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SCS ENGINEERS

October 1, 2018
File No. 04218001.02

Mr. Keith Johnston
Tacoma-Pierce County Health Department
3629 South D Street
Tacoma, Washington 98418-6813

**Subject: Second Quarter 2018 Monitoring Report**
**LRI Landfill, Pierce County, Washington**

Dear Keith:

Please find enclosed the Second Quarter 2018 Monitoring Report for the LRI Landfill. 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.

If you have any questions regarding the monitoring results, please call me at (425) 289-5447.

Sincerely,

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

Samuel Graber
Staff Scientist
SCS ENGINEERS

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

cc: Peter Lyon, Ecology
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George Duvendack, LRI (email and hard copy)
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SCS ENGINEERS







# Second Quarter 2018 Monitoring Report

# LRI Landfill
# Pierce County, Washington

Presented to:

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

Presented by:

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October 1, 2018
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# GROUNDWATER MONITORING

Second Quarter 2018 groundwater samples were collected on June 18 through 20, 2018. Water level elevations were measured on June 20, 2018. 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-2A. 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 $1 \times 10^{-3}$ 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, including summary tables for indicator parameters, are included 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. Copies of the laboratory reports were submitted to the TPCHD 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 metals and nitrate). Prediction limits were generated using background data for nitrate and eight rounds of quarterly sampling conducted in 2014 and 2015 for the fifteen 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 measured values during the Second Quarter. The highest concentrations of chloride and nitrate in the uppermost aquifer continue to be observed in background well MW-10.

Reported detections of inorganic parameters and metals measured at downgradient monitoring wells were less than or equal to the ground water 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**

| Groundwater Results Greater Than WAC 173-200-040 Criteria (mg/L) LRI Landfill, Pierce County, Washington | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Groundwater Quality Criteria** | **MW-1A** | **MW-2A** | **MW-3** | **MW-4** | **MW-5A** | **MW-6** | **MW-7** |
| Arsenic, Total | 0.00005 | ** | ** | ** | 0.0089 | 0.0058 | 0.0075 | ** |
| Iron, Dissolved | 0.30 | 1.30 | 0.62 | * | * | * | * | * |
| Manganese, Dissolved | 0.05 | 0.25 | 0.31 | 0.30 | 0.21 | 0.17 | 0.17 | 0.24 |

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

Results for arsenic, iron, and manganese are typical of previous results (see time-trend plots in Appendix G), are interpreted to be within natural background variation, and are less than or equal to the background levels used to establish prediction limits. The method reporting limit (MRL) for arsenic is 0.005 milligrams per liter (mg/L), which is greater than the WAC 173-200-040 criteria of 0.00005 mg/L. Therefore, arsenic results reported as non-detect are considered to be greater than the WAC 173-200-040 criterion.

Low-level detections of ammonia (<0.36 mg/L) were reported at each monitoring well, except MW-9, during this monitoring event. Since ammonia was detected in background well MW-10 at a similar concentration to the other monitoring wells, this appears to be a site-wide occurrence that may be due to aquifer chemistry, or laboratory testing.

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. No monitoring well results exceeded the appropriate cation-anion balance threshold this quarter (see Table 7 in Attachment B).

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).

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

## LEAK DETECTION/COLLECTION SYSTEM (LDCS) MONITORING

**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 flow meters at LDCS-1 and LDCS-4A operated intermittently this quarter. LRI is currently in the process of cleaning the vaults, checking electrical connections, and replacing flow meters and conductivity probes as needed.

Conductivity levels at LDCS-4B trended higher beginning in early February. Site investigation found that the water level transducer that activates the dewatering pump at LDCS-4B had malfunctioned, which caused the pump to stop operating. Consequently, groundwater within the LDCS came in contact with the overlying clay liner, which in turn, caused the conductivity of the groundwater to rise. The transducer was replaced on February 1, 2018, and since then conductivity levels have remained stable, but somewhat elevated, at approximately 1,000 to 1,200 microsiemens per centimeter (µS/cm). See the LDCS Quarterly Monitoring section for additional discussion.

The recording range of the conductivity transducer at LDCS-6 was increased during the first week of May. Since that time, conductivity levels remained stable, but somewhat elevated, at approximately 1,200 µS/cm. See the LDCS Quarterly Monitoring section for additional discussion.

Conductivity data from the remaining LDCS sumps trended within typical historical levels during the Second Quarter.

**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-5, and LDCS-6. Samples for laboratory testing were submitted to TestAmerica of Denver, Colorado. Field and laboratory data results are included on the groundwater summary tables (see 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

Low-level detections of ammonia (<0.27 mg/L) were recorded at all LDCS locations during this monitoring event with the exception of LDCS-2B (non-detect) and LDCS-5 (1.6 mg/L). As noted previously, there were also low-level ammonia detections at the majority of the monitoring wells during this quarter, including background well MW-10. The low-level ammonia detections appear to be a site-wide occurrence that may be due to aquifer chemistry, or laboratory testing.

There appear to be long-term increasing trends in chloride at LDCS-4A and LDCS-4B. In addition, total dissolved solids (TDS) as well as calcium increased at both LDCS-4A and LDCS-4B this quarter. These increases may be due to water levels within the LDCS that result in occasional contact of groundwater with the overlying clay liner. Additional maintenance and pump adjustments are planned for these sumps.

The ammonia concentration at LDCS-5 increased to 1.60 mg/L, compared to 0.93 mg/L in March 2018. However, the chloride concentration decreased from 34 mg/L to 21 mg/L during the second quarter monitoring event. Both ammonia and chloride are secondary leachate indicator parameters as discussed in Section 12.5 of the LRI Landfill GWMP. Primary leachate indicator parameters acetone and 2-butanone were non-detect. Since the primary indicator parameters were non-detect and chloride decreased in concentration, the increase in ammonia does not appear to be related to leachate. However, groundwater withdrawn from LDCS-5 continues to be directed to the leachate collection system as a precautionary measure.

Concentrations of alkalinity, total dissolved solids (TDS), sulfate, calcium, magnesium, and sodium displayed increases at LDCS-6. However, primary leachate indicator parameters acetone and 2-butanone were non-detect, and secondary leachate indicator parameter concentrations of ammonia and chloride remained low at 0.11 mg/L and 13.0 mg/L, respectively. Therefore, the parameter increases noted above do not appear to be related to leachate or landfill gas, and may be the result of construction water being released (squeezed) from the clay liner as Cell 6 is loaded with refuse, or due to the contact of groundwater with the clay liner. Additional maintenance and pump adjustments are planned for the sump.

Water quality results from LDCS-2A included a low-level detection of 1,4-dichlorobenzene (0.68 µg/L). Primary leachate indicator parameters acetone and 2-butanone were non-detect, and secondary leachate indicator parameter concentrations of ammonia and chloride remained low at 0.13 mg/L and 2.8 mg/L, respectively. Previous studies at the LRI Landfill have shown that 1,4-

dichlorobenzene was not present in landfill gas. Therefore, this detection does not appear to be related to leachate or landfill gas. No other VOC detections were reported present in the LCDS samples this quarter.

Graphical plots of the LDCS 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).

## SURFACE WATER MONITORING

Surface water inspections were performed on a weekly basis consistent with NPDES Construction General Permit WAR-00263C. A surface water sample was collected on April 25, 2018 consistent with NPDES Industrial General Permit WAR-002557. Surface water monitoring results were reported to Ecology on a monthly (Construction Permit) and quarterly (Industrial Permit) basis using Discharge Monitoring Reports (DMRs). Copies of the Second Quarter DMR's are included in Attachment I. No benchmark values or effluent limits were exceeded this quarter.

## LEACHATE MONITORING

Leachate samples are collected for all Cells annually in December. In addition, a leachate sample was collected from Cell 6 during the current monitoring period. Field and laboratory data results for the Cell 6 leachate sample are included on the groundwater summary tables (see Attachment B).

Leachate volumes were monitored using the automated PLC system and through direct measurements by LRI site personnel. 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 Wastewater Treatment Plant 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. 2018 Leachate Volume Data**

| 2018 Leachate Volume Data<br>LRI Landfill, Pierce County, Washington | | |
|---|---|---|
| **Month** | **Leachate Trucked Offsite for Proper Disposal (gallons)** | **Monthly Rainfall (inches)** |
| January | 2,821,282 | 7.62 |
| February | 2,443,589 | 3.47 |
| March | 2,878,127 | 2.25 |
| April | 2,464,653 | 4.57 |
| May | 4,621,504 | 1.99 |
| June | 1,939,654 | 1.36 |
| **Totals:** | **17,168,809** | **21.26** |

## LANDFILL GAS MONITORING

Monthly monitoring of the landfill gas performance probes was conducted on April 12, May 22, and June 27 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 have shown that similar methane levels at these probes does not result in the migration of landfill gas to the property line.

Indoor air was tested for the presence of methane on May 22. 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). No detectible methane was recorded.

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

**Table 3. 2018 Landfill Gas Probe Monitoring Summary**

| 2018 Landfill Gas Probe Monitoring Summary (percent methane) LRI Landfill, Pierce County, Washington | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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** |
| January 29 | 1.4 | **14.4** | 0.0 | 0.0 | 0.0 | 0.0 | **19.6** | 0.0 | -- | 2.0 | 0.0 | 0.0 |
| February 27 | 1.0 | **16.2** | 0.0 | 0.0 | 0.0 | 0.1 | **21.9** | 0.0 | **34.0** | 2.2 | 0.0 | 0.0 |
| March 20 | 1.6 | **16.4** | 0.0 | 0.0 | 0.0 | 0.9 | **16.1** | 0.0 | **35.9** | 2.3 | 0.0 | 0.0 |
| April 12 | 0.6 | **15.3** | 0.0 | 0.0 | 0.0 | **7.8** | **20.6** | 0.0 | **35.8** | 2.1 | 0.0 | 0.0 |
| May 22 | 2.3 | **14.9** | 0.0 | 0.0 | 0.0 | **12.1** | **24.3** | 0.0 | **34.6** | 2.3 | 0.0 | 0.0 |
| June 27 | 1.4 | **14.4** | 0.0 | 0.0 | 0.0 | 1.8 | **14.7** | 0.0 | **33.3** | 0.8 | 0.0 | 0.0 |

Notes: All values are reported as percent methane by volume.
-- : Unable to monitor GP-12 during January event due to presence of water and sediment in probe casing.
Methane measurements at or above the lower explosive limit of 5.0% by volume are shown in **bold**.

## LANDFILL GAS EXTRACTION WELL CONSTRUCTION

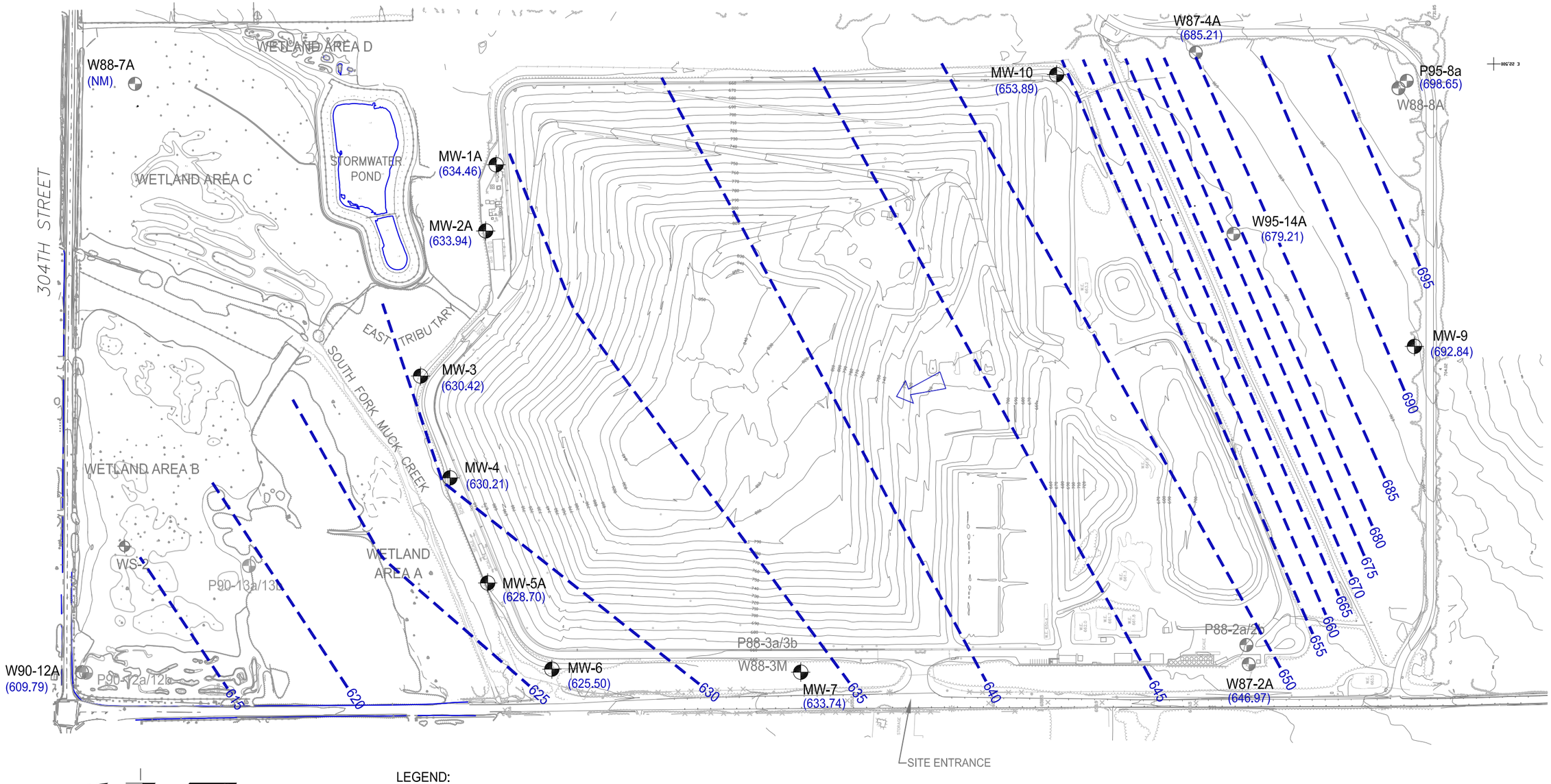
No new landfill gas extraction wells were installed this quarter.

## GROUNDWATER MONITORING WELL CONSTRUCTION AND MAINTENANCE

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

Appendix A

# **Groundwater Flow Map**




NOTES:

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

LEGEND:

| | |
|---|---|
| MW-1A | MONITORING WELL |
| W87-2A | CHARACTERIZATION WELL/ PIEZOMETER |
| (646.97) | GROUNDWATER ELEVATION (IN FEET ABOVE MSL) |
| | INFERRED GROUNDWATER FLOW DIRECTION |
| * | WATER LEVEL ELEVATION NOT USED IN CONTOURING |

0 400 800

SCALE (ft)

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| | | | |
|---|---|---|---|
| PROJECT NO. 04218001.02 | DES BY SG | POTENTIOMETRIC SURFACE CONTOUR MAP<br>JUNE 20, 2018<br>LRI LANDFILL<br>30919 MERIDIAN STREET E.<br>GRAHAM, WASHINGTON | DATE SEPTEMBER 2018 |
| SCALE AS SHOWN | CHK BY KGL | | FIGURE 1 |
| CAD FILE FIGURE 1 | APP BY KGL | | |

# Appendix B
# **Groundwater Data Summary Tables**

**Table 1. Groundwater Level Elevations**
**June 20, 2018**
**LRI Landfill, Pierce County, Washington**

| Location | Well Casing Elevation (ft) | Depth to Water (ft) | Water Level Elevation (ft, NGVD29) |
|---|---|---|---|
| **Wells** | | | |
| W87-2A | 664.01 | 17.04 | 646.97 |
| W87-4A | 693.29 | 8.08 | 685.21 |
| W88-3M | 658.11 | 12.04 | 646.07 |
| W88-7A | 632.51 | NM | -- |
| W88-8M | 721.05 | 40.26 | 680.79 |
| W90-12A | 640.84 | 31.05 | 609.79 |
| W95-14A | 680.49 | 1.28 | 679.21 |
| MW-1A | 652.57 | 18.11 | 634.46 |
| MW-2A | 651.93 | 17.99 | 633.94 |
| MW-3 | 637.41 | 6.99 | 630.42 |
| MW-4 | 652.37 | 22.16 | 630.21 |
| MW-5A | 655.55 | 26.85 | 628.70 |
| MW-6 | 635.71 | 10.21 | 625.50 |
| MW-7 | 656.03 | 22.29 | 633.74 |
| MW-9 | 701.77 | 8.93 | 692.84 |
| MW-10 | 673.87 | 19.98 | 653.89 |
| **Piezometers** | | | |
| P13-14A | 665.96 | 21.64 | 644.32 |
| P88-2A | 663.96 | NM | -- |
| P88-2B | 663.48 | NM | -- |
| P88-3A | 656.20 | 14.90 | 641.30 |
| P88-3B | 655.98 | 17.78 | 638.20 |
| P95-8A | 722.07 | 23.42 | 698.65 |
| P90-12A | 640.79 | 4.35 | 636.44 |
| P90-12B | 640.73 | 5.48 | 635.25 |
| P90-13A | 645.19 | NM | -- |
| P90-13B | 643.63 | NM | -- |
| GP-1P | 652.00 | 17.46 | 634.54 |
| GP-2P | 658.61 | 16.28 | 642.33 |
| GP-3P | 658.51 | 11.23 | 647.28 |
| GP-4P | 662.01 | 10.14 | 651.87 |
| GP-9P[a] | 674.03 | 12.69 | 661.34 |
| **South Creek** | | | |
| SWSC-1 | 632.68 | 0.80 | 631.88 |
| SWSC-2 | 629.98 | 7.75 | 622.23 |
| **Leak Detection System** | | | |
| LDCS-1 | 657.26 | 26.50 | 630.76 |
| LDCS-2A | 659.24 | 25.10 | 634.14 |
| LDCS-2B | 661.70 | 25.80 | 635.90 |

Notes:
NM= not measured
-- = not applicable
Measurements taken on 6/20/2018 unless otherwise noted
a = Measurement taken on 6/27/2018

**Table 2. Field Parameters**
**Second Quarter 2018**
**LRI Landfill, Pierce County, Washington**

| Location | Sample Number | Sample Date | Sampling Method | pH | Conductivity (µS/cm) | Temperature (°C) |
|---|---|---|---|---|---|---|
| **Monitoring Wells** | | | | | | |
| MW-1A | 304-061818-02 | 6/18/2018 | DP | 6.66 | 178 | 14.0 |
| MW-2A | 304-061818-04 | 6/18/2018 | DP | 6.98 | 244 | 13.5 |
| MW-3 | 304-061818-08 | 6/18/2018 | DP | 7.09 | 336 | 10.8 |
| MW-4 | 304-062018-17 | 6/20/2018 | SP | 7.48 | 314 | 14.1 |
| MW-5A | 304-061918-14 | 6/19/2018 | DP | 7.29 | 367 | 12.3 |
| MW-6 | 304-061918-12 | 6/19/2018 | DP | 7.14 | 290 | 10.5 |
| MW-7 | 304-061918-16 | 6/19/2018 | DP | 7.26 | 402 | 10.5 |
| MW-9 | 304-061918-18 | 6/19/2018 | DP | 6.72 | 140 | 10.7 |
| MW-10 | 304-061818-10 | 6/18/2018 | DP | 6.45 | 272 | 11.0 |
| **Leak Detection System** | | | | | | |
| LDCS-1 | 304-061818-07 | 6/18/2018 | DB | 6.66 | 395 | 30.5 |
| LDCS-2A | 304-061818-05 | 6/18/2018 | DB | 6.96 | 774 | 30.0 |
| LDCS-2B | 304-061818-03 | 6/18/2018 | DB | 7.46 | 704 | 30.8 |
| LDCS-3A | 304-061818-01 | 6/18/2018 | DP | 6.96 | 757 | 22.9 |
| LDCS-4A | 304-061918-09 | 6/19/2018 | DP | 7.03 | 931 | 23.7 |
| LDCS-4B | 304-061918-11 | 6/19/2018 | DP | 6.85 | 1,226 | 27.6 |
| LDCS-5 | 304-061918-15 | 6/19/2018 | DP | 6.65 | 926 | 26.6 |
| LDCS-6 | 304-061918-13 | 6/19/2018 | DP | 7.06 | 1,197 | 23.1 |
| **Leachate Collection System** | | | | | | |
| Leachate, Cell 6 | 304-062018-20 | 6/20/2018 | GB | 7.67 | 23,148 | 29.1 |

Notes:
DB = disposable bailer
DP = dedicated pump
GB = grab sample
SP = submersible pump
µS/cm = microsiemens per centimeter
°C = degrees celcius

# Table 3. Inorganic Parameters
# Second Quarter 2018
# LRI Landfill, Pierce County, Washington

| Parameter | Alkalinity, Total | Ammonia | Chloride | Nitrate | Sulfate | Total Dissolved Solids | Total Organic Carbon | Total Suspended Solids |
|---|---|---|---|---|---|---|---|---|
| MRL | 5.0 | 0.1-11 | 0.2 - 120 | 0.5 - 2.1 | 0.2 - 10 | 10 - 94 | 1.0 - 6.0 | 4.0 |
| WAC 173-200 Criteria | — | — | 250 | 10 | 250 | 500 | — | — |
| Prediction Limit | — | — | — | 6.4 | — | — | — | — |
| **Monitoring Wells** | | | | | | | | |
| MW-1A | 91 | 0.12 | 2.0 | * | 3.0 | 130 | * | * |
| MW-2A | 120 | 0.19 | 2.9 | * | 5.7 | 160 | * | * |
| MW-3 | 140 | 0.24 | 3.4 | * | 28 | 210 | * | * |
| MW-4 | 140 | 0.12 | 2.9 | * | 8.6 | 190 | * | 4.0 |
| MW-5A | 170 | 0.22 | 3.0 | * | 15 | 200 | 1.0 | * |
| MW-6 | 130 | 0.20 | 4.8 | * | 6.9 | 160 | * | * |
| MW-7 | 200 | 0.35 | 3.1 | * | 3.2 | 230 | * | * |
| MW-9 | 66 | * | 1.6 | * | 1.8 | 110 | * | * |
| MW-10 | 95 | 0.21 | 8.6 | 5.0 | 7.7 | 200 | * | * |
| **Leak Detection System** | | | | | | | | |
| LDCS-1 | 190 | 0.26 | 3.8 | * | 7.4 | 250 | 2.5 | — |
| LDCS-2A | 400 | 0.13 | 2.8 | * | 21 | 460 | 2.3 | — |
| LDCS-2B | 320 | * | 3.4 | * | 68 | 440 | 1.8 | — |
| LDCS-3A | 340 | 0.19 | 4.1 | * | 84 | 480 | 1.8 | — |
| LDCS-4A | 370 | 0.11 | 24 | * | 95 | 590 | 5.1 | — |
| LDCS-4B | 440 | 0.19 | 23 | * | 200 | 840 | 3.3 | — |
| LDCS-5 | 400 | 1.60 | 21 | * | 74 | 590 | 7.9 | — |
| LDCS-6 | 450 | 0.11 | 13 | 0.64 | 280 | 950 | 6.0 | — |
| **Leachate Collection System** | | | | | | | | |
| Leachate, Cell 6 | 8,800 | 1,300 | 2,500 | * | 1.8 | 12,000 | 1,400 | — |

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.

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

— = not applicable or not performed

**Table 4. WAC 173-351 Appendix I Metals**
**Second Quarter 2018**
**LRI Landfill, Pierce County, Washington**

| Parameter | | Antimony-D | Antimony-T | Arsenic-D | Arsenic-T | Barium-D | Barium-T | Beryllium-D | Beryllium-T | Cadmium-D | Cadmium-T | Chromium-D | Chromium-T | Cobalt-D | Cobalt-T | Copper-D | Copper-T | Lead-D | Lead-T | Nickel-D | Nickel-T | Selenium-D | Selenium-T | Silver-D | Silver-T | Thallium-D | Thallium-T | Vanadium-D | Vanadium-T | Zinc-D | Zinc-T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Units | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| MRL | | 0.05 | 0.05 | 0.005 | 0.005 | 0.005 | 0.005 | 0.001 | 0.001 | 0.001 | 0.001 | 0.005 | 0.005 | 0.001 | 0.001 | 0.01 | 0.01 | 0.002 | 0.002 | 0.02 | 0.02 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.01 |
| WAC 173-200 Criteria | | — | — | — | 0.00005 | — | 1.0 | — | — | — | 0.01 | — | 0.05 | — | — | — | 1.0 | — | 0.05 | — | — | — | 0.01 | — | 0.05 | — | — | — | — | — | 5.0 |
| Prediction Limit | | — | 0.05 | — | 0.011 | — | 0.091 | — | 0.005 | — | 0.005 | — | 0.011 | — | 0.01 | — | 0.063 | — | 0.042 | — | 0.020 | — | 0.005 | — | 0.01 | — | 0.005 | — | 0.016 | — | 0.290 |
| **Monitoring Wells** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MW-1A | — | * | — | * | — | 0.019 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * |
| | MW-2A | — | * | — | * | — | 0.013 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * |
| | MW-3 | — | * | — | * | — | 0.012 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * |
| | MW-4 | — | * | — | **0.0089** | — | 0.015 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | 0.022 |
| | MW-5A | — | * | — | **0.0058** | — | 0.012 | — | * | — | * | — | * | — | 0.0013 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * |
| | MW-6 | — | * | — | **0.0075** | — | 0.011 | — | * | — | * | — | * | — | 0.0013 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * |
| | MW-7 | — | * | — | * | — | 0.014 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * |
| (BG) | MW-9 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | 0.013 | — | * |
| (BG) | MW-10 | — | * | — | * | — | 0.013 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * |
| **Leak Detection System** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | LDCS-1 | * | — | 0.0085 | — | 0.020 | — | — | — | — | — | * | — | * | — | * | — | * | — | * | — | — | — | — | — | — | — | * | — | * | — |
| | LDCS-2A | * | — | 0.0120 | — | 0.025 | — | — | — | — | — | * | — | * | — | * | — | * | — | * | — | — | — | — | — | — | — | * | — | * | — |
| | LDCS-2B | * | — | * | — | 0.017 | — | — | — | — | — | * | — | * | — | * | — | * | — | * | — | — | — | — | — | — | — | * | — | * | — |
| | LDCS-3A | * | — | * | — | 0.014 | — | — | — | — | — | * | — | * | — | * | — | * | — | * | — | — | — | — | — | — | — | * | — | * | — |
| | LDCS-4A | * | — | 0.0072 | — | 0.033 | — | — | — | — | — | * | — | 0.0028 | — | * | — | * | — | * | — | — | — | — | — | — | — | * | — | * | — |
| | LDCS-4B | * | — | * | — | 0.037 | — | — | — | — | — | * | — | 0.0017 | — | * | — | * | — | * | — | — | — | — | — | — | — | * | — | * | — |
| | LDCS-5 | * | — | 0.0110 | — | 0.072 | — | * | — | * | — | * | — | 0.0020 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — |
| | LDCS-6 | * | — | * | — | 0.034 | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | * | — | 0.013 | — |
| **Leachate Collection System** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Leachate, Cell 6 | — | * | — | 0.15 | — | 0.75 | — | * | — | 0.0013 | — | 0.69 | — | 0.045 | — | 0.066 | — | 0.069 | — | 0.44 | — | 0.005 | — | * | — | * | — | 0.12 | — | 0.96 |

Notes:
All sample units are milligrams per liter (mg/L).
WAC 173-200-040 Table 1 Groundwater Quality Criteria are for total metals.
Groundwater (monitoring well) concentrations greater than prediction limits or WAC 173-200 criteria are shown in **bold**.
Parameter concentrations for monitoring wells are total (T) metals.
Parameter concentrations for LDCS sumps are dissolved (D) metals.
Analyses performed by TestAmerica of Denver, Colorado.
Method Reporting Limit (MRL) is typical and may be elevated for some samples.
* indicates 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 2018
## LRI Landfill, Pierce County, Washington

| Parameter | Calcium | Iron | Magnesium | Manganese | Potassium | Sodium |
|---|---|---|---|---|---|---|
| Units | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| MRL | 0.20 | 0.10 | 0.10 | 0.005 | 2.0 | 1.0 |
| WAC 173-200 Criteria | — | 0.30 | — | 0.050 | — | — |
| **Monitoring Wells** | | | | | | |
| MW-1A | 13 | **1.3** | 8.2 | **0.25** | 3.6 | 11 |
| MW-2A | 18 | **0.62** | 9.7 | **0.31** | 3.1 | 15 |
| MW-3 | 30 | * | 13 | **0.30** | 3.7 | 13 |
| MW-4 | 24 | 0.12 | 14 | **0.21** | 4.8 | 11 |
| MW-5A | 23 | 0.10 | 9.9 | **0.17** | 3.8 | 33 |
| MW-6 | 25 | * | 12 | **0.17** | 4.1 | 9.5 |
| MW-7 | 29 | 0.20 | 21 | **0.24** | 4.9 | 14 |
| (BG) MW-9 | 9.1 | * | 6.3 | * | * | 7.4 |
| (BG) MW-10 | 23 | **0.43** | 9.7 | * | 2.2 | 14 |
| **Leak Detection System** | | | | | | |
| LDCS-1 | 36 | 0.48 | 14 | 1.5 | 5.3 | 18 |
| LDCS-2A | 80 | 0.16 | 30 | 1.7 | 9.6 | 33 |
| LDCS-2B | 89 | * | 27 | 0.03 | 7.1 | 21 |
| LDCS-3A | 87 | * | 37 | 0.50 | 5.8 | 22 |
| LDCS-4A | 85 | 1.1 | 43 | 1.8 | 6.5 | 32 |
| LDCS-4B | 140 | * | 47 | 1.5 | 6.2 | 42 |
| LDCS-5 | 78 | 0.85 | 46 | 2.6 | 8.4 | 34 |
| LDCS-6 | 140 | * | 67 | 0.73 | 4.0 | 56 |
| **Leachate Collection System^** | | | | | | |
| Leachate, Cell 6 | 190 | 10 | 230 | 2.4 | 940 | 2,300 |

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.
* indicates result was not reported at or above the MRL.
^ Leachate reported concentrations are total metals.
— = not applicable or not performed
BG = Background

# Table 6. Volatile Organic Compounds (µg/L)
# Second Quarter 2018
# LRI Landfill, Pierce County, Washington

| Parameter | 1,2-Dichloroethane | 1,4-Dichlorobenzene | 2-Butanone (MEK) | 4-Methyl-2-pentanone (MIBK) | Acetone | Benzene | Ethylbenzene | Methylene Chloride | m-Xylene & p-Xylene | o-Xylene | Toluene | Vinyl Chloride |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Units | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| MRL | 5.2 | 0.5 | 80.0 | 39.0 | 76.0 | 6.4 | 6.4 | 13.0 | 14.0 | 7.6 | 6.8 | 4.0 |
| WAC 173-200 Criteria | 0.5 | 4.0 | — | — | — | 1.0 | — | 5.0 | — | — | — | 0.02 |
| **Monitoring Wells** | | | | | | | | | | | | |
| MW-1A | * | * | * | * | * | * | * | * | * | * | * | * |
| MW-2A | * | * | * | * | * | * | * | * | * | * | * | * |
| MW-3 | * | * | * | * | * | * | * | * | * | * | * | * |
| MW-4 | * | * | * | * | * | * | * | * | * | * | * | * |
| MW-5A | * | * | * | * | * | * | * | * | * | * | * | * |
| MW-6 | * | * | * | * | * | * | * | * | * | * | * | * |
| MW-7 | * | * | * | * | * | * | * | * | * | * | * | * |
| (BG) MW-9 | * | * | * | * | * | * | * | * | * | * | * | * |
| (BG) MW-10 | * | * | * | * | * | * | * | * | * | * | * | * |
| **Leak Detection System** | | | | | | | | | | | | |
| LDCS-1 | * | * | * | * | * | * | * | * | * | * | * | * |
| LDCS-2A | * | 0.68 | * | * | * | * | * | * | * | * | * | * |
| LDCS-2B | * | * | * | * | * | * | * | * | * | * | * | * |
| LDCS-3A | * | * | * | * | * | * | * | * | * | * | * | * |
| LDCS-4A | * | * | * | * | * | * | * | * | * | * | * | * |
| LDCS-4B | * | * | * | * | * | * | * | * | * | * | * | * |
| LDCS-5 | * | * | * | * | * | * | * | * | * | * | * | * |
| LDCS-6 | * | * | * | * | * | * | * | * | * | * | * | * |
| Field Blank | * | * | * | * | * | * | * | * | * | * | * | * |
| **Leachate Collection System** | | | | | | | | | | | | |
| Leachate, Cell 6 | 17 | * | 3,100 | 220 | 3,000 | 21 | 21 | 18 | 40 | 18 | 200 | 5.5 |

Notes:
Analyses performed by TestAmerica of Denver, Colorado.
MRL displayed is value from leachate sample analysis with the exception of 1,4 Dichlorobenzene.
* = not reported at or above the MRL
— = not applicable or not performed
BG = Background

# Table 7. Cation-Anion Balance
## Second Quarter 2018
## 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 | 8.2 | 3.6 | 11 | 35.8 | 0.65 | 0.67 | 0.08 | 0.48 | 1.88 | 30 | 34 | 36 |
| MW-2A | 18 | 9.7 | 3.1 | 15 | 45.8 | 0.90 | 0.80 | 0.07 | 0.65 | 2.42 | 30 | 37 | 33 |
| MW-3 | 30 | 13 | 3.7 | 13 | 59.7 | 1.50 | 1.07 | 0.08 | 0.57 | 3.22 | 20 | 47 | 33 |
| MW-4 | 24 | 14 | 4.8 | 11 | 53.8 | 1.20 | 1.15 | 0.11 | 0.48 | 2.94 | 20 | 41 | 39 |
| MW-5A | 23 | 9.9 | 3.8 | 33 | 69.7 | 1.15 | 0.81 | 0.09 | 1.44 | 3.48 | 44 | 33 | 23 |
| MW-6 | 25 | 12 | 4.1 | 9.5 | 50.6 | 1.25 | 0.99 | 0.09 | 0.41 | 2.74 | 18 | 46 | 36 |
| MW-7 | 29 | 21 | 4.9 | 14 | 68.9 | 1.45 | 1.73 | 0.11 | 0.61 | 3.90 | 18 | 37 | 44 |
| MW-9 | 9.1 | 6.3 | 2.0 | 7.4 | 24.8 | 0.45 | 0.52 | 0.05 | 0.32 | 1.34 | 27 | 34 | 39 |
| MW-10 | 23 | 9.7 | 2.2 | 14 | 48.9 | 1.15 | 0.80 | 0.05 | 0.61 | 2.60 | 25 | 44 | 31 |
| LDCS-1 | 36 | 14 | 5.3 | 18 | 73.3 | 1.80 | 1.15 | 0.12 | 0.78 | 3.85 | 23 | 47 | 30 |
| LDCS-2A | 80 | 30 | 9.6 | 33 | 152.6 | 3.99 | 2.47 | 0.22 | 1.44 | 8.11 | 20 | 49 | 30 |
| LDCS-2B | 89 | 27 | 7.1 | 21 | 144.1 | 4.44 | 2.22 | 0.16 | 0.91 | 7.74 | 14 | 57 | 29 |
| LDCS-3A | 87 | 37 | 5.8 | 22 | 151.8 | 4.34 | 3.05 | 0.13 | 0.96 | 8.47 | 13 | 51 | 36 |
| LDCS-4A | 85 | 43 | 6.5 | 32 | 166.5 | 4.24 | 3.54 | 0.15 | 1.39 | 9.32 | 17 | 46 | 38 |
| LDCS-4B | 140 | 47 | 6.2 | 42 | 235.2 | 6.99 | 3.87 | 0.14 | 1.83 | 12.82 | 15 | 54 | 30 |
| LDCS-5 | 78 | 46 | 8.4 | 34 | 166.4 | 3.89 | 3.79 | 0.19 | 1.48 | 9.35 | 18 | 42 | 41 |
| LDCS-6 | 140 | 67 | 4.0 | 56 | 267 | 6.99 | 5.51 | 0.09 | 2.44 | 15.03 | 17 | 46 | 37 |
| Leachate Cell 6 | 190 | 230 | 940 | 2300 | 3660 | 9.48 | 18.93 | 21.23 | 100.05 | 149.69 | 81 | 6 | 13 |

| 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 | 109.2 | 2.0 | 0.5 | 3.0 | 114.7 | 1.79 | 0.06 | 0.008 | 0.06 | 1.92 | 3 | 93 | 3 | 3.80 | 0.9 | 10 | O |
| MW-2A | 144 | 2.9 | 0.5 | 5.7 | 153.1 | 2.36 | 0.08 | 0.008 | 0.12 | 2.57 | 3 | 92 | 5 | 4.99 | 3.0 | 10 | O |
| MW-3 | 168 | 3.4 | 0.5 | 28 | 199.9 | 2.76 | 0.10 | 0.008 | 0.58 | 3.44 | 3 | 80 | 17 | 6.66 | 3.4 | 5 | O |
| MW-4 | 168 | 2.9 | 0.5 | 8.6 | 180.0 | 2.76 | 0.08 | 0.008 | 0.18 | 3.02 | 3 | 91 | 6 | 5.96 | 1.5 | 5 | O |
| MW-5A | 204 | 3.0 | 0.5 | 15 | 222.5 | 3.35 | 0.08 | 0.008 | 0.31 | 3.75 | 2 | 89 | 8 | 7.23 | 3.7 | 5 | O |
| MW-6 | 156 | 4.8 | 0.5 | 6.9 | 168.2 | 2.56 | 0.14 | 0.008 | 0.14 | 2.85 | 5 | 90 | 5 | 5.59 | 1.9 | 5 | O |
| MW-7 | 240 | 3.1 | 0.5 | 3.2 | 246.8 | 3.94 | 0.09 | 0.008 | 0.07 | 4.10 | 2 | 96 | 2 | 7.99 | 2.5 | 5 | O |
| MW-9 | 79.2 | 1.6 | 0.5 | 1.8 | 83.1 | 1.30 | 0.05 | 0.008 | 0.04 | 1.39 | 3 | 93 | 3 | 2.73 | 1.8 | 10 | O |
| MW-10 | 114 | 8.6 | 5.0 | 7.7 | 135.3 | 1.87 | 0.24 | 0.081 | 0.16 | 2.35 | 10 | 79 | 7 | 4.96 | 5.1 | 10 | O |
| LDCS-1 | 228 | 3.8 | 0.5 | 7.4 | 239.7 | 3.74 | 0.11 | 0.008 | 0.15 | 4.01 | 3 | 93 | 4 | 7.86 | 2.0 | 5 | O |
| LDCS-2A | 480 | 2.8 | 0.5 | 21 | 504.3 | 7.87 | 0.08 | 0.008 | 0.44 | 8.40 | 1 | 94 | 5 | 16.51 | 1.7 | 5 | O |
| LDCS-2B | 384 | 3.4 | 0.5 | 68 | 455.9 | 6.30 | 0.10 | 0.008 | 1.41 | 7.82 | 1 | 81 | 18 | 15.55 | 0.5 | 5 | O |
| LDCS-3A | 408 | 4.1 | 0.5 | 84 | 496.6 | 6.69 | 0.12 | 0.008 | 1.75 | 8.56 | 1 | 78 | 20 | 17.04 | 0.5 | 5 | O |
| LDCS-4A | 444 | 24 | 0.5 | 95 | 563.5 | 7.28 | 0.68 | 0.008 | 1.98 | 9.94 | 7 | 73 | 20 | 19.26 | 3.2 | 5 | O |
| LDCS-4B | 528 | 23 | 0.5 | 200 | 751.5 | 8.66 | 0.65 | 0.008 | 4.16 | 13.48 | 5 | 64 | 31 | 26.30 | 2.5 | 5 | O |
| LDCS-5 | 480 | 21 | 0.5 | 74 | 575.5 | 7.87 | 0.59 | 0.008 | 1.54 | 10.01 | 6 | 79 | 15 | 19.36 | 3.4 | 5 | O |
| LDCS-6 | 540 | 13 | 0.64 | 280 | 834 | 8.86 | 0.37 | 0.010 | 5.82 | 15.06 | 2 | 59 | 39 | 30.08 | 0.1 | 5 | O |
| Leachate, Cell 6 | 10,560 | 2,500 | 2.1 | 1.8 | 13064 | 173.18 | 70.50 | 0.034 | 0.04 | 243.76 | 29 | 71 | 0 | 393.44 | 23.9 | 5 | Exceeds |

Notes:

mg/L = milligrams per liter

meq/L = milliequivalents per liter

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

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

The MRL was used for analytes that were non-detect

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

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

**Table 8. Duplicate Sample Results**
**Second Quarter 2018 Monitoring Report**
**LRI Landfill, Pierce County, Washington**

| Parameter | MRL | MW-2A | MW-2A (Duplicate) | RPD (%) |
|---|---|---|---|---|
| **Volatile Organic Compunds (µg/L)** | | | | |
| No Detections | - | - | - | - |
| **Inorganic Parameters (mg/L)** | | | | |
| Alkalinity, Bicarbonate (as CaCO3) | 5.0 | 120 | 120 | 0.0 |
| Ammonia | 0.10 | 0.19 | 0.14 | 19.2 |
| Chloride | 0.20 | 2.9 | 2.9 | 0.0 |
| Sulfate | 0.20 | 5.7 | 5.7 | 0.0 |
| Total Dissolved Solids | 10 | 160 | 170 | 4.1 |
| **Dissolved Metals (mg/L)** | | | | |
| Calcium | 0.20 | 18 | 19 | 3.6 |
| Iron | 0.10 | 0.62 | 0.65 | 3.2 |
| Magnesium | 0.10 | 9.7 | 10 | 2.0 |
| Manganese | 0.005 | 0.31 | 0.29 | 4.4 |
| Potassium | 2.0 | 3.1 | 3.3 | 4.2 |
| Sodium | 1.0 | 15 | 16 | 4.3 |
| **Total Metals (mg/L)** | | | | |
| Barium | 0.005 | 0.013 | 0.013 | 0.0 |

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.
* = the sample results were not reported at or above the MRL
The MRL was used to calculate the RPD for analytes where one sample was non-detect.

Appendix C

# Field Sampling Documentation

Environmental Consultants
and Contractors

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

425 746-4600
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SCS ENGINEERS

June 21, 2018
File No. 04218001.02

**Subject: Second Quarter 2018 Groundwater Monitoring Event**
**LRI Landfill, Pierce County, Washington**

## NOTES/SAMPLE DECODING:

Event Dates: June 18-20, 2018
Field Staff: Sam Graber and Travis Berndahl

- Dedicated pumps were used for purging and sampling wells MW-1A, MW-2A, MW-3, MW-5A, MW-6, MW-7, MW-9, MW-10, and leak detection/collection system points LDCS-3A, LDCS-4A, LDCS-4B, LDCS-5, and LDCS-6.
- Disposeable 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.
- A round of water level measurements was completed on June 20th, 2018.
- 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 |
|---|---|
| 304-061818-01 | LDCS-3A |
| 304-061818-02 | MW-1 |
| 304-061818-03 | LDCS-2B |
| 304-061818-04 | MW-2A |
| 304-061818-05 | LDCS-2A |
| 304-061818-06 | MW-2A (Duplicate) |
| 304-061818-07 | LDCS-1 |
| 304-061818-08 | MW-3 |
| 304-061918-09 | LDCS-4A |
| 304-061818-10 | MW-10 |
| 304-061918-11 | LDCS-4B |
| 304-061918-12 | MW-6 |
| 304-061918-13 | LDCS-6 |
| 304-061918-14 | MW-5 |
| 304-061918-15 | LDCS-5 |
| 304-061918-16 | MW-7 |
| 304-062018-17 | MW-4 |
| 304-061918-18 | MW-9 |
| 304-062018-19 | Field Blank |
| 304-062018-20 | Leachate Cell 6 |

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

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: LDCS-3A
Sample ID: 304-061818-01
Date: 6/18/2018
Weather: Sunny

DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 YSI

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.24 gallons

Refill 11.5
Discharge 3.5
Pressure 35
Flow 200 mL/min

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

Filtered? Y N
Locked? Y N
Water in Protector? Y N N/A
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. |
|---|---|---|---|---|---|---|---|---|
| 1040 | Turned pump on. | | | | | | | |
| 1045 | | 23.08 | 769 | 5.99 | 7.16 | 203 | | |
| ~~1050~~ 1048 | | 21.61 | 762 | 3.71 | 7.04 | 194 | | |
| ~~1055~~ 1051 | | 21.92 | 770 | 2.37 | 6.94 | 189 | | |
| 1054 | | 22.18 | 769 | 1.70 | 6.92 | 186 | | |
| 1059 | | 22.31 | 757 | 1.68 | 6.95 | 170 | | |
| 1100 | | 22.94 | 757 | 1.78 | 6.96 | 160 | | |
| ~~1105~~ | | | | | | | 0.79 | |

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

SAMPLER: Sam Graber
Printed Name

Signature

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

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: MW-1
Sample ID: 304-061818-02
Date: 6/18/2018
Weather: Sunny

17.95 DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 YSI

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.24 gallons

Refill 10
Discharge 5
Pressure 35
Flow 300 mL/min

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

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

Sample Containers:

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

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

1. Pressure increased to 50 @ 1108

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1030 | | 14.20 | 156 | 2.89 | 5.82 | 220 | | |
| 1035 | | 13.78 | 57 | 1.19 | 5.70 | 232.8 | | |
| 1038 | | 13.82 | 95 | 1.03 | 5.89 | 229.5 | 0.30 | |
| 1041 | | 13.77 | 146 | 0.73 | 6.23 | 181.0 | | |
| 1044 | | 13.94 | 159 | 0.69 | 6.43 | 103.2 | | |
| 1047 | | 14.04 | 169 | 0.56 | 6.57 | 45.3 | | |
| 1050 | 23.95 | 14.02 | 178 | 0.47 | 6.66 | 7.3 | 1.34 | |

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

SAMPLER: Travis Berndahl
Printed Name

Signature

**SCS ENGINEERS**
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**Bellevue, WA 98005** (425) 746-4600

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: 304-061818-03
Sample ID: LDCS-23
Date: 6/18/2018
Weather: Sunny

25.80 DTW
TOS
Intake
BOS
Total Depth

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

Meter: (MP-20) YSI

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.24 gallons

Refill
Discharge
Pressure
Flow

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

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

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

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1200 | | 30.9 | 704 | 4.23 | 7.46 | 133 | 0.60 | |

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

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

SAMPLER: Sam Graber
Printed Name

Signature

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**Bellevue, WA 98005** (425) 746-4600

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: MW-2A
Sample ID: 304-061818-04
Date: 6/ 18 /2018
Weather: Sunny

17.94 DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 (YSI)

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.24 gallons

Refill: 9
Discharge: 6
Pressure: 30
Flow: 300 mL/sec

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

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

Sample Containers:

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

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1130 | | 14.28 | 251 | 2.88 | 6.91 | 94.6 | | |
| 1135 | | 13.09 | 246 | 0.34 | 6.93 | 29.3 | | |
| 1138 | | 12.98 | 244 | 0.32 | 6.93 | 4.3 | | |
| 1141 | | 13.44 | 243 | 0.30 | 6.95 | -13.5 | | |
| 1144 | | 13.41 | 244 | 0.23 | 6.95 | -24.3 | 0.65 | |
| 1147 | | 13.41 | 244 | 0.22 | 6.96 | -28.9 | | |
| 1150 | 19.34 | 13.45 | 244 | 0.21 | 6.98 | -36.8 | 0.41 | |

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

Duplicate Taken @ Sample time 1155

Sample ID: 304-061818-06

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

SAMPLER: Travis Berndahl
Printed Name

Signature

**SCS ENGINEERS**
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**Bellevue, WA 98005** (425) 746-4600

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: LDCS-2A
Sample ID: 304-061818-05
Date: 6/18/2018
Weather: Sunny

25.10 DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 YSI

CONTROL SETTINGS:
Refill
Discharge
Pressure
Flow

1 ft water = 0.62L
1L = 0.24 gallons

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

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y N (NA)
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. |
|---|---|---|---|---|---|---|---|---|
| 1245 | | 29.99 | 774 | 1.30 | 6.96 | 79 | 2.50 | |

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

SAMPLER: Sam Gruber
Printed Name

Signature

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**Bellevue, WA 98005** (425) 746-4600

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: LOCS-1
Sample ID: 304-060618-07
Date: 6/18/2018
Weather: sunny

26.50 DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 / YSI

CONTROL SETTINGS:
Refill
Discharge
Pressure
Flow

1 ft water = 0.62L
1L = 0.24 gallons

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

Filtered? (Y) N
Locked? Y (N)
Water in Protector? Y N (NA)
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. |
|---|---|---|---|---|---|---|---|---|
| 1345 | | 30.45 | 395 | 2.40 | 6.66 | 105 | 6.66 | |

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

SAMPLER: Sam Graber
Printed Name

Signature

# SCS ENGINEERS

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## Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: MW-3
Sample ID: 304-061818-08
Date: 6/ 18 /2018
Weather: Sunny

6.93 DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 YSI

CONTROL SETTINGS:

1 ft water = 0.62L 1L = 0.24 gallons

Refill: 8
Discharge: 7
Pressure: 35
Flow: 350 mL/min

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

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

Sample Containers:

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

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

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1237 | | 12.28 | 382 | 7.57 | 6.90 | 153.5 | | |
| 1242 | | 11.05 | 340 | 1.17 | 6.56 | 171.4 | | |
| 1245 | | 10.89 | 337 | 0.72 | 6.78 | 160.1 | | |
| 1248 | | 10.88 | 336 | 0.44 | 6.96 | 142.0 | 0.0 | |
| 1251 | | 10.87 | 336 | 0.36 | 7.03 | 124.2 | | |
| 1254 | | 10.76 | 336 | 0.32 | 7.07 | 107.7 | | |
| 1257 | 8.2 | 10.76 | 336 | 0.27 | 7.09 | 90.3 | 0.0 | |

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

SAMPLER: Travis Berndahl
Printed Name

Signature

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# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: ~~LOCS-4A~~ LOCS-4A
Sample ID: 304-061918-09
Date: 6/19/2018
Weather: Sunny

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

Meter: MP-20 YSI

DTW
TOS
Intake
BOS
Total Depth

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.24 gallons

Refill: 12
Discharge: 3
Pressure: 35
Flow: 175 mL/min

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

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

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

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

LOCLS level = 10.39 @ 1025

Brown + orange particulates in Sample.

Pumped SPC

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | ~~Q~~ Vol. |
|---|---|---|---|---|---|---|---|---|
| 1000 | | 20.53 | 785 | 5.37 | 6.34 | 229 | | 948 |
| 1005 | | 19.97 | 788 | 2.63 | 6.22 | 213 | | |
| 1008 | | 20.32 | 787 | 1.46 | 6.37 | 185 | | |
| 1011 | | 20.96 | 836 | 0.92 | 8.11 | -176 | | |
| 1014 | | 21.68 | 921 | 0.59 | 7.95 | -149 | | |
| 1017 | | 22.18 | 927 | 0.54 | 7.80 | -111 | | |
| 1020 | | 22.77 | 928 | 0.45 | 7.52 | -59 | 72.9 | 942 |
| 1025 | | 23.00 | 928 | 0.40 | 7.30 | -24 | 29.8 | |
| 1030 | | 23.19 | 926 | 0.37 | 7.12 | 6 | 20.7 | |
| 1035 | | 23.41 | 926 | 0.33 | 7.04 | 21 | 16.2 | |
| 1040 | | 23.56 | 931 | 0.29 | 7.01 | 21 | 9.51 | |
| 1043 | | 23.74 | 931 | 0.27 | 7.03 | 21 | 8.68 | 954 |

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

SAMPLER: Sam Graber
Printed Name

Signature

**SCS ENGINEERS**
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# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: MW-10
Sample ID: 304-061818-10
Date: 6/18/2018
Weather: Sunny

21.05 DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 (YSI)

CONTROL SETTINGS:
Refill: 9
Discharge: 6
Pressure: 30
Flow: 300 mL/min

1 ft water = 0.62L
1L = 0.24 gallons
One Well Volume (liters):
Total Volume Bailed (liters):
Other:
Flow Setting:

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

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

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

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1340 | | 11.82 | 274 | 7.76 | 7.23 | 163.9 | | |
| 1345 | | 11.01 | 275 | 3.04 | 6.42 | 191.2 | | |
| 1348 | | 10.96 | 276 | 2.72 | 6.43 | 189.7 | | |
| 1351 | | 10.88 | 274 | 2.03 | 6.46 | 186.3 | | |
| 1354 | | 10.91 | 274 | 1.90 | 6.46 | 184.2 | | |
| 1357 | | 10.79 | 272 | 1.71 | 6.46 | 182.8 | | |
| 1400 | 25.91 | 11.00 | 272 | 1.47 | 6.45 | 179.9 | 0.75 | |

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

SAMPLER: Travis Berndahl
Printed Name

Signature

**SCS ENGINEERS**
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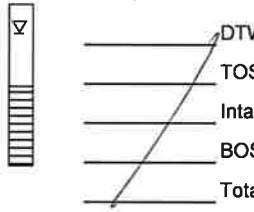
**Bellevue, WA 98005** (425) 746-4600

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: LDCS - 4B
Sample ID: 304 - 061918 - 11
Date: 6/ 19 /2018
Weather: Sunny




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

Meter: MP-20 / YSI

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.24 gallons

Refill 15 | One Well Volume (liters) | Other :
Discharge 5 | Flow Setting :
Pressure 40 | Total Volume Bailed (liters)
Flow 300 mL/min

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

Sample Containers:

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

SpC panel

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1123 | | 20.44 | 1226 | 5.10 | 8.24 | -183 | | |
| 1128 | | 25.84 | 1226 | 0.45 | 7.71 | -130 | | |
| 1131 | | 27.04 | 1229 | 0.33 | 7.39 | -65 | | |
| 1134 | | 27.28 | 1232 | 0.33 | 7.16 | -14 | | 1156 |
| 1137 | | 27.40 | 1227 | 0.30 | 7.03 | 31 | | |
| 1140 | | 27.53 | 1230 | 0.28 | 6.92 | 61 | 2.07 | |
| 1143 | | 27.61 | 1226 | 0.27 | 6.85 | 83 | 1.95 | 1151 |

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

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

SAMPLER: Sam Graber
Printed Name

Signature

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**Bellevue, WA 98005** (425) 746-4600

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: MW-6
Sample ID: 304-061918-12
Date: 6/ 19 /2018
Weather: Sunny

10.21 DTW
TOS
Intake
BOS
Total Depth

Sampling Method : Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other
Meter: MP-20 (YSI)
CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.24 gallons
Refill 9 One Well Volume (liters) Other :
Discharge 6 Flow Setting :
Pressure 30 Total Volume Bailed (liters)
Flow 300 mL/min

Filtered? (Y) N Locked? Y (N) Water in Protector? (Y) N Damage? Y (N)
Sample Containers:
1000 ml Poly | 500 ml Poly | 250 ml Poly | 125 ml Poly
500 ml HNO3 x2 | 500 ml H2SO4 x2 | 40 ml VOA x3 x6 | 1000 ml Amber
125 ml NaOH

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

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1000 | | 10.52 | 290 | 1.43 | 6.49 | 205.2 | | |
| 1005 | | 10.49 | 290 | 0.82 | 6.63 | 211.1 | | |
| 1008 | | 10.48 | 290 | 0.48 | 6.86 | 205.3 | | |
| 1011 | | 10.49 | 288 | 0.37 | 6.99 | 198.2 | | |
| 1014 | | 10.48 | 288 | 0.31 | 7.08 | 190.9 | | |
| 1017 | | 10.48 | 288 | 0.26 | 7.12 | 185.3 | | |
| 1020 | 11.80 | 10.51 | 290 | 0.24 | 7.14 | 180.0 | 0.30 | |

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

SAMPLER: Travis Berndahl
Printed Name

Signature

**SCS ENGINEERS**
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# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: LDCS-6
Sample ID: 304-061918-13
Date: 6/19/2018
Weather: Sunny

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

Meter: MP-20 / YSI

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.24 gallons

| | | | |
|---|---|---|---|
| DTW | | Refill | 16 |
| TOS | | Discharge | 4 |
| Intake | | Pressure | 40 |
| BOS | | Flow | 150 mL/min |
| Total Depth | | | |

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

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

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

SPC panel

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1220 | | 24.33 | 1200 | 6.35 | 7.77 | 104 | | |
| 1225 | | 23.21 | 1195 | 5.71 | 7.62 | 110 | | 1244 |
| 1228 | | 23.29 | 1205 | 5.66 | 7.37 | 117 | | |
| 1231 | | 23.63 | 1194 | 5.73 | 7.09 | 126 | | |
| 1234 | | 23.36 | 1198 | 5.73 | 7.07 | 129 | | |
| 1237 | | 23.28 | 1198 | 5.61 | 7.05 | 130 | | |
| 1240 | | 23.13 | 1197 | 5.46 | 7.06 | 130 | 3.25 | 1245 |

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

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

SAMPLER: Sam Graber
Printed Name

Signature

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# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: MW-5
Sample ID: 304-061918-14
Date: 6/19/2018
Weather: Sunny

26.89 DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 YSI

CONTROL SETTINGS: 1 ft water = 0.62L 1L = 0.24 gallons

Refill 9
Discharge 6
Pressure 40
Flow 300 mL/min

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

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

Sample Containers:

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

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1058 | | 12.57 | 406 | 3.32 | 7.20 | 111.1 | | |
| 1103 | | 12.29 | 371 | 0.43 | 7.22 | 59.0 | | |
| 1106 | | 12.25 | 366 | 0.35 | 7.29 | 18.4 | | |
| 1109 | | 12.26 | 367 | 0.33 | 7.32 | -5.5 | | |
| 1112 | | 12.29 | 366 | 0.38 | 7.33 | -21.1 | | |
| 1115 | | 12.28 | 365 | 0.40 | 7.31 | -28.6 | | |
| 1118 | 28.89 | 12.31 | 367 | 0.45 | 7.29 | -32.6 | 0.66 | |

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

Water level meter had a significant amount of sediment on it for the water level reading @ 1118

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

SAMPLER: Travis Berndahl
Printed Name

Signature

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

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: LDCS-5
Sample ID: 304-061918-15
Date: 6/19/2018
Weather: Sunny

DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 / YSI

CONTROL SETTINGS:
Refill 12
Discharge 3
Pressure 40
Flow 100 ml/min

1 ft water = 0.62L
1L = 0.24 gallons
One Well Volume (liters)
Total Volume Bailed (liters)
Other:
Flow Setting:

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

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

spc panel

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q/Vol. |
|---|---|---|---|---|---|---|---|---|
| 1328 | | 25.99 | 751 | 3.55 | 7.28 | 103 | | |
| 1333 | | 26.39 | 846 | 0.64 | 6.80 | 124 | | |
| 1336 | | 26.62 | 851 | 0.48 | 6.87 | 111 | 1.45 | 927 |
| 1339 | | 26.51 | 886 | 0.29 | 7.60 | 45 | | |
| 1342 | | 26.43 | 867 | 0.23 | 7.51 | 48 | 14.6 | |
| 1345 | | 26.61 | 894 | 0.20 | 8.18 | -92 | 13.5 | |
| 1348 | | 26.47 | 924 | 0.17 | 8.91 | -158 | 13.8 | 925 |
| 1351 | | 26.52 | 926 | 0.16 | 9.96 | -133 | 14.0 | |
| 1354 | | 26.60 | 926 | 0.15 | 9.01 * | -110 | 14.1 | 926 |

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

* pH recal.

| Pre | post. | sample |
|---|---|---|
| 6.72 | 7.0 | 9.11 |

* YSI = 6.65 @ 1354

↑ use this for pH value

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

SAMPLER: Sam Gruber
Printed Name

Signature

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

# Groundwater Sampling Data Sheet

Project #: 04218001.02 | Site: LRI 304th | Well ID: MW-3 | Sample ID: 304-061918-16 | Date: 6/19/2018 | Weather: Sunny

22.22 DTW | TOS | Intake | BOS | Total Depth

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

Meter: MP-20 YSI

CONTROL SETTINGS: (1 ft water = 0.62L; 1L = 0.24 gallons)

Refill: 9 | Discharge: 6 | Pressure: 30 | Flow: 330 ml/min

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

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

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

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

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1200 | | 10.72 | 404 | 6.37 | 6.68 | 140.2 | | |
| 1205 | | 10.51 | 402 | 0.75 | 7.18 | 16.7 | | |
| 1208 | | 10.49 | 400 | 1.32 | 7.23 | -14.7 | | |
| 1211 | | 10.51 | 400 | 1.30 | 7.23 | -23.3 | | |
| 1214 | | 10.52 | 401 | 1.15 | 7.23 | -29.9 | | |
| 1217 | | 10.51 | 402 | 1.00 | 7.24 | -38.0 | | |
| 1220 | 26.99 | 10.51 | 402 | 0.86 | 7.26 | -46.3 | 0.34 | |

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

SAMPLER: Travis Berndahl
Printed Name

Signature

**SCS ENGINEERS**
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**Bellevue, WA 98005** (425) 746-4600

# Groundwater Sampling Data Sheet

Project #: 04218001.02 | Sampling Method: Dedicated | 1.75" QED SamplePro | Bail | Peristaltic | Grab | Other

Site: LRI 304th | DTW: 22.16 | Meter: | CONTROL SETTINGS: | 1 ft water = 0.62L | 1L = 0.24 gallons

Well ID: MW-4 | TOS: | MP-20 | Refill: 8 | One Well Volume (liters): | Other:

Sample ID: 304-062018-17 | Intake: | YSI | Discharge: 7 | Flow Setting:

Date: 6/20/2018 | BOS: | Pressure: 40 | Total Volume Bailed (liters):

Weather: Sunny | Total Depth: 27.73 | Flow: 300 mL/min.

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

Sample Containers:

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

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

set pump ~ 7' above bottom of well.

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 945 | Turned pump on | | | | | | 158.2 | |
| 1000 | | 14.21 | 316 | 0.65 | 7.01 | 180.1 | 25.07 | |
| 1005 | | 14.13 | 316 | 0.53 | 7.23 | 117.2 | 16.26 | |
| 1013 | | 14.10 | 315 | 0.40 | 7.36 | 35.0 | 13.37 | |
| 1020 | | 14.31 | 315 | 0.31 | 7.44 | -1.7 | 8.98 | |
| 1028 | | 14.40 | 315 | 0.26 | 7.47 | -25.1 | 8.91 | |
| 1035 | | 14.32 | 315 | 0.24 | 7.46 | -38.7 | 7.98 | |
| 1040 | | 14.25 | 315 | 0.23 | 7.50 | -47.9 | 7.34 | |
| 1050 | | 14.22 | 315 | 0.22 | 7.50 | -54.2 | 10.69 | |
| ~~1055~~ | | | | | | | | |
| 1101 | | 14.27 | 315 | 0.38 | 7.50 | -56.9 | 7.68 | |
| 1104 | | 14.32 | 314 | 0.36 | 7.51 | -59.1 | 8.85 | |
| 1107 | | 14.11 | 314 | 0.29 | 7.48 | -56.3 | 8.44 | |

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

SAMPLER: Sam Graber
Printed Name

Signature

# SCS ENGINEERS

2405 140th ave NE #107
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## Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: MW-9
Sample ID: 304-061918-18
Date: 6/19/2018
Weather: Sunny

8.70 DTW
TOS
Intake
BOS
Total Depth

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

Meter: MP-20 (YSI)

CONTROL SETTINGS:

Refill: 8
Discharge: 7
Pressure: 40
Flow: 300 mL/min

1 ft water = 0.62L
1L = 0.24 gallons

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

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

Sample Containers:

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

| TIME | DTW | Temp. | Sp.Cond. | DO | pH | Eh | Turbidity | Q / Vol. |
|---|---|---|---|---|---|---|---|---|
| 1305 | | 11.35 | 145 | 10.03 | 7.34 | 134.0 | | |
| 1310 | | 10.73 | 139 | 4.90 | 6.73 | 153.3 | | |
| 1313 | | 10.90 | 138 | 4.68 | 6.70 | 141.2 | | |
| 1316 | | 10.84 | 138 | 4.59 | 6.73 | 120.0 | | |
| 1319 | | 10.83 | 140 | 4.58 | 6.69 | 124.0 | | |
| 1322 | | 10.86 | 140 | 4.53 | 6.75 | 123.4 | | |
| 1325 | 9.31 | 10.68 | 140 | 4.51 | 6.72 | 131.8 | 0.29 | |

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

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

SAMPLER: Travis Berndahl
Printed Name

Signature

**SCS ENGINEERS**
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**Bellevue, WA 98005** (425) 746-4600

# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: Field Blank
Sample ID: 304-062018-19
Date: 6/20/2018
Weather: Sunny

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

DTW
TOS
Intake
BOS
Total Depth

Meter: MP-20 (YSI)

CONTROL SETTINGS:
Refill
Discharge
Pressure
Flow

1 ft water = 0.62L
1L = 0.24 gallons

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

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

Sample Containers:
1000 ml Poly
500 ml Poly
250 ml Poly
125 ml Poly
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. |
|---|---|---|---|---|---|---|---|---|
| 1100 | | 31.04 | 10 | 5.50 | 8.23 | 4.4 | 1.20 | |

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

SAMPLER: Sam Gabe
Printed Name

Signature

**SCS ENGINEERS**
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# Groundwater Sampling Data Sheet

Project #: 04218001.02
Site: LRI 304th
Well ID: Leachate Cell 6
Sample ID: 304-062018-20
Date: 6/20/2018
Weather: sunny

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

DTW
TOS
Intake
BOS
Total Depth

Meter: MP-20 (YSI)

CONTROL SETTINGS:
Refill
Discharge
Pressure
Flow

1 ft water = 0.62L
1L = 0.24 gallons

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

Filtered? Y (N)
Locked? Y (N)
Water in Protector? Y N (NA)
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. |
|---|---|---|---|---|---|---|---|---|
| 1230 | | 29.08 | 23148 | 0.16 | 7.67 | -147.8 | 175.3 | |

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

SAMPLER: Sam Graber
Printed Name

Signature

# Appendix D
# **Statistical Calculations**

## Groundwater Prediction Limits (mg/L)
## Appendix I Parameters, Second Quarter 2018
## 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 | 0.015 |
| 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 | 0.011 |
| 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 Groundwater Data
## Appendix I Parameters, Second Quarter 2018
## LRI Landfill, Pierce County, Washington

| Location ID | Antimony (Sb) | | Arsenic (As) | | Barium (Ba) | | Beryllium (Be) | | Cadmium (Cd) | | Chromium (Cr) | | Cobalt (Co) | | Copper (Cu) | | Lead (Pb) | | Nickel (Ni) | | Selenium (Se) | | Silver (Ag) | | Thallium (Tl) | | Vanadium (V) | | Zinc (Zn) | | Nitrate ($NO_3$) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monitoring Date | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. |
| MW-1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/24/2014 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.022 | 0.022 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/24/2014 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.02 | 0.02 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/17/2014 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.024 | 0.024 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.02 | 0.02 | 0.5 | L 0.25 |
| 12/16/2014 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.03 | 0.03 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.032 | 0.032 | 0.5 | L 0.25 |
| 3/23/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.02 | 0.02 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/8/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.022 | 0.022 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/16/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.021 | 0.021 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 12/14/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.024 | 0.024 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| Number Analyzed | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | |
| Number Detected | 0 | | 0 | | 8 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 2 | | 0 | | | |
| Minimum Concentration | | 0.001 | | 0.0025 | | 0.02 | | 0.0005 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0025 | | 0.0025 | | 0.0005 | | 0.0025 | | 0.005 | | 0.25 |
| Maximum Concentration | | 0.025 | | 0.0025 | | 0.03 | | 0.0025 | | 0.0025 | | 0.0025 | | 0.005 | | 0.005 | | 0.001 | | 0.01 | | 0.0025 | | 0.005 | | 0.0025 | | 0.005 | | 0.032 | | 0.25 |
| Average Concentration | | NC | | NC | | 0.022875 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Variance | | NC | | NC | | 1.07E-05 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Deviation | | NC | | NC | | 0.003271 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Coefficient of Variation (%) | | NC | | NC | | 14.29744 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Error | | NC | | NC | | 0.001156 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| MW-2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/24/2014 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.014 | 0.014 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/26/2014 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.015 | 0.015 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/16/2014 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.018 | 0.018 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 12/16/2014 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.014 | 0.014 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 3/23/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.012 | 0.012 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/8/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.013 | 0.013 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/16/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.013 | 0.013 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 12/14/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.014 | 0.014 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| Number Analyzed | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | |
| Number Detected | 0 | | 0 | | 8 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | | |
| Minimum Concentration | | 0.001 | | 0.0025 | | 0.012 | | 0.0005 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0025 | | 0.0025 | | 0.0005 | | 0.0025 | | 0.005 | | 0.25 |
| Maximum Concentration | | 0.025 | | 0.0025 | | 0.018 | | 0.0025 | | 0.0025 | | 0.0025 | | 0.005 | | 0.005 | | 0.001 | | 0.01 | | 0.0025 | | 0.005 | | 0.0025 | | 0.005 | | 0.005 | | 0.25 |
| Average Concentration | | NC | | NC | | 0.014125 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Variance | | NC | | NC | | 3.27E-06 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Deviation | | NC | | NC | | 0.001808 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Coefficient of Variation (%) | | NC | | NC | | 12.79803 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Error | | NC | | NC | | 0.000639 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| MW-3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/26/2014 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.014 | 0.014 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/25/2014 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.011 | 0.011 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/17/2014 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.01 | 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 12/16/2014 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.012 | 0.012 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 3/26/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.013 | 0.013 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/9/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.011 | 0.011 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/16/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.01 | 0.01 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 12/14/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.015 | 0.015 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| Number Analyzed | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | |
| Number Detected | 0 | | 0 | | 8 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | | |
| Minimum Concentration | | 0.001 | | 0.0025 | | 0.01 | | 0.0005 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0025 | | 0.0025 | | 0.0005 | | 0.0025 | | 0.005 | | 0.25 |
| Maximum Concentration | | 0.025 | | 0.0025 | | 0.015 | | 0.0025 | | 0.0025 | | 0.0025 | | 0.005 | | 0.005 | | 0.001 | | 0.01 | | 0.0025 | | 0.005 | | 0.0025 | | 0.005 | | 0.005 | | 0.25 |
| Average Concentration | | NC | | NC | | 0.012 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Variance | | NC | | NC | | 3.43E-06 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Deviation | | NC | | NC | | 0.001852 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Coefficient of Variation (%) | | NC | | NC | | 15.43033 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Error | | NC | | NC | | 0.000655 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |

# Statistical Summary of Total Metals Groundwater Data
## Appendix I Parameters, Second Quarter 2018
## LRI Landfill, Pierce County, Washington

| Location ID | Antimony (Sb) | | Arsenic (As) | | Barium (Ba) | | Beryllium (Be) | | Cadmium (Cd) | | Chromium (Cr) | | Cobalt (Co) | | Copper (Cu) | | Lead (Pb) | | Nickel (Ni) | | Selenium (Se) | | Silver (Ag) | | Thallium (Tl) | | Vanadium (V) | | Zinc (Zn) | | Nitrate ($NO_3$) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monitoring Date | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. | Result | Conc. |
| MW-4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/24/2014 | 0.002 | L 0.001 | 0.0074 | 0.0074 | 0.012 | 0.012 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/25/2014 | 0.002 | L 0.001 | 0.0086 | 0.0086 | 0.012 | 0.012 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/17/2014 | 0.05 | L 0.025 | 0.0099 | 0.0099 | 0.013 | 0.013 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 12/16/2014 | 0.05 | L 0.025 | 0.0076 | 0.0076 | 0.011 | 0.011 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 3/24/2015 | 0.05 | L 0.025 | 0.0079 | 0.0079 | 0.013 | 0.013 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/9/2015 | 0.05 | L 0.025 | 0.0094 | 0.0094 | 0.013 | 0.013 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/18/2015 | 0.05 | L 0.025 | 0.0094 | 0.0094 | 0.017 | 0.017 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.014 | 0.014 | 0.5 | L 0.25 |
| 12/15/2015 | 0.05 | L 0.025 | 0.011 | 0.011 | 0.091 | 0.091 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.011 | 0.011 | 0.0039 | 0.0039 | 0.063 | 0.063 | 0.042 | 0.042 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.014 | 0.014 | 0.29 | 0.29 | 0.5 | L 0.25 |
| Number Analyzed | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | |
| Number Detected | 0 | | 8 | | 8 | | 0 | | 0 | | 1 | | 1 | | 1 | | 1 | | 0 | | 0 | | 0 | | 0 | | 1 | | 2 | | 0 | |
| Minimum Concentration | | 0.001 | | 0.0074 | | 0.011 | | 0.0005 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0025 | | 0.0025 | | 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 | | 1.56E-06 | | 0.000764 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Deviation | | NC | | 0.00125 | | 0.027634 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Coefficient of Variation (%) | | NC | | 14.04655 | | 121.4685 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Error | | NC | | 0.000442 | | 0.00977 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| MW-5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/24/2014 | 0.002 | L 0.001 | 0.0072 | 0.0072 | 0.032 | 0.032 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/25/2014 | 0.002 | L 0.001 | 0.0067 | 0.0067 | 0.033 | 0.033 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.0036 | 0.0036 | 0.01 | L 0.005 | 0.0061 | 0.0061 | 0.001 | L 0.0005 | 0.0043 | 0.0043 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/16/2014 | 0.05 | L 0.025 | 0.0059 | 0.0059 | 0.036 | 0.036 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.0051 | 0.0051 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.01 | 0.01 | 0.5 | L 0.25 |
| 12/16/2014 | 0.05 | L 0.025 | 0.0055 | 0.0055 | 0.022 | 0.022 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 3/23/2015 | 0.05 | L 0.025 | 0.008 | 0.008 | 0.03 | 0.03 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/8/2015 | 0.05 | L 0.025 | 0.0075 | 0.0075 | 0.02 | 0.02 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/18/2015 | 0.05 | L 0.025 | 0.005 | L 0.0025 | 0.014 | 0.014 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 12/14/2015 | 0.05 | L 0.025 | 0.0072 | 0.0072 | 0.021 | 0.021 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| Number Analyzed | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | |
| Number Detected | 0 | | 7 | | 8 | | 0 | | 0 | | 2 | | 0 | | 1 | | 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | 1 | | 0 | |
| Minimum Concentration | | 0.001 | | 0.0025 | | 0.014 | | 0.0005 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0025 | | 0.0025 | | 0.0005 | | 0.0025 | | 0.005 | | 0.25 |
| Maximum Concentration | | 0.025 | | 0.008 | | 0.036 | | 0.0025 | | 0.0025 | | 0.0051 | | 0.005 | | 0.0061 | | 0.001 | | 0.01 | | 0.0025 | | 0.005 | | 0.0025 | | 0.005 | | 0.01 | | 0.25 |
| Average Concentration | | NC | | 0.006313 | | 0.026 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Variance | | NC | | 3.05E-06 | | 6.03E-05 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Deviation | | NC | | 0.001746 | | 0.007764 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Coefficient of Variation (%) | | NC | | 27.66533 | | 29.86303 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Error | | NC | | 0.000617 | | 0.002745 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| MW-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/26/2014 | 0.002 | L 0.001 | 0.0075 | 0.0075 | 0.014 | 0.014 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/25/2014 | 0.002 | L 0.001 | 0.0065 | 0.0065 | 0.011 | 0.011 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/18/2014 | 0.002 | L 0.001 | 0.0078 | 0.0078 | 0.01 | 0.01 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.002 | L 0.001 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.001 | L 0.0005 | 0.002 | L 0.001 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 12/17/2014 | 0.05 | L 0.025 | 0.0068 | 0.0068 | 0.012 | 0.012 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 3/26/2015 | 0.05 | L 0.025 | 0.0068 | 0.0068 | 0.01 | 0.01 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 6/8/2015 | 0.05 | L 0.025 | 0.0075 | 0.0075 | 0.01 | 0.01 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 9/17/2015 | 0.05 | L 0.025 | 0.0069 | 0.0069 | 0.011 | 0.011 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| 12/14/2015 | 0.05 | L 0.025 | 0.0074 | 0.0074 | 0.011 | 0.011 | 0.001 | L 0.0005 | 0.001 | L 0.0005 | 0.005 | L 0.0025 | 0.001 | L 0.0005 | 0.01 | L 0.005 | 0.002 | L 0.001 | 0.02 | L 0.01 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.005 | L 0.0025 | 0.01 | L 0.005 | 0.5 | L 0.25 |
| Number Analyzed | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | |
| Number Detected | 0 | | 8 | | 8 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | |
| Minimum Concentration | | 0.001 | | 0.0065 | | 0.01 | | 0.0005 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0025 | | 0.0025 | | 0.0005 | | 0.0025 | | 0.005 | | 0.25 |
| Maximum Concentration | | 0.025 | | 0.0078 | | 0.014 | | 0.0005 | | 0.0025 | | 0.0025 | | 0.005 | | 0.005 | | 0.001 | | 0.01 | | 0.0025 | | 0.005 | | 0.0025 | | 0.005 | | 0.005 | | 0.25 |
| Average Concentration | | NC | | 0.00715 | | 0.011125 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Variance | | NC | | 2.09E-07 | | 1.84E-06 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Deviation | | NC | | 0.000457 | | 0.001356 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Coefficient of Variation (%) | | NC | | 6.38736 | | 12.19059 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Error | | NC | | 0.000161 | | 0.000479 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |

# Statistical Summary of Total Metals Groundwater Data
## Appendix I Parameters, Second Quarter 2018
## LRI Landfill, Pierce County, Washington

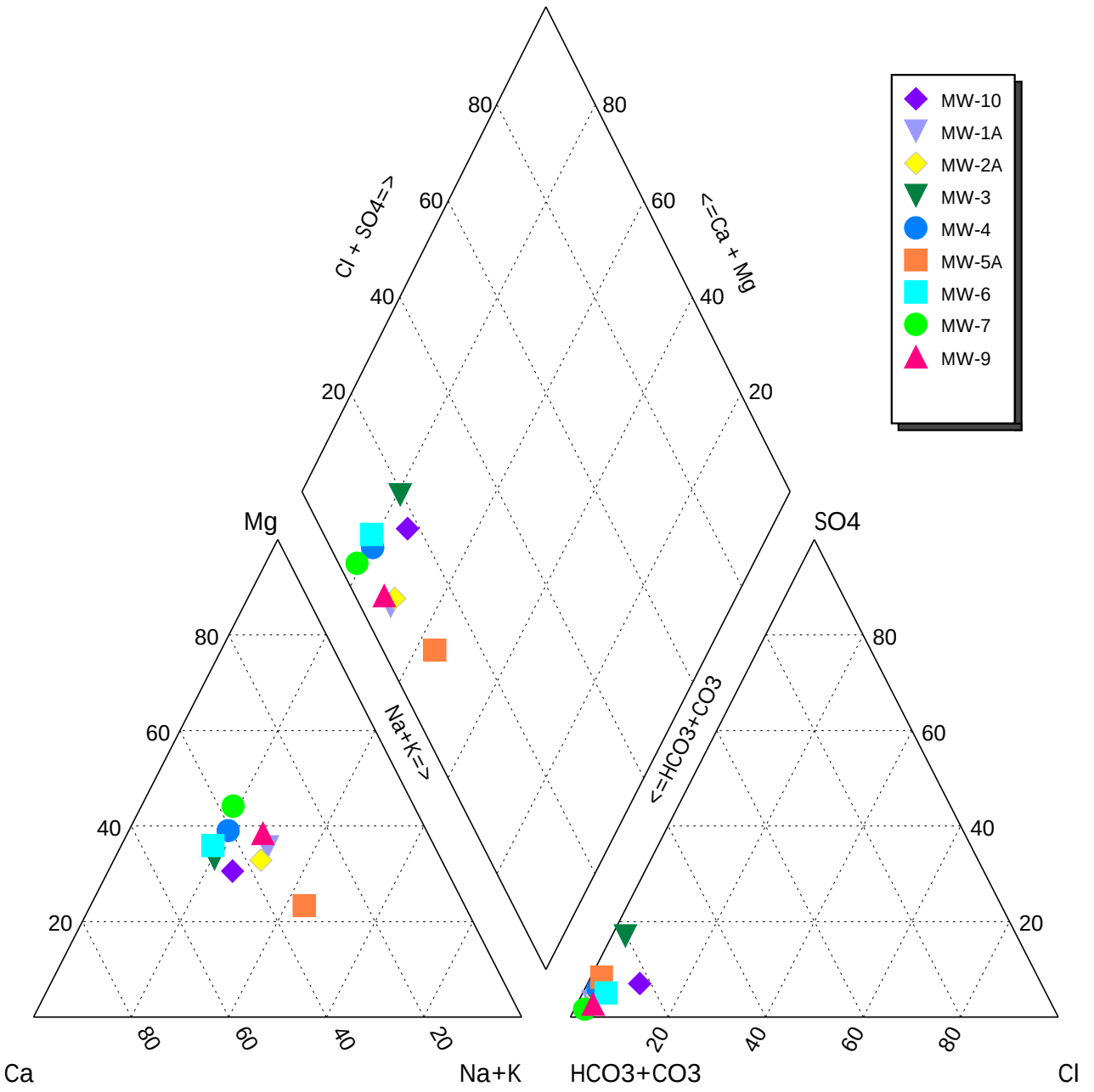
| Location ID | Antimony (Sb) | | Arsenic (As) | | Barium (Ba) | | Beryllium (Be) | | Cadmium (Cd) | | Chromium (Cr) | | Cobalt (Co) | | Copper (Cu) | | Lead (Pb) | | Nickel (Ni) | | Selenium (Se) | | Silver (Ag) | | Thallium (Tl) | | Vanadium (V) | | Zinc (Zn) | | Nitrate ($NO_3$) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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-7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/26/2014 | 0.002 L | 0.001 | 0.0054 | 0.0054 | 0.016 | 0.016 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.002 L | 0.001 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.001 L | 0.0005 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 6/26/2014 | 0.002 L | 0.001 | 0.0053 | 0.0053 | 0.016 | 0.016 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.002 L | 0.001 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.001 L | 0.0005 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 9/17/2014 | 0.05 L | 0.025 | 0.0052 | 0.0052 | 0.015 | 0.015 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 12/16/2014 | 0.05 L | 0.025 | 0.005 | 0.005 | 0.014 | 0.014 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 3/24/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.015 | 0.015 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 6/9/2015 | 0.05 L | 0.025 | 0.0054 | 0.0054 | 0.015 | 0.015 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 9/17/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.012 | 0.012 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 12/15/2015 | 0.05 L | 0.025 | 0.0055 | 0.0055 | 0.016 | 0.016 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| Number Analyzed | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | |
| Number Detected | 0 | | 6 | | 8 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | |
| Minimum Concentration | | 0.001 | | 0.0025 | | 0.012 | | 0.0005 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0025 | | 0.0025 | | 0.0005 | | 0.0025 | | 0.005 | | 0.25 |
| Maximum Concentration | | 0.025 | | 0.0055 | | 0.016 | | 0.0025 | | 0.0025 | | 0.0025 | | 0.005 | | 0.005 | | 0.001 | | 0.01 | | 0.0025 | | 0.005 | | 0.0025 | | 0.005 | | 0.005 | | 0.25 |
| Average Concentration | | NC | | 0.0046 | | 0.014875 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Variance | | NC | | 1.7E-06 | | 1.84E-06 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Deviation | | NC | | 0.001305 | | 0.001356 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Coefficient of Variation (%) | | NC | | 28.36817 | | 9.117329 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| Standard Error | | NC | | 0.000461 | | 0.000479 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC |
| MW-9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/25/2014 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.0047 | 0.0047 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.002 L | 0.001 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.001 L | 0.0005 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.001 L | 0.0005 | 0.016 | 0.016 | 0.01 | 0.01 | 0.5 L | 0.25 |
| 6/24/2014 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.0045 | 0.0045 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.002 L | 0.001 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.001 L | 0.0005 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.001 L | 0.0005 | 0.016 | 0.016 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 9/18/2014 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.0057 | 0.0057 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.002 L | 0.001 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.001 L | 0.0005 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.001 L | 0.0005 | 0.014 | 0.014 | 0.014 | 0.014 | 0.5 L | 0.25 |
| 12/17/2014 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 3/24/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 6/9/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 9/18/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 | 0.005 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 12/16/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.042 | 0.042 | 0.5 L | 0.25 |
| 3/22/2016 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.028 | 0.028 | 0.5 L | 0.25 |
| 6/8/2016 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 | 0.005 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.023 | 0.023 | 0.5 L | 0.25 |
| 9/16/2016 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.015 | 0.015 | 0.043 | 0.043 | 0.5 L | 0.25 |
| 12/6/2016 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 3/29/2017 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.0056 | 0.0056 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 6/22/2017 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 9/26/2017 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.012 | 0.012 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 12/13/2017 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 3/21/2018 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.016 | 0.016 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| 6/19/2018 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.01 L | 0.005 | 0.5 L | 0.25 |
| Number Analyzed | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | |
| Number Detected | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 18 | | 6 | | 0 | |
| Minimum Concentration | | 0.001 | | 0.0025 | | 0.0025 | | 0.0005 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0025 | | 0.0025 | | 0.0005 | | 0.012 | | 0.005 | | 0.25 |
| Maximum Concentration | | 0.025 | | 0.0025 | | 0.0057 | | 0.0005 | | 0.0025 | | 0.0025 | | 0.005 | | 0.005 | | 0.001 | | 0.01 | | 0.0025 | | 0.005 | | 0.0025 | | 0.016 | | 0.043 | | 0.25 |
| Average Concentration | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 0.014111 | | NC | | NC |
| Variance | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 1.16E-06 | | NC | | NC |
| Standard Deviation | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 0.001079 | | NC | | NC |
| Coefficient of Variation (%) | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 7.64369 | | NC | | NC |
| Standard Error | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 0.000254 | | NC | | NC |
| MW-10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3/25/2014 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.002 L | 0.001 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.001 L | 0.0005 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.01 L | 0.005 | 6.4 | 6.4 |
| 6/25/2014 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.002 L | 0.001 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.001 L | 0.0005 | 0.002 L | 0.001 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.01 | 0.01 | 5.8 | 5.8 |
| 9/16/2014 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.015 | 0.015 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 0.011 | 0.011 | 5.4 | 5.4 |
| 12/17/2014 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.3 | 5.3 |
| 3/25/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.9 | 5.9 |
| 6/8/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.7 | 5.7 |
| 9/15/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.1 | 5.1 |
| 12/16/2015 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 4.9 | 4.9 |
| 3/21/2016 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.9 | 5.9 |
| 6/6/2016 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.012 | 0.012 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.9 | 5.9 |
| 9/15/2016 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.014 | 0.014 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.4 | 5.4 |
| 12/6/2016 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.2 | 5.2 |
| 3/29/2017 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.8 | 5.8 |
| 6/19/2017 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.5 | 5.5 |
| 9/26/2017 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.012 | 0.012 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.2 | 5.2 |
| 12/12/2017 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 4.9 | 4.9 |
| 3/20/2018 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.3 | 5.3 |
| 6/18/2018 | 0.05 L | 0.025 | 0.005 L | 0.0025 | 0.013 | 0.013 | 0.001 L | 0.0005 | 0.001 L | 0.0005 | 0.005 L | 0.0025 | 0.001 L | 0.0005 | 0.01 L | 0.005 | 0.002 L | 0.001 | 0.02 L | 0.01 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.005 L | 0.0025 | 0.01 L | 0.005 | 5.0 | 5.0 |
| Number Analyzed | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | | 18 | |
| Number Detected | 0 | | 0 | | 18 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 2 | | 18 | |
| Minimum Concentration | | 0.001 | | 0.0025 | | 0.012 | | 0.0005 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0005 | | 0.001 | | 0.0025 | | 0.0025 | | 0.0005 | | 0.0025 | | 0.005 | | 4.9 |
| Maximum Concentration | | 0.025 | | 0.0025 | | 0.015 | | 0.0025 | | 0.0025 | | 0.0025 | | 0.005 | | 0.005 | | 0.001 | | 0.01 | | 0.0025 | | 0.005 | | 0.0025 | | 0.005 | | 0.011 | | 6.4 |
| Average Concentration | | NC | | NC | | 0.013222 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 5.4777778 |
| Variance | | NC | | NC | | 5.36E-07 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 0.1712418 |
| Standard Deviation | | NC | | NC | | 0.000732 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 0.4138138 |
| Coefficient of Variation (%) | | NC | | NC | | 5.536774 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 7.5544095 |
| Standard Error | | NC | | NC | | 0.000173 | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | NC | | 0.0975368 |

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

Appendix E

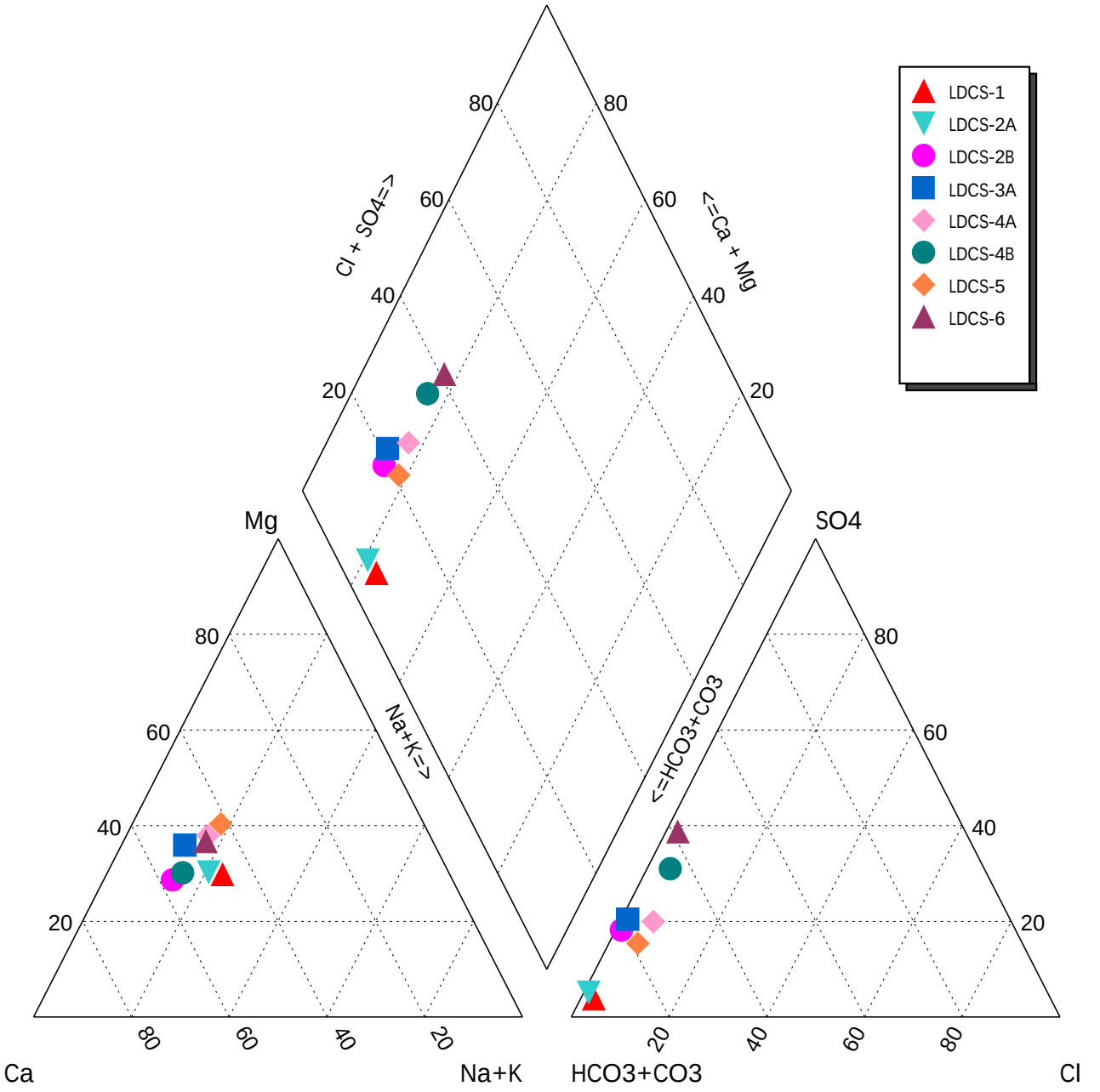
# **Trilinear Diagrams**

LRI Landfill Second Quarter 2018 Monitoring Wells



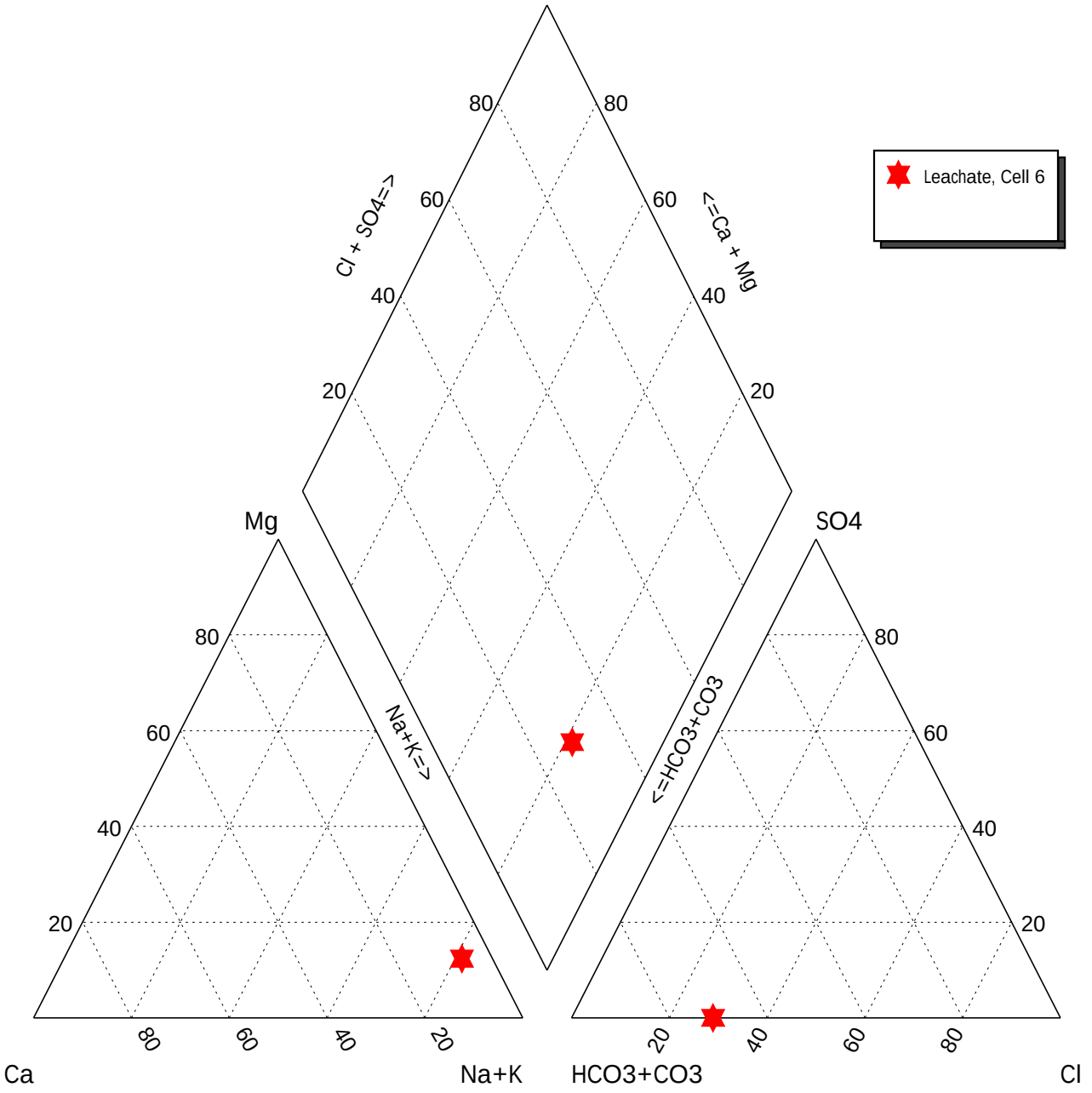

| | | |
|---|---|---|
| DESCRIPTION: LRILF Groundwater 2Q18 Trilinear Diagram | | |
| | PROJECT: LRI Landfill | PROJECT NO: 04218001.02 |
| | CLIENT: LRI, Inc. | DATE: August 2018 |

LRI Landfill Second Quarter 2018 Leak Detection Collection Recovery System



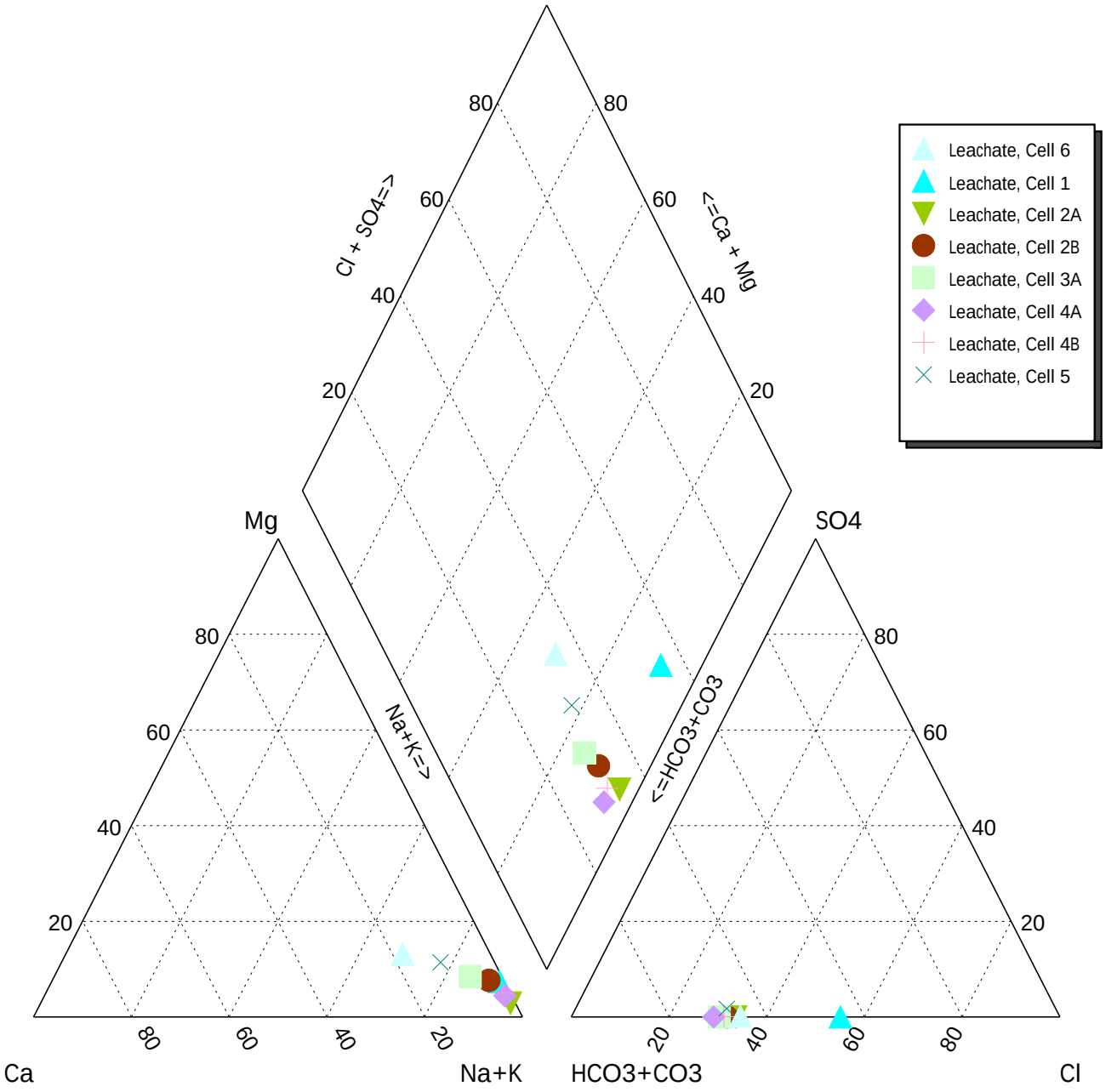

| | | |
|---|---|---|
| DESCRIPTION: LRILF LDCRS 2Q18 Trilinear Diagram | | |
| | PROJECT: LRI Landfill | PROJECT NO: 04218001.02 |
| | CLIENT: LRI, Inc. | DATE: August 2018 |

LRI Landfill Second Quarter 2018 Leachate




| | | |
|---|---|---|
| DESCRIPTION: LRILF Leachate 2Q18 Trilinear Diagram | | |
| | PROJECT: LRI Landfill | PROJECT NO: 04218001.02 |
| | CLIENT: LRI, Inc. | DATE: August 2018 |

LRI Landfill Fourth Quarter 2017 Leachate




| | | |
|---|---|---|
| DESCRIPTION: LRILF Leachate Fourth Quarter 2017 Trilinear Diagram | | |
| | PROJECT: LRI Landfill | PROJECT NO: 04218001.02 |
| | CLIENT: LRI, Inc. | DATE: March 2018 |

Appendix F

# Analytical Data Validation Report

# SECOND QTR. 2018 DATA VALIDATION REPORT – LRI LANDFILL

## Project Details

| | | | |
|---|---|---|---|
| **Project No.** | 04218001.02 | **Site Name** | LRI 304th Street LF |
| **Data Validator** | Sam Graber | **Data Level** | Level 2 |
| **Date** | 7/18/2018 | **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) |
|---|---|---|
| 280-111125-1 | No Comments. | TestAmerica, Denver, CO |
| 280-111142-1 | Both vials received for the sample Trip Blank contained headspace greater than 6 mm. Due to lab oversight, the trip blank was analyzed 1 day past holding time. | TestAmerica, Denver, CO |
| 280-111187-1 | Samples "-12" and "-16" arrived 1 day late due to a Fedex delay. The hold times for Nitrate expired on these samples. Three of three VOA vials for samples "-14" contained bubbles greater than 6 mm. The lab proceeded with analysis. | TestAmerica, Denver, CO |
| 280-111188-1 | One of three VOA vials for samples "-09" and "-13" contained bubbles greater than 6 mm. Lab used vials without headspace for analysis. Sample collection time on COC for sample "-15" did not match container labels. Client contacted- issue resolved 6/20/18. | TestAmerica, Denver, CO |
| 280-111229-1 | Three of three VOA vials for sample "-20" and two of three VOA vials contained bubbles larger than 6 mm. The lab proceeded with analysis. | TestAmerica, Denver, CO |
| 280-111235-1 | No Comments. | TestAmerica, Denver, CO |

## Analytical Summary

| Sample Group | Analyses | | | | | |
|---|---|---|---|---|---|---|
| | TDS/Alk/NO3 | Metals | NH4/TOC | VOCs | Anions | TSS |
| 280-111125-1 | X | X[1] | X | X | X | -- |
| 280-111142-1 | X | X[2] | X | X | X | X |
| 280-111187-1 | X | X[2] | X | X | X | X |
| 280-111188-1 | X | X[1] | X | X | X | -- |
| 280-111229-1 | X | X[3] | X | X | X | -- |
| 280-111235-1 | X | X[2] | X | X | X | X |

Notes:

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

## Laboratory Quality Assurance Samples

| Lab QA Samples | Results | Comments |
|---|---|---|
| Method Blank | Acceptable. | See case narrative (280-111229-1) |
| LCS/LCSD | Acceptable. | See case narrative (280-111187-1, 280-111188-1, 280-111229-1, 280-111235-1) |
| MS/MSD | Possible matrix interferences. Data acceptable. | See case narrative (280-111125-1, 280-111142-1, 280-111187-1, 280-111188-1, 280-111229-1, 280-111235-1) |
| Duplicates | Acceptable. | See case narrative (280-111142-1) |
| Organics | Acceptable. | See case narrative (280-111229-1) |
| General Chemistry | Acceptable. | See case narrative (280-111235-1) |
| General Comments | Acceptable. | See case narrative (280-111125-1, 280-111142-1, 280-111187-1, 280-111188-1, 280-111229-1, 280-111235-1) |
| Metals | Acceptable. | See case narrative (280-111229-1) |

## Field Quality Assurance Samples

| Field QA Samples | Sample Group | Analytes | Notes |
|---|---|---|---|
| QC-FB | 280-111235-1 | Dissolved Calcium (0.41 mg/L)<br>Dissolved Sodium (1.1 mg/L) | |
| QC-TB | 280-111125-1 | None. | |
| QC-TB | 280-111142-1 | None. | |
| QC-TB | 280-111229-1 | None. | |

## Lab Quality Flags

| Flag | Sample Groups | Comments |
|---|---|---|
| J | 280-111125-1, 280-111142-1, 280-111187-1, 280-111188-1, 280-111229-1, 280-111235-1 | Result is <RL, >MDL and concentration is approximate value. |
| B | 280-111229-1 | Compound was found in the blank and sample. |
| F1 | 280-111125-1, 280-111187-1, 280-111188-1, 280-111229-1, 280-111235-1 | MS and/or MSD recovery exceeds the control limits. |
| F3 | 280-111142-1 | Duplicate RPD exceeds the control limit. |
| E | 280-111125-1, 280-111142-1, 280-111187-1, 280-111188-1 | Result exceeds calibration range. |
| 4 | 280-111125-1, 280-111142-1, 280-111187-1, 280-111188-1, 280-111229-1, 280-111235-1 | MD, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration. Therefore the control limits are not applicable. |
| * | 280-111187-1, 280-111188-1, 280-111229-1, 280-111235-1 | LCS or LCSD is outside acceptance limits. Or RPD of the LCS and LCSD exceeds the control limits. |
| H | 280-111142-1, 280-111187-1 | Sample was prepped or analyzed beyond the specified holding time. |
| X | 280-111229-1, 280-111235-1 | Surrogate is outside control limits. |
| ^ | 280-111229-1 | ICV, CCV, ICB, CCB, ISA, ISB, CRI, CRA, DLCK, or MRL standard: instrument related QC is outside acceptance limits. |

**Duplicate Evaluation**

| Analyte | Units | MW-2A (304-061818-04) | MW-2A-DUP (304-061818-06) | RPD (%) |
|---|---|---|---|---|
| Alkalinity, Total | mg/L | 120 | 120 | 0.0 |
| Ammonia | mg/L | 0.19 | 0.14 | 19.2 |
| Barium, Total | mg/L | 0.013 | 0.013 | 0.0 |
| Calcium, Dissolved | mg/L | 18 | 19 | 3.6 |
| Chloride | mg/L | 2.9 | 2.9 | 0.0 |
| Iron, Dissolved | mg/L | 0.62 | 0.65 | 3.2 |
| Magnesium, Dissolved | mg/L | 9.7 | 10 | 2.0 |
| Manganese, Dissolved | mg/L | 0.31 | 0.29 | 4.4 |
| Potassium, Dissolved | mg/L | 3.1 | 3.3 | 4.2 |
| Sodium, Dissolved | mg/L | 15 | 16 | 4.3 |
| Sulfate | mg/L | 5.7 | 5.7 | 0.0 |
| Total Dissolved Solids | mg/L | 160 | 170 | 4.1 |

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

**Additional Data Flags**

| Flag | Description |
|---|---|
| U | Not detected above the method reporting limit. |
| B | Compound was found in a laboratory or field blank and the sample. |
| H | Sample was prepped or analyzed beyond the specified holding time. |

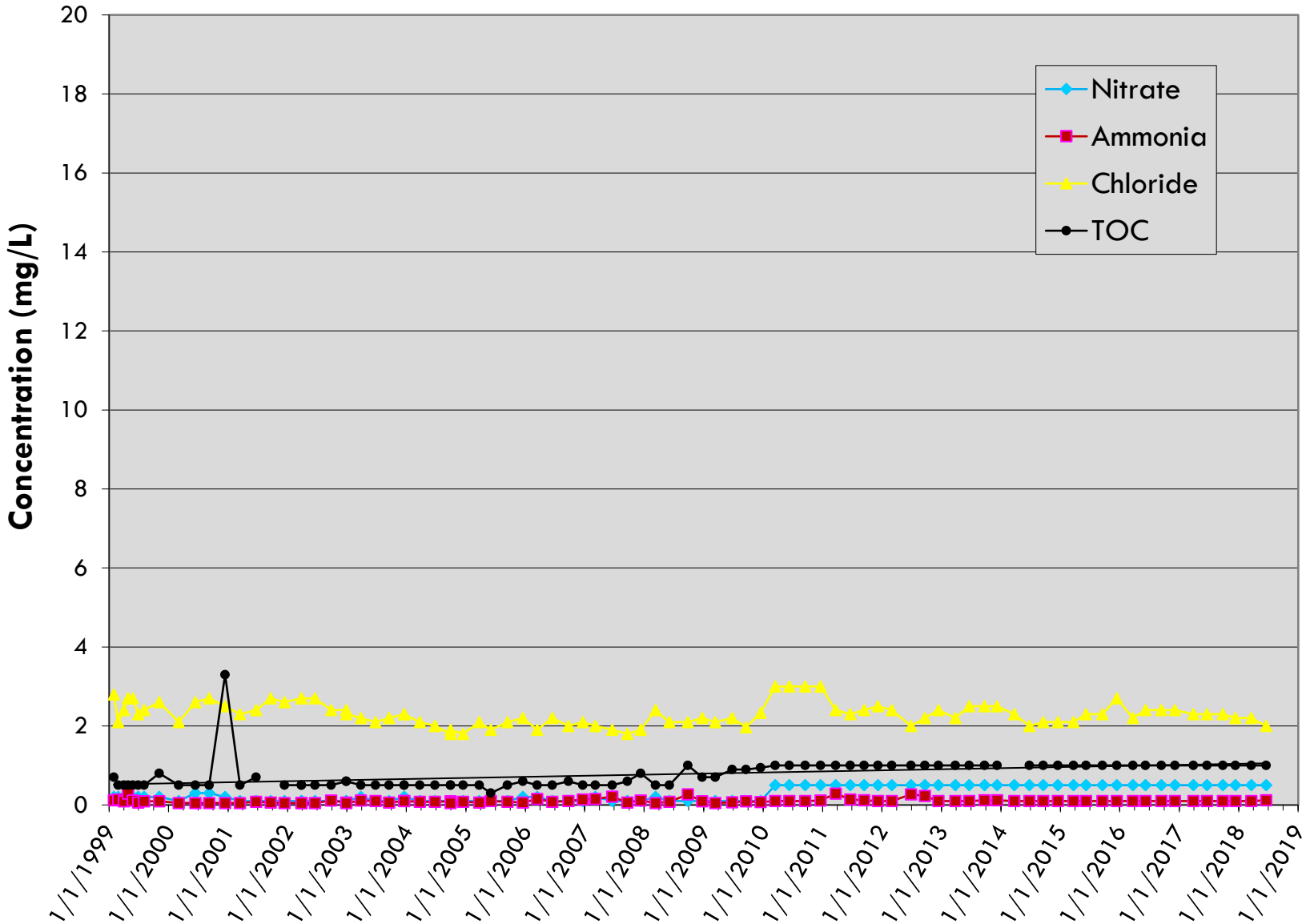
## Qualified Data and Usability

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

# Appendix G
# **Groundwater and LDCS Time Trend Plots**

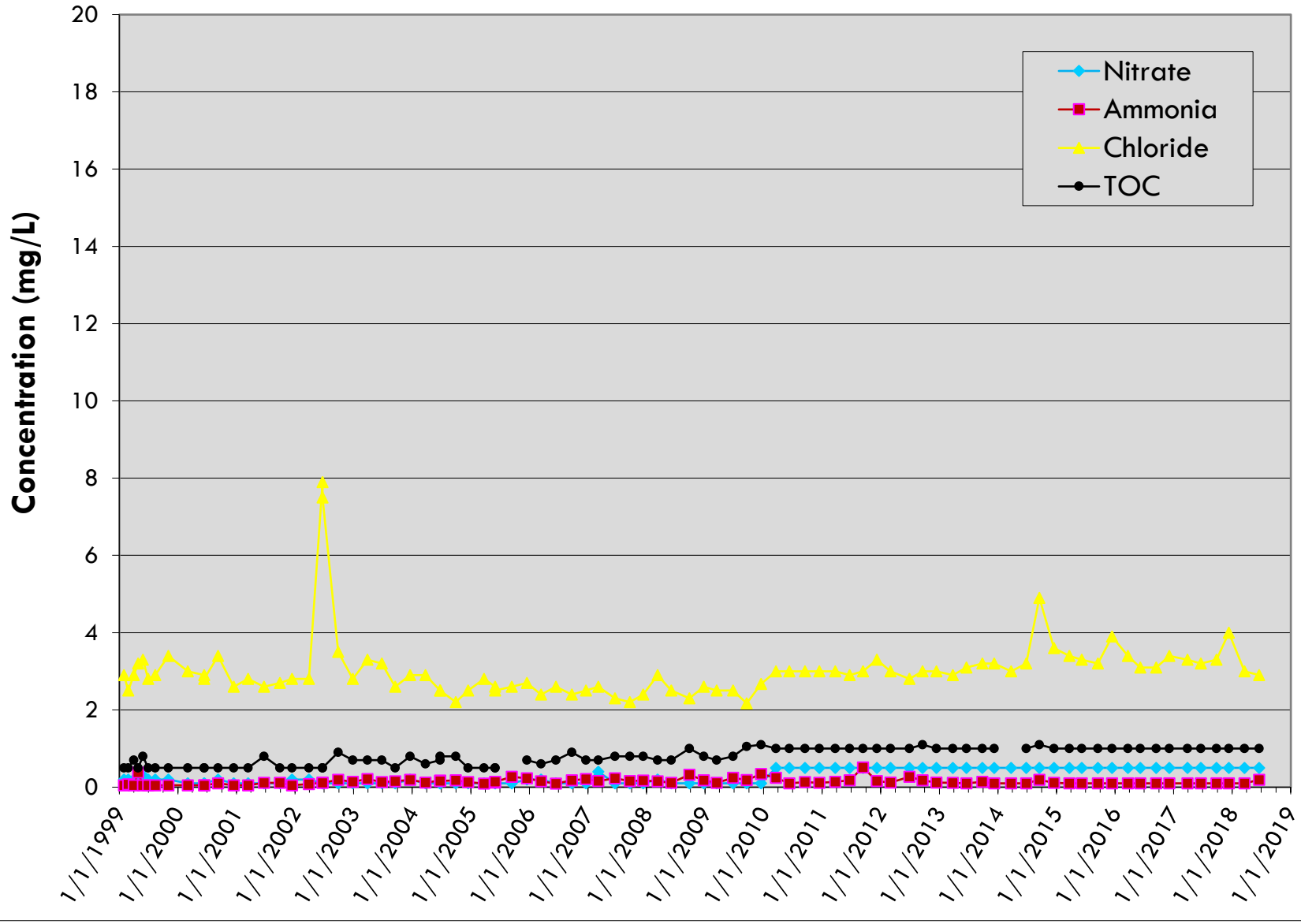
# MW-1A

**LRI Landfill, Pierce County, Washington**



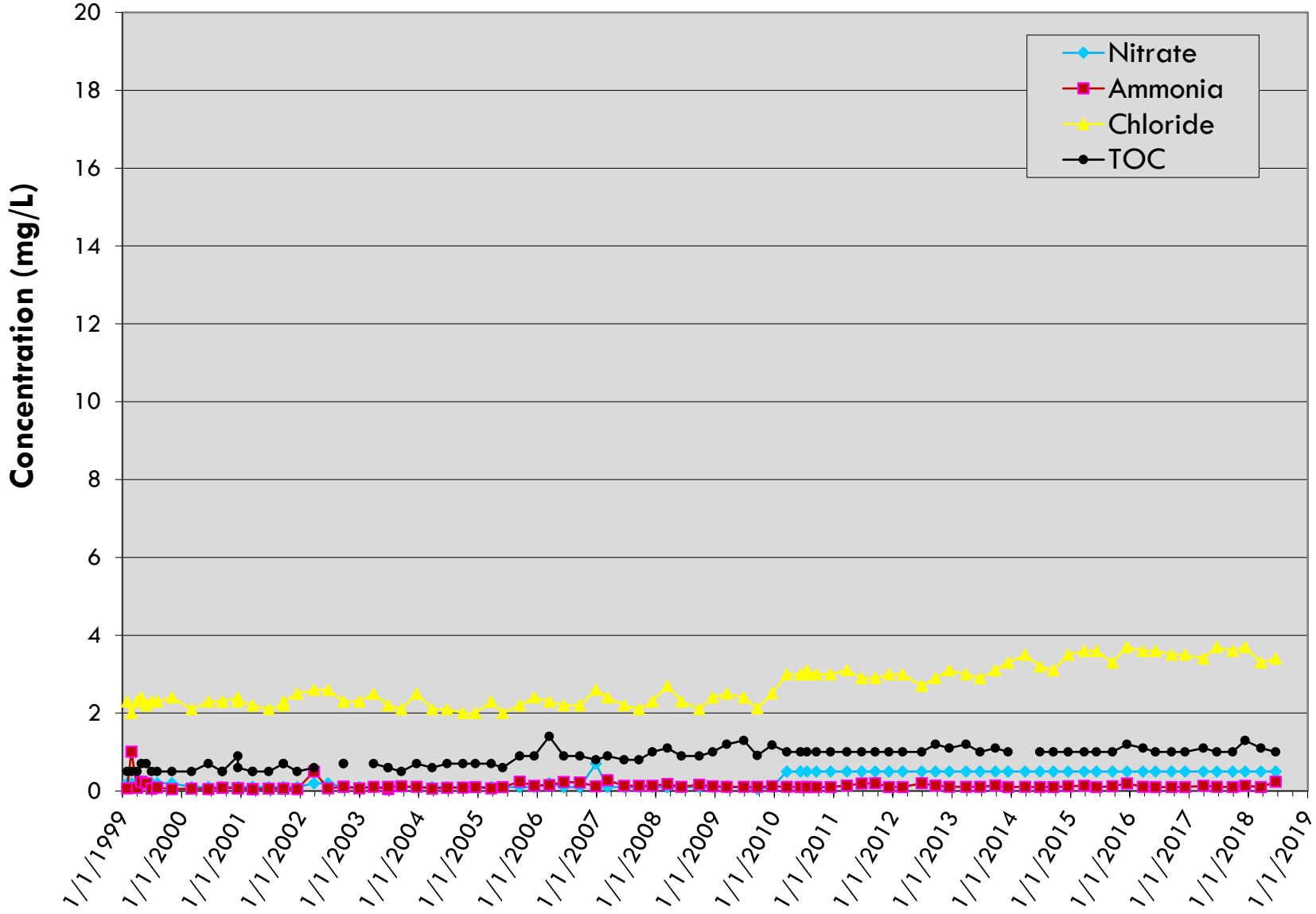
# MW-2A

**LRI Landfill, Pierce County, Washington**



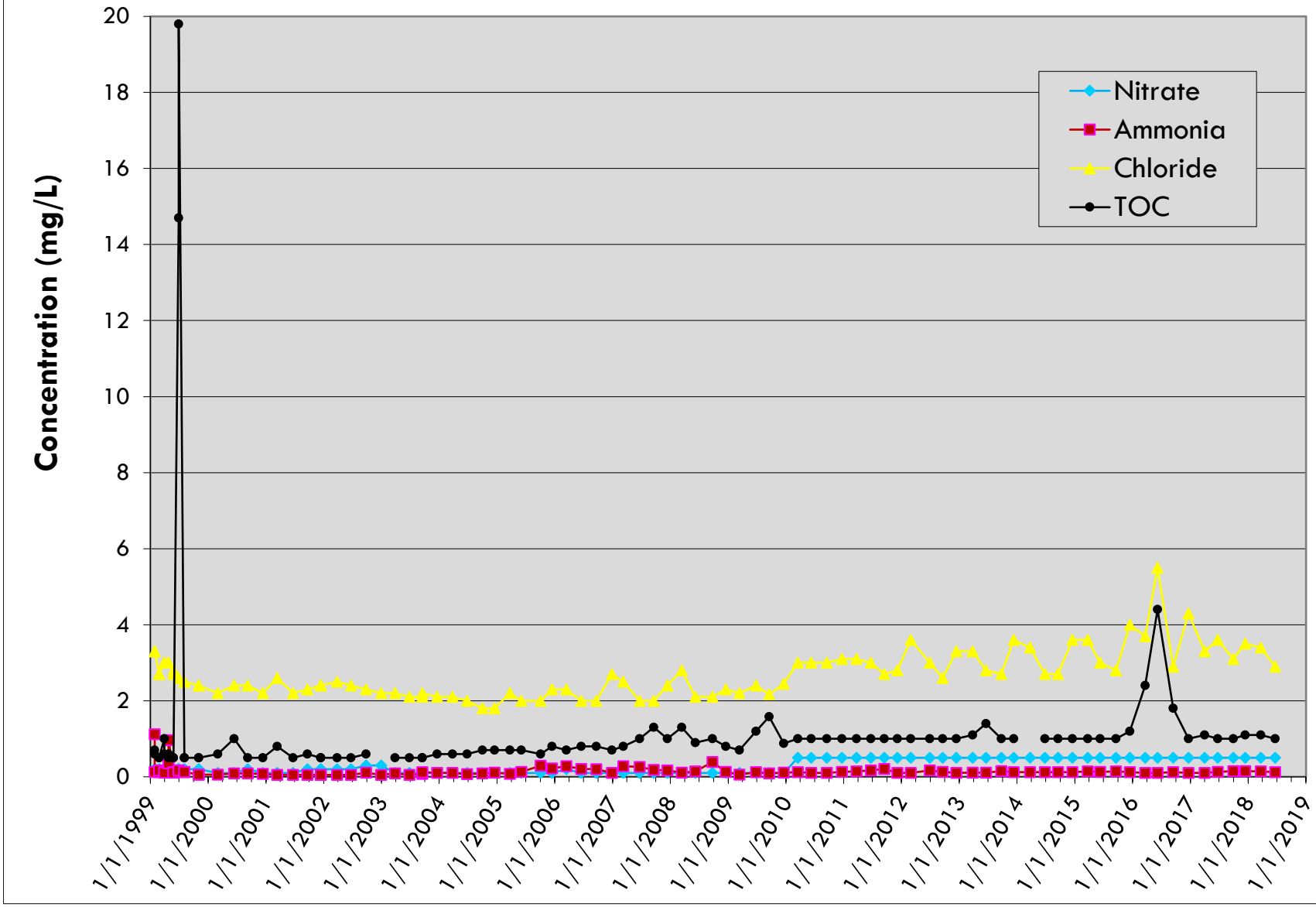
# MW-3

**LRI Landfill, Pierce County, Washington**



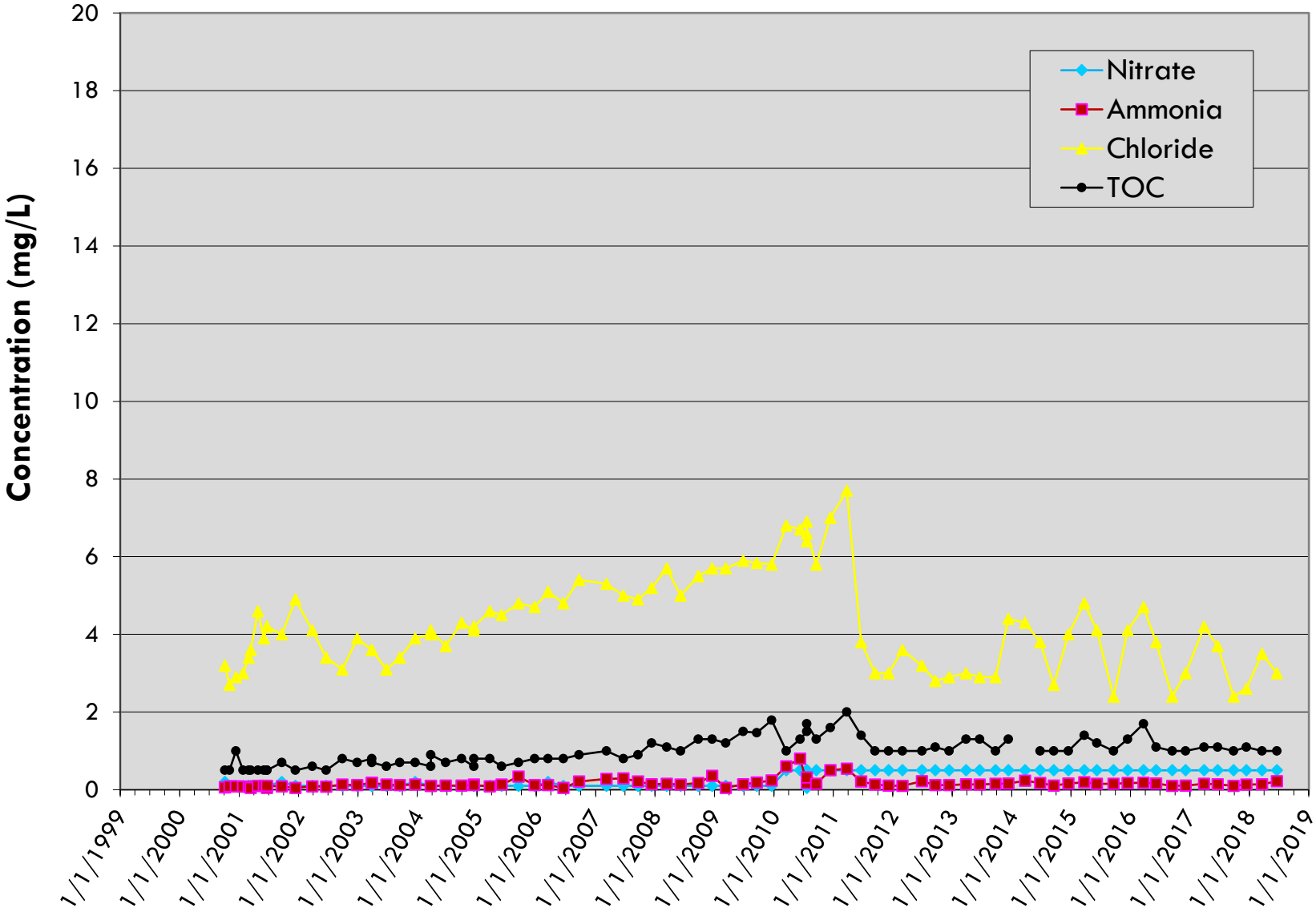
# MW-4

**LRI Landfill, Pierce County, Washington**



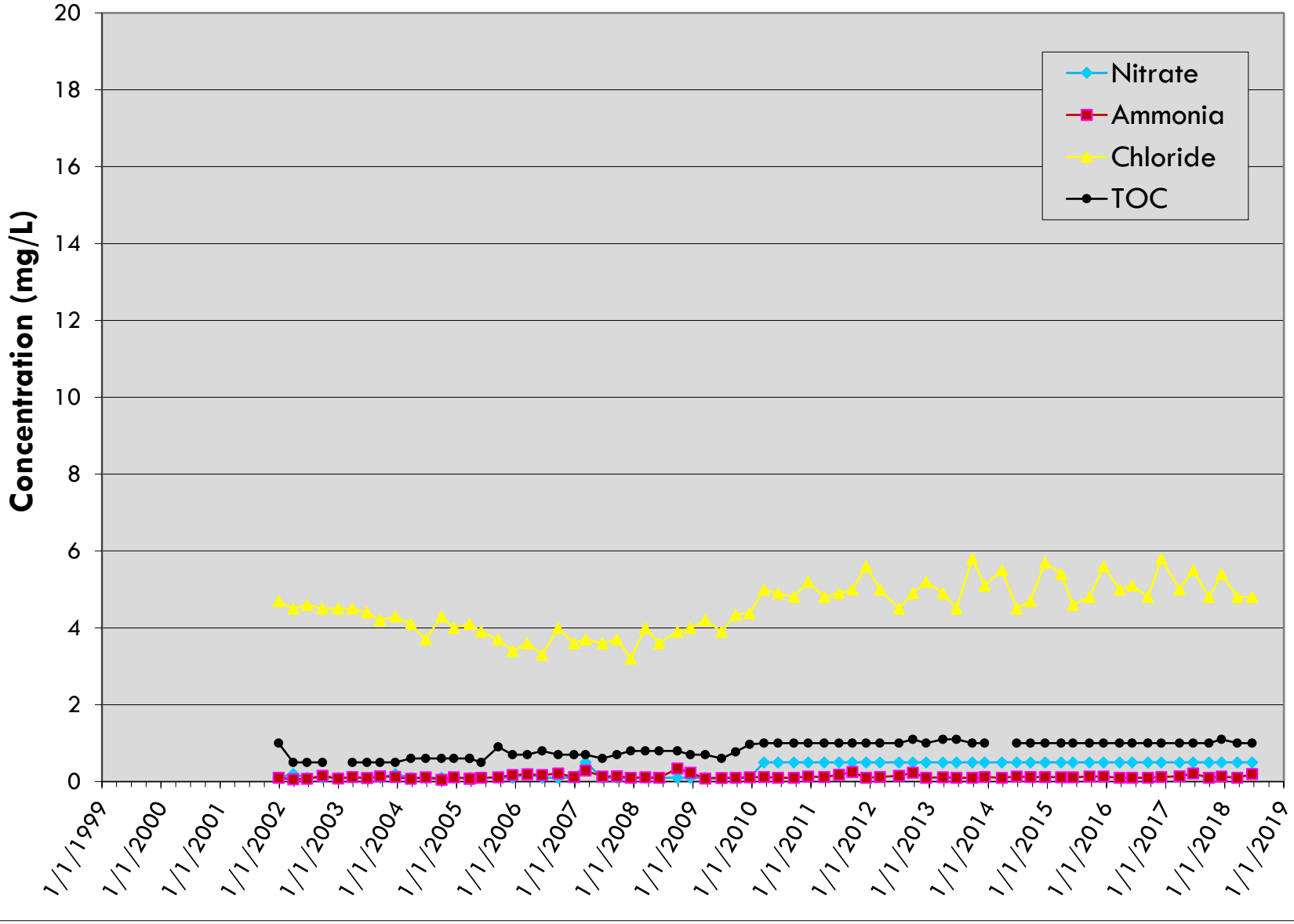
# MW-5A

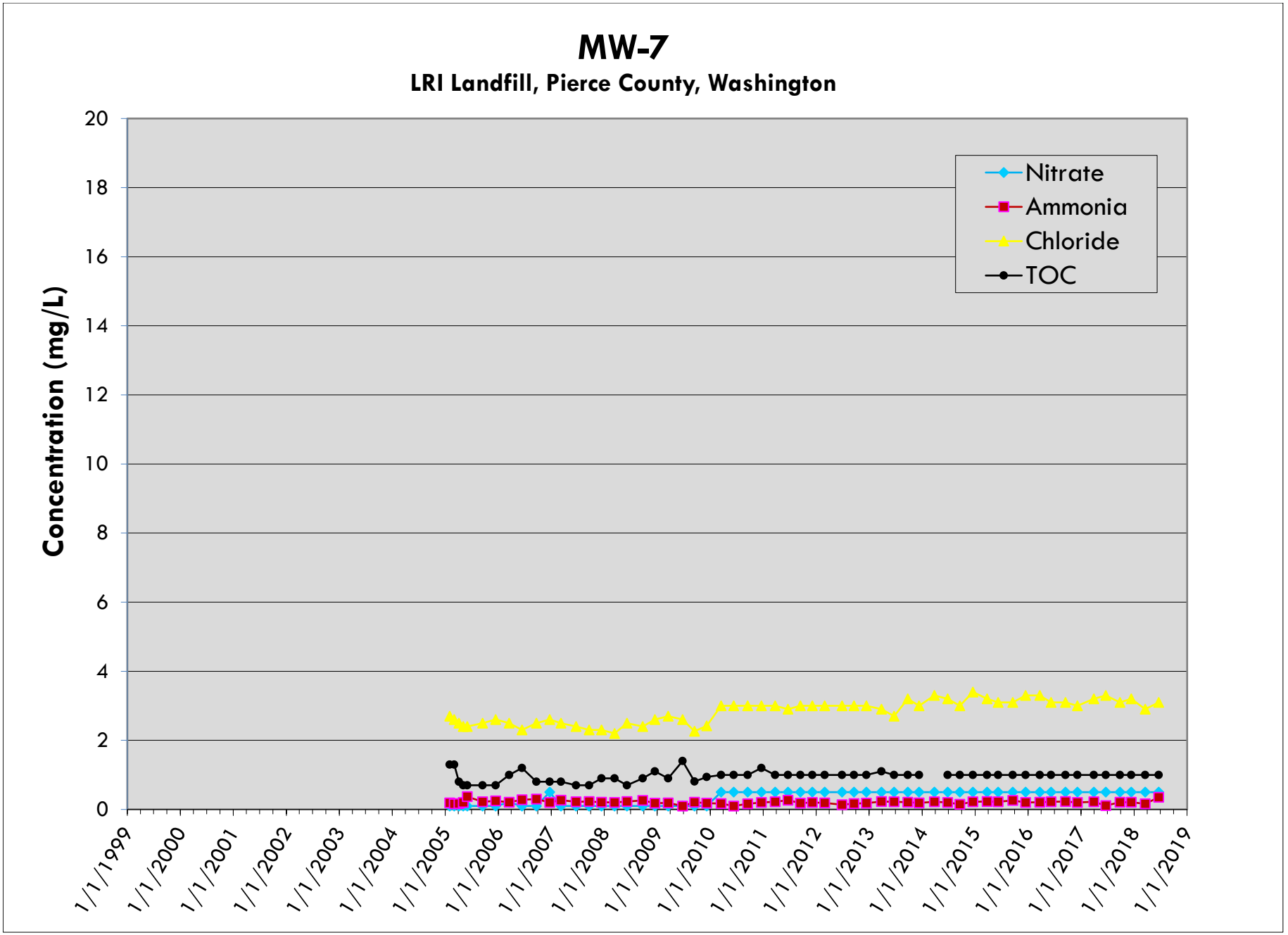
**LRI Landfill, Pierce County, Washington**

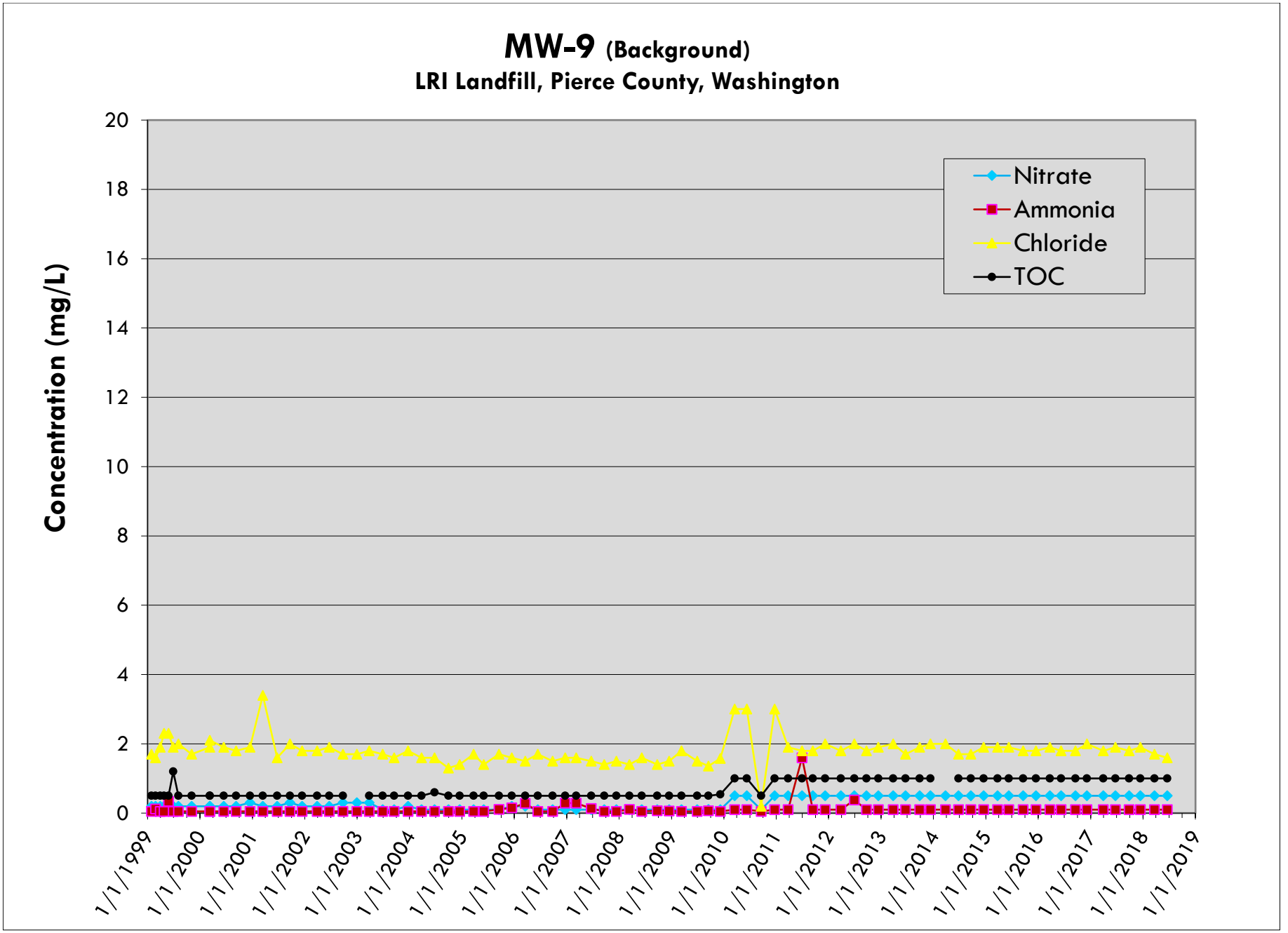


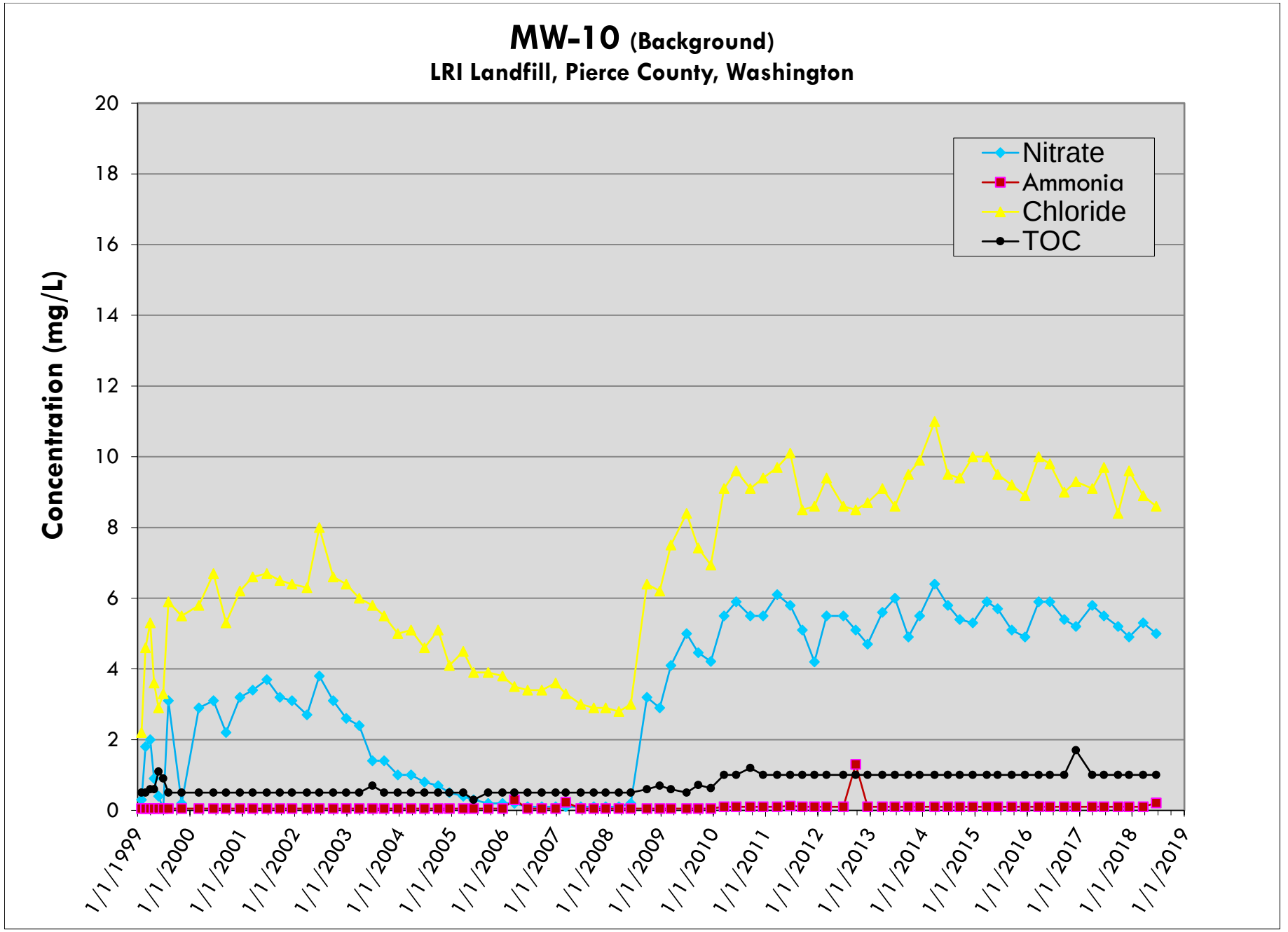
# MW-6

**LRI Landfill, Pierce County, Washington**



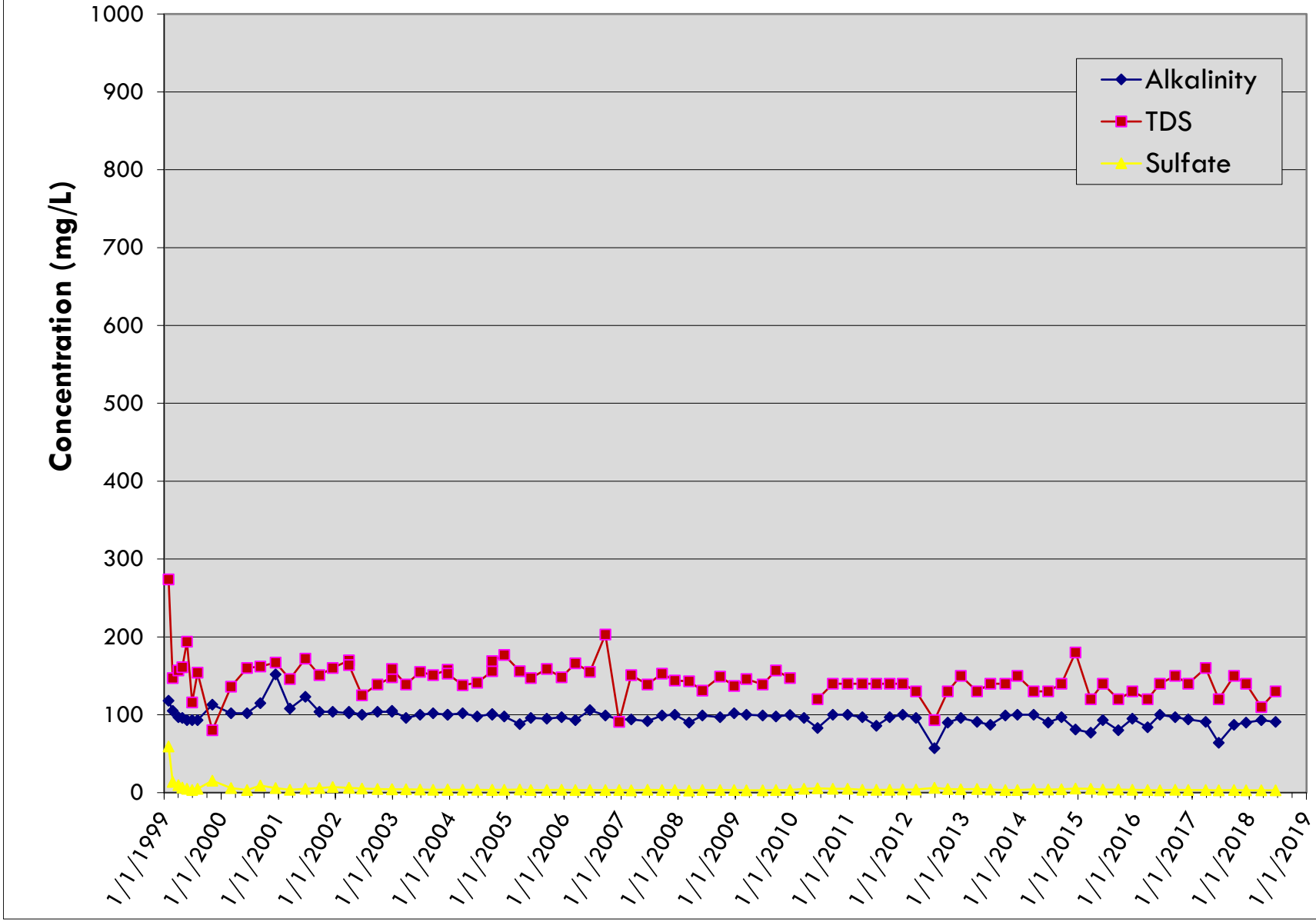

MW-7
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
Nitrate
Ammonia
Chloride
TOC
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018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


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


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

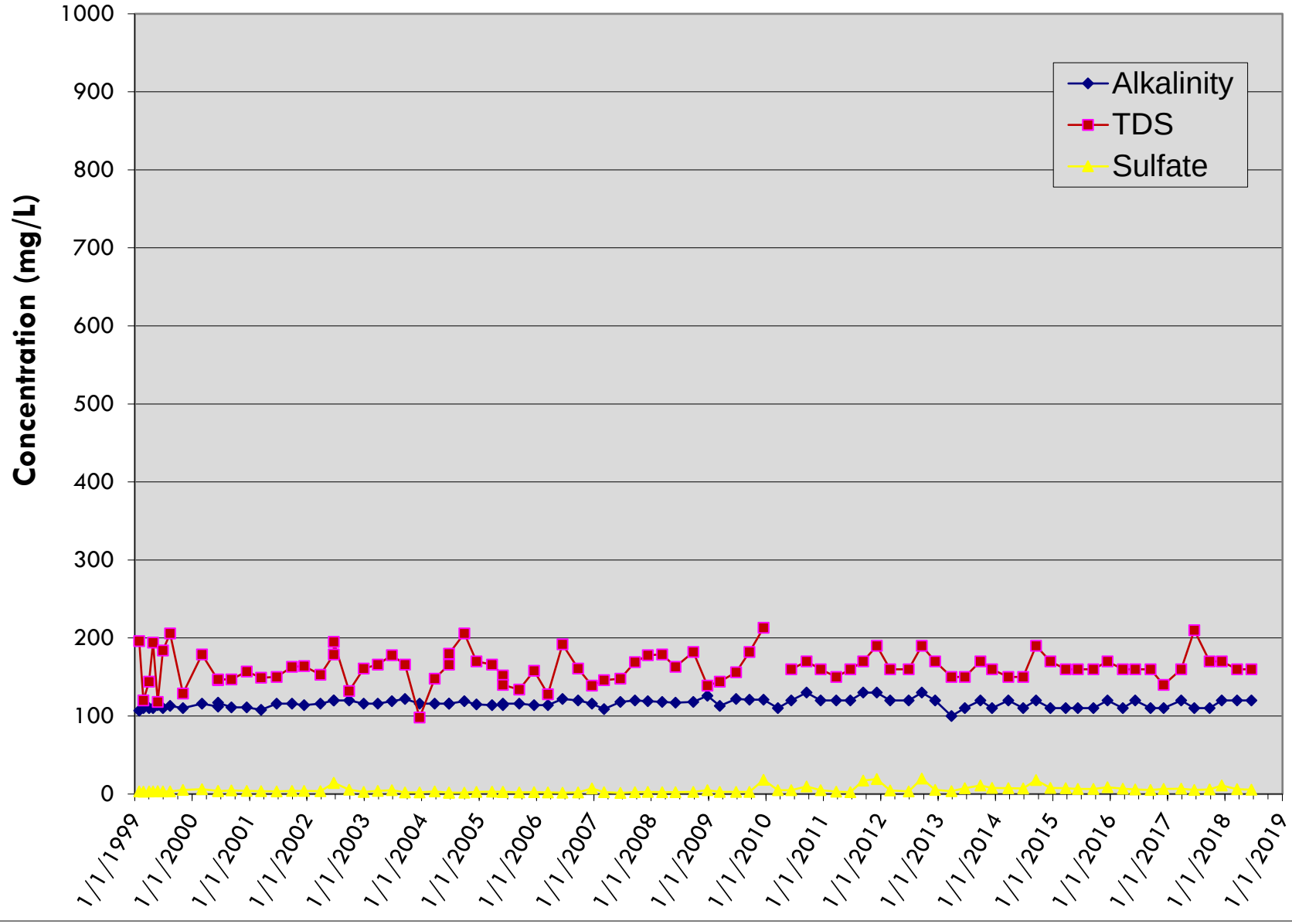
# MW-1A

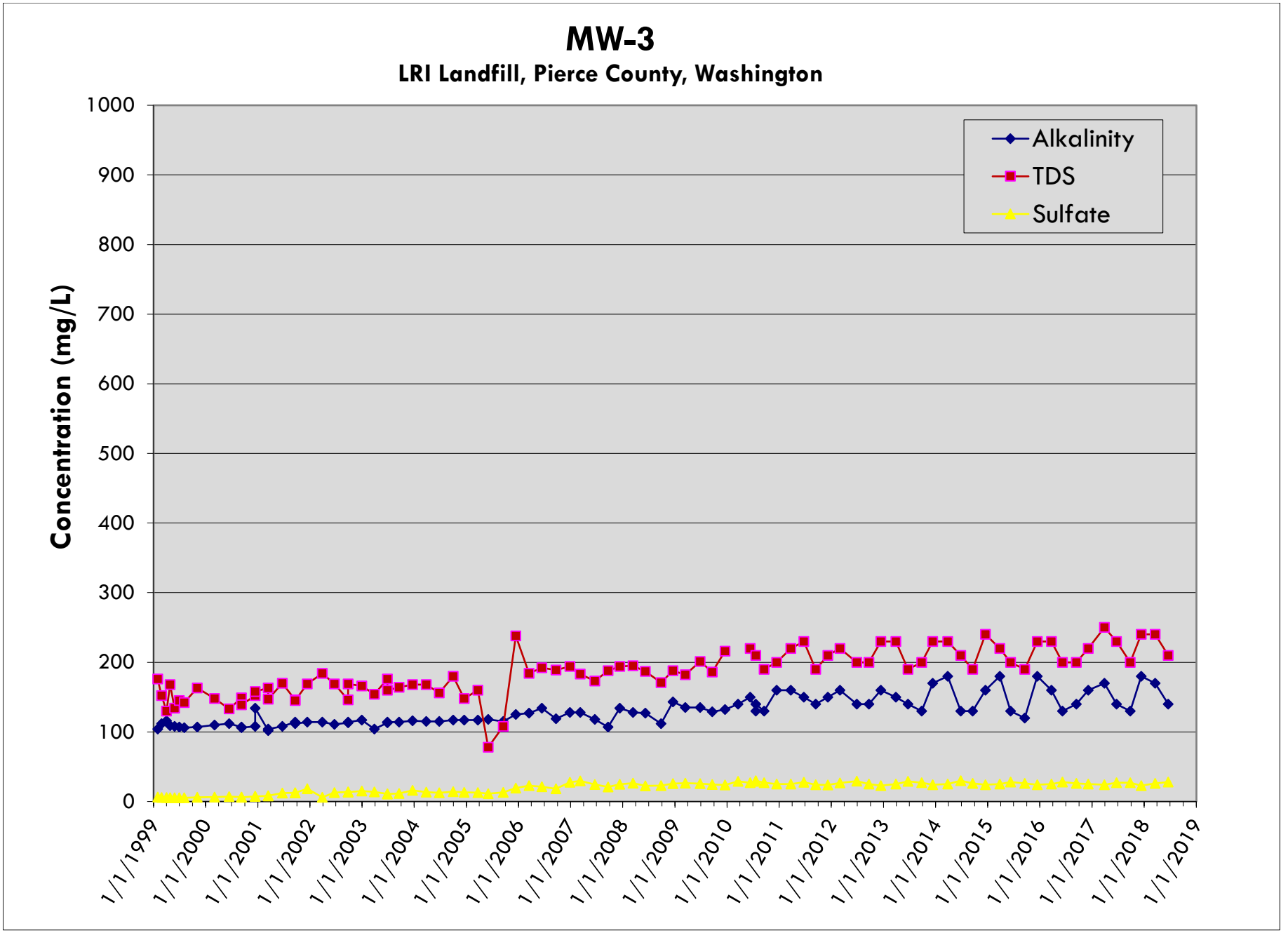
**LRI Landfill, Pierce County, Washington**



# MW-2A

**LRI Landfill, Pierce County, Washington**




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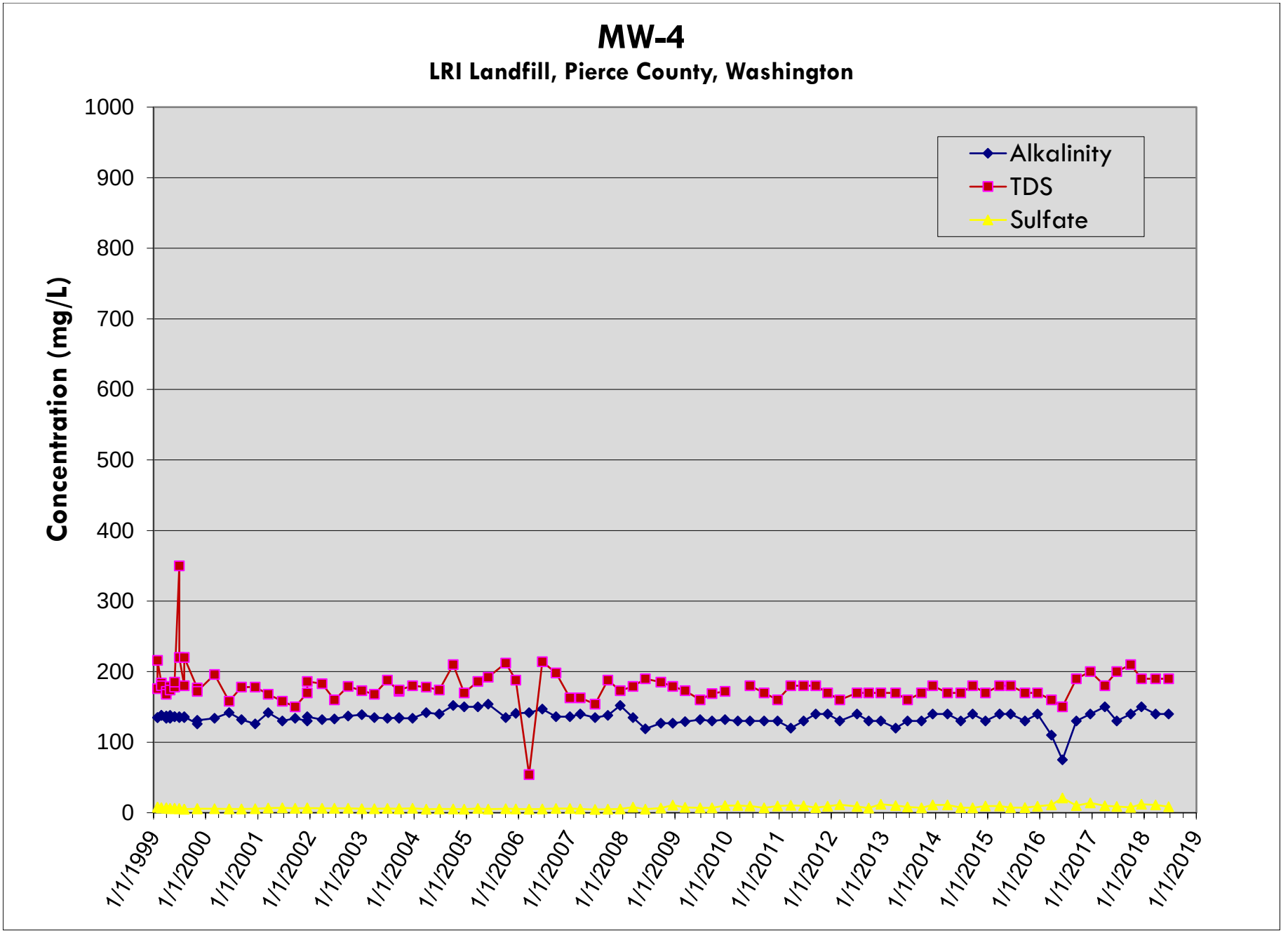
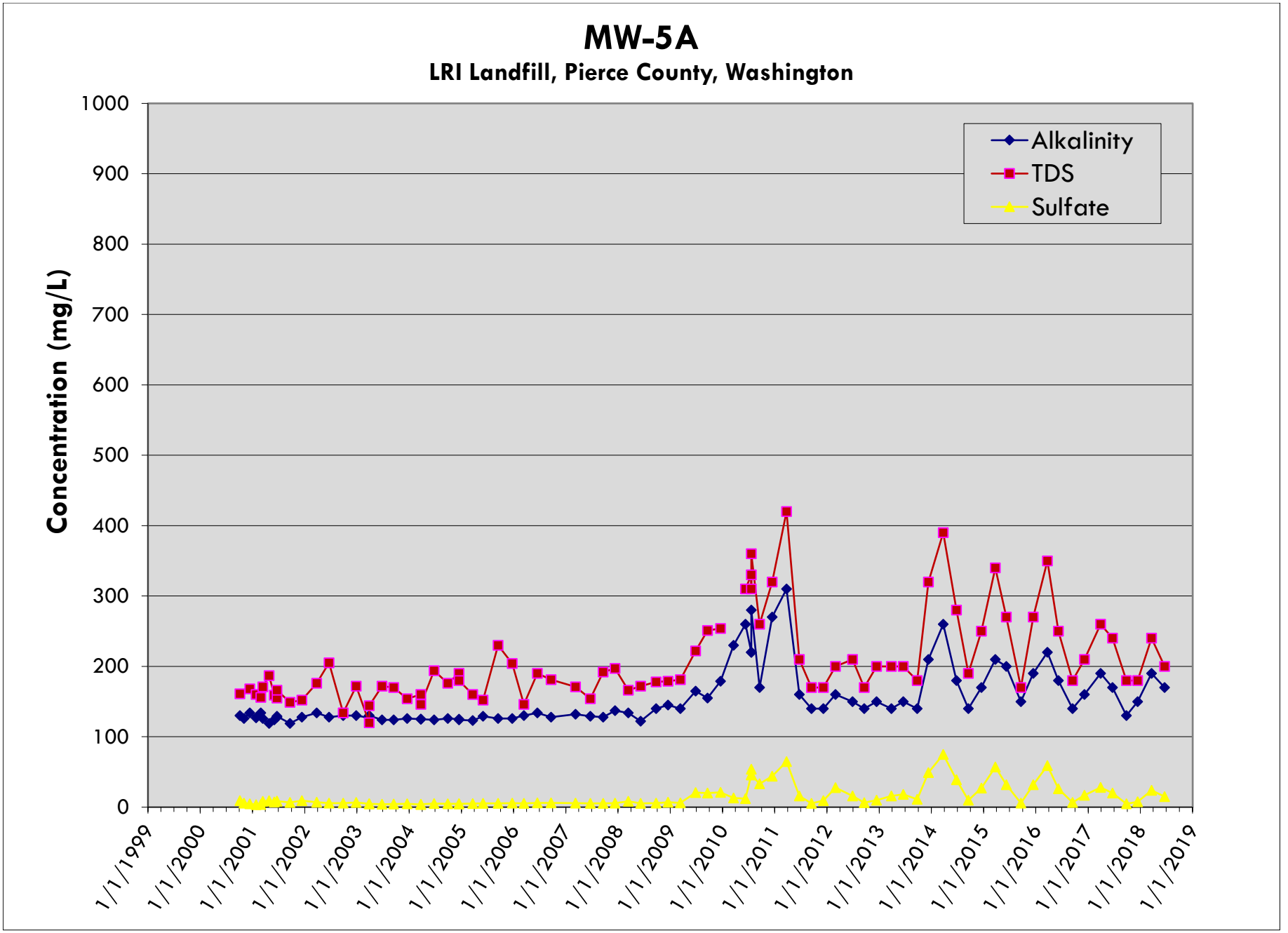
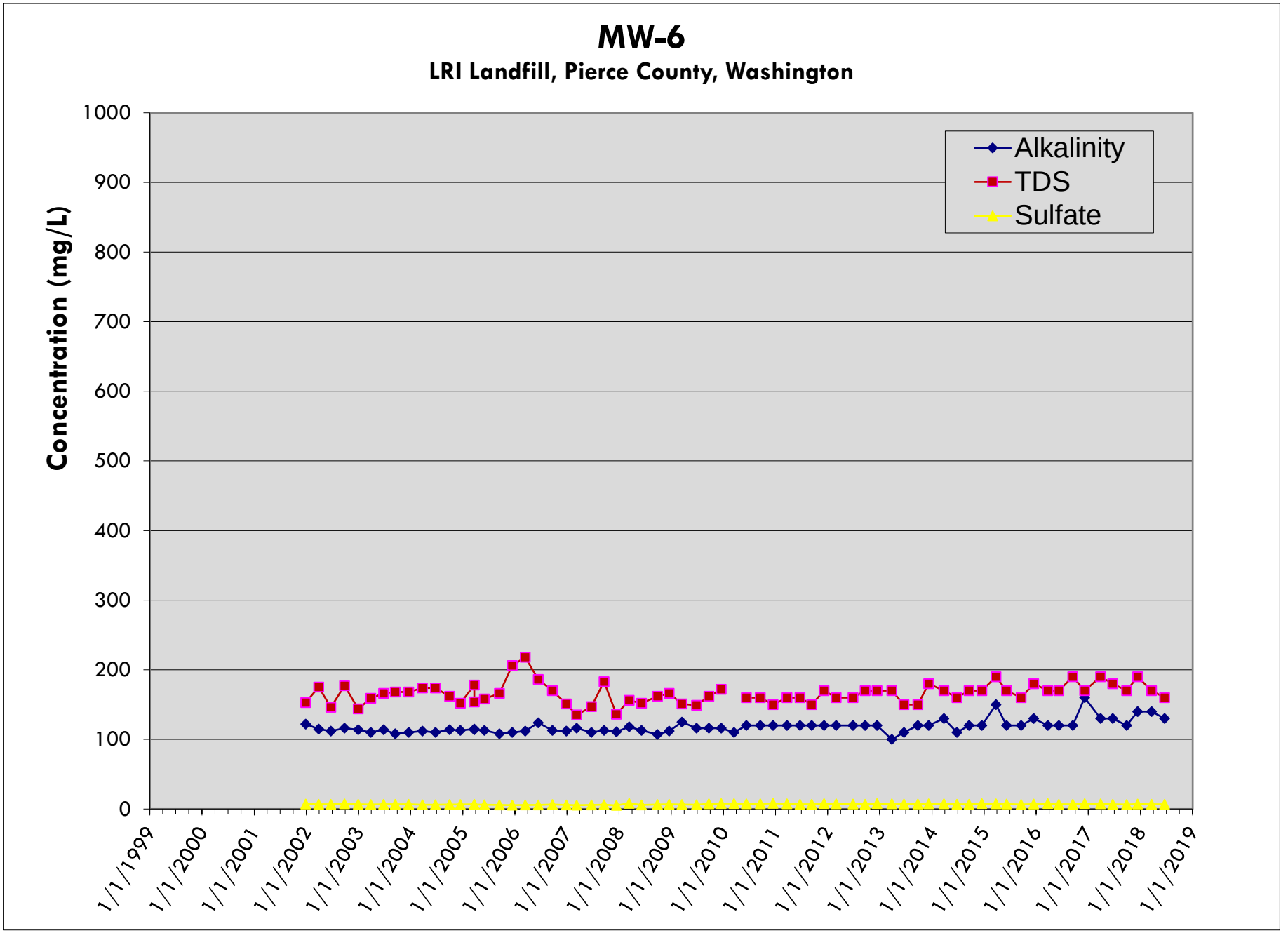
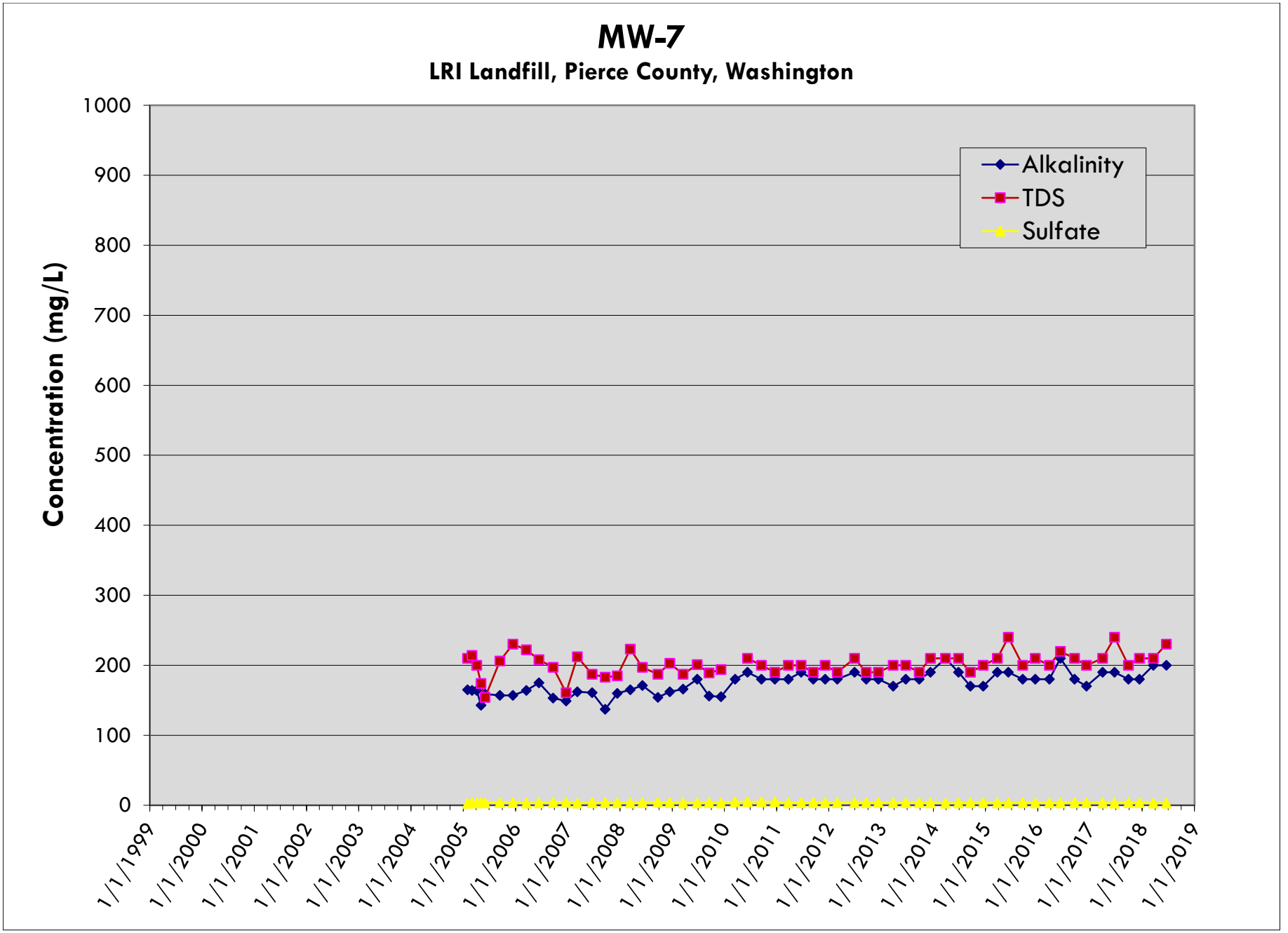
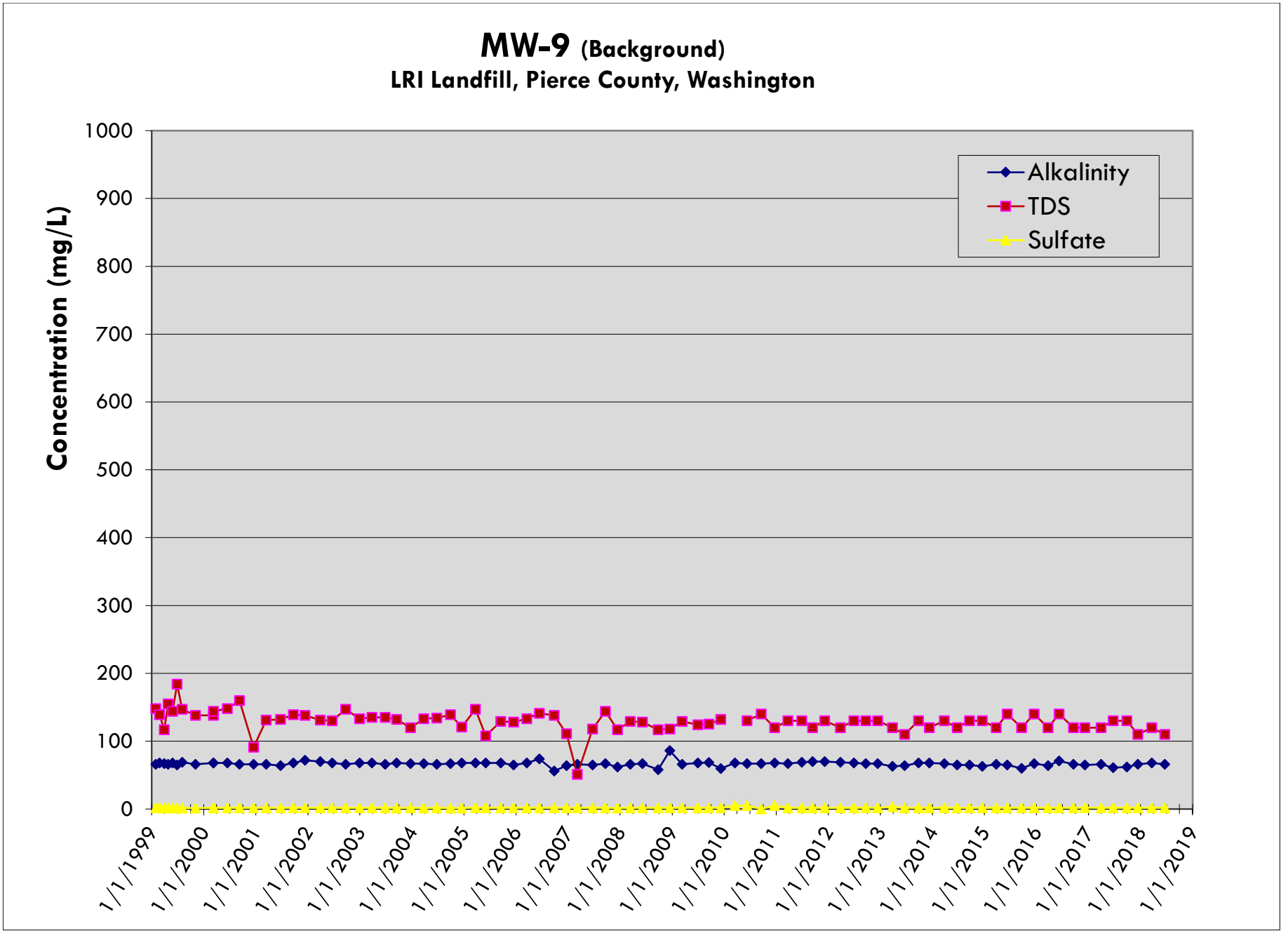
1/1/2016
1/1/2017
1/1/2018
1/1/2019

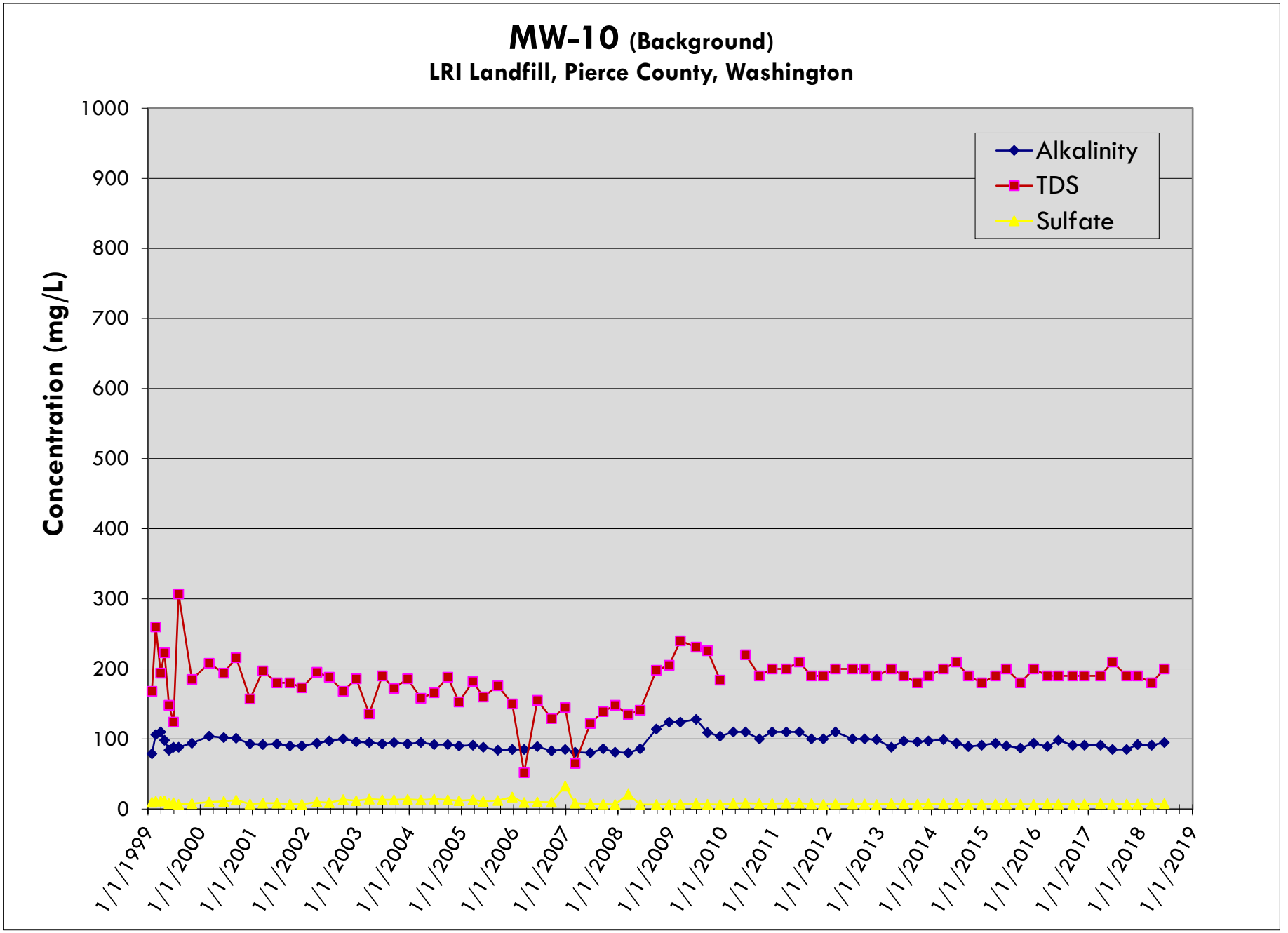

MW-4
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017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


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


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

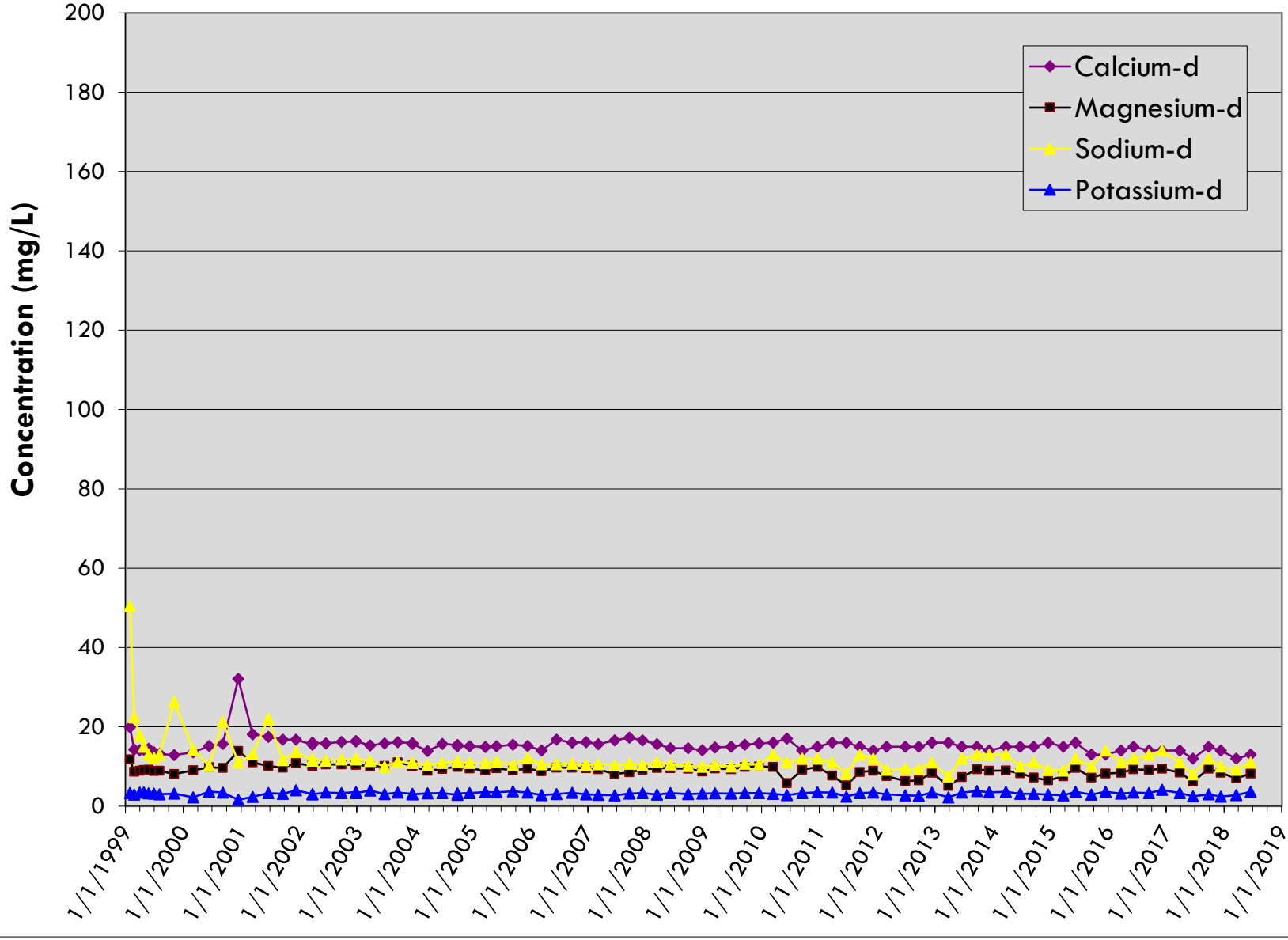

MW-7
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
1000
900
800
700
600
500
400
300
200
100
0
Alkalinity
TDS
Sulfate
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017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


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


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

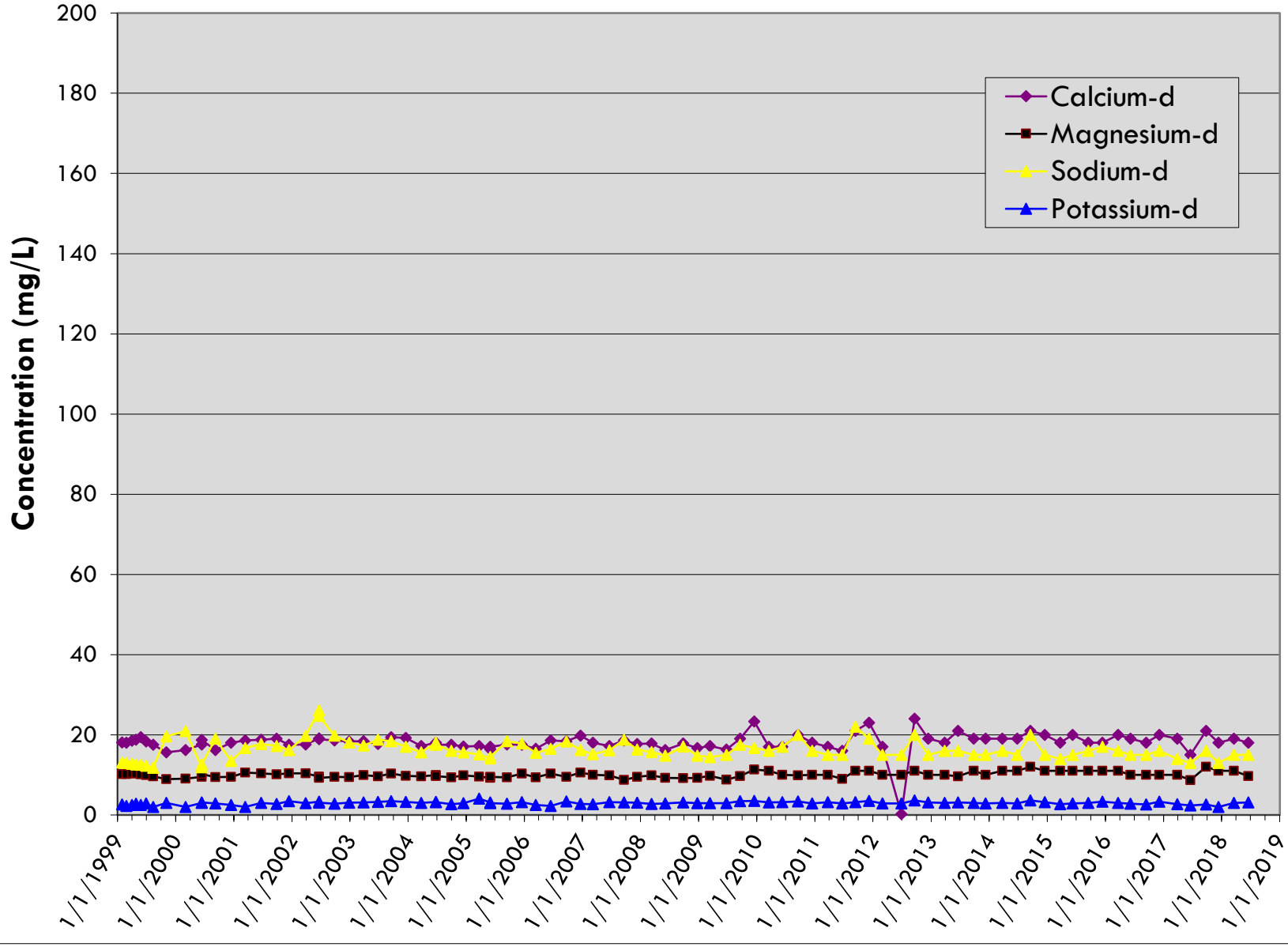
# MW-1A

**LRI Landfill, Pierce County, Washington**



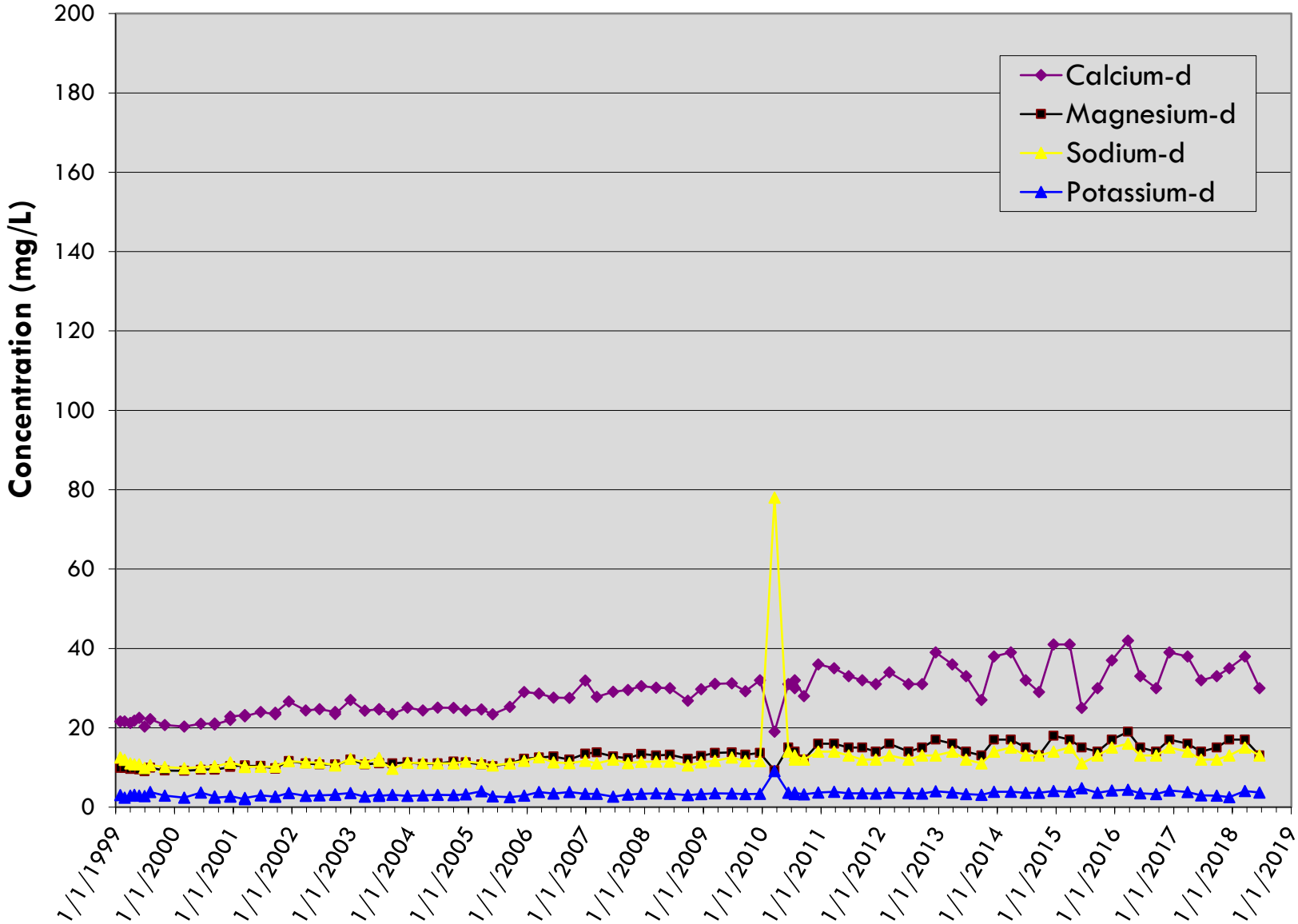
# MW-2A

**LRI Landfill, Pierce County, Washington**



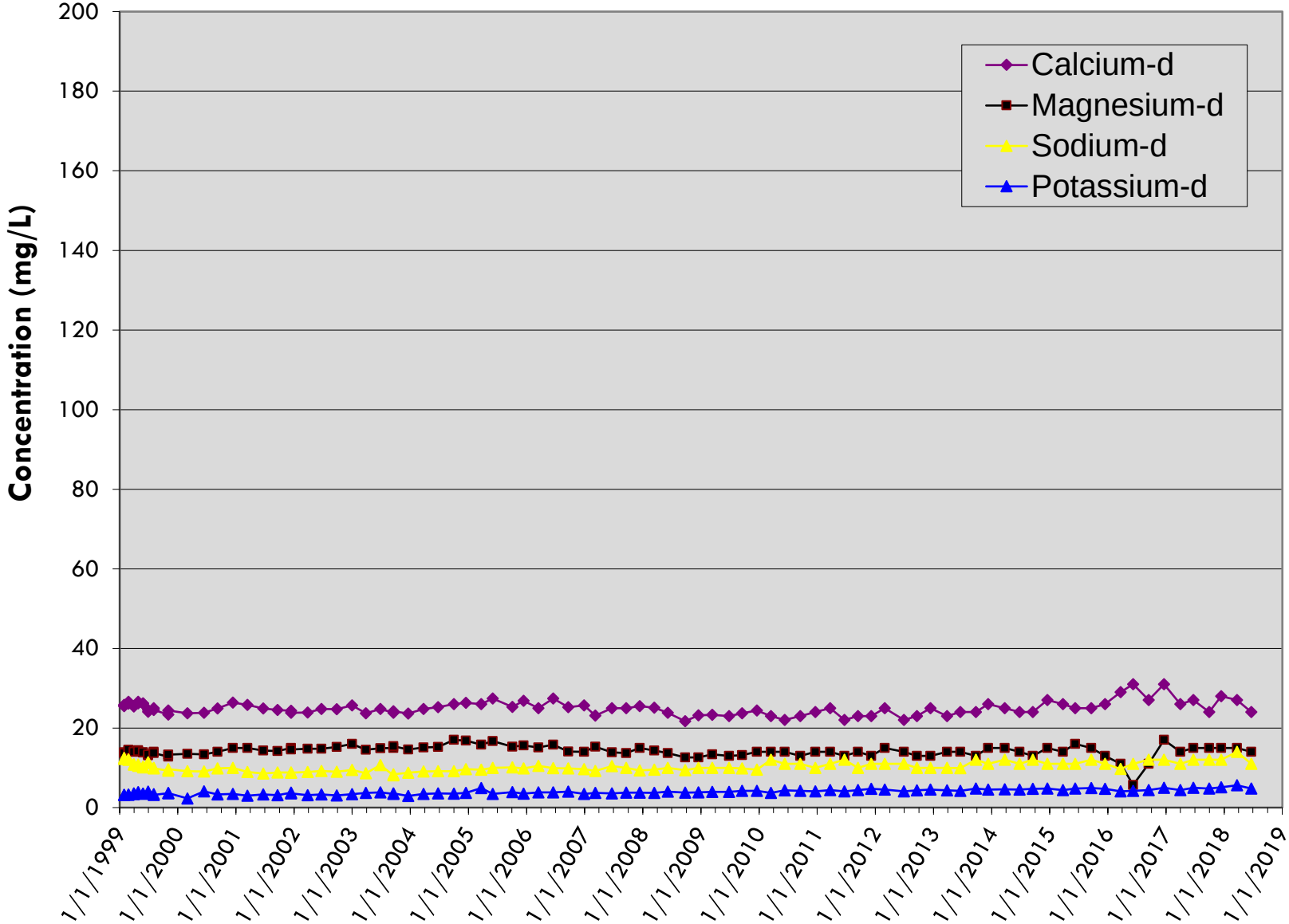
# MW-3

**LRI Landfill, Pierce County, Washington**



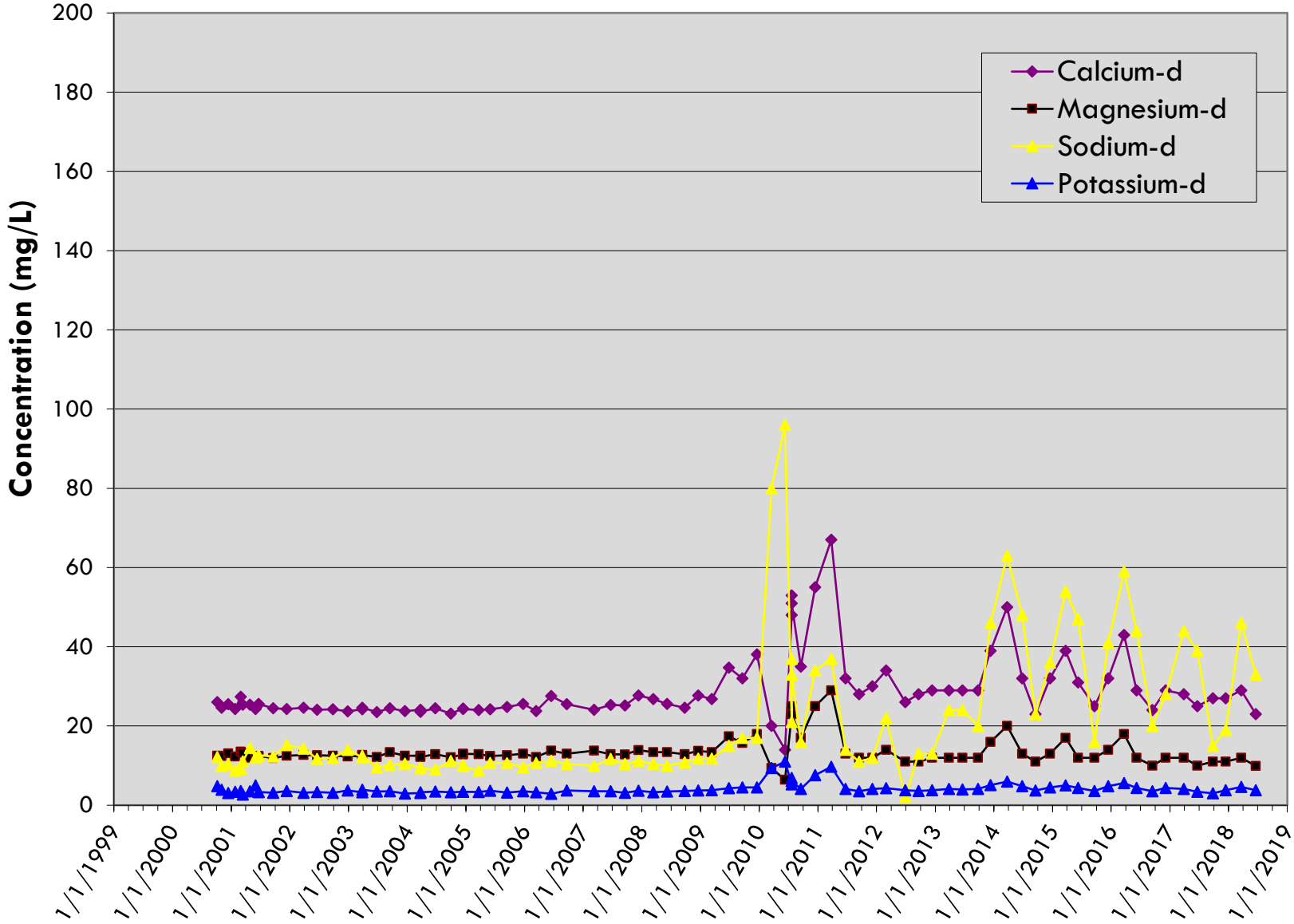
# MW-4

**LRI Landfill, Pierce County, Washington**



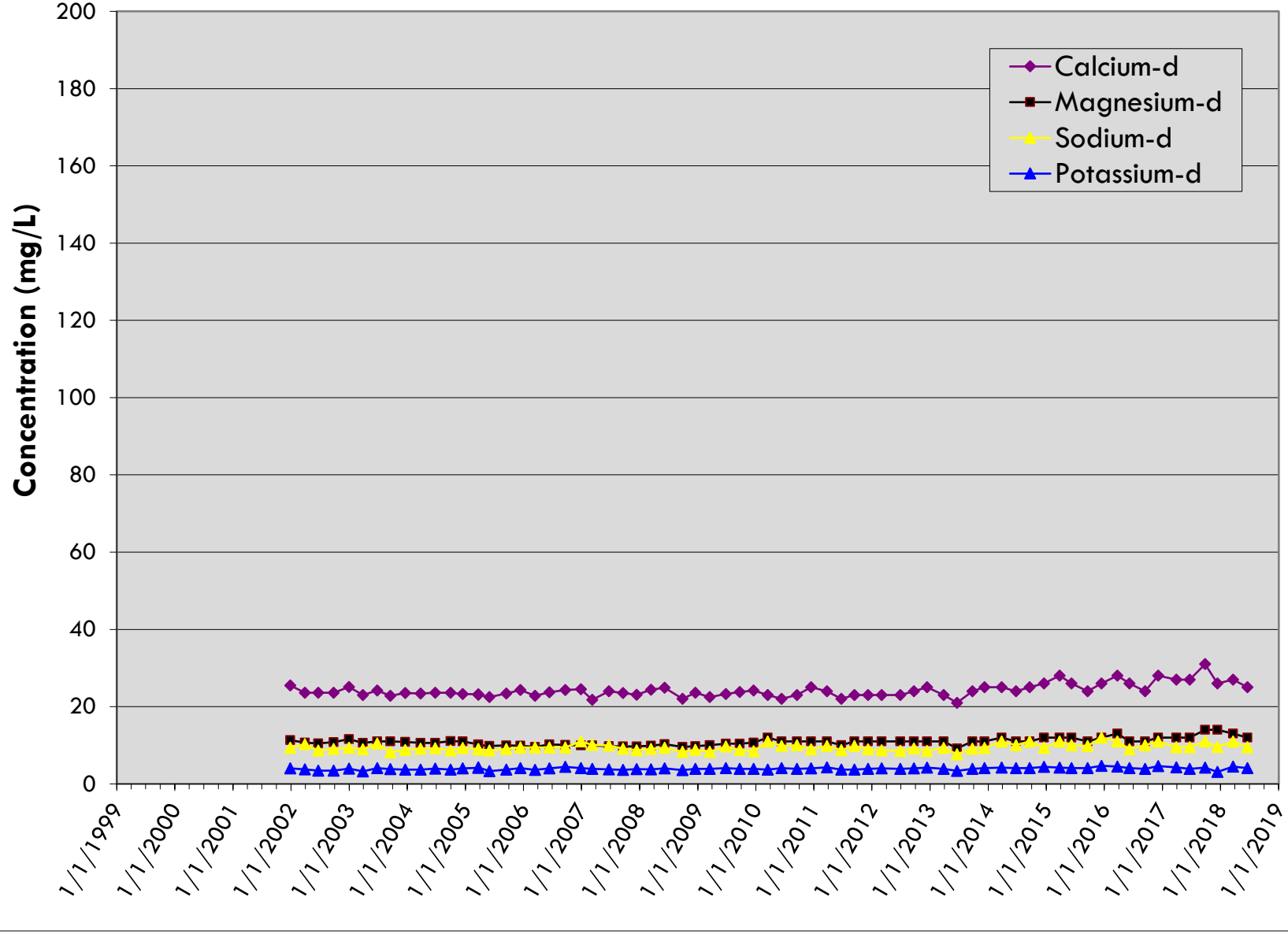
# MW-5A

**LRI Landfill, Pierce County, Washington**



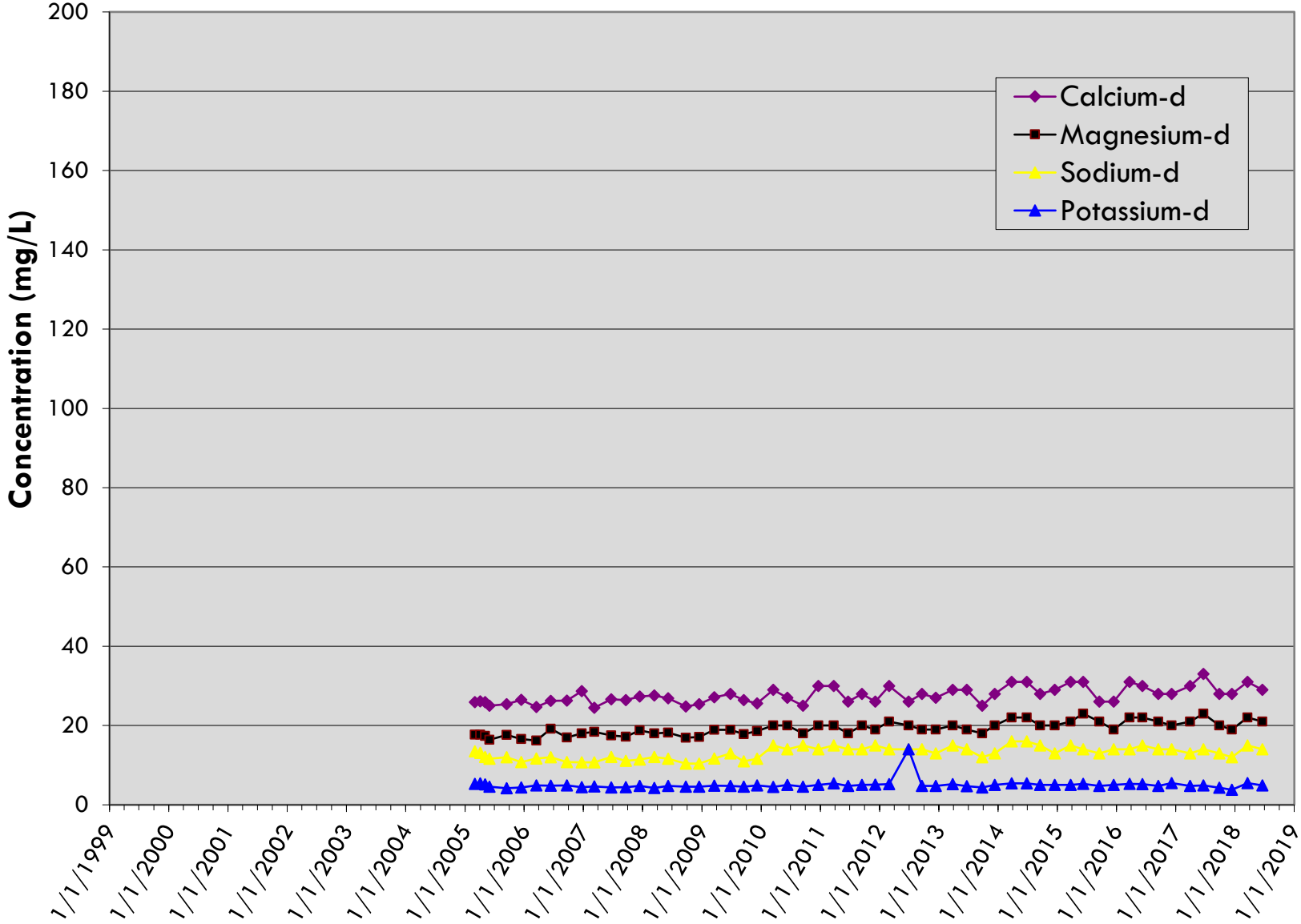
# MW-6

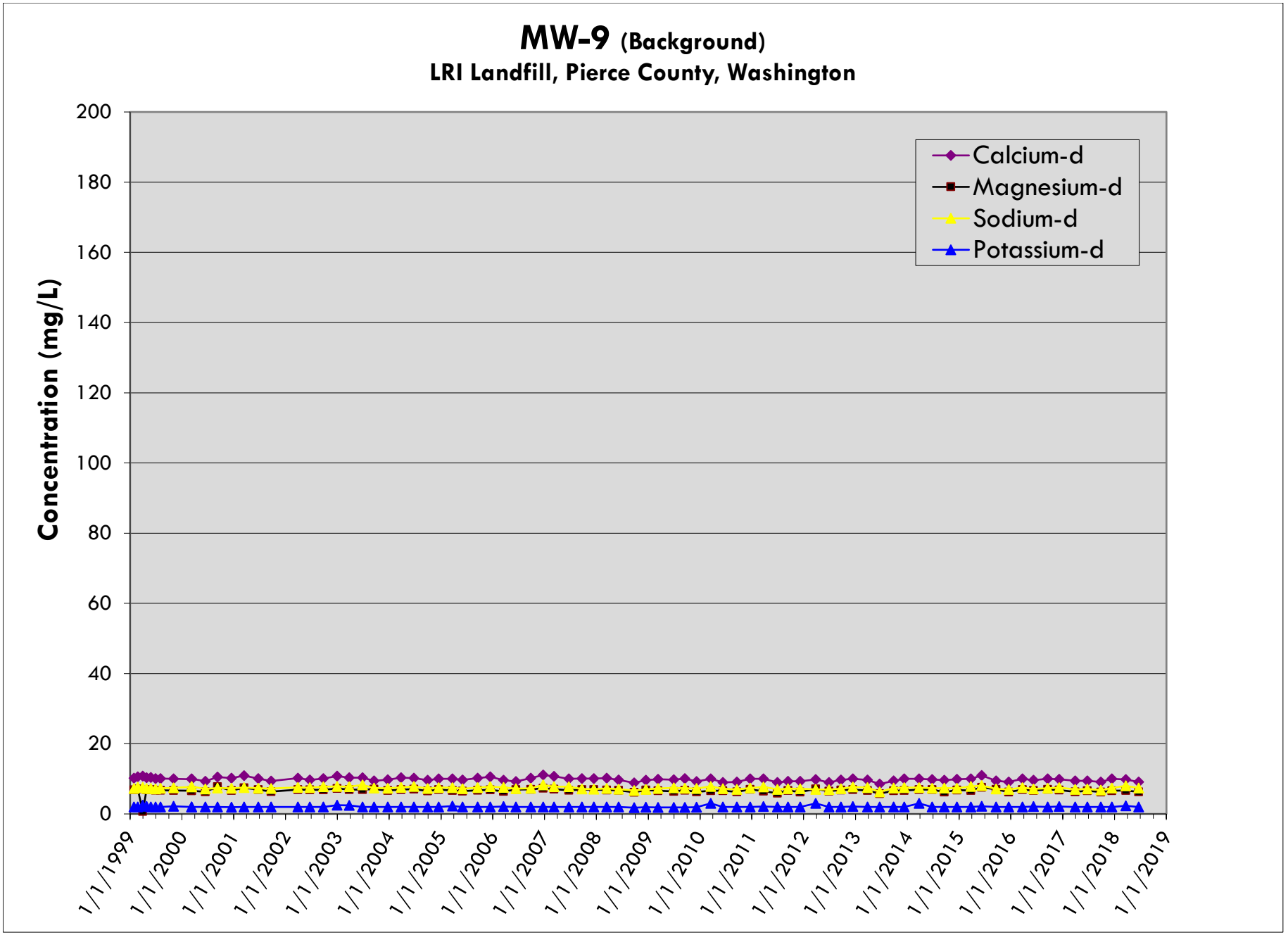
**LRI Landfill, Pierce County, Washington**



# MW-7

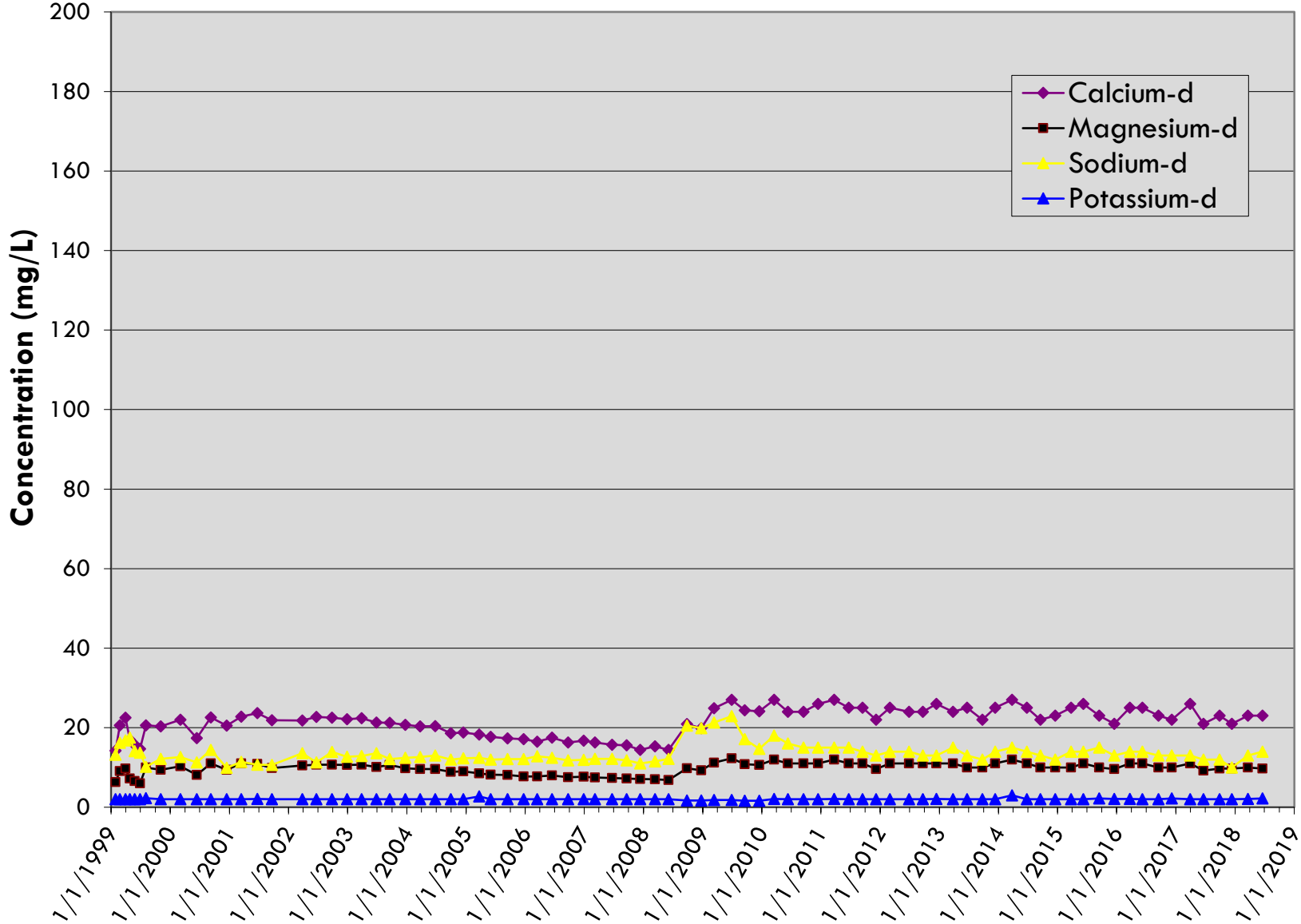
**LRI Landfill, Pierce County, Washington**




MW-9 (Background)
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
200
180
160
140
120
100
80
60
40
20
0
Calcium-d
Magnesium-d
Sodium-d
Potassium-d
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019

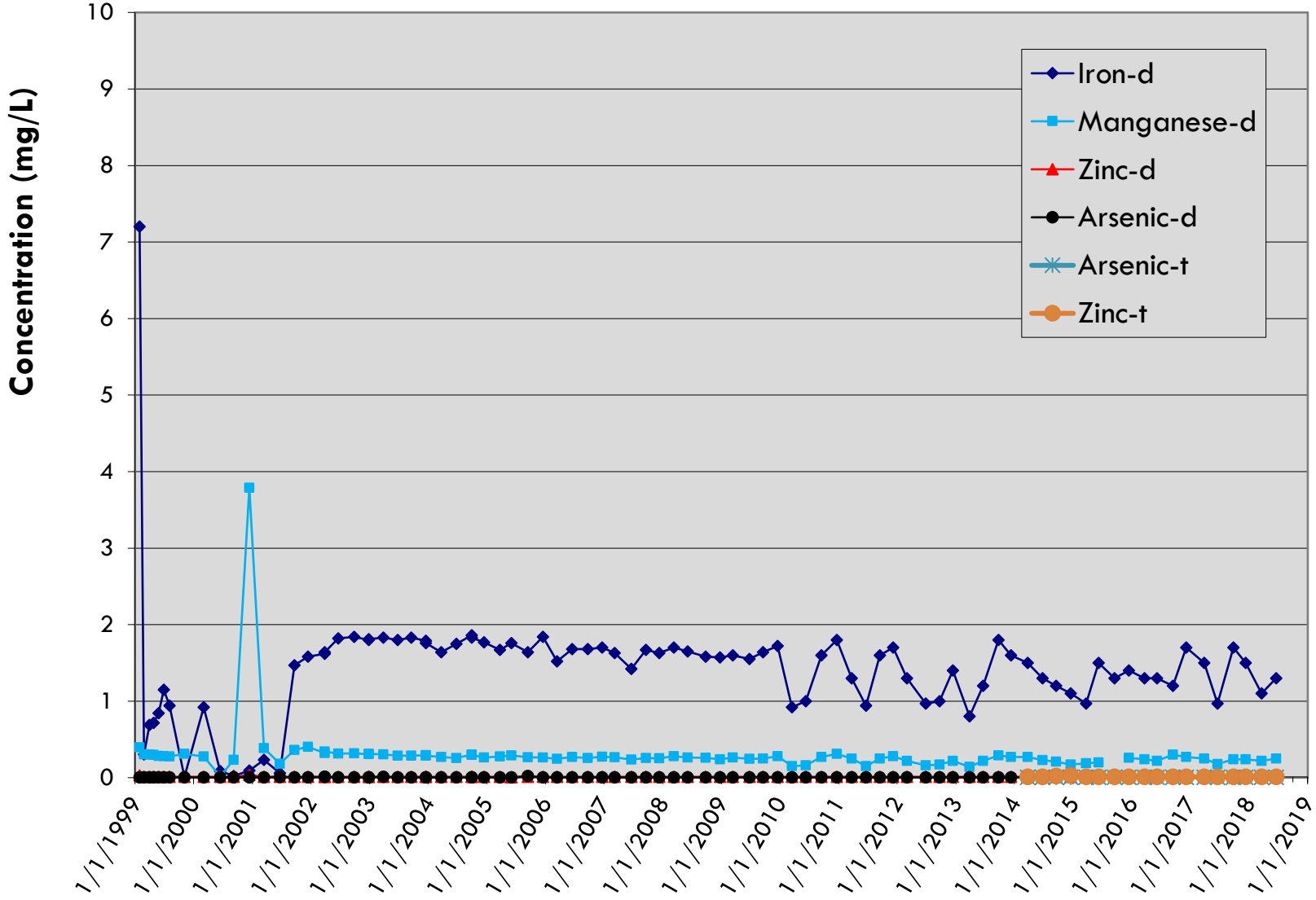
# MW-10 (Background)

## LRI Landfill, Pierce County, Washington



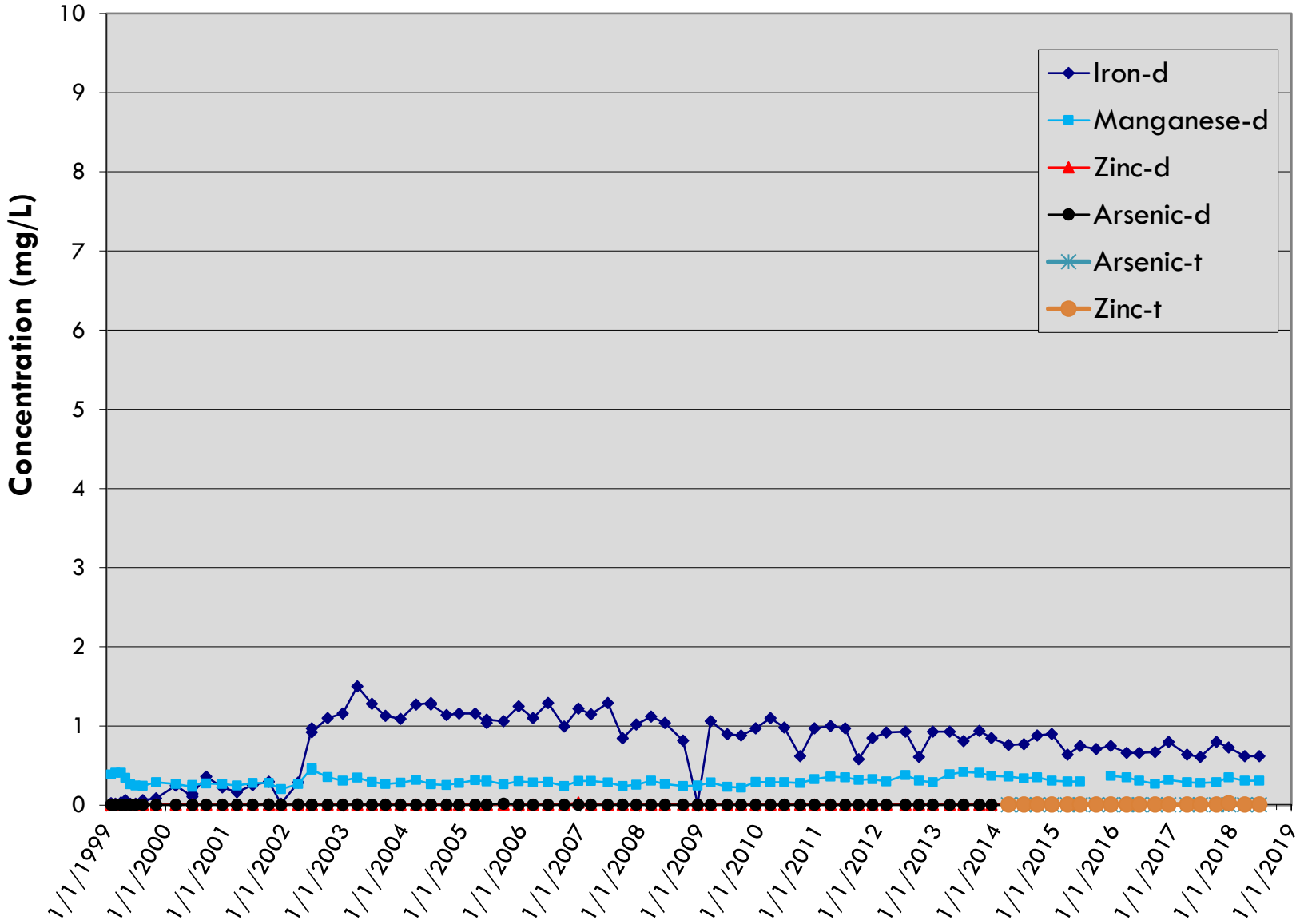
# MW-1A

**LRI Landfill, Pierce County, Washington**



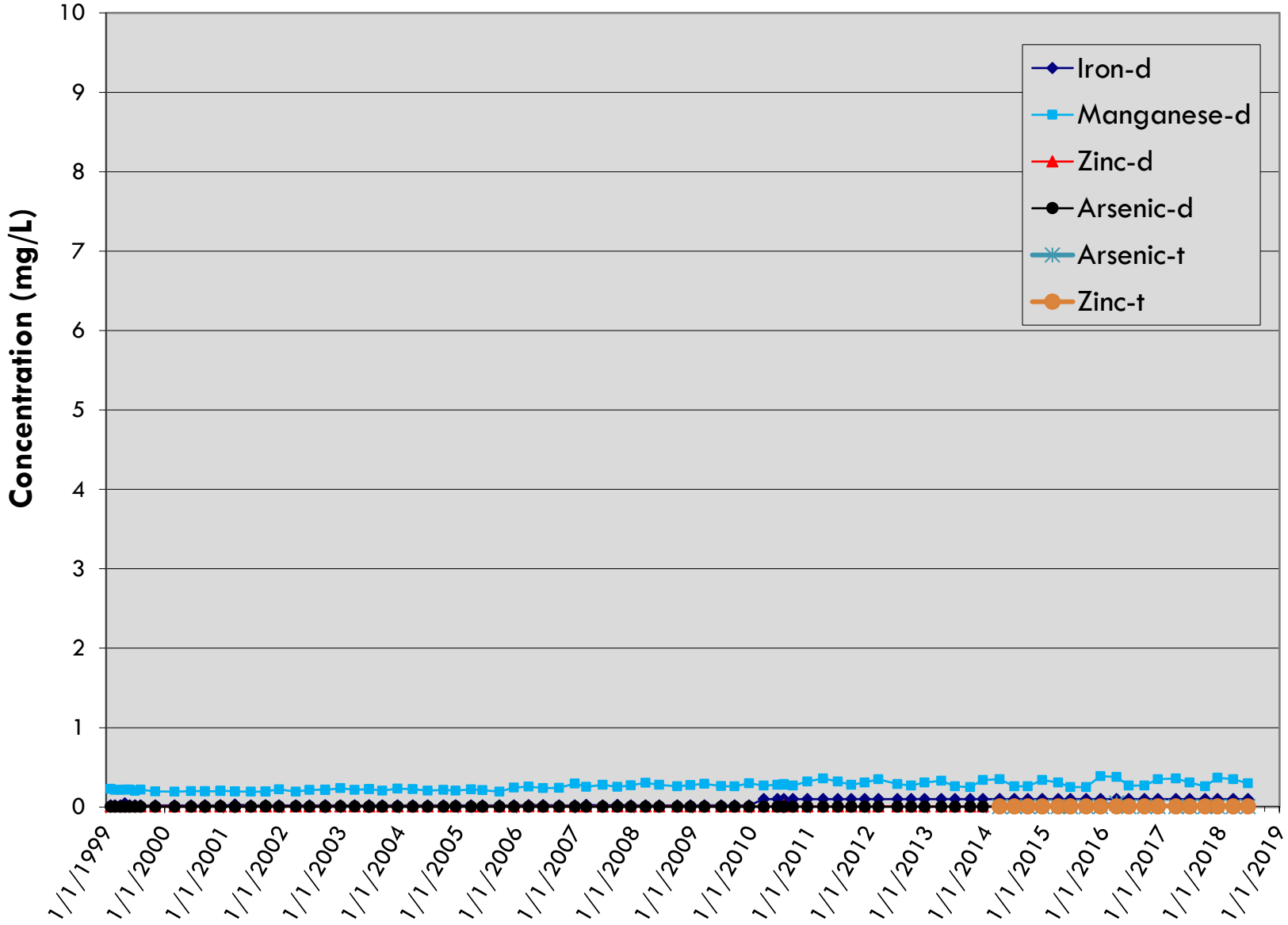
# MW-2A

**LRI Landfill, Pierce County, Washington**



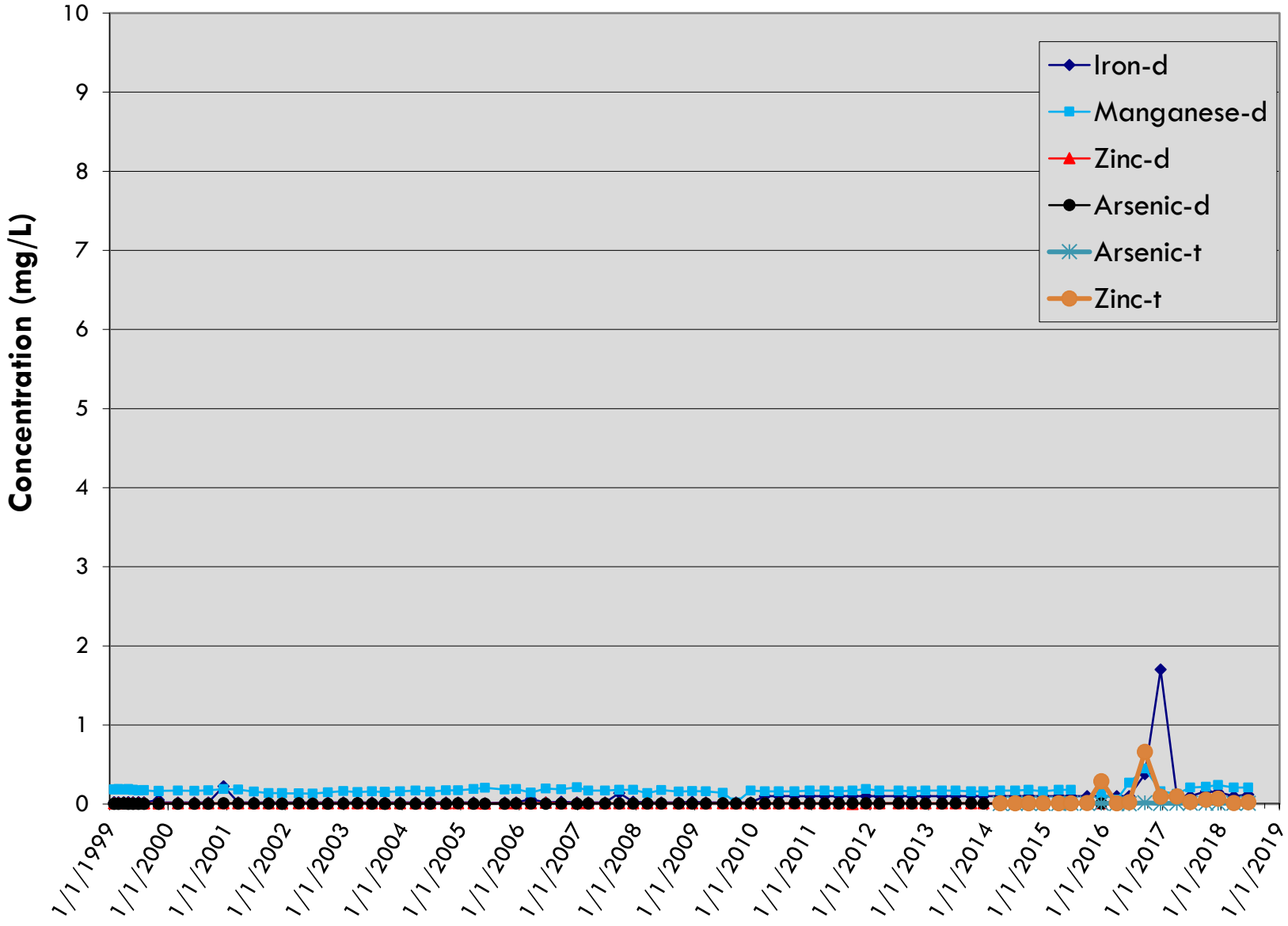
# MW-3

**LRI Landfill, Pierce County, Washington**



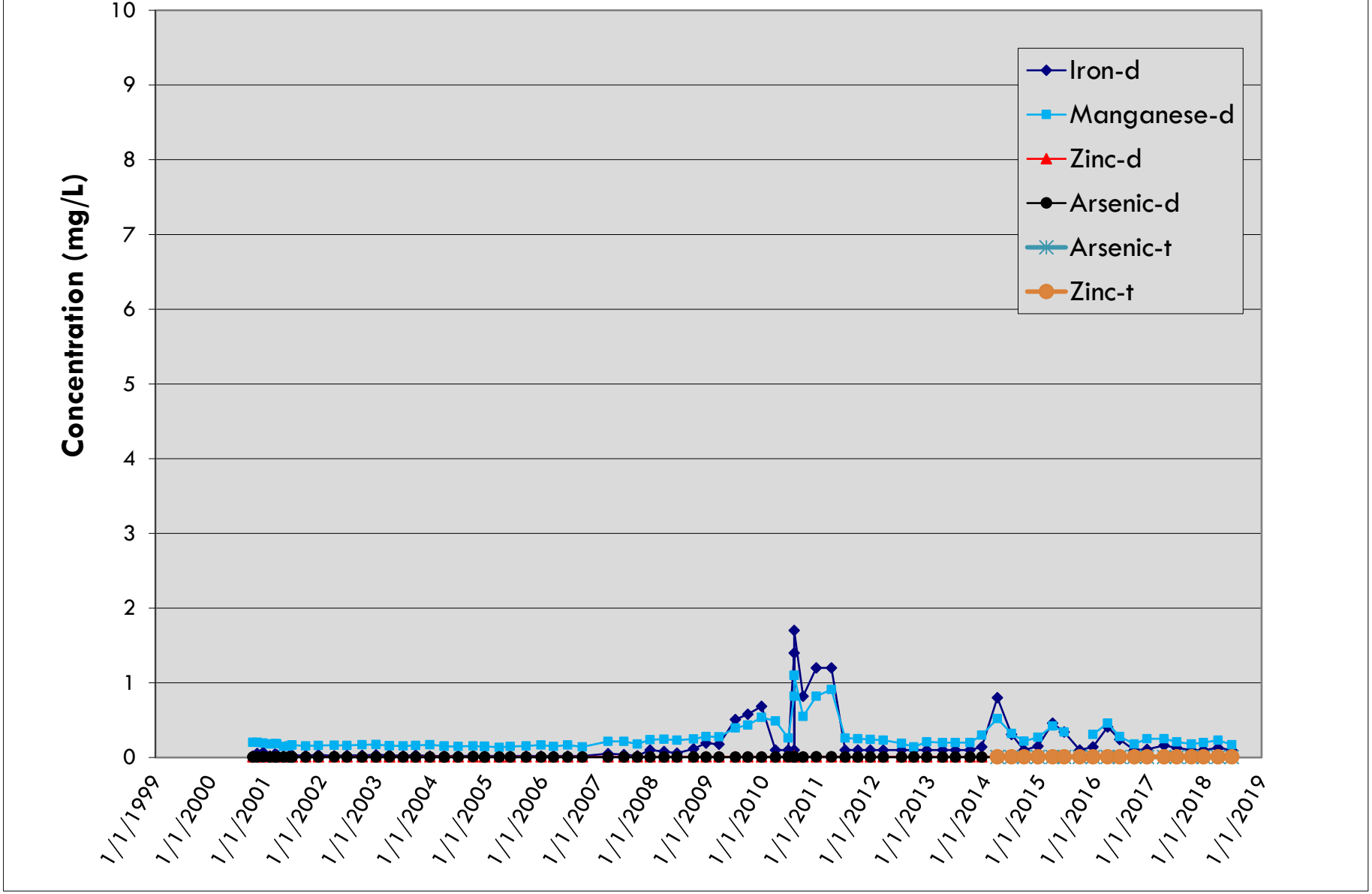
# MW-4

**LRI Landfill, Pierce County, Washington**



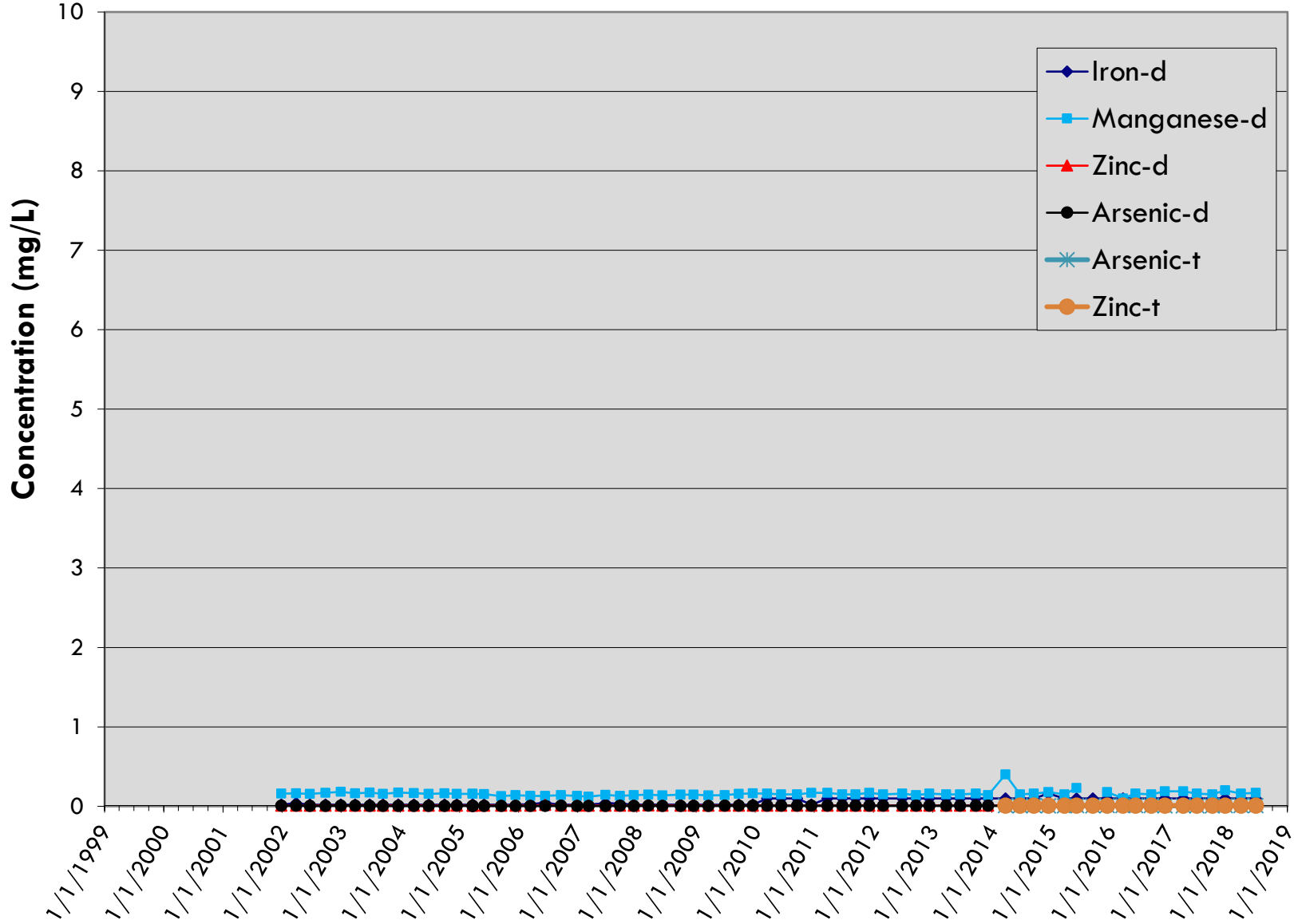
# MW-5A

**LRI Landfill, Pierce County, Washington**



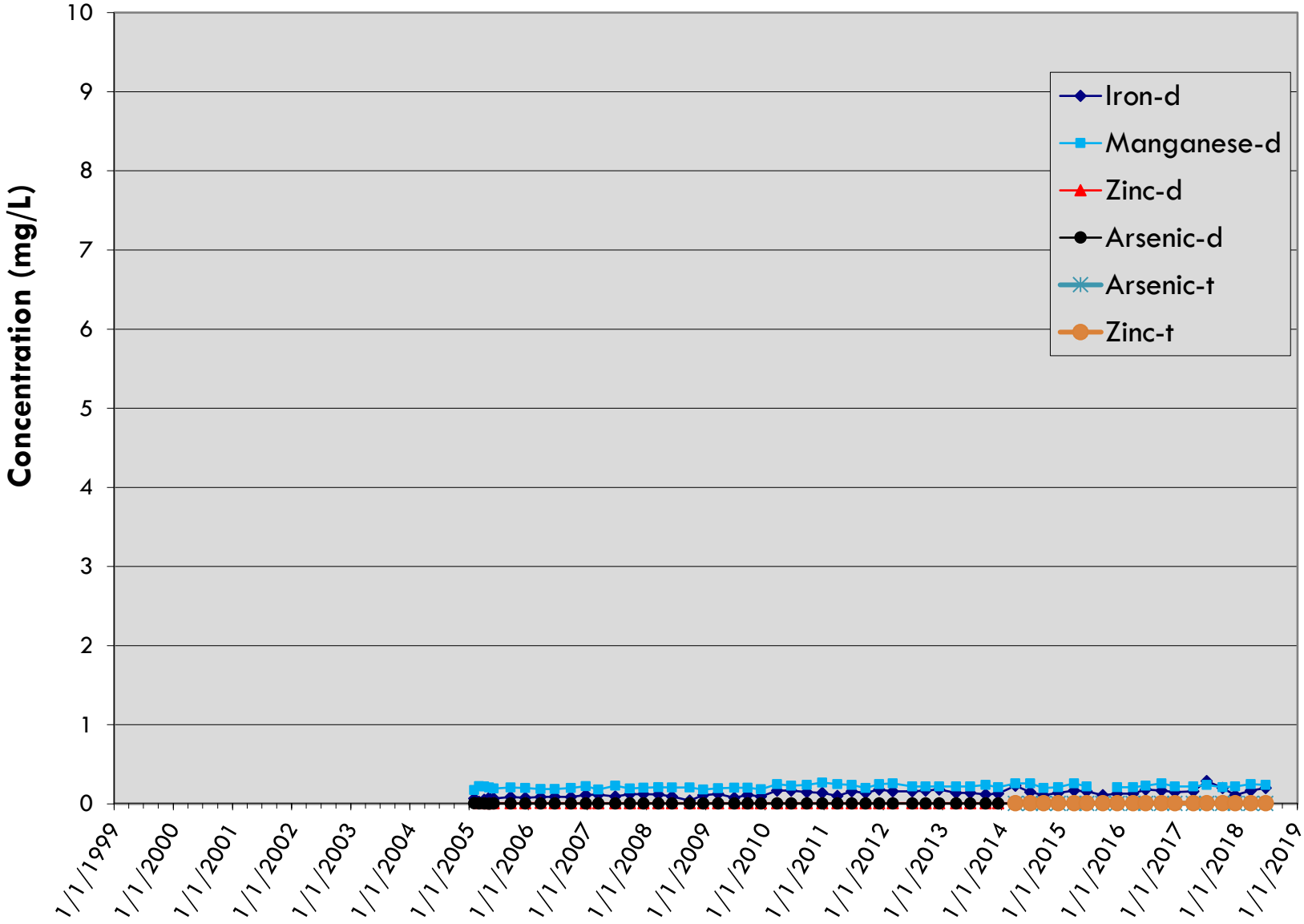
# MW-6

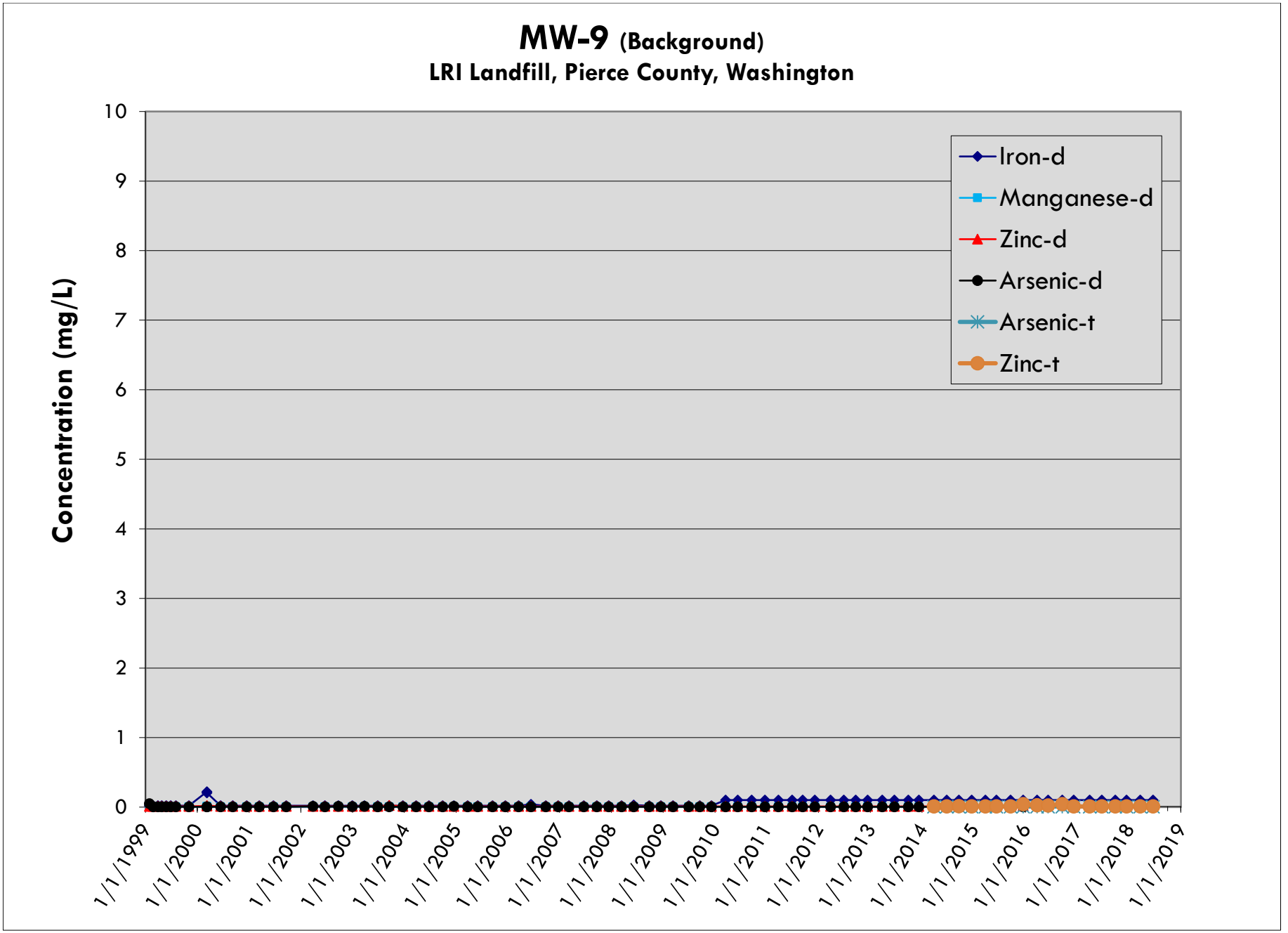
**LRI Landfill, Pierce County, Washington**

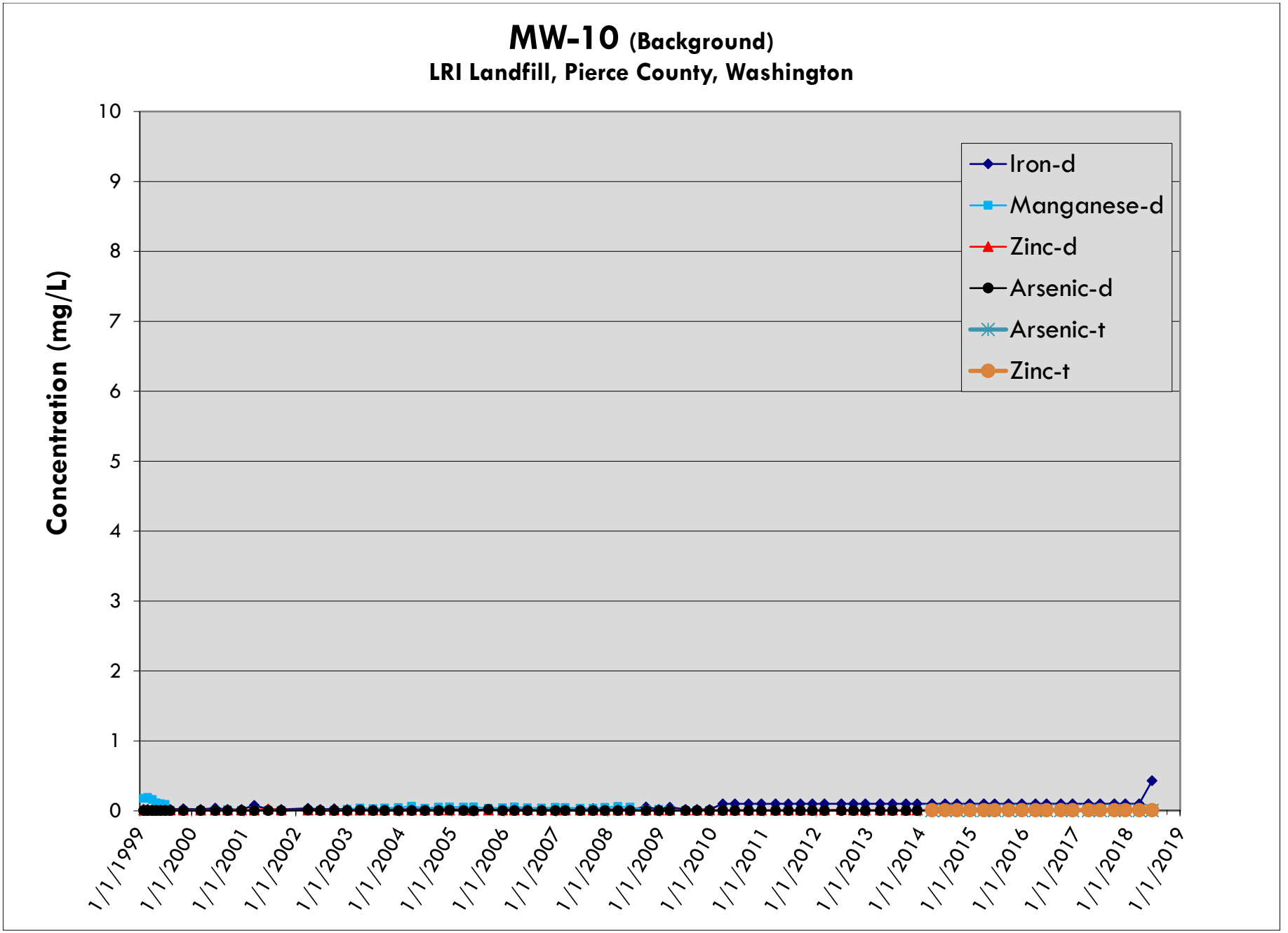


# MW-7

**LRI Landfill, Pierce County, Washington**

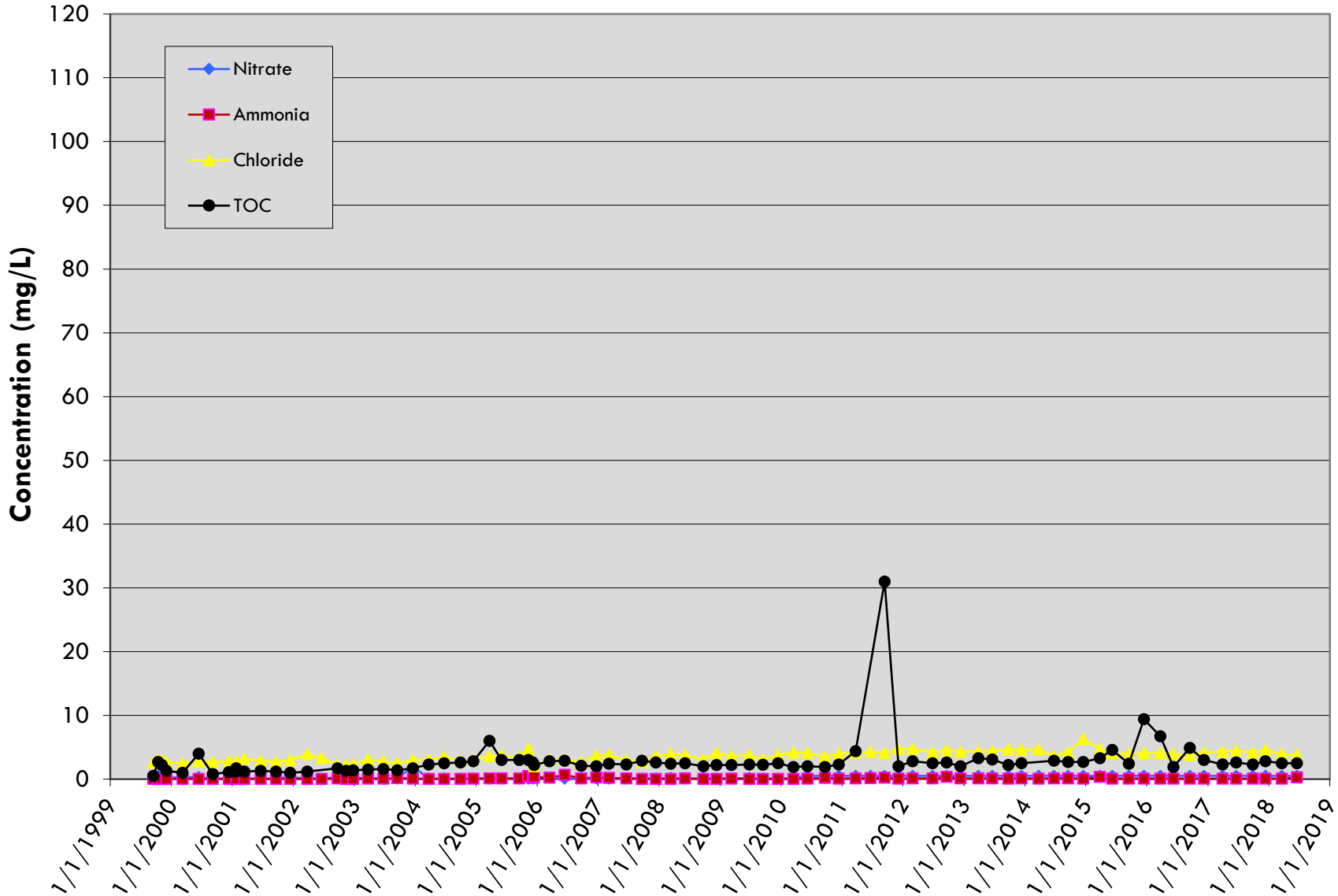



MW-9 (Background)
LRI Landfill, Pierce County, Washington
Concentration (mg/L)
10
9
8
7
6
5
4
3
2
1
0
1/1/1999
1/1/2000
1/1/2001
1/1/2002
1/1/2003
1/1/2004
1/1/2005
1/1/2006
1/1/2007
1/1/2008
1/1/2009
1/1/2010
1/1/2011
1/1/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
1/1/2017
1/1/2018
1/1/2019
Iron-d
Manganese-d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


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

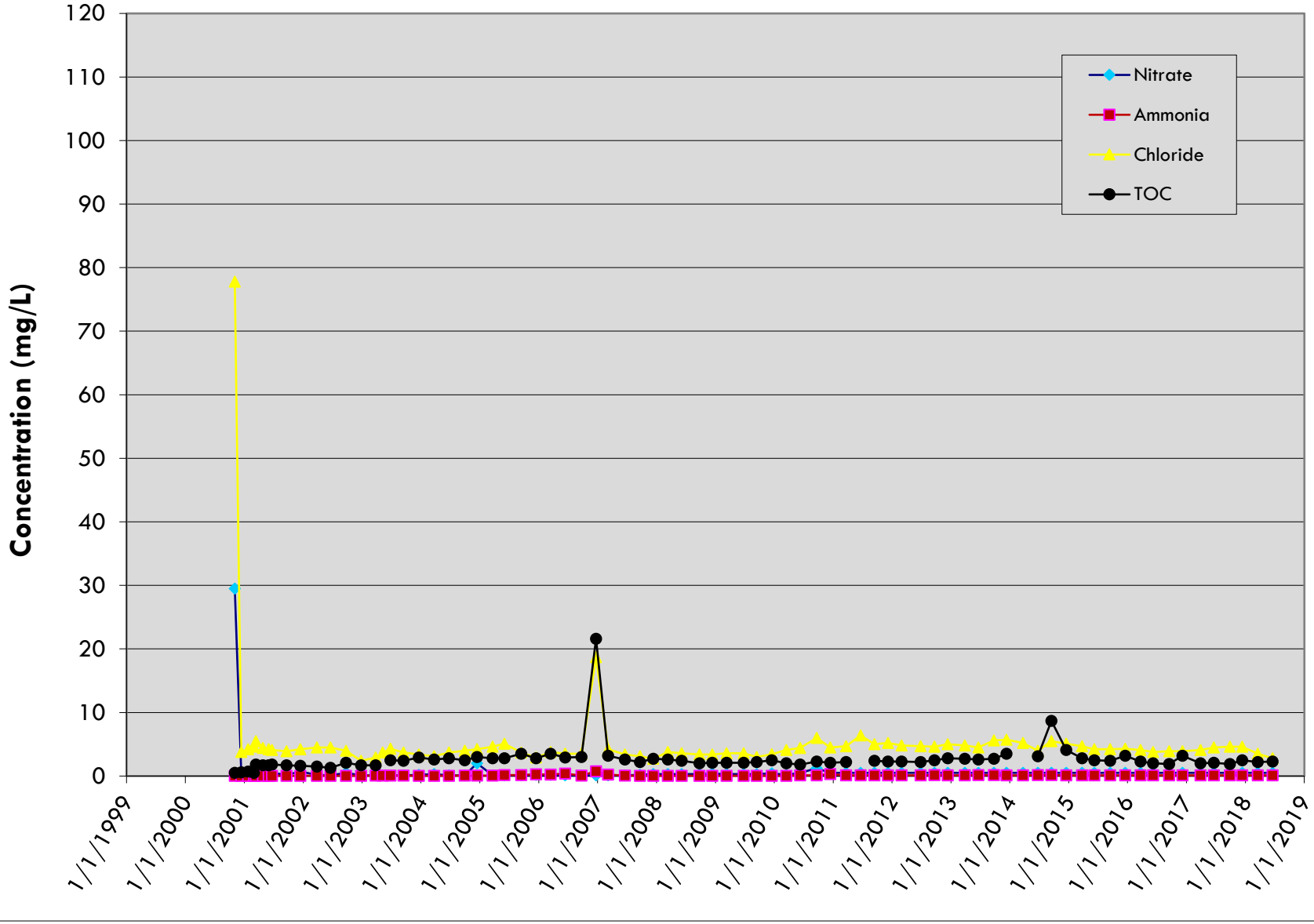
# LDCS-1

## LRI Landfill, Pierce County, Washington



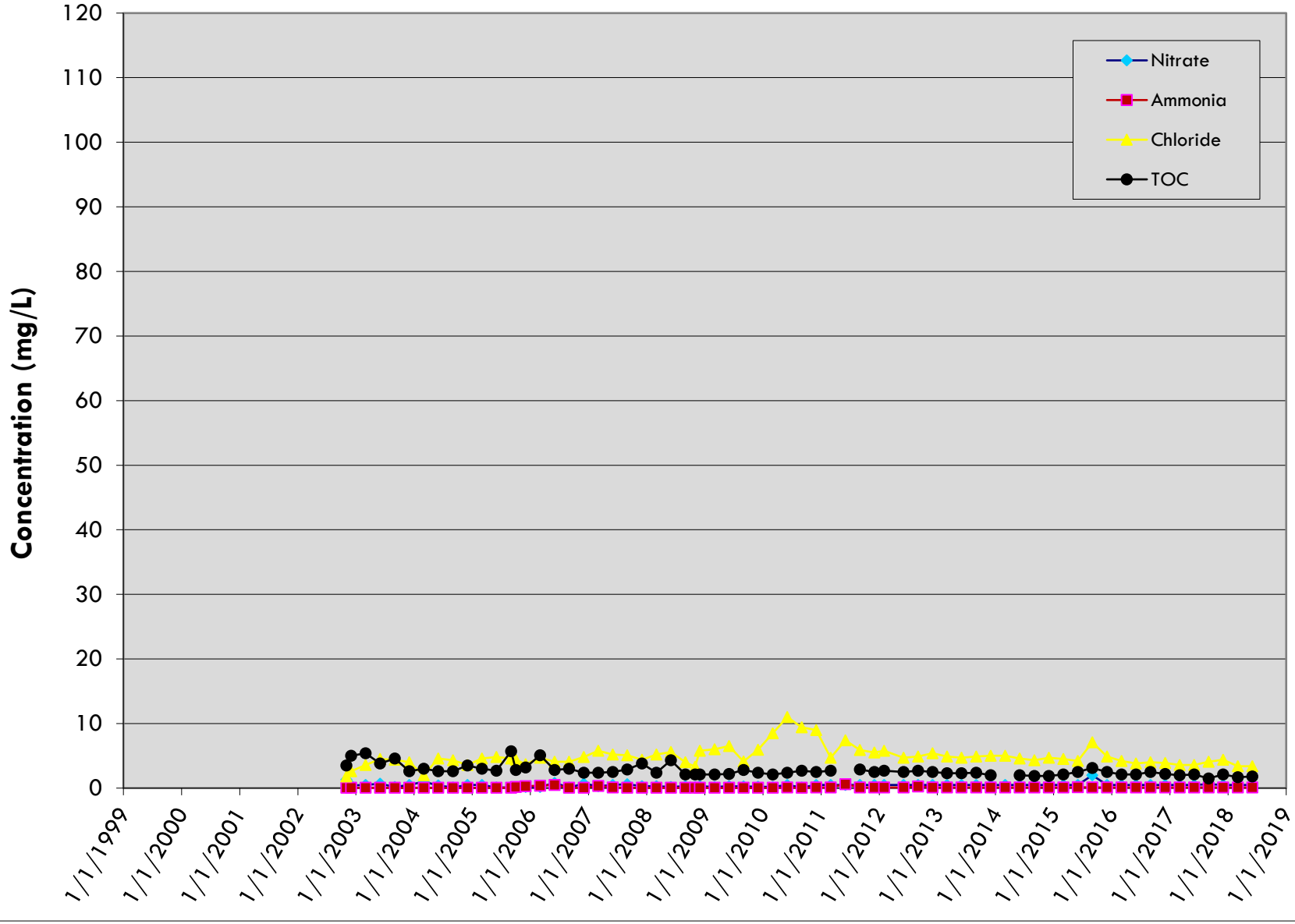
# LDCS-2A

## LRI Landfill, Pierce County, Washington



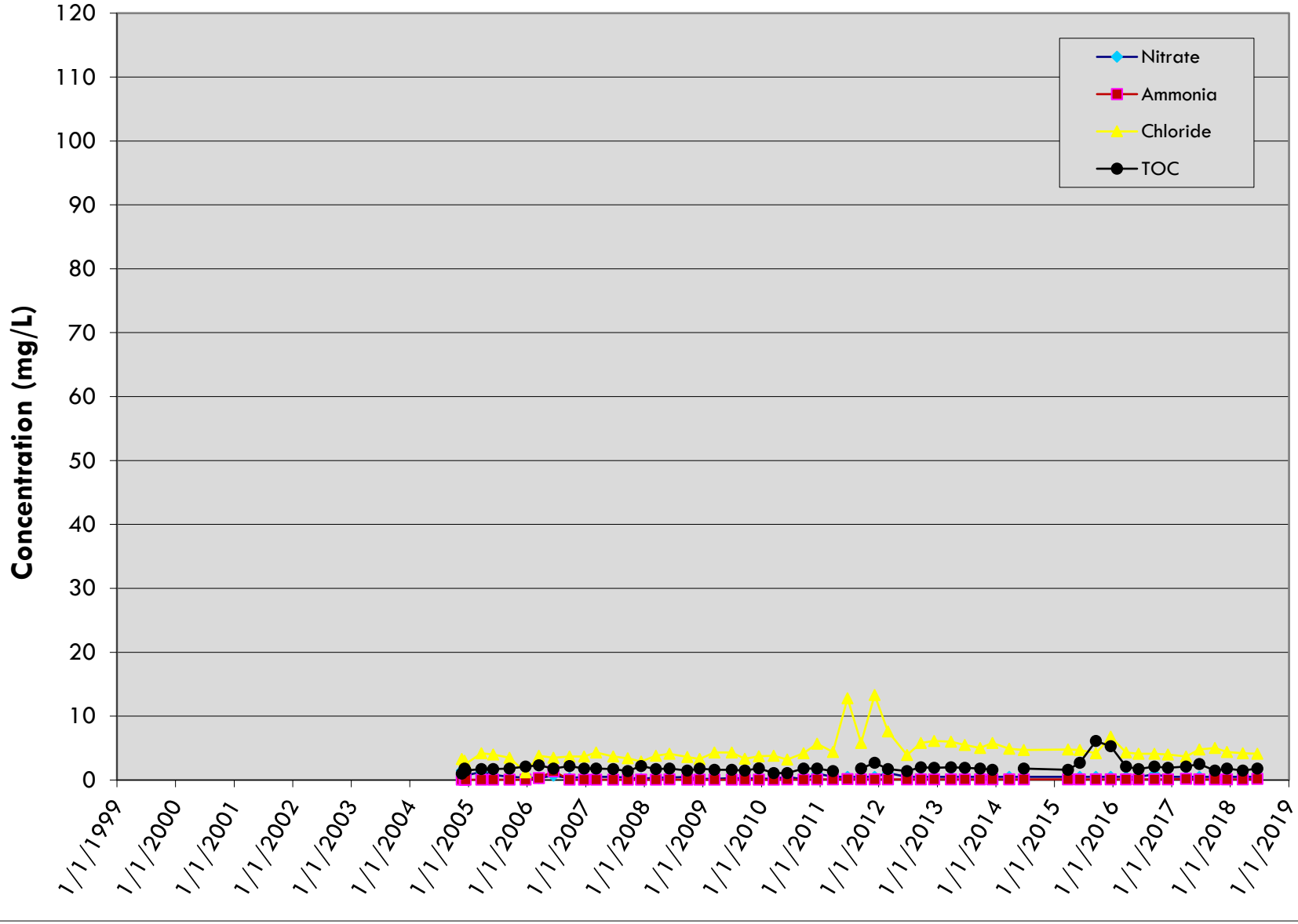
# LDCS-2B

## LRI Landfill, Pierce County, Washington



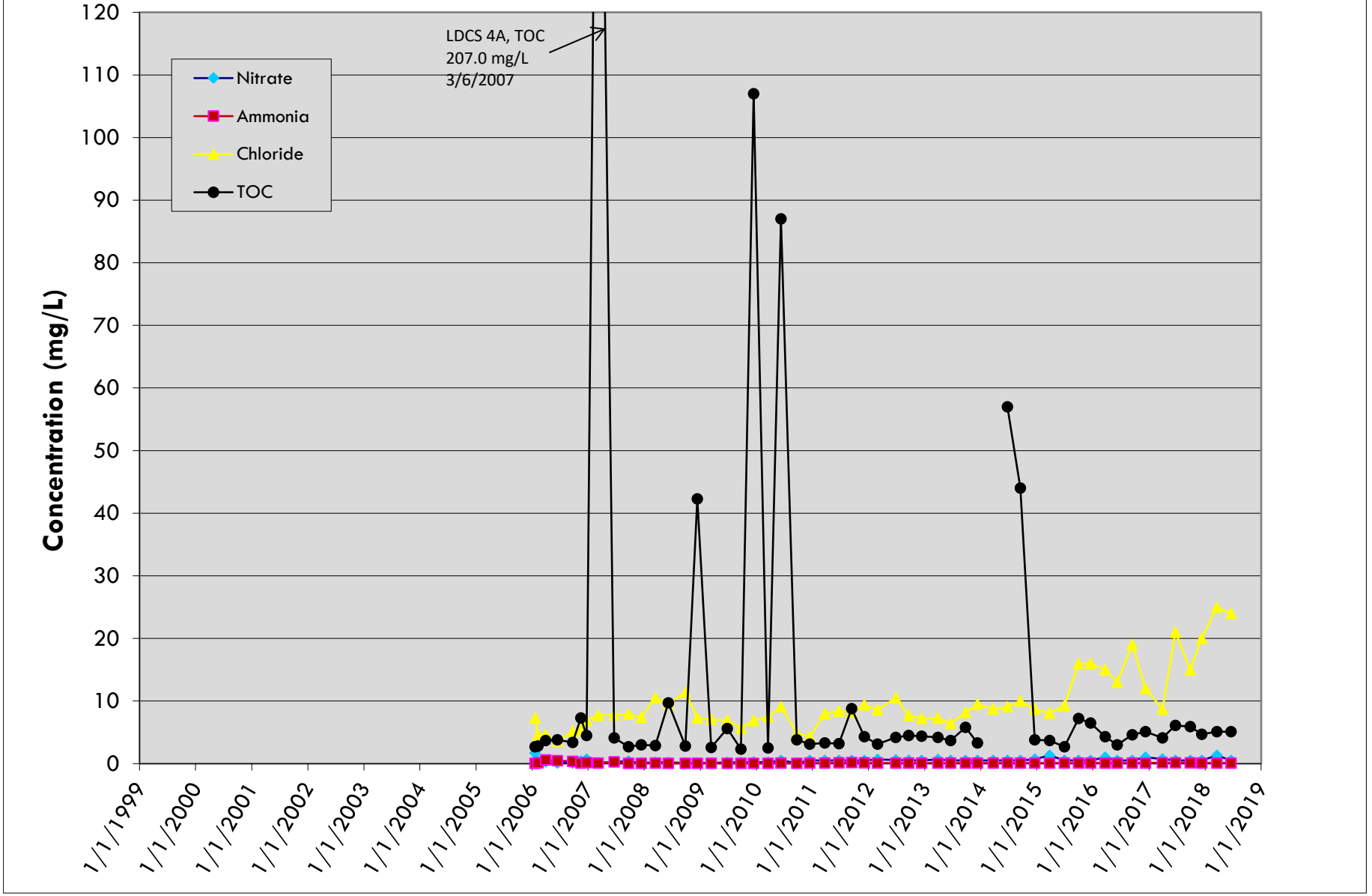
# LDCS-3A

## LRI Landfill, Pierce County, Washington



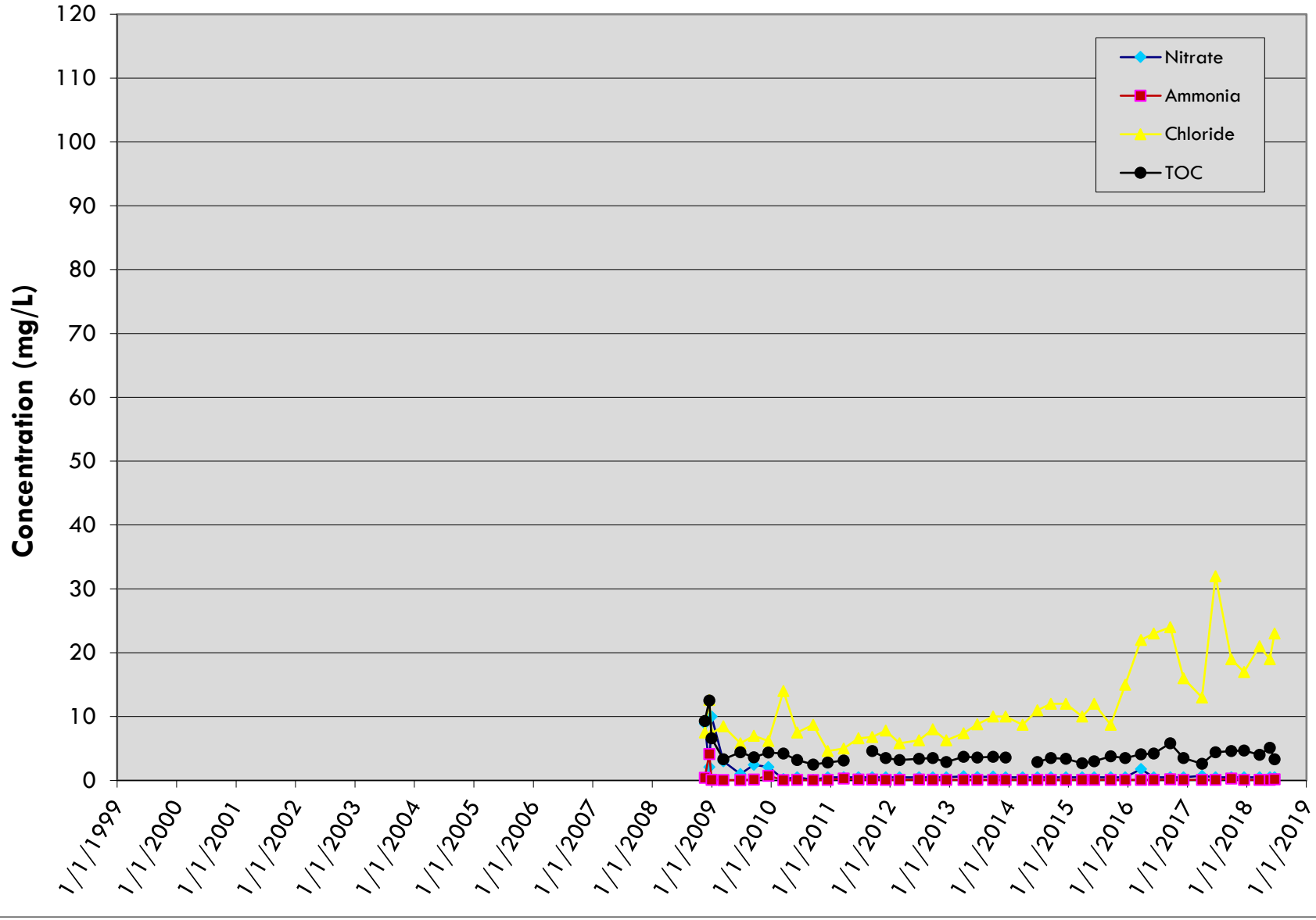
# LDCS-4A

## LRI Landfill, Pierce County, Washington



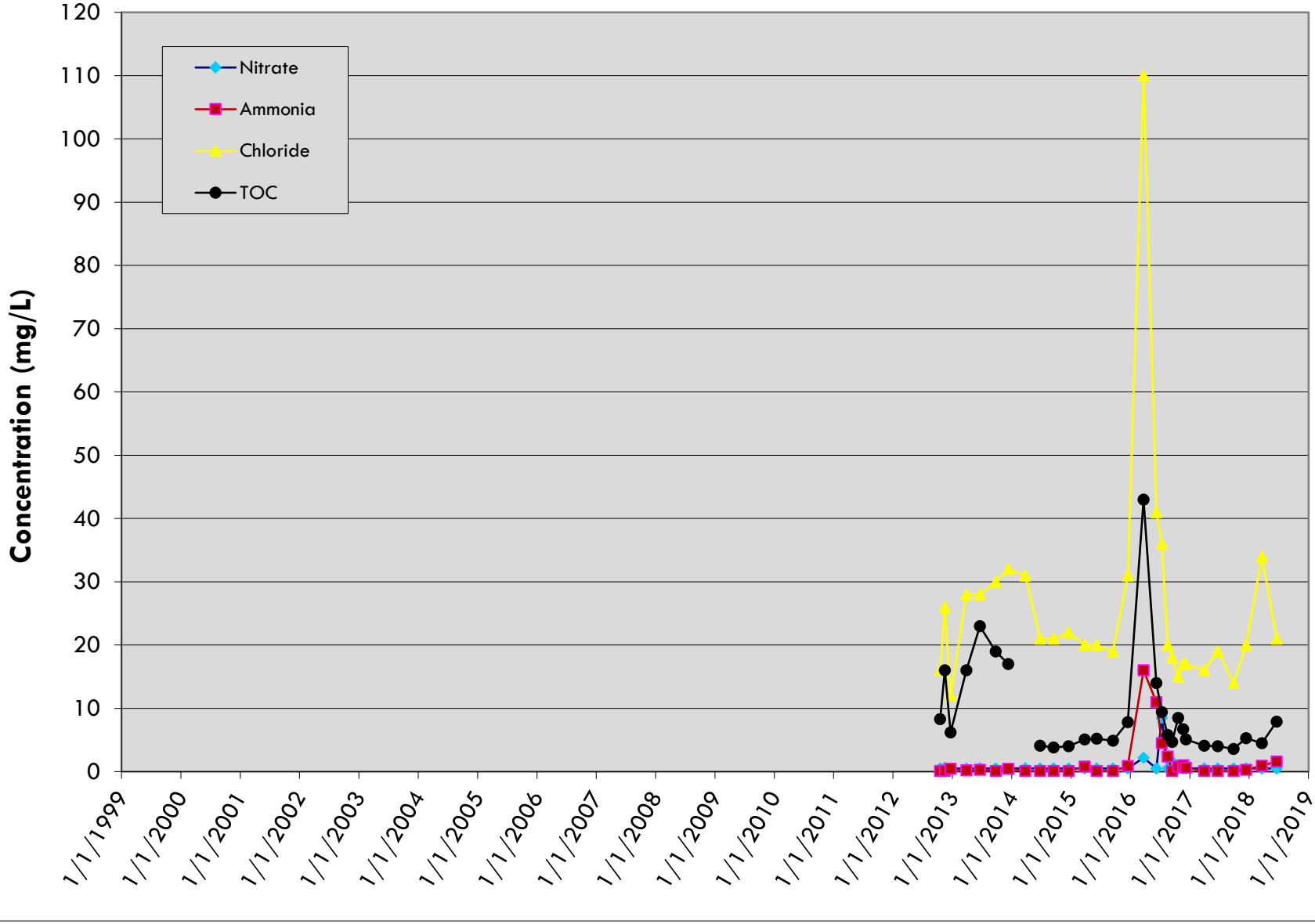
# LDCS-4B

## LRI Landfill, Pierce County, Washington



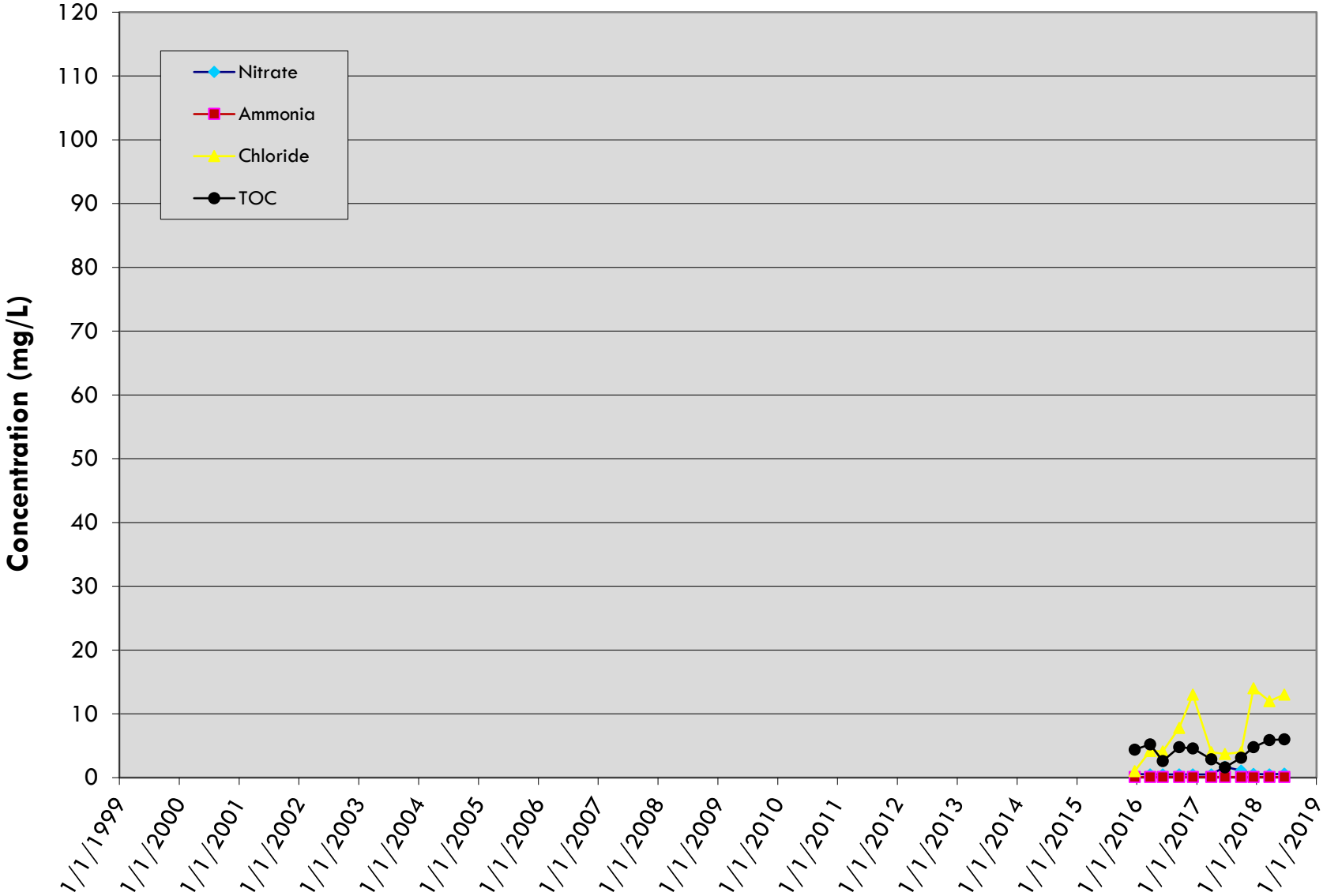
# LDCS-5A

## LRI Landfill, Pierce County, Washington



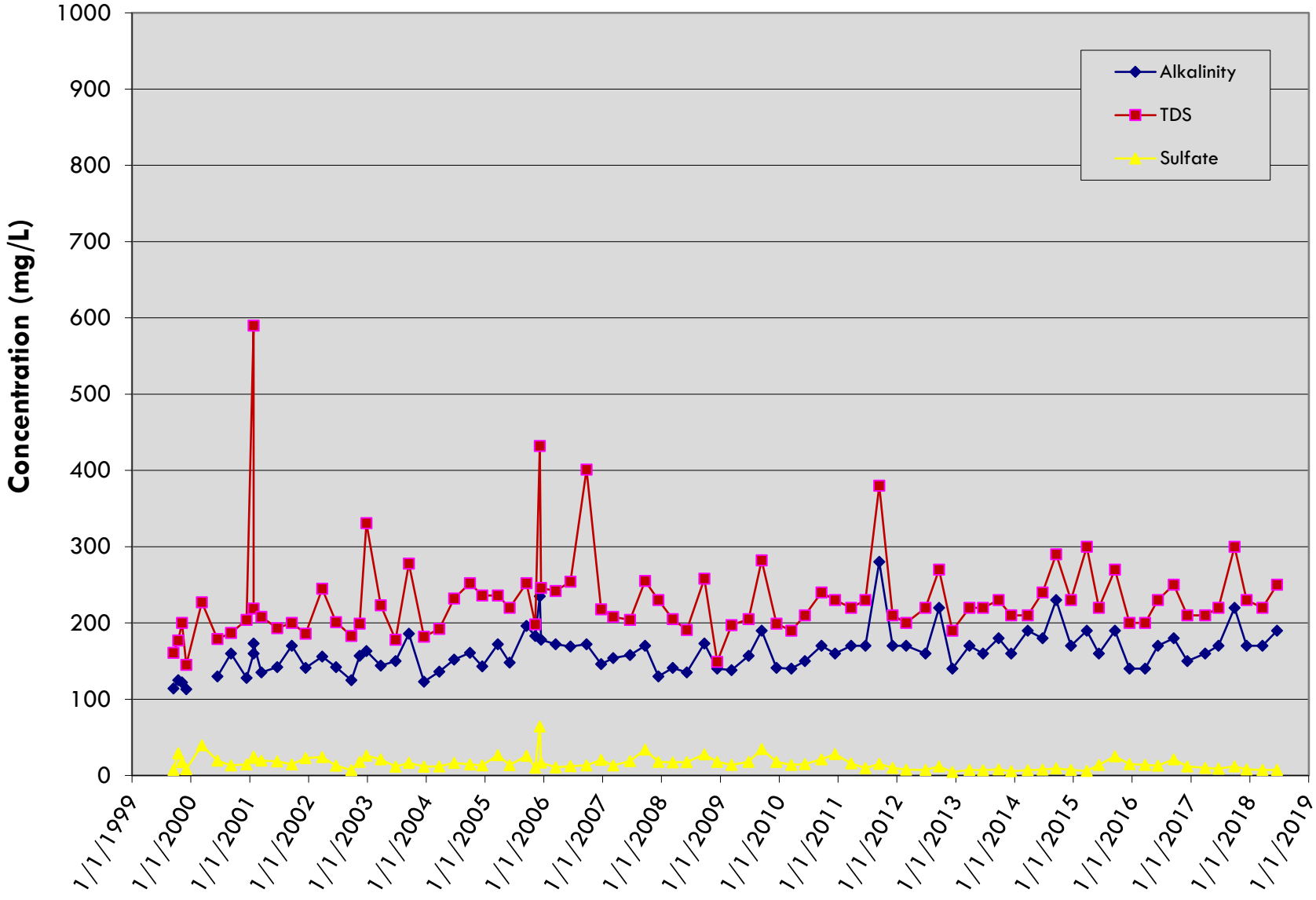
# LDCS-6A

## LRI Landfill, Pierce County, Washington



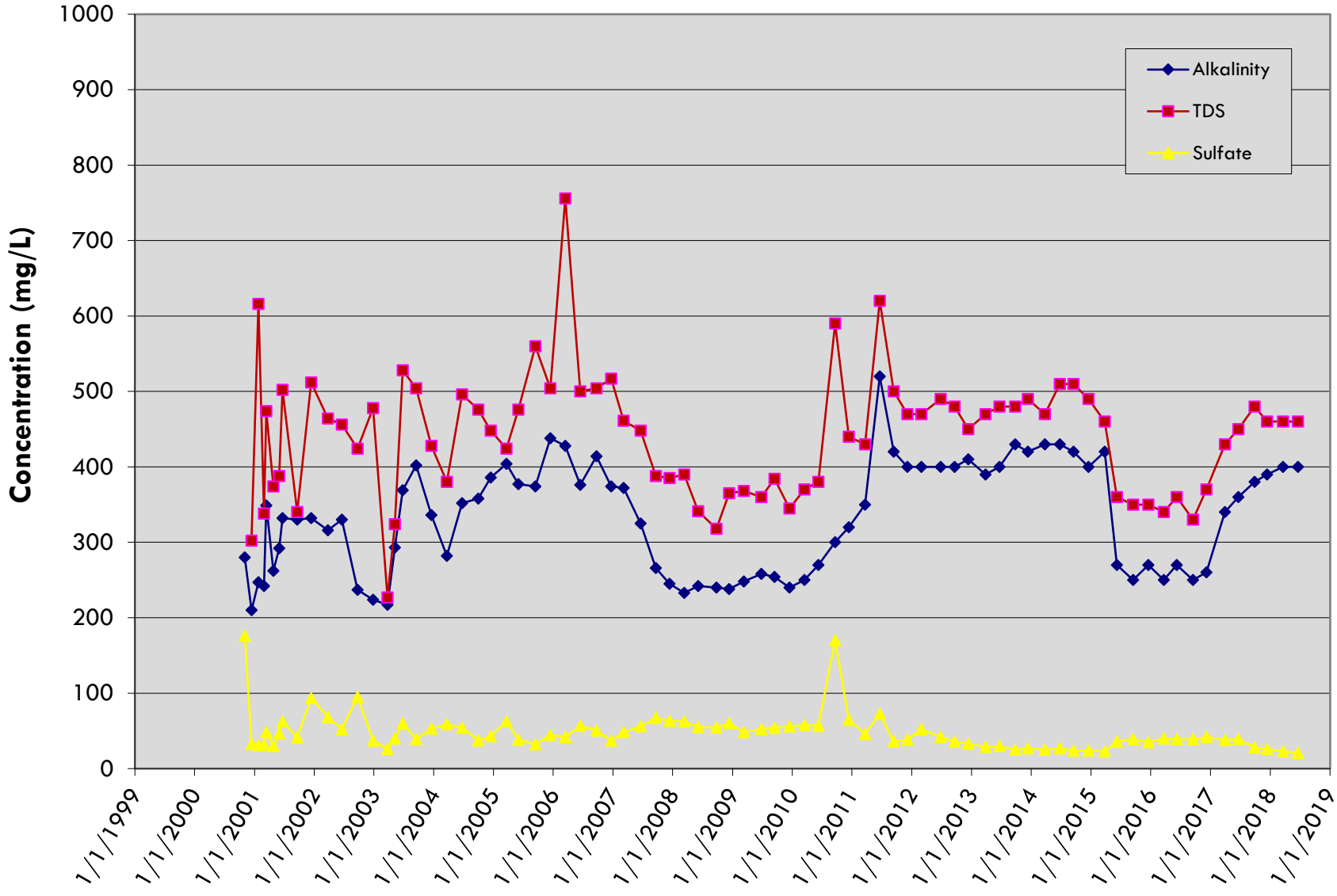
# LDCS-1

## LRI Landfill, Pierce County, Washington



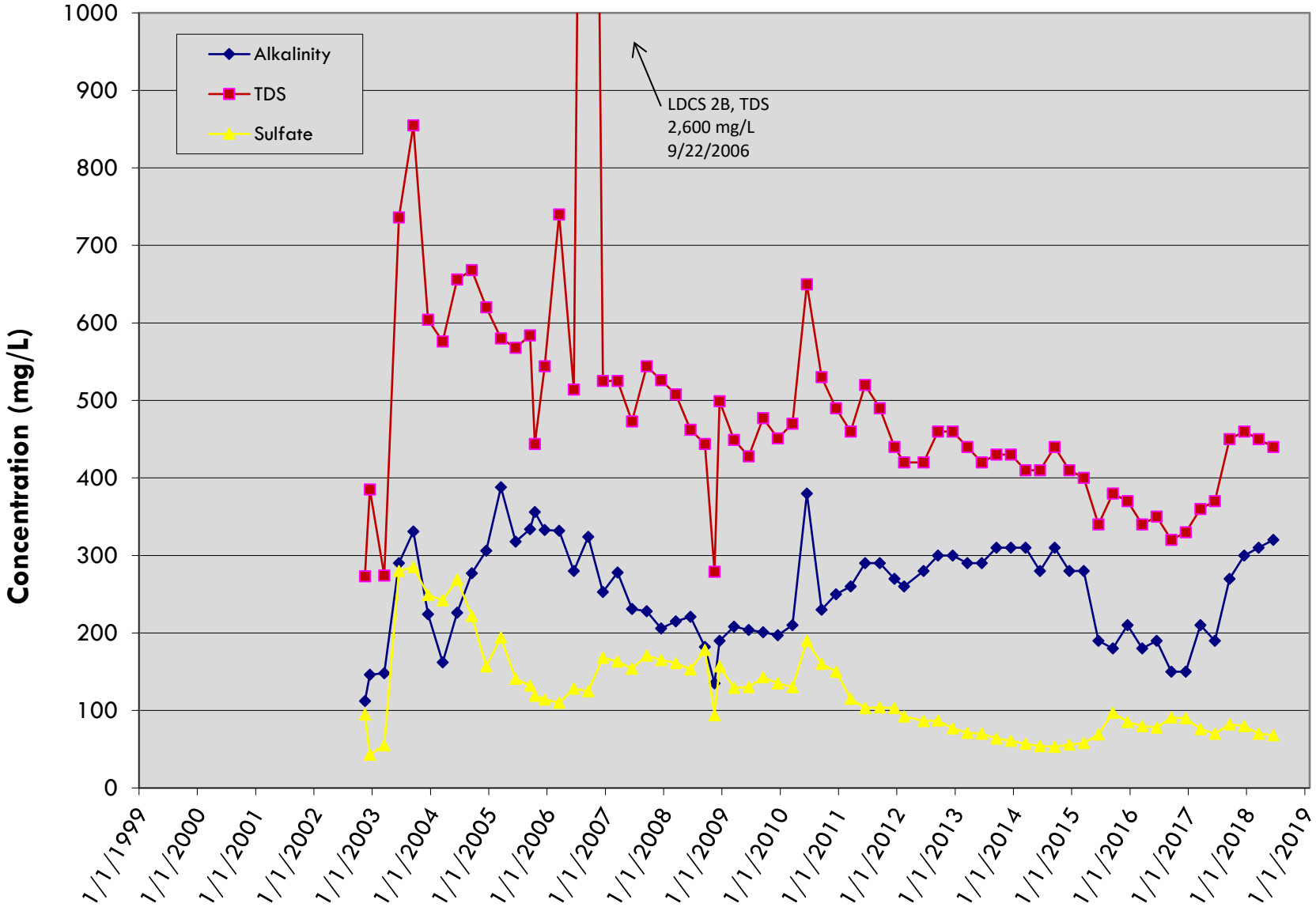
# LDCS-2A

## LRI Landfill, Pierce County, Washington



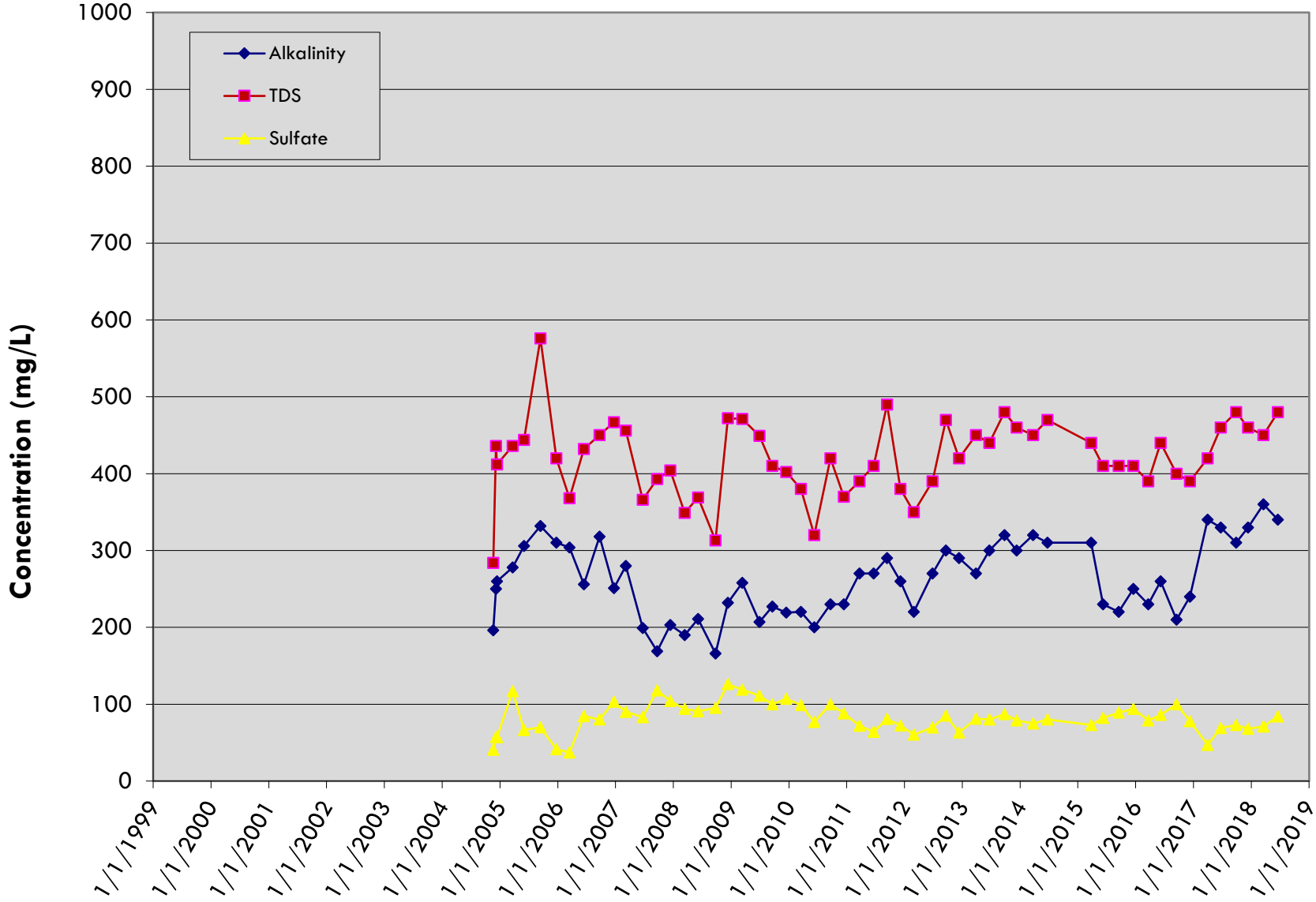
# LDCS-2B

**LRI Landfill, Pierce County, Washington**



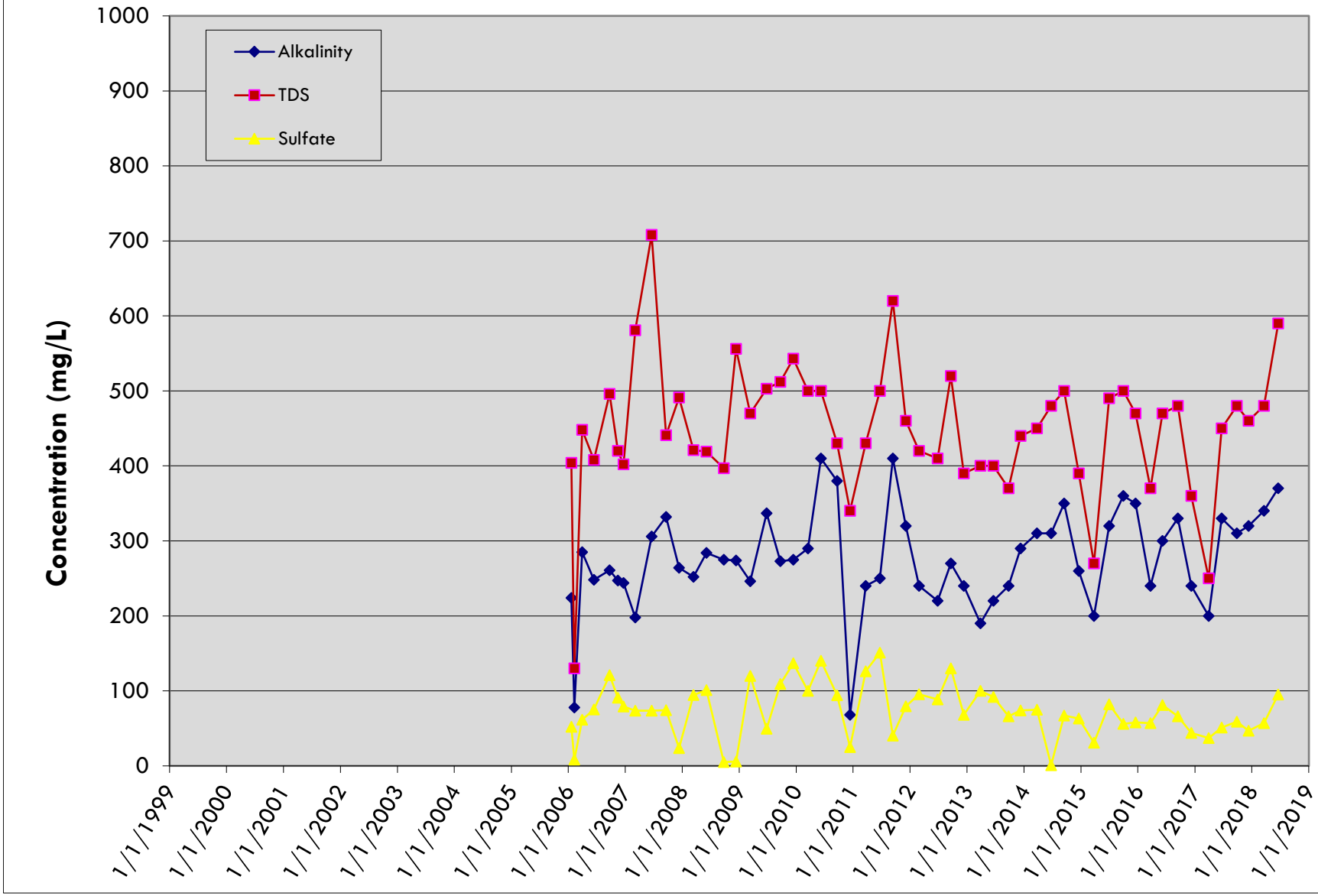
# LDCS-3A

## LRI Landfill, Pierce County, Washington



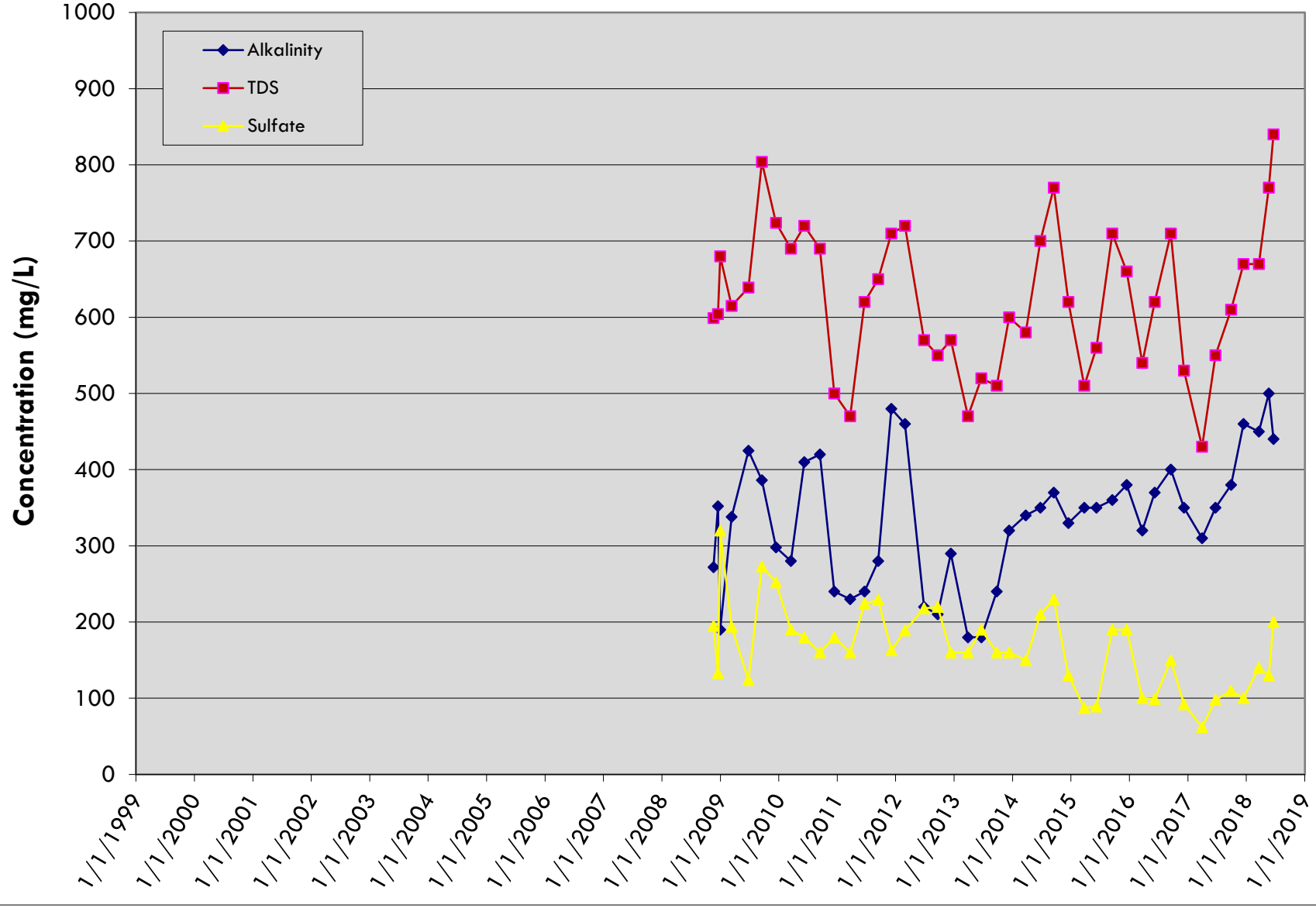
# LDCS-4A

## LRI Landfill, Pierce County, Washington



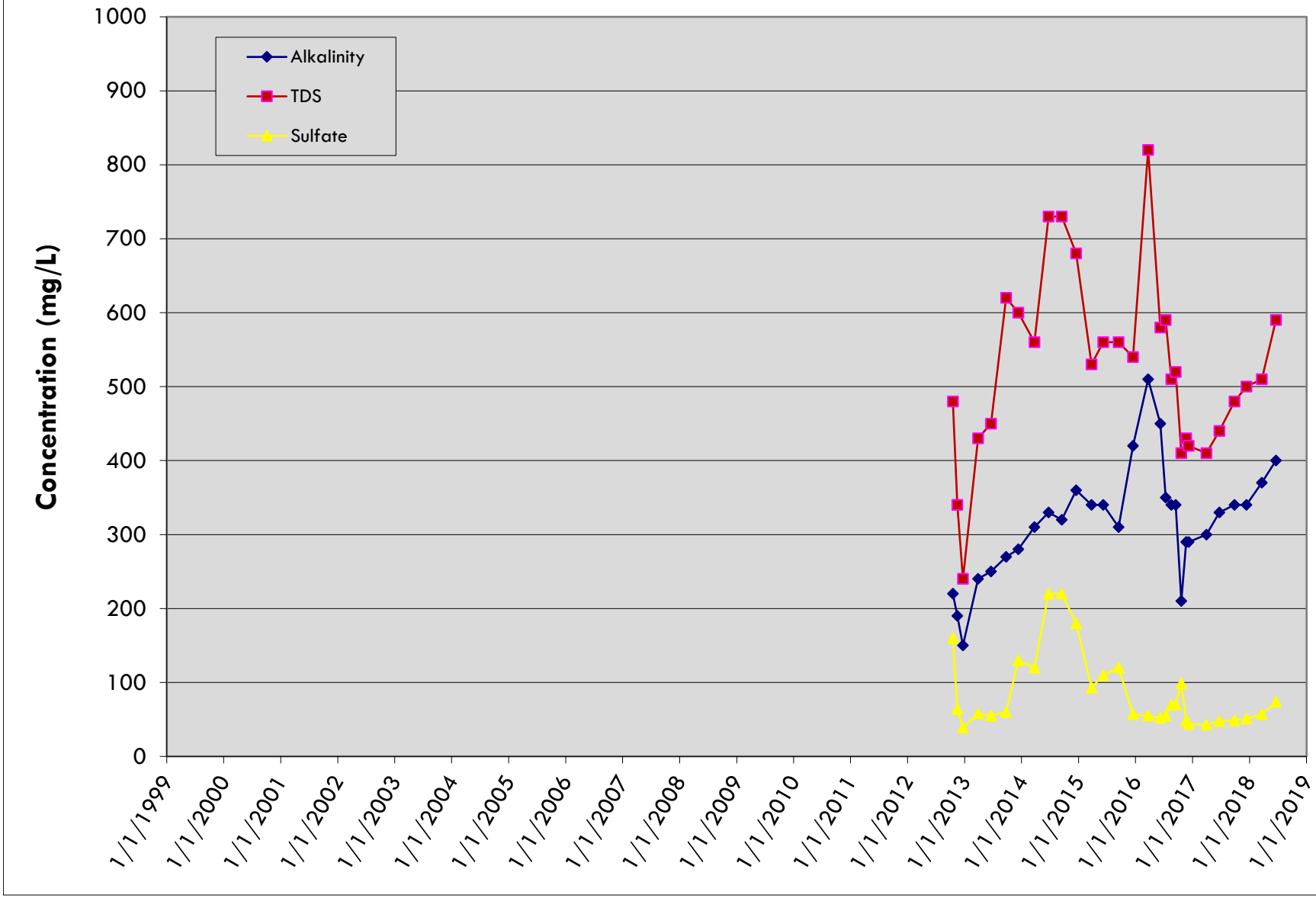
# LDCS-4B

## LRI Landfill, Pierce County, Washington



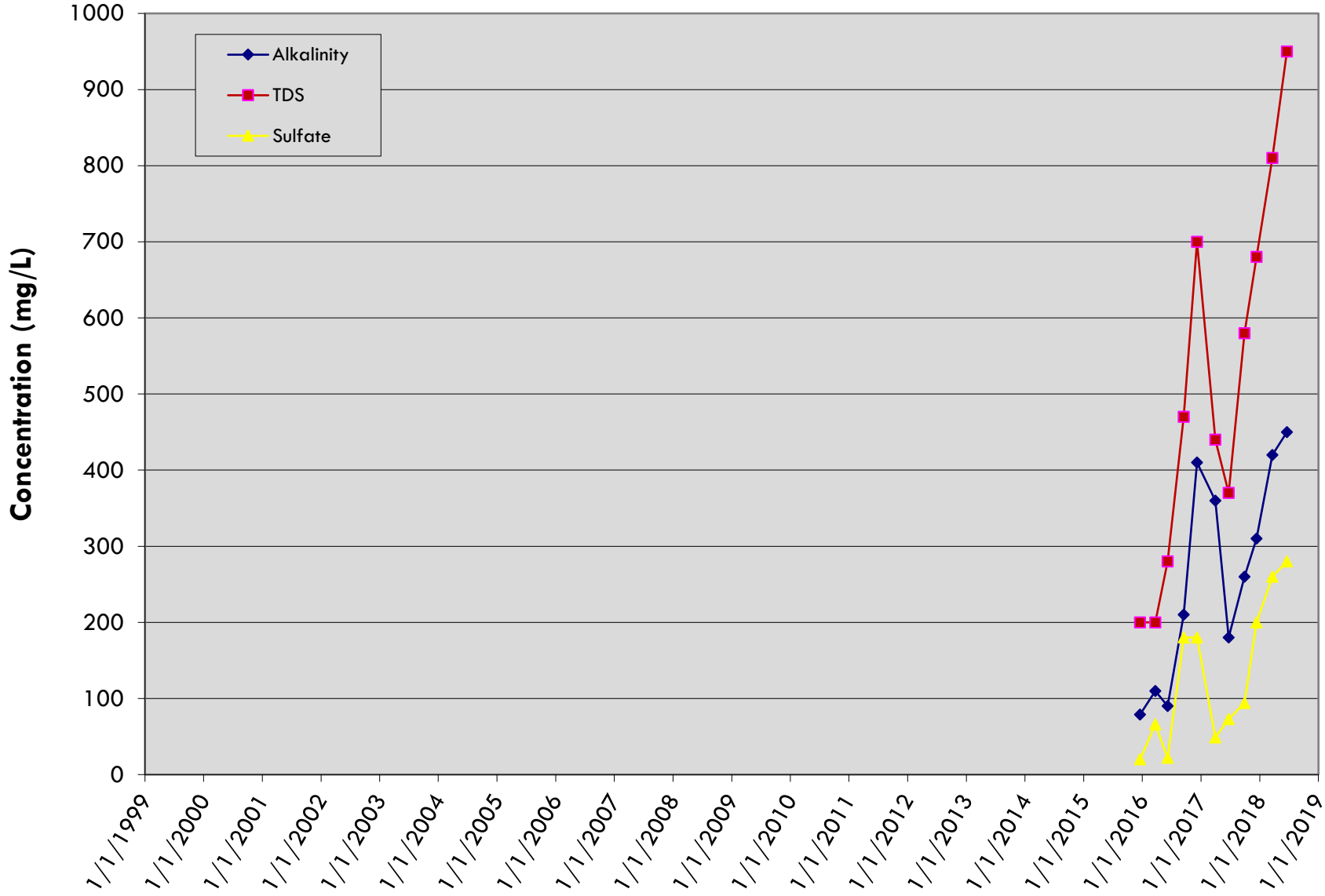
# LDCS-5A

## LRI Landfill, Pierce County, Washington



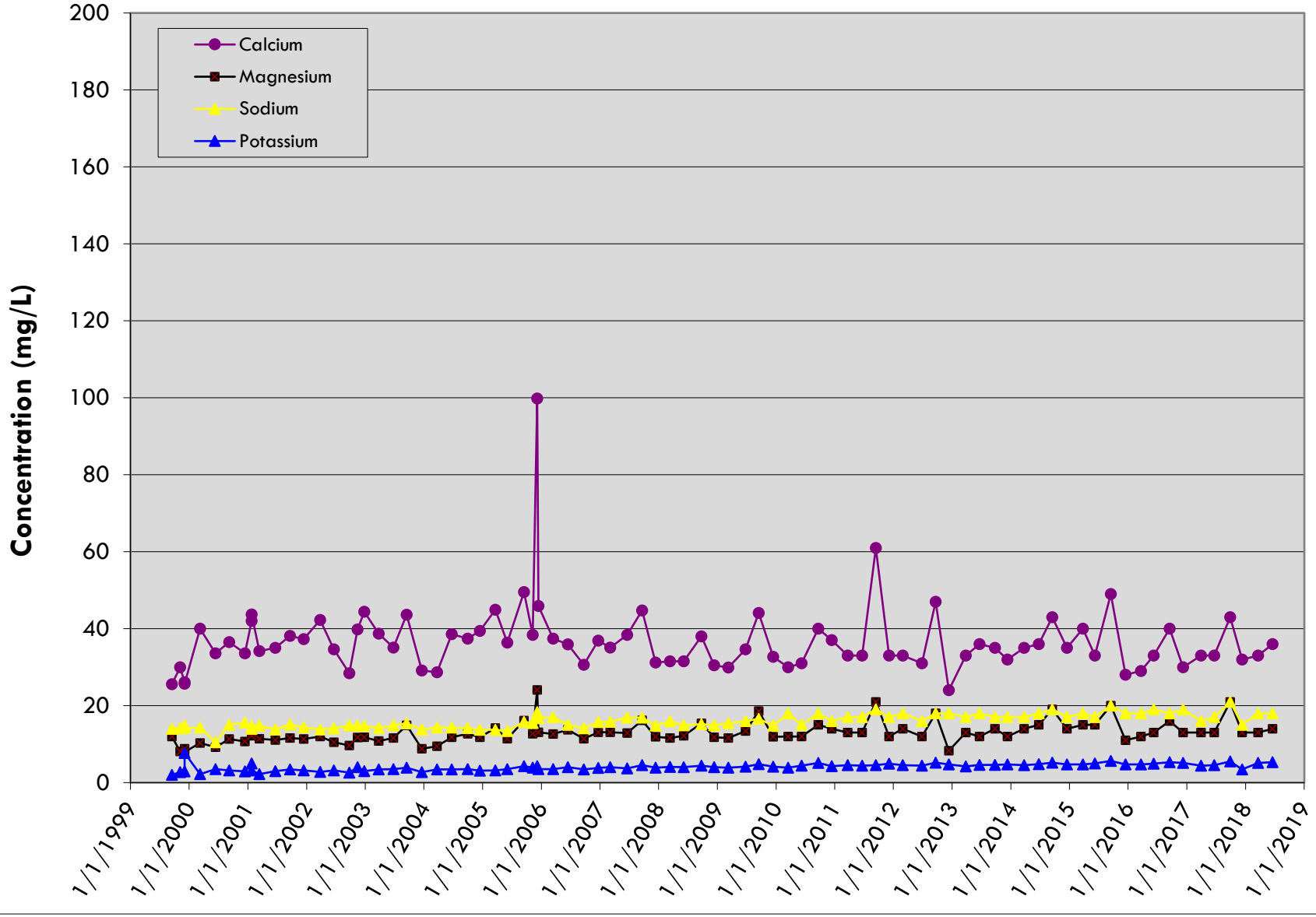
# LDCS-6A

## LRI Landfill, Pierce County, Washington



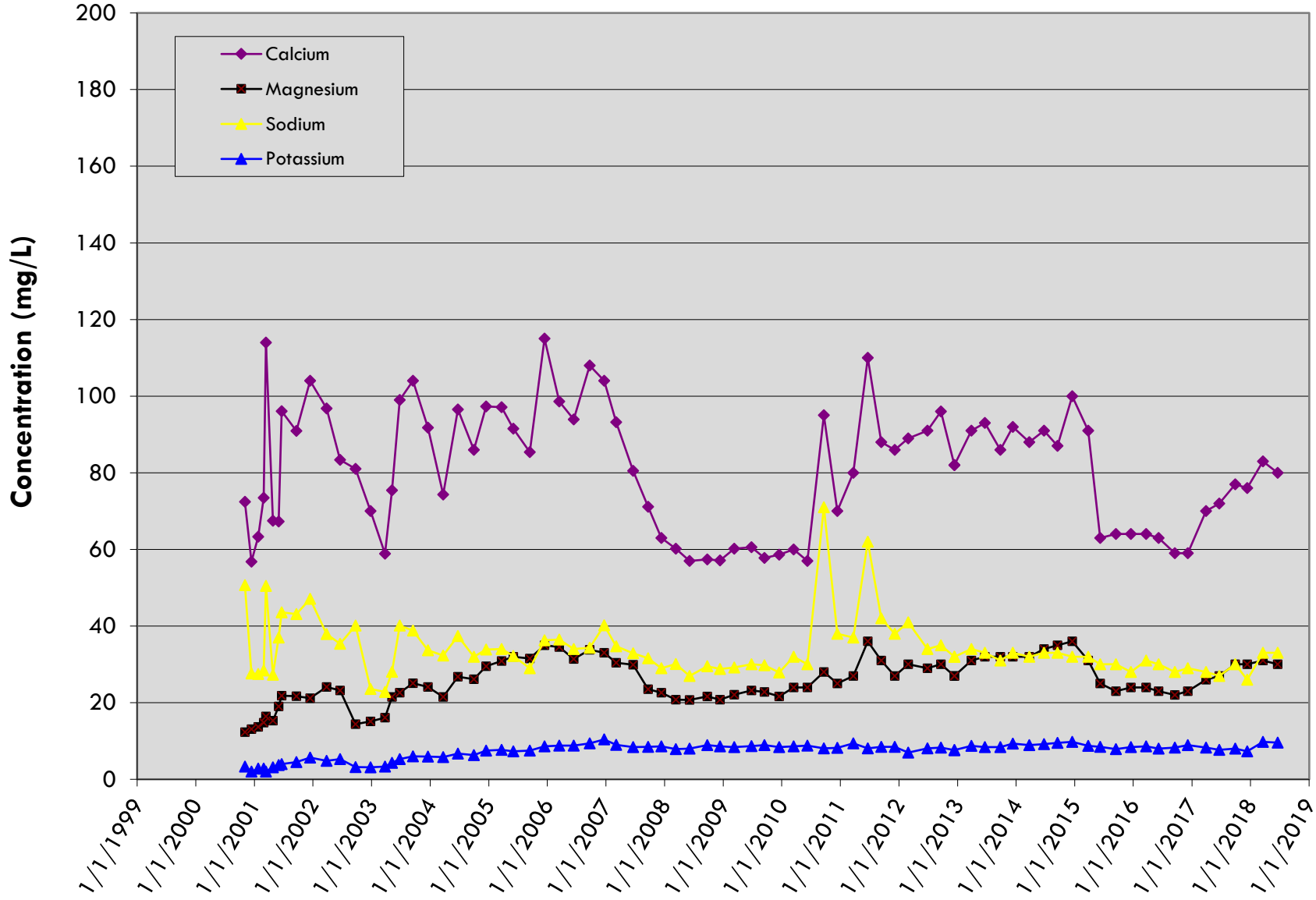
# LDCS-1

## LRI Landfill, Pierce County, Washington



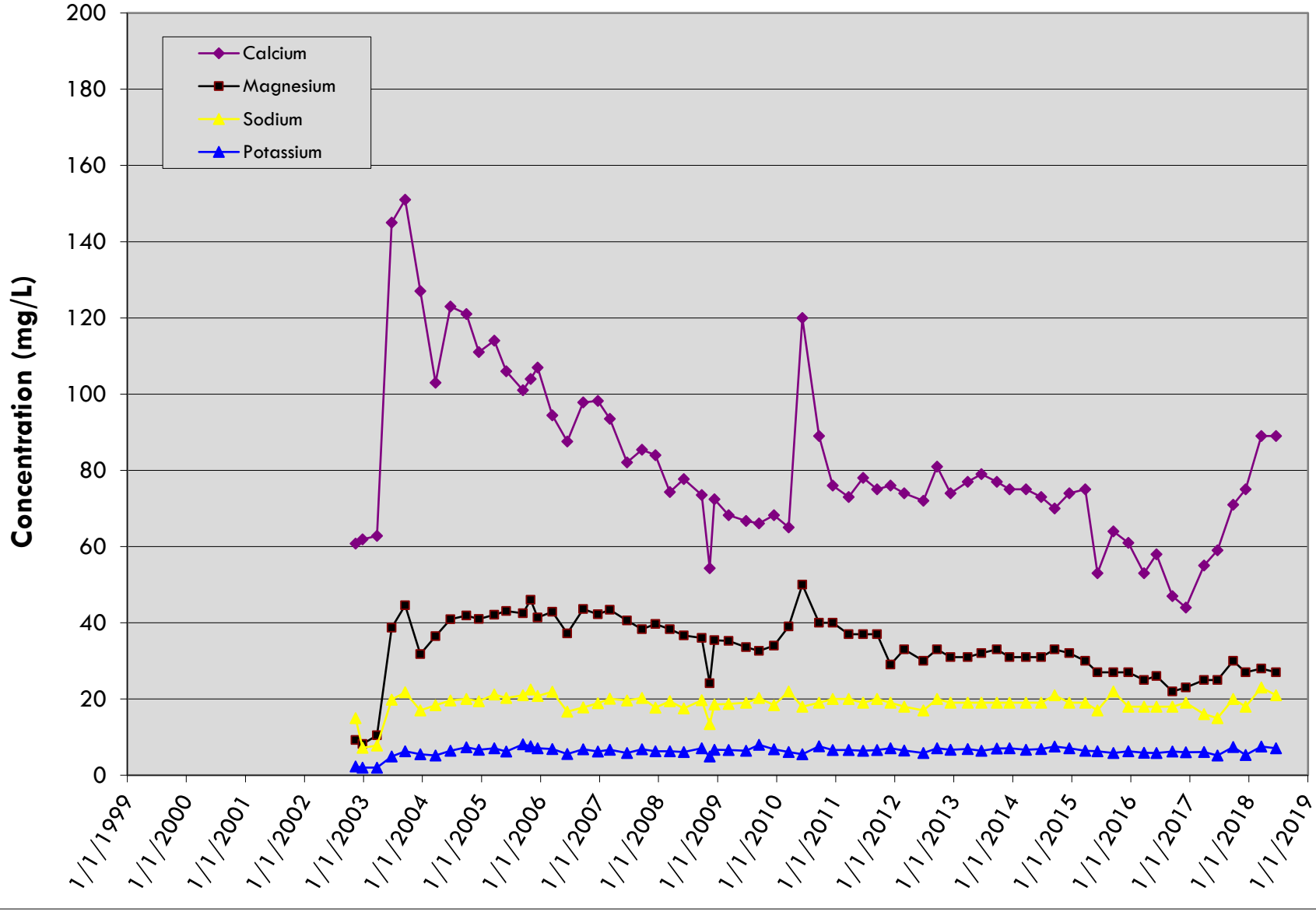
# LDCS-2A

## LRI Landfill, Pierce County, Washington



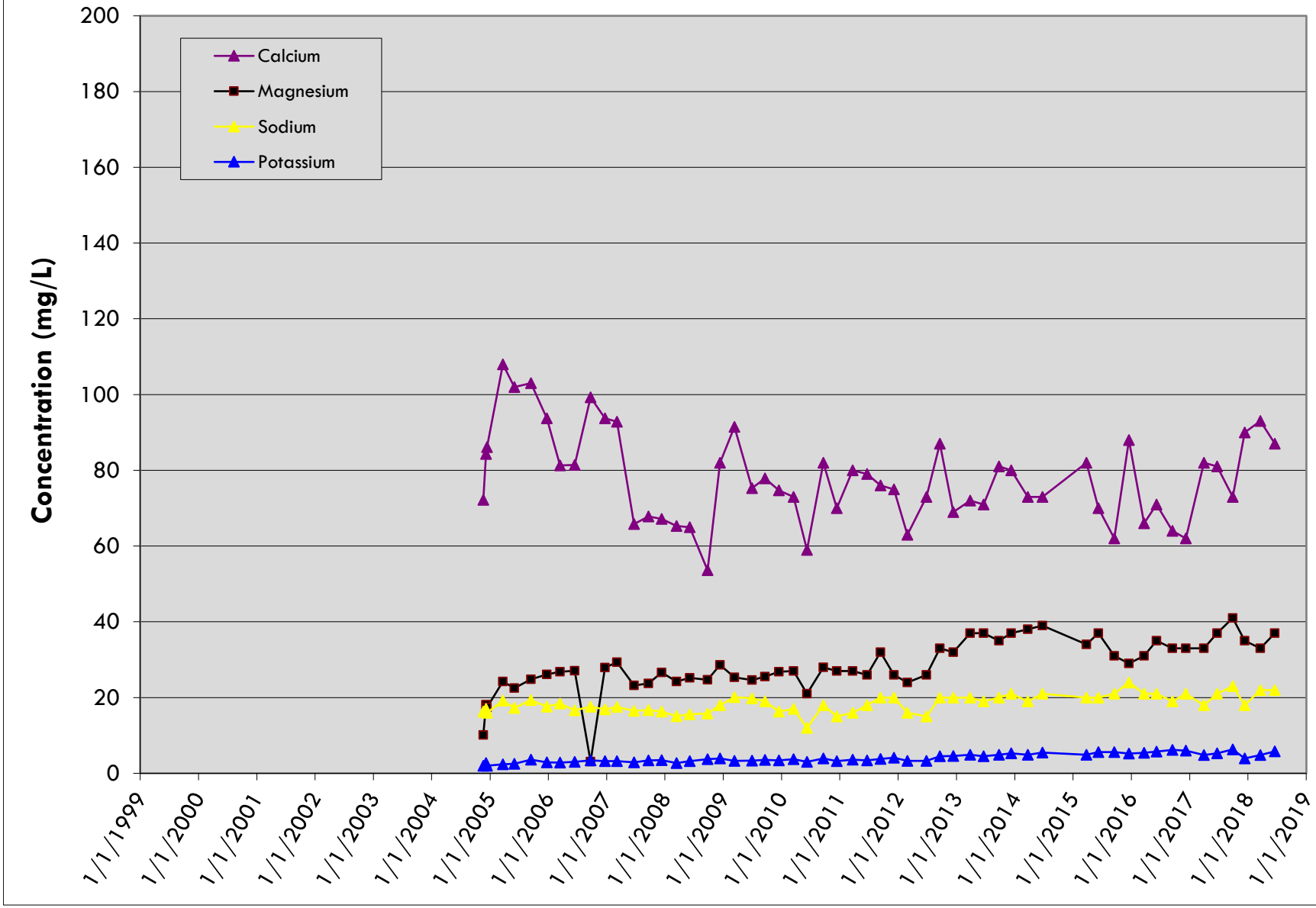
# LDCS-2B

## LRI Landfill, Pierce County, Washington



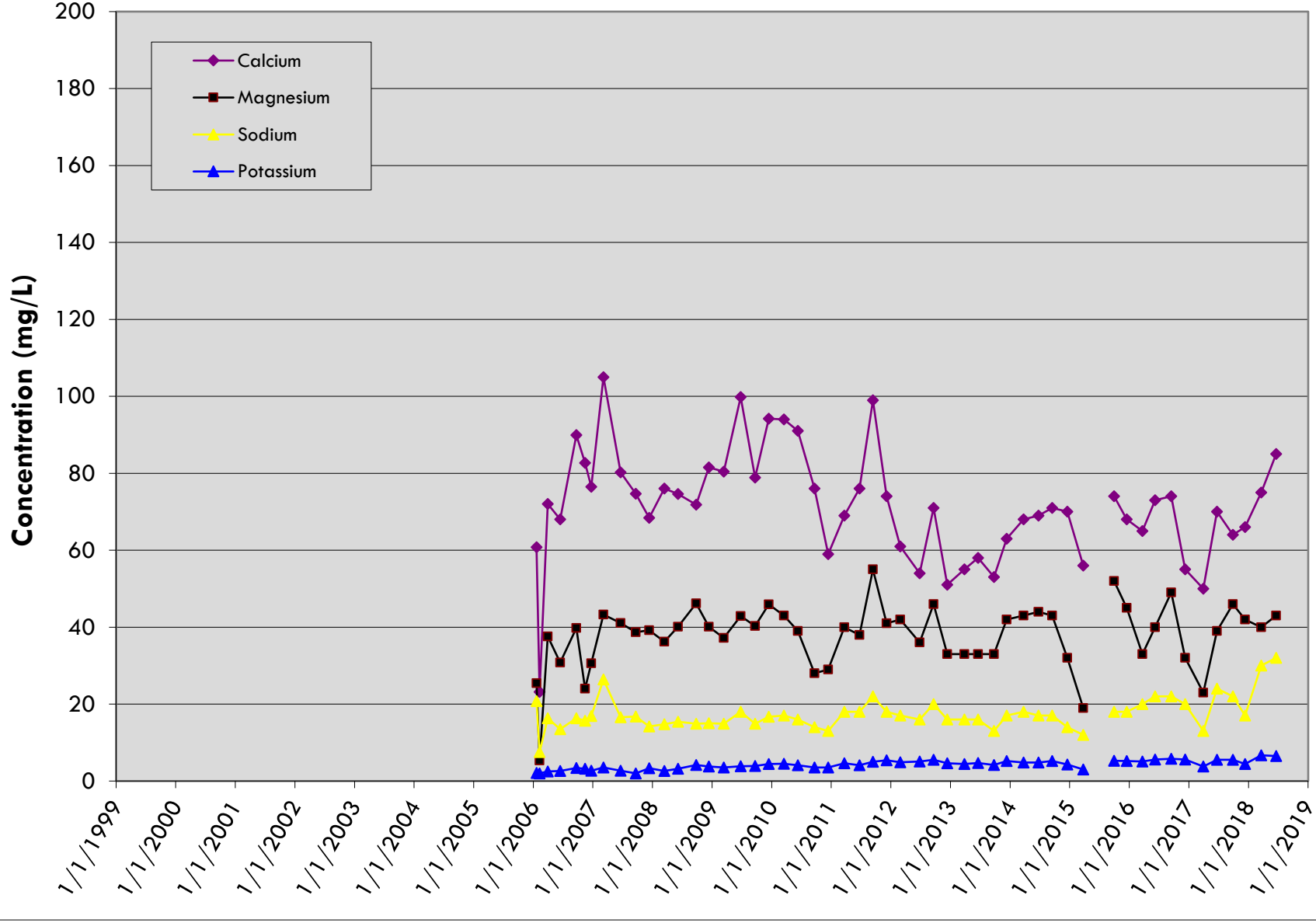
# LDCS-3A

## LRI Landfill, Pierce County, Washington



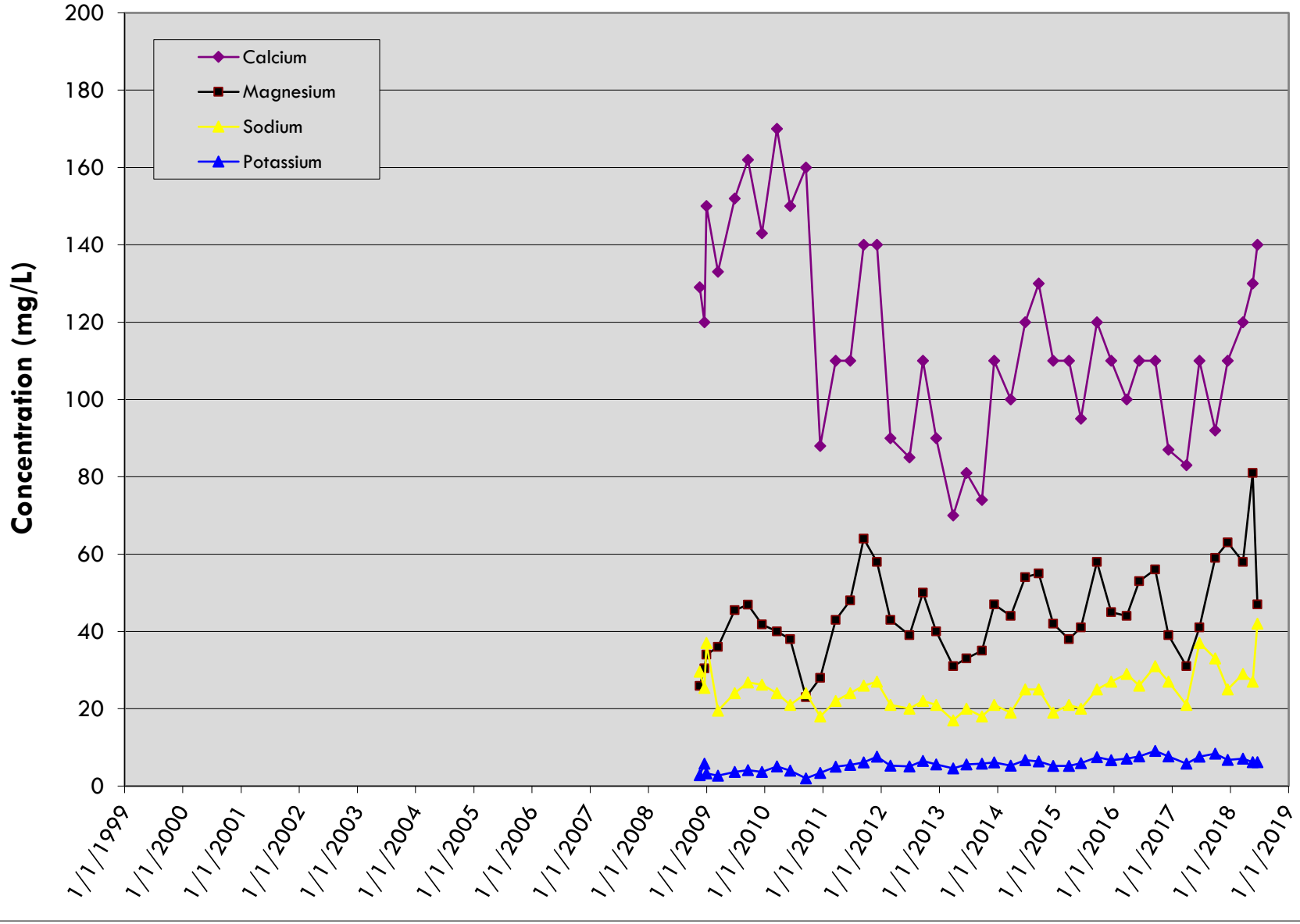
# LDCS-4A

## LRI Landfill, Pierce County, Washington



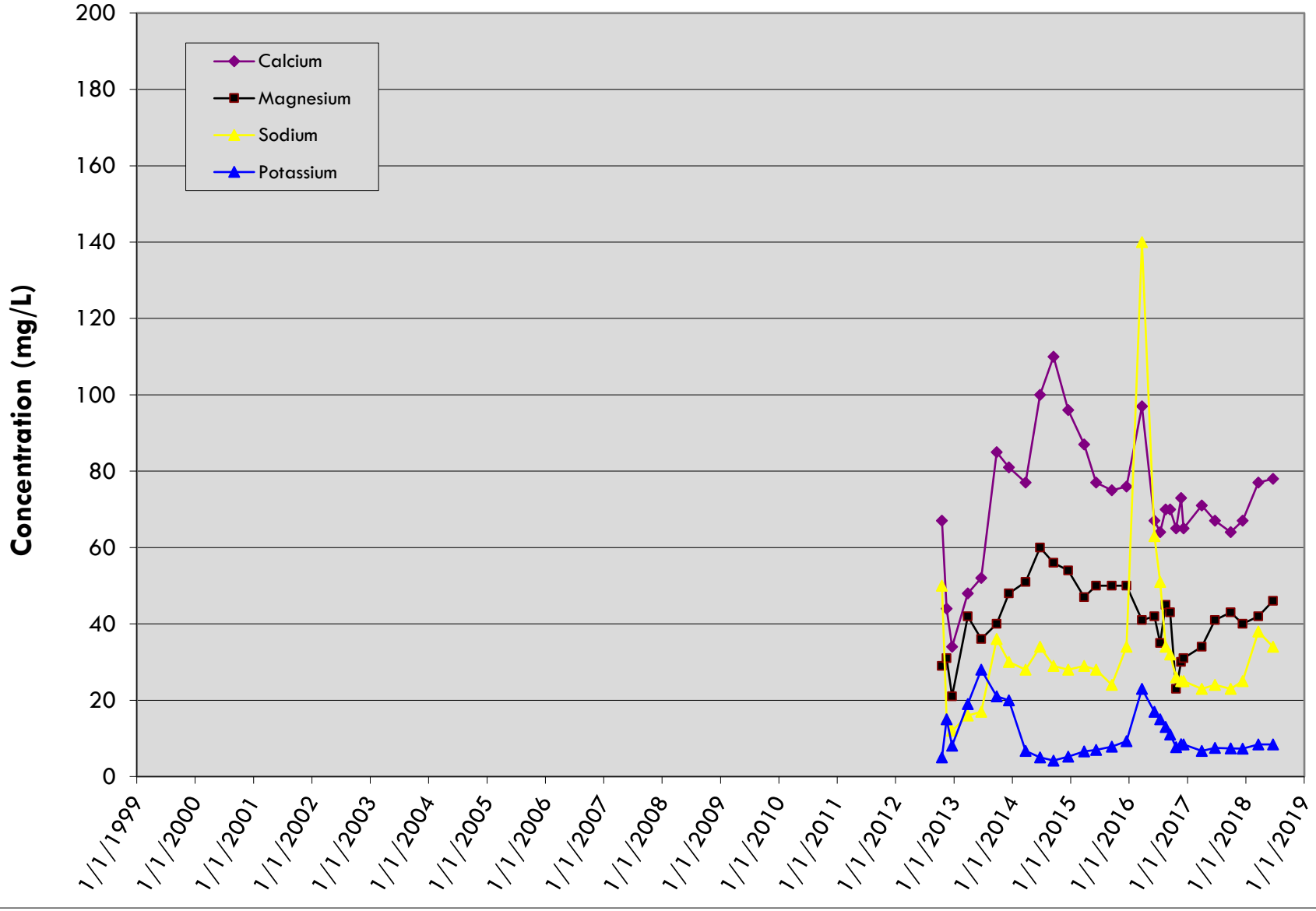
# LDCS-4B

## LRI Landfill, Pierce County, Washington



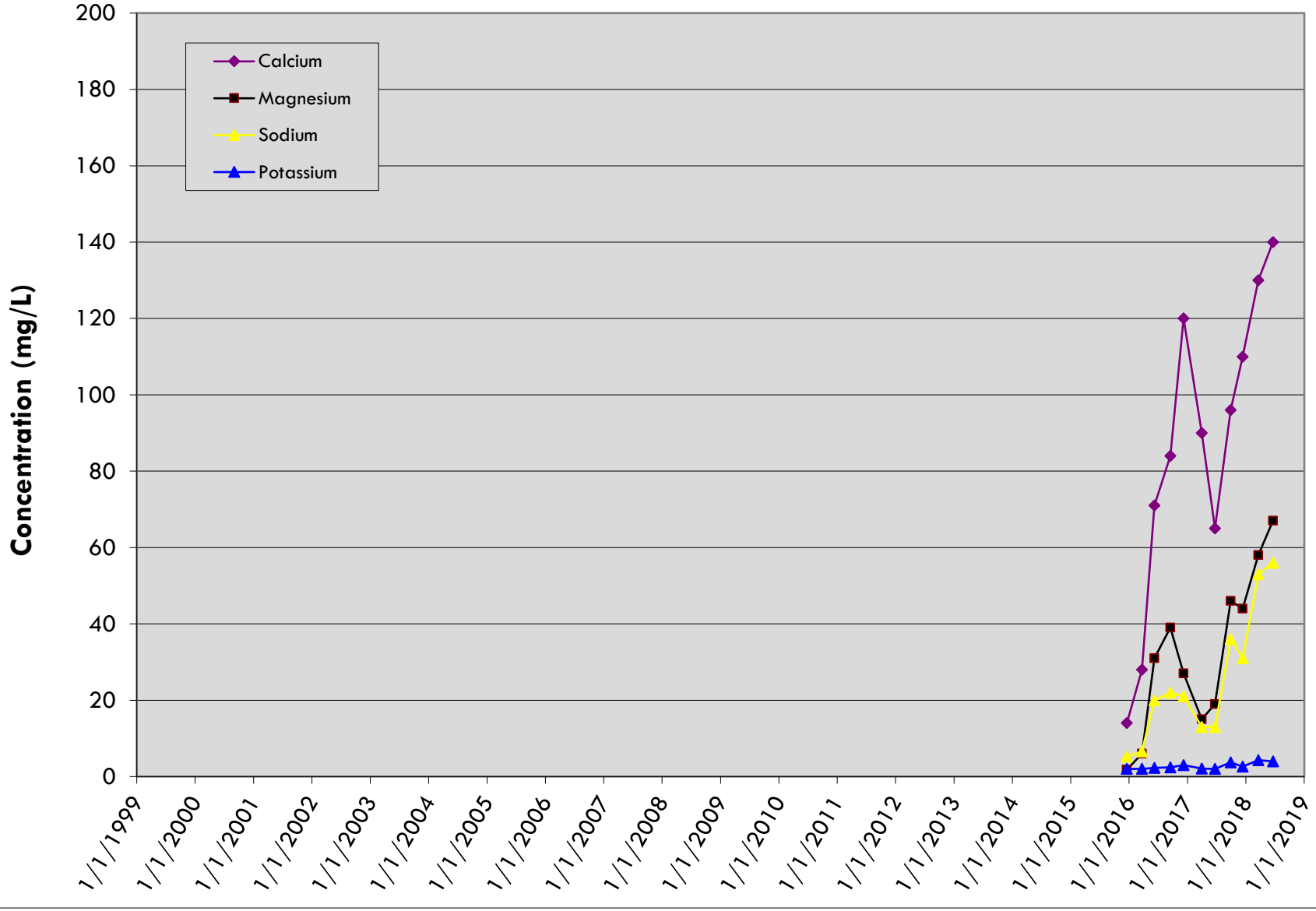
# LDCS-5A

## LRI Landfill, Pierce County, Washington



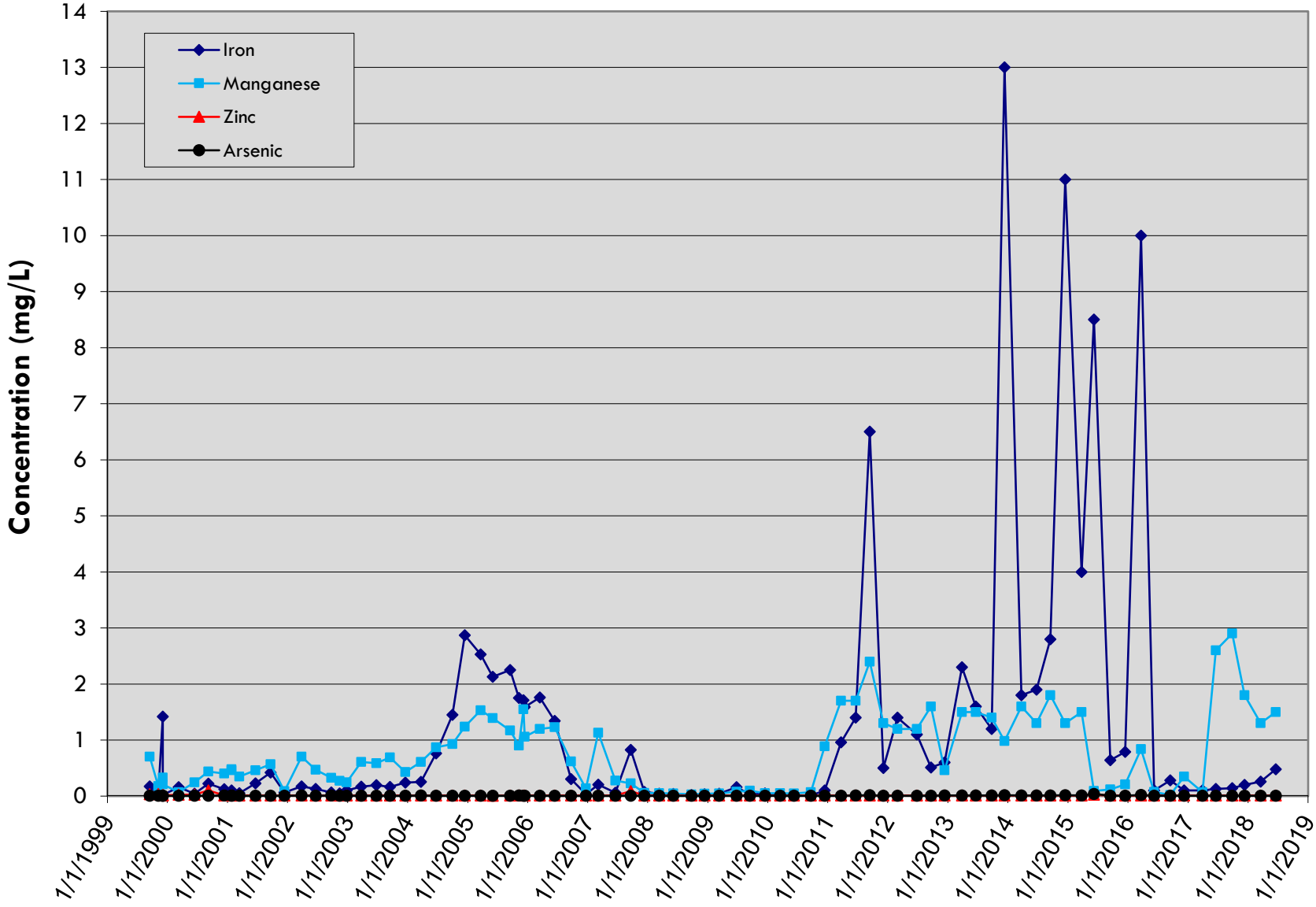
# LDCS-6A

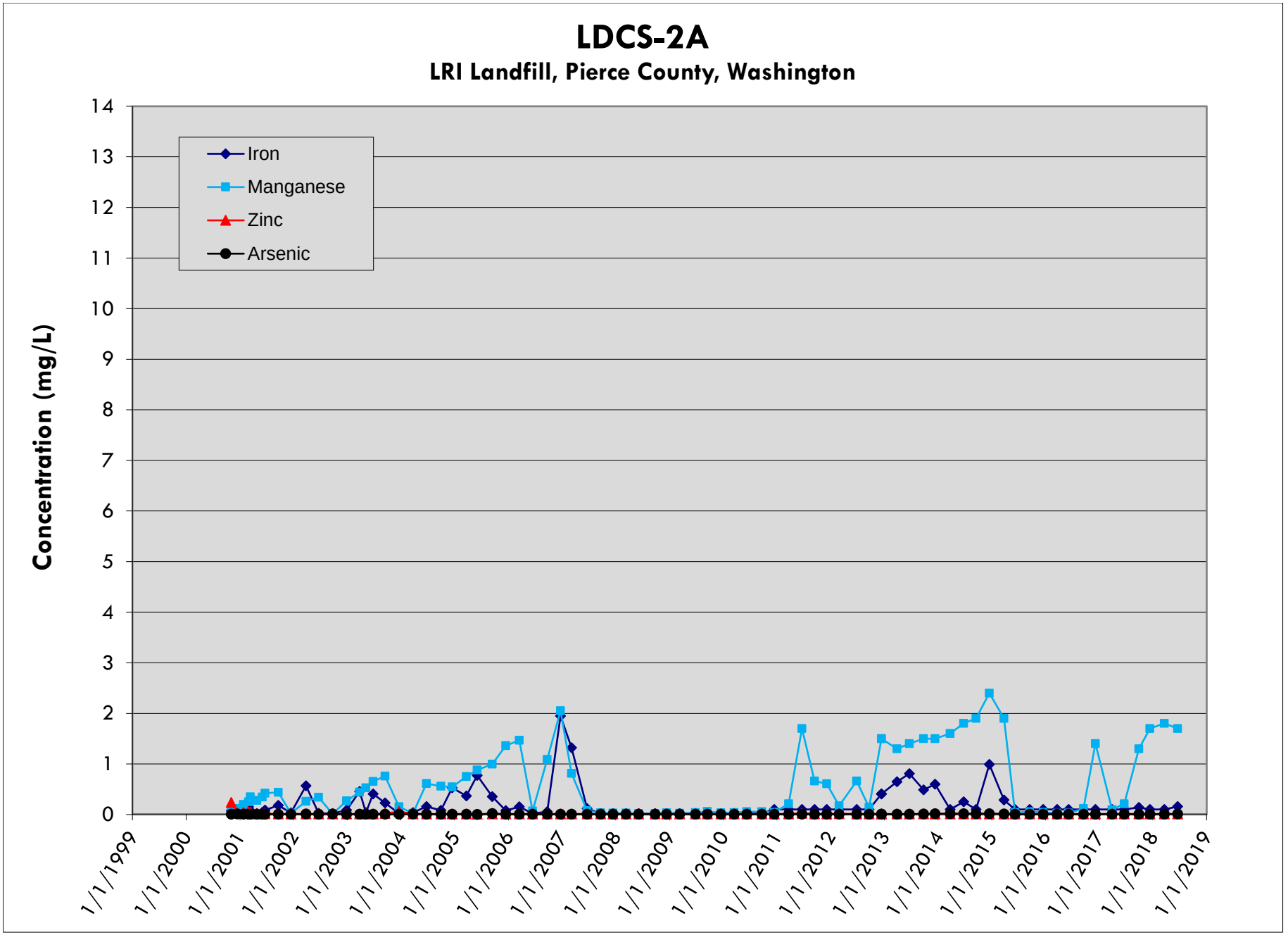
## LRI Landfill, Pierce County, Washington



# LDCS-1

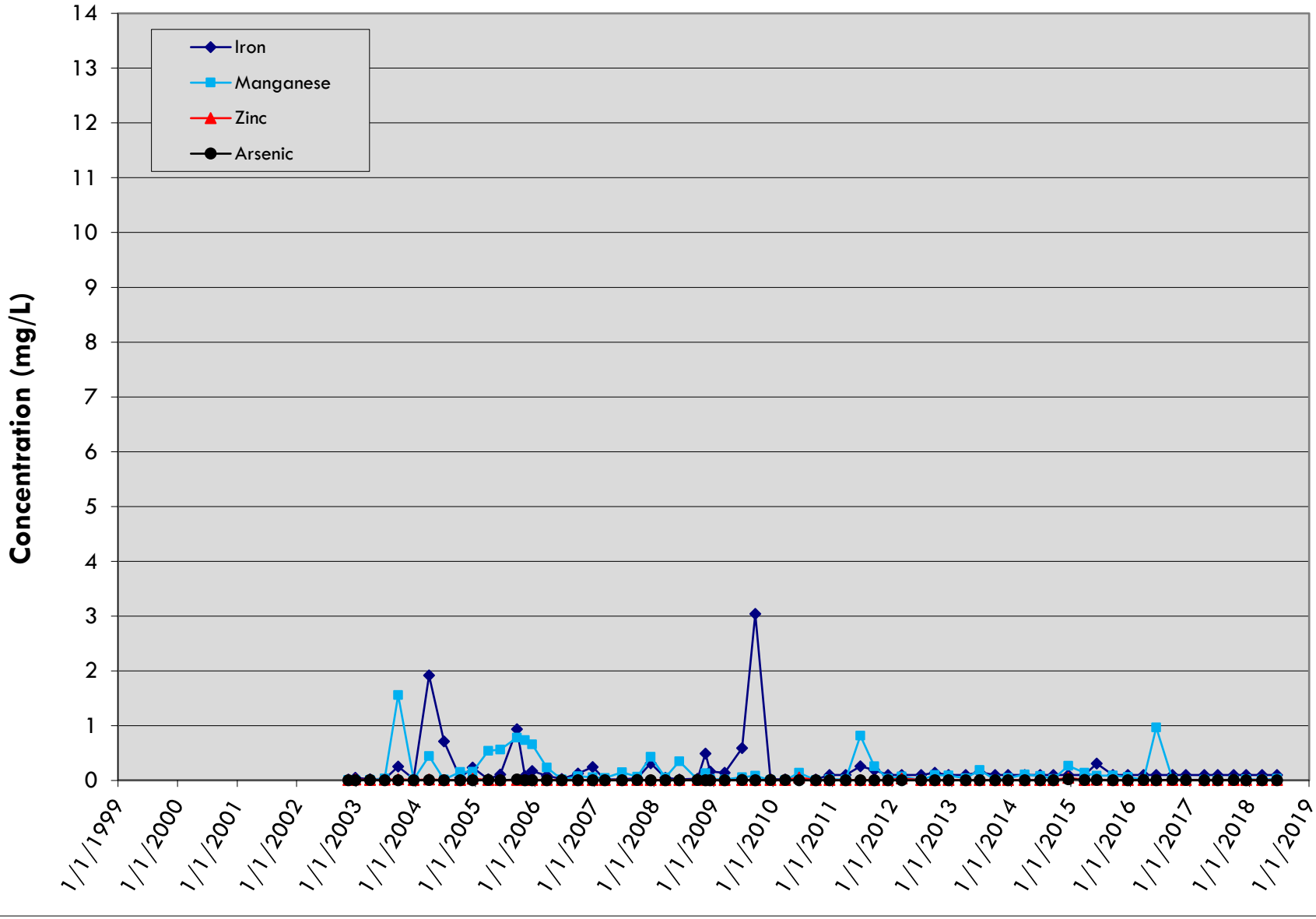
## LRI Landfill, Pierce County, Washington




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

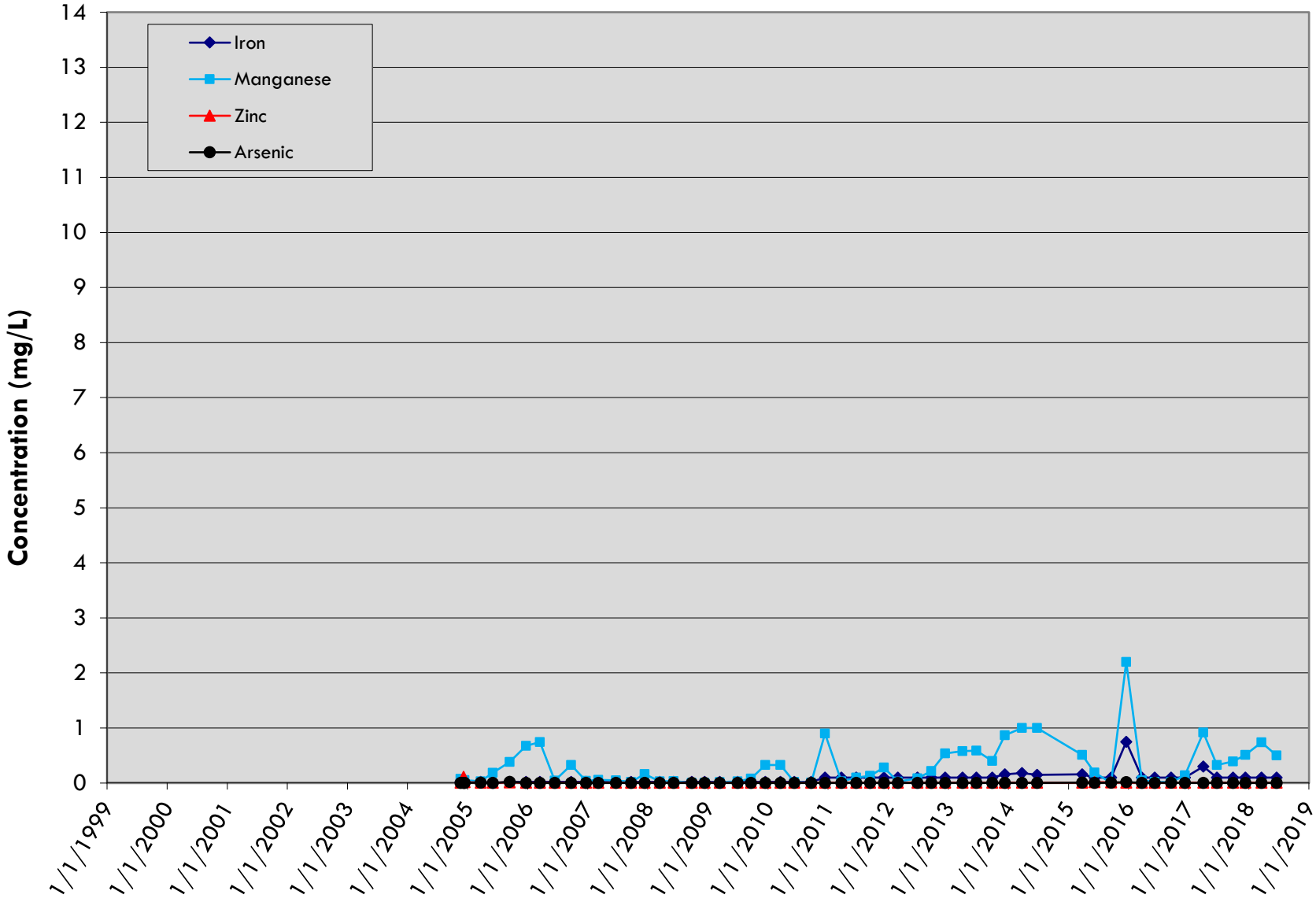
# LDCS-2B

## LRI Landfill, Pierce County, Washington



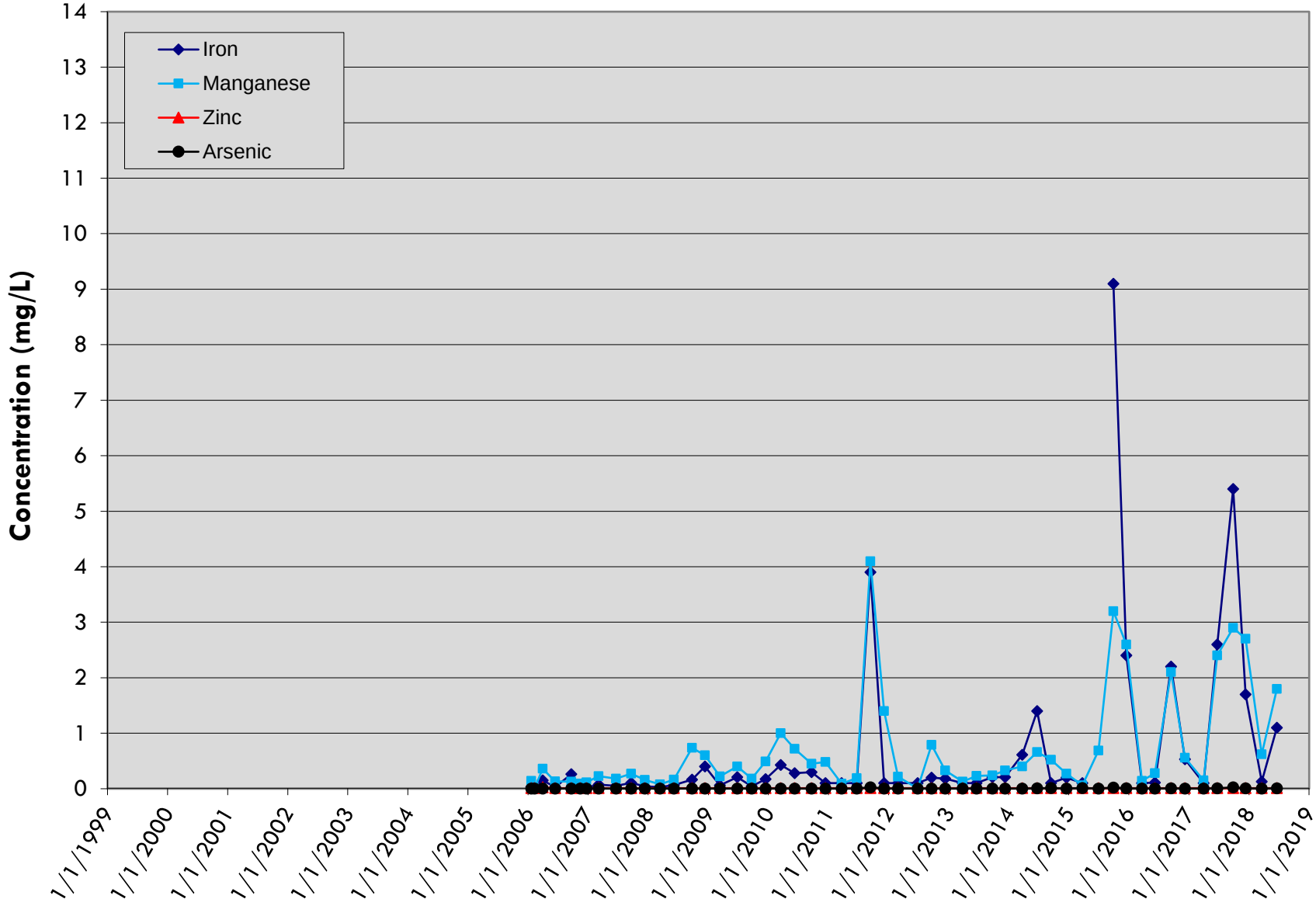
# LDCS-3A

## LRI Landfill, Pierce County, Washington



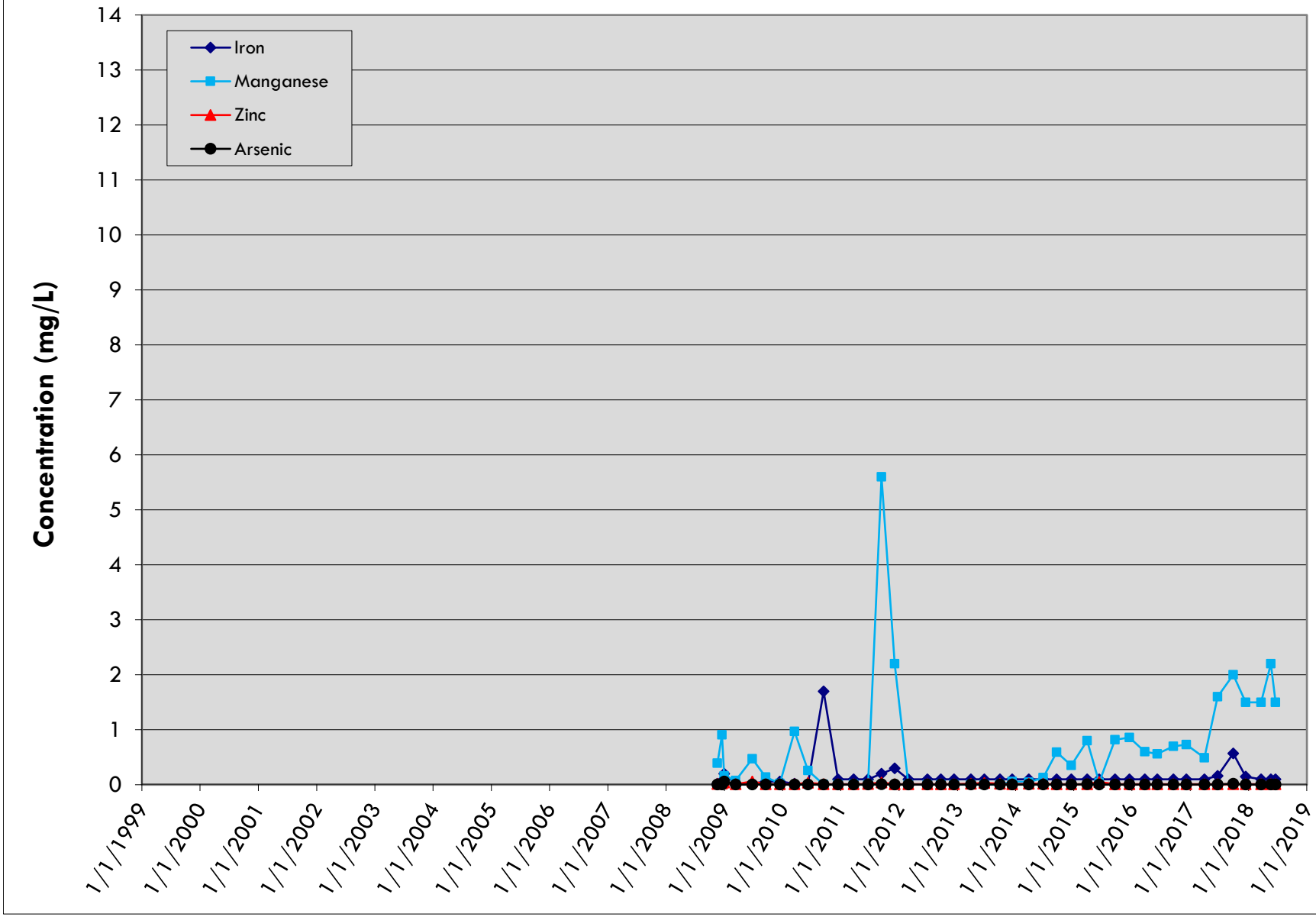
# LDCS-4A

## LRI Landfill, Pierce County, Washington



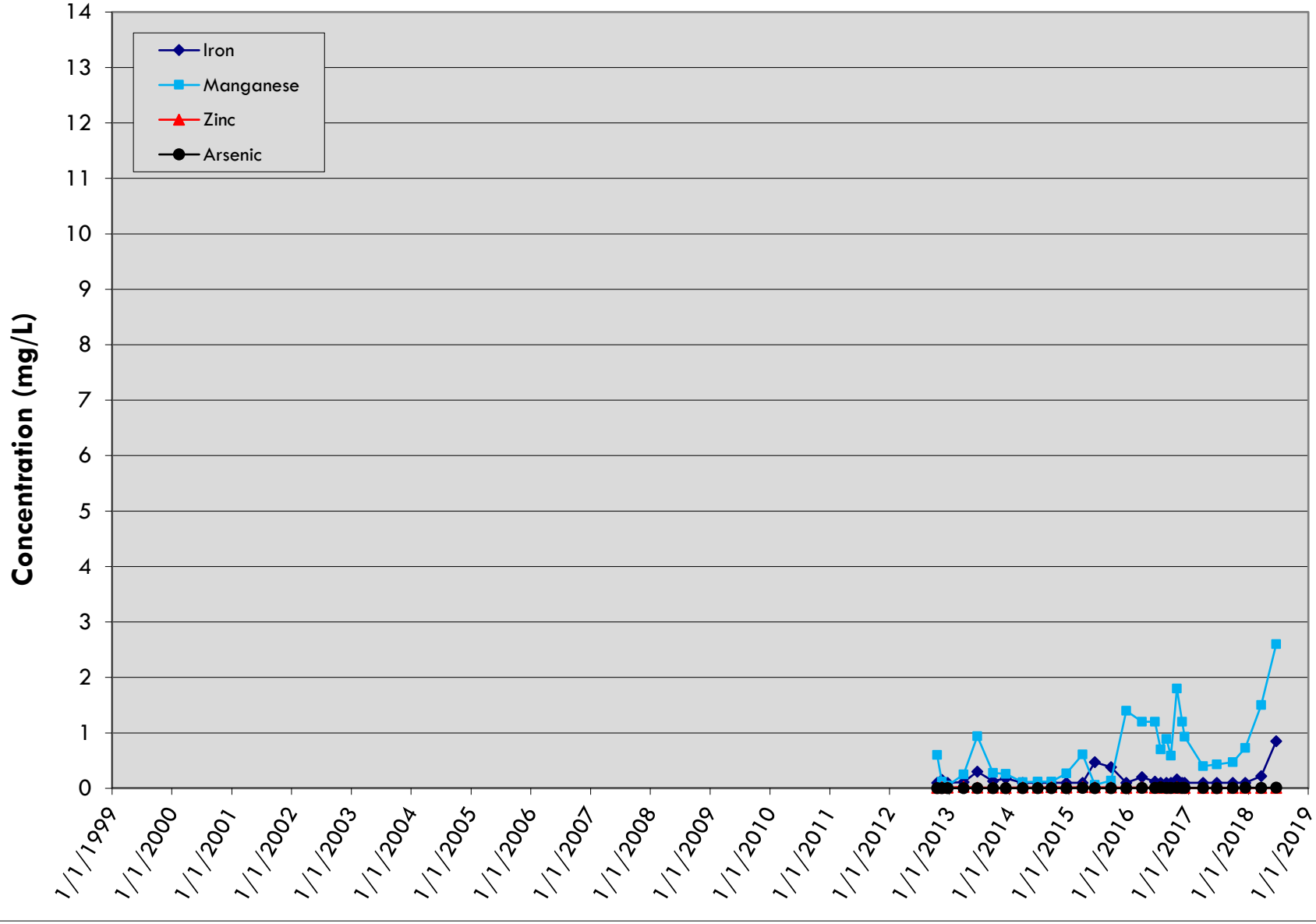
# LDCS-4B

## LRI Landfill, Pierce County, Washington



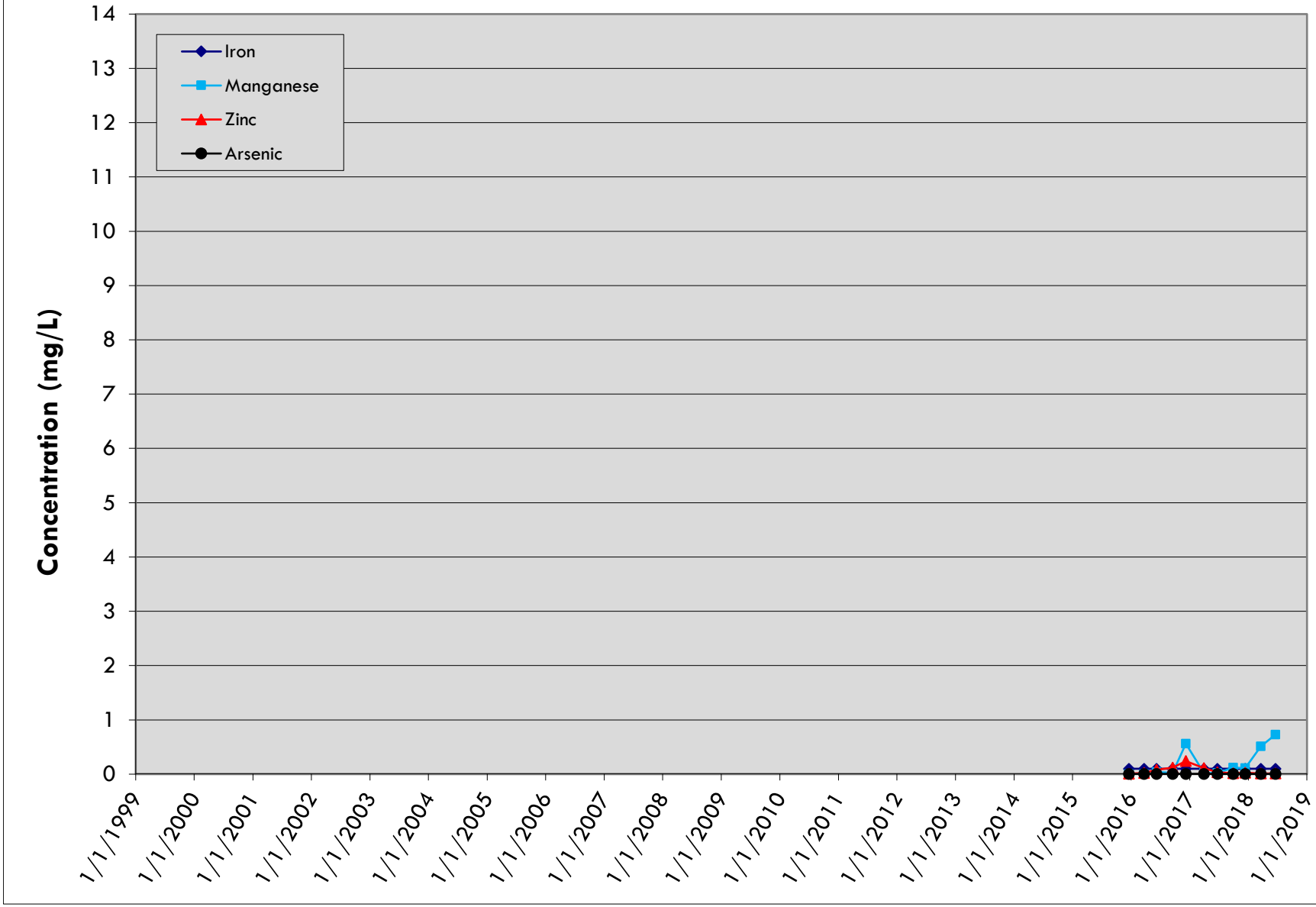
# LDCS-5A

## LRI Landfill, Pierce County, Washington



# LDCS-6A

## LRI Landfill, Pierce County, Washington



# Appendix H
# LDCS Pumping Records and Conductivity Measurements

**Summary of LDCS Volumes Pumped and Conductivity Data**
**Second Quarter 2018**
**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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/1/2018 | 0.05 | - | 343 | 1010 | 646 | 1166 | 243 | 10 | 609 | 3,080 | 754 | - | 1,051 | 1212 | 861 | 1684 | 1000 |
| 4/2/2018 | 0.00 | - | 342 | 1010 | 643 | 24 | 245 | 0 | 610 | 0 | 752 | - | 1,062 | 0 | 862 | 1683 | 1000 |
| 4/3/2018 | 0.36 | - | 342 | 0 | 642 | 1150 | 241 | 2070 | 605 | 2,620 | 743 | 1,191 | 1,073 | 620 | 864 | 1693 | 1000 |
| 4/4/2018 | 0.36 | - | 436 | 1010 | 643 | 1150 | 239 | 2480 | 604 | 200 | 738 | - | 1,069 | 2898 | 865 | 1700 | 1000 |
| 4/5/2018 | 0.01 | - | 425 | 640 | 644 | 1200 | 241 | 2640 | 590 | - | 736 | - | 1,077 | 0 | 864 | 1929 | 1000 |
| 4/6/2018 | 0.36 | - | 495 | 0 | 645 | 1216 | 245 | 0 | 581 | - | 733 | - | 1,065 | 0 | 862 | 2212 | 1000 |
| 4/7/2018 | 0.97 | - | 414 | 0 | 646 | 1216 | 248 | 0 | 586 | - | 727 | - | 1,076 | 2244 | 857 | 2297 | 1000 |
| 4/8/2018 | 0.01 | - | 367 | 1010 | 645 | 1216 | 245 | 0 | 584 | - | 720 | - | 1,086 | 6173 | 851 | 2433 | 1000 |
| 4/9/2018 | 0.06 | - | 414 | 0 | 645 | 1250 | 239 | 0 | 574 | - | 714 | - | 1,084 | 1055 | 844 | 2541 | 990 |
| 4/10/2018 | 0.27 | - | 370 | 0 | 647 | 1250 | 243 | 2000 | 576 | - | 706 | - | 1,058 | 899 | 836 | 2391 | 989 |
| 4/11/2018 | 0.05 | - | 345 | 0 | 647 | 1300 | 244 | 3010 | 580 | - | 699 | - | 1,049 | 1265 | 829 | 2197 | 996 |
| 4/12/2018 | 0.20 | - | 425 | 10 | 647 | 1150 | 244 | 0 | 581 | - | 694 | - | 1,035 | 1465 | 824 | 2131 | 999 |
| 4/13/2018 | 0.83 | - | 461 | 0 | 645 | 1233 | 239 | 0 | 583 | - | 690 | - | 1,035 | 0 | 820 | 1922 | 999 |
| 4/14/2018 | 0.36 | - | 392 | 370 | 640 | 1233 | 238 | 2220 | 586 | - | 689 | - | 1,029 | 4944 | 818 | 2031 | 1000 |
| 4/15/2018 | 0.26 | - | 451 | 0 | 635 | 1233 | 245 | 0 | 580 | - | 688 | 1,181 | 1,042 | 3634 | 815 | 2781 | 990 |
| 4/16/2018 | 0.11 | - | 556 | 0 | 632 | 1300 | 248 | 10 | 584 | - | 686 | 964 | 1,043 | 1765 | 812 | 2806 | 985 |
| 4/17/2018 | 0.07 | - | 589 | 1010 | 638 | 1200 | 244 | 1270 | 588 | - | 691 | 2,972 | 1,027 | 1512 | 811 | 2458 | 994 |
| 4/18/2018 | 0.00 | - | 466 | 0 | 640 | 1300 | 239 | 0 | 592 | - | 701 | - | 996 | 0 | 814 | 2234 | 998 |
| 4/19/2018 | 0.00 | - | 429 | 1000 | 645 | 1350 | 239 | 3010 | 598 | - | 715 | - | 993 | 562 | 819 | 2084 | 999 |
| 4/20/2018 | 0.00 | - | 365 | 1000 | 647 | 1150 | 237 | 0 | 605 | - | 731 | - | 999 | 486 | 827 | 1912 | 1000 |
| 4/21/2018 | 0.01 | - | 352 | 0 | 646 | 1300 | 238 | 2470 | 611 | - | 750 | - | 1,005 | 535 | 837 | 1809 | 1000 |
| 4/22/2018 | 0.00 | - | 202 | 1000 | 386 | 1200 | 141 | 2870 | 367 | - | 457 | - | 1,041 | 451 | 849 | 1533 | 493 |
| 4/23/2018 | 0.00 | - | 207 | 0 | 403 | 1300 | 151 | 2500 | 389 | - | 493 | - | 1048 | 318 | 858 | 1459 | 528 |
| 4/24/2018 | 0.00 | - | 292 | 1000 | 558 | 1300 | 209 | 2410 | 539 | - | 687 | - | 1060 | 0 | 865 | 1459 | 826 |
| 4/25/2018 | 0.00 | - | 326 | 1010 | 615 | 1350 | 230 | 2500 | 596 | - | 765 | - | 1,058 | 946 | 870 | 1460 | 936 |
| 4/26/2018 | 0.07 | - | 341 | 0 | 636 | 1300 | 237 | 2410 | 619 | - | 799 | - | 1,022 | 265 | 875 | 2359 | 977 |
| 4/27/2018 | 0.12 | - | 348 | 1000 | 643 | 1350 | 241 | 2410 | 630 | - | 814 | - | 1,014 | 567 | 880 | 1974 | 455 |
| 4/28/2018 | 0.03 | - | 340 | 1010 | 645 | 1300 | 238 | 2410 | 637 | - | 822 | - | 1,024 | 703 | 883 | 1814 | 551 |
| 4/29/2018 | 0.01 | - | 339 | 1000 | 644 | 1300 | 238 | 2390 | 641 | - | 826 | - | 1,051 | 839 | 886 | 1752 | 835 |
| 4/30/2018 | 0.00 | - | 328 | 0 | 645 | 1350 | 235 | 2340 | 644 | - | 830 | - | 1,073 | 593 | 890 | 1749 | 939 |
| 5/1/2018 | 0.00 | - | 328 | 1,000 | 644 | 1,300 | 236 | 2,390 | 646 | 0 | 834 | 241 | 1086 | 504 | 892 | 1,685 | 978 |
| 5/2/2018 | 0.00 | - | 337 | 0 | 645 | 1,300 | 237 | 1,890 | 646 | 0 | 837 | 558 | 1097 | 434 | 894 | 1,580 | 991 |
| 5/3/2018 | 0.00 | 40 | 180 | 1,070 | 649 | 1,200 | 238 | 2,280 | 337 | 0 | 843 | 330 | 1082 | 440 | 896 | 1,034 | 443 |
| 5/4/2018 | 0.00 | - | 224 | 1,010 | 650 | 1,300 | 236 | 2,000 | 425 | 0 | 844 | 404 | 1067 | 435 | 897 | 2,198 | 426 |
| 5/5/2018 | 0.00 | - | 301 | 0 | 651 | 1,350 | 239 | 2,040 | 564 | 0 | 854 | 339 | 1070 | 404 | 897 | 1,690 | 882 |
| 5/6/2018 | 0.01 | - | 335 | 1,000 | 651 | 1,450 | 244 | 1,840 | 615 | 0 | 864 | 197 | 1081 | 411 | 896 | 1,752 | 1048 |
| 5/7/2018 | 0.00 | - | 338 | 1,010 | 652 | 1,150 | 242 | 1,730 | 637 | 0 | 877 | 204 | 1085 | 457 | 896 | 1,698 | 1111 |
| 5/8/2018 | 0.01 | - | 340 | 0 | 653 | 1,350 | 240 | 1,750 | 644 | 0 | 890 | 86 | 1102 | 437 | 895 | 1,695 | 1133 |
| 5/9/2018 | 0.25 | - | 367 | 980 | 653 | 1,300 | 241 | 1,770 | 645 | 20 | 480 | 94 | 1138 | 614 | 894 | 1,811 | 1142 |
| 5/10/2018 | 1.10 | - | 365 | 1,000 | 652 | 1,300 | 237 | 1,980 | 643 | 0 | 600 | 64 | 1154 | 2,845 | 893 | 1,829 | 1140 |
| 5/11/2018 | 0.00 | - | 400 | 0 | 652 | 1,350 | 235 | 2,440 | 637 | 0 | 851 | 98 | 1157 | 1,113 | 891 | 2,038 | 1097 |
| 5/12/2018 | 0.00 | - | 389 | 1,000 | 652 | 1,300 | 238 | 2,400 | 627 | 0 | 944 | 125 | 1118 | 505 | 887 | 1,969 | 1077 |
| 5/13/2018 | 0.00 | - | 385 | 1,010 | 653 | 1,450 | 243 | 2,220 | 626 | 0 | 978 | 150 | 1090 | 457 | 883 | 1,983 | 1104 |
| 5/14/2018 | 0.00 | - | - | 0 | 655 | 1,200 | 243 | 2,220 | 627 | 0 | 979 | 152 | 1,079 | 453 | 880 | 2,002 | 1,135 |
| 5/15/2018 | 0.00 | - | - | 1,010 | 654 | 1,300 | 240 | 2,050 | 628 | 0 | 964 | 211 | 1,079 | 440 | 879 | 1,984 | 1,158 |
| 5/16/2018 | 0.00 | - | - | 1,000 | 652 | 1,150 | 236 | 1,950 | 631 | 0 | 949 | 51 | 1,084 | 450 | 878 | 1,968 | 1,176 |
| 5/17/2018 | 0.00 | - | - | 0 | 650 | 1,200 | 233 | 1,870 | 634 | 0 | 938 | 45 | 1,108 | 443 | 878 | 1,846 | 1,190 |
| 5/18/2018 | 0.02 | - | - | 1,010 | 650 | 1,150 | 234 | 1,860 | 637 | 0 | 932 | 46 | 1,134 | 454 | 878 | 560 | 1,201 |
| 5/19/2018 | 0.55 | - | - | 0 | 645 | 1,000 | 236 | 1,810 | 640 | 0 | 938 | 78 | 1,153 | 521 | 879 | 0 | 1,204 |
| 5/20/2018 | 0.00 | - | - | 1,000 | 648 | 1,200 | 237 | 1,920 | 641 | 0 | 967 | 56 | 1,165 | 835 | 880 | 0 | 1,196 |
| 5/21/2018 | 0.00 | - | - | 1,010 | 650 | 1,150 | 235 | 1,830 | 637 | 0 | 986 | 157 | 1,169 | 529 | 881 | 0 | 1,185 |
| 5/22/2018 | 0.00 | - | - | 0 | 651 | 1,150 | 236 | 1,830 | 636 | 0 | 988 | 153 | 1,164 | 445 | 882 | 4,742 | 1,177 |
| 5/23/2018 | 0.00 | - | - | 1,010 | 653 | 1,200 | 240 | 1,770 | 636 | 0 | 971 | 96 | 1,130 | 433 | 883 | 3,721 | 1,170 |
| 5/24/2018 | 0.05 | - | - | 1,000 | 655 | 1,150 | 239 | 1,550 | 638 | 0 | 953 | 85 | 1,134 | 483 | 884 | 2,569 | 1,197 |
| 5/25/2018 | 0.00 | - | - | 0 | 654 | 1,000 | 235 | 1,560 | 640 | 0 | 936 | 77 | 1,152 | 470 | 886 | 1,995 | 1,232 |
| 5/26/2018 | 0.00 | - | - | 1,000 | 652 | 1,200 | 234 | 1,470 | 640 | 0 | 919 | 76 | 1,163 | 478 | 888 | 1,779 | 1,246 |
| 5/27/2018 | 0.00 | - | - | 1,000 | 651 | 1,150 | 233 | 1,390 | 642 | 0 | 910 | 154 | 1,174 | 460 | 890 | 1,630 | 1,242 |
| 5/28/2018 | 0.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 5/29/2018 | 0.00 | - | 405 | 1,000 | 655 | 1,150 | 236 | 1,480 | 642 | 0 | 898 | 83 | 1160 | 422 | 894 | 1,519 | 1213 |
| 5/30/2018 | 0.00 | - | 555 | 0 | 655 | 1,200 | 237 | 1,460 | 641 | 0 | 896 | 76 | 1173 | 417 | 896 | 1,522 | 1204 |
| 5/31/2018 | - | - | 568 | 1,010 | 655 | 1,150 | 238 | 1,470 | 640 | 0 | 896 | - | 1185 | 409 | 898 | 1,559 | 1204 |

**Summary of LDCS Volumes Pumped and Conductivity Data**
**Second Quarter 2018**
**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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6/1/2018 | 0.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6/2/2018 | 0.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6/3/2018 | 0.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6/4/2018 | 0.00 | - | 459 | 1,000 | 654 | 1,050 | 237 | 1,240 | 640 | - | 914 | 165 | 1150 | 363 | 910 | 1,424 | 1210 |
| 6/5/2018 | 0.00 | - | 428 | 0 | 654 | 1,150 | 236 | 1,470 | 642 | - | 915 | 104 | 1131 | 365 | 911 | 1,421 | 1207 |
| 6/6/2018 | 0.03 | - | 409 | 880 | 655 | 1,050 | 234 | 1,390 | 644 | - | 911 | 99 | 1137 | 343 | 914 | 1,458 | 1208 |
| 6/7/2018 | 0.00 | - | 394 | 680 | 655 | 1,150 | 236 | 1,320 | 644 | - | 903 | 89 | 1152 | 334 | 916 | 1,523 | 1211 |
| 6/8/2018 | 0.00 | - | 451 | 280 | 652 | 1,000 | 234 | 1,380 | 646 | - | 897 | 162 | 1156 | 333 | 918 | 1,422 | 1215 |
| 6/9/2018 | 0.13 | - | 499 | 1,000 | 649 | 1,200 | 237 | 1,500 | 644 | - | 894 | 119 | 1136 | 505 | 920 | 1,469 | 1213 |
| 6/10/2018 | 0.63 | - | 478 | 0 | 648 | 1,300 | 235 | 1,530 | 642 | - | 905 | 18,742 | 1127 | 586 | 922 | 1,511 | 1210 |
| 6/11/2018 | 0.00 | - | 440 | 1,000 | 647 | 1,350 | 235 | 1,600 | 641 | - | 904 | 7,441 | 1106 | 690 | 922 | 1,566 | 1216 |
| 6/12/2018 | 0.00 | - | 381 | 0 | 650 | 1,300 | 237 | 1,810 | 640 | - | 899 | 95 | 1106 | 518 | 922 | 1,617 | 1222 |
| 6/13/2018 | 0.00 | - | 471 | 1,000 | 642 | 1,350 | 244 | 1,650 | 639 | - | 898 | 71 | 1115 | 440 | 922 | 1,605 | 1226 |
| 6/14/2018 | 0.00 | - | 561 | 1,010 | 643 | 1,150 | 242 | 1,570 | 637 | - | 894 | 6,647 | 1,126 | 419 | 922 | 1,561 | 1,230 |
| 6/15/2018 | 0.00 | - | 538 | 0 | 647 | 1,300 | 241 | 1,700 | 637 | - | 898 | 81 | 1,130 | 393 | 923 | 1,476 | 1,232 |
| 6/16/2018 | 0.00 | - | 472 | 1,000 | 648 | 1,350 | 243 | 1,510 | 635 | - | 906 | 122 | 1,139 | 375 | 923 | 1,451 | 1,231 |
| 6/17/2018 | 0.00 | - | 466 | 120 | 654 | 1,300 | 241 | 1,560 | 638 | - | 904 | 4,399 | 1,141 | 367 | 923 | 1,470 | 1,232 |
| 6/18/2018 | 0.00 | - | - | 830 | 659 | 1,400 | 241 | 1,420 | 640 | - | 907 | 2,318 | 1,144 | 353 | 923 | 1,460 | 1,234 |
| 6/19/2018 | 0.36 | - | - | 980 | 660 | 1,250 | 237 | 1,420 | 641 | - | 926 | 89 | 1,150 | 341 | 924 | 1,366 | 1,237 |
| 6/20/2018 | 0.00 | - | - | 0 | 661 | 1,200 | 240 | 1,450 | 639 | - | 926 | 120 | 1,160 | 339 | 924 | 1,343 | 1,241 |
| 6/21/2018 | 0.00 | - | - | 1,000 | 661 | 1,250 | 242 | 1,310 | 618 | - | 910 | 50 | 1,160 | 332 | 924 | 1,347 | 1,240 |
| 6/22/2018 | 0.00 | - | - | 0 | 659 | 1,150 | 237 | 1,290 | 612 | - | 900 | 32 | 1,167 | 330 | 924 | 1,252 | 1,235 |
| 6/23/2018 | 0.00 | - | - | 1,000 | 656 | 1,150 | 236 | 1,160 | 627 | - | 896 | 34 | 1,175 | 347 | 924 | 1,199 | 1,231 |
| 6/24/2018 | 0.21 | - | - | 0 | 655 | 1,150 | 239 | 1,300 | 634 | - | 897 | 37 | 1,178 | 356 | 924 | 1,204 | 1,230 |
| 6/25/2018 | 0.00 | - | - | 1,000 | 658 | 1,100 | 243 | 1,450 | 636 | - | 899 | 82 | 1,180 | 469 | 924 | 1,250 | 1,228 |
| 6/26/2018 | 0.00 | - | - | 1,000 | 655 | 1,150 | 239 | 1,550 | 642 | - | 895 | 69 | 1,180 | 448 | 924 | 1,206 | 1,225 |
| 6/27/2018 | 0.00 | - | 397 | 0 | 654 | 1,150 | 240 | 1,510 | 606 | - | 897 | 76 | 1,183 | 402 | 923 | 1,188 | 1,222 |
| 6/28/2018 | 0.00 | - | 394 | 1,010 | 648 | 1,050 | 239 | 1,360 | 508 | - | 898 | 81 | 1,185 | 384 | 922 | 1,245 | 1,220 |
| 6/29/2018 | 0.00 | - | 396 | 0 | 641 | 1,000 | 235 | 1,370 | 585 | - | 897 | 10,208 | 1184 | 373 | 922 | 1,210 | 1224 |
| 6/30/2018 | 0.00 | - | 493 | 1,010 | 642 | 950 | 233 | 1,300 | 600 | - | 895 | 10,307 | 1160 | 355 | 922 | 1,215 | 1225 |

- = No data collected, meter not functioning properly

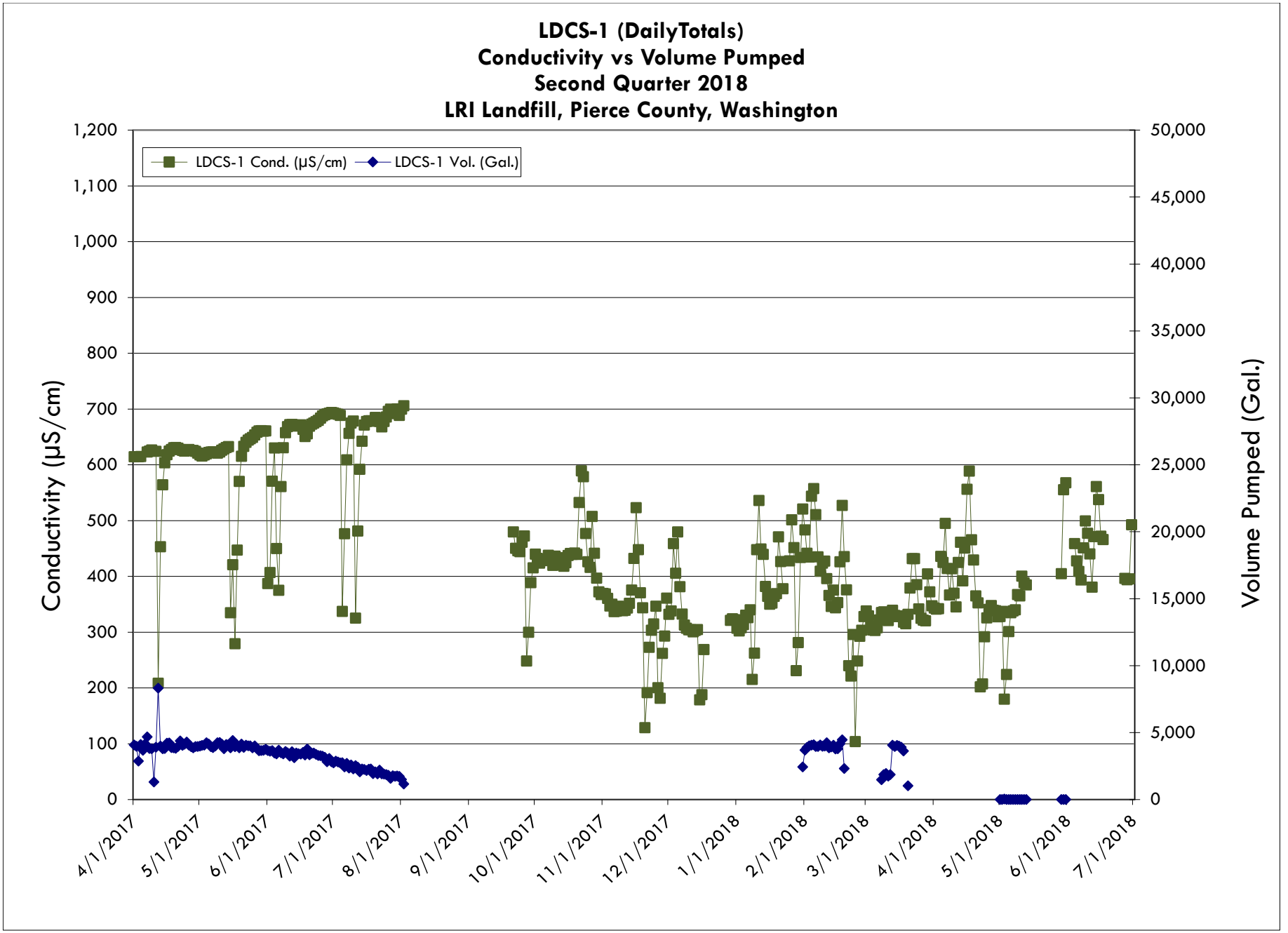
**Summary of Leachate Volume and Depth Data**
**Second Quarter 2018**
**LRI Landfill, Pierce County, Washington**

| 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.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/1/2018 | 0 | 17.0 | 17,480 | 9.5 | 13,053 | 11.9 | 1,334 | 11.3 | 40,164 | 11.9 | 49,692 | 10.5 | 20,990 | 4.3 | 17,858 | 11.1 |
| 4/2/2018 | 0 | 17.0 | 0 | 10.6 | 3,794 | 14.5 | 172 | 12.0 | 11,532 | 14.4 | 19,100 | 10.5 | 0 | 3.4 | 5,038 | 9.2 |
| 4/3/2018 | 0 | 17.0 | 1 | 12.5 | 4,010 | 15.3 | 370 | 11.4 | 16,088 | 12.5 | 19,230 | 10.8 | 26,636 | 1.9 | 6,351 | 9.0 |
| 4/4/2018 | 0 | 17.0 | 0 | 13.6 | 13,941 | 14.0 | 338 | 11.5 | 15,708 | 11.9 | 16,258 | 10.2 | 15,294 | 3.0 | 26,207 | 12.1 |
| 4/5/2018 | 5 | 17.0 | 0 | 15.2 | 5,950 | 14.1 | 152 | 10.3 | 8,380 | 14.4 | 25,478 | 10.7 | 0 | 3.9 | 14,405 | 8.3 |
| 4/6/2018 | 0 | 17.0 | 5,534 | 16.5 | 6,782 | 13.5 | 159 | 10.0 | 11,558 | 12.8 | 21,843 | 10.6 | 0 | 5.9 | 14,786 | 8.3 |
| 4/7/2018 | 1 | 17.1 | 5,534 | 8.7 | 6,782 | 11.9 | 159 | 10.3 | 11,558 | 12.4 | 21,843 | 10.2 | 12,894 | 7.6 | 25,169 | 13.6 |
| 4/8/2018 | 0 | 17.0 | 5,534 | 7.8 | 6,782 | 15.7 | 159 | 10.4 | 11,558 | 14.0 | 21,843 | 10.1 | 3,468 | 8.5 | 33,969 | 13.3 |
| 4/9/2018 | 1 | 17.0 | 0 | 10.0 | 1,764 | 12.0 | 102 | 10.4 | 13,884 | 13.1 | 17,518 | 11.1 | 4,638 | 9.4 | 13,192 | 14.0 |
| 4/10/2018 | 1 | 17.0 | 0 | 11.4 | 3,852 | 13.0 | 50 | 10.6 | 15,060 | 12.7 | 24,320 | 11.1 | 5,328 | 9.5 | 19,081 | 12.6 |
| 4/11/2018 | 1,655 | 16.8 | 0 | 13.2 | 5,981 | 12.6 | 110 | 12.0 | 22,004 | 12.3 | 19,904 | 10.4 | 7,930 | 8.4 | 9,025 | 11.1 |
| 4/12/2018 | 22 | 17.0 | 19 | 14.0 | 3,702 | 16.4 | 44 | 10.4 | 10,640 | 13.5 | 21,706 | 10.3 | 7,110 | 7.0 | 11,704 | 10.0 |
| 4/13/2018 | 3,299 | 15.9 | 5,774 | 15.3 | 2,834 | 13.2 | 332 | 12.6 | 13,466 | 12.0 | 26,502 | 10.7 | 2 | 7.1 | 17,870 | 10.3 |
| 4/14/2018 | 0 | 17.0 | 5,774 | 16.7 | 2,834 | 13.4 | 332 | 10.5 | 13,466 | 12.5 | 26,502 | 10.3 | 5,490 | 6.3 | 21,104 | 11.2 |
| 4/15/2018 | 0 | 17.3 | 5,774 | 10.2 | 2,834 | 13.2 | 332 | 10.4 | 13,466 | 12.8 | 26,502 | 10.5 | 766 | 7.5 | 25,591 | 11.1 |
| 4/16/2018 | 0 | 17.1 | 1 | 7.5 | 9,181 | 12.3 | 506 | 14.5 | 14,720 | 13.3 | 22,538 | 12.2 | 18,320 | 8.1 | 26,132 | 12.9 |
| 4/17/2018 | 0 | 17.0 | 0 | 9.1 | 3,770 | 15.3 | 526 | 10.9 | 16,284 | 12.2 | 31,682 | 12.0 | 14,302 | 8.7 | 21,563 | 12.7 |
| 4/18/2018 | 1 | 17.0 | 0 | 11.3 | 6,139 | 14.5 | 574 | 15.6 | 12,724 | 15.5 | 21,236 | 11.1 | 0 | 9.6 | 14,589 | 12.7 |
| 4/19/2018 | 0 | 17.1 | 0 | 12.5 | 5,013 | 13.9 | 713 | 10.8 | 12,696 | 13.1 | 18,090 | 10.6 | 3,938 | 9.8 | 13,439 | 11.1 |
| 4/20/2018 | 1 | 17.5 | 1,202 | 13.9 | 3,715 | 14.5 | 604 | 10.7 | 9,046 | 12.0 | 14,126 | 9.9 | 16,404 | 8.6 | 12,296 | 11.5 |
| 4/21/2018 | 1 | 17.2 | 1,202 | 15.4 | 3,715 | 13.9 | 604 | 10.9 | 9,046 | 13.1 | 14,126 | 10.4 | 6,522 | 8.6 | 14,375 | 11.0 |
| 4/22/2018 | 915 | 17.6 | 1,202 | 16.2 | 3,715 | 12.7 | 604 | 10.9 | 9,046 | 14.0 | 14,126 | 10.4 | 9,610 | 10.0 | 9,080 | 11.0 |
| 4/23/2018 | 14,830 | 15.2 | 1 | 15.5 | 7,860 | 14.6 | 172 | 11.2 | 19,892 | 13.4 | 23,980 | 10.7 | 50,794 | 6.4 | 11,093 | 11.4 |
| 4/24/2018 | 0 | 15.0 | 6,731 | 16.7 | 3,953 | 12.5 | 196 | 11.0 | 19,324 | 11.5 | 17,304 | 10.2 | 17,646 | 4.6 | 9,376 | 11.0 |
| 4/25/2018 | 17 | 16.0 | 11,005 | 12.0 | 7,923 | 15.9 | 8 | 11.7 | 12,856 | 13.3 | 19,372 | 10.9 | 17,676 | 4.9 | 10,394 | 11.6 |
| 4/26/2018 | 0 | 16.8 | 0 | 7.7 | 7,222 | 13.2 | 46 | 11.4 | 9,892 | 11.7 | 11,842 | 9.9 | 14,956 | 3.9 | 9,522 | 11.6 |
| 4/27/2018 | 0 | 17.0 | 0 | 9.2 | 2,432 | 12.8 | 88 | 11.6 | 1,788 | 11.5 | 14,945 | 11.3 | 33,716 | 1.9 | 10,384 | 11.7 |
| 4/28/2018 | 0 | 17.0 |  | 11.0 | 2,432 | 12.5 | 88 | 10.8 | 1,788 | 10.1 | 14,945 | 9.8 | 24,884 | 1.1 | 12,553 | 11.4 |
| 4/29/2018 | 0 | 17.0 | 0 | 12.5 | 2,432 | 12.3 | 88 | 11.5 | 1,788 | 12.6 | 14,945 | 10.2 | 15,864 | 3.5 | 11,384 | 11.1 |
| 4/30/2018 | 0 | 17.0 | 0 | 13.6 | 2,432 | 16.2 | 88 | 11.4 | 1,788 | 14.4 | 14,945 | 10.6 | 30,562 | 1.7 | 11,206 | 11.9 |
| 5/1/2018 | 0 | 18.0 | 0 | 15.3 | 2,142 | 13.0 | 11 | 10.8 | 11,225 | 14.4 | 0 | 11.6 | 29,734 | 0.3 | 4,614 | 12.3 |
| 5/2/2018 | 10,234 | 15.0 | 9,801 | 14.3 | 3,611 | 12.6 | 43 | 18.2 | 5,309 | 15.0 | 10,142 | 13.5 | 17,246 | 0.4 | 18,642 | 12.3 |
| 5/3/2018 | 7,027 | 14.5 | 20 | 11.5 | 2,442 | 14.2 | 193 | 16.6 | 5,049 | 15.9 | 10,702 | 14.9 | 20,470 | 2.5 | 3 | 12.8 |
| 5/4/2018 | 1,217 | 15.6 | 768 | 12.3 | 2,946 | 12.1 | 23 | 14.6 | 24,128 | 12.3 | 13,726 | 15.9 | 14,856 | 4.3 | 6,398 | 15.4 |
| 5/5/2018 | 1,217 | 15.8 | 768 | 13.2 | 3,089 | 12.7 | 0 | 11.8 | 1,157 | 17.9 | 31,306 | 13.1 | 17,510 | 6.0 | 13,397 | 15.5 |
| 5/6/2018 | 1,217 | 16.9 | 768 | 14.2 | 3,200 | 12.8 | 13 | 16.3 | 6,516 | 15.5 | 8,386 | 14.2 | 16,716 | 7.3 | 13,615 | 14.1 |
| 5/7/2018 | 12,081 | 14.6 | 7,613 | 14.1 | 5,936 | 7.5 | 16 | 11.8 | 9,632 | 14.8 | 14,766 | 15.3 | 16,598 | 8.3 | 11,568 | 12.0 |
| 5/8/2018 | 3,836 | 15.2 | 2,797 | 12.2 | 4,232 | 8.0 | 55 | 10.6 | 21,282 | 14.2 | 26,110 | 15.3 | 34,978 | 7.7 | 9,925 | 10.8 |
| 5/9/2018 | 0 | 15.4 | 0 | 11.5 | 2,428 | 7.2 | 0 | 14.8 | 11,175 | 14.4 | 35,970 | 12.3 | 17,356 | 7.8 | 15,970 | 12.2 |
| 5/10/2018 | 0 | 16.8 | 0 | 12.9 | 5,071 | 16.2 | 0 | 10.9 | 22,989 | 12.3 | 23,852 | 11.2 | 23,052 | 8.2 | 22,202 | 17.0 |
| 5/11/2018 | 3,272 | 17.0 | 0 | 14.4 | 5,464 | 12.1 | 8 | 10.1 | 22,932 | 8.7 | 28,346 | 10.7 | 13,710 | 9.0 | 38,525 | 30.2 |
| 5/12/2018 | 3,272 | 17.4 | 0 | 15.8 | 4,004 | 13.3 | 0 | 10.9 | 0 | 7.9 | 15,654 | 11.2 | 17,736 | 9.6 | 17,786 | 25.7 |
| 5/13/2018 | 3,272 | 16.4 | 2,793 | 17.0 | 2 | 16.1 | 4 | 11.3 | 0 | 6.0 | 20,104 | 10.3 | 12,824 | 10.0 | 24,510 | 22.0 |
| 5/14/2018 | 22,391 | - | 17,225 | 13.2 | 9,409 | 13.2 | 23 | 14.6 | 0 | 6.0 | 15,898 | 11.0 | 20,118 | 10.4 | 18,540 | 13.4 |
| 5/15/2018 | 1 | - | 1 | 7.0 | 1 | 15.8 | 84 | 13.9 | 0 | 6.2 | 4,662 | 12.4 | 27,450 | 10.9 | 0 | 12.7 |
| 5/16/2018 | 0 | - | 0 | 8.6 | 4,249 | 12.4 | 538 | 11.8 | 0 | 6.6 | 33,662 | 13.9 | 24,448 | 10.4 | 16,317 | 13.8 |
| 5/17/2018 | 3 | - | 9 | 10.5 | 4,134 | 14.0 | 522 | 15.2 | 0 | 7.0 | 33,690 | 10.9 | 34,994 | 10.0 | 7,900 | 11.9 |
| 5/18/2018 | 0 | - | 0 | 10.8 | 4,981 | 4.9 | 934 | 12.4 | 1,715 | 7.0 | 15,690 | 11.3 | 29,618 | 9.8 | 6,995 | 10.7 |
| 5/19/2018 | 0 | - | 0 | 10.3 | 0 | 14.0 | 763 | 10.3 | 1,771 | 7.0 | 35,520 | 11.3 | 32,746 | 8.9 | 10,106 | 10.6 |
| 5/20/2018 | 7,542 | - | 6,329 | 10.6 | 4,980 | 14.8 | 300 | 11.2 | 6 | 7.0 | 30,512 | 10.1 | 5,330 | 9.0 | 7,527 | 11.4 |
| 5/21/2018 | 9,143 | - | 979 | 12.3 | 5,660 | 12.1 | 92 | 13.3 | 2 | 7.0 | 27,642 | 10.5 | 21,924 | 9.5 | 3,283 | 12.3 |
| 5/22/2018 | 16,698 | - | 10,931 | 8.5 | 11,628 | 13.4 | 189 | 11.9 | 8 | 7.0 | 30,092 | 10.5 | 20,130 | 9.5 | 12,178 | 11.9 |
| 5/23/2018 | 8 | - | 0 | 6.9 | 763 | 5.6 | 38 | 10.8 | 4,850 | 9.0 | 19,348 | 11.8 | 29,852 | 9.3 | 6,569 | 11.6 |
| 5/24/2018 | 6,349 | - | 0 | 8.6 | 6,064 | 9.9 | 422 | 10.4 | 15,732 | 10.9 | 26,872 | 9.9 | 20,712 | 9.3 | 11,310 | 8.4 |
| 5/25/2018 | 0 | - | 0 | 10.2 | 11,554 | 13.9 | 547 | 16.2 | 0 | 6.6 | 14,886 | 11.7 | 22,016 | 9.3 | 3,235 | 10.7 |
| 5/26/2018 | 0 | - | 0 | 8.3 | 100 | 15.9 | 214 | 10.6 | 0 | 6.0 | 28,590 | 10.2 | 9,314 | 9.3 | 6,920 | 10.9 |
| 5/27/2018 | 18,390 | - | 14,741 | 9.9 | 5,164 | 16.9 | 468 | 10.6 | 0 | 7.0 | 22,410 | 10.6 | 14,924 | 9.9 | 6,944 | 11.2 |
| 5/28/2018 | 6,035 | - | 0 | - | 7,576 | - | 372 | - | 4 | - | 22,070 | - | 24,990 | - | 9,599 | - |
| 5/29/2018 | 19,743 | 11.1 | 0 | 6.0 | 5,604 | 3.6 | 371 | 12.1 | 0 | 7.0 | 20,604 | 10.7 | 26,240 | 9.5 | 9,377 | 6.0 |
| 5/30/2018 | 7,619 | 9.1 | 0 | 7.9 | 5,255 | 3.0 | 416 | 10.5 | 0 | 7.0 | 28,468 | 10.2 | 23,652 | 9.1 | 0 | 9.0 |
| 5/31/2018 | 7,387 | 10.8 | 0 | 9.5 | 5,103 | 2.9 | 387 | 11.2 | 0 | 7.0 | 27,222 | 10.7 | 15,932 | 9.0 | 7,357 | 11.4 |

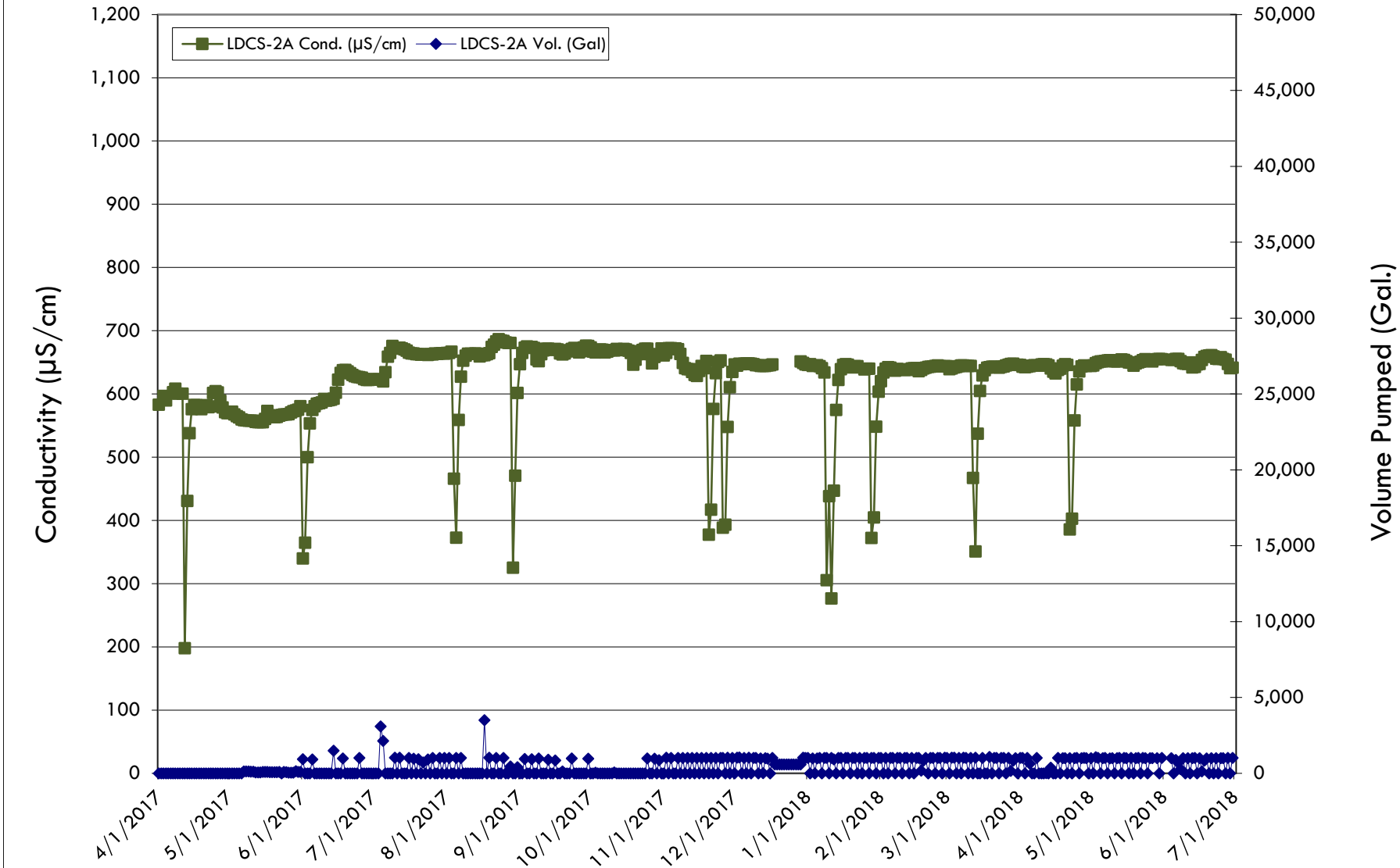
**Summary of Leachate Volume and Depth Data**
**Second Quarter 2018**
**LRI Landfill, Pierce County, Washington**

| 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.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6/1/2018 | 7,387 | - | - | - | 5,084 | - | 418 | - | - | - | 26,634 | - | 16,024 | - | 5,447 | - |
| 6/2/2018 | 3,117 | - | 3,640 | - | 3,797 | - | 826 | - | - | - | 39,794 | - | 32,585 | - | 9,827 | - |
| 6/3/2018 | 3,117 | - | 3,640 | - | 3,797 | - | 826 | - | - | - | 39,794 | - | 32,585 | - | 9,827 | - |
| 6/4/2018 | 0 | 14.0 | 0 | 11.0 | 12,487 | 12.3 | 511 | 9.8 | 0 | 7.0 | 28,774 | 10.3 | 20,098 | 10.0 | 6,175 | 11.2 |
| 6/5/2018 | 7 | 14.0 | 0 | 11.9 | 6,651 | 13.4 | 650 | 11.7 | 3 | 7.0 | 30,086 | 10.1 | 18,844 | 10.0 | 6,801 | 11.0 |
| 6/6/2018 | 10 | 14.2 | 14 | 13.5 | 11 | 16.0 | 372 | 11.7 | 28 | 7.0 | 29,148 | 10.2 | 27,584 | 10.0 | 5,804 | 11.4 |
| 6/7/2018 | 3,471 | 13.3 | 2,912 | 13.3 | 5,307 | 10.9 | 45 | 11.8 | 0 | 7.0 | 25,738 | 11.1 | 35,926 | 9.6 | 7,135 | 11.6 |
| 6/8/2018 | 4,515 | 13.1 | 6,664 | 13.5 | 2,597 | 16.2 | 11 | 10.7 | 0 | 7.0 | 25,422 | 11.1 | 20,404 | 9.7 | 7,862 | 10.4 |
| 6/9/2018 | 4,515 | 11.3 | 8,117 | 5.5 | 2 | 17.0 | 41 | 10.7 | 0 | 7.0 | 33,820 | 10.2 | 14,324 | 10.0 | 6,971 | 11.1 |
| 6/10/2018 | 4,515 | 13.4 | 0 | 6.7 | 6,923 | 16.1 | 524 | 10.9 | 1 | 7.3 | 26,354 | 10.2 | 17,706 | 10.4 | 11,583 | 11.1 |
| 6/11/2018 | 10,290 | 11.1 | 0 | 8.9 | 13,674 | 12.6 | 801 | 10.2 | 0 | 7.0 | 28,478 | 10.2 | 12,780 | 11.0 | 5,003 | 11.1 |
| 6/12/2018 | 2,004 | 13.2 | 0 | 10.3 | 0 | 15.8 | 678 | 12.6 | 1 | 7.0 | 26,534 | 11.0 | 20,430 | 10.8 | 7,722 | 11.1 |
| 6/13/2018 | 2,004 | 14.0 | 0 | 11.6 | 4,300 | 12.5 | 357 | 11.8 | 1 | 7.0 | 26,154 | 10.4 | 25,462 | 10.9 | 6,928 | 11.1 |
| 6/14/2018 | 2,004 | 14.0 | 0 | 13.0 | 0 | 16.9 | 309 | 12.1 | 0 | 7.8 | 22,984 | 11.4 | 29,270 | 10.6 | 7,393 | 11.0 |
| 6/15/2018 | 2,004 | 14.0 | 2,495 | 14.3 | 9,792 | 21.1 | 504 | 10.7 | 3 | 7.8 | 10,776 | 11.8 | 47,872 | 9.8 | 8,211 | 12.0 |
| 6/16/2018 | 2,004 | 13.1 | 2,088 | 12.6 | 21,604 | 14.2 | 157 | 15.4 | 0 | 8.1 | 32,098 | 13.8 | 27,622 | 8.0 | 5,226 | 11.0 |
| 6/17/2018 | 2,004 | 14.2 | 4,543 | 14.0 | 2,776 | 14.5 | 41 | 12.1 | 10,080 | 14.1 | 34,896 | 10.7 | 10,566 | 8.4 | 7,671 | 10.9 |
| 6/18/2018 | 8,067 | - | 8,095 | 10.3 | 8,349 | 13.9 | 659 | 10.7 | 1,125 | 8.1 | 26,100 | 10.7 | 16,432 | 8.7 | 5,966 | 11.3 |
| 6/19/2018 | - | - | 3,733 | 5.2 | 5 | 16.7 | 404 | 11.2 | 0 | 8.0 | 20,600 | 10.9 | 36,896 | 7.8 | 6,327 | 11.4 |
| 6/20/2018 | - | - | 0 | 7.1 | 8 | 18.1 | 415 | 11.3 | 0 | 8.0 | 31,594 | 10.3 | 25,462 | 5.5 | 7,445 | 10.9 |
| 6/21/2018 | - | - | 0 | 8.5 | 2 | 18.5 | 926 | 15.8 | 0 | 8.0 | 16,250 | 11.7 | 35,562 | 3.9 | 5,994 | 11.3 |
| 6/22/2018 | 8,469 | - | 4,536 | 10.0 | 1 | 19.0 | 892 | 11.3 | 0 | 8.0 | 39,614 | 10.4 | 11,402 | 2.4 | 5,736 | 11.1 |
| 6/23/2018 | 8,469 | - | 4,461 | 4.8 | 10,446 | 13.6 | 1,179 | 10.1 | 0 | 8.0 | 23,182 | 9.4 | 15,540 | 3.2 | 7,977 | 11.1 |
| 6/24/2018 | 8,469 | - | 2 | 6.6 | 6,124 | 13.2 | 1,168 | 11.9 | 0 | 8.0 | 32,020 | 10.2 | 922 | 5.6 | 5,105 | 11.1 |
| 6/25/2018 | - | - | 0 | 8.1 | 2,859 | 10.9 | 681 | 11.8 | 0 | 8.0 | 23,546 | 11.7 | 28,096 | 6.4 | 8,811 | 10.9 |
| 6/26/2018 | 1,466 | - | 0 | 9.7 | 2,336 | 16.5 | 658 | 11.4 | 0 | 8.0 | 31,224 | 10.9 | 27,050 | 5.2 | 7,132 | 11.4 |
| 6/27/2018 | 0 | 13.3 | 0 | 11.6 | 14,020 | 13.2 | 519 | 11.7 | 0 | 8.0 | 22,910 | 8.9 | 30,028 | 3.5 | 7,378 | 11.1 |
| 6/28/2018 | 0 | 13.7 | 0 | 12.6 | 3,620 | 14.8 | 24 | 10.7 | 22,305 | 20.5 | 20,192 | 11.2 | 16,270 | 3.3 | 7,459 | 10.9 |
| 6/29/2018 | 4,516 | 13.4 | 5,360 | 13.9 | 0 | 14.3 | 192 | 15.1 | 0 | 5.9 | 22,002 | 10.7 | 26,976 | 2.4 | 7,050 | 11.5 |
| 6/30/2018 | 3,009 | 12.2 | 3,693 | 9.2 | 3,801 | 13.3 | 141 | 11.9 | 1 | 6.6 | 18,768 | 10.0 | 18,050 | 1.8 | 8,013 | 11.8 |

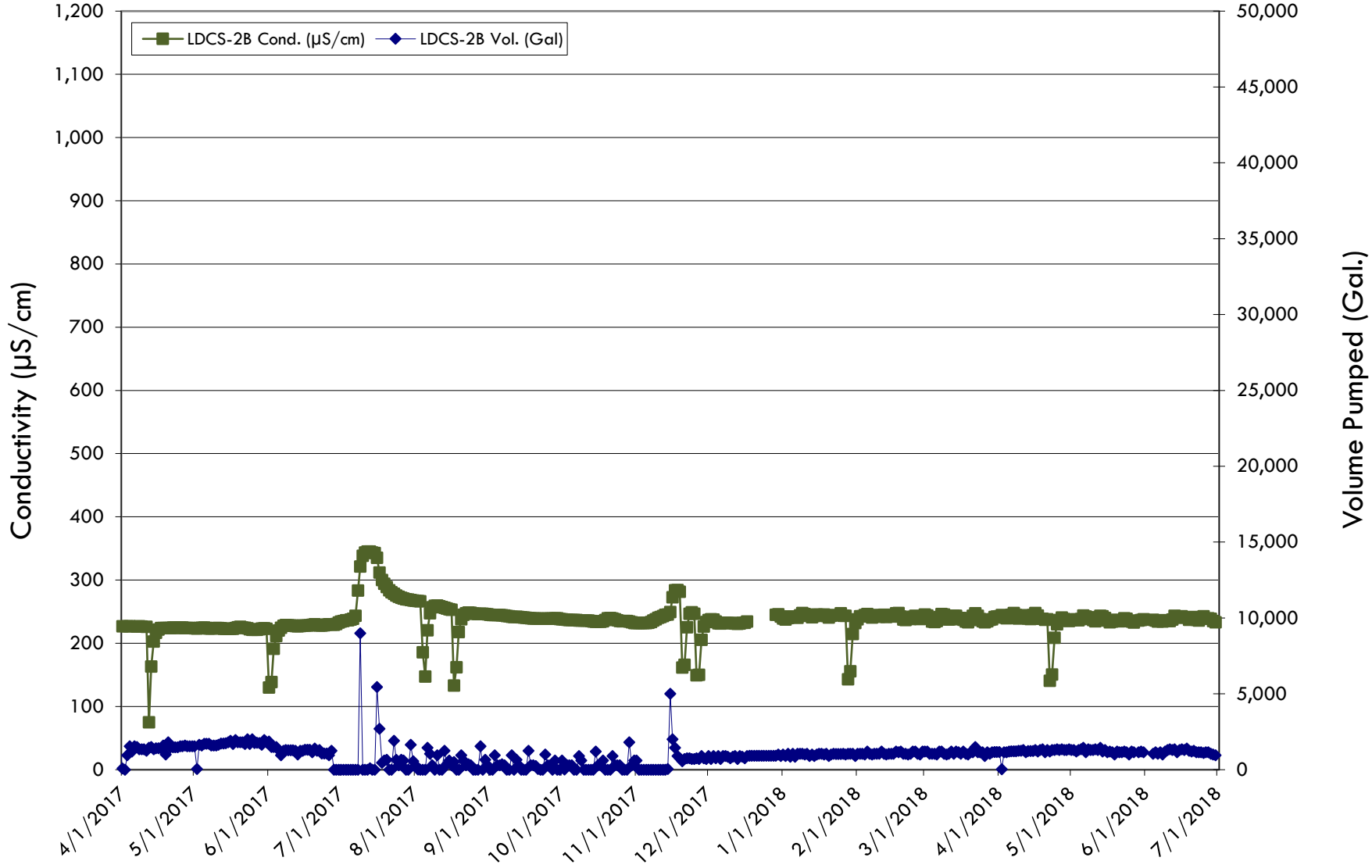
- = No data collected, meter not functioning properly

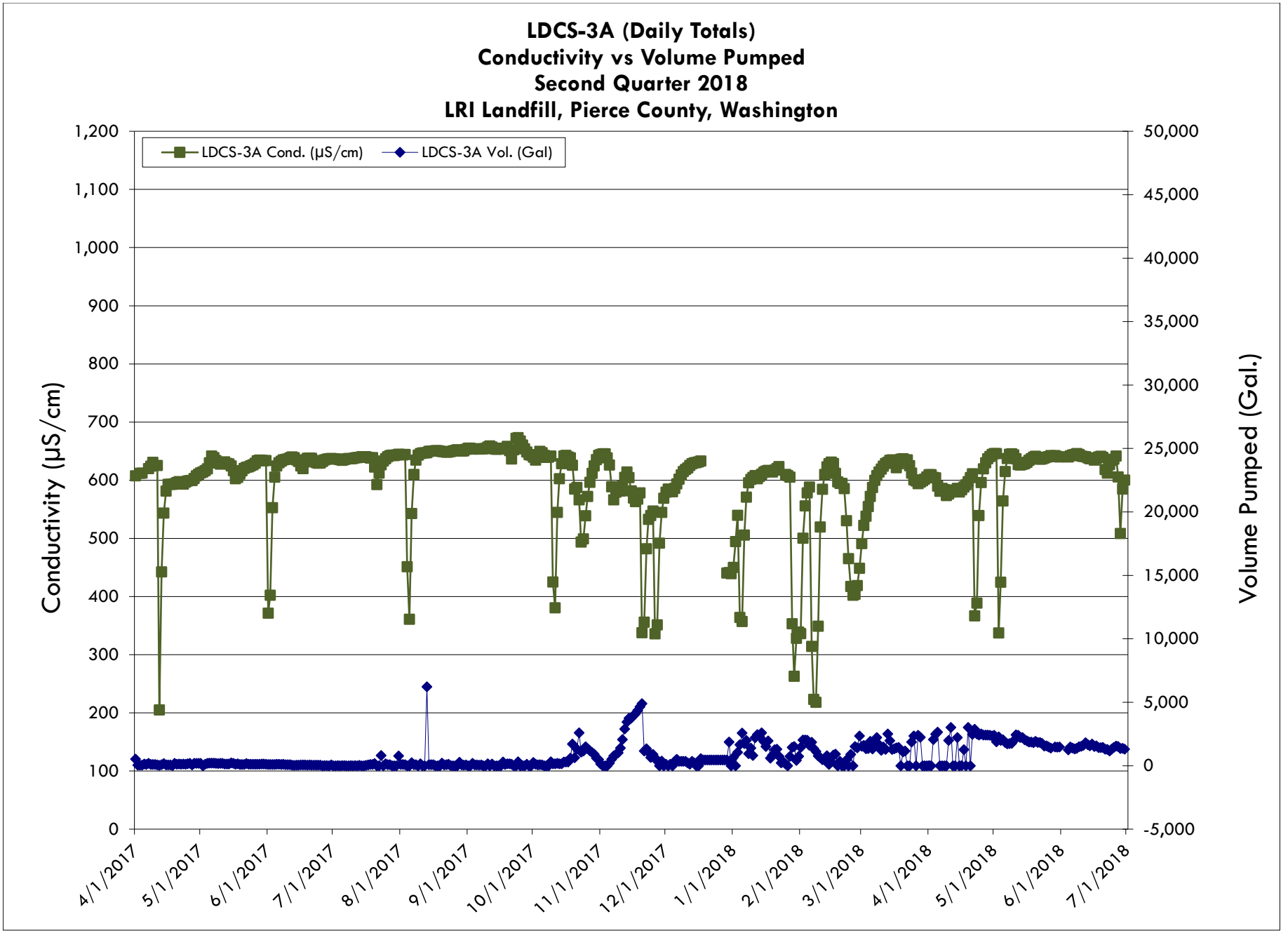

LDCS-1 (DailyTotals)
Conductivity vs Volume Pumped
Second Quarter 2018
LRI Landfill, Pierce County, Washington
LDCS-1 Cond. (µS/cm)
LDCS-1 Vol. (Gal.)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

**LDCS-2A (Daily Totals)**
**Conductivity vs Volume Pumped**
**Second Quarter 2018**
**LRI Landfill, Pierce County, Washington**

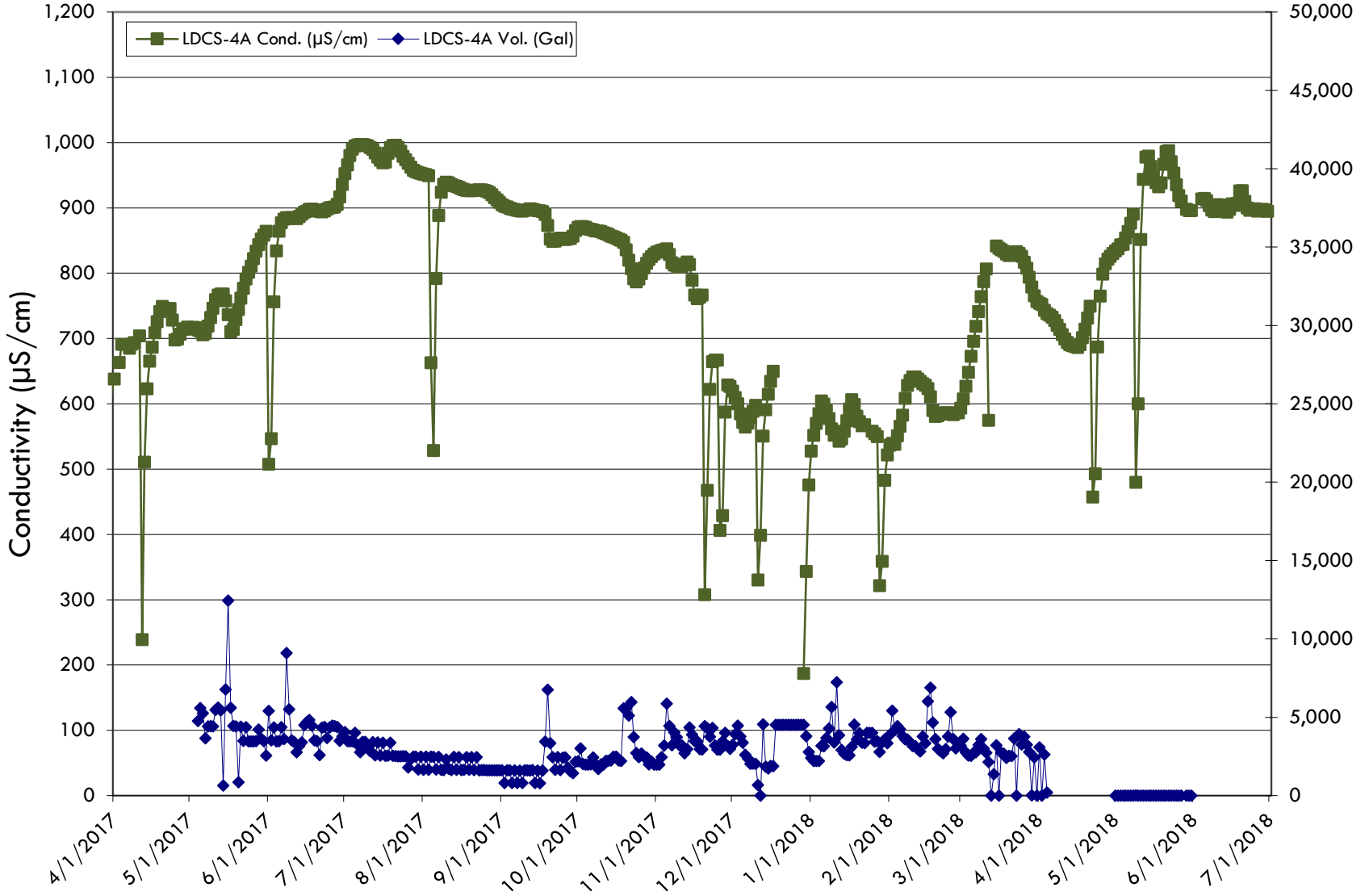


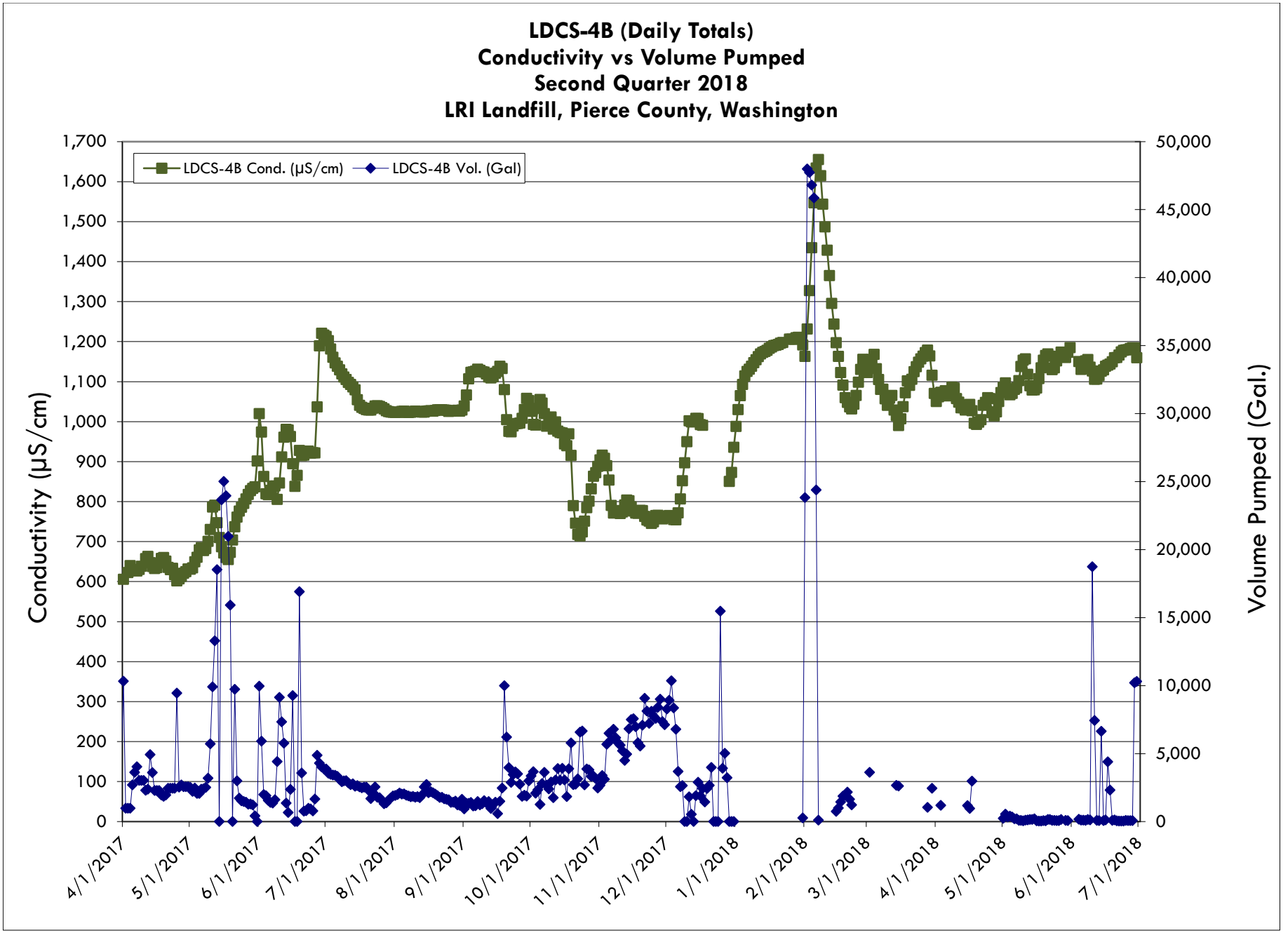
**LDCS-2B (Daily Totals)**
**Conductivity vs Volume Pumped**
**Second Quarter 2018**
**LRI Landfill, Pierce County, Washington**




LDCS-3A (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2018
LRI Landfill, Pierce County, Washington
LDCS-3A Cond. (µS/cm)
LDCS-3A Vol. (Gal)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
-5,000
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

**LDCS-4A (Daily Totals)**
**Conductivity vs Volume Pumped**
**Second Quarter 2018**
**LRI Landfill, Pierce County, Washington**




LDCS-4B (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2018
LRI Landfill, Pierce County, Washington
LDCS-4B Cond. (µS/cm)
LDCS-4B Vol. (Gal)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
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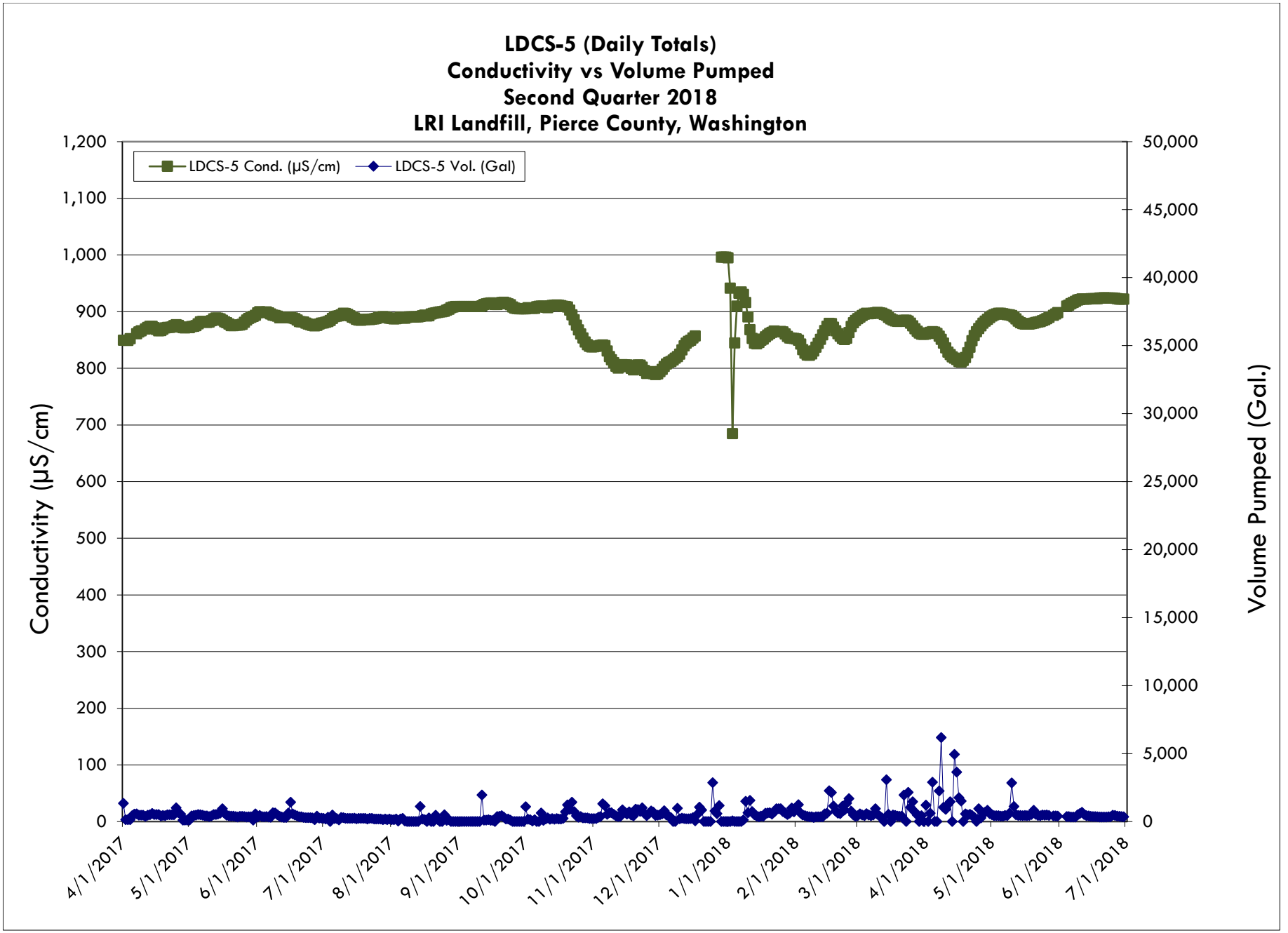
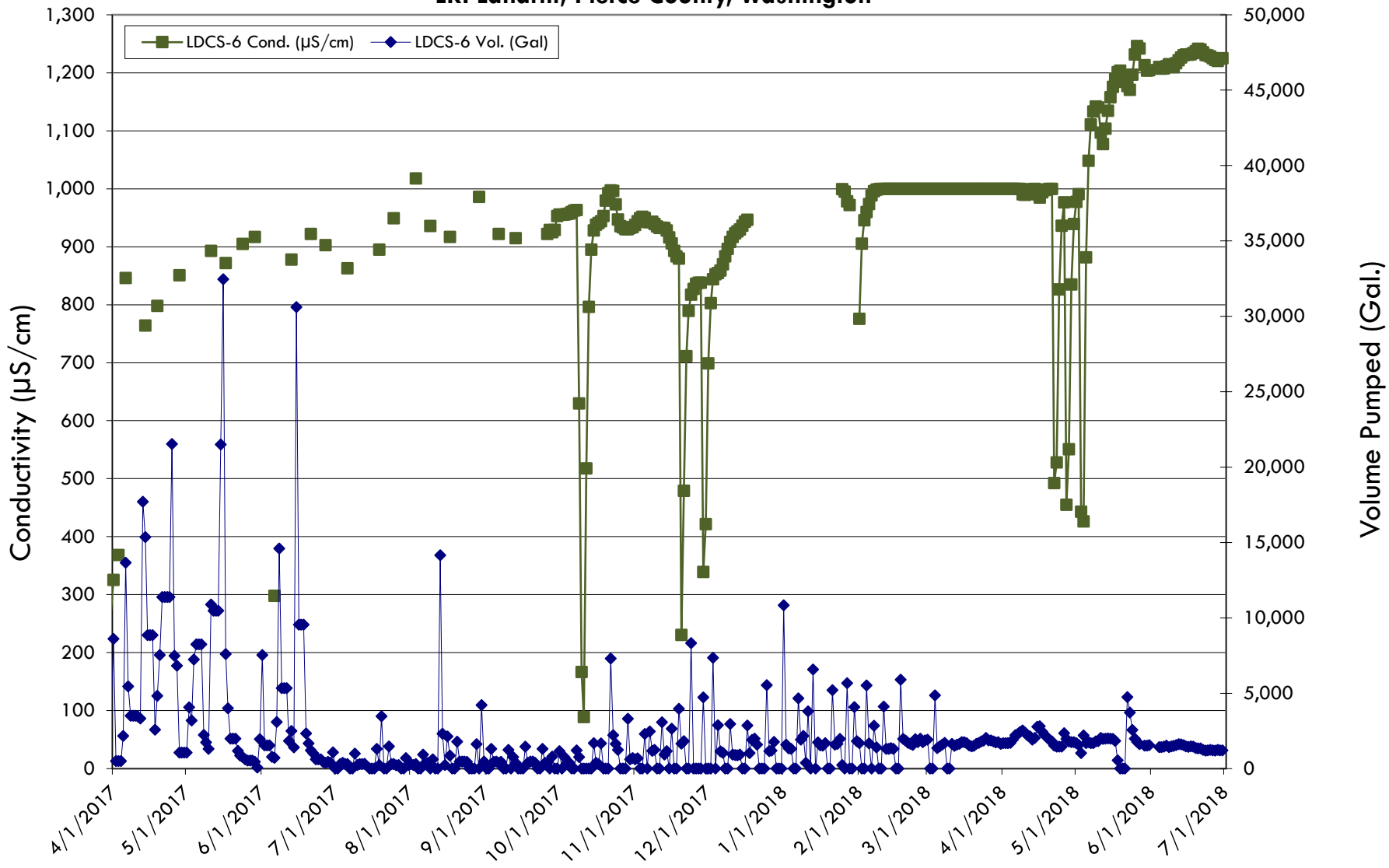
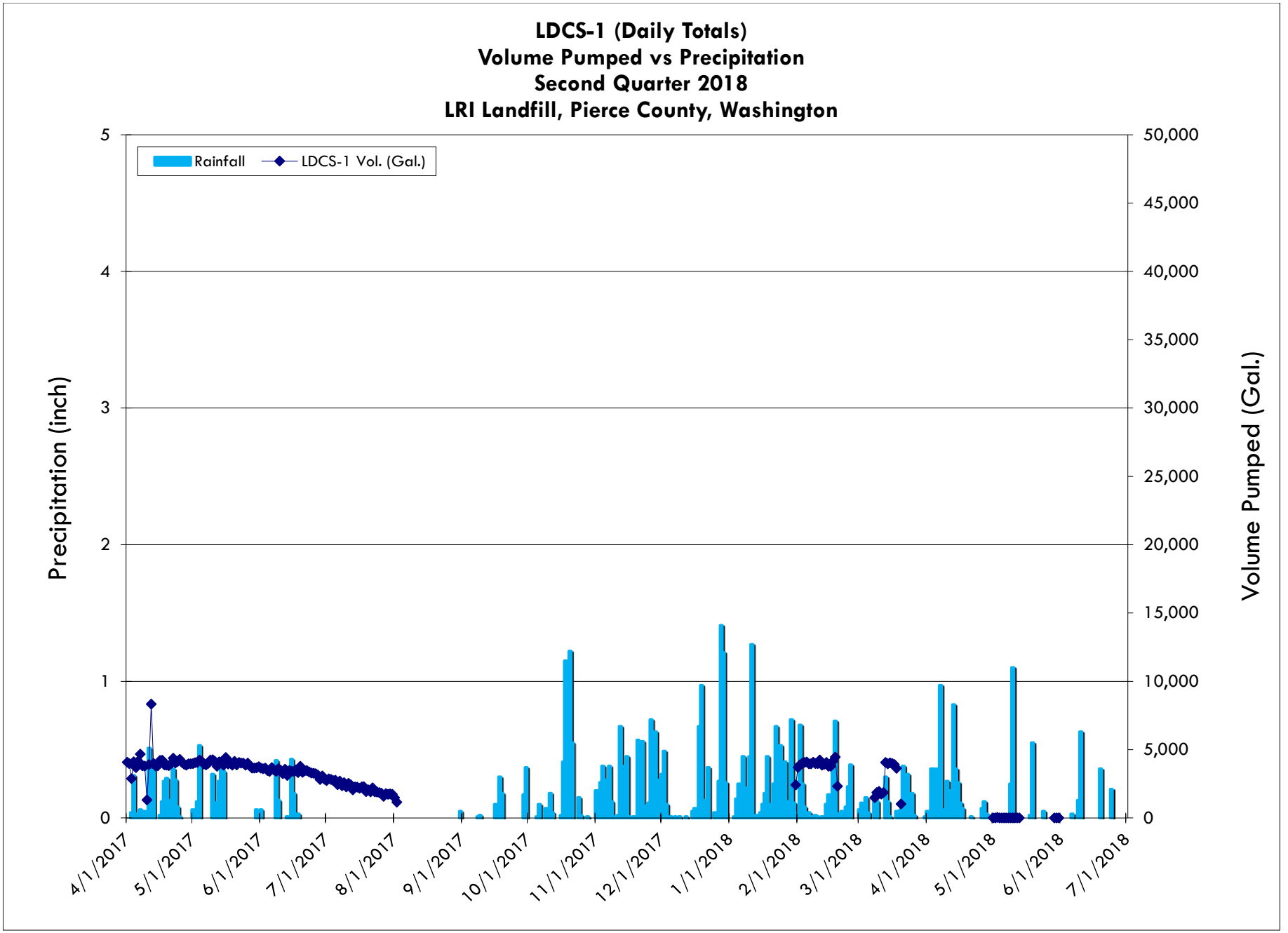
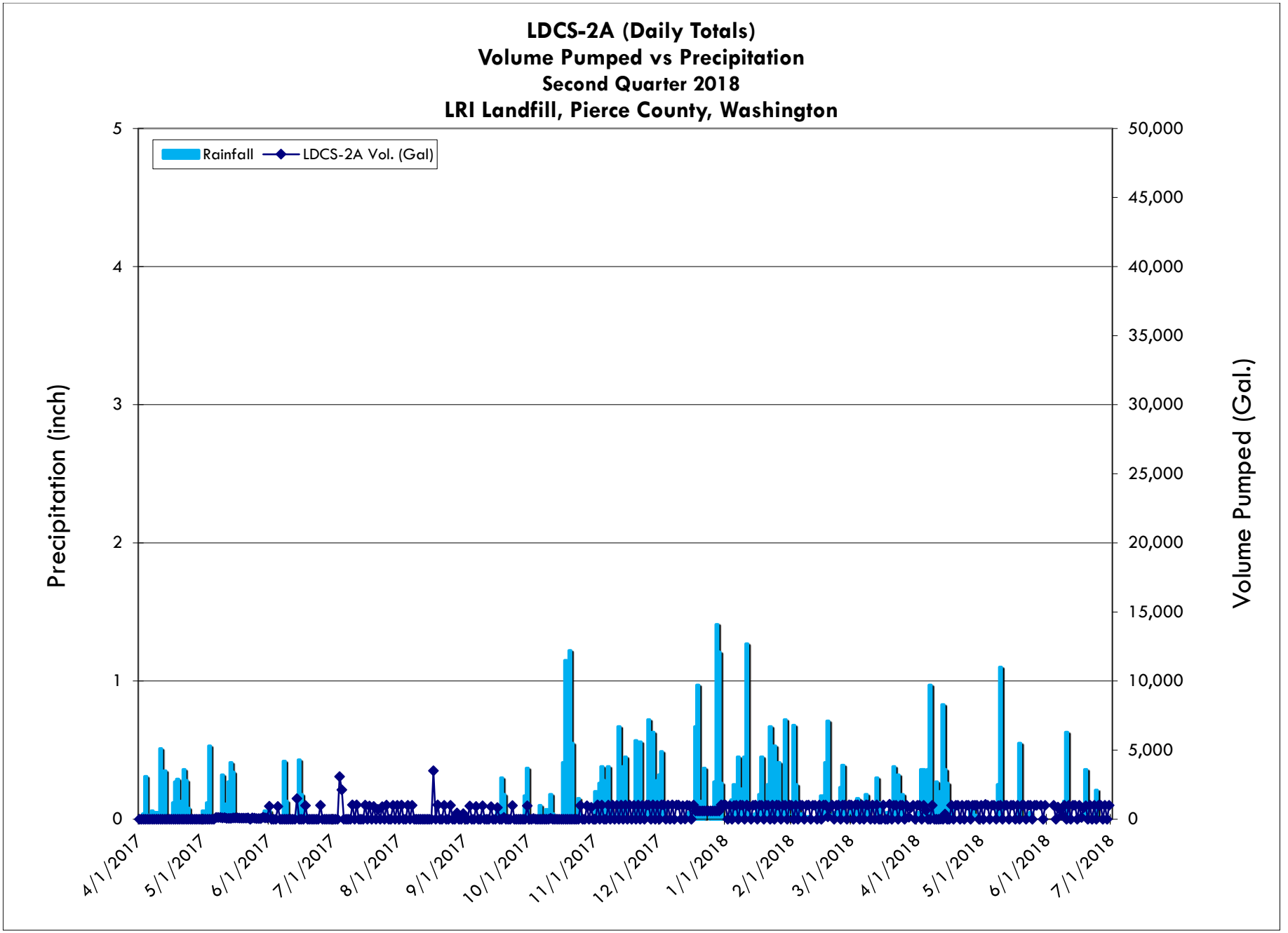
4/1/2018
5/1/2018
6/1/2018
7/1/2018

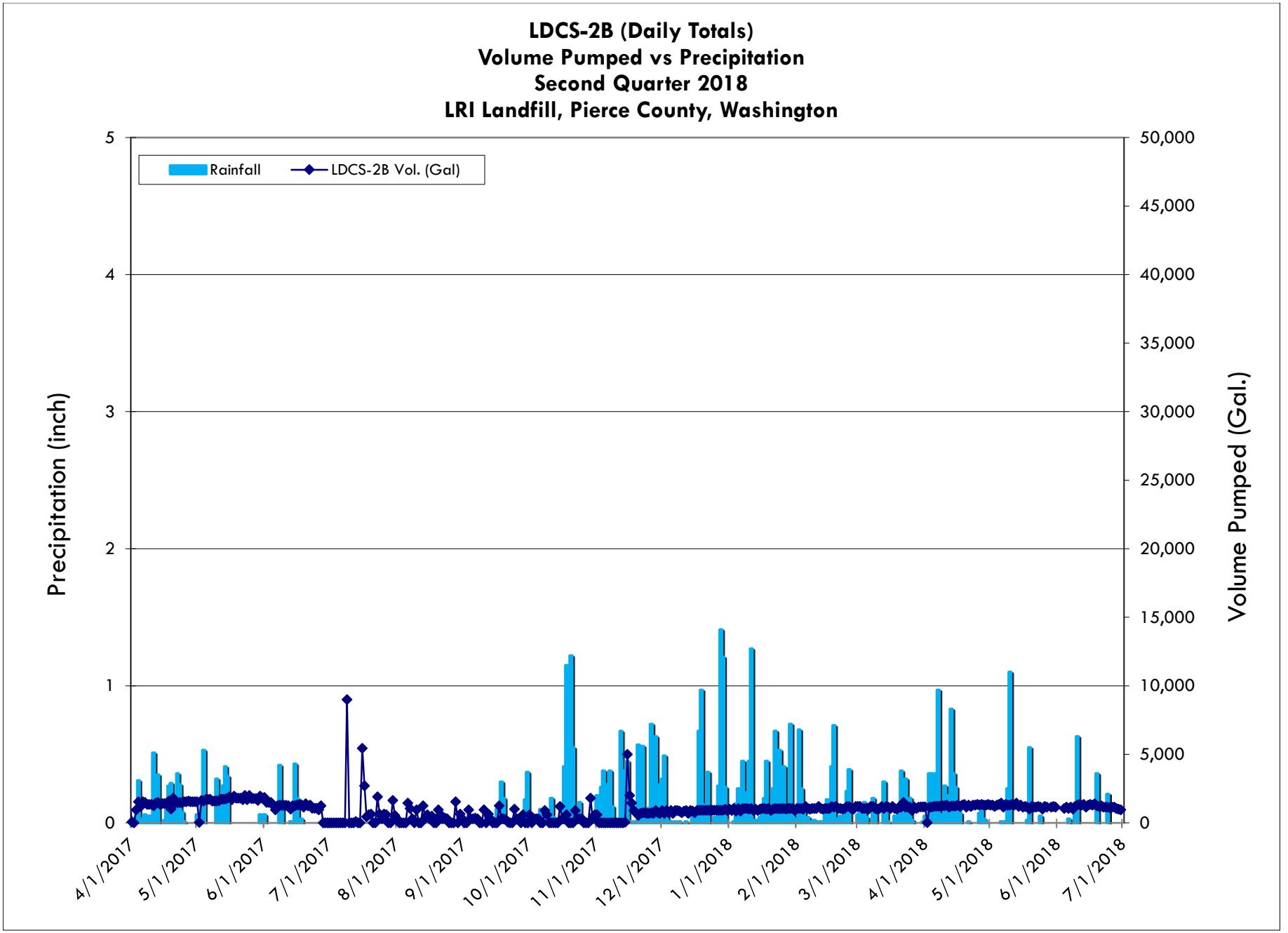

LDCS-5 (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2018
LRI Landfill, Pierce County, Washington
LDCS-5 Cond. (µS/cm)
LDCS-5 Vol. (Gal)
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

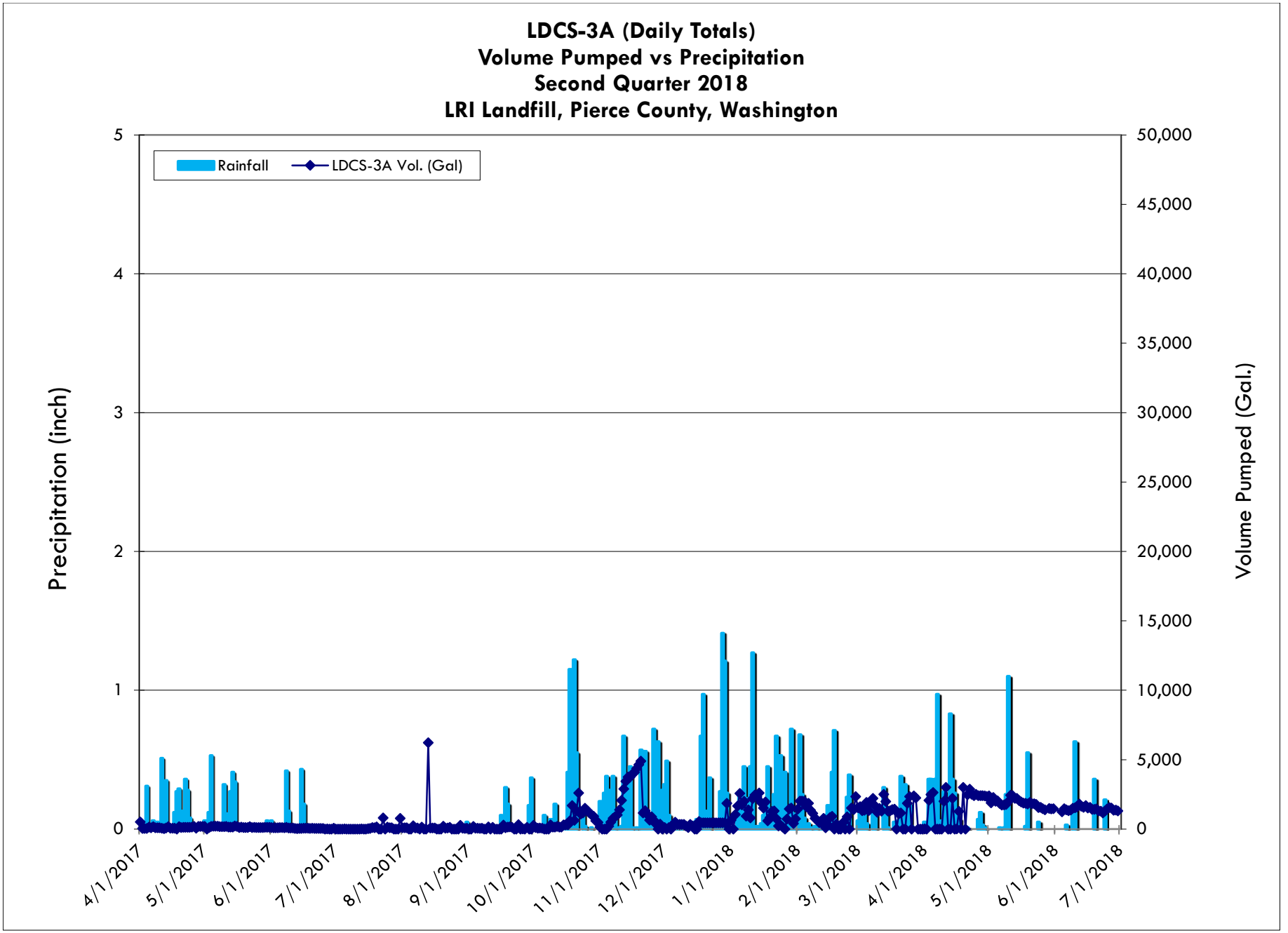
**LDCS-6 (Daily Totals)**
**Conductivity vs Volume Pumped**
**Second Quarter 2018**
**LRI Landfill, Pierce County, Washington**

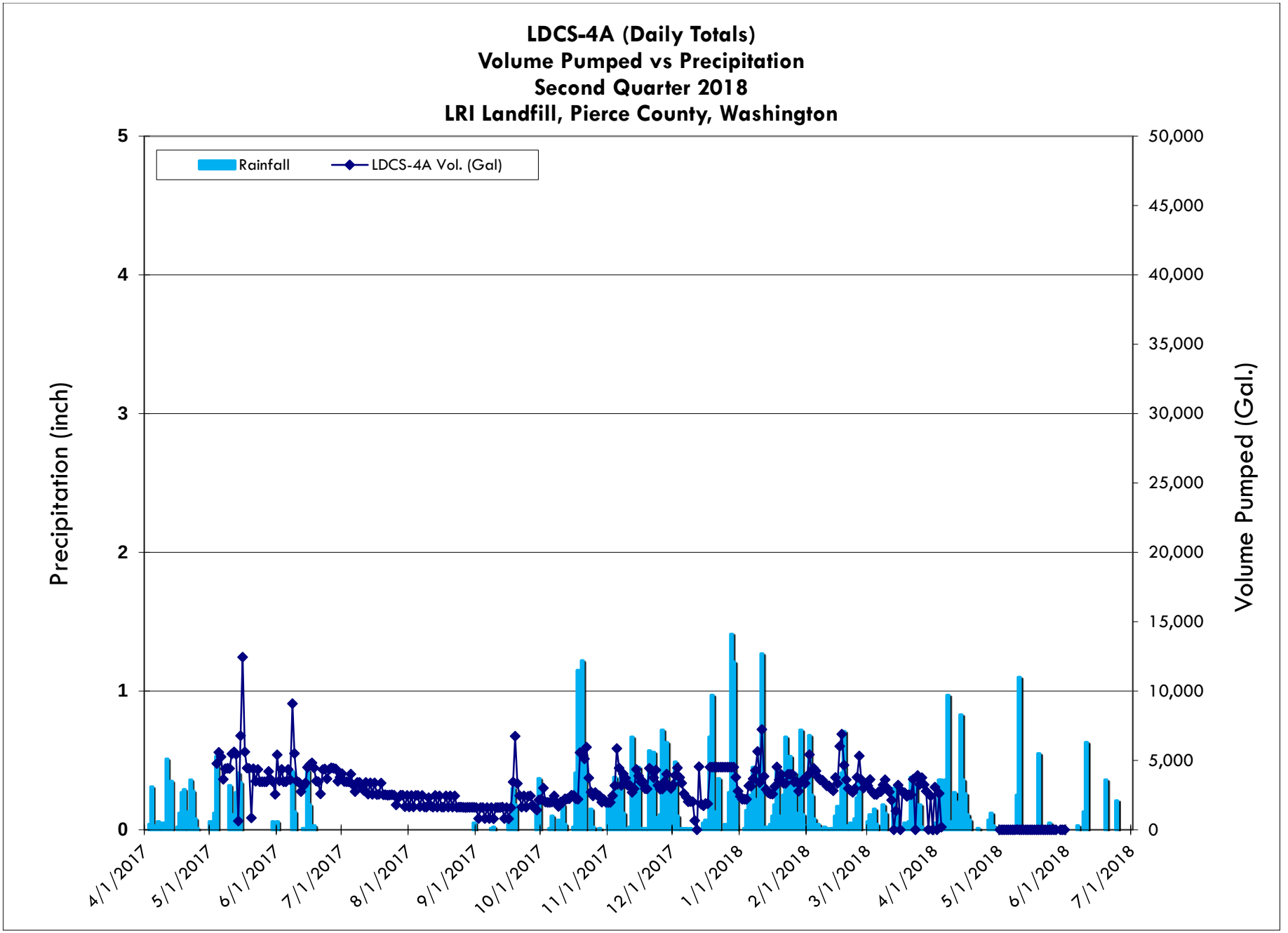


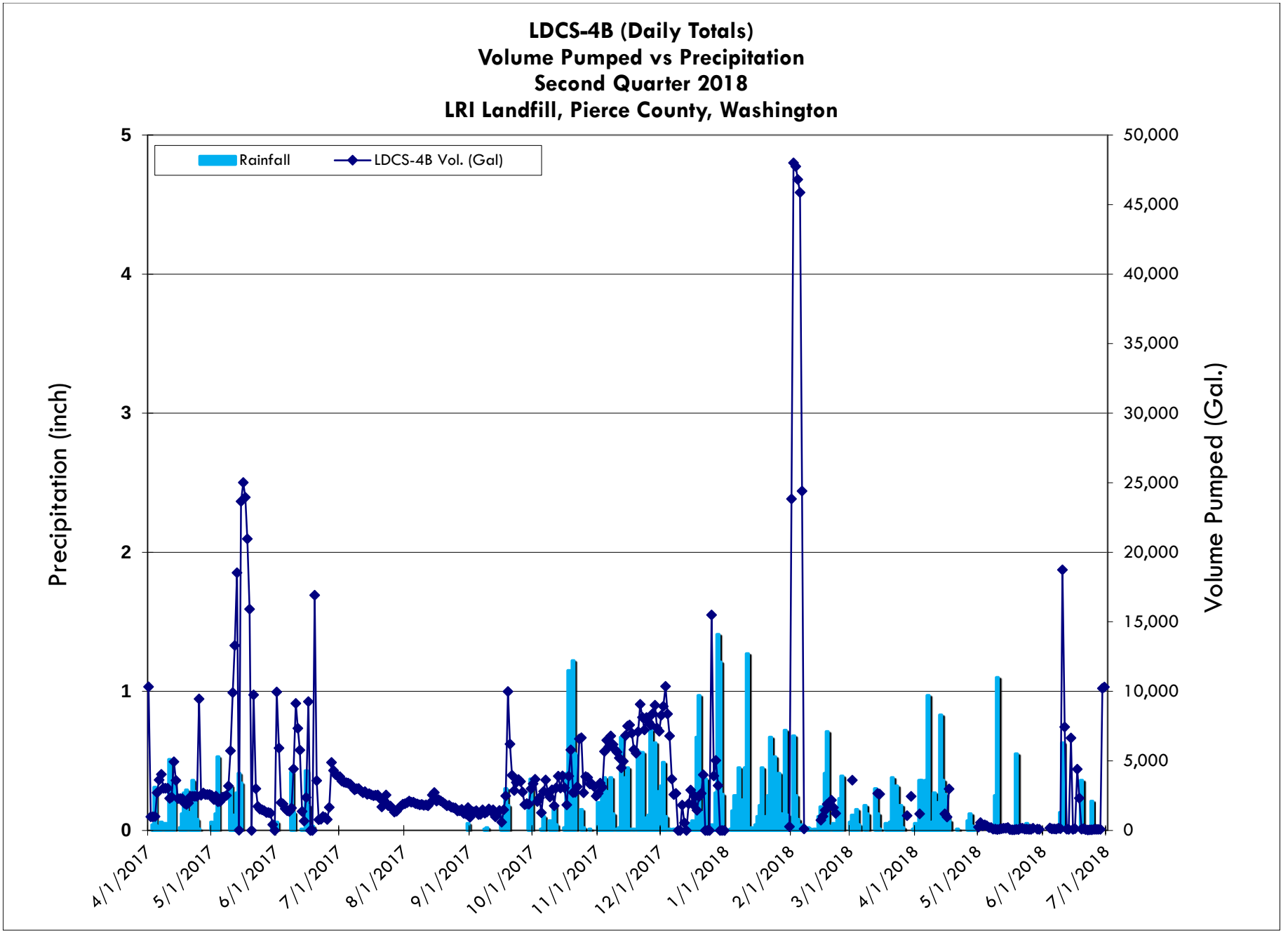

LDCS-1 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2018
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-1 Vol. (Gal.)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

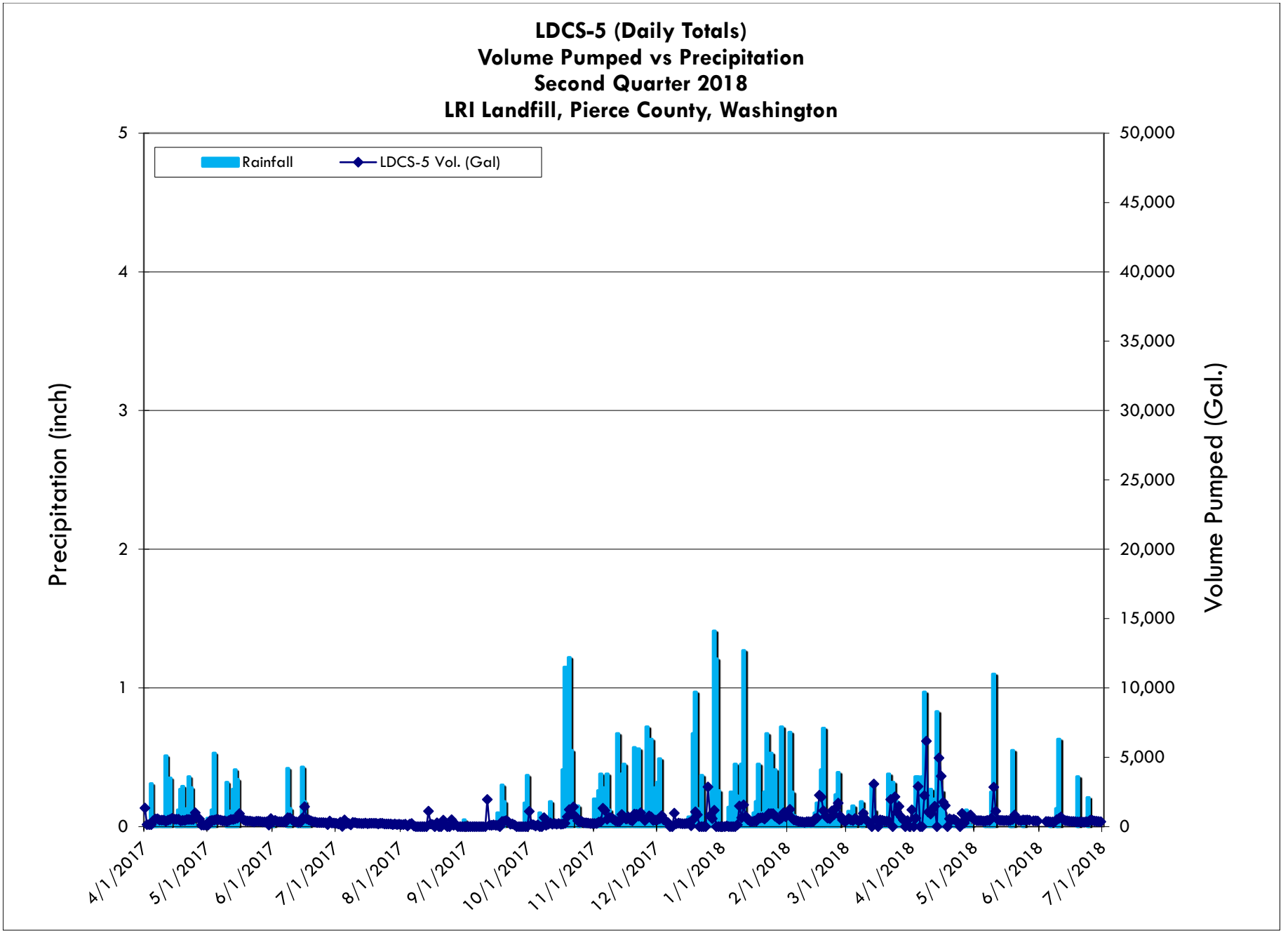

LDCS-2A (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2018
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-2A Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

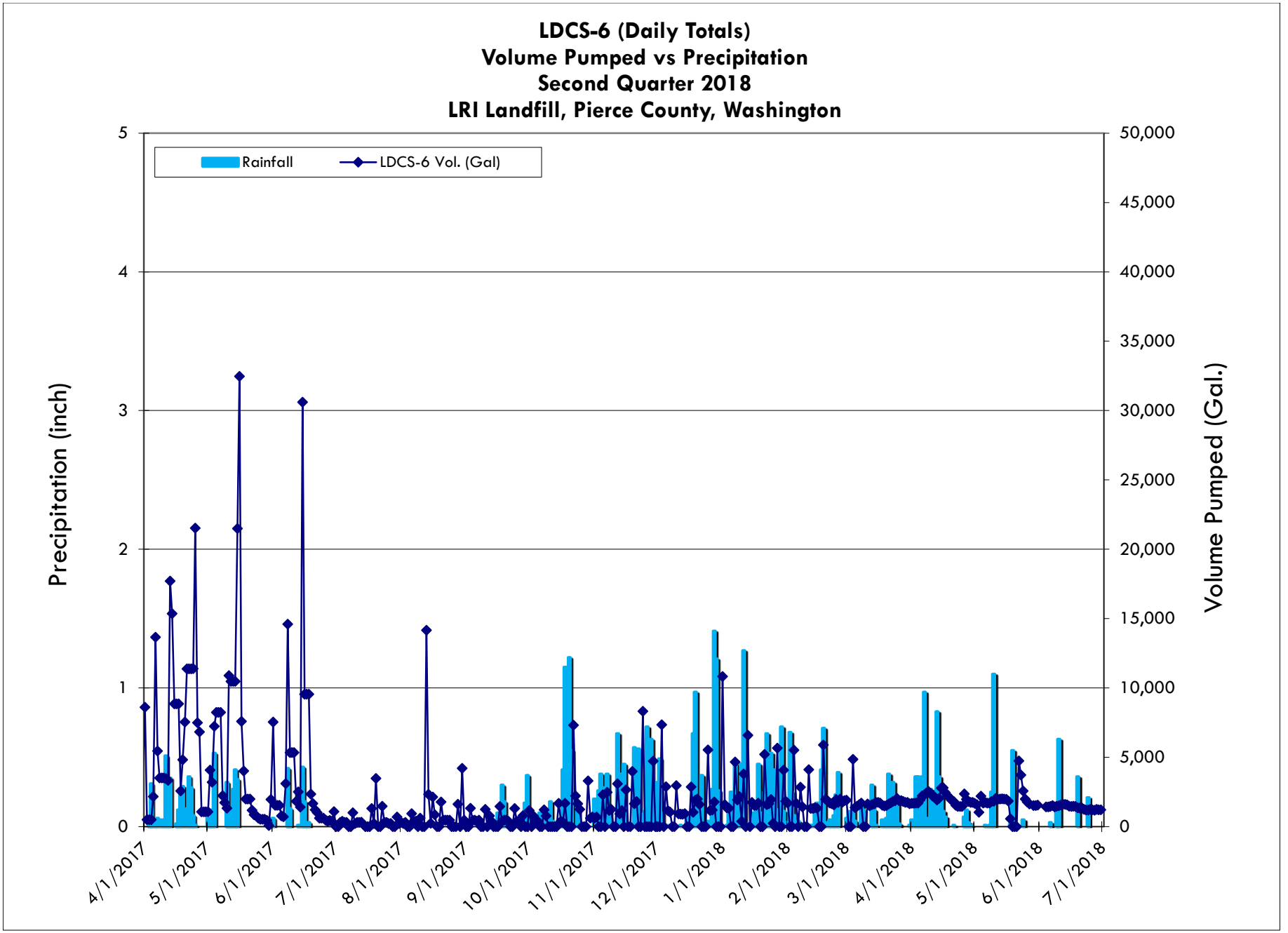

LDCS-2B (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2018
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-2B Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
5
4
3
2
1
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

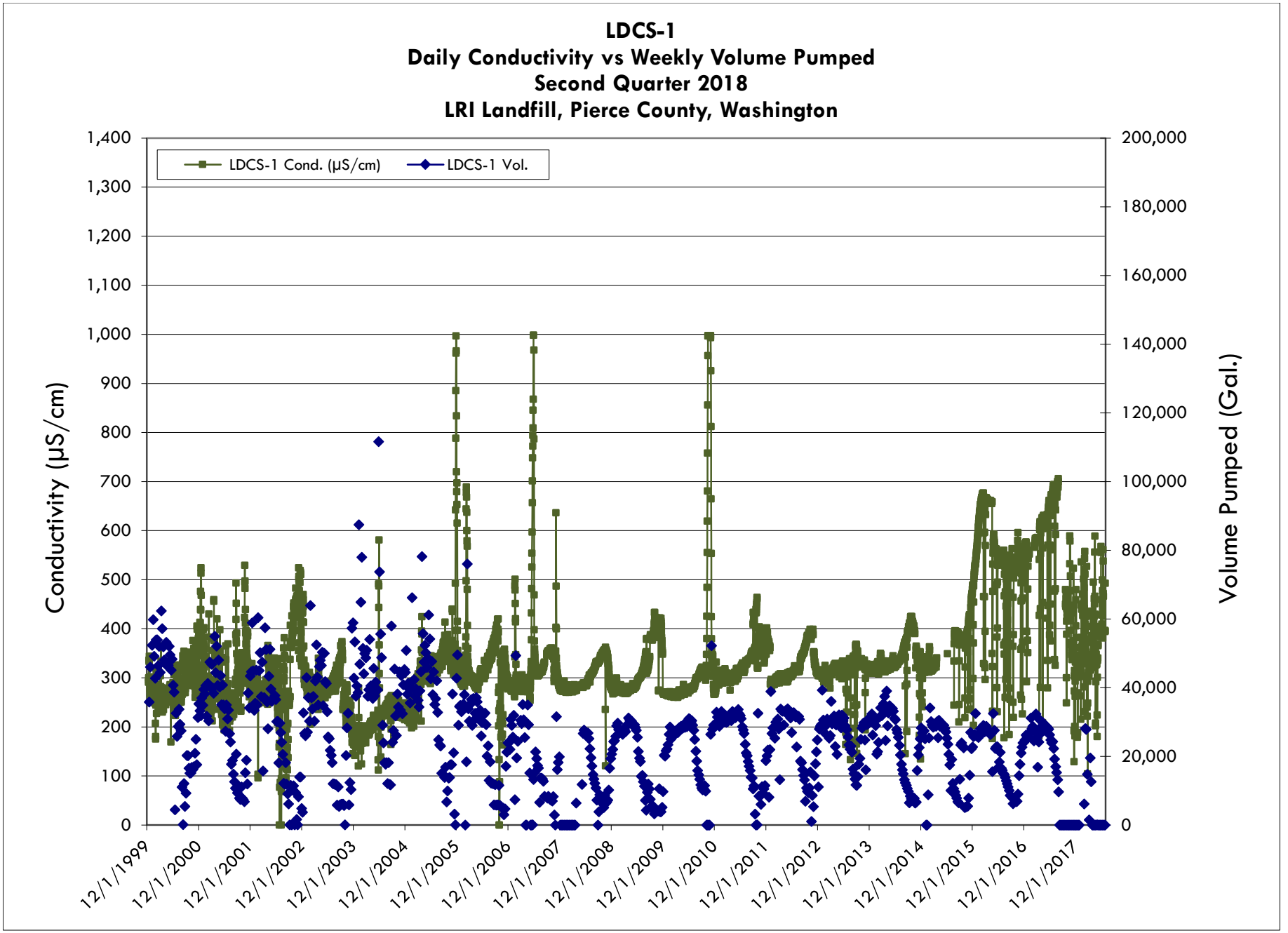

LDCS-3A (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2018
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-3A Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

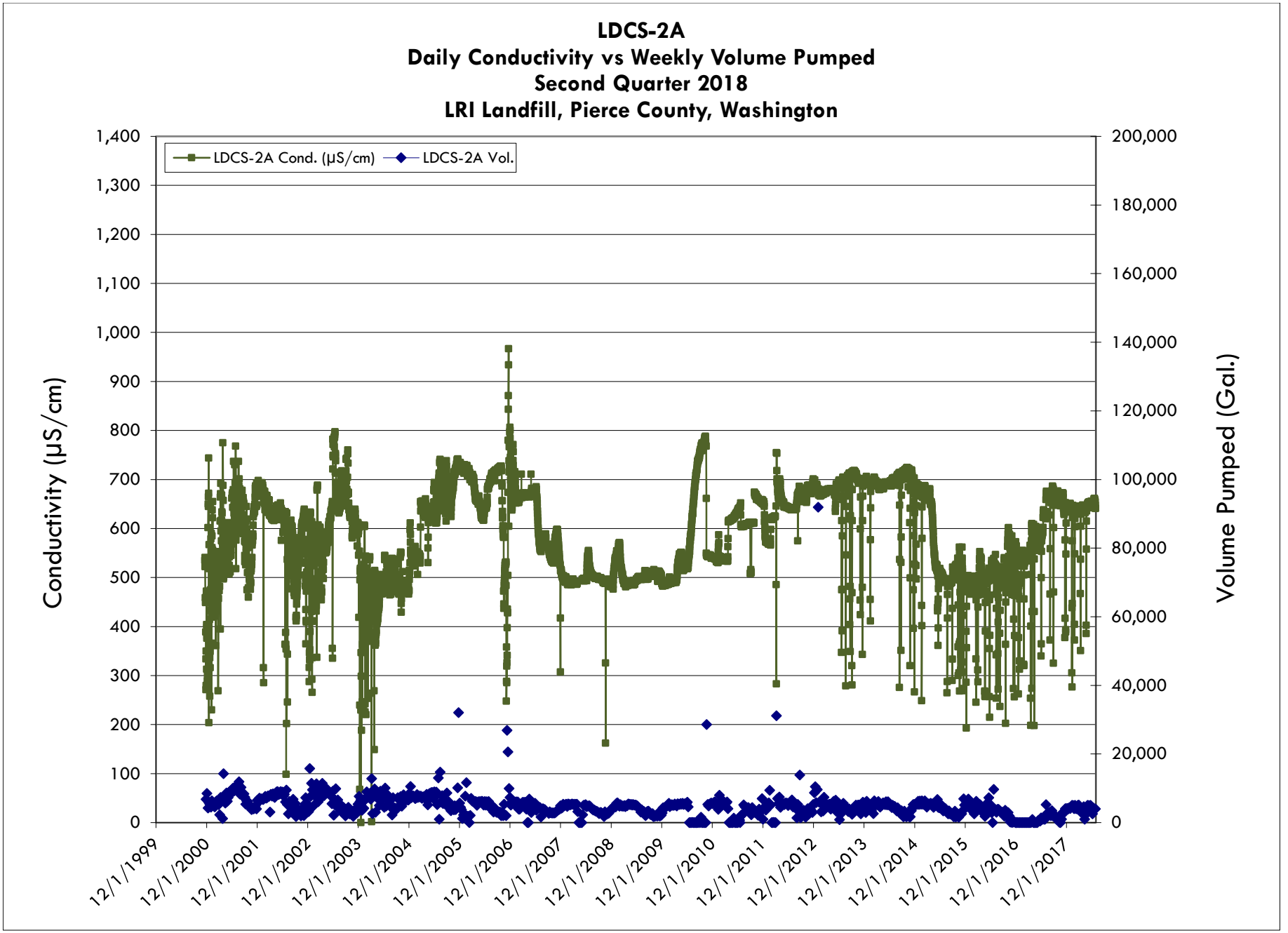

LDCS-4A (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2018
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-4A Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

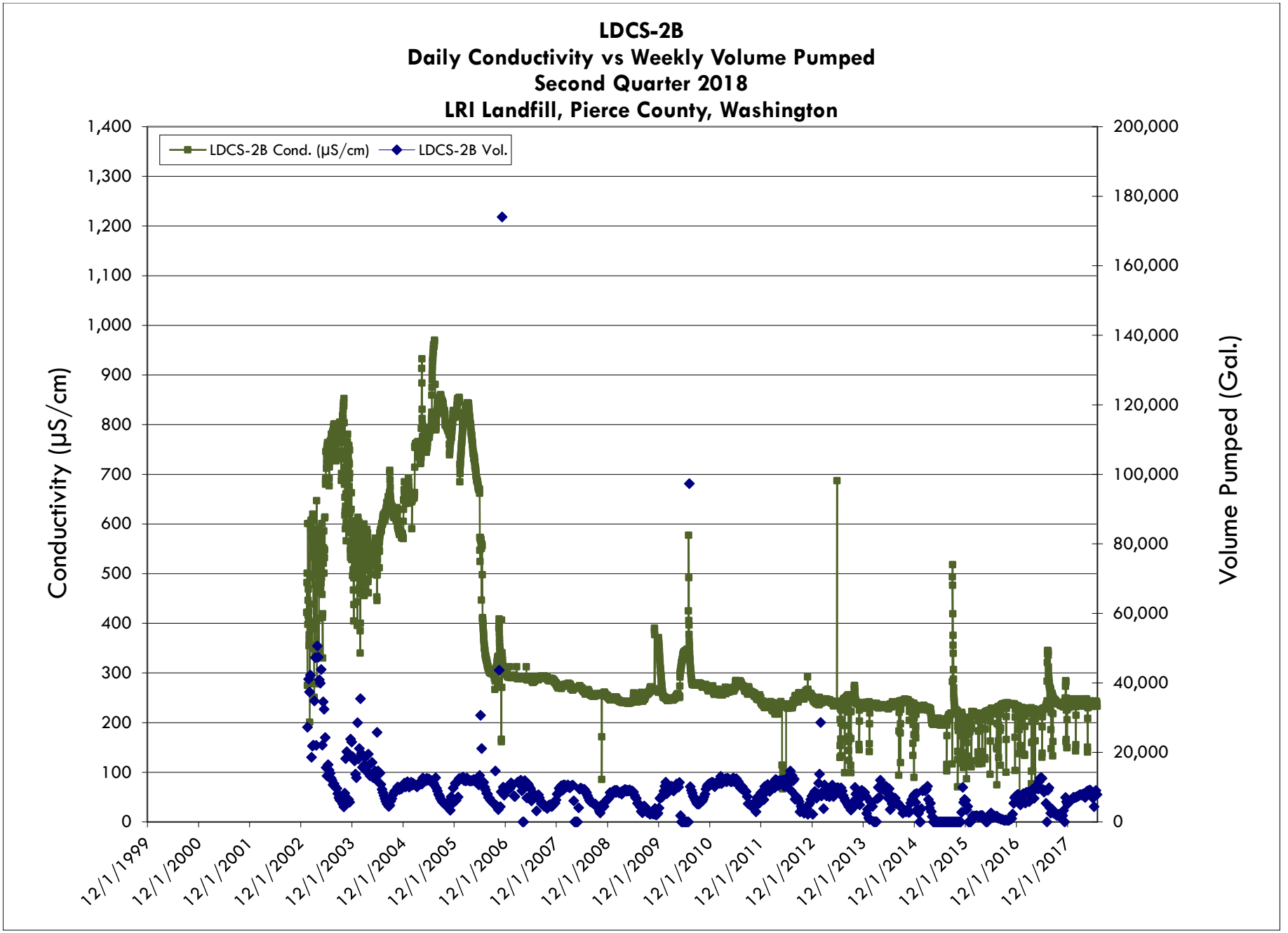

LDCS-4B (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2018
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-4B Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

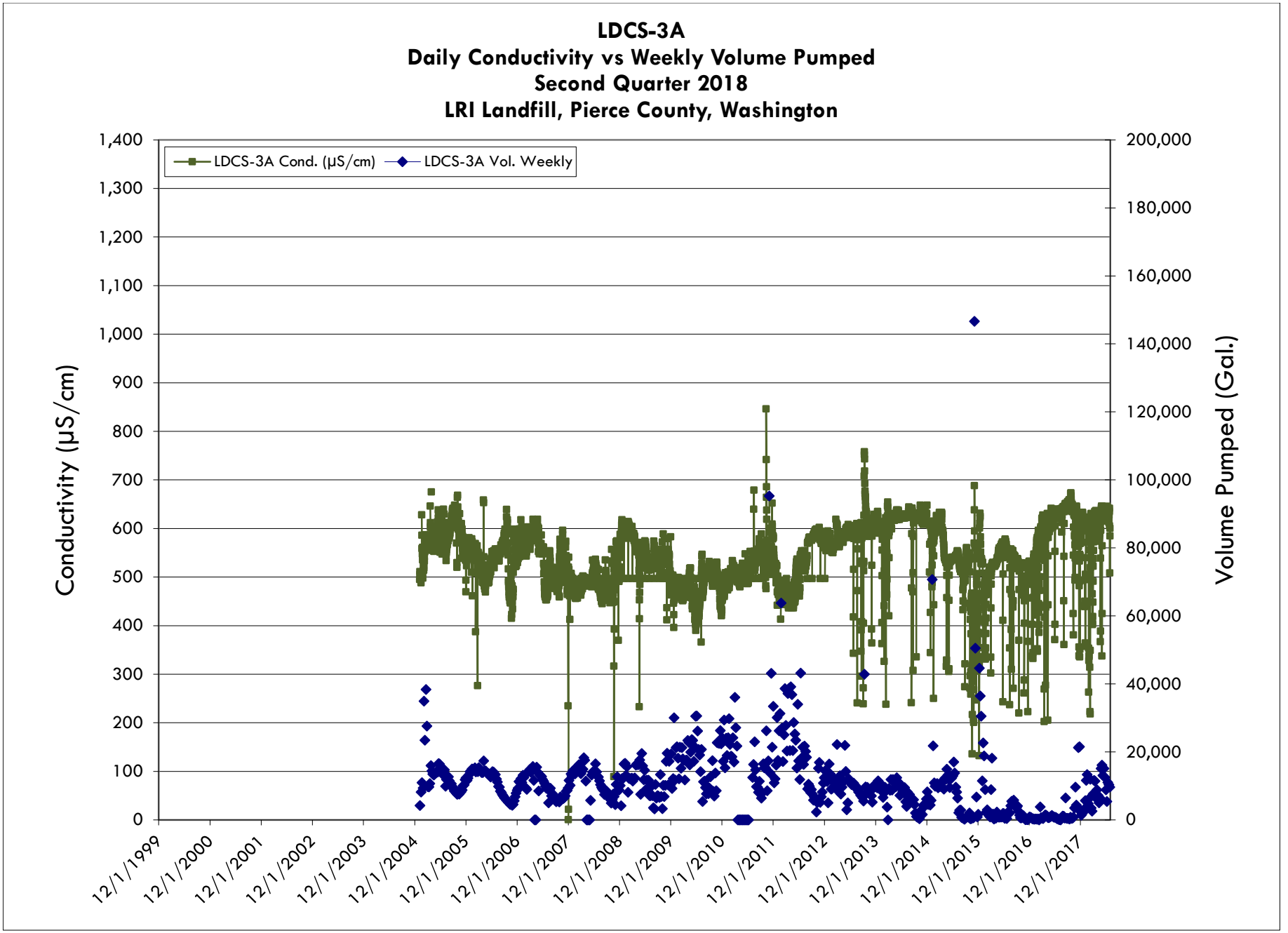

LDCS-5 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2018
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-5 Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018


LDCS-6 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2018
LRI Landfill, Pierce County, Washington
Rainfall
LDCS-6 Vol. (Gal)
Precipitation (inch)
Volume Pumped (Gal.)
0
1
2
3
4
5
0
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
4/1/2017
5/1/2017
6/1/2017
7/1/2017
8/1/2017
9/1/2017
10/1/2017
11/1/2017
12/1/2017
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018

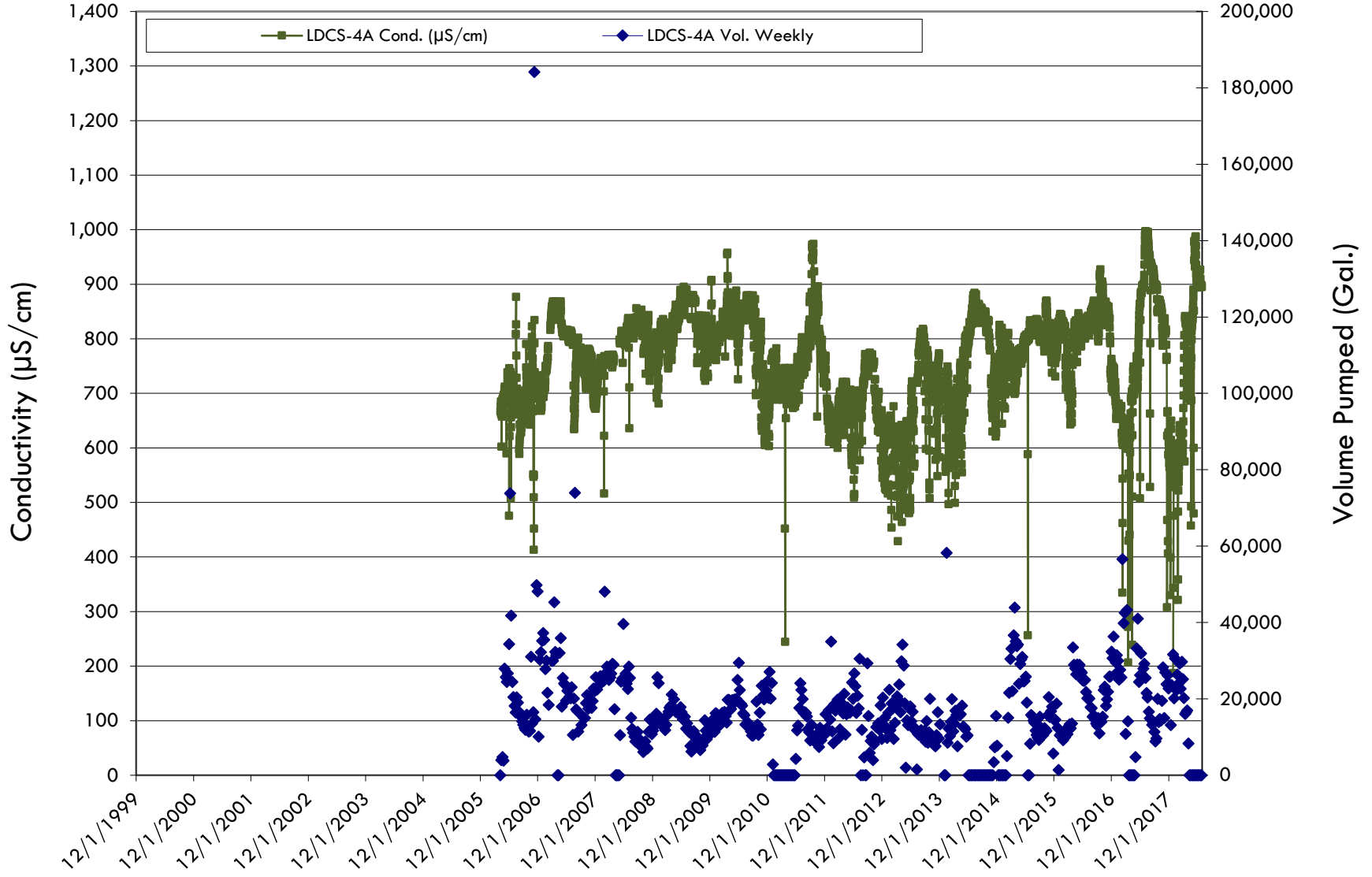

LDCS-1
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2018
LRI Landfill, Pierce County, Washington
LDCS-1 Cond. (µS/cm)
LDCS-1 Vol.
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000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

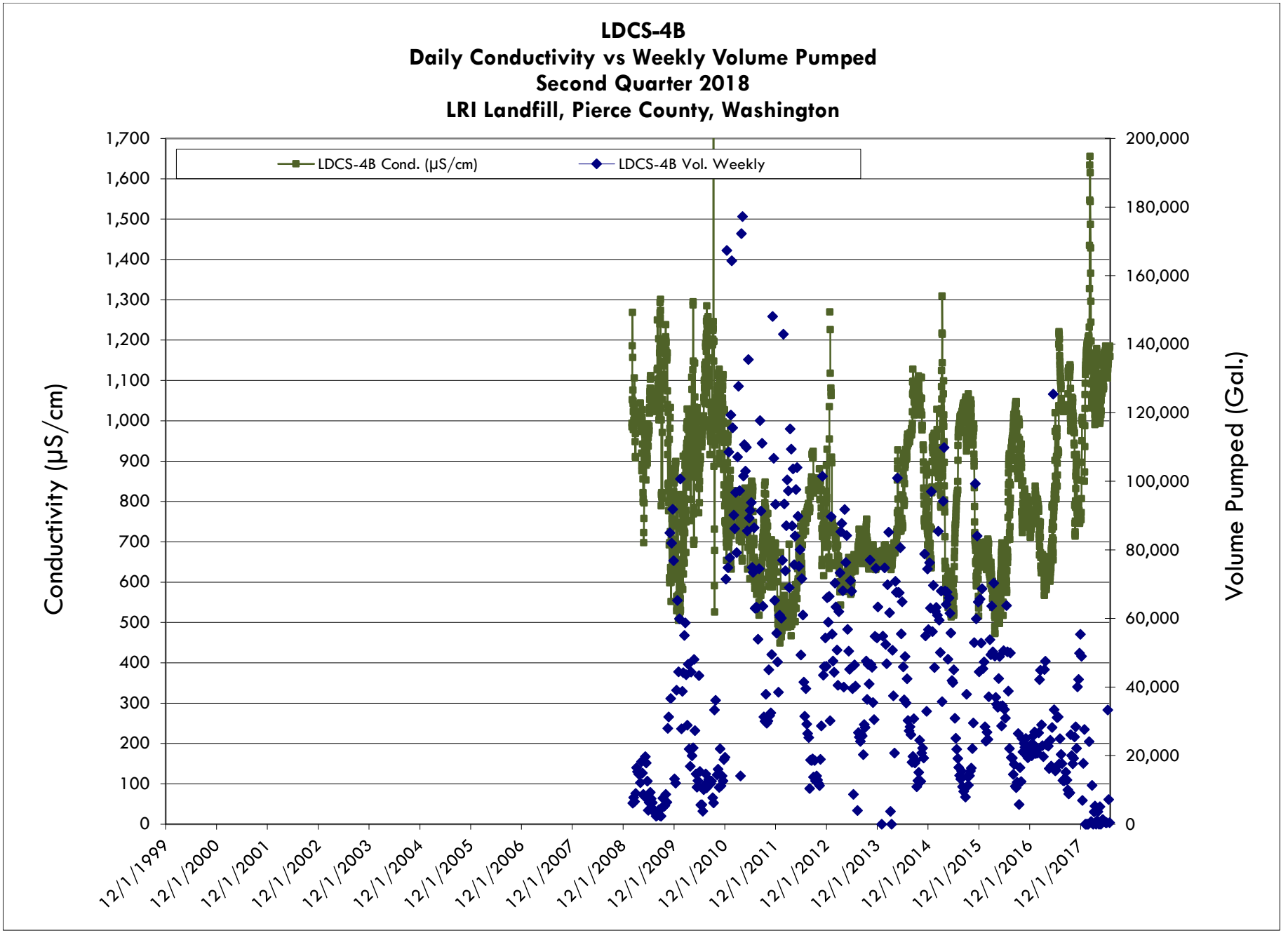

LDCS-2A
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2018
LRI Landfill, Pierce County, Washington
LDCS-2A Cond. (µS/cm)
LDCS-2A Vol.
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000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

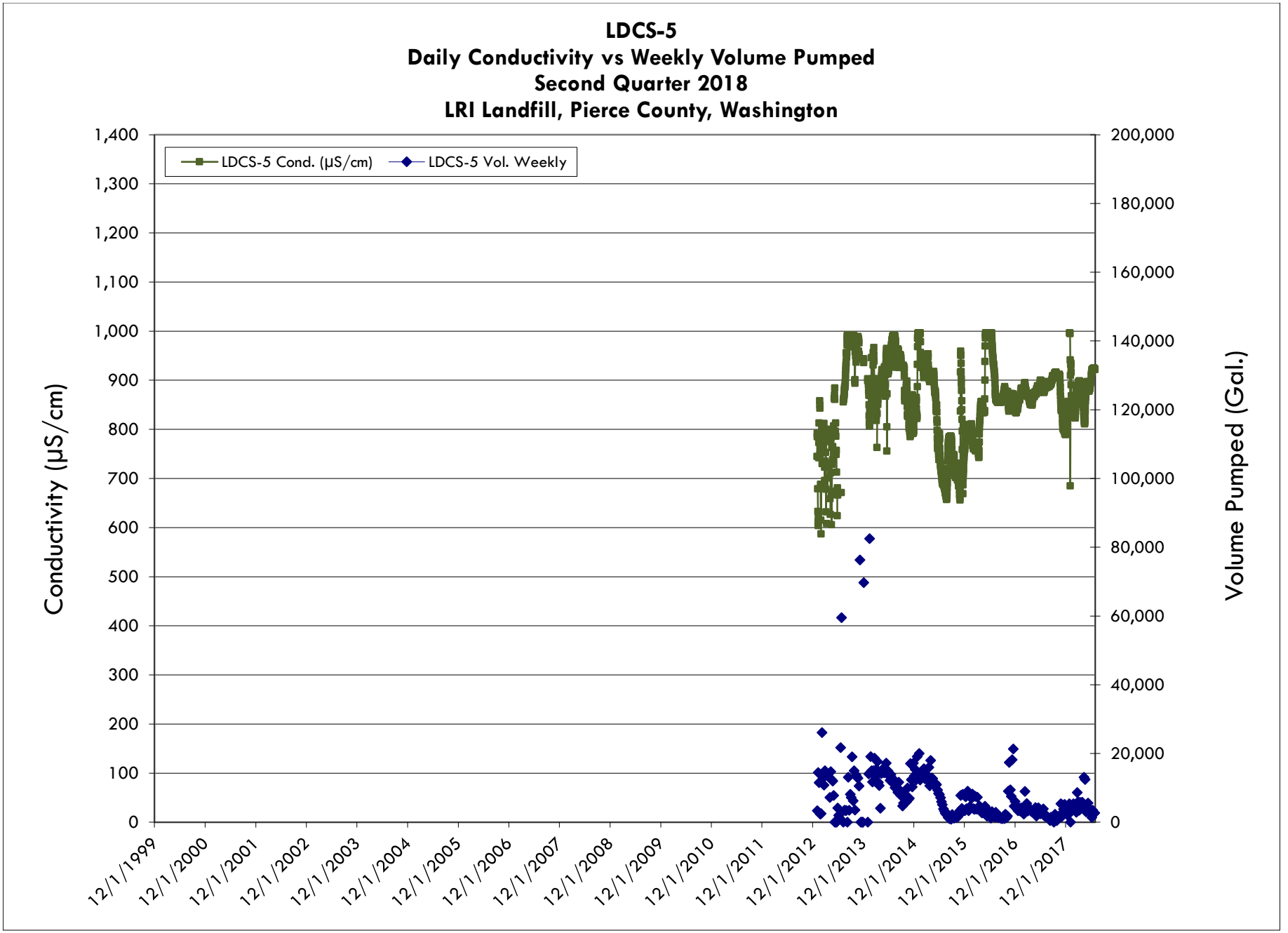

LDCS-2B
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2018
LRI Landfill, Pierce County, Washington
LDCS-2B Cond. (µS/cm)
LDCS-2B Vol.
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000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

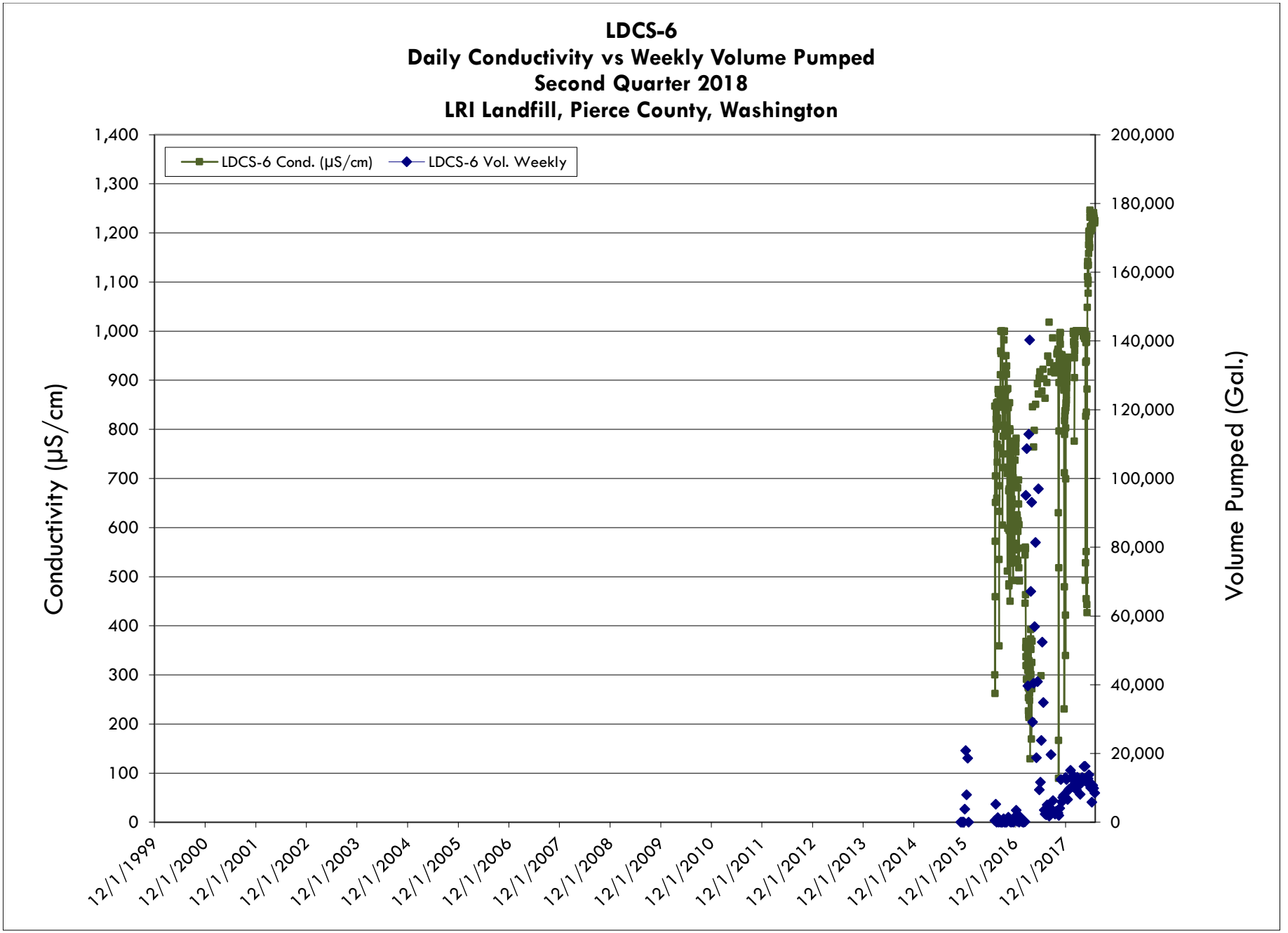

LDCS-3A
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2018
LRI Landfill, Pierce County, Washington
LDCS-3A Cond. (µS/cm)
LDCS-3A Vol. Weekly
Conductivity (µS/cm)
Volume Pumped (Gal.)
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
12/1/1999
12/1/2000
12/1/2001
12/1/2002
12/1/2003
12/1/2004
12/1/2005
12/1/2006
12/1/2007
12/1/2008
12/1/2009
12/1/2010
12/1/2011
12/1/2012
12/1/2013
12/1/2014
12/1/2015
12/1/2016
12/1/2017

**LDCS-4A**
**Daily Conductivity vs Weekly Volume Pumped**
**Second Quarter 2018**
**LRI Landfill, Pierce County, Washington**




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


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


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

Appendix I

# **Surface Water Monitoring Data**

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

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

**Facility County:** Pierce **Receiving Waterbody:** South Creek

**Monitoring Period:** 04/01/2018 - 06/30/2018 **Outfall:** NEWB - NEWB 2 **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NEWB | NEWB | NEWB | NEWB | NEWB | NEWB | NEWB | NEWB | NEWB | NEWB | NEWB |
| **Limit Set** | | ISGP Western WA - 2015 Permit | ISGP Western WA - 2015 Permit | ISGP Western WA - 2015 Permit | ISGP Western WA - 2015 Permit | ISGP Western WA - 2015 Permit | ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2015 permit | ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2015 permit | ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2015 permit | ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2015 permit | ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2015 permit | ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2015 permit |
| 1-Th | **4/5/18** | 4.6 | 7.01 | | | | | | | | | |
| 2-Th | **4/12/18** | 9 | 6.9 | | | | | | | | | |
| 3-T | **4/17/18** | 13 | 7.0 | | | | | | | | | |
| 4-W | **4/25/18** | 4 | 6.8 | No | B\|10 | B\|35 | B\|2 | 5 | J\|0.093 | B\|4.9 | B\|49 | B\|9.8 |
| 5-W | **5/2/18** | 6 | 6.9 | | | | | | | | | |
| 6-T | **5/8/18** | 5 | 6.8 | | | | | | | | | |
| 7-W | **5/16/18** | 7 | 6.9 | | | | | | | | | |
| 8-T | **5/22/18** | 7 | 6.9 | | | | | | | | | |
| 9-M | **5/28/18** | 5 | 6.8 | | | | | | | | | |
| 10-F | **6/8/18** | 7 | 6.9 | | | | | | | | | |
| **Minimum** | | | 6.8 | | | | | | | | | |
| | | | BM: >= 5.0 (RO) | | | | | | | | | |
| **Average** | | 6.76 | | | B\|10 | B\|35 | | | | | | |
| | | BM: <= 25 | | | BM: <= 14 | BM: <= 117 | | | | | | |
| **Maximum** | | | 7.01 | | | | | | | | | |
| | | | BM: <= 9.0 (RO) | | | | | | | | | |
| **Month 1 Average** | | | | | | | B\|2 | 5 | J\|0.093 | B\|4.9 | B\|49 | B\|9.8 |
| | | | | | | | <= 37 | <= 27 | <= 4.9 | <= 16 | <= 71 | <= 14 |
| **Month 2 Average** | | | | | | | B\|2 | 5 | J\|0.093 | B\|4.9 | B\|49 | B\|9.8 |
| | | | | | | | <= 37 | <= 27 | <= 4.9 | <= 16 | <= 71 | <= 14 |
| **Month 3 Average** | | | | | | | B\|2 | 5 | J\|0.093 | B\|4.9 | B\|49 | B\|9.8 |
| | | | | | | | <= 37 | <= 27 | <= 4.9 | <= 16 | <= 71 | <= 14 |

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

| Week | Monitoring Point | Phenol Micrograms/L (ug/L) Quarterly Grab | Zinc Total Micrograms/L (ug/L) Quarterly Grab | pH Standard Units Quarterly Grab |
|---|---|---|---|---|
| | | NEWB | NEWB | NEWB |
| Limit Set | | ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2015 permit | ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2015 permit | ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2015 permit |
| 1-Th | **4/5/18** | | | 7.01 |
| 2-Th | **4/12/18** | | | 6.9 |
| 3-T | **4/17/18** | | | 7.0 |
| 4-W | **4/25/18** | B\|3.9 | B\|35 | 6.8 |
| 5-W | **5/2/18** | | | 6.9 |
| 6-T | **5/8/18** | | | 6.8 |
| 7-W | **5/16/18** | | | 6.9 |
| 8-T | **5/22/18** | | | 6.9 |
| 9-M | **5/28/18** | | | 6.8 |
| 10-F | **6/8/18** | | | 6.9 |
| **Minimum** | | | | 6.8 |
| | | | | >= 6.0 (RO) |
| **Average** | | | | |
| | | | | |
| **Maximum** | | | | 7.01 |
| | | | | <= 9.0 (RO) |
| **Month 1 Average** | | B\|3.9 | B\|35 | |
| | | <= 15 | <= 110 | |
| **Month 2 Average** | | B\|3.9 | B\|35 | |
| | | <= 15 | <= 110 | |
| **Month 3 Average** | | B\|3.9 | B\|35 | |
| | | <= 15 | <= 110 | |

*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 | 8/13/2018 11:46:22 AM |
|---|---|
| **Signature** | **Date** |

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

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

**Facility County:** Pierce **Receiving Waterbody:**

**Monitoring Period:** 04/01/2018 - 04/30/2018 **Outfall:** 001 - NEWB 2 **Version:** 1

| Week | Monitoring Point | Turbidity (NTU) Measured NTU Optional Grab | Turbidity (cm) Measured Centimeters Optional Grab | pH Standard Units Optional Grab |
|---|---|---|---|---|
| | | 001 | 001 | 001 |
| 1-Th | **4/5/18** | 4.6 | | 7.01 |
| 2-Th | **4/12/18** | 9 | | 6.9 |
| 3-T | **4/17/18** | 13 | | 7.0 |
| 4-W | **4/25/18** | 4 | | 6.8 |
| **Minimum** | | | | 6.8 |
| | | | BM: >= 33 (RO) | BM: >= 6.5 (RO) |
| **Maximum** | | 13 | | 7.01 |
| | | BM: <= 25 (RO) | | BM: <= 8.5 (RO) |

**Overall DMR Notes/Comment**

Listed BMP's were in operation for the entire month.

**BMPs**

| Monitoring Point | Week | BMP |
|---|---|---|
| 001 | | Check Dams |
| 001 | | Other |
| 001 | | Sediment Trap |
| 001 | | Silt Fence |
| 001 | | Straw Wattles |

*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**

5/11/2018 9:39:55 AM — **Date**

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

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

**Facility County:** Pierce **Receiving Waterbody:**

**Monitoring Period:** 05/01/2018 - 05/31/2018 **Outfall:** 001 - NEWB 2 **Version:** 1

| Week | Monitoring Point | Turbidity (NTU) Measured NTU Optional Grab | Turbidity (cm) Measured Centimeters Optional Grab | pH Standard Units Optional Grab |
|---|---|---|---|---|
| | | 001 | 001 | 001 |
| 1-W | **5/2/18** | 6 | | 6.9 |
| 2-T | **5/8/18** | 5 | | 6.8 |
| 3-W | **5/16/18** | 7 | | 6.9 |
| 4-T | **5/22/18** | 7 | | 6.9 |
| 5-M | **5/28/18** | 5 | | 6.8 |
| **Minimum** | | | | 6.8 |
| | | | BM: >= 33 (RO) | BM: >= 6.5 (RO) |
| **Maximum** | | 7 | | 6.9 |
| | | BM: <= 25 (RO) | | BM: <= 8.5 (RO) |

**Overall DMR Notes/Comment**

Listed BMP's were in operation for the entire month.

**BMPs**

| Monitoring Point | Week | BMP |
|---|---|---|
| 001 | | Check Dams |
| 001 | | Other |
| 001 | | Sediment Trap |
| 001 | | Silt Fence |
| 001 | | Straw Wattles |

*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**

6/14/2018 5:44:48 PM — **Date**

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

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

**Facility County:** Pierce **Receiving Waterbody:**

**Monitoring Period:** 06/01/2018 - 06/30/2018 **Outfall:** 001 - NEWB 2 **Version:** 1

| Week | Monitoring Point | Turbidity (NTU) Measured NTU Optional Grab | Turbidity (cm) Measured Centimeters Optional Grab | pH Standard Units Optional Grab |
|---|---|---|---|---|
| | | 001 | 001 | 001 |
| 2-F | **6/8/18** | 7 | | 6.9 |
| 3-F | **6/15/18** | C | | C |
| 4-Th | **6/21/18** | C | | C |
| 5-Th | **6/28/18** | C | | C |
| **Minimum** | | | | 6.9 |
| | | | BM: >= 33 (RO) | BM: >= 6.5 (RO) |
| **Maximum** | | 7 | | 6.9 |
| | | BM: <= 25 (RO) | | BM: <= 8.5 (RO) |

Reporting Codes Used: C - No Discharge

**Overall DMR Notes/Comment**

Listed BMP's were in operation for the entire month.

**BMPs**

| Monitoring Point | Week | BMP |
|---|---|---|
| 001 | | Check Dams |
| 001 | | Other |
| 001 | | Sediment Trap |
| 001 | | Silt Fence |
| 001 | | Straw Wattles |

*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**

7/13/2018 9:35:17 AM — **Date**

Appendix J

# Landfill Gas Monitoring Data

# Landfill Gas Probe Monitoring

SCS Engineers

304th Street Landfill

04218001.04

PCRCD dba LRI

April 12, 2018

| Location Reference Designation *Note 1* | Date | Time | Pressure (in. $H_2O$) | $CH_4$ (% vol.) | $CO_2$ (% vol.) | $O_2$ (% vol.) | Spike CH4 *Note 2* (% vol.) | Spike CO2 *Note 2* (% vol.) | Other |
|---|---|---|---|---|---|---|---|---|---|
| GP-1 | 4/12/2018 | 8:09 | 0.00 | 0.6 | 0.7 | 19.1 | 2.6 | - | |
| GP-2 | 4/12/2018 | 8:26 | 1.29 | 15.3 | 17.7 | 0.0 | 15.8 | - | |
| GP-3 | 4/12/2018 | 8:37 | 0.01 | 0.0 | 9.3 | 8.5 | 0.2 | - | |
| GP-4 | 4/12/2018 | 8:45 | 0.01 | 0.0 | 0.7 | 20.0 | - | - | |
| GP-9 | 4/12/2018 | 8:53 | 0.04 | 0.0 | 6.6 | 9.4 | - | - | |
| GP-10 | 4/24/2018 | 13:04 | 0.00 | 7.8 | 22.5 | 0.0 | 6.2 | | *Note 4* |
| GP-10P | 4/24/2018 | 11:39 | 0.21 | 20.6 | 26.0 | 0.0 | 23.8 | | *Note 4* |
| GP-11 | 4/12/2018 | 7:54 | 0.11 | 0.0 | 5.8 | 16.7 | - | - | |
| GP-12 | 4/12/2018 | 7:46 | -0.04 | 35.8 | 58.2 | 0.0 | 41.7 | | |
| GP-13 | 4/12/2018 | 7:38 | 0.00 | 2.1 | 23.0 | 1.2 | 2.8 | - | |
| GP-14 | 4/12/2018 | 9:31 | -0.28 | 0.0 | 0.1 | 21.2 | - | - | *Note 3* |
| GP-15 | 4/12/2018 | 9:23 | 0.00 | 0.0 | 0.1 | 21.1 | - | - | *Note 3* |

General Data

| | | | |
|---|---|---|---|
| Date: | 12-Apr-18 | Weather Conditions | |
| Monitored by: | S. Adlington & A.Deep | Sky Cover: | Partly Cloudy |
| Instruments: | GEM 2000 | Wind / Rain / Snow: | - |
| Calibration Date: | Daily | Temperature ($^oF$): | 45 |

Notes

1. Gas Probes GP-5, GP-6, GP-7, and GP-8 were temporary gas probes and no longer exist.
2. Measurement for spike concentrations of CH4 and CO2 are recorded if observed during sampling.
3. Gas Probe installed on September 22, 2016. See installation report for details.
4. Monitored on 4/24/2018 due to flooding of the well casing on 4/12/2018.

GP = Gas Probe

NM = Not measured

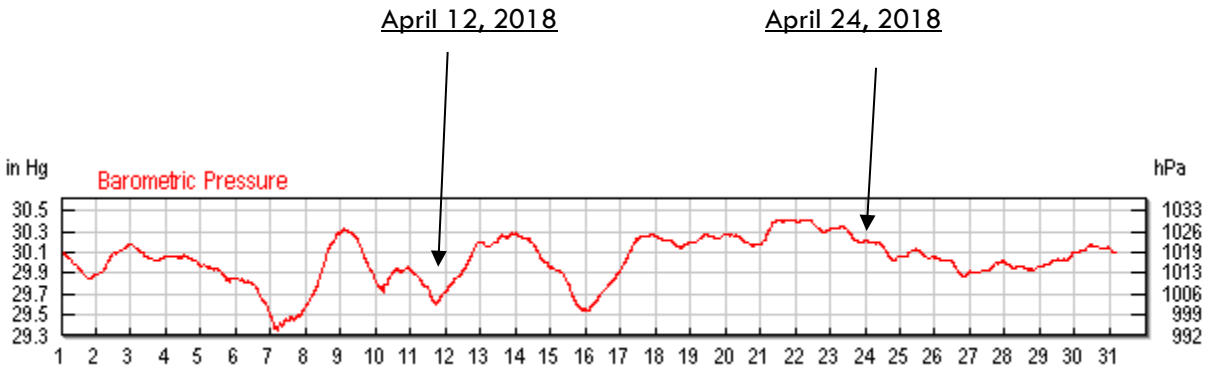
$CH_4$ = Methane

$CO_2$ = Carbon Dioxide

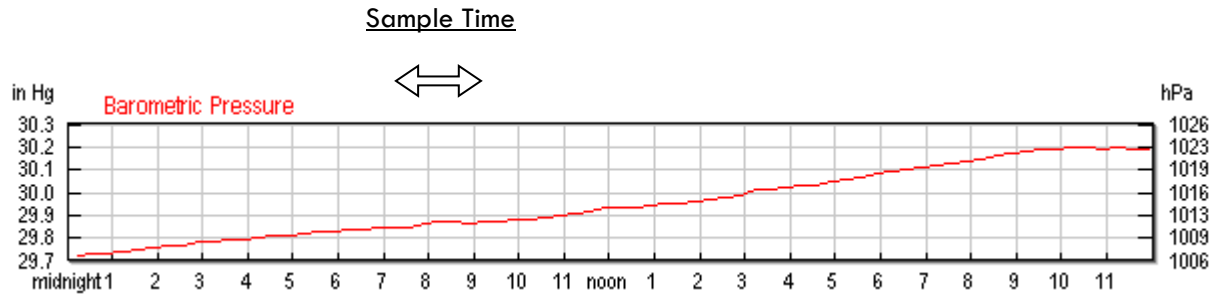
$O_2$ = Oxygen

# Barometric Pressure Trend – April 2018
# LRI Landfill, Pierce County, Washington

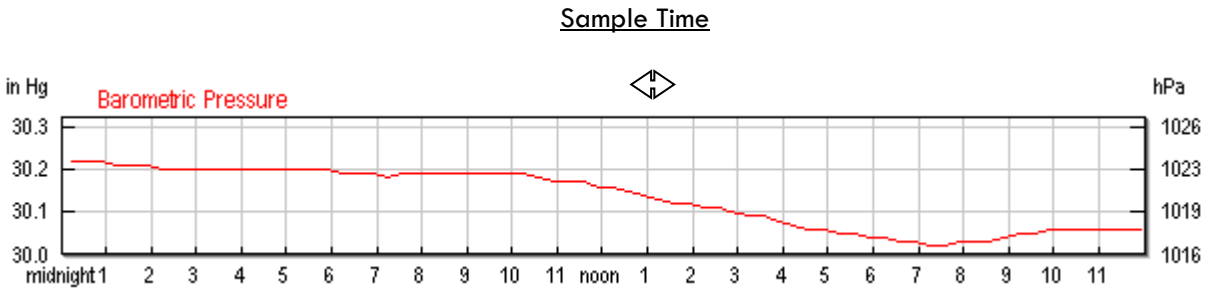
Barometric Pressure Trend for April 2018




Barometric Pressure Trend for April 12, 2018




Barometric Pressure Trend for April 24, 2018 (GP-10 Monitoring)




Source :
https://www.wunderground.com/history/airport/KPLU/2018/4/12/DailyHistory.html?req_city=&req_state=&req_statename=&reqdb.zip=&reqdb.magic=&reqdb.wmo=

# Landfill Gas Probe Monitoring

SCS Engineers

304th Street Landfill

04218001.04

PCRCD dba LRI

May 22, 2018

| Location Reference Designation *Note 1* | Date | Time | Pressure (in. $H_2O$) | $CH_4$ (% vol.) | $CO_2$ (% vol.) | $O_2$ (% vol.) | Spike CH4 *Note 2* (% vol.) | Spike CO2 *Note 2* (% vol.) | Other |
|---|---|---|---|---|---|---|---|---|---|
| GP-1 | 5/22/2018 | 8:47 | 0.34 | 2.3 | 2.4 | 15.8 | 5.1 | - | |
| GP-2 | 5/22/2018 | 8:56 | 0.92 | 14.9 | 17.9 | 0.0 | 15.8 | - | |
| GP-3 | 5/22/2018 | 9:05 | 0.08 | 0.0 | 9.8 | 9.4 | - | - | |
| GP-4 | 5/22/2018 | 9:14 | 0.00 | 0.0 | 2.1 | 18.2 | - | - | |
| GP-9 | 5/22/2018 | 9:23 | -0.02 | 0.0 | 8.0 | 7.7 | - | - | |
| GP-10 | 5/22/2018 | 8:36 | -0.01 | 12.1 | 24.3 | 0.0 | 12.0 | | |
| GP-10P | 5/22/2018 | 8:31 | 0.03 | 24.3 | 26.0 | 0.0 | 25.3 | | |
| GP-11 | 5/22/2018 | 8:03 | 0.00 | 0.0 | 16.7 | 4.2 | - | - | |
| GP-12 | 5/22/2018 | 8:12 | 0.56 | 34.6 | 59.0 | 0.0 | 35.7 | | |
| GP-13 | 5/22/2018 | 8:19 | 0.00 | 2.3 | 25.9 | 0.0 | 2.3 | - | |
| GP-14 | 5/22/2018 | 9:36 | 0.00 | 0.0 | 0.1 | 20.5 | - | - | *Note 3* |
| GP-15 | 5/22/2018 | 9:55 | 0.04 | 0.0 | 0.3 | 20.6 | - | - | *Note 3* |

General Data

| | | | |
|---|---|---|---|
| Date: | 22-May-18 | Weather Conditions | |
| Monitored by: | A.Deep & T. Berndahl | Sky Cover: | Sunny |
| Instruments: | GEM 2000 | Wind / Rain / Snow: | - |
| Calibration Date: | Daily | Temperature ($^oF$): | 61 |

Notes

1. Gas Probes GP-5, GP-6, GP-7, and GP-8 were temporary gas probes and no longer exist.
2. Measurement for spike concentrations of CH4 and CO2 are recorded if observed during sampling.
3. Gas Probe installed on September 22, 2016. See installation report for details.

GP = Gas Probe

NM = Not measured

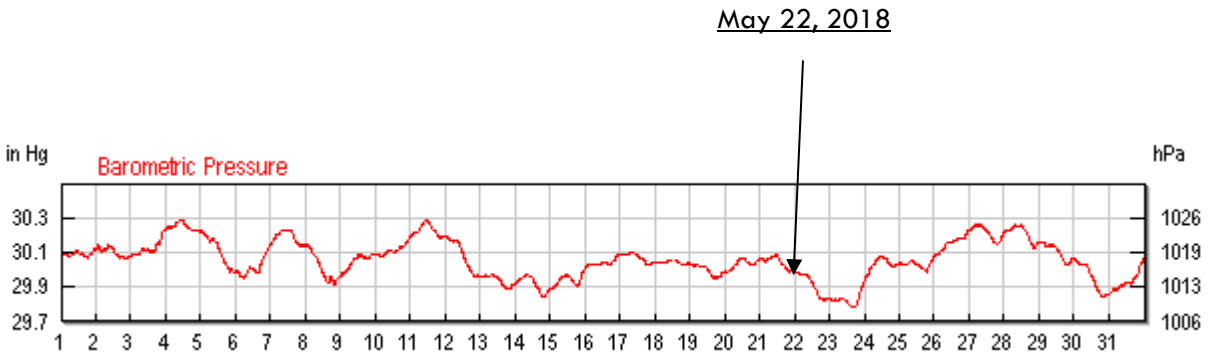
$CH_4$ = Methane

$CO_2$ = Carbon Dioxide

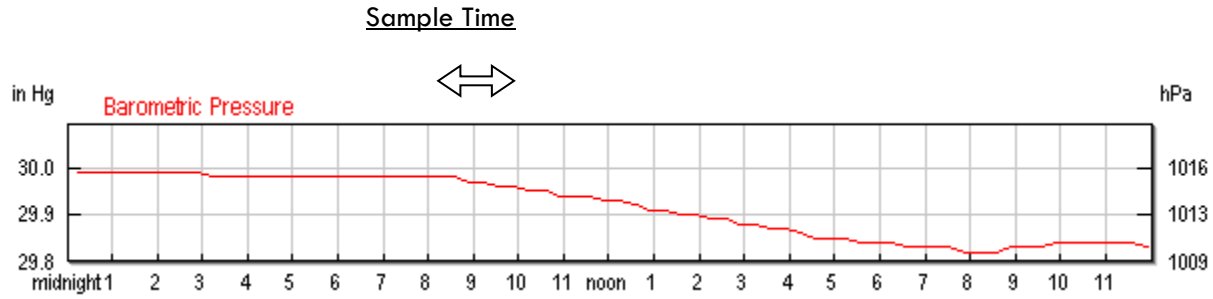
$O_2$ = Oxygen

**Barometric Pressure Trend – May 2018**
**LRI Landfill, Pierce County, Washington**

Barometric Pressure Trend for May 2018




Barometric Pressure Trend for May 22, 2018




Source :
https://www.wunderground.com/history/airport/KPLU/2018/5/22/DailyHistory.html?req_city=&req_state=&req_statename=&reqdb.zip=&reqdb.magic=&reqdb.wmo=

# Landfill Gas Probe Monitoring

SCS Engineers

304th Street Landfill

04218001.04

PCRCD dba LRI

June 27, 2018

| Location Reference Designation *Note 1* | Date | Time | Pressure (in. $H_2O$) | $CH_4$ (% vol.) | $CO_2$ (% vol.) | $O_2$ (% vol.) | Spike CH4 *Note 2* (% vol.) | Spike CO2 *Note 2* (% vol.) | Depth to Water (ft) | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| GP-1 | 6/27/2018 | 8:44 | 0.67 | 1.4 | 1.4 | 17.4 | 4.6 | - | 17.67 | |
| GP-2 | 6/27/2018 | 8:54 | 1.14 | 14.4 | 19.1 | 0.0 | 14.6 | - | 16.42 | |
| GP-3 | 6/27/2018 | 9:03 | 0.44 | 0.0 | 10.5 | 9.9 | - | - | 17.46 | |
| GP-4 | 6/27/2018 | 9:11 | 0.27 | 0.0 | 6.1 | 5.9 | - | - | 10.81 | |
| GP-9 | 6/27/2018 | 9:18 | 0.68 | 0.0 | 9.0 | 5.6 | - | - | 12.69 | |
| GP-10 | 6/27/2018 | 8:33 | 0.07 | 1.8 | 21.4 | 0.2 | 1.8 | | | |
| GP-10P | 6/27/2018 | 8:25 | 0.04 | 14.7 | 24.8 | 0.0 | 14.9 | | | |
| GP-11 | 6/27/2018 | 7:54 | -0.01 | 0.0 | 17.9 | 3.9 | - | - | | |
| GP-12 | 6/27/2018 | 8:05 | 0.17 | 33.3 | 63.6 | 0.0 | 33.3 | | | |
| GP-13 | 6/27/2018 | 8:13 | 0.09 | 0.8 | 26.0 | 0.4 | 0.8 | - | | |
| GP-14 | 6/27/2018 | 9:42 | 0.13 | 0.0 | 0.0 | 20.6 | - | - | 14.12 | |
| GP-15 | 6/27/2018 | 9:31 | 0.18 | 0.0 | 0.0 | 20.9 | - | - | 11.10 | |

General Data

| | | | |
|---|---|---|---|
| Date: | 27-Jun-18 | Weather Conditions | |
| Monitored by: | A.Deep & T. Berndahl | Sky Cover: | Sunny |
| Instruments: | GEM 2000 | Wind / Rain / Snow: | - |
| Calibration Date: | Daily | Temperature ($^oF$): | 61 |

Notes

1. Gas Probes GP-5, GP-6, GP-7, and GP-8 were temporary gas probes and no longer exist.
2. Measurement for spike concentrations of CH4 and CO2 are recorded if observed during sampling.

GP = Gas Probe

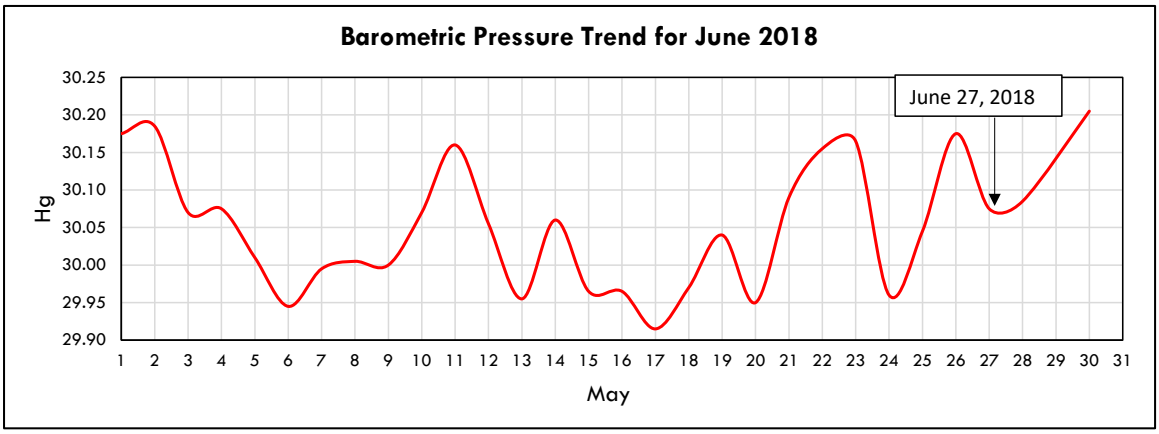
NM = Not measured

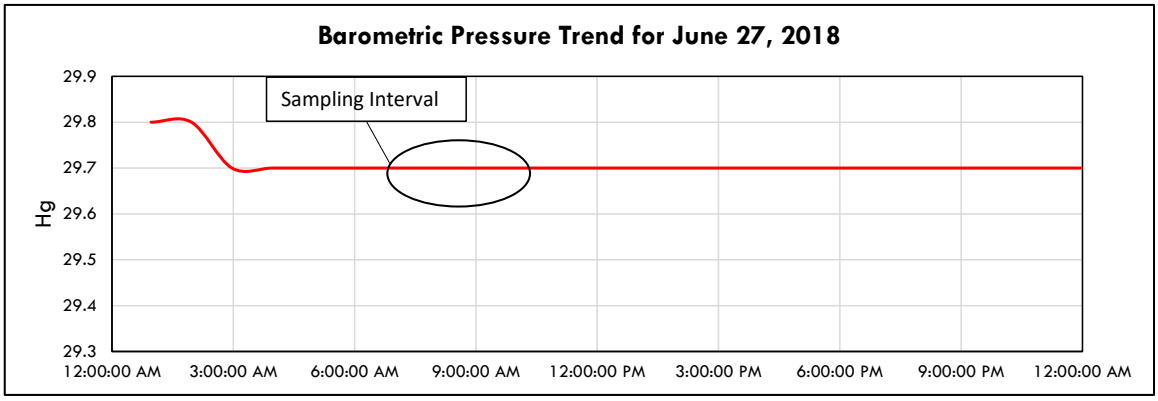
$CH_4$ = Methane

$CO_2$ = Carbon Dioxide

$O_2$ = Oxygen

**Barometric Pressure Trend - June 2018**
**LRI Landfill, Pierce County, Washington**




Source: Pierce County - Thun Field Station
Lat: 47.1 Long: 122.29 Elev: 538 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2018-6-27

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

Project Number: 04218001.04

Date: 5/22/18
Weather Conditions: sunny
Instrument: Micro FID
Measured By: A. Deep & T. Berndahl

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

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

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

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

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

main office (near active fill)
upwind (pre) - 30 ppm
downwind (pre) - 35 ppm

upwind (post) - 0.2 ppm
downwind (post) - 0.3 ppm

Amy Deep
Signature