367	44.8	15,518	17.9	20,424	30.6	20,583	16.1
4/3/2020	3,107	11.8	0	11.3	5,290	14.0	8,763	9.1	14,121	17.8	22,950	45.0	13,397	17.7	9,591	23.7	5,110	12.7
4/4/2020	3,501	10.6	0	6.4	5,520	9.0	9,985	10.5	12,947	7.9	24,884	43.8	13,397	17.7	9,591	23.7	3,294	12.8
4/5/2020	2,379	10.9	0	7.6	3,661	8.7	11,037	8.9	11,996	7.5	27,227	42.8	13,397	17.7	12,158	8.6	4,105	13.2
4/6/2020	2,042	10.8	0	8.6	3,144	9.3	7,314	10.5	15,594	10.0	18,231	42.3	12,428	17.9	15,496	9.3	7,598	13.1
4/7/2020	1,448	11.0	0	10.1	3,977	8.7	10,161	8.7	10,665	7.0	27,743	40.9	11,376	17.3	10,778	8.9	6,870	13.3
4/8/2020	2,355	10.9	8,033	9.3	3,998	8.7	9,866	8.9	10,065	7.1	25,875	39.9	11,498	17.5	8,742	9.0	3,921	13.5
4/9/2020	3,715	10.9	0	7.3	3,740	8.9	7,774	9.3	10,045	7.1	26,869	38.7	15,629	17.4	8,400	9.0	3,327	13.6
4/10/2020	2,279	11.0	0	8.5	3,742	8.9	7,262	8.8	11,347	7.1	27,008	37.2	15,629	17.9	9,812	8.9	2,358	13.8
4/11/2020	2,114	11.0	0	9.9	3,895	8.7	10,115	8.8	10,684	7.1	25,955	35.8	15,629	17.9	14,676	8.8	3,830	13.9
4/12/2020	3,560	10.4	0	11.1	4,125	8.8	6,600	9.4	10,017	7.0	25,603	34.1	10,700	17.9	9,217	9.9	7,654	14.6
4/13/2020	1,102	11.0	7,739	8.1	2,951	8.6	8,161	8.7	10,701	7.0	25,501	32.6	11,812	17.2	8,247	8.8	13,186	13.8
4/14/2020	3,751	11.0	0	8.7	4,074	8.5	5,735	9.4	9,867	7.0	25,287	30.7	11,610	17.7	7,880	9.0	2,993	13.7
4/15/2020	4,654	10.6	0	10.1	3,993	9.0	9,056	9.1	10,514	7.3	24,300	28.8	12,294	17.2	8,878	9.0	0	14.9
4/16/2020	1,149	10.8	0	10.7	2,674	8.6	6,091	9.5	10,724	7.0	24,899	26.3	9,132	17.3	8,424	9.1	0	15.8
4/17/2020	3,986	10.4	7,777	7.8	4,018	8.5	11,273	9.2	11,084	7.2	22,777	24.1	9,132	16.9	6,372	8.9	0	16.6
4/18/2020	1,638	11.2	0	7.5	3,777	8.8	0	9.0	19,216	9.1	25,359	20.3	9,132	16.9	15,994	8.5	0	17.3
4/19/2020	3,621	10.5	0	9.0	4,017	8.8	5,928	9.1	16,476	9.1	26,138	17.4	9,132	16.9	9,906	8.9	2,315	17.8
4/20/2020	1,887	11.1	0	10.5	3,904	8.8	9,131	9.0	14,986	8.9	24,291	11.8	11,442	12.2	9,682	9.1	2,410	17.7
4/21/2020	3,739	10.5	8,437	9.0	4,250	8.9	8,088	9.3	12,053	9.2	8,384	8.5	10,868	17.7	10,378	8.7	746	17.7
4/22/2020	2,327	10.9	0	7.7	3,752	9.1	5,580	8.9	14,533	9.2	17,373	10.2	18,416	17.8	20,991	8.0	3,049	18.2
4/23/2020	1,500	11.2	0	8.6	4,867	9.0	10,602	9.1	19,300	9.4	26,398	13.2	12,812	17.6	4,749	18.4	7,023	18.2
4/24/2020	3,069	11.1	0	10.3	3,608	8.9	14,327	8.6	17,699	7.9	17,642	8.6	15,383	12.3	14,931	14.8	17,188	15.8
4/25/2020	1,858	11.0	0	11.3	3,871	9.0	13,570	8.8	14,321	9.0	18,731	10.0	15,383	12.3	19,678	8.6	6,462	13.0
4/26/2020	3,543	11.0	8,181	7.2	3,411	9.0	13,807	8.5	14,212	8.9	20,408	10.1	15,383	12.3	9,889	8.6	5,174	13.3
4/27/2020	1,829	11.3	0	8.2	2,608	8.6	11,424	8.7	16,053	9.2	19,545	9.9	12,064	17.9	16,942	9.0	2,855	13.6
4/28/2020	2,334	11.0	0	9.5	3,595	8.9	13,170	8.8	15,963	8.6	13,079	7.8	11,390	12.0	12,906	8.1	1,208	13.6
4/29/2020	2,865	11.1	6,962	9.5	3,547	9.2	11,873	9.0	11,737	6.2	9,675	8.1	12,910	17.9	10,676	8.3	0	14.5
4/30/2020	2,541	11.0	0	7.7	3,744	8.8	12,915	8.9	9,410	7.0	11,279	8.0	12,004	17.9	18,845	11.2	0	15.5
5/1/2020	3,484	10.9	0	9.1	2,941	9.0	11,652	8.9	11,110	6.8	11,606	8.2	10,791	14.2	16,513	9.4	0	16.4
5/2/2020	2,310	11.0	0	10.1	3,570	8.2	8,598	9.0	7,536	7.4	16,689	8.9	10,791	14.2	19,110	15.0	51	17.6
5/3/2020	2,452	10.9	2,829	10.5	2,713	8.9	6,384	9.2	15,785	8.9	25,378	17.0	10,791	14.2	21,255	25.3	6,070	20.7
5/4/2020	4,104	10.6	4,905	6.7	3,880	8.6	10,167	9.0	8,165	6.9	22,733	16.0	0	34.5	11,990	11.4	10,715	20.0
5/5/2020	2,011	11.0	0	7.6	1,511	10.2	6,632	10.2	17,990	9.2	16,742	14.0	6	34.5	12,232	15.5	15,021	17.7
5/6/2020	2,707	10.8	0	8.4	4,103	10.9	8,058	9.9	13,749	11.2	13,142	12.4	21,208	37.9	9,156	17.6	2,728	14.5
5/7/2020	2,651	10.7	0	10.1	3,332	8.7	5,429	9.5	12,811	8.6	17,659	9.8	44,232	38.1	10,066	18.0	0	15.5
5/8/2020	5,767	10.3	7,632	9.3	3,611	8.9	4,965	9.1	11,281	8.3	9,670	8.0	15,151	17.8	14,927	13.4	0	17.0
5/9/2020	1,774	11.1	0	7.2	2,441	8.8	9,456	8.7	16,581	8.7	9,935	8.1	15,151	17.8	11,443	12.4	0	18.4
5/10/2020	4,312	10.6	0	8.5	3,741	8.5	8,415	9.2	14,830	7.3	10,298	8.0	15,151	17.8	7,435	12.7	12,290	18.7
5/11/2020	1,189	11.0	0	9.7	3,786	8.9	10,326	9.2	11,849	8.6	10,964	8.1	12,100	11.9	5,091	17.6	5,420	14.8
5/12/2020	2,319	11.4	112	10.9	3,285	10.4	567	14.7	8,890	11.4	4,018	10.4	16,476	14.9	2,731	30.1	5	16.0
5/13/2020	6,284	9.6	8,021	8.7	2,661	8.2	12,430	9.4	17,212	9.9	18,142	16.8	15,184	13.5	18,839	30.7	29,079	17.0
5/14/2020	2,746	10.7	0	7.4	3,823	9.1	5,976	9.1	15,478	8.8	26,369	15.3	12,346	12.6	28,926	14.5	1,473	15.6
5/15/2020	2,334	10.6	0	8.6	2,424	8.8	9,966	8.9	15,285	8.6	20,086	9.7	15,631	14.9	9,064	10.4	12,440	16.7
5/16/2020	2,588	10.8	1	10.0	3,324	9.0	5,134	9.1	10,791	8.2	8,651	8.0	15,631	14.9	10,671	8.9	0	15.2
5/17/2020	5,833	10.0	0	11.1	3,429	8.9	9,112	9.2	11,731	8.1	22,731	15.0	15,631	14.9	19,639	8.5	32,954	16.8
5/18/2020	4,137	10.3	7,710	7.4	3,852	8.9	7,334	8.6	14,279	9.2	22,380	14.9	12,218	14.5	10,813	8.9	0	15.9
5/19/2020	0	10.9	0	7.6	2,252	9.0	5,239	9.1	9,419	8.7	16,944	9.1	11,790	14.9	10,758	8.9	12,134	16.8
5/20/2020	9	11.8	0	9.0	3,269	9.0	5,805	8.9	10,831	9.3	10,145	8.1	11,230	14.2	9,675	8.8	1	15.1
5/21/2020	0	12.0	0	10.4	3,437	9.0	7,883	9.1	14,049	8.7	12,313	8.3	11,882	14.9	12,151	8.7	0	16.6
5/22/2020	0	12.0	7,150	6.8	2,485	9.0	6,450	8.5	9,597	8.3	12,750	8.0	10,797	14.9	10,277	8.8	11,798	17.1
5/23/2020	0	12.5	0	7.5	3,642	8.9	4,840	8.8	16,136	8.7	10,912	8.0	10,797	14.9	8,904	8.9	0	14.8
5/24/2020	0	13.0	0	9.7	2,445	8.8	5,003	9.0	9,551	7.0	9,277	8.0	10,797	14.9	7,763	9.0	0	15.9
5/25/2020	0	13.0	0	10.7	2,557	9.1	8,274	9.0	9,476	7.0	13,663	7.6	12,354	14.9	15,282	8.7	2	16.9
5/26/2020	0	13.0	6,438	7.8	3,928	8.5	7,840	8.7	10,492	7.0	16,055	8.1	11,080	13.2	10,823	8.9	11,960	16.2
5/27/2020	0	13.0	0	7.7	2,433	9.0	5,432	8.6	10,918	7.0	11,009	8.1	11,020	14.9	7,815	8.8	0	15.2
5/28/2020	0	13.1	0	8.8	3,637	8.8	4,926	8.6	11,194	7.0	8,751	8.1	11,304	14.9	8,936	8.2	0	16.4
5/29/2020	0	13.4	11	10.0	2,425	9.1	5,535	9.1	11,333	7.0	9,648	8.0	14,697	11.0	8,171	7.9	0	17.3
5/30/2020	0	13.3	7,598	10.2	3,876	8.5	8,610	9.5	10,521	7.1	13,080	10.2	14,697	11.0	25,379	8.2	15,960	16.5
5/31/2020	0	13.9	0	7.0	2,627	8.8	6,838	8.4	11,334	7.0	26,337	18.3	0	11.0	10,740	8.8	12,323	15.2

Summary of Leachate Volume and Depth Data
Second Quarter 2020
LRI Landfill, Pierce County, Washington

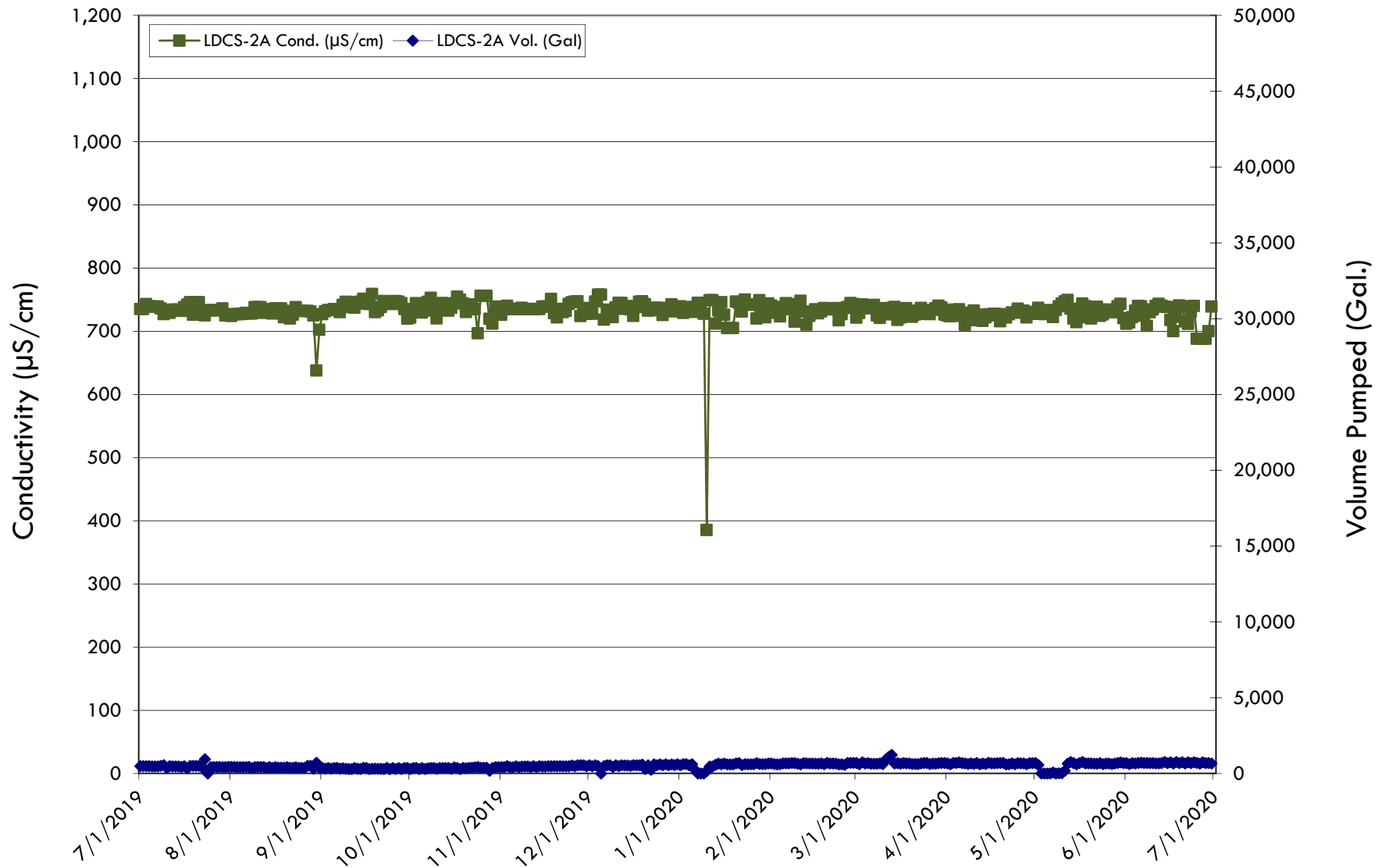
Date	Cell 1 Leachate Volume (GPD)	Cell 1 Leachate Level (in.)	Cell 2A Leachate Volume (GPD)	Cell 2A Leachate Level (in.)	Cell 2B Leachate Volume (GPD)	Cell 2B Leachate Level (in.)	Cell 3A Leachate Volume (GPD)	Cell 3A Leachate Level (in.)	Cell 4A Leachate Volume (GPD)	Cell 4A Leachate Level (in.)	Cell 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.)
6/1/2020	0	13.6	0	7.5	4,045	9.0	5,395	9.1	10,130	7.0	20,631	15.0	10,548	14.7	9,518	9.1	0	16.1
6/2/2020	0	14.0	0	9.1	2,734	8.5	10,946	8.5	10,859	6.8	15,840	9.7	10,630	14.9	9,620	9.1	0	17.2
6/3/2020	0	14.0	0	10.6	2,588	8.7	5,308	9.1	10,600	7.0	9,491	8.0	10,704	14.9	9,620	9.1	11,094	16.1
6/4/2020	0	14.0	7,603	10.4	3,729	9.1	5,531	9.7	10,427	7.0	11,472	8.0	11,124	14.9	8,060	9.0	11,094	15.0
6/5/2020	10,454	9.4	0	7.2	2,337	8.9	9,583	9.3	11,557	7.0	8,258	8.2	12,977	14.9	10,801	8.8	0	15.9
6/6/2020	10,097	9.9	0	8.9	3,682	8.8	7,178	8.6	11,462	7.0	18,118	8.7	12,977	14.9	14,785	8.7	0	16.7
6/7/2020	4,907	10.6	0	9.3	2,627	8.8	5,967	8.6	11,205	6.9	20,208	11.5	12,977	14.9	16,814	8.6	12,695	17.0
6/8/2020	9,561	10.2	0	11.0	2,912	8.6	4,666	9.0	8,509	9.3	19,513	15.9	11,894	14.9	11,852	8.7	12,695	15.2
6/9/2020	4,859	10.5	7,589	9.4	3,498	9.0	5,237	8.8	0	25.9	17,305	20.6	19,544	14.0	18,909	8.3	15,139	16.3
6/10/2020	3,161	10.8	0	7.2	3,408	9.3	5,974	8.8	32,248	21.1	1	25.0	11,144	14.9	18,909	8.9	15,139	15.0
6/11/2020	4,170	10.6	0	8.4	2,577	8.6	10,321	8.9	22,842	9.4	40,033	24.5	12,166	14.9	10,622	9.1	0	16.2
6/12/2020	4,485	10.7	0	9.6	2,766	8.7	6,650	8.8	15,779	9.6	23,904	24.0	13,558	14.9	16,104	8.5	0	17.2
6/13/2020	6,298	10.6	7,035	7.4	3,550	8.9	6,176	8.9	13,342	9.5	20,964	28.2	13,558	14.9	16,210	8.4	12,643	15.2
6/14/2020	2,272	10.8	0	6.5	2,595	9.0	7,693	9.3	18,672	9.4	20,964	28.9	13,558	14.9	15,372	16.0	12,643	15.7
6/15/2020	3,967	10.9	0	8.3	3,671	8.9	7,139	8.7	13,217	9.5	18,723	27.7	18,234	14.9	26,643	13.6	4,035	17.0
6/16/2020	2,415	10.7	0	9.5	2,634	8.7	5,308	8.9	10,424	8.4	49,752	30.5	11,432	14.9	26,774	8.2	9,906	14.8
6/17/2020	1,520	10.9	0	10.2	2,619	9.0	5,218	9.1	12,895	8.1	25,024	28.9	10,932	14.9	14,356	8.8	9,906	15.9
6/18/2020	5,406	10.2	7,412	7.8	3,833	8.8	6,088	9.0	9,895	7.0	47,008	23.6	11,192	14.9	13,886	7.7	0	16.9
6/19/2020	3,581	10.8	0	7.9	2,435	8.7	10,357	9.0	10,601	7.0	20,196	13.1	10,945	14.9	11,340	7.3	7,662	17.5
6/20/2020	3,514	10.6	0	8.8	2,684	8.7	2,552	9.5	8,743	10.5	38,440	10.4	10,945	14.9	9,121	9.4	7,764	14.6
6/21/2020	7,861	9.8	0	9.9	2,200	9.9	1,719	17.0	1,456	20.9	33,274	10.2	10,945	14.9	9,317	13.2	4,248	15.5
6/22/2020	9,278	9.3	4,155	10.6	2,956	10.2	3,848	20.4	4,537	22.3	48,724	9.1	10,376	14.8	9,317	13.7	4	16.4
6/23/2020	6,983	10.2	4,207	7.6	3,434	9.8	12,026	19.6	13,166	21.4	26,640	8.6	10,780	14.8	9,433	12.7	0	17.2
6/24/2020	0	10.8	0	6.8	2,774	8.7	8,148	9.5	18,156	12.0	16,200	8.7	10,842	14.2	10,679	9.6	12,107	16.4
6/25/2020	939	10.9	0	8.3	2,677	8.7	9,858	9.2	18,235	9.8	9,360	8.4	10,937	14.9	10,679	8.2	12,107	14.8
6/26/2020	1,543	11.2	0	9.9	2,572	8.9	5,432	8.8	15,627	8.7	11,160	8.4	10,937	14.9	10,149	7.7	0	15.9
6/27/2020	2,834	10.8	0	10.6	3,927	8.6	5,927	9.3	17,038	10.0	11,160	8.5	10,937	14.9	11,199	8.8	0	16.8
6/28/2020	4,549	10.5	7,920	9.9	2,784	8.6	5,236	9.1	15,015	9.7	11,160	8.2	10,937	14.9	19,118	8.5	962	17.6
6/29/2020	0	11.1	0	6.8	3,589	9.2	9,545	8.8	10,491	9.7	11,160	9.9	10,622	14.9	19,118	8.7	10,902	14.9
6/30/2020	2,659	10.9	0	8.3	2,356	8.9	5,398	8.9	12,026	9.9	3,960	10.4	10,584	14.9	11,525	8.8	10,902	15.2

- = No data collected

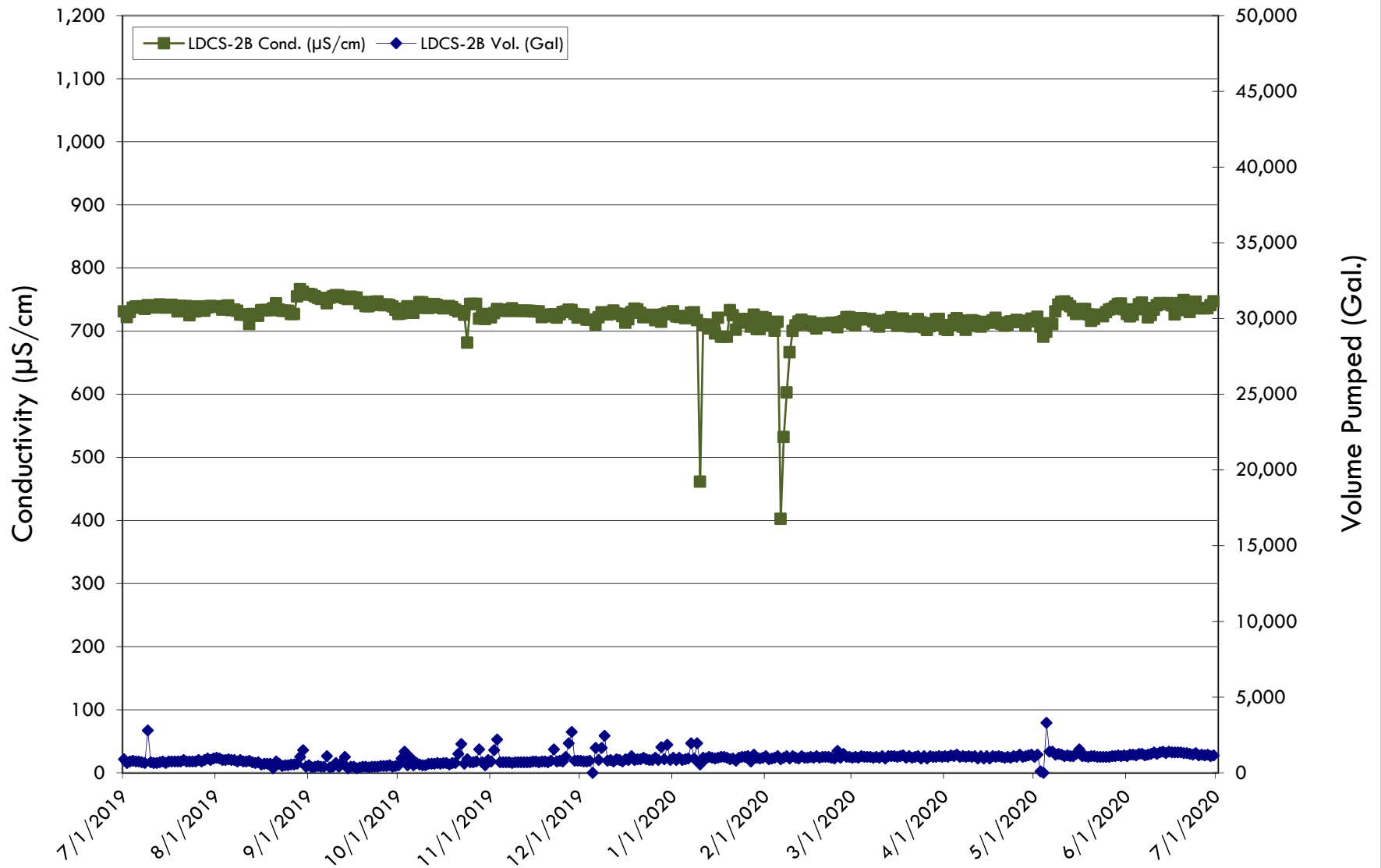
LDCS-1 (DailyTotals)
Conductivity vs Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



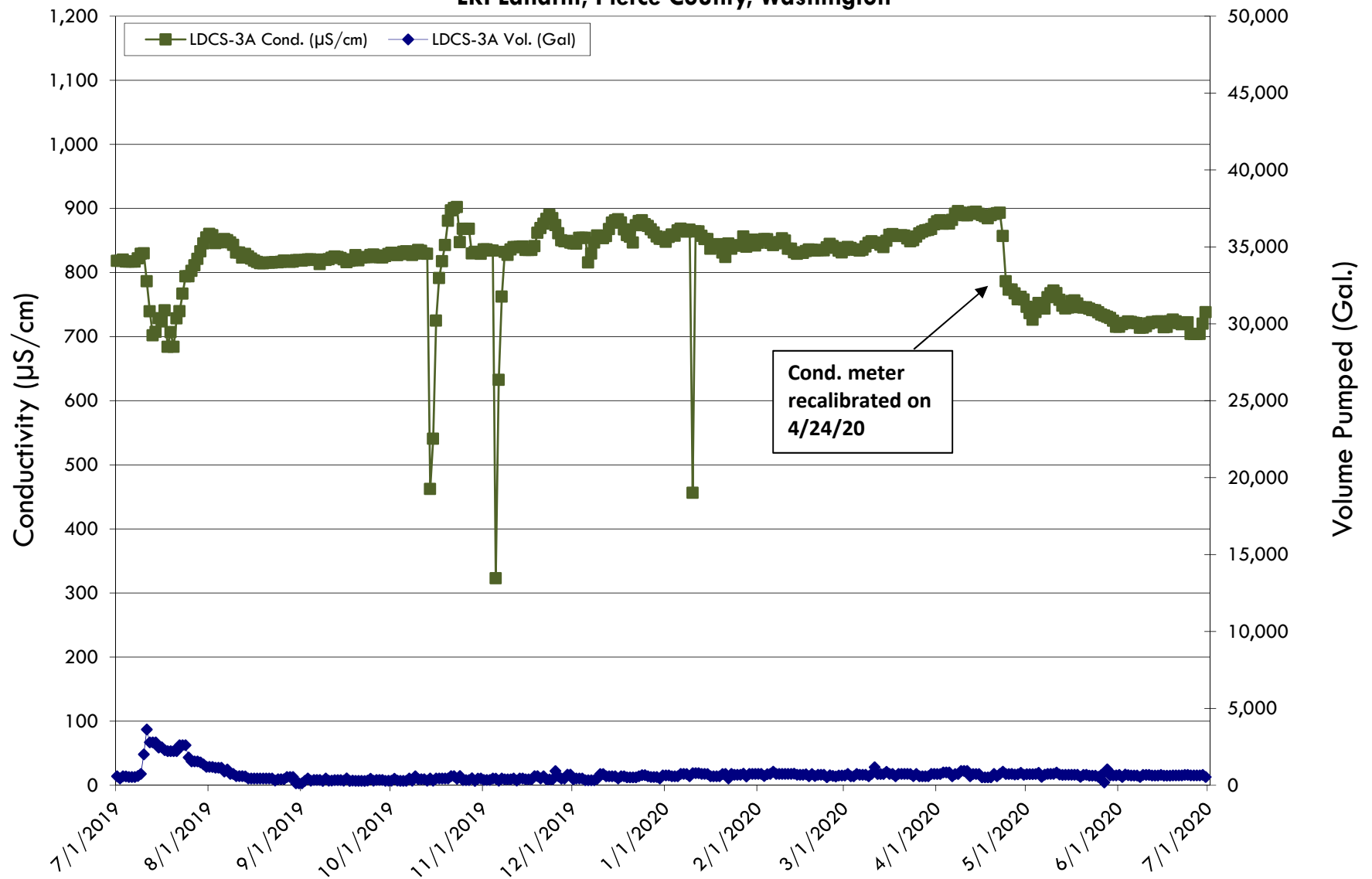
LDCS-2A (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



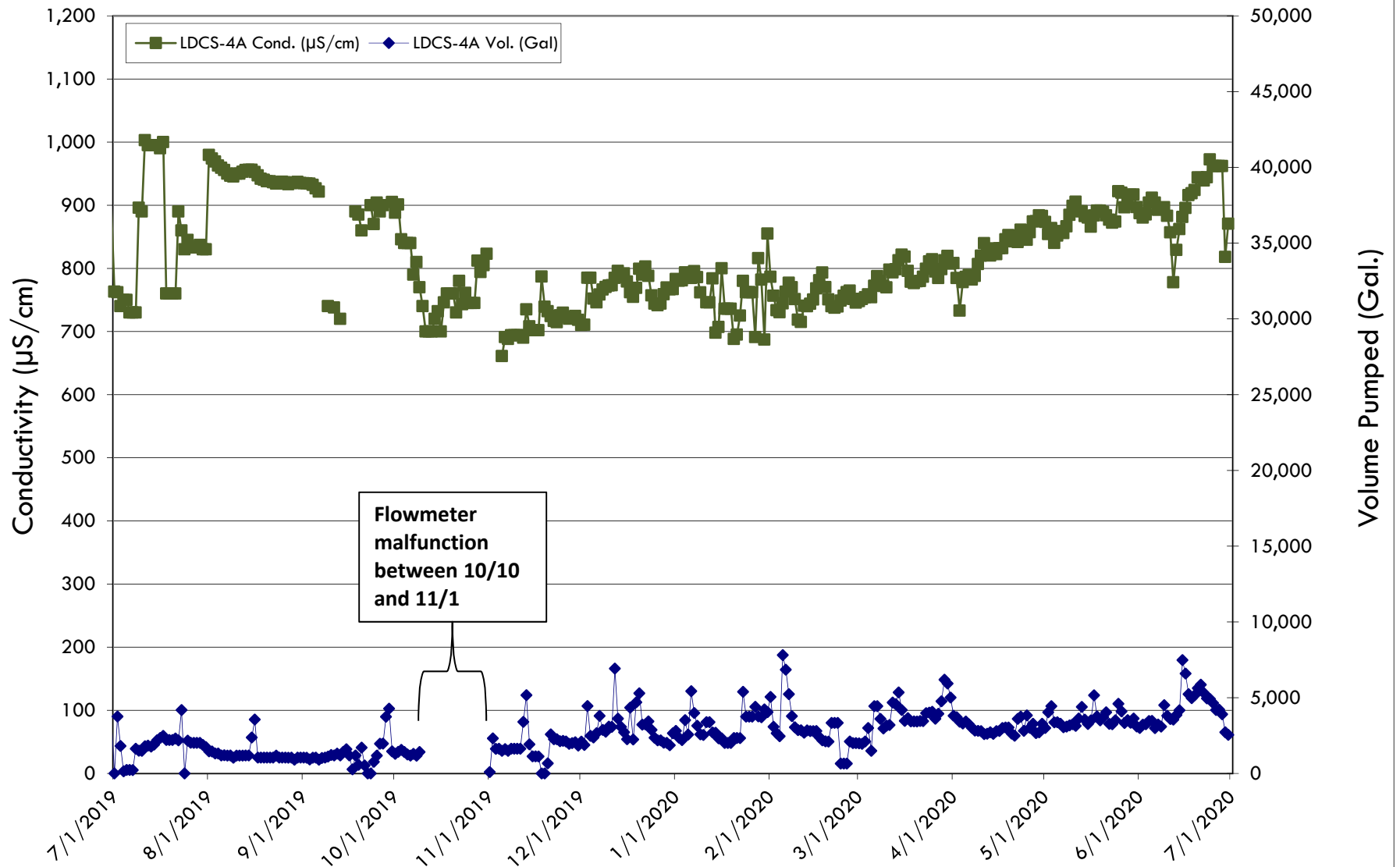
LDCS-2B (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



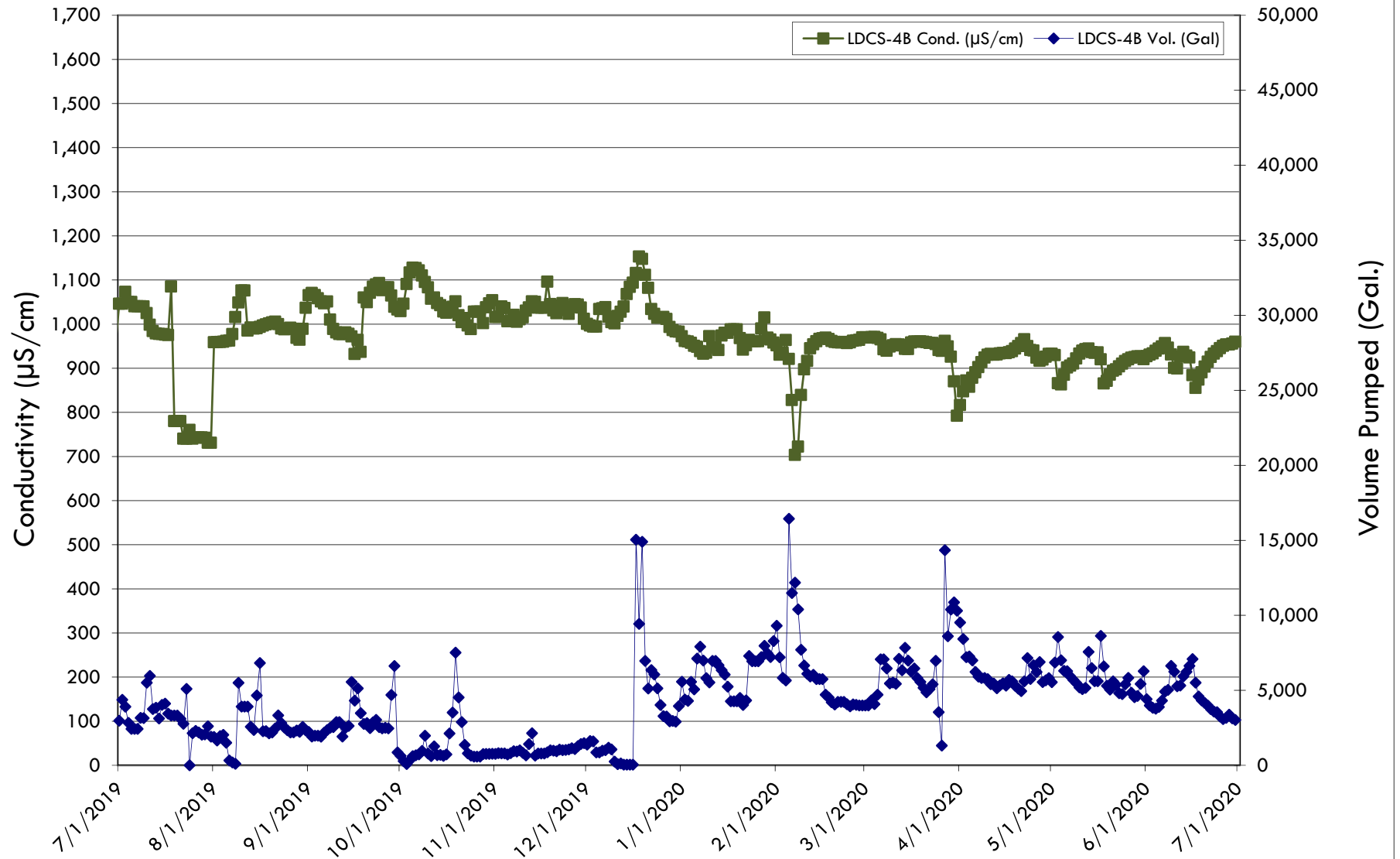
LDCS-3A (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



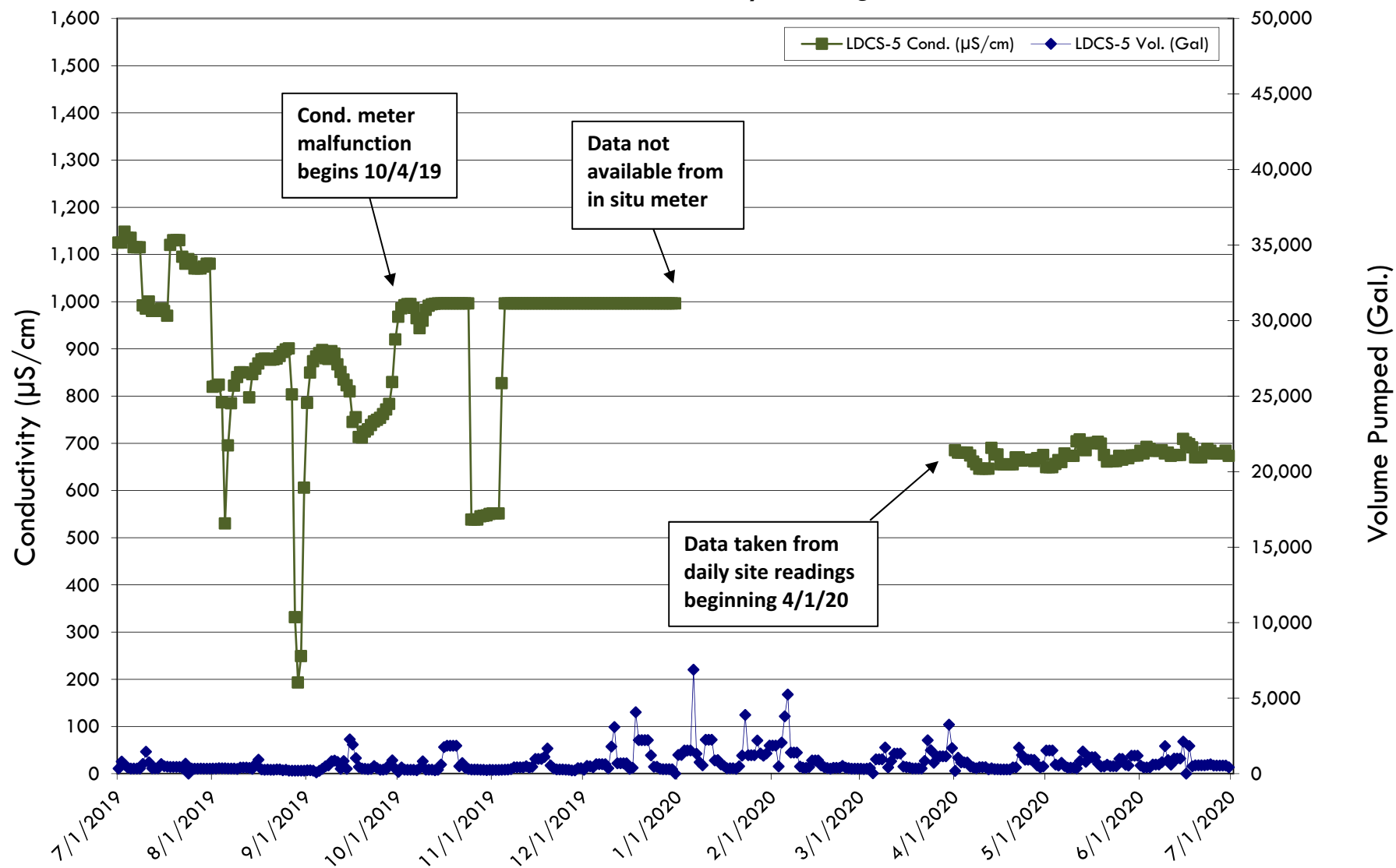
LDCS-4A (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



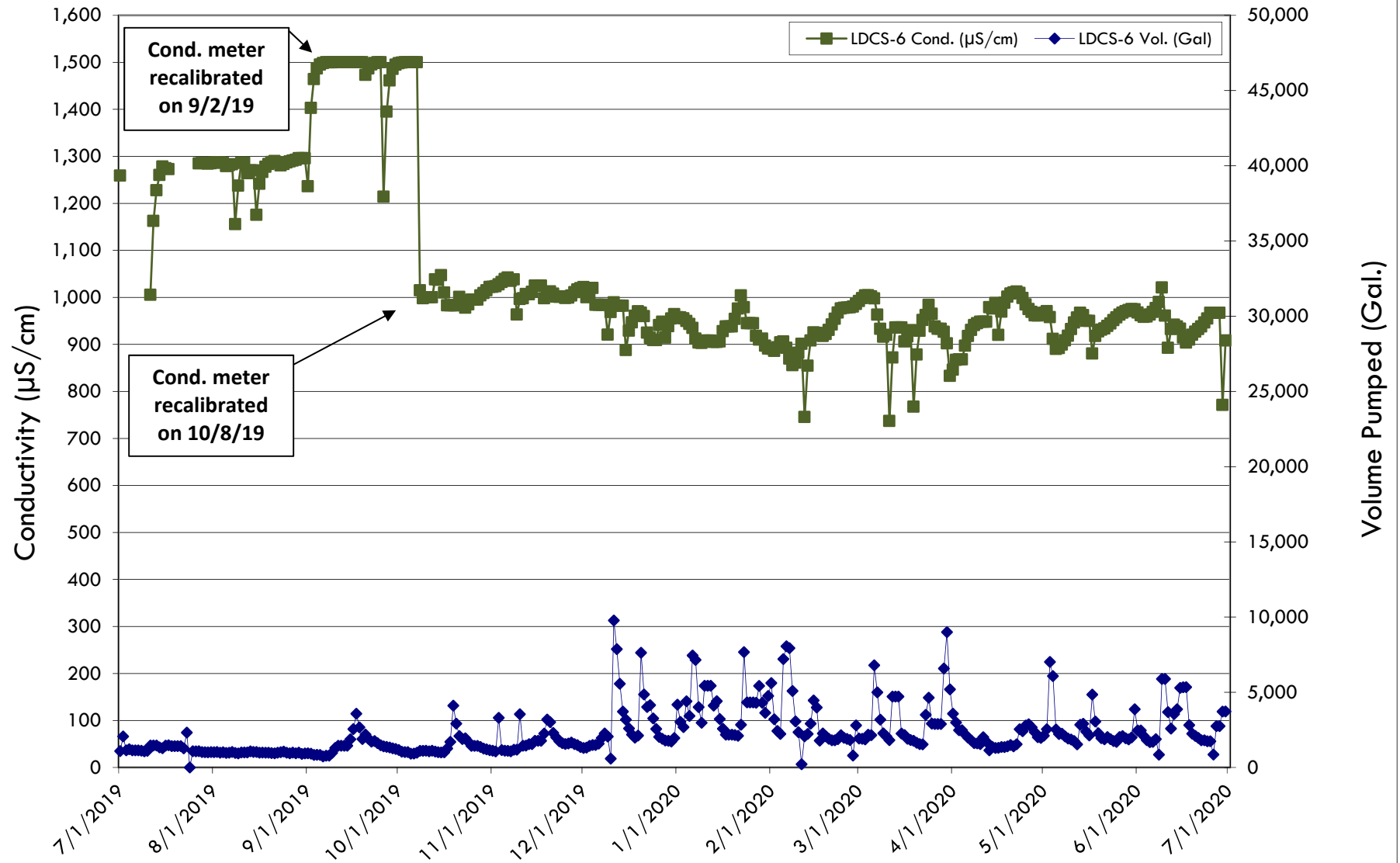
LDCS-4B (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



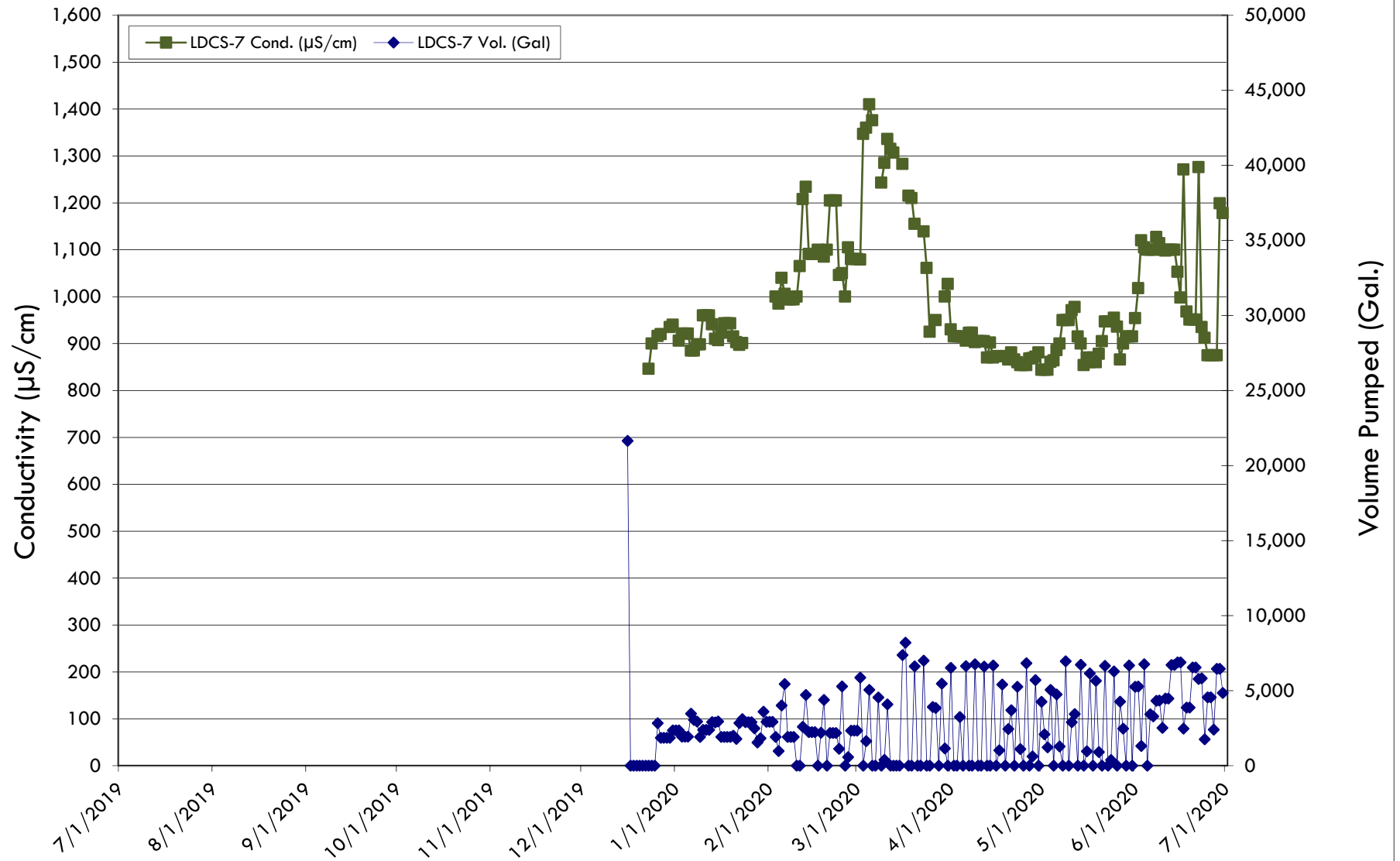
LDCS-5 (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



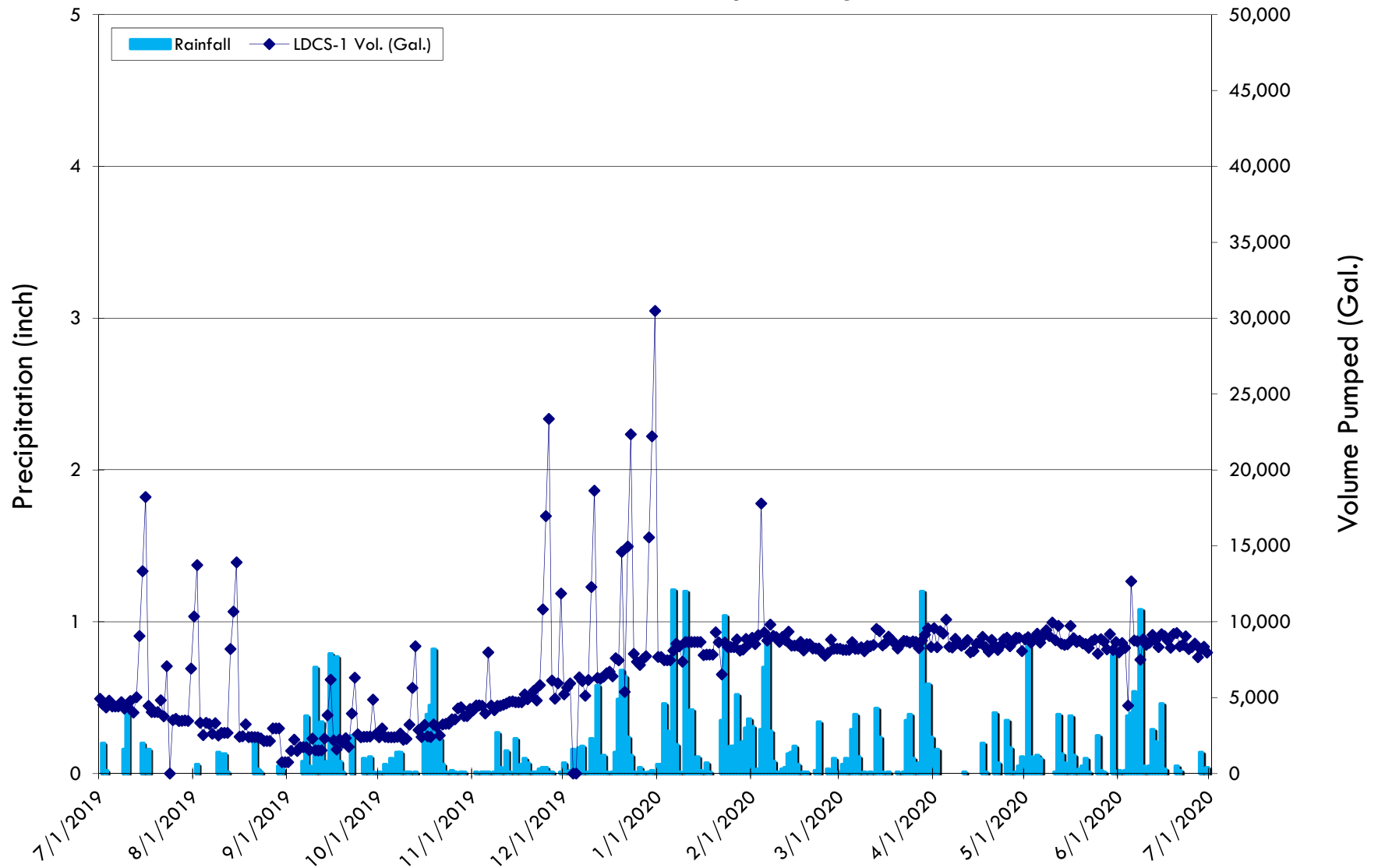
LDCS-6 (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



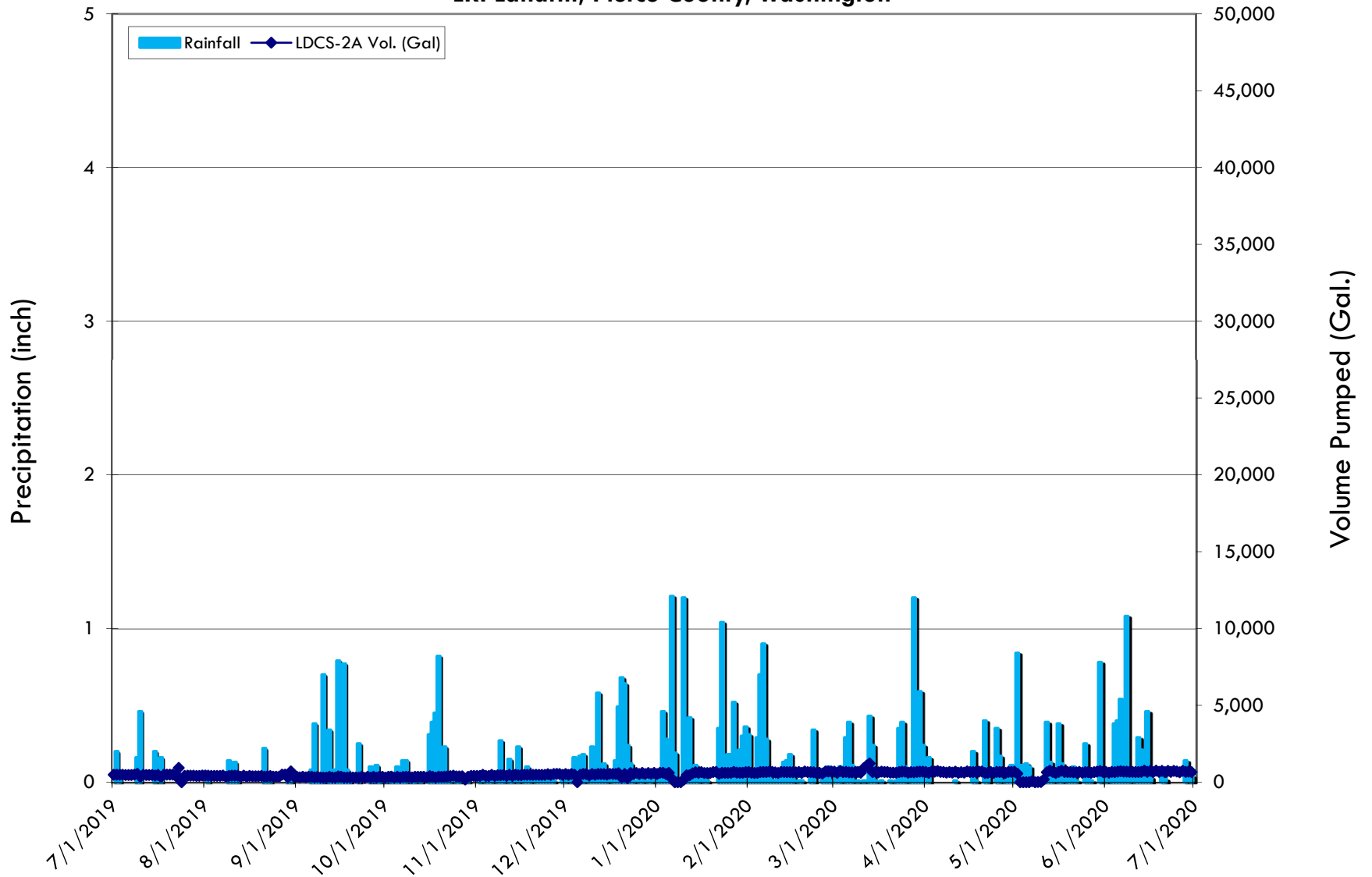
LDCS-7 (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



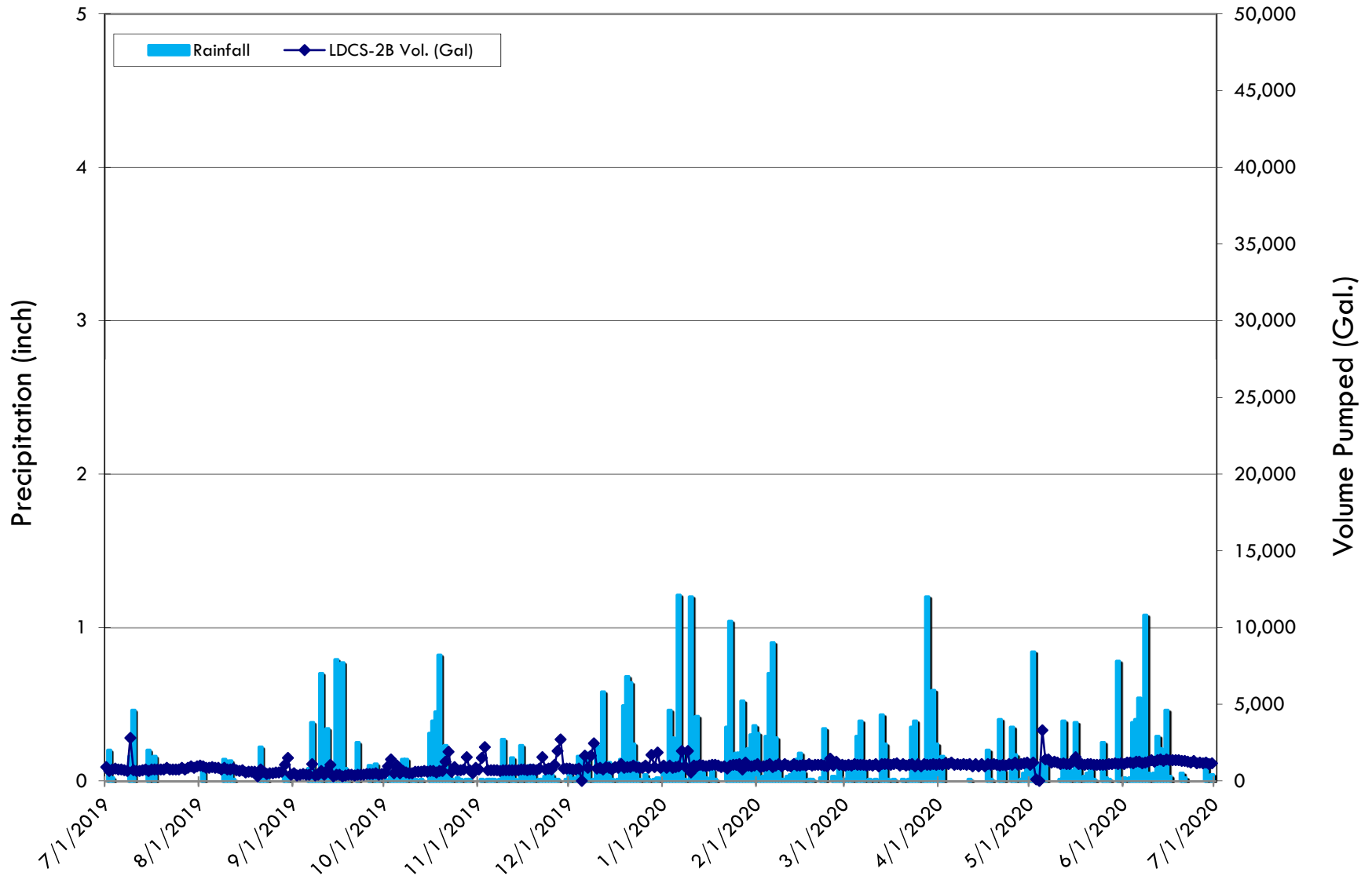
LDCS-1 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2020
LRI Landfill, Pierce County, Washington



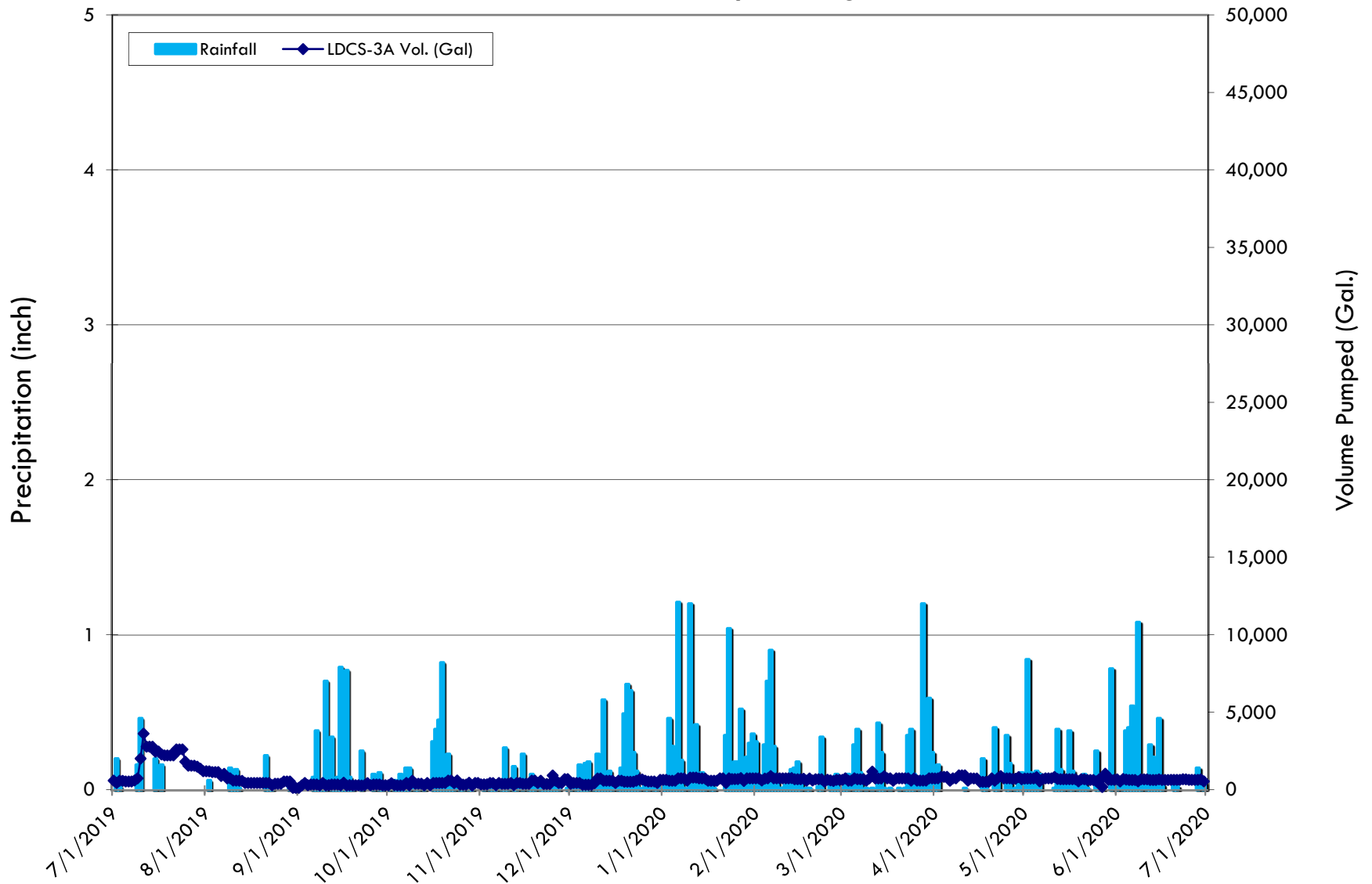
LDCS-2A (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2020
LRI Landfill, Pierce County, Washington



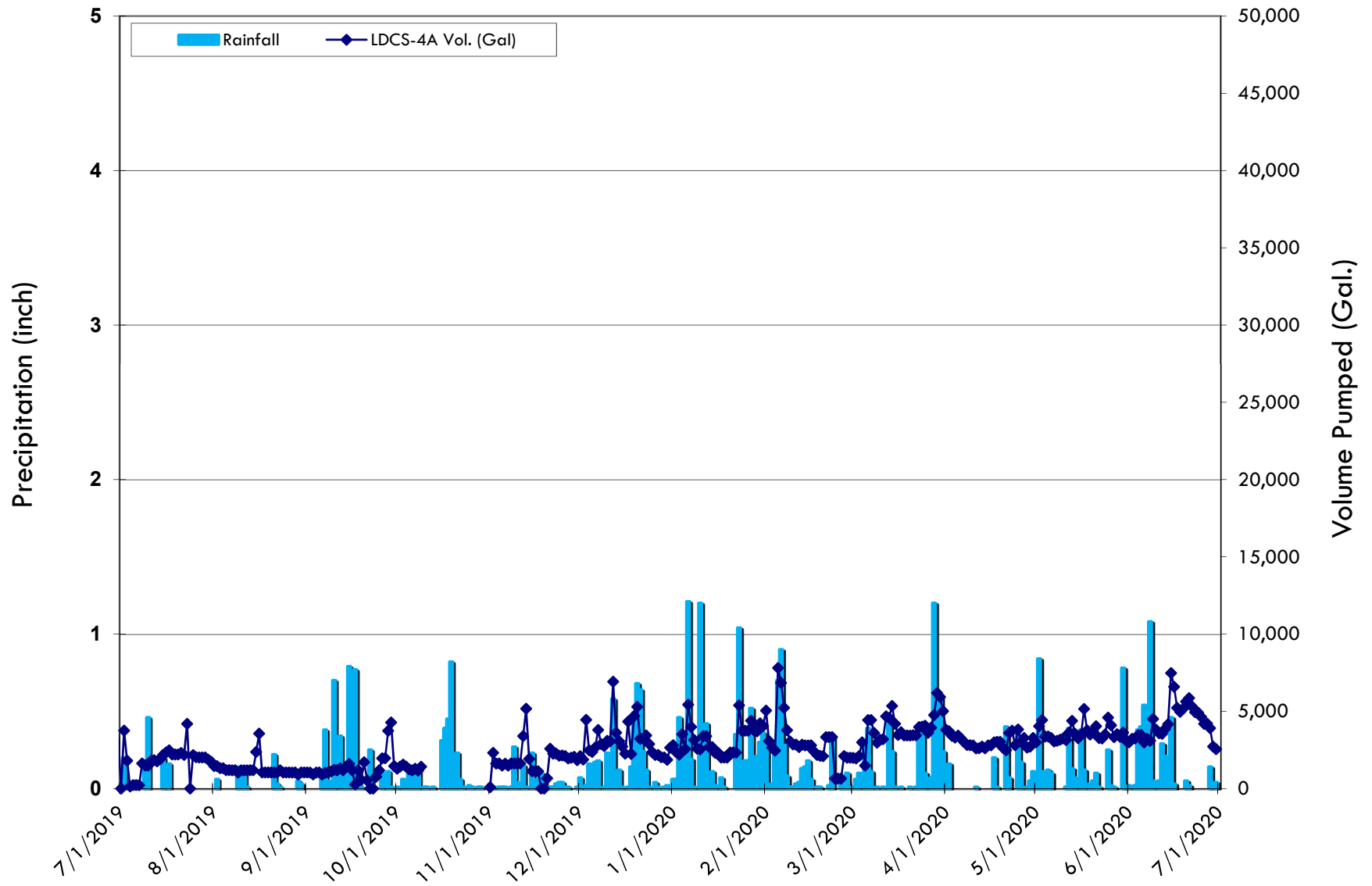
LDCS-2B (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2020
LRI Landfill, Pierce County, Washington



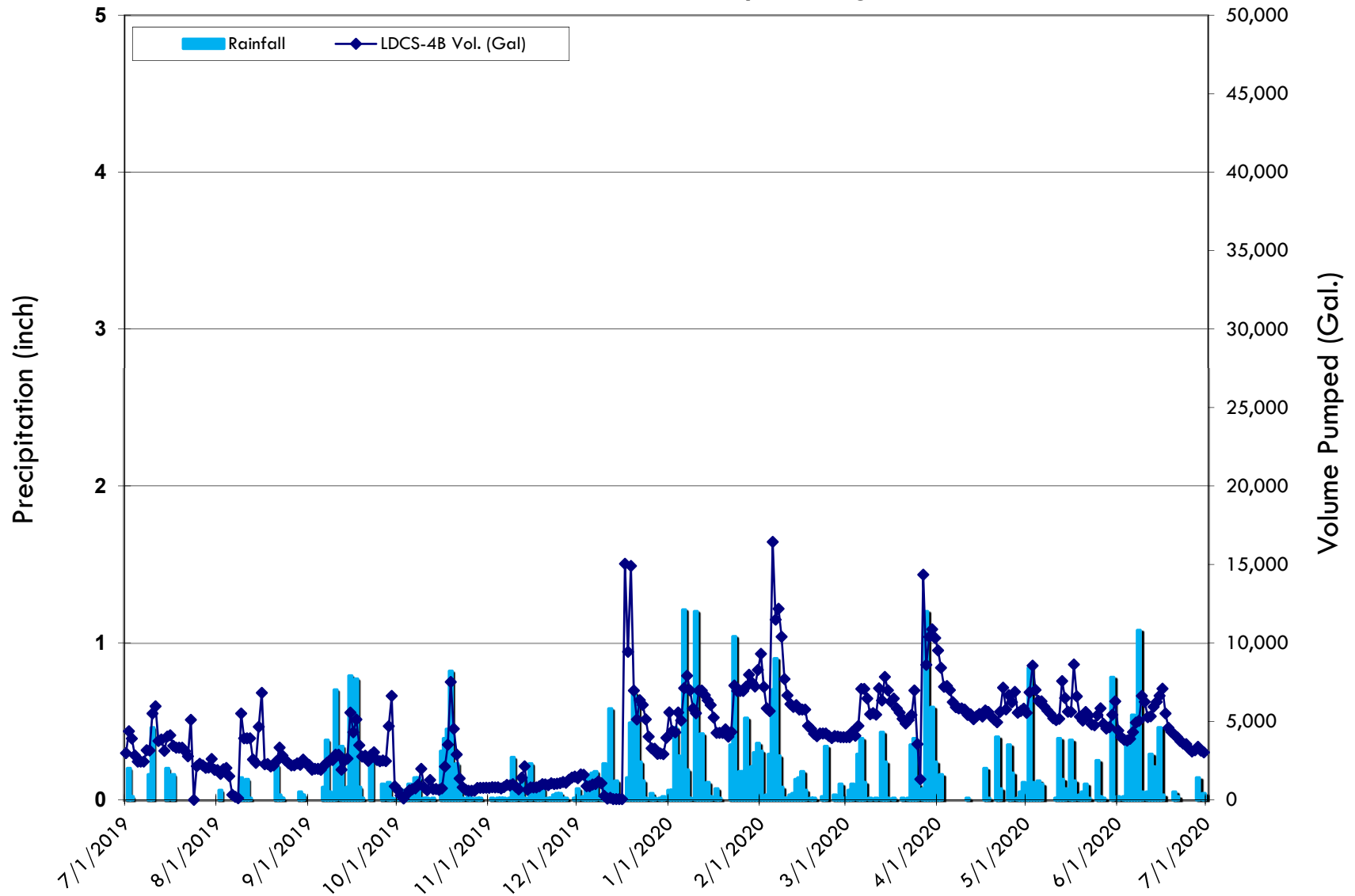
LDCS-3A (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2020
LRI Landfill, Pierce County, Washington



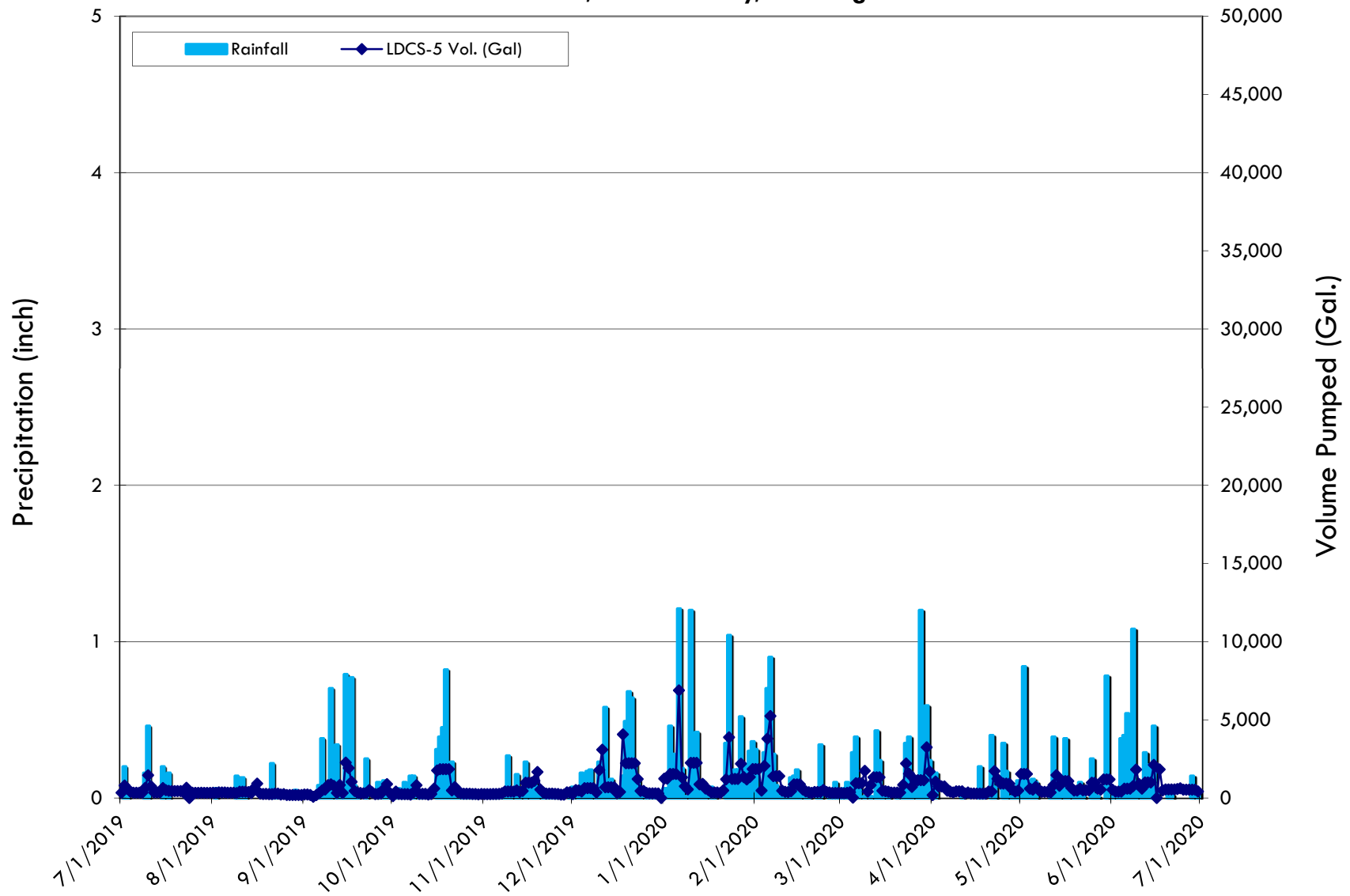
LDCS-4A (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2020
LRI Landfill, Pierce County, Washington



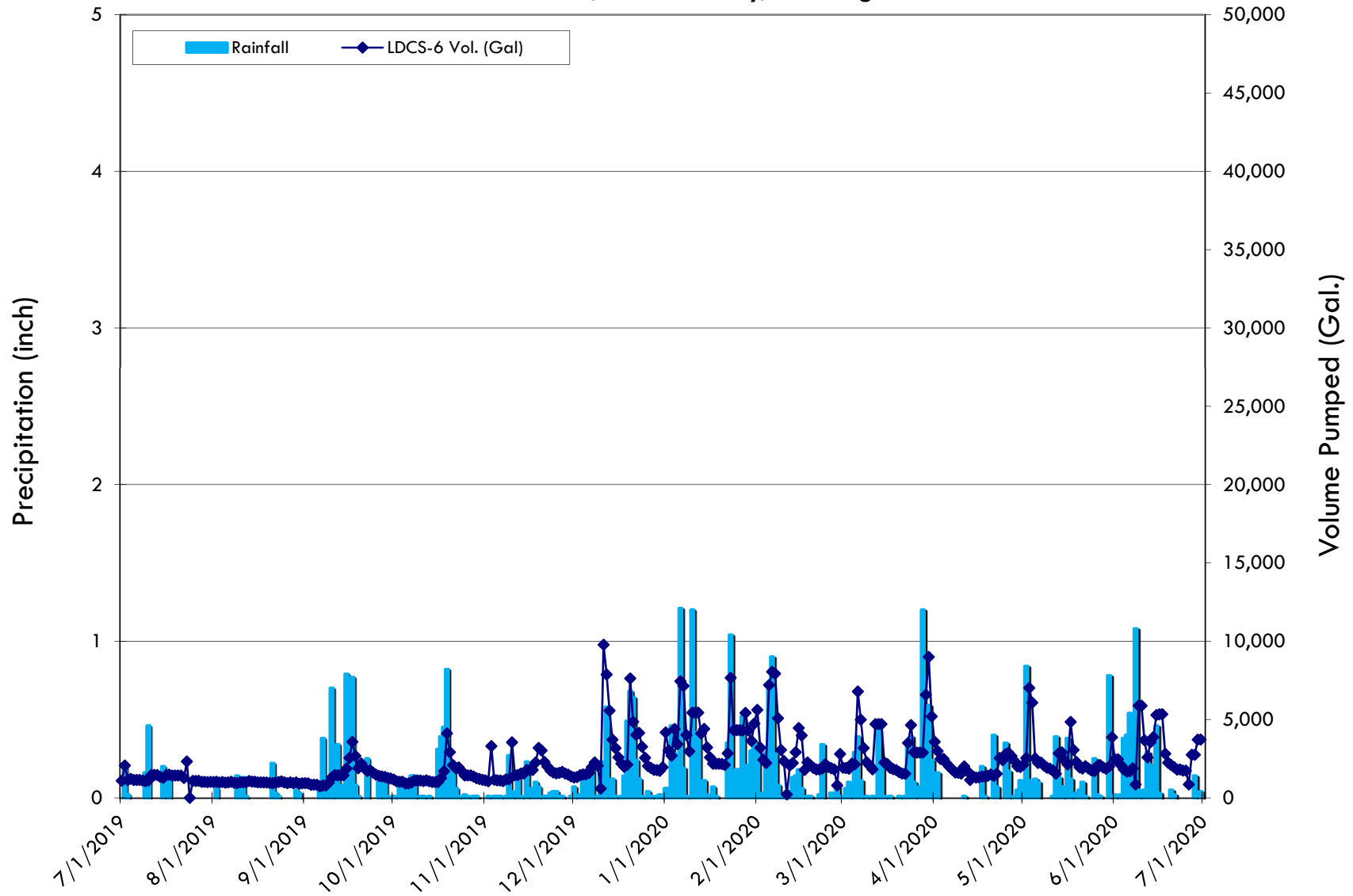
LDCS-4B (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2020
LRI Landfill, Pierce County, Washington



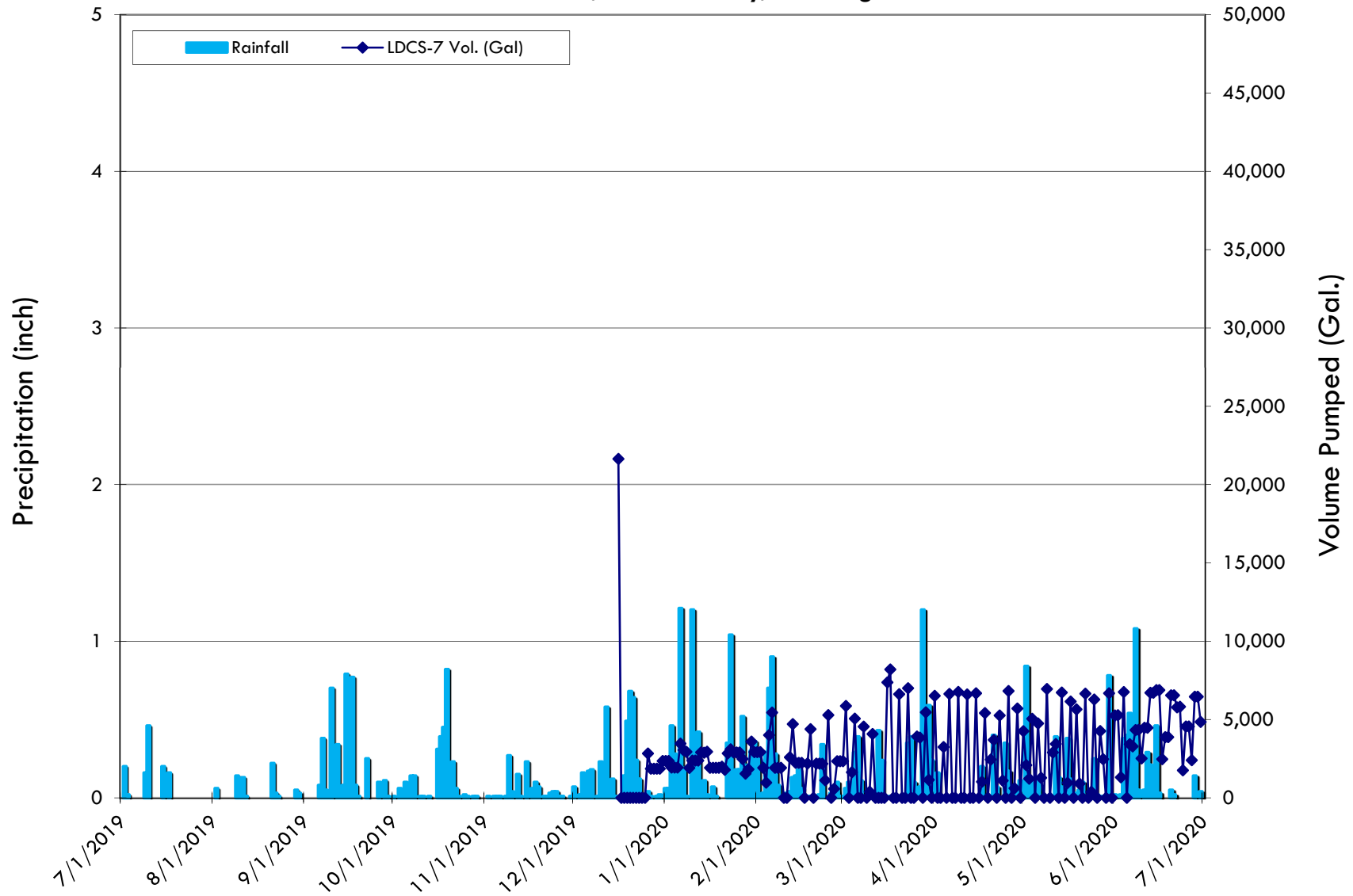
LDCS-5 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2020
LRI Landfill, Pierce County, Washington



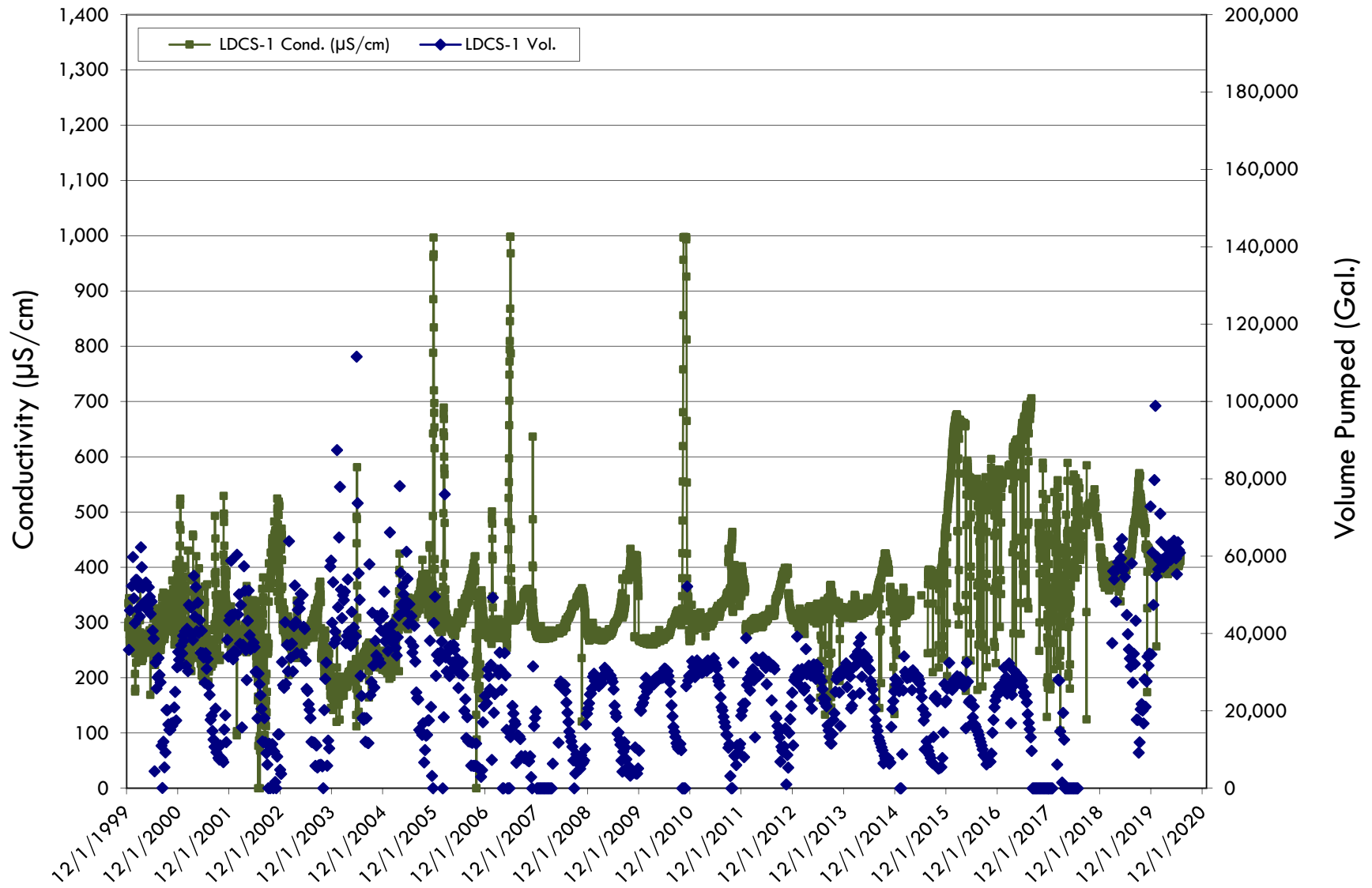
LDCS-6 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2020
LRI Landfill, Pierce County, Washington



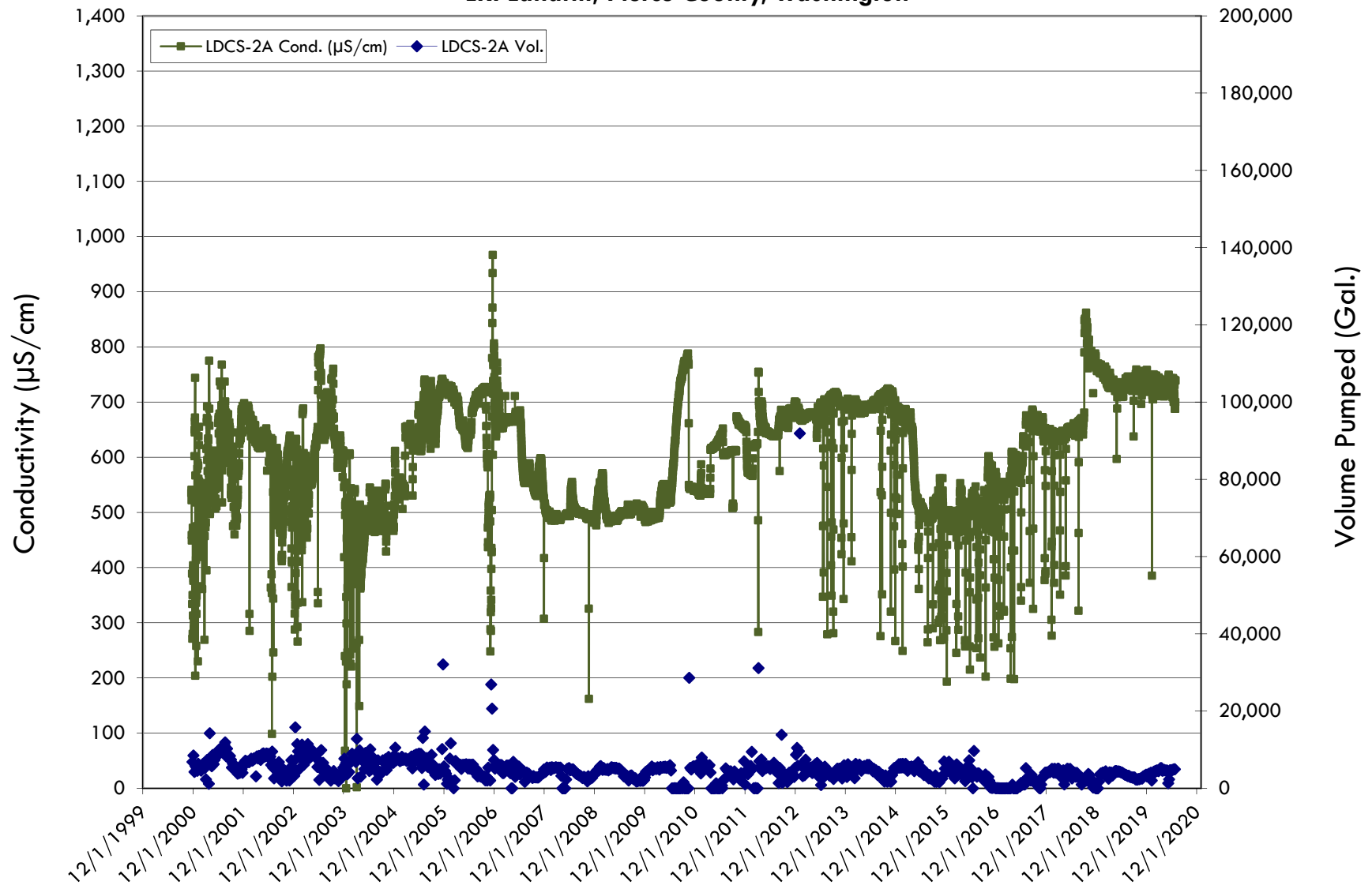
LDCS-7 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2020
LRI Landfill, Pierce County, Washington



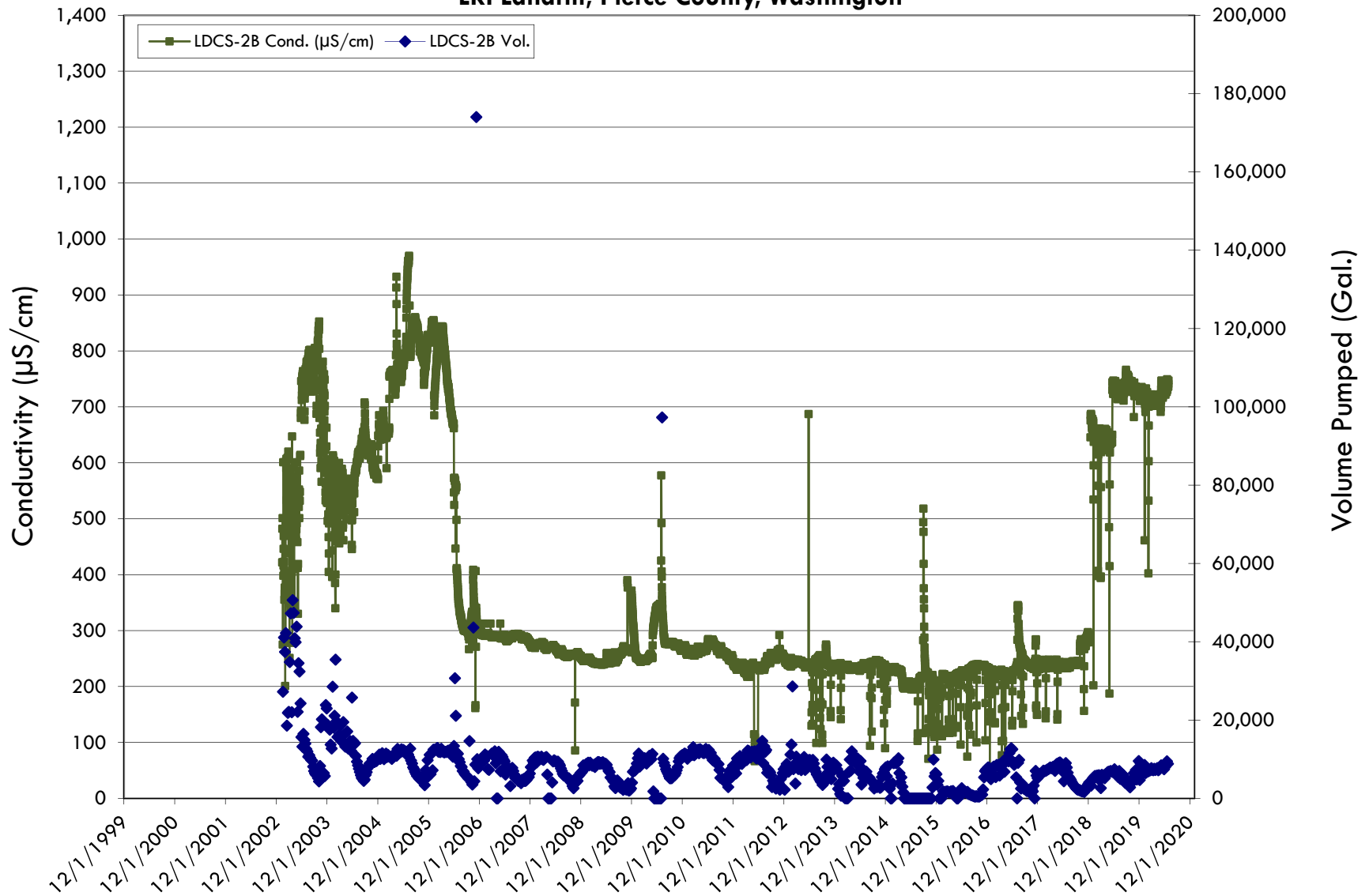
LDCS-1
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



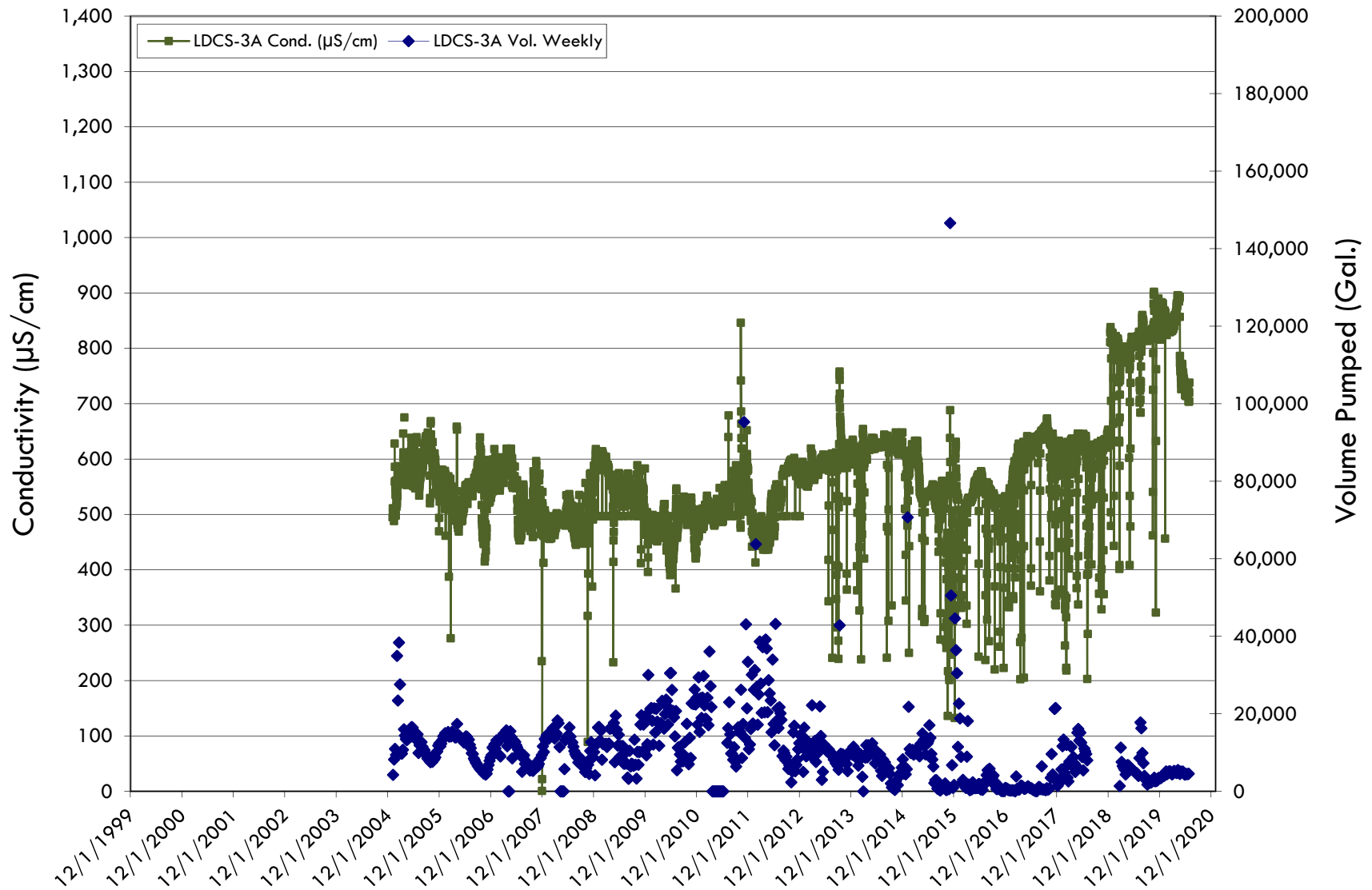
LDCS-2A
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



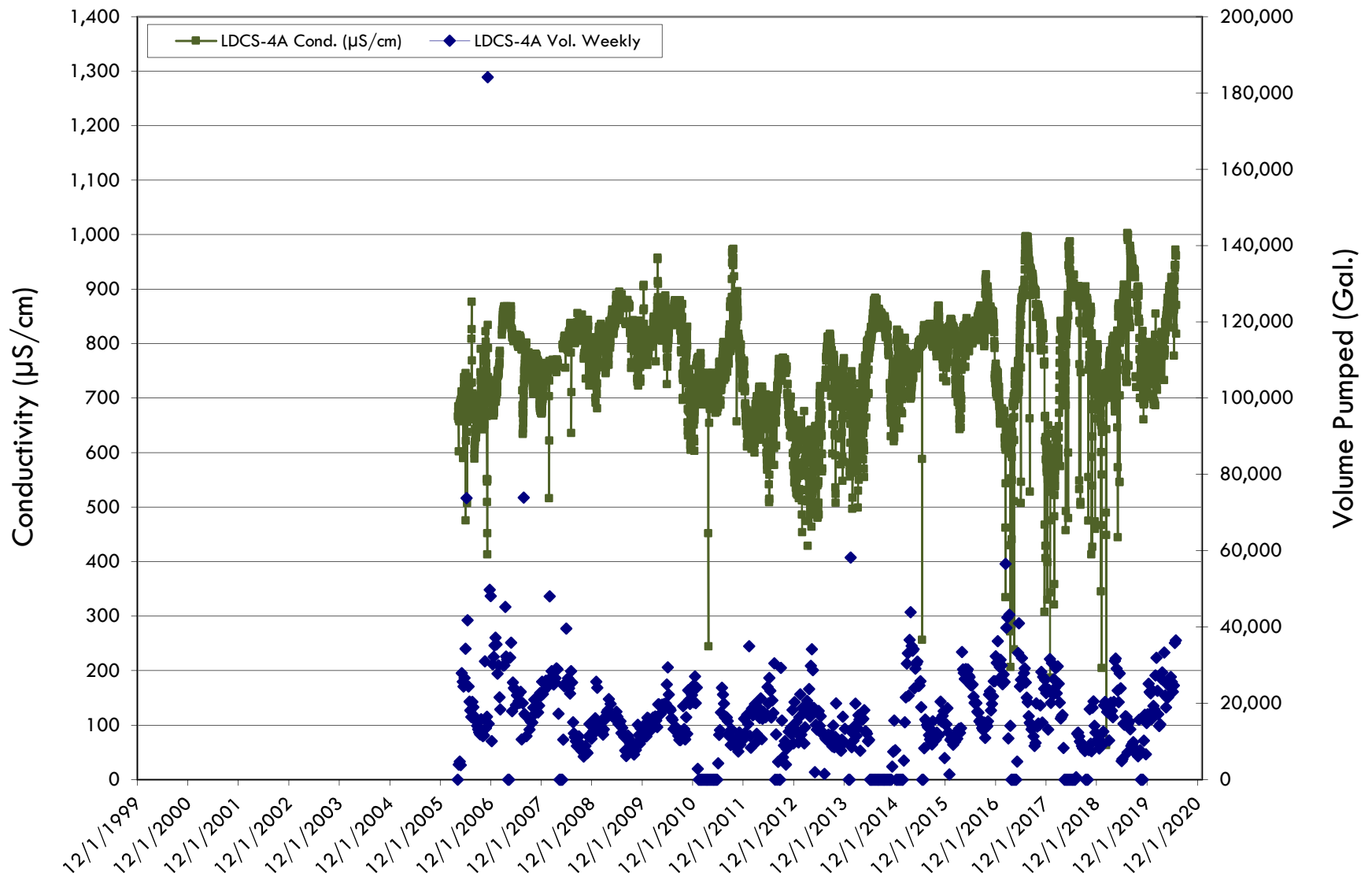
LDCS-2B
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



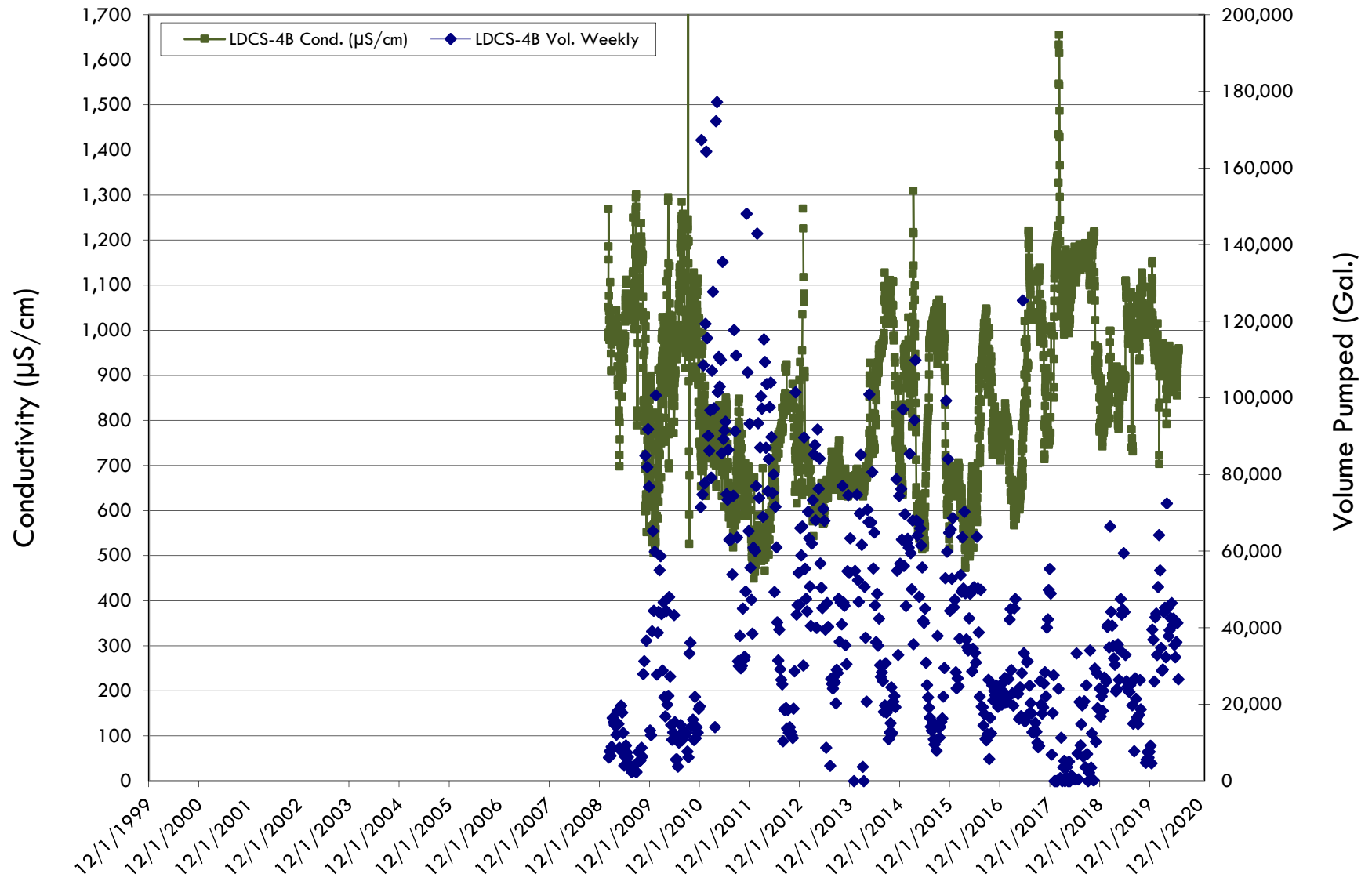
LDCS-3A
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



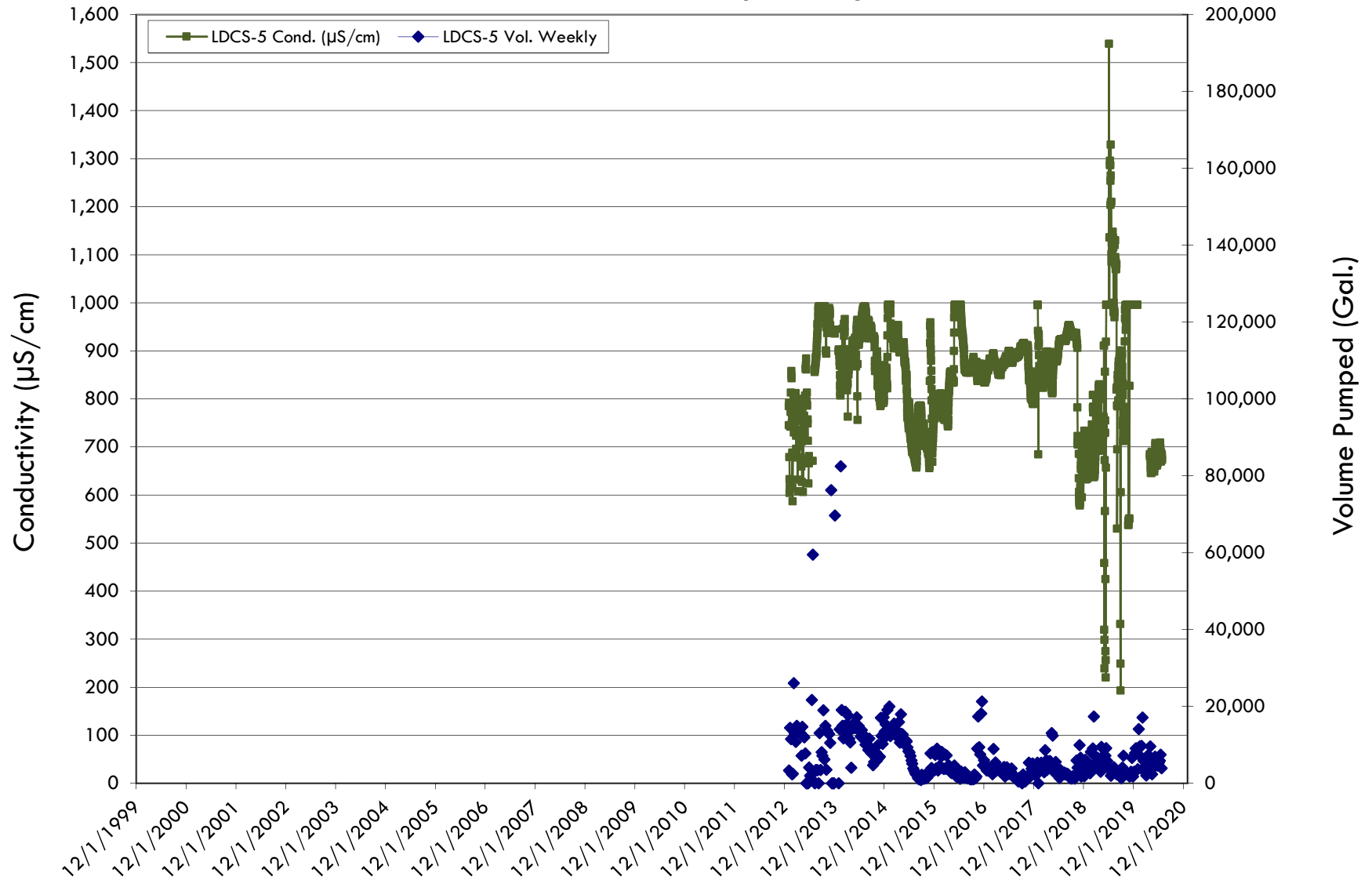
LDCS-4A
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



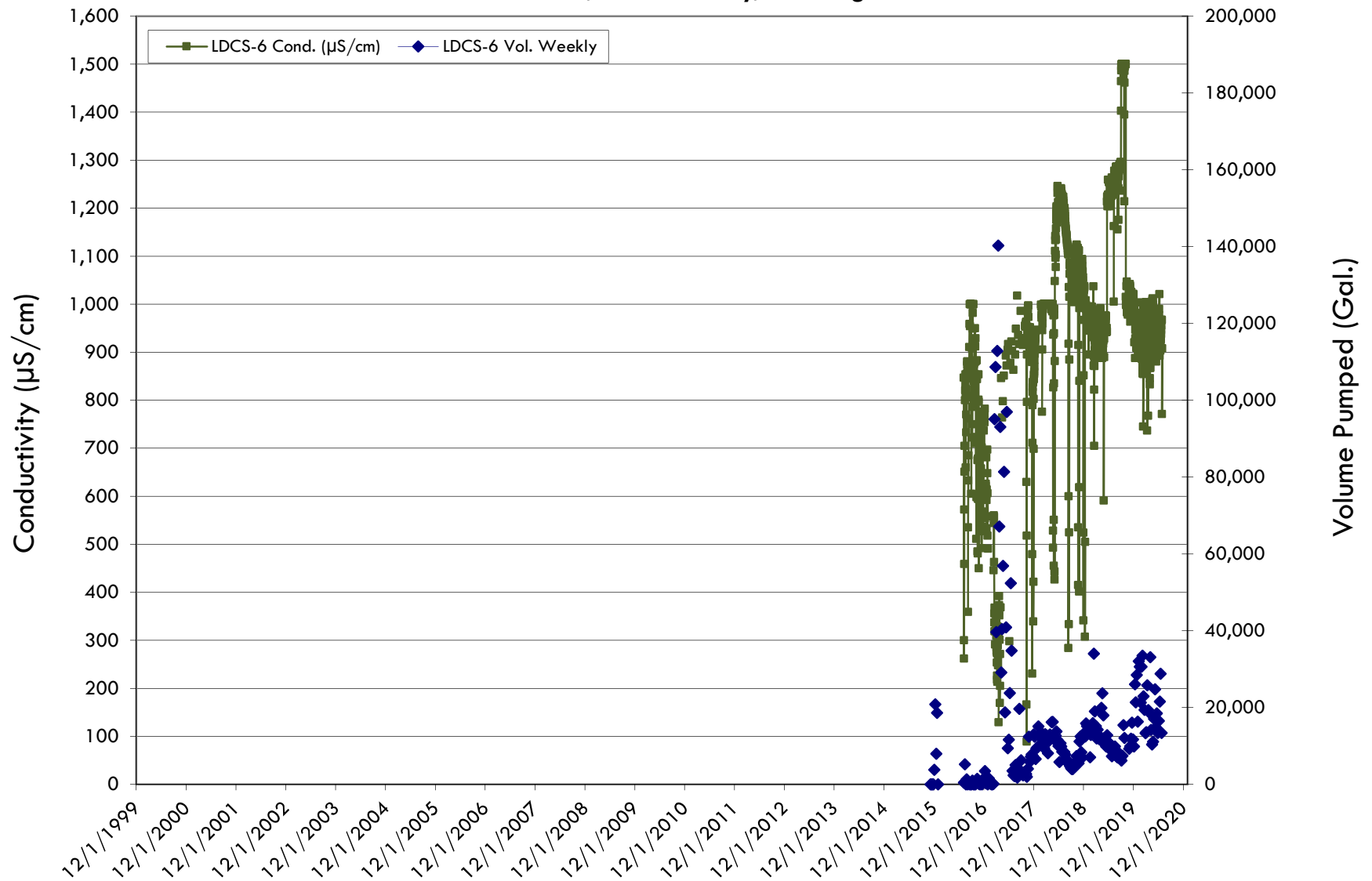
LDCS-4B
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



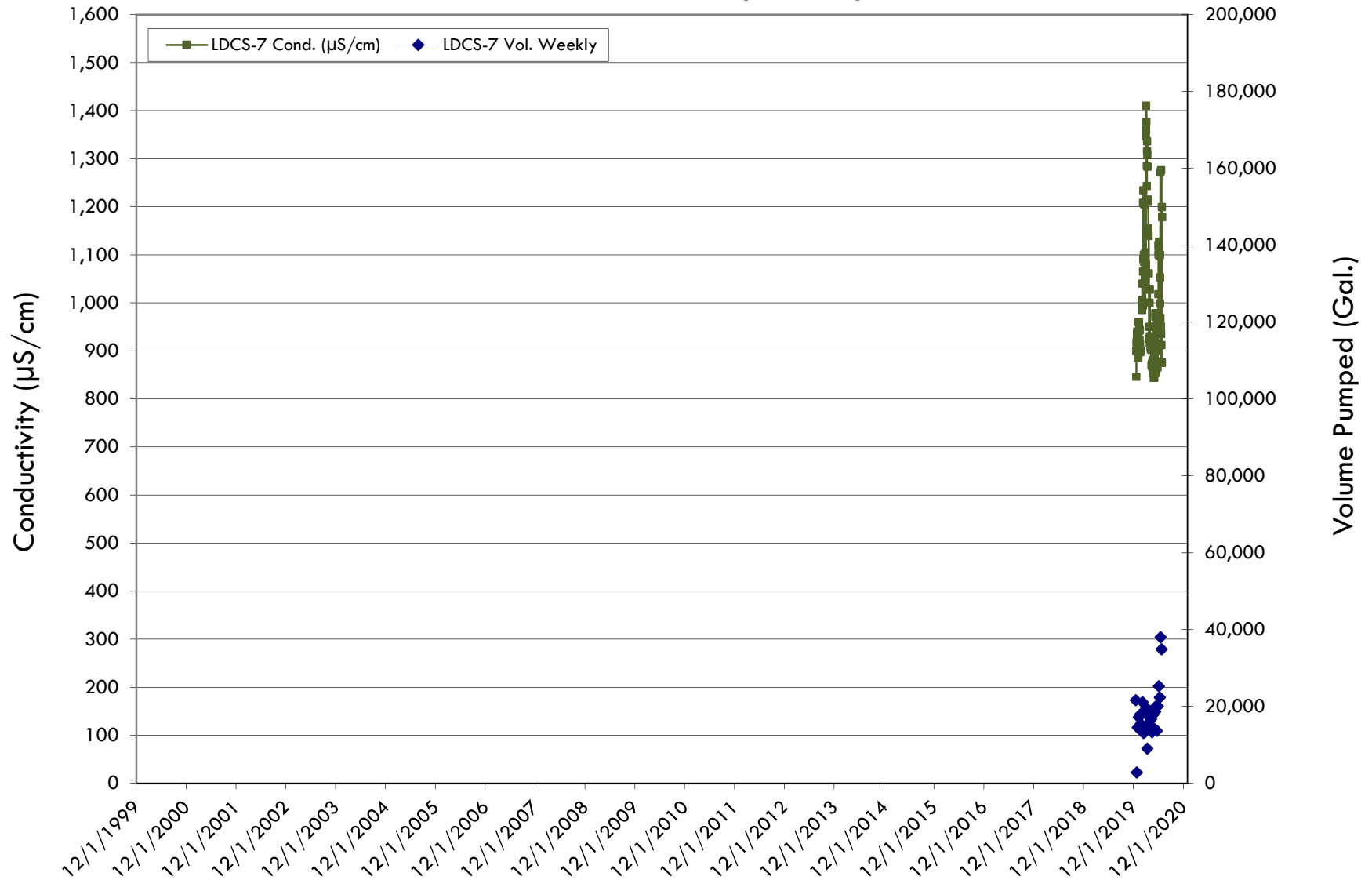
LDCS-5
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



LDCS-6
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington



LDCS-7
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2020
LRI Landfill, Pierce County, Washington





Attachment I

Surface Water Monitoring Data





Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: South Creek

Monitoring Period: 04/01/2020 - 04/30/2020

Outfall: UNK - 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	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C7-1	C7-1	C7-2	C7-2	C7-3	C7-3	C7-4	C7-4
1-F	4/3/20	19	M	C	M	C	M	12	M
2-M	4/6/20	15	M	C	M	C	M	4	M
3-M	4/13/20	23	M	C	M	C	M	10	M
4-M	4/20/20	13	M	C	M	C	M	11	M
5-M	4/27/20	8	M	C	M	C	M	5	M
Minimum			M		M		M		M
			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum		23	M	C	M	C	M	12	M
		BM: <= 25 (RO)	BM: <= 8.5 (RO)	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

Outfall: UNK - South Creek

Monitoring Point	Parameter	Sample Date/ Statistical Base	Value	Notes/Comment
C7-1	All Parameters			Construction stormwater treatment using Chitosan Enhanced Sand Filtration (CESF) was not utilized during the month of April 2020.

BMPs

Monitoring Point	Week	BMP
C7-1		Check Dams
C7-1		Other
C7-1		Sediment Trap
C7-1		Silt Fence
C7-2		Other
C7-3		Other
C7-4		Check Dams
C7-4		Other
C7-4		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

5/13/2020 2:50:32 PM

Signature

Date



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: South Creek

Monitoring Period: 05/01/2020 - 05/31/2020

Outfall: UNK - South Creek

Version: 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C7-1	C7-1
2-T	5/5/20	18	M
3-T	5/12/20	16	M
4-T	5/19/20	20	M
5-M	5/25/20	12	M
Minimum			M
			BM: >= 6.5 (RO)
Maximum		20	M
		BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: M - Monitoring Is Conditional/Not Req This MP

Outfall: UNK - South Creek

Monitoring Point	Parameter	Sample Date/ Statistical Base	Value	Notes/Comment
C7-1	All Parameters			Construction stormwater treatment using Chitosan Enhanced Sand Filtration (CESF) was not utilized during the month of May 2020.

BMPs

Monitoring Point	Week	BMP
C7-1		Check Dams
C7-1		Other
C7-1		Sediment Trap
C7-1		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

6/9/2020 12:43:01 PM

Signature

Date



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: South Creek

Monitoring Period: 06/01/2020 - 06/30/2020

Outfall: UNK - South Creek

Version: 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C7-1	C7-1
1-W	6/3/20	12	M
2-M	6/8/20	16	M
3-M	6/15/20	14	M
4-Su	6/21/20	12	M
4-Sa	6/27/20	11	M
Minimum			M
			BM: >= 6.5 (RO)
Maximum		16	M
		BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: M - Monitoring Is Conditional/Not Req This MP

Overall DMR Notes/Comment

Construction stormwater treatment using Chitosan
Enhanced Sand Filtration (CESF) was not utilized during the month of June 2020.

BMPs

Monitoring Point	Week	BMP
C7-1		Check Dams
C7-1		Other
C7-1		Sediment Trap
C7-1		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

7/13/2020 5:50:40 PM

Date



Permit Number: WAR002557

Permittee: Pierce County Recycling - 304th Street L

Facility County: Pierce

Receiving Waterbody:

Monitoring Period: 04/01/2020 - 06/30/2020

Outfall: SWPO - Discharge from SW pond

Version: 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Quarterly Grab	pH Standard Units Quarterly Grab	Oil & Grease Yes/No Quarterly Visual Observation	Copper Total Micrograms/L (ug/L) Quarterly Grab	Zinc Total Micrograms/L (ug/L) Quarterly Grab	Total BOD5 Total Milligrams/L (mg/L) Quarterly Grab	Solids (Residue) Total suspended (TSS) Milligrams/L (mg/L) Quarterly Grab	Ammonia Total Milligrams/L (mg/L) Quarterly Grab	Alpha-terpineol (3-Cyclohexene-1-methanol, alpha, alpha, trimethyl-) Micrograms/L (ug/L) Quarterly Grab	Benzoic Acid Micrograms/L (ug/L) Quarterly Grab	p-Cresol (4-methylphenol) Micrograms/L (ug/L) Quarterly Grab
		SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO
Limit Set		ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Non- Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non- Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non- Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non- Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non- Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non- Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit
2-M	4/6/20	7.8	6.90	No	5.5	15	3.1	5.2	0.84	B 4.9	B 49	B 9.6
Minimum			6.9 BM: >= 5.0 (RO)									
Average		7.8 BM: <= 25			5.5 BM: <= 14	15 BM: <= 117						
Maximum			6.9 BM: <= 9.0 (RO)									
Month 1 Average							3.1 <= 37	5.2 <= 27	0.84 <= 4.9	B 4.9 <= 16	B 49 <= 71	B 9.6 <= 14
Month 2 Average							3.1 <= 37	5.2 <= 27	0.84 <= 4.9	B 4.9 <= 16	B 49 <= 71	B 9.6 <= 14
Month 3 Average							3.1 <= 37	5.2 <= 27	0.84 <= 4.9	B 4.9 <= 16	B 49 <= 71	B 9.6 <= 14

Reporting Codes Used: B - Below Detection Limit/No Detection

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

George Duvendack

Signature

8/11/2020 10:40:21 AM

Date



Attachment J

Landfill Gas Monitoring Data



SCS Engineers

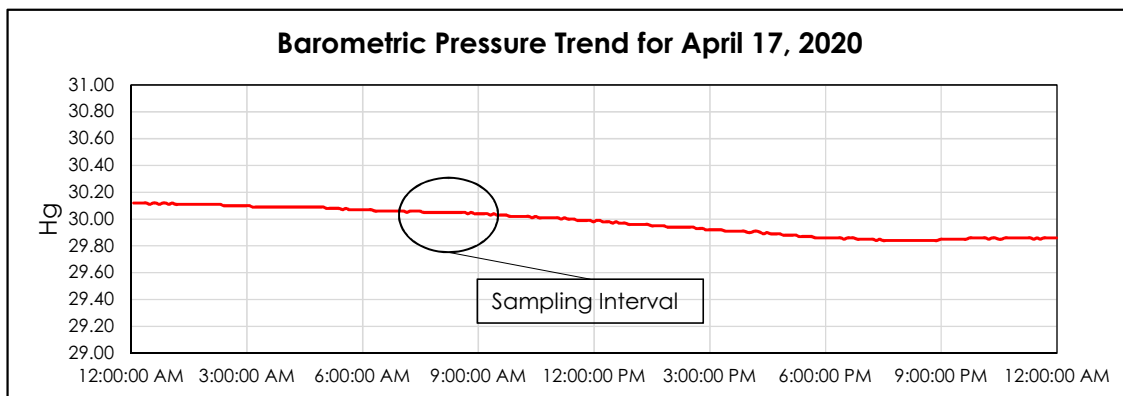
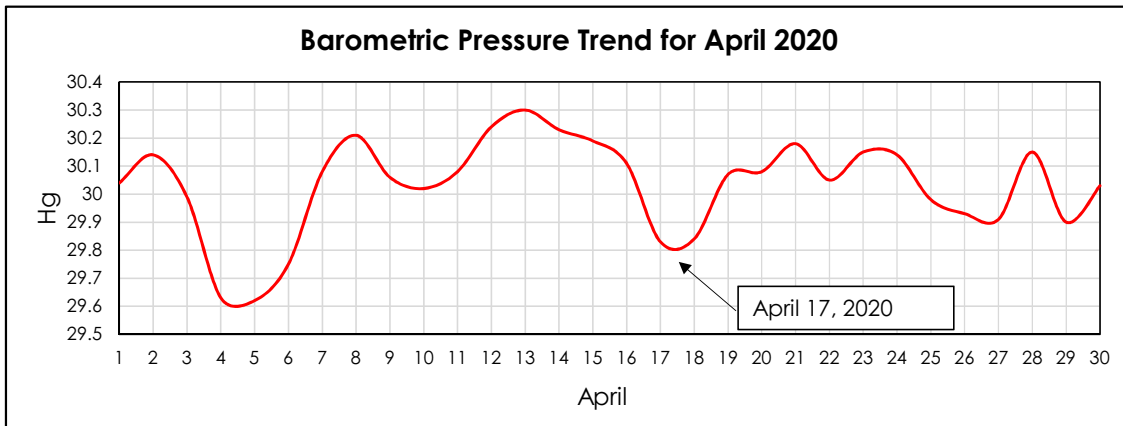
04220001.04

April-20

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	2. Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
CO ₂	Carbon Dioxide	
O ₂	Oxygen	3. Exposed Perforation = perforated pipe section not submerged by liquid.
H ₂ O	Water Vapor	4. GP-10P added in January 2018. Monitoring performed at water level piezometer installed in the same boring as GP-10.
N ₂	Nitrogen	
TOC	Top of Casing	

Barometric Pressure Trend - April 2020

LRI 304th Landfill, Washington



Monthly Data Source: Wunderground.com (Puyallup)

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

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-04-17/2020-04-17/daily>

Daily Data Source: Wunderground.com (Puyallup)

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

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-04-17/2020-04-17/monthly>

SCS Engineers

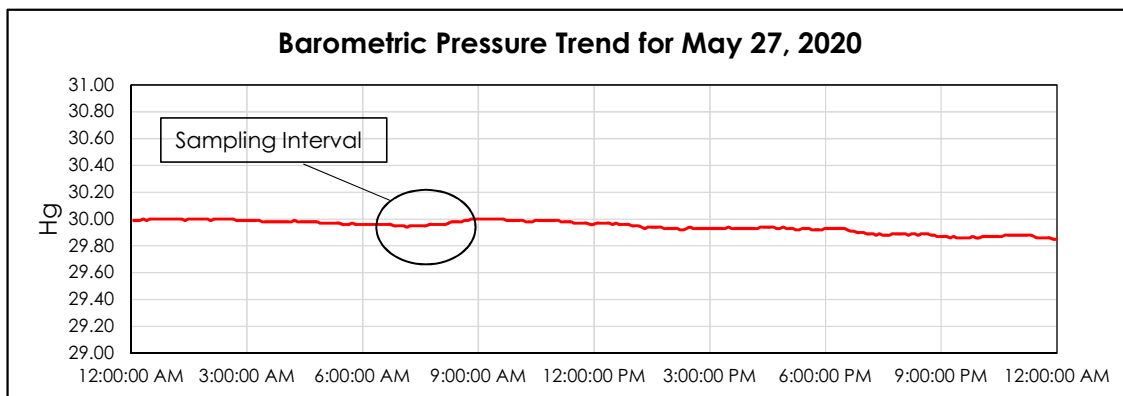
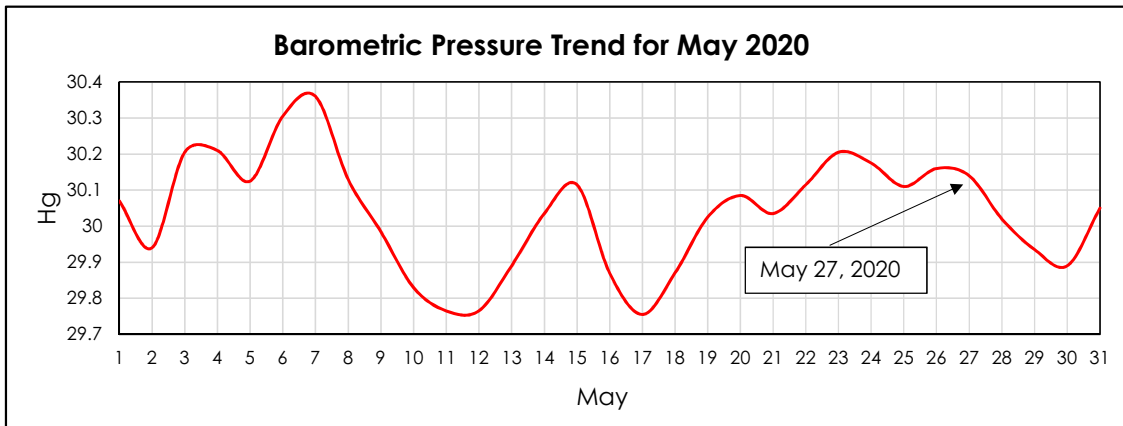
04220001.04

May-20

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	2. Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
CO ₂	Carbon Dioxide	
O ₂	Oxygen	3. Exposed Perforation = perforated pipe section not submerged by liquid.
H ₂ O	Water Vapor	4. GP-10P added in January 2018. Monitoring performed at water level piezometer installed in the same boring as GP-10.
N ₂	Nitrogen	
TOC	Top of Casing	

Barometric Pressure Trend - May 2020

LRI 304th Landfill, Washington



Monthly Data Source: Wunderground.com (Puyallup)

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

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/graph/2020-05-23/2020-05-23/monthly>

Daily Data Source: Wunderground.com (Puyallup)

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

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-05-27/2020-05-27/daily>

SCS Engineers

04220001.04

LRI Landfill

June-20

[illegible]

Normal Operating Range:

(min)			-		0.3	0.3	-				20.0	
(max)			5.00		5.0	5.0	20.3				90.0	

Perimeter Gas Probes

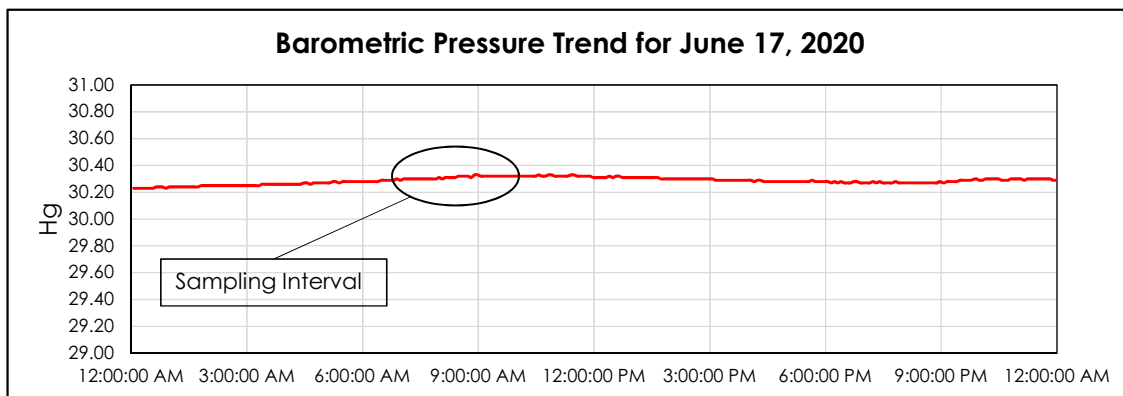
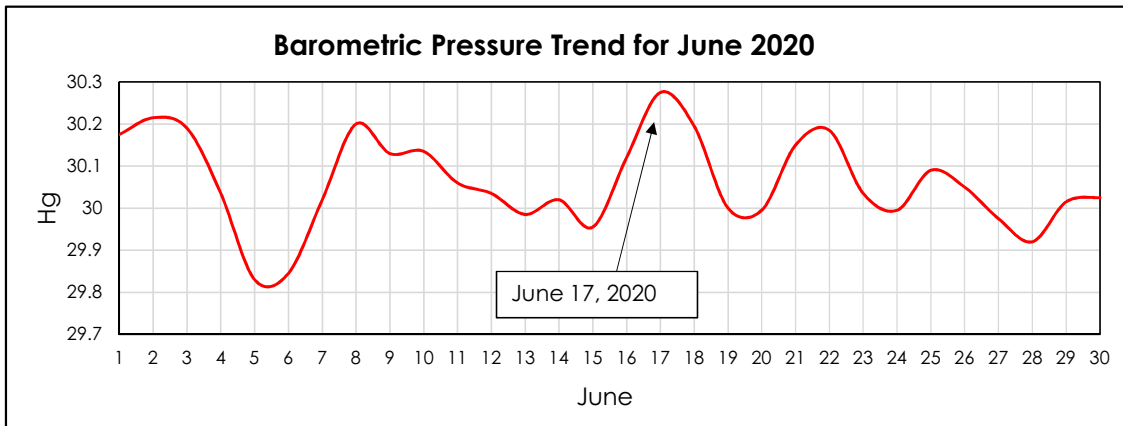
GP-1	6/17/2020	7:45	0.1	3.4	2.0	2.0	16.4	79.6	16.1	9.1	100.0	
GP-2	6/17/2020	7:54	0.2	17.9	16.2	19.1	0.7	64.0	16.1	9.1	100.0	Note 6
GP-3	6/17/2020	8:00	0.1	--	0.0	9.1	11.7	79.2	11.3	7.3	100.0	
GP-4	6/17/2020	8:05	0.0	--	0.0	2.8	11.2	86.0	8.9	4.9	97.4	
GP-9	6/17/2020	8:12	0.1	--	0.0	8.0	7.8	84.2	11.7	0.0	0.0	
GP-10	6/17/2020	7:38	0.1	7.1	8.3	26.9	0.0	64.8				
GP-10P	6/17/2020	7:35	0.2	26.5	25.9	36.1	0.0	38.0				
GP-11	6/17/2020	7:30	0.3	0.2	0.0	20.0	1.7	78.3				Note 1, Note 5, Note 7
GP-12	6/17/2020	7:22	0.1	37.2	31.7	60.4	2.1	5.8				
GP-13	6/17/2020	7:12	0.1	0.4	0.9	26.3	0.5	72.3				
GP-14	6/17/2020	9:32	0.1	--	0.0	0.0	20.5	79.5	10.6	0.0	0.0	
GP-15	6/17/2020	9:16	0.1	--	0.0	0.1	20.8	79.1	8.9	0.0	0.0	
GP-16	6/17/2020	8:19	0.1	--	0.0	0.3	20.7	79.0	20.0	13.0	86.5	

	Beginning	Ending	Average	Starting Date:	6/17/2020
Weather:	Clear	Clear	Clear	Starting Time:	7:12
Temperature, T (deg F):	50.5	57.1	53.8	Finishing Date:	6/17/2020
Wind Speed (mph):	2.2	3.8	3	Finishing Time:	9:32
Wind Direction:	225	225	225	Monitored by:	T. Berndahl
Barometric Pressure, P (in Hg):	30.30	30.32	30.31	Instruments:	GEM 2000
24hr Baro.Trend (rising / falling / steady / unsteady)	Steady			Calibration Date:	6/17/2020

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	2. Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
CO ₂	Carbon Dioxide	
O ₂	Oxygen	3. Exposed Perforation = perforated pipe section not submerged by liquid.
H ₂ O	Water Vapor	4. GP-10P added in January 2018. Monitoring performed at water level piezometer installed in the same boring as GP-10.
N ₂	Nitrogen	
TOC	Top of Casing	5 Heavy sediment in monument affecting probe access.
		6 Water present in monument.
		7 Missing Bolts for the flush mount.

Barometric Pressure Trend - June 2020

LRI 304th Landfill, Washington



Monthly Data Source: Wunderground.com (Puyallup)

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

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-06-17/2020-06-17/monthly>

Daily Data Source: Wunderground.com (Puyallup)

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

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-06-17/2020-06-17/daily>

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

Project Number: 04220001.04

Date: 6-18-20

Weather Conditions: Sunny

Instrument: MicroPID

Measured By: Travis D.

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**.

- ☐ Main Office - individual office spaces, storage areas and within open crawl-space area. 51.9 ppm
- ☒ Repair Shop - survey atmosphere conditions throughout (lower height levels). 7 ppm
- ☐ Pay/Scale Booth - interior of building. 81.6 ppm
- ☒ Work Shop - interior of shed adjacent to stormwater ponds. 0.0 ppm

Background

Upwind → 0.6 ppm
Downwind → 3.7 ppm



Signature

- A Strong Smell of air freshener. Detection in sink cabinet.
- A Strong Smell of air freshener. Meters in the back of scale house read 0.0% LEL. Calibrated correctly earlier this month according to LRI site staff.