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REPORT ON

MACKENZIE NORTH PROJECT - ANNUAL GROUNDWATER MONITORING REPORT 2025 YEAR

For: Jellinbah Group Pty Ltd

Project number: 4159

Date: 24/02/2026

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Mackenzie North Project - Annual Groundwater Monitoring Report 2025 Year

Prepared for
Jellinbah Group Pty Ltd

1. Introduction

This Annual Groundwater Monitoring Report (AGMR) for the Mackenzie North Project (the Project) has been prepared by hydrogeologist.com.au on behalf of the Jellinbah Group Pty Ltd (Jellinbah) to satisfy the conditions of the Project Environmental Authority (EA) EPML00516813 (dated 3 March 2025), specifically:

- Condition I16 – an Annual Groundwater Monitoring Report (AGMR) must be completed by 1 March each year; and
- Condition I17 – The AGMR required by Condition I16 must include:
 - a) a review of all the groundwater quality and SWL data of all groundwater bores listed within Table I1 – Groundwater quality monitoring locations and frequency and Table I4 – Groundwater standing water level monitoring locations, frequency and triggers;
 - b) an assessment of groundwater quality and SWL trends for all data from all groundwater bores listed in Table I1 – Groundwater quality monitoring locations and frequency and Table I4 – Groundwater standing water level monitoring locations, frequency and triggers;
 - c) an assessment of any impacts on groundwater level due to the mining activities; and
 - d) comparison with receiving environment surface water quality monitoring results to determine any interaction or impact from groundwater on surface water.

This AGMR covers the period 1 January 2025 to 31 December 2025, but references earlier data as required for analysis of groundwater level and groundwater quality trends.

2. Geology and hydrogeology

The geology and hydrogeology of the Mackenzie North Project area has been reported in AGE (2013)¹. Relevant elements are summarised below to provide background and context to the groundwater data review.

The Project is located within the central part of the Bowen Basin, an early Permian to middle Triassic-age basin that covers an area of approximately 160,000 km². Table 2-1 shows the stratigraphic relationship and description of strata that occur within the Project Area. This stratigraphy includes Bowen Basin strata (Late Permian Burngrove Formation and Rangal Coal Measures, and the Triassic Rewan Sub-group) that are overlain by Quaternary / Tertiary aged alluvium. Figure 2-1 shows the Bowen Basin solid geology for the Project area². The Project area is underlain by strata of the Rangal Coal Measures, with the underlying Burngrove Formation occurring in the west of the Project area and the overlying Rewan Sub-group occurring in the eastern and south-eastern Project area. The Rangal Coal Measures contain the target coal seams for mining at Mackenzie North, i.e. the Pollux Upper seam and the Pollux Lower seam.

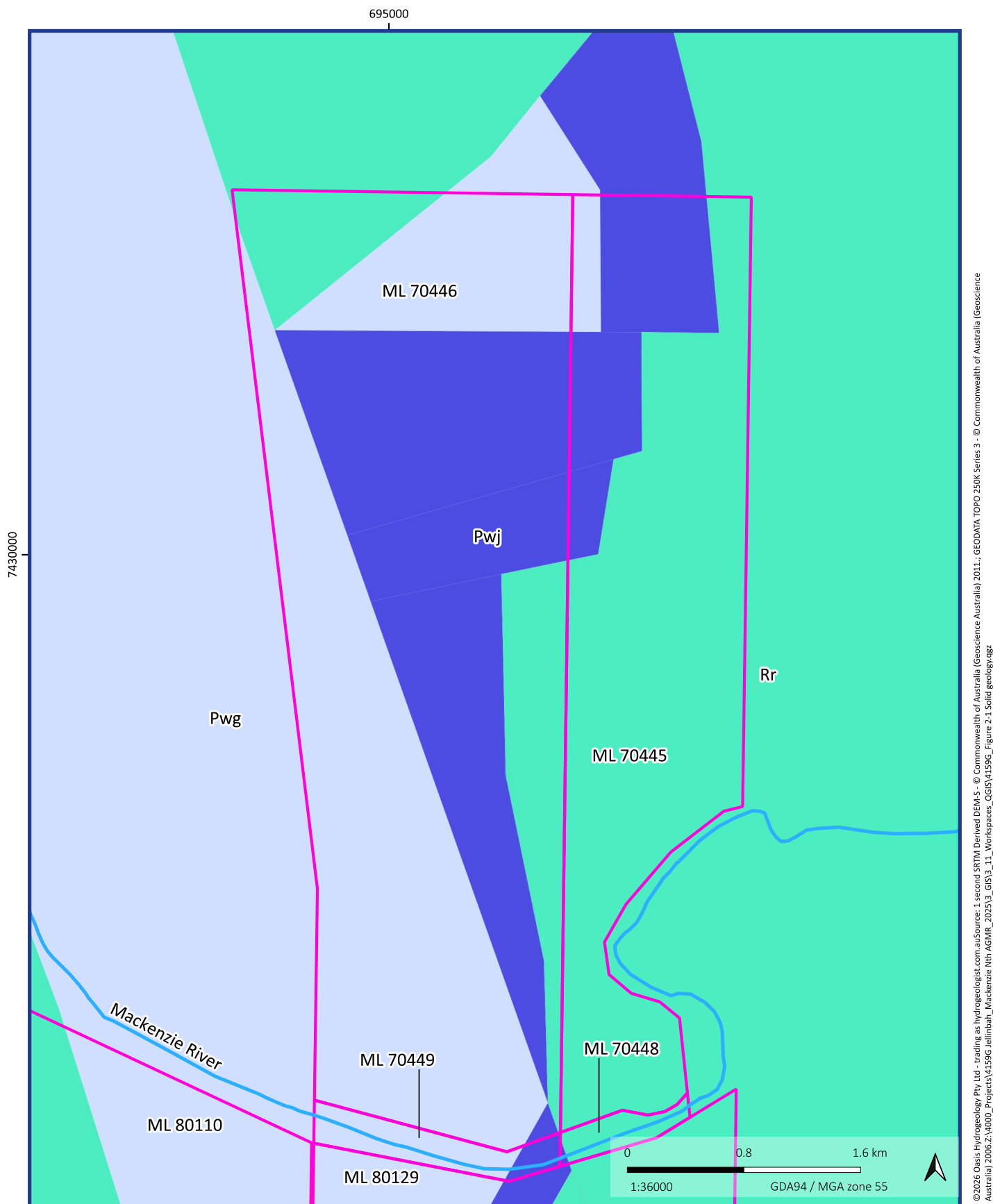
The Permian and Triassic strata are overlain by unconsolidated Quaternary and Tertiary alluvium, with the Quaternary-age alluvial sediments associated with current channels of the Mackenzie River floodplain. The surface geology of the project area is shown on Figure 2-2. The Project area is underlain by Quaternary alluvium, which is deposited directly over strata of the Rangal Coal Measures in the central part of the Project area (the majority of the proposed disturbance area for the Project).

Table 2-1 Stratigraphy of the Mackenzie North Project (after AGE, 2013)

Geological age	Unit	Lithology	Thickness (m)
Quaternary / Tertiary	Alluvium	Unconsolidated soil, silty clay, sand, and gravel. The basal sand and gravel thickens towards the Mackenzie River.	~14 m to 42 m
Triassic	Rewan Sub-group	Green-grey claystone, siltstone and sandstone with a minor pebbly conglomerate unit at its base.	0 m to 100 m
Late Permian	Rangal Coal Measures	Feldspathic and lithic sandstone, carbonaceous mudstone, siltstone, tuff, and coal seams. Coal seams include: - Castor - Pollux Upper - Pollux Lower	100 + m
		- Aries	0 – 2.2 m
		- Castor	0 – 1.1 m
		- Pollux Upper	0 – 7.6 m
		- Pollux Lower	0 – 6.4 m
	Burngrove Formation	Sandstone, siltstone, mudstone and banded coal seams, frequently interbedded with tuff and tuffaceous mudstone.	>200 m

¹ Mackenzie North Groundwater Assessment. Report prepared for Australasian Resource Consultants Pty Ltd (AARC) by Australasian Groundwater and Environmental Consultants (AGE). Project No. G1512, May 2013.

² In the Bowen Basin solid geology map the surficial unconsolidated Quaternary and Tertiary geology has been stripped off to reveal the relationship of the underlying Triassic and Permian sediments. Data source: Bowen Basin Structural Geology 2008. Geological map and digital dataset prepared by Sliwa, R., Hamilton, S., Hodgkinson, J. & Draper, J., copyright CSIRO and Queensland Department of Mines and Energy, 2008.



Solid geology

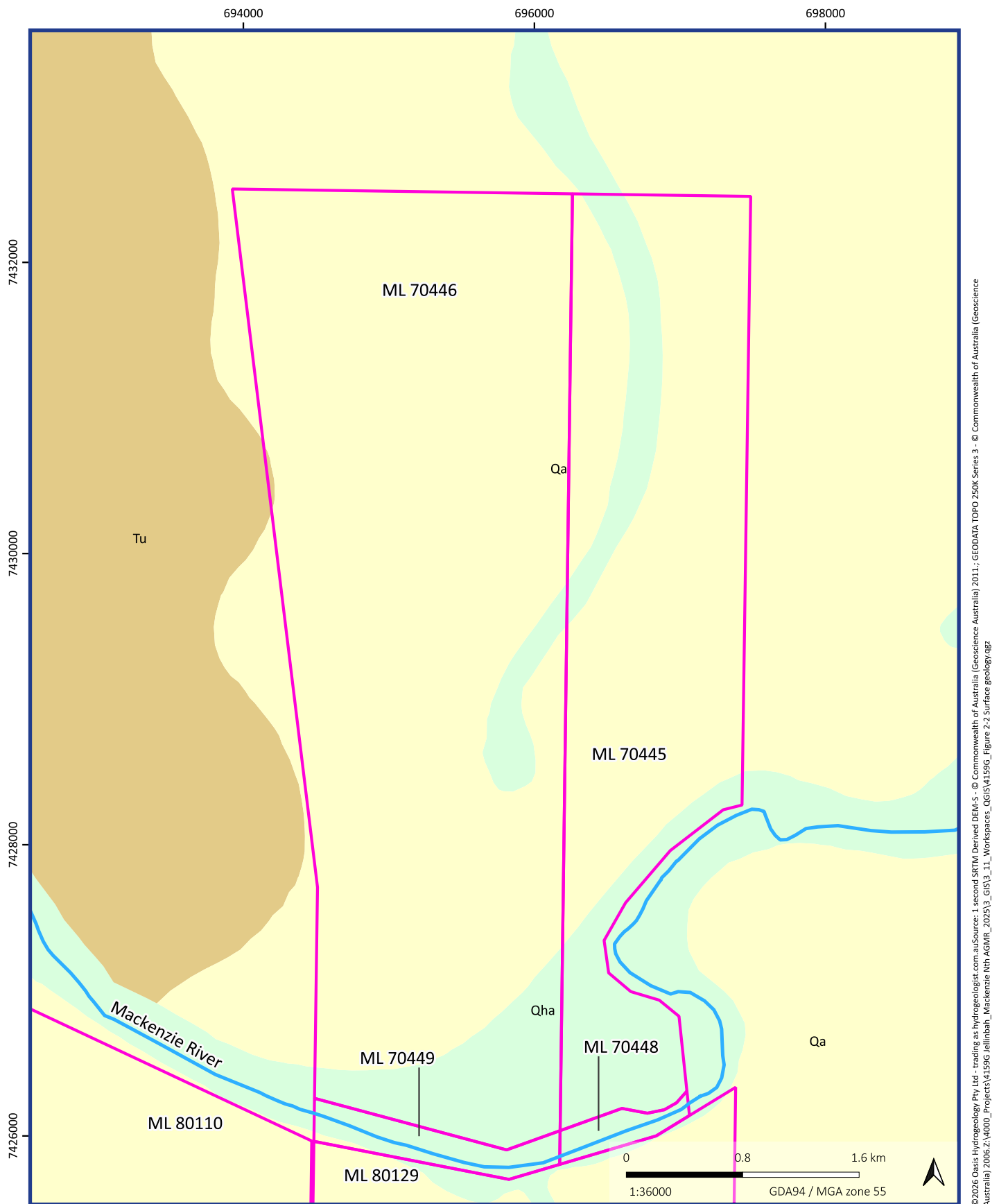
Legend

- Mackenzie River
- Mining leases
- Fault
- Pwg - Burngrove Formation
- Pwj - Rangal Coal Measures
- Rr - Rewan Sub-group

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Annual Groundwater Monitoring Report 2025

Figure 2-1

24/02/2026



© 2026 Oasis Hydrogeology Pty Ltd - trading as hydrogeologist.com.au Source: 1 second SRTM Derived DEM-S - © Commonwealth of Australia (Geoscience Australia) 2011, GEODATA TOPO 250K Series 3 - © Commonwealth of Australia (Geoscience Australia) 2006.Z:\4000_Projects\4159G_Jellinbah_Mackenzie Nth AGMR_2025\3_GIS\3_11_Workspaces_QGIS\4159G_Figure 2-2 Surface geology.mxd

Surface geology

(4159G) Mackenzie North Project
Annual Groundwater Monitoring Report 2025

Figure 2-2

24/02/2026

Legend

- | | |
|---|---|
|  Mackenzie River | Geology |
|  Mining leases |  Qa - Alluvium (clay, silt) |
| |  Qha - Alluvium (sand, gravel) |
| |  Tu - Duaringa Formation |

3. Rainfall data

Rainfall data for the Project has been obtained from the Queensland Government SILO Data Drill website, for a location that corresponds to the centre of the Project. The SILO data accesses grids of climate data available from surrounding Bureau of Meteorology (BoM) point observations and then creates interpolated climate values for the requested location. The interpolated climate data are calculated for the requested location using splining and kriging techniques, based on the proximity of surrounding BoM point observations.

Monthly rainfall data is shown below in Figure 3-1 and presents a Cumulative Rainfall Departure (CRD) curve for the data. The CRD is calculated by subtracting the long-term average monthly rainfall from the actual monthly rainfall, to provide a monthly “departure” from average conditions. If the monthly rainfall is above average, the resulting rainfall departure number is positive, whereas if the rainfall is below average, the number is negative. A number of below-average rainfall months will result in a falling CRD curve, while a number of above average rainfall months will result in a rising CRD curve. The CRD curve is used extensively in groundwater assessments due to the strong correlation in many locations between the CRD and groundwater level trends.

The CRD curve exhibits an upward trend between 2010 and 2012, reflecting a period of predominantly above-average rainfall. From 2012 through to 2021, the curve shows a sustained decline, consistent with generally below average rainfall conditions over this period. An upward trend in the CRD is evident from March 2022 to January 2023, during which the curve rises in response to multiple above average rainfall events. Following the increase observed between March 2022 and January 2023, the CRD curve generally stabilises through 2024 and into 2025, fluctuating around near neutral conditions. While individual months record both above and below average rainfall, there is no sustained cumulative trend over this later period, indicating a return to broadly average rainfall conditions rather than a continuation of the earlier recovery phase.

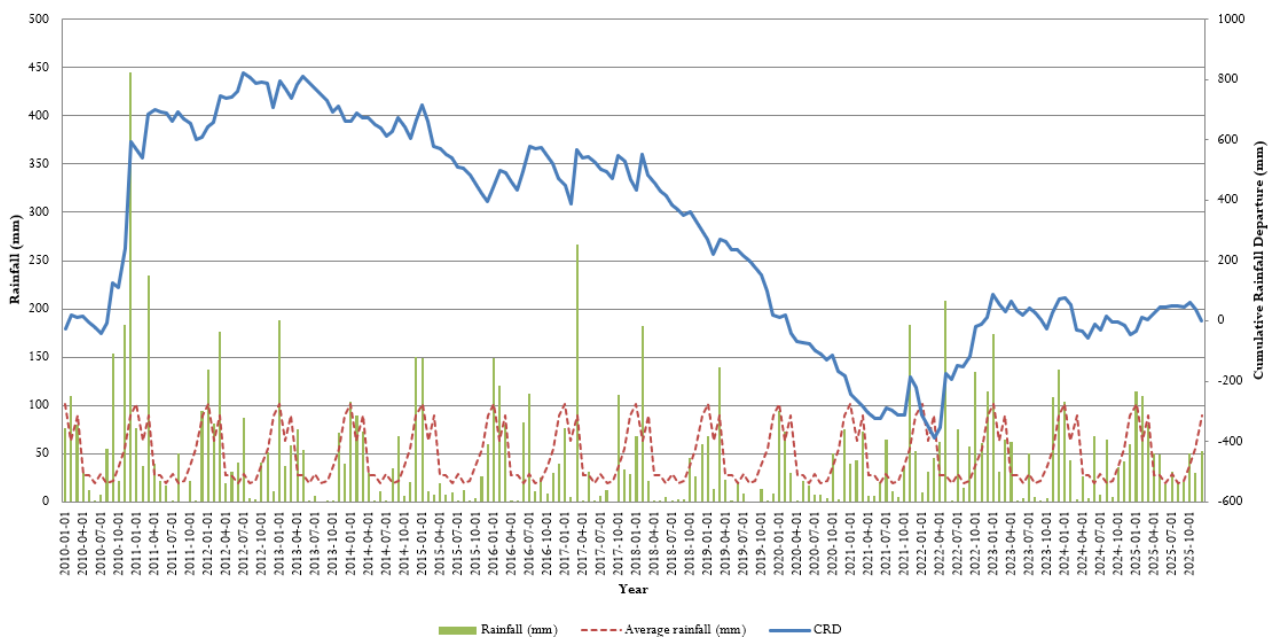


Figure 3-1 Rainfall data and cumulative rainfall departure

4. Groundwater monitoring bores

4.1. Monitoring network

The groundwater monitoring network comprises twelve bores at nine sites as shown below in Table 4-1. Eight bores monitor groundwater within the alluvium, with four bores in the Permian coal measures (three within the Pollux seam and one within the Permian overburden). Monitoring sites and monitoring purpose are shown in Table 4-1 and bore locations (as well as surface water monitoring points that are discussed in Section 6) are presented in Figure 4-1.

All existing bores in the monitoring network were assessed in August/September 2018 for bore integrity, and confirmation of bore depth, and were re-developed prior to commencement of water quality and water level sampling.

The three alluvial monitoring bores that are located between the mining operation and the Mackenzie River (JMR4WA, JMR24WA and JMR25WA) have been fitted with dataloggers.

Table 4-1 Mackenzie North groundwater monitoring bores

Monitoring bore	Hydrogeological unit	Easting	Northing	Surface RL (mAHD)	Screened interval (mbgl)		Bore purpose and monitoring frequency ¹	
					From	To	Water quality	Water level
JMR22WP	Permian-Pollux seam	697115	7429826	122.2	157	163	Interpretation	Compliance
JN1119E	Permian-Pollux seam	697068	7430176	121.38	140	146	Interpretation	Compliance
JMR23WA	Alluvium	697214	7428283	122.3	17.2	20.2	Interpretation	Compliance
JMR4WA	Alluvium	695949	7427175	123.8	36	42	Compliance	Compliance
JMR4WP2	Permian-Pollux seam	695952	7427176	124	83.5	88	Compliance	Compliance
JMR24WP2	Permian overburden	697305	7432067	120.5	72.8	78.8	Compliance	Compliance
JMR25WA	Alluvium	696363	7427544	122.5	17.9	20.9	Compliance	Compliance
JP0911T	Alluvium	694540	7425880	124.86	22	28	-	Interpretation
JP0912T	Alluvium	697270	7426150	122.56	36	42	-	Interpretation
JMR26WA	Alluvium	696550	7425800	123.4	18.2	21.2	-	Interpretation
JMR22WA	Alluvium	697111	7429809	122.2	14.5	17.5	-	Compliance
JMR24WA	Alluvium	697303	7432067	120.4	14.8	17.8	-	Compliance

Notes: Coordinates are in GDA94 Zone 55.

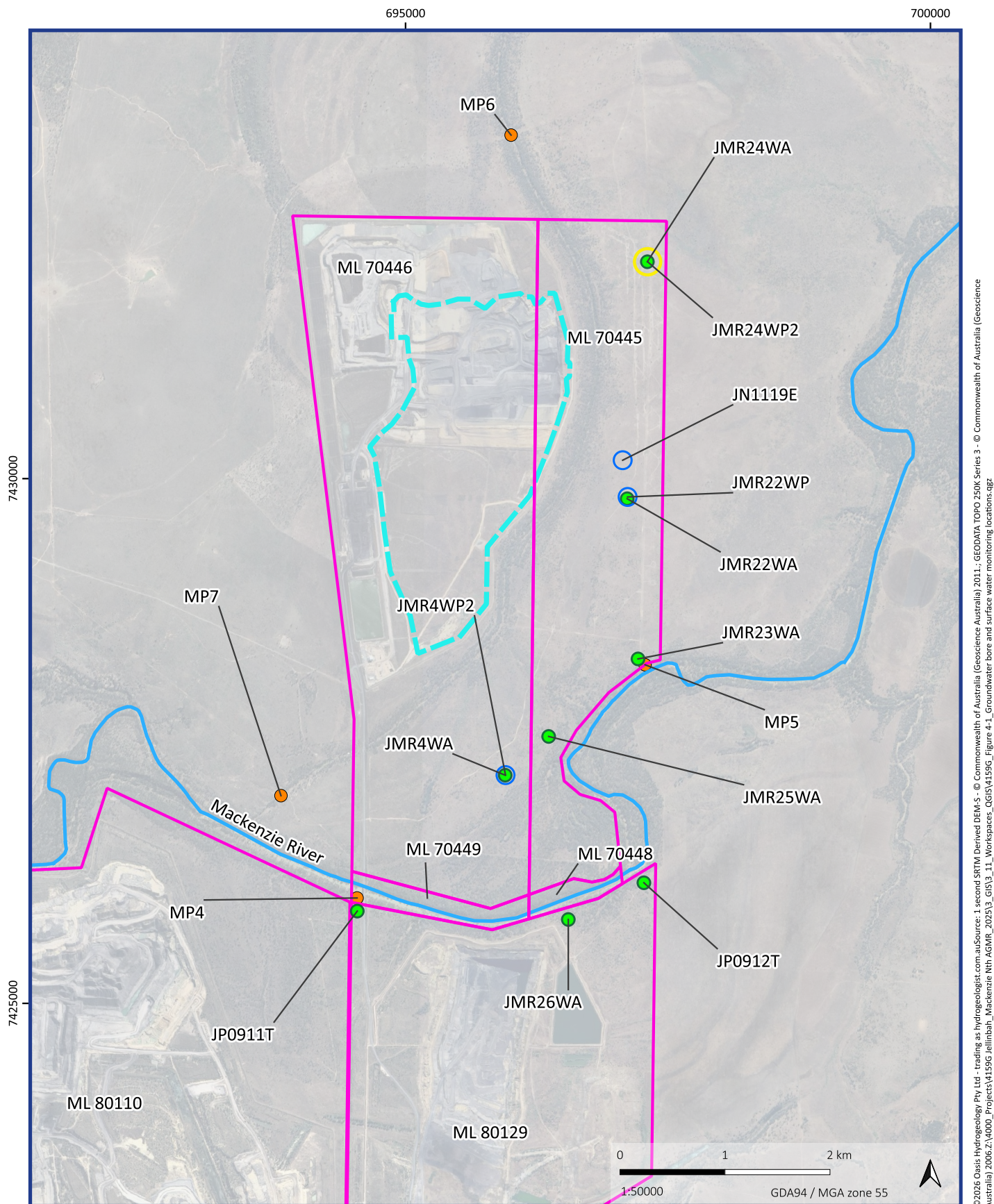
mAHD – metres above Australian Height Datum

mbgl – metres below ground level

¹ For bores where monitoring is shown to be required (i.e. for Interpretation or Compliance purposes), the monitoring frequency is quarterly, i.e. every 3 months.

4.2. Changes to monitoring bore network

No new groundwater bores were drilled, and no bores were decommissioned during the reporting period, i.e. there were no changes to the monitoring bore network from 1 January 2025 to 31 December 2025.



Groundwater bore and surface water monitoring locations

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Annual Groundwater Monitoring Report 2025

Figure 4-1

24/02/2026

Legend

- | | |
|--|--|
| ● Surface water | ● Bore |
| — Mackenzie River | ○ Alluvium |
| — Limit of Mining | ○ Permian-Pollux seam |
| □ Mining leases | ○ Permian overburden |

5. Groundwater monitoring

5.1. Groundwater quality monitoring

5.1.1. Monitoring requirements

Groundwater quality monitoring is undertaken at the bore sites and monitoring frequency shown in Table 4-1 and for the parameters shown below in Table 5-1 and Table 5-2.

Table 5-1 Groundwater quality limits (reproduced from EA Table I2)

Monitoring bore	Groundwater quality characteristic limit		
	pH (pH units)	EC ($\mu\text{S}/\text{cm}$)	Sulphate (mg/L)
JMR4WA	6.37 - 8.6	6,900	103
JMR4WP2		9,590	60
JMR24WP2		10,490	20
JMR25WA		2,200	16

Table 5-2 Groundwater contaminant limits (reproduced from EA Table I3)

Quality parameter	Unit	Groundwater limit
Total dissolved solids (TDS)	mg/L	No specified limit - interpretative purposes only
Major cations (Ca, K, Mg, Na)	mg/L	No specified limit - interpretative purposes only
Major anions (Cl, OH, CO ₃ , HCO ₃)	mg/L	No specified limit - interpretative purposes only
<i>Dissolved Metals/Metalloids</i>		
Aluminium	mg/L	0.055
Arsenic	mg/L	0.013
Chromium	mg/L	0.0010
Cobalt	mg/L	0.0014
Copper	mg/L	0.002
Manganese	mg/L	1.9
Molybdenum	mg/L	0.034
Nickel	mg/L	0.211 (Permian bores: JMR22WP, JN1119E, JMR4WP2, and JMR24WP2))
		0.221 (Alluvium bores: JMR23WA, JMR4WA, and JMR25WA)
Selenium	mg/L	0.010
Zinc	mg/L	0.154 (Permian bores: JMR22WP, JN1119E, JMR4WP2, and JMR24WP2))
		0.161 (Alluvium bores: JMR23WA, JMR4WA, and JMR25WA)
<i>Petroleum Hydrocarbons</i>		
TPH C6-C9	µg/L	20
TPH C10-C36	µg/L	50

5.1.2. Groundwater quality assessment

Water quality sampling during 2025 was undertaken on a quarterly basis for the bores and parameters listed in Table 5-1 and Table 5-2, where sampling conditions and site access permitted. All available groundwater quality data, including pH, electrical conductivity (EC), major ions, metals and metalloids, and total petroleum hydrocarbons, are summarised in Appendix A. Groundwater quality trends for pH, EC, major ions, metals/metalloids and total petroleum hydrocarbons are shown in Appendix C. Groundwater quality results are discussed for the compliance monitoring bores JMR4WA, JMR4WP2, JMR24WP2 and JMR25WA.

Groundwater quality assessment is based on the available field and laboratory data for each parameter. Where bores were dry or inaccessible during the 2025 reporting period, no data were available for assessment, and this is noted accordingly.

5.1.3. pH

Field pH values for the compliance monitoring bores were assessed against the applicable groundwater quality limits of 6.37 to 8.6. Overall, pH values are stable and within the specified limits across all compliance bores. The pH data for the compliance bores is summarised as follows:

- JMR4WA (alluvium) field pH values range from 6.37 to 7.26, with a mean of 6.59 (25 samples). All available samples are within the pH quality limits.
- JMR25WA (alluvium) Historic field pH values range from 6.44 to 6.78, with a mean of 6.57 (12 samples). All available samples are within the pH quality limits. JMR25WA was dry for all monitoring rounds during the reporting period.
- JMR4WP2 (Pollux Seam) field pH values range from 6.62 to 7.34, with a mean of 7.18 (15 samples). All available samples are within the pH quality limits.
- JMR24WP2 (Pollux Seam) – the field pH values range from 6.79 to 7.80, with a mean of 7.29 (18 samples). All available samples are within the pH quality limits.

5.1.4. Electrical conductivity

EC values for the compliance monitoring bores were assessed against the relevant EA groundwater quality limits. EC values show variability between formations but generally remain below the applicable compliance limits, with isolated historical exceedances or outliers noted. The EC data for the compliance bores is summarised as follows:

- JMR4WA (alluvium) field EC values range from 3986 $\mu\text{S}/\text{cm}$ to 7,189 $\mu\text{S}/\text{cm}$ (September 2018), with a mean of 5,456.4 $\mu\text{S}/\text{cm}$ (25 samples). All subsequent samples are below the EA compliance limit of 6,900 $\mu\text{S}/\text{cm}$.
- JMR25WA (alluvium) field EC values range from 1,171 $\mu\text{S}/\text{cm}$ to 2,358 $\mu\text{S}/\text{cm}$, with a mean of 1,574 $\mu\text{S}/\text{cm}$ (12 samples), except for the sample in May 2021. JMR25WA was dry for all monitoring rounds during the reporting period.
- JMR4WP2 (Pollux Seam) the field EC values range from 3,448 $\mu\text{S}/\text{cm}$ to 6190 $\mu\text{S}/\text{cm}$, with a mean of 4,202 $\mu\text{S}/\text{cm}$ (15 samples). All available samples are below the EA compliance limit of 9,590 $\mu\text{S}/\text{cm}$.
- JMR24WP2 (Pollux Seam) the field EC values range from 6,141 $\mu\text{S}/\text{cm}$ to 11,491 $\mu\text{S}/\text{cm}$, with a mean of 7,764 $\mu\text{S}/\text{cm}$ (18 samples). A single EC value of 11,491 $\mu\text{S}/\text{cm}$ recorded in January 2021 was excluded from statistical analysis in previous reporting as an outlier. Apart from this single value, all samples are below the EA compliance limit of 10,490 $\mu\text{S}/\text{cm}$.

5.1.5. Sulfate

Sulfate concentrations in groundwater from the compliance monitoring bores were assessed against the applicable EA groundwater quality limits. With the exception of isolated historical exceedances and identified outliers, sulfate concentrations are generally low and within compliance limits across the monitoring network. The sulfate data for the compliance bores is summarised as follows:

- JMR4WA (alluvium) sulfate concentrations range from 18 mg/L to 105 mg/L, with a mean of 79.5 mg/L (25 samples). All samples are below the EA compliance limit of 103 mg/L, with the exception of a single exceedance recorded in July 2019.
- JMR25WA (alluvium) JMR25WA was dry for all monitoring rounds during the reporting period. Sulfate concentrations range from 2 mg/L to 17 mg/L, with a mean of 10.17 mg/L (12 samples). Historically, one of the twelve samples has exceeded the EA sulfate compliance limit of 16 mg/L. JMR25WA was dry for all monitoring rounds during the reporting period.
- JMR4WP2 (Pollux Seam) sulfate concentrations range from 24 mg/L to 98 mg/L, with a mean of 45.5 mg/L (15 samples). All samples are below the EA compliance limit of 60 mg/L.
- JMR24WP2 (Pollux Seam) sulfate concentrations generally range from <1 mg/L to 6 mg/L, with nine of the 18 samples recording concentrations below the laboratory limit of reporting (LOR <1 mg/L). A single sulfate concentration of 404 mg/L (recorded in January 2021) is assessed as an outlier and has been excluded from the statistical analysis. Excluding this outlier, all samples are below the EA compliance limit of 20 mg/L.

5.1.6. Metals

This section assesses dissolved metals and metalloids for the compliance monitoring bores during the January to December 2025 reporting period. Historic data are referenced where relevant to provide context for observed trends, outliers and bore-specific data quality considerations.

Available dissolved metal and metalloid data for the compliance monitoring bores are presented in Appendix C. Each figure includes the applicable EA groundwater contaminant limit for reference (Table 5-2), noting that the EA commencement date for assessment of contaminant limits is 8 September 2022. For the figures, results below the laboratory LOR are not shown as symbols. Isolated results above the LOR are displayed as individual data points, while consecutive results above the LOR are joined by lines to illustrate temporal trends.

Dissolved metal and metalloid concentrations for the January to December 2025 reporting period are assessed below, with reference to historic data where relevant to provide context for observed trends, outliers and data quality considerations.

The following observations are noted:

- **Aluminium:**
Dissolved aluminium concentrations were generally below the laboratory LOR at all compliance monitoring bores during the 2025 reporting period. The exception was JMR22WP, which recorded a single exceedance of the groundwater contaminant limit of 0.57 mg/L in May 2025.
- **Arsenic:**
All dissolved arsenic concentrations recorded during the 2025 reporting period were below the applicable groundwater contaminant limit.
- **Chromium:**
Dissolved chromium concentrations were generally below the LOR. A single exceedance of the groundwater contaminant limit (0.001 mg/L) was recorded at JMR22WP in May 2025 (0.041 mg/L).
- **Cobalt:**
Dissolved cobalt concentrations for the reporting period were below the laboratory LOR. All results were below the applicable groundwater contaminant limit of 0.0014 mg/L.

- **Copper:**
Dissolved copper concentrations were predominantly below the LOR. Isolated exceedances of the groundwater contaminant limit (0.002 mg/L) were recorded during the 2025 reporting period at JMR22WP in May 2025 (0.017 mg/L), JMR24WP2 in May 2025 (0.003 mg/L) and JMR24WP2 in November 2025 (0.011 mg/L).
- **Manganese:**
All dissolved manganese concentrations recorded during the 2025 reporting period were below the applicable groundwater contaminant limit.
- **Molybdenum:**
Dissolved molybdenum concentrations were generally below the groundwater contaminant limit of 0.034 mg/L. Isolated exceedances were recorded during 2025 at JMR22WP (0.069 mg/L in May 2025) and JN1119E (0.059 mg/L in August 2025).
- **Nickel:**
All dissolved nickel concentrations recorded during the 2025 reporting period were below the applicable groundwater contaminant limit.
- **Selenium:**
All dissolved selenium concentrations recorded during the 2025 reporting period were below the applicable groundwater contaminant limit.
- **Zinc:**
All dissolved zinc concentrations recorded during the 2025 reporting period were below the applicable groundwater contaminant limit.

5.1.7. Total Petroleum Hydrocarbon (TPH)

Available Total Petroleum Hydrocarbon (TPH) data for the compliance monitoring bores are presented in Appendix C. Each figure includes the relevant EA groundwater contaminant limit (Table 5-2) for reference, noting that the EA commencement date for assessment of contaminant limits is 8 September 2022. For each figure, concentration values below the laboratory LOR are not displayed. Isolated values above the LOR are shown as individual data points, while consecutive values above the LOR are connected by lines. Based on the available TPH data, the following observations are made.

5.1.7.1. TPH C6–C9

With the exception of isolated historic values above the laboratory LOR, and therefore above the groundwater contaminant limit, no consecutive exceedances of the TPH C6 - C9 limit were recorded during the reporting period.

5.1.7.2. TPH C10–C36

Most compliance bores recorded TPH C10 - C36 concentrations below the LOR during the 2025 reporting period. The following exceptions were identified:

- JMR4WA recorded a single exceedance of the groundwater contaminant limit in May 2025 (170 µg/L);
- JMR24WP2 recorded two exceedances of the groundwater contaminant limit in 2025 (150 µg/L in February and 170 µg/L in May);
- JMR22WP recorded a single exceedance of the groundwater contaminant limit in May 2025 (290 µg/L); and
- JN1119E recorded a single exceedance of the groundwater contaminant limit in August 2025 (330 µg/L).

TPH samples have previously been analysed using the silica gel clean-up method to assess whether detected hydrocarbons are biogenic (naturally occurring) rather than indicative of contamination associated with site activities. These analyses indicate that the majority of TPH detected in groundwater comprises organic compounds of natural origin.

Consistent with previous reporting, the presence of petroleum hydrocarbon contamination in groundwater is not suspected, as elevated TPH concentrations were observed prior to mining activities and do not demonstrate a sustained or increasing trend. It is recommended that the silica gel clean-up method continue to be routinely applied as part of compliance monitoring to confirm this interpretation and assist in minimising apparent exceedances of the EA contaminant limits.

5.2. Groundwater level monitoring

5.2.1. Monitoring requirements

Groundwater level monitoring is undertaken at all sites on a quarterly basis, where access and groundwater conditions permit. Data loggers are fitted to three of the Quaternary alluvium monitoring bores (JMR4WA, JMR23WA and JMR25WA), which are located between the mining operation and the Mackenzie River. These data assist in distinguishing climatic influences from potential mining-related impacts.

5.2.2. Assessment of groundwater level data

This section presents the following tables and figures:

- Table 5-3 shows the EA groundwater level monitoring locations, the required monitoring frequency and the groundwater drawdown triggers for each bore (based on Table I4 of the EA);
- Table 5-4 shows the observed groundwater level drawdown (the most recent 2025 reading) relative to the baseline value for each monitoring site;
- Figure 5-1 shows the hydrographs (groundwater elevation over time) for each monitoring site;
- Figure 5-2 shows datalogger and manual water level data for alluvium bore JMR4WA;
- Figure 5-3 shows datalogger and manual water level data for alluvium bore JMR23WA;
- Figure 5-4 shows datalogger and manual water level data for alluvium bore JMR25WA;
- Figure 5-5 shows the ground elevation within the active mining area in December 2025;
- Figure 5-6 shows the average 2025 groundwater level for bores that are closest to the mining area relative to pre-mining (December 2012) groundwater level; and
- Available groundwater level data is included in Appendix B.

Based on review of available groundwater level data, the following observations are made with respect to bores that monitor the alluvium:

- The alluvium bores have declined in water levels likely in response to reduced or below average rainfall conditions from 2018 to 2021 (Figure 3-1). Above average rainfall from 2021 to 2025 (Figure 3-1) resulted in higher groundwater recharge and rising groundwater levels that is evident in some monitoring bores. Groundwater levels recorded over the reporting period reflect the recent rainfall conditions (Figure 5-1).
- JMR22WA has been dry since December 2018, JMR24WA has been dry since October 2018 and JMR26WA has been dry since November 2018.
- Bores JP0911T and JP0912T monitor the Tertiary alluvium to the south of the Mackenzie River. The bores were monitored from August to October 2023 with access in 2024 impeded due to rainfall and poor access conditions.
- Figure 5-2 shows the logger data for JMR4WA, which has been collected at six hourly intervals since November 2020. The manual groundwater levels recorded during 2025 were stable, ranging between 21.72 mbgl to 21.92 mbgl.

- Figure 5-3 shows the logger data for JMR23WA. Groundwater levels were recorded above the base of bore since June 2022. However, the data was assessed as being unreliable prior to January 2023 (JBT, 2023)³. A single groundwater level was recorded in August 2025 of 19.24 mbgl.
- Figure 5-4 shows the logger data for JMR25WA. Since June 2022, the groundwater level was either just above the base of the bore, or was reported as dry. Over the 2025 reporting period the bore was dry.

Based on review of available groundwater level data, the following observations are made with respect to bores that monitor the Permian coal measures:

- The Permian overburden bore JMR24WP2 exhibits a degree of hydraulic isolation from the coal seams (JBT, 2023). JMR24WP2 recorded a slight increase in groundwater levels of between 82.30 mAHD to 83.04 mAHD for the 2025 recording period (Figure 5-1).
- The Permian bore JMR22WP remained stable over the 2025 year with groundwater levels of between 100.62 mAHD to 100.18 mAHD (Figure 5-1).
- The Permian bore JN1119E is located approximately 800 m from the mining area. The bore has previously been reported to be within the zone of predicted groundwater level impact from mining (JBT, 2023). The groundwater elevation recorded over the 2025 period year ranged between 95.47 mAHD to 96.15 mAHD (Figure 5-1).
- The Permian bore JMR4WP2 groundwater level are stable over the 2025 year. The data shows no response to mining activities and unlikely to be impacted by mining (Figure 5-1).

Table 5-4 shows the observed groundwater level drawdown in 2025 relative to the baseline level, as well as the remaining drawdown at each bore (until the drawdown level trigger threshold is reached). With respect to impact of mining activities (and with reference to EA Table I4 and Table 5-4 of this report), it is concluded there are no groundwater level trigger exceedances for the compliance bores. Groundwater levels for bores JN1119E and JMR22WP have decreased since October 2022, however the drawdown is not considered significant compared to pre-mining groundwater levels.

Bores JMR22WA and JMR24WA are the closest alluvium compliance bores to the mining area. These bores were dry in December 2012, are currently dry, and have been dry for every monitoring event in between. It is therefore concluded that groundwater levels in the alluvium have not been impacted by mining activities.

Groundwater level monitoring is undertaken at all sites on a quarterly basis, where access and groundwater conditions permit. Data loggers are installed in three of the Quaternary alluvium monitoring bores (JMR4WA, JMR23WA and JMR25WA), which are located between the mining operation and the Mackenzie River. The logger data is analysed to establish seasonal variations in water levels, including responses to rainfall recharge and flow events in the Mackenzie River. These data assist in distinguishing climatic influences from potential mining-related impacts.

³ JBT, 2023. Jellinbah Mine, Mackenzie North, Annual Groundwater Monitoring Report 2022 – 2023 Water Year. Final, 29 September 2023.

Table 5-3 Groundwater level monitoring locations, frequency and triggers (Table I4 of EA)

Monitoring bore	Hydrogeological unit	Baseline water level ¹ (mAHD)	Level trigger threshold - end of mining drawdown ² (m)
JP0911T	Alluvium	99.48	N/A
JP0912T	Alluvium	100.89	N/A
JMR26WA	Alluvium	Dry	N/A
JMR4WP2	Permian-Pollux seam	103.2	18
JMR24WP2	Permian-Overburden	77.81	55
JMR4WA	Alluvium	103.25	10 to 20
JMR25WA	Alluvium	102.43	5 to 10
JMR22WP	Permian	101.24	90
JMR22WA	Alluvium	Dry	N/A
JN1119E	Permian	100.79	100
JMR24WA	Alluvium	Dry	N/A
JMR23WA	Alluvium	Dry	N/A

Notes: 1. Trigger level thresholds sourced from 'Australasian Groundwater & Environmental Consultants Pty Ltd, report on Mackenzie North groundwater assessment, June 2013' (AGE 2013).

2. Baseline water levels are underpinned by data gathered prior to July 2020 (as mining of coal in the Mackenzie North Pit commenced in August 2020).

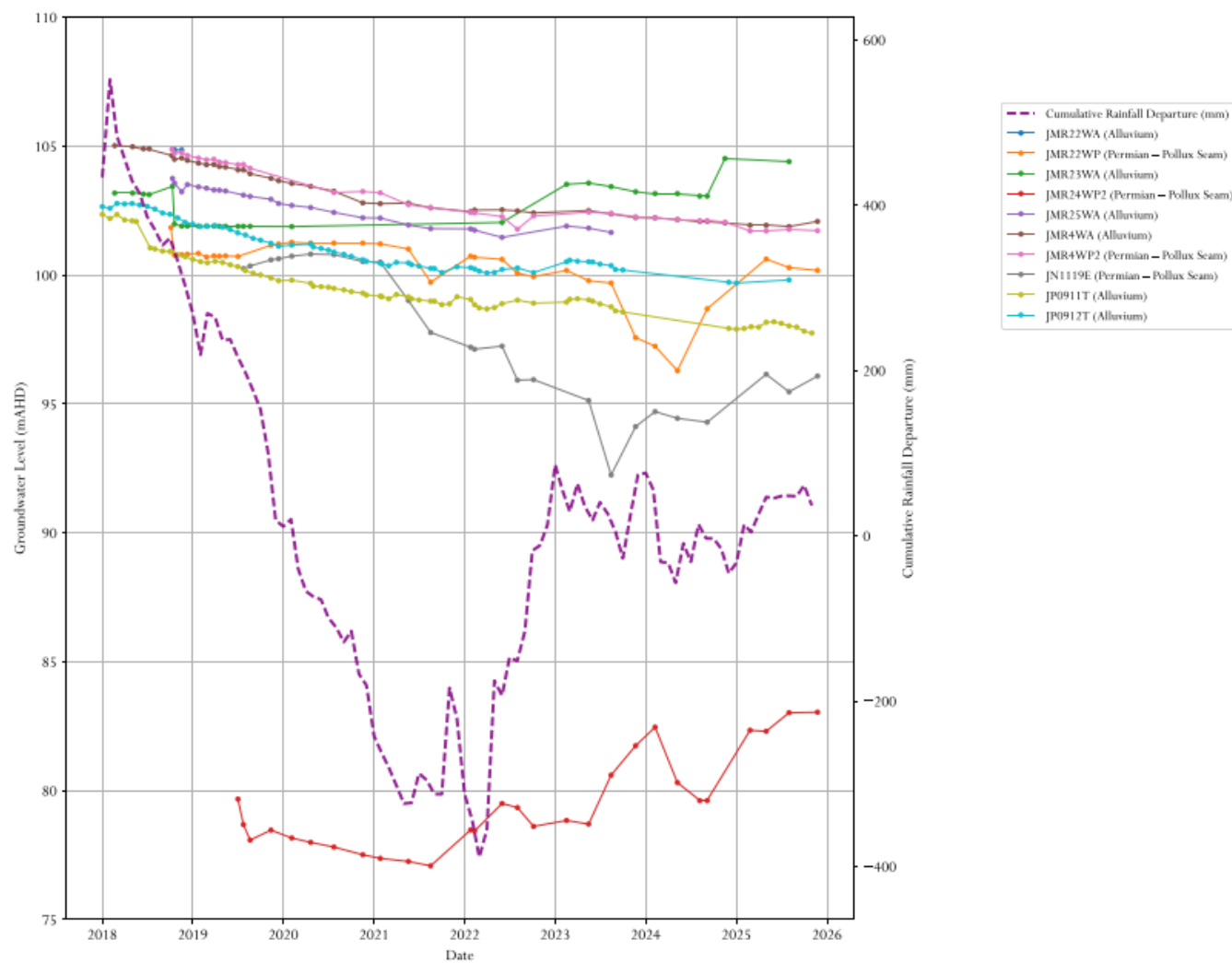


Figure 5-1 Groundwater level hydrographs

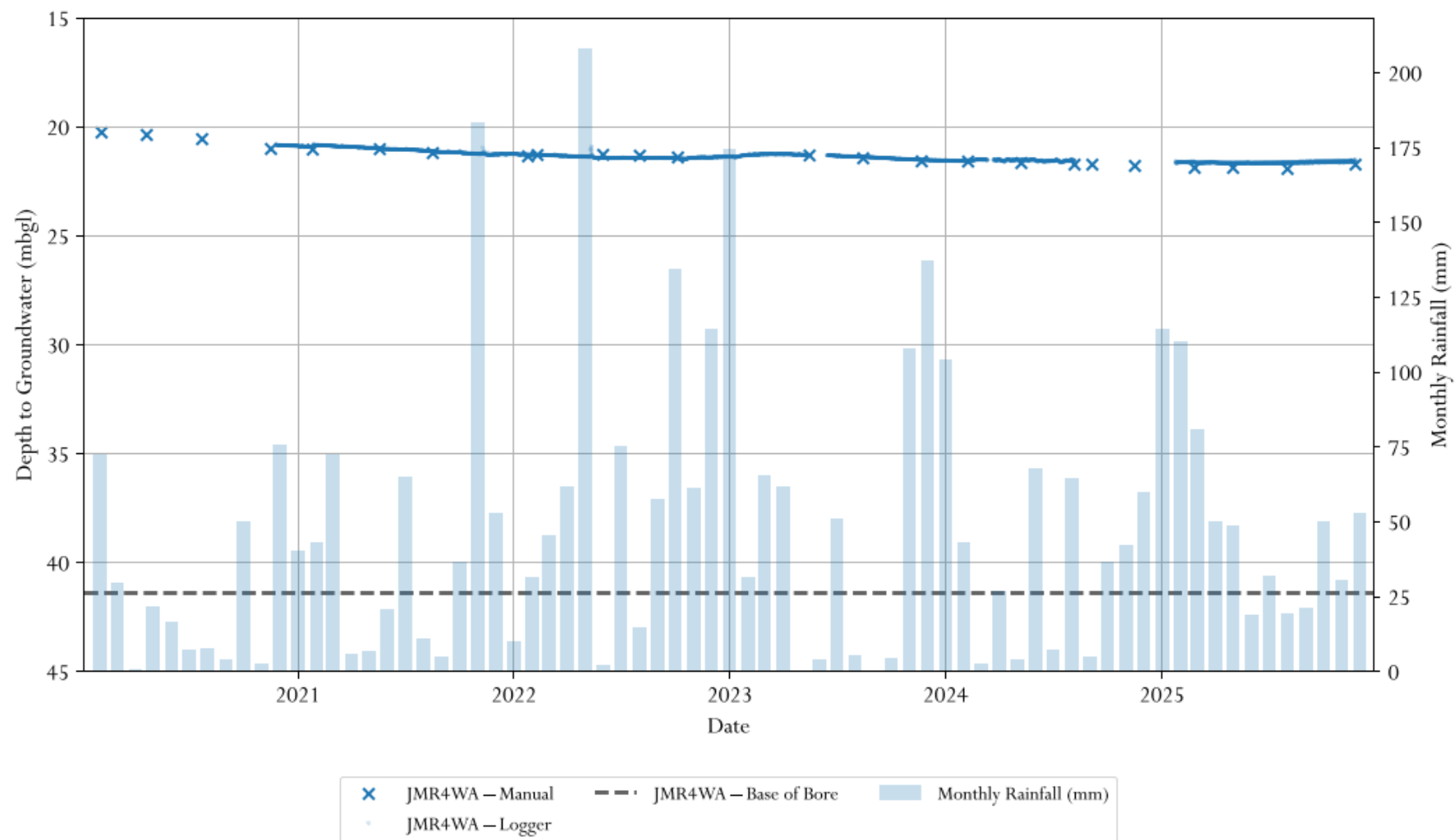


Figure 5-2 Datalogger and manual water level data –JMR4WA

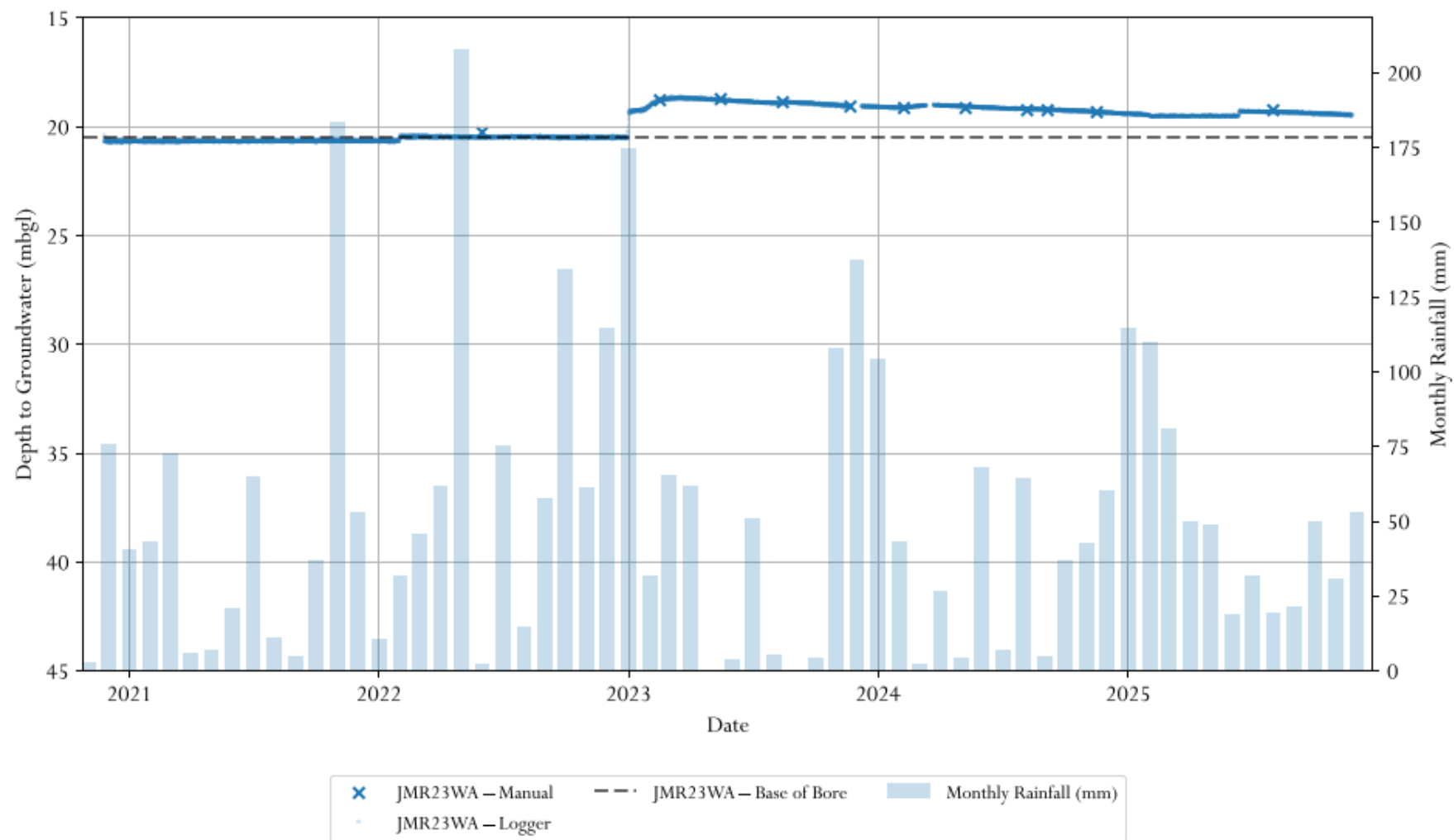


Figure 5-3 Datalogger and manual water level data – JMR23WA

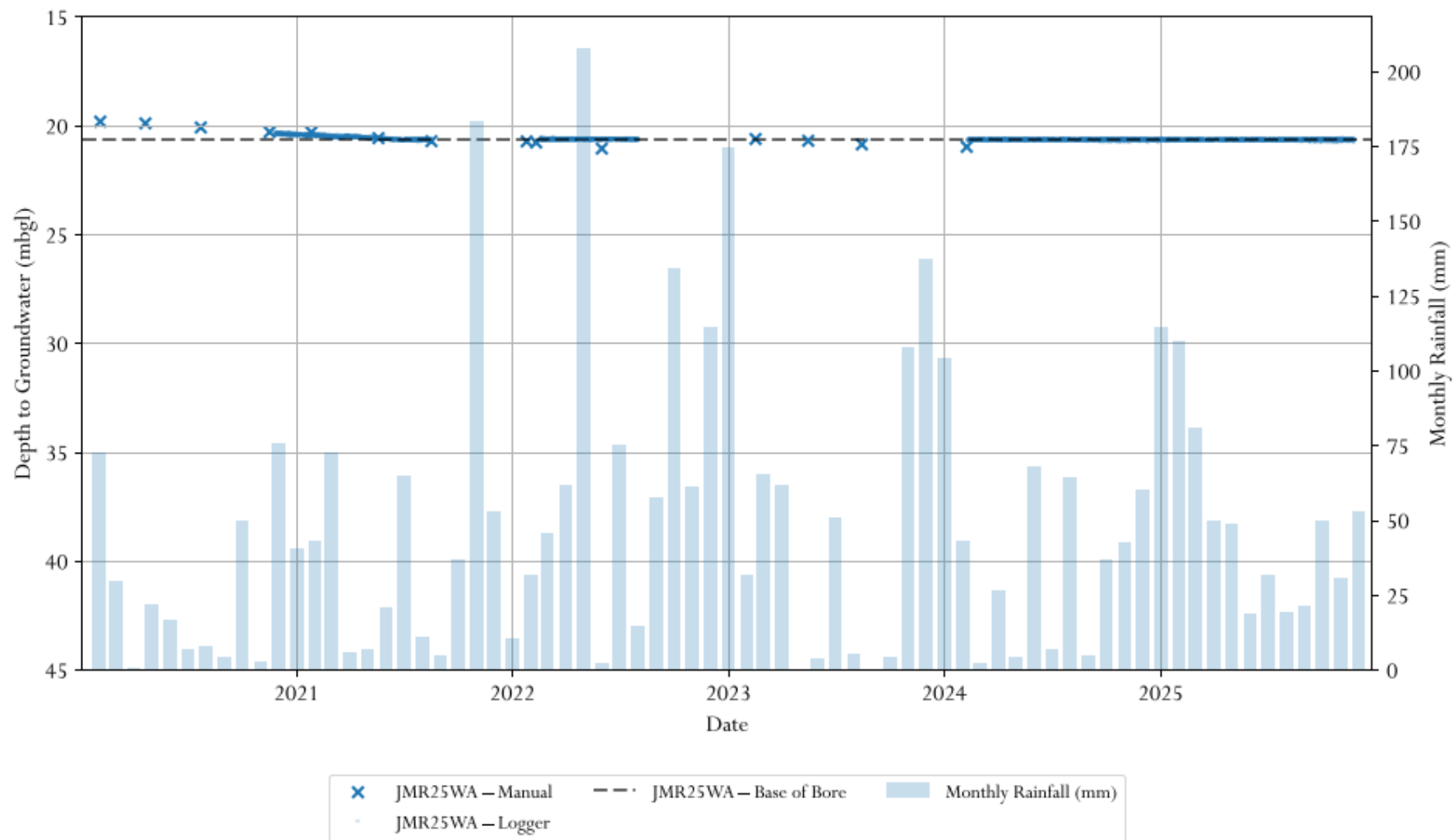


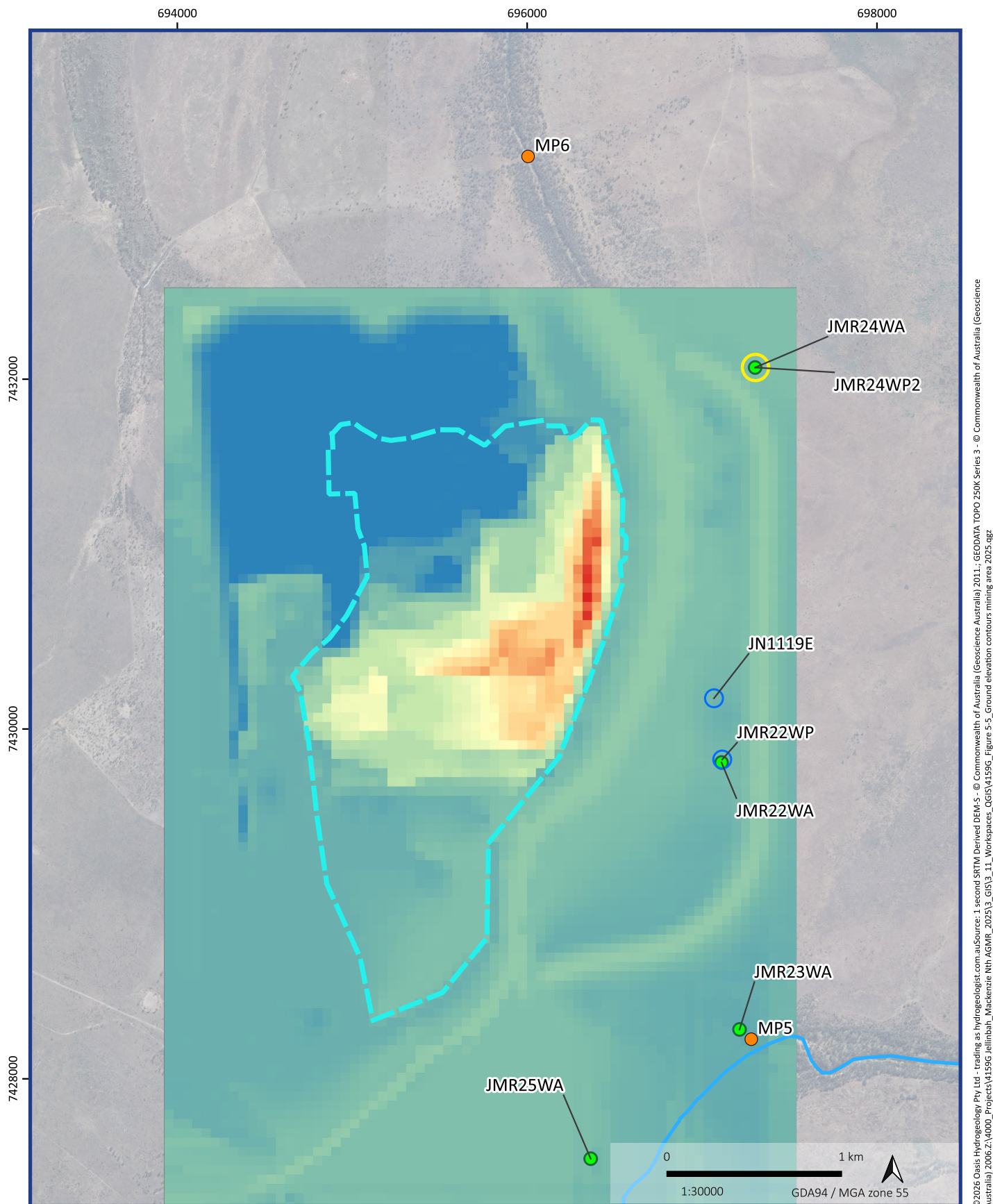
Figure 5-4 Datalogger and manual water level data – JMR25WA

Table 5-4 Observed groundwater level drawdown relative to baseline

Monitoring bore	Unit	Baseline groundwater level (mAHD) ¹	Trigger level threshold - end of mining drawdown (m) ¹	Groundwater level (mAHD) 2025	Observed drawdown (m) ²	Remaining drawdown (m) until trigger threshold
JMR4WA	Alluvium	103.25	10 to 20	102.08	-1.17	8.83 to 18.83
JMR4WP2	Permian	103.20	18	101.72	-1.48	16.52
JMR22WA	Alluvium	Dry	N/A	Dry	-	-
JMR22WP	Permian	101.24	90	100.18	-1.06	88.94
JN1119E	Permian	100.79	100	96.08	-4.71	95.29
JMR23WA	Alluvium	Dry	N/A	Dry	-	-
JMR24WA	Alluvium	Dry	N/A	Dry	-	-
JMR24WP2	Permian	77.81	55	83.04	+5.23	55
JMR25WA	Alluvium	102.43	5 to 10	Dry	-	Dry
JMR26WA	Alluvium	Dry	N/A	Dry	-	Dry
JP0911T	Alluvium	99.48	N/A	-	-	-
JP0912T	Alluvium	100.89	N/A	-	-	-

Notes: 1. From Table I3 of EA (refer also Table 5-3 of this report)

2. Difference in water level between baseline water level and November 2025 observed water level – a negative value indicates water level drawdown relative to baseline value



Legend

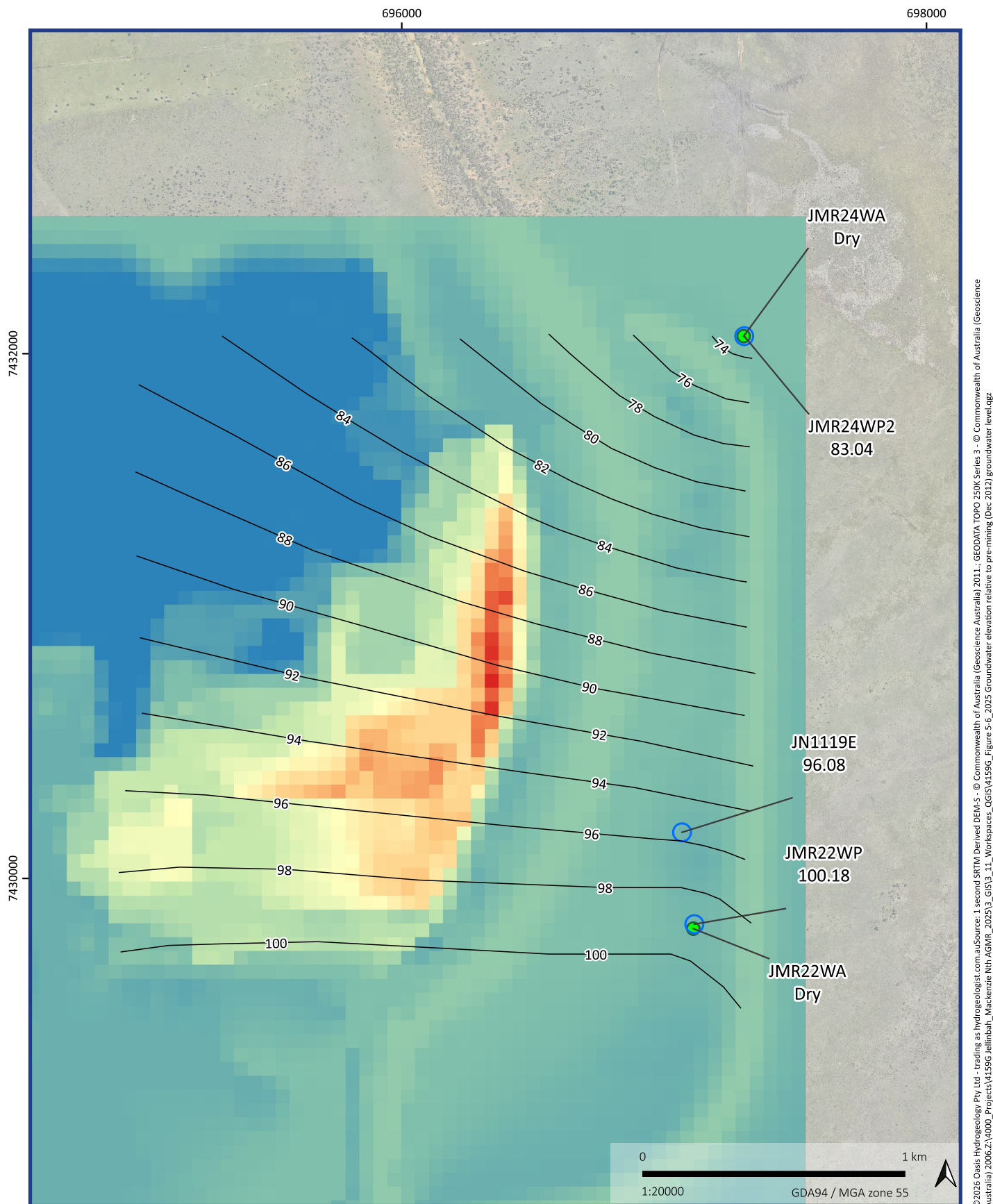
Bore		Elevation (mAHD)	
	Surface water		20
	Mackenzie River		40
	Limit of Mining		60
	Alluvium		80
	Permian-Pollux seam		100
	Permian overburden		120
			140

Mining area ground elevation December 2025

(4159G) Mackenzie North Project
Annual Groundwater Monitoring Report 2025

Figure 5-5

24/02/2026



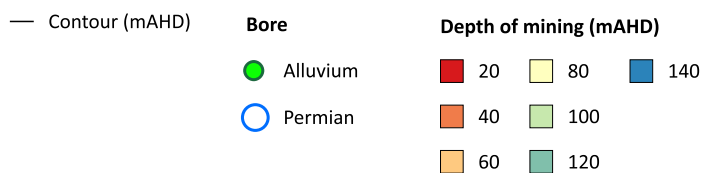
Legend

2025 Groundwater elevation relative to pre-mining (Dec 2012) contours

(4159G) Mackenzie North Project
Annual Groundwater Monitoring Report 2025

Figure 5-6

24/02/2026



6. Assessment of surface water data

Condition I17 of the EA requires that the AGMR include a comparison of groundwater monitoring results against receiving environment surface water quality monitoring results, to determine any interaction or impact from groundwater on surface water. Following review of available groundwater surface water monitoring data the following observations are made:

- Within the impacted zone for groundwater drawdown, groundwater flow will be towards the pit and impacts away from the mining area could not be expected to occur via the deeper Permian coal measures which occur at depths of > 20 mbgl. The Permian coal measures are expected to be disconnected from the surface water system.
- Where groundwater is observed in the alluvium (generally in bores in close proximity to the Mackenzie River), the depth to groundwater is also in the order of 20 mbgl. In all alluvium monitoring bores that are close to the current mining area, the alluvium is currently dry and has been dry since the commencement of monitoring and pre-mining.
- The locations of surface water monitoring points are shown in Figure 4-1. Based on the overall direction of groundwater flow from south to north and the disconnected nature of groundwater in the alluvium (as the alluvium is dry over much of the mining area), the most likely indicator of current surface water / groundwater impacts related to mining would be at the surface water monitoring points.

Table 6-1 provides summary statistics for the EC of surface water sites and the EC of groundwaters (alluvium and Permian). The 2025 surface water EC values are less than 398 $\mu\text{S}/\text{cm}$, while the groundwater EC values are greater than 4,159 $\mu\text{S}/\text{cm}$. The significant difference in EC values between surface waters and shallow groundwaters, indicates that there is currently no interaction between groundwaters and surface waters at the site.

Table 6-1 Electrical conductivity at surface water and groundwater sampling sites

Monitoring location		2022 Value	2023 Value	2024 Value	2025 Value
Surface water sites	MP4	167	355	446	396
	MP5	328	381	443	378
Groundwater sites	Alluvium	2,072 – 5,856	3,060 – 3,420	4,040 – 6,570	4,159 – 5,151
	Permian	6,912 – 17,152	3,624 – 16,842	3,448 – 13,970	3,976 – 19,633

7. Summary and conclusions

Following review of the available data, the following summary and conclusions are made:

- Groundwater level and groundwater quality monitoring is undertaken at 12 monitoring bores across the Mackenzie North Project. Monitoring frequency and parameters are in accordance with the requirements of the Environmental Authority (EA).
- During the 12-month period covered by this report, no new groundwater monitoring bores were installed and no bores were decommissioned.
- Groundwater levels in the alluvium have not been impacted by mining activities. Several alluvial monitoring bores are dry and have been for an extended period. The alluvium within the mining area was dry under pre-mining conditions, and groundwater level responses in those alluvial bores that contain water are interpreted to reflect climatic variability rather than mining-related effects.
- Groundwater levels in the Permian coal measures show localised drawdown associated with mining activities. However, these changes are consistent with the predicted and approved drawdown relative to pre-mining groundwater levels, and several Permian monitoring bores show no discernible response to mining. No groundwater level trigger exceedances were recorded during the reporting period.
- The majority of groundwater quality results were below the prescribed groundwater contaminant limits. A small number of isolated elevated results were recorded during the reporting period, and no compliance bores recorded three consecutive exceedances of groundwater contaminant limits. During the 2025 reporting period, results were detected above the groundwater quality criterion for dissolved metals and metalloids, including aluminium at JMR22WP (0.57 mg/L in May 2025), chromium at JMR22WP (0.041 mg/L in May 2025), and copper at JMR22WP (0.017 mg/L in May 2025). At JMR24WP2, three individual copper exceedances were recorded during 2025 (0.005 mg/L in February 2025, 0.003 mg/L in May 2025, and 0.011 mg/L in November 2025); however, these were not consecutive, with intervening non exceedance (<LOR) results, and therefore do not constitute an exceedance breach of groundwater contaminant limits. Isolated elevated results for molybdenum were also recorded at JMR22WP (0.069 mg/L in May 2025) and JN1119E (0.059 mg/L in August 2025).
- All dissolved arsenic, cobalt, manganese, nickel, selenium and zinc concentrations recorded during the 2025 reporting period were below the applicable groundwater contaminant limits.
- Based on review of the available data and historical results, the isolated exceedances described above are considered highly unlikely to result in environmental harm, and continued monitoring is recommended.
- Several monitoring bores have historically recorded TPH C10–C36 concentrations above the contaminant limit for three consecutive samples. However, all bores show a decreasing trend in TPH C10–C36 concentrations during the 2025 reporting period. Petroleum hydrocarbon contamination of groundwater is not suspected, as elevated concentrations were observed under pre-mining conditions. Silica gel clean-up analyses indicate that detected hydrocarbons are predominantly biogenic (naturally occurring). It is recommended that the silica gel clean-up method continue to be routinely applied as part of compliance monitoring to confirm this interpretation and minimise apparent exceedances of contaminant limits.
- The large difference between surface water and groundwater EC values, together with generally deep groundwater levels (typically >20 mbgl), indicates no evidence of groundwater surface water interaction at the site under current conditions.

Appendix A Water quality monitoring data

Mackenzie North Groundwater Quality Monitoring
pH, EC, TDS, Major Ions, Hydrocarbon Data

Bore ID	Sample Date	pH		Electrical		TDS		Major Ions										Total Petroleum										C10 - C14 Fraction (SVSG)	C15 - C28 Fraction (SVSG)	C29 - C36 Fraction (SVSG)	C10 - C36 Fraction (SVSG)
		Field	Lab	Field	Lab	Total Dissolved Solids (TDS)	Calcium	Magnesium	Sodium	Potassium	Chloride	Sulfate	Alkalinity	Alkalinity	Alkalinity	Alkalinity	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36										
pH	pH	µS/cm	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L											
JMR22WP	16/2/2023	12.41	12.1	10748	10400	5770	371	<1	1320	35	1960	68	1000	101	<1	144	144	<20	70	150	<50	220									
JMR22WP	16/5/2023	7.84	8.07	16551	17400	10800	108	68	3660	10	6000	1	<1	<1	144	144	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR22WP	14/8/2023	8.36	8.24	16842	19400	11200	166	75	3760	11	5150	1	<1	<1	139	139	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR22WP	21/11/2023	11.67	12	9453	8670	4160	320	<1	1160	70	1630	63	699	57	<1	756	<20	140	600	<50	740	<50	<100	<50	<50						
JMR22WP	8/2/2024	11.6	12.2	8547	9010	4410	326	<1	1120	59	1720	67	882	64	<1	946	<20	50	340	<50	390	<50	<100	<50	<50						
JMR22WP	8/5/2024	11.79	12.2	8651	8970	3930	385	<1	1120	44	1590	56	831	67	<1	899	<20	70	240	<50	310	<50	<100	<50	<50						
JMR22WP	4/9/2024	11.64	12.2	9497	8410	3880	331	<1	1020	29	1660	58	780	78	<1	859	<20	60	130	<50	190	<50	<100	<50	<50						
JMR22WP	27/5/2025	11.62	12.1	9691	8770	3920	354	<1	1030	29	1630	58	675	73	<1	748	<20	90	200	<50	290	<50	<100	<50	<50						
JMR22WP	6/8/2025	7.86	8.13	16979	17400	10700	200	68	3330	10	6110	1	<1	<1	184	184	<20	<50	<100	<50	<50	<50	<100	<50	<50						
JMR22WP	24/11/2025	7.86	8.2	19633	16500	11200	160	73	3520	12	6180	1	<1	<1	192	192	<20	<50	<100	<50	<50	<50	<100	<50	<50						
JMR24WP	12/11/2019	7.56	8.14	9490	9570	6530	224	131	1590	8	3270	8	<1	<1	222	222	<20	<50	<100	<50	<50										
JMR24WP	20/4/2020	7.53	7.97	7950	8250	5190	202	152	1220	8	2670	<1	<1	<1	198	198	<20	<50	<100	<50	<50										
JMR24WP	16/11/2020	7.61	7.98	8269	7860	5570	203	147	1300	9	2800	4	<1	<1	215	215	<20	<50	<100	<50	<50										
JMR24WP	26/1/2021	7.33	7.98	8308	8020	5210	191	144	1200	7	2850	12	<1	<1	204	204	<20	<50	<100	<50	<50										
JMR24WP	19/5/2021	7.32	7.94	7966	7810	4510	180	124	1170	7	2740	2	<1	<1	203	203	<20	<50	<100	<50	<50										
JMR24WP	24/1/2022	7.58	8.04	7752	7790	5140	189	137	1300	8	2720	1	<1	<1	212	212	<20	<50	<100	<50	<50										
JMR24WP	8/6/2022	7.6	8.09	7670	7830	5260	181	132	1300	8	2680	1	<1	<1	204	204	<20	<50	<100	<50	<50										
JMR24WP	5/10/2022	7.24	7.77	7875	8230	4630	168	126	1290	7	2630	2	<1	<1	221	221	<20	<50	<100	<50	<50										
JMR24WP2	20/4/2020	7.38	7.96	8587	8870	5500	182	125	1420	8	2910	2	<1	<1	204	204	<20	<50	<100	<50	<50										
JMR24WP2	17/11/2020	7.4	7.86	8036	7730	5190	172	111	1370	7	2750	<1	<1	<1	214	214	<20	<50	<100	<50	<50										
JMR24WP2	27/1/2021	6.79	7.8	11491	11200	6420	281	171	1910	8	3430	404	<1	<1	992	992	70	<50	960	610	1570										
JMR24WP2	19/5/2021	7.34	7.96	7553	7400	4250	139	90	1150	7	2550	<1	<1	<1	233	233	<20	<50	<100	<50	<50										
JMR24WP2	24/1/2022	7.54	8.07	7059	7110	4550	144	97	1290	7	2350	<1	<1	<1	282	282	<20	50	150	120	320										
JMR24WP2	8/6/2022	7.62	8.2	6912	7060	4460	134	93	1270	6	2260	<1	<1	<1	266	266	<20	<50	<100	80	80										
JMR24WP2	5/10/2022	7.31	7.89	7116	7460	4410	120	90	1280	6	2280	6	<1	<1	298	298	<20	<50	<100	<50	<50										
JMR24WP2	16/2/2023	7.8	7.47	6912	6390	4030	122	82	1160	7	2100	1	<1	<1	311	311	<20	<50	<100	<50	<50										
JMR24WP2	8/5/2023	7.25	8.12	7397	8060	4560	157	122	1230	8	2540	1	<1	<1	207	207	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR24WP2	14/8/2023	7.25	7.9	7487	8830	4960	191	135	1270	8	2700	2	<1	<1	202	202	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR24WP2	21/11/2023	7.22	7.92	7671	7890	5380	170	127	1220	8	2620	<1	<1	<1	197	197	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR24WP2	8/2/2024	7.3	7.78	7591	7690	4890	175	126	1190	8	2590	<1	<1	<1	217	217	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR24WP2	8/5/2024	7.27	7.78	7257	7420	4940	174	120	1130	7	2490	2	<1	<1	213	213	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR24WP2	6/8/2024	7.03	7.91	7560	7580	4860	169	128	1220	8	2560	<1	<1	<1	241	241	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR24WP2	24/2/2025	7	7.72	6959	7010	4780	173	125	1160	8	2480	4	<1	<1	218	218	<20	<50	150	<50	150	<50	<50	<100	<50	<50					
JMR4WP2	25/2/2025	7.03	7.83	3976	4190	2350	75	63	699	4	1110	37	<1	<1	473	473	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR24WP2	27/5/2025	7.19	8.01	7573	7900	4940	165	106	1100	7	2440	6	<1	<1	218	218	<20	<50	170	<50	170	<50	<50	<100	<50	<50					
JMR24WP2	6/8/2025	7.24	8.17	6141	6170	3570	114	72	1030	6	1880	2	<1	<1	307	307	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR24WP2	24/11/2025	7.22	8.16	6851	6030	3460	102	72	1040	6	1780	<1	<1	<1	302	302	<20	<50	<100	<50	<50	<50	<50	<100	<50	<50					
JMR25WA	11/9/2018	6.45	7.01	1171	1190	905	67	43	66	5	282	14	<1	<1	161	161	<20	<50	100	50	150										
JMR25WA	29/11/2018	6.45	6.93	1299	1200	738	81	44	80	5	298	17	<1	<1	153	153	<20	<50	<100	<50	<50										
JMR25WA	24/1/2019	6.5	6.99	1273	1200	1010	82	44	83	5	302	15	<1	<1	171	171	<20	<50	<100	<50	<50										
JMR25WA	27/3/2019	6.66	7.51	1292	1260	909	93	49	97	6	297	16	<1	<1	163	163	<20	<50	<100	<50	<50										
JMR25WA	15/5/2019	6.47	7.14																												

Bore ID	Sample Date	pH		Electrical		TDS		Major Ions										Total Petroleum										C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 (sum)
		Field	Lab	Field	Lab	Total Dissolved Solids (TDS)	Calcium	Magnesium	Sodium	Potassium	Chloride	Sulfate	Alkalinity	Carbonate	Bicarbonate	Total	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction (sum)										
pH	pH	µS/c	µS/cm	mg/	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L											
JMR4WA	24/11/2025	6.68	7.83	5151	4330	2810	181	177	490	7	1200	74	<1	<1	462	462	<20	<50	<100	<50	<50	<50	<50	<50	<50	<50	<50				
JMR4WP	9/9/2018	7.07	7.65	7450	6870	4050	140	110	1070	5	1860	38	<1	<1	458	458	<20	<50	<100	<50	<50										
JMR4WP	18/11/2018	7.08	7.44	8921	8600	5010	252	143	1490	7	2710	22	<1	<1	428	428	<20	<50	<100	<50	<50										
JMR4WP	24/1/2019	6.91	7.54	9883	9500	5620	263	153	1570	6	3160	22	<1	<1	432	432	<20	<50	<100	<50	<50										
JMR4WP	27/3/2019	7.29	8.01	9096	9070	5620	280	146	1610	7	2830	18	<1	<1	428	428	<20	<50	<100	<50	<50										
JMR4WP	15/5/2019	7.06	7.68	9235	8620	5650	345	149	1650	7	3060	22	<1	<1	419	419	<20	<50	<100	<50	<50										
JMR4WP	25/7/2019	6.9	7.59	8725	8760	5250	254	128	1380	6	2800	18	<1	<1	480	480	<20	<50	<100	<50	<50										
JMR4WP	16/11/2020	6.62	7.28	6190	5920	4270	267	241	710	8	1640	98	<1	<1	696	696	<20	<50	160	<50	160										
JMR4WP	26/1/2021	7.21	8.13	4099	3980	2170	62	65	695	4	1060	64	<1	<1	473	473	20	<50	<100	<50	<50										
JMR4WP	19/5/2021	7.33	8.11	4046	3930	2170	61	53	621	4	1070	56	<1	<1	476	476	20	<50	<100	<50	<50										
JMR4WP	24/1/2022	7.34	8.05	4207	4220	2330	63	56	670	4	1140	48	<1	<1	503	503	<20	<50	<100	<50	<50										
JMR4WP	8/6/2022	7.13	8.14	3803	3930	2170	68	66	723	4	1040	43	<1	<1	457	457	<20	<50	<100	<50	<50										
JMR4WP	5/10/2022	7.31	7.89	3952	3990	2180	66	57	733	5	1010	42	<1	<1	486	486	<20	<50	<100	<50	<50										
JMR4WP2	16/5/2023	7.2	8.29	3946	3510	2170	67	58	726	5	1040	40	<1	<1	462	462	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JMR4WP2	22/11/2023	7.26	8.07	3624	4320	2390	71	64	722	5	1050	41	<1	<1	457	457	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JMR4WP2	8/2/2024	7.3	7.86	3448	3790	2100	65	56	614	7	964	39	<1	<1	469	469	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JMR4WP2	8/5/2024	7.21	8.11	3894	4150	2340	79	66	707	5	1090	39	<1	<1	477	477	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JMR4WP2	6/8/2024	7.08	8.09	4269	4290	2340	75	67	761	5	1080	35	<1	<1	526	526	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JMR4WP2	27/5/2025	7.25	8	4306	4300	2440	78	60	661	4	1180	40	<1	<1	440	440	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JMR4WP2	6/8/2025	7.18	8.21	4206	4300	2300	76	60	681	4	1180	36	<1	<1	482	482	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JMR4WP2	24/11/2025	7.23	8.26	5071	4240	2300	73	66	783	5	1160	24	<1	<1	507	507	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JN1119E	13/11/2019	8.6	8.35	17353	18000	11400	98	99	3550	10	6300	3	<1	5	119	124	<20	<50	<100	80	80										
JN1119E	20/4/2020	11.97	11.6	13343	13100	7670	90	<1	2550	17	3860	11	396	113	<1	509	<20	50	170	<50	220										
JN1119E	16/11/2020	11.88	11.6	13958	12800	6880	81	<1	2680	18	4060	10	468	109	<1	578	<20	50	280	<50	330										
JN1119E	26/1/2021	11.97	11.4	12691	11400	5310	7	<1	2240	12	3520	16	349	308	<1	657	<20	<50	240	<50	240										
JN1119E	19/5/2021	11.98	11.6	11974	11100	6360	<1	<1	2240	12	3290	16	433	294	<1	727	<20	<50	210	<50	210										
JN1119E	24/1/2022	12.08	12	11791	11300	6340	22	<1	2250	12	2870	18	712	253	<1	964	<20	70	200	<50	270										
JN1119E	8/6/2022	12.01	11.6	10851	10300	5770	5	<1	2300	11	3100	14	379	394	<1	773	<20	50	130	<50	180										
JN1119E	5/10/2022	12.03	11.8	12838	12700	5910	15	<1	2470	11	3140	12	733	340	<1	1070	<20	50	110	<50	160										
JN1119E	16/5/2023	12.04	12	12822	11800	5390	94	<1	2240	11	2580	16	805	414	<1	1220	<20	80	140	<50	220	<50	<100	<50	<50	<50					
JN1119E	14/8/2023	12.01	12.1	14181	14400	6300	172	<1	2530	11	3160	13	1030	268	<1	1300	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JN1119E	21/11/2023	11.73	12	13844	12700	6060	151	<1	2190	10	2980	16	850	309	<1	1160	<20	70	110	<50	180	<50	<100	<50	<50	<50					
JN1119E	8/2/2024	11.71	12.3	13348	13300	6590	230	<1	1940	10	2510	16	1400	295	<1	1700	<20	<50	<100	<50	<50	<50	<100	<50	<50	<50					
JN1119E	8/5/2024	11.73	12.3	12848	12700	5200	267	<1	1870	10	2260	16	1410	140	<1	1550	<20	80	<100	<50	80	<50	<100	<50	<50	<50					
JN1119E	4/9/2024	11.62	12.2	13870	13400	5350	228	<1	1840	10	2320	15	1430	161	<1	1590	<20	50	<100	<50	50	<50	<100	<50	<50	<50					
JN1119E	6/8/2025	11.88	11.3	9284	7880	4270	32	<1	1490	8	2090	22	160	508	<1	669	<20	170	160	<50	330	<50	<100	<50	<50	<50					

Mackenzie North Groundwater Quality Monitoring
Dissolved Metals/Metalloids Data

Bore ID	Sample Date	Dissolved Metals																	
		Aluminium	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Uranium	Vanadium	Zinc	Boron	Iron
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
JMR22WP	16/2/2023	0.06	0.001	<0.0001	0.061	<0.001	0.008	0.002	<0.001	<0.0001	0.094	0.004	<0.01	<0.001	<0.001	<0.01	<0.005	0.14	0.1
JMR22WP	16/5/2023	0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.084	<0.0001	0.002	0.001	<0.01	<0.001	<0.001	<0.01	0.011	0.52	0.06
JMR22WP	14/8/2023	0.01	0.003	<0.0001	<0.001	<0.001	<0.001	<0.001	0.054	<0.0001	0.003	<0.001	<0.01	<0.001	<0.001	<0.01	0.01	0.56	<0.05
JMR22WP	21/11/2023	0.17	0.001	<0.0001	0.062	<0.001	0.011	0.002	<0.001	<0.0001	0.09	0.004	<0.01	<0.001	<0.001	<0.01	0.012	0.12	0.17
JMR22WP	16/2/2024	0.06	0.001	<0.0001	0.061	<0.001	0.008	0.002	<0.001	<0.0001	0.094	0.004	<0.01	<0.001	<0.001	<0.01	<0.005	0.14	0.1
JMR22WP	8/5/2024	0.14	0.001	<0.0001	0.054	<0.001	0.007	<0.001	<0.001	<0.0001	0.077	0.004	<0.01	<0.001	<0.001	<0.01	0.007	0.11	0.22
JMR22WP	5/9/2024	0.12	0.002	<0.0001	0.046	<0.001	0.005	<0.001	<0.001	<0.0001	0.079	0.003	<0.01	<0.001	<0.001	<0.01	<0.005	0.12	0.25
JMR22WP	6/8/2025	<0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.101	<0.0001	0.004	0.001	<0.01	<0.001	<0.001	<0.01	0.014	0.55	0.1
JMR22WP	27/5/2025	0.57	0.002	<0.0001	0.041	<0.001	0.017	0.003	<0.001	<0.0001	0.069	0.003	<0.01	<0.001	<0.001	<0.01	<0.005	0.12	0.28
JMR22WP	24/11/2025	<0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.086	<0.0001	0.004	0.002	<0.010	<0.001	<0.001	<0.01	0.011	0.58	<0.05
JMR23WA	16/2/2023	<0.01	0.02	<0.0001	<0.001	0.001	<0.001	<0.001	0.822	<0.0001	0.003	0.006	<0.01	<0.001	<0.001	<0.01	<0.005	0.08	2.09
JMR23WA	16/5/2023	0.01	0.005	<0.0001	<0.001	0.001	<0.001	<0.001	0.911	<0.0001	0.002	0.004	<0.01	<0.001	<0.001	<0.01	<0.005	<0.05	1.89
JMR23WA	14/8/2023	0.01	0.006	<0.0001	<0.001	<0.001	<0.001	<0.001	1.07	<0.0001	0.002	0.004	<0.01	<0.001	<0.001	<0.01	0.036	0.08	2.68
JMR24WP	12/11/2019	<0.01	0.002	<0.0001	0.004	<0.001	<0.001	<0.001	0.193	<0.0001	0.008	0.02	<0.01	<0.001	<0.001	<0.01	0.01	0.51	<0.05
JMR24WP	20/4/2020	<0.01	0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.196	<0.0001	0.001	0.009	<0.01	<0.001	<0.001	<0.01	0.014	0.49	<0.05
JMR24WP	16/11/2020	<0.01	0.002	<0.0001	0.002	<0.001	0.003	<0.001	0.214	<0.0001	0.004	0.017	<0.01	<0.001	<0.001	<0.01	0.019	0.36	<0.05
JMR24WP	26/1/2021	<0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.22	<0.0001	0.002	0.005	<0.01	<0.001	<0.001	<0.01	0.017	0.46	<0.05
JMR24WP	19/5/2021	<0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.218	<0.0001	0.002	0.004	<0.01	<0.001	<0.001	<0.01	0.017	0.46	<0.05
JMR24WP	24/1/2022	<0.01	0.002	<0.0001	0.016	<0.001	0.002	<0.001	0.248	<0.0001	0.016	0.072	<0.01	<0.001	<0.001	<0.01	0.014	0.51	<0.05
JMR24WP	8/6/2022	<0.01	0.002	<0.0001	<0.001	<0.001	0.002	<0.001	0.2	<0.0001	0.001	0.004	<0.01	<0.001	<0.001	<0.01	0.016	0.61	<0.05
JMR24WP	5/10/2022	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.219	<0.0001	0.002	0.008	<0.01	<0.001	<0.001	<0.01	0.03	0.55	<0.05
JMR24WP2	20/4/2020	<0.01	0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.257	<0.0001	0.002	0.005	<0.01	<0.001	<0.001	<0.01	0.012	0.43	0.2
JMR24WP2	17/11/2020	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.258	<0.0001	0.002	0.006	<0.01	<0.001	<0.001	<0.01	0.047	0.39	0.21
JMR24WP2	27/1/2021	0.02	0.003	<0.0001	0.003	<0.001	<0.001	<0.001	0.321	<0.0001	0.002	0.002	<0.01	<0.001	0.002	<0.01	<0.005	1.26	0.06
JMR24WP2	19/5/2021	<0.01	0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.217	<0.0001	0.002	0.003	<0.01	<0.001	<0.001	<0.01	0.011	0.5	0.16
JMR24WP2	24/1/2022		<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.23	<0.0001	0.002	0.004	<0.01	<0.001	<0.001	<0.01	0.008	0.6	<0.05
JMR24WP2	8/6/2022	<0.01	0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.202	<0.0001	0.003	0.003	<0.01	<0.001	<0.001	<0.01	0.008	0.64	<0.05
JMR24WP2	5/10/2022	<0.01	0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.204	<0.0001	0.002	0.006	<0.01	<0.001	<0.001	<0.01	0.024	0.59	0.45
JMR24WP2	16/2/2023	<0.01	0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.168	<0.0001	0.002	0.001	<0.01	<0.001	<0.001	<0.01	0.007	0.6	0.1
JMR24WP2	16/5/2023	0.01	0.003	<0.0001	<0.001	<0.001	<0.001	<0.001	0.219	<0.0001	0.001	0.001	<0.01	<0.001	<0.001	<0.01	0.014	0.5	0.37
JMR24WP2	14/8/2023	<0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.225	<0.0001	0.002	0.003	<0.01	<0.001	<0.001	<0.01	0.007	0.54	0.05
JMR24WP2	21/11/2023	<0.01	0.001	<0.0001	<0.001	<0.001	0.008	<0.001	0.258	<0.0001	0.002	0.002	<0.01	<0.001	<0.001	<0.01	0.046	0.51	0.09
JMR24WP2	8/2/2024	<0.01	0.004	<0.0001	<0.001	<0.001	<0.001	<0.001	0.213	<0.0001	0.002	0.003	<0.01	<0.001	<0.001	<0.01	0.013	0.52	0.55
JMR24WP2	8/5/2024	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.221	<0.0001	0.002	<0.001	<0.01	<0.001	<0.001	<0.01	<0.005	0.18	0.2
JMR24WP2	6/8/2024	<0.01	0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.232	<0.0001	0.001	0.002	<0.01	<0.001	<0.001	<0.01	0.022	0.52	<0.05
JMR24WP2	24/2/2025	<0.01	<0.001	<0.0001	<0.001	<0.001	0.005	<0.001	0.369	<0.0001	0.002	0.008	<0.01	<0.001	<0.001	<0.01	0.069	0.48	<0.05
JMR24WP2	27/5/2025	<0.01	0.001	<0.0001	<0.001	<0.001	0.003	<0.001	0.206	<0.0001	0.002	0.005	<0.01	<0.001	<0.001	<0.01	0.053	0.55	0.05
JMR24WP2	24/11/2025	<0.01	<0.001	<0.0001	<0.001	<0.001	0.011	<0.001	0.141	<0.0001	0.001	0.002	<0.010	<0.001	<0.001	<0.01	0.019	0.66	<0.05
JMR24WP2	6/8/2025	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.184	<0.0001	0.001	0.002	<0.01	<0.001	<0.001	<0.01	0.019	0.58	0.26
JMR25WA	11/9/2018	0.01	<0.001	<0.0001	<0.001		0.002	<0.001		<0.0001		0.001	<0.01				0.014		<0.05
JMR25WA	29/11/2018	<0.01	<0.001	<0.0001	<0.001	-	0.002	<0.001	0.015	<0.0001	<0.001	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	<0.05	<0.05
JMR25WA	24/1/2019	<0.01	<0.001	<0.0001	0.001	<0.001	0.001	<0.001	0.016	<0.0001	<0.001	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	<0.05	<0.05
JMR25WA	27/3/2019	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.01	<0.0001	<0.001	0.001	<0.01	<0.001	<0.001	<0.01	<0.005	<0.05	<0.05
JMR25WA	15/5/2019	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.008	<0.0001	<0.001	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	<0.05	<0.05
JMR25WA	25/7/2019	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.006	<0.0001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.01	<0.005	<0.05	<0.05
JMR25WA	12/11/2019	<0.01	<0.001	0.0002	<0.001	<0.001	0.005	<0.001	0.022	<0.0001	<0.001	0.005	<0.01	<0.001	<0.001	<0.01	0.013	<0.05	<0.05
JMR25WA	20/4/2020	<0.01	<0.001	<0.0001	<0.001	0.003	<0.001	<0.001	0.216	<0.0001	<0.001	0.012	<0.01	<0.001	<0.001	<0.01	0.005	<0.05	<0.05
JMR25WA	16/11/2020	<0.01	<0.001	<0.0001	<0.001	<0.001	0.001	<0.001	0.055	<0.0001	<0.001	0.007	<0.01	<0.001	0.001	<0.01	0.011	<0.05	<0.05
JMR25WA	26/1/2021	<0.01	0.001	<0.0001	<0.001	0.006	<0.001	<0.001	0.769	<0.0001	<0.001	0.014	<0.01	<0.001	0.002	<0.01	<0.005	<0.05	0.09
JMR25WA	19/5/2021	<0.01	0.002	<0.0001	<0.001	0.01	<0.001	<0.001	1.9	<0.0001	0.001	0.023	<0.01	<0.001	0.002	<0.01	<0.005	<0.05	0.34
JMR25WA	24/1/2022	<0.01	0.004	<0.0001	0.001	0.012	<0.001	<0.001	3.03	<0.0001	0.002	0.021	<0.01	<0.001	0.001	<0.01	0.006	0.07	4.43
JMR4WA	9/9/2018	<0.01	<0.001	<0.0001	<0.001		<0.001	<0.001		<0.0001		<0.001	<0.01				<0.005		5.61
JMR4WA	18/11/2018	<0.01	<0.001	<0.0001	<0.001	-	<0.001	<0.001	1.64	<0.0001	<0.001								

Bore ID	Sample Date	Dissolved Metals																	
		Aluminium	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Uranium	Vanadium	Zinc	Boron	Iron
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
JMR4WA	8/5/2024	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	1.18	<0.0001	0.002	0.003	<0.01	<0.001	<0.001	<0.01	0.052	0.06	2.18
JMR4WA	6/8/2024	<0.01	0.001	<0.0001	<0.001	<0.001	0.003	<0.001	1.2	<0.0001	<0.001	0.003	<0.01	<0.001	<0.001	<0.01	0.109	0.08	2.02
JMR4WA	25/2/2025	<0.01	<0.001	<0.0001	<0.001	0.001	0.008	<0.001	1.26	<0.0001	0.002	0.01	<0.01	<0.001	<0.001	<0.01	0.125	0.09	1.7
JMR4WA	27/5/2025	<0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	1.19	<0.0001	0.002	0.005	<0.01	<0.001	<0.001	<0.01	0.034	0.06	1.09
JMR4WA	6/8/2025	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	1.28	<0.0001	0.001	0.003	<0.01	<0.001	<0.001	<0.01	0.067	0.06	2.28
JMR4WA	24/11/2025	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	1.15	<0.0001	<0.001	0.007	<0.010	<0.001	<0.001	<0.01	0.051	0.08	1.62
JMR4WP	9/9/2018	<0.01	<0.001	<0.0001	<0.001		<0.001	<0.001		<0.0001		0.001	<0.01				<0.005		0.14
JMR4WP	18/11/2018	<0.01	<0.001	<0.0001	<0.001			<0.001	<0.001	0.096	<0.0001	0.001	<0.001	<0.01	<0.001	<0.01	0.016	0.25	0.21
JMR4WP	24/1/2019	<0.01	<0.001	<0.0001	0.001	<0.001	<0.001	<0.001	0.104	<0.0001	<0.001	0.001	<0.01	<0.001	<0.001	<0.01	0.006	0.18	0.13
JMR4WP	27/3/2019	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.11	<0.0001	0.001	<0.001	<0.01	<0.001	<0.001	<0.01	0.009	0.19	0.13
JMR4WP	15/5/2019	<0.01	<0.001	<0.0001	<0.001	<0.001	0.001	<0.001	0.111	<0.0001	0.001	<0.001	<0.01	<0.001	<0.001	<0.01	0.012	0.17	0.1
JMR4WP	25/7/2019	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.107	<0.0001	0.001	<0.001	<0.01	<0.001	<0.001	<0.01	0.007	0.21	0.07
JMR4WP	16/11/2020	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	1.6	<0.0001	<0.001	0.012	<0.01	<0.001	0.002	<0.01	0.012	<0.05	4.17
JMR4WP	26/1/2021	<0.01	0.021	<0.0001	<0.001	0.001	<0.001	<0.001	0.178	<0.0001	0.006	0.003	<0.01	<0.001	0.001	<0.01	0.007	0.16	0.5
JMR4WP	19/5/2021	<0.01	0.014	<0.0001	<0.001	<0.001	<0.001	<0.001	0.135	<0.0001	0.004	0.006	<0.01	<0.001	<0.001	<0.01	<0.005	0.14	<0.05
JMR4WP	24/1/2022	<0.01	0.005	<0.0001	0.003	<0.001	<0.001	<0.001	0.152	<0.0001	0.006	0.02	<0.01	<0.001	<0.001	<0.01	<0.005	<0.05	0.15
JMR4WP	8/6/2022	<0.01	0.004	<0.0001	<0.001	<0.001	<0.001	<0.001	0.141	<0.0001	0.003	0.019	<0.01	<0.001	<0.001	<0.01	<0.005	0.23	0.07
JMR4WP	5/10/2022	<0.01	0.004	<0.0001	<0.001	<0.001	<0.001	<0.001	0.171	<0.0001	0.007	0.009	<0.01	<0.001	<0.001	<0.01	<0.005	0.18	<0.05
JMR4WP2	16/5/2023	0.01	0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.187	<0.0001	0.002	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.18	0.13
JMR4WP2	22/11/2023	0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.152	<0.0001	0.002	<0.001	<0.01	<0.001	<0.001	<0.01	0.006	0.19	0.14
JMR4WP2	8/2/2024	<0.01	0.002	<0.0001	0.001	<0.001	<0.001	<0.001	0.194	<0.0001	0.004	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.18	0.21
JMR4WP2	8/5/2024	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.221	<0.0001	0.002	<0.001	<0.01	<0.001	<0.001	<0.01	<0.005	0.18	0.2
JMR4WP2	6/8/2024	<0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.176	<0.0001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.01	<0.005	0.2	0.29
JMR4WP2	25/2/2025	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.209	<0.0001	0.001	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.2	0.2
JMR4WP2	6/8/2025	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.182	<0.0001	0.001	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.19	0.19
JMR4WP2	27/5/2025	<0.01	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.222	<0.0001	<0.001	0.001	<0.01	<0.001	<0.001	<0.01	0.012	0.18	0.09
JMR4WP2	24/11/2025	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	0.122	<0.0001	<0.001	0.002	<0.010	<0.001	<0.001	<0.01	<0.005	0.23	0.48
JN1119E	13/11/2019	<0.01	0.007	<0.0001	<0.001	<0.001	<0.001	<0.001	0.01	<0.0001	0.007	0.002	<0.01	<0.001	<0.001	<0.01	0.009	0.52	<0.05
JN1119E	20/4/2020	0.07	0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.038	0.001	<0.01	<0.001	<0.001	<0.01	<0.005	0.21	<0.05
JN1119E	16/11/2020	0.02	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0011	0.05	0.003	<0.01	<0.001	<0.001	<0.01	0.011	0.18	<0.05
JN1119E	26/1/2021	0.02	0.002	0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	0.0003	0.077	0.001	<0.01	<0.001	<0.001	<0.01	<0.005	0.18	<0.05
JN1119E	19/5/2021	0.02	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0001	0.066	0.003	<0.01	<0.001	<0.001	<0.01	<0.005	0.14	<0.05
JN1119E	24/1/2022	0.24	0.001	<0.0001	0.001	<0.001	<0.001	<0.001	<0.001	0.0002	0.065	0.009	<0.01	<0.001	<0.001	<0.01	<0.005	0.16	<0.05
JN1119E	8/6/2022	0.03	0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0001	0.06	0.002	<0.01	<0.001	<0.001	<0.01	0.006	0.22	<0.05
JN1119E	5/10/2022	0.06	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.058	0.001	<0.01	<0.001	<0.001	<0.01	<0.005	0.21	<0.05
JN1119E	16/5/2023	0.02	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.069	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.13	<0.05
JN1119E	14/8/2023	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0003	0.056	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.23	<0.05
JN1119E	21/11/2023	0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.055	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.17	<0.05
JN1119E	8/2/2024	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.054	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.13	<0.05
JN1119E	8/5/2024	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.051	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.1	<0.05
JN1119E	5/9/2024	<0.01	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.054	0.002	<0.01	<0.001	<0.001	<0.01	<0.005	0.14	<0.05
JN1119E	6/8/2025	0.16	0.006	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.059	0.003	<0.01	<0.001	<0.001	<0.01	<0.005	0.16	0.14

Appendix B Water level monitoring data

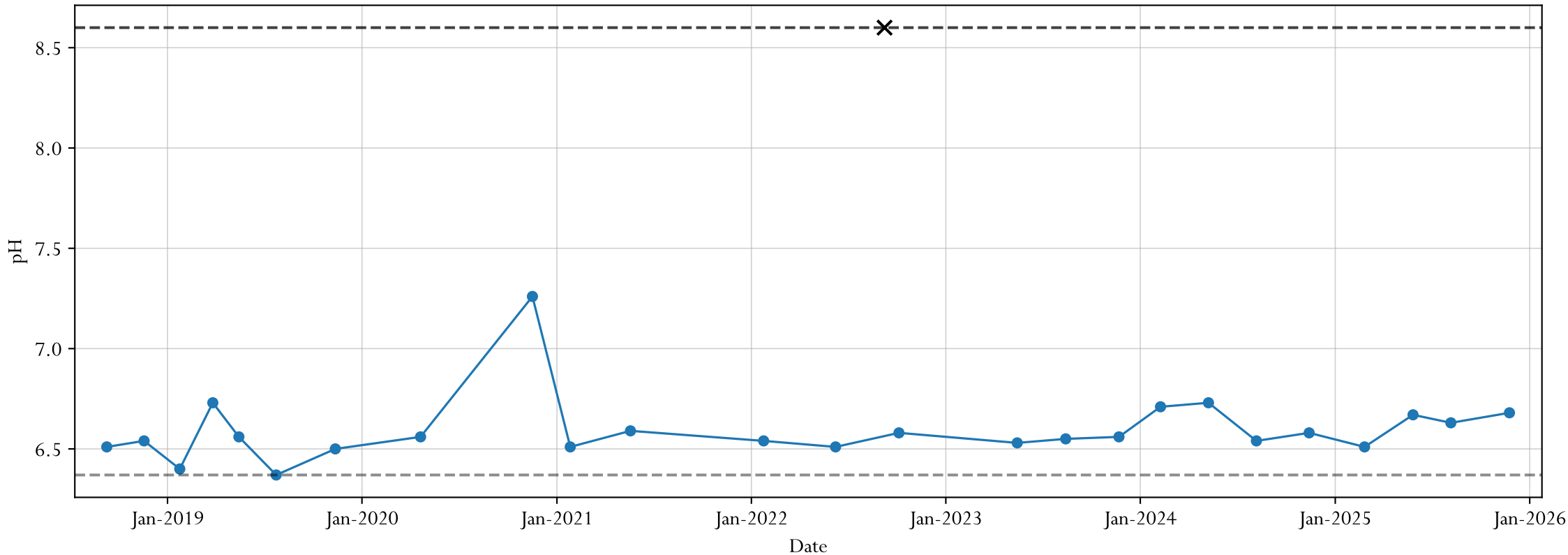
Mackenzie North Groundwater Level Monitoring

Standing Water Level (SWL) - metres below top of casing (mTOC)

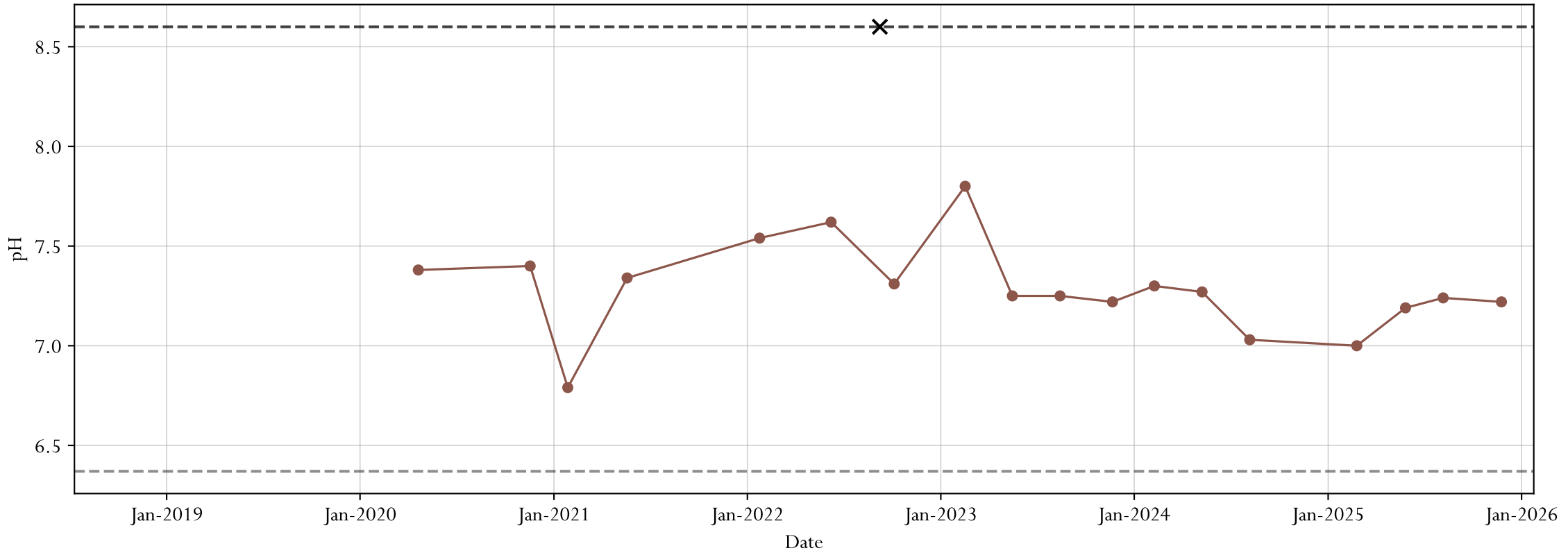
Date	JMR4WA	JMR4WP2	JMR22WA	JMR22WP	JN1119E	JMR23WA	JMR24WA	JMR24WP	JMR24WP2	JMR25WA	JMR26WA	JP0911T	JP0912T
15/12/2012	Dry		17.0	dry	22.8		18.7	dry	47.4		16.9		
12/10/2015	18.5						20.0				16.6		
17/5/2017	18.5						19.3						
19/7/2017	18.7						19.4						
28/9/2017												125.5	123.2
6/10/2017	19.2						19.2						
1/11/2017												125.5	123.2
1/12/2017												22.8	20.4
9/12/2017	19.3						19.9						
1/1/2018												125.5	123.2
1/2/2018												23.2	20.6
20/2/2018	19.4						19.9						
1/3/2018												125.5	123.2
1/4/2018												23.2	20.5
1/5/2018												23.4	20.5
3/5/2018	19.4						19.9						
18/5/2018												125.5	
1/6/2018													123.2
16/6/2018	19.5						19.9						
1/7/2018													123.2
9/7/2018	19.5						20.0						
13/7/2018												125.5	
1/8/2018												24.5	123.2
1/9/2018												24.5	20.7
1/10/2018												24.6	20.8
5/10/2018				21.0									
8/10/2018	19.8												
9/10/2018		19.8						35.9					
11/10/2018							19.6		0.8	19.4			
19/10/2018	19.9	19.9	18.0	22.1			21.1	Dry	36.7	19.5			
1/11/2018											Dry	125.5	123.2
17/11/2018	19.9	19.9	18.0	22.1			21.2	Dry	36.7	-18.5	19.9		
1/12/2018											Dry	125.5	123.2
10/12/2018	20.0	20.0	Dry	22.1			21.2	Dry	36.7	-19.7	19.6		
1/1/2019											Dry	125.5	123.2
24/1/2019	20.1	20.1	Dry	22.0			21.2	Dry	36.7		19.7		
1/2/2019											Dry	125.5	123.2
25/2/2019	20.1	20.2	Dry	22.2			21.2	Dry	37.0		19.7		
1/3/2019											Dry	125.5	123.2
27/3/2019	20.1	20.1	Dry	22.1			21.2	Dry	37.0		19.8		
1/4/2019											Dry	125.5	123.2
18/4/2019	20.2	20.3	Dry	22.2			21.2	Dry	37.1		19.8		
1/5/2019											Dry	125.5	123.2
13/5/2019	20.2	20.3	Dry	22.1			21.2	Dry	37.1		19.8		
1/6/2019											Dry	125.5	123.2
1/7/2019											Dry	25.1	21.5
2/7/2019	20.3	20.4	Dry	22.2			21.2	Dry		41.7			
24/7/2019	20.3	20.3	Dry		22.0		21.2	Dry		42.7	20.0	Dry	
1/8/2019											Dry	125.5	123.2
20/8/2019	20.5	20.5	Dry		21.9		21.2	Dry		43.3	20.1		
1/9/2019											Dry	125.5	123.2
1/10/2019											Dry	25.5	21.8
12/11/2019	20.7	NM	Dry	21.7	21.6	Dry		Dry	44.1	42.9	20.2	Dry	25.5
13/12/2019	20.8	NM	Dry	21.7	21.6	Dry		Dry	44.2		20.3	Dry	25.7
4/2/2020	20.9	NM	Dry	21.6	21.5		21.2	Dry	44.4	43.2	20.4	Dry	25.8
20/4/2020	21.0	NM	Dry	21.6	21.4	Dry		Dry	44.7	43.3	20.5	Dry	25.7
1/5/2020											Dry	25.7	22.0
1/6/2020											Dry	25.9	22.0
1/7/2020											Dry	26.0	22.2
23/7/2020	21.2	21.4	No access	21.6	21.4	No access	No access	45.0	43.5	20.7	Dry	26.0	22.2
1/9/2020											Dry	26.0	22.3
1/10/2020											Dry	26.1	22.4
16/11/2020	21.6	21.4	Dry	21.6	21.7	Dry		Dry	44.7	43.8	20.9	Dry	26.1
1/12/2020											Dry	26.2	22.5
26/1/2021	21.7	21.4	Dry	21.7	21.7	Dry		Dry	44.8	44.0	20.9	Dry	26.2
1/2/2021											Dry	26.3	22.7
1/3/2021											Dry	26.4	22.8
1/4/2021											Dry	26.4	22.8
19/5/2021	21.6	21.9	Dry	21.9	23.2	Dry		Dry	45.5	44.1	21.2	Dry	26.5
1/6/2021											Dry	26.4	22.8
1/7/2021											Dry	26.5	22.8
17/8/2021	21.8	22.0	Dry	23.2	24.5	Dry		Dry	45.6	44.3	21.3	Dry	26.5
1/9/2021											Dry	26.5	22.9
1/10/2021											Dry	26.6	23.0
1/11/2021											Dry	26.7	
1/12/2021											Dry	26.7	123.2
25/1/2022	22.0	22.2	Dry	22.2	25.0	Dry		Dry	39.7	42.9	21.3	Dry	26.4
10/2/2022	21.9	22.2	Dry	22.2	25.1	Dry		Dry	39.5	42.9	21.4	Dry	26.5
1/3/2022											Dry	26.7	23.0
1/4/2022											Dry	26.8	23.1
1/5/2022											Dry	26.9	23.2
1/6/2022	21.9	22.4	Dry	22.3	25.0		21.0	Dry	38.4	41.8	21.6	Dry	26.8
2/8/2022	21.9	22.9	Dry	22.8	26.3			Dry	39.0	42.0	Dry	Dry	26.6
6/10/2022	22.0	22.3	Dry	22.9	26.3			Dry	42.7	42.7	Dry	Dry	26.5
16/2/2023			Dry	22.7			19.6	Dry		42.5	21.2	Dry	26.6
1/3/2023											Dry	26.6	22.7
1/4/2023											Dry	26.5	22.7
16/5/2023	21.9	22.2	Dry	23.1	27.1		19.5	Dry		42.6	21.3	Dry	26.5
1/6/2023											Dry	26.5	22.7
1/7/2023											Dry	26.5	22.7
14/8/2023	22.1	22.2	Dry	23.2	30.0		19.7	Dry		40.7	21.5	Dry	26.7
1/9/2023											Dry	26.8	22.9

Date	JMR4WA	JMR4WP2	JMR22WA	JMR22WP	JN1119E	JMR23WA	JMR24WA	JMR24WP	JMR24WP2	JMR25WA	JMR26WA	JP0911T	JP0912T
1/10/2023											Dry	26.9	23.0
21/11/2023	22.2	22.4	Dry	25.3	28.1	19.9	Dry		39.6	Dry			
8/2/2024	22.2	22.4	Dry	25.6	27.5	19.9	Dry		38.9	21.6			
8/5/2024	22.3	22.5	Dry	26.6	27.8	19.9	Dry		41.0				
6/8/2024	22.3	22.5	No access	No access	No access	20.0	Dry		41.7	Dry			
5/9/2024	22.3	22.5	Dry	24.2	27.9	20.0	Dry		41.7	Dry			
16/11/2024	22.4	22.6	No access	No access	No access	20.1	Dry		No access				
1/12/2024												27.6	23.5
1/1/2025												27.6	23.6
1/2/2025												27.6	
25/2/2025	22.5	22.7	No access	No access	No access	Dry	Dry		42.1	Dry			
1/3/2025												27.5	
1/4/2025												27.6	
1/5/2025	22.5	22.7	Dry	23.8	28.3	Dry	Dry		42.1	Dry		27.4	
1/6/2025												27.4	
1/7/2025												27.4	
1/8/2025	22.5	22.7	Dry	24.1	29.0	20.0	Dry		41.4	Dry		27.5	23.4
1/9/2025												27.6	
1/10/2025												27.7	
1/11/2025												27.8	
24/11/2025	22.3	22.7	Dry	24.2	28.3	Dry	Dry		41.4	Dry			

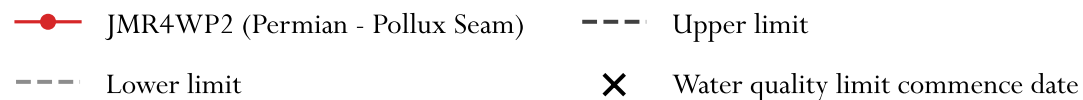
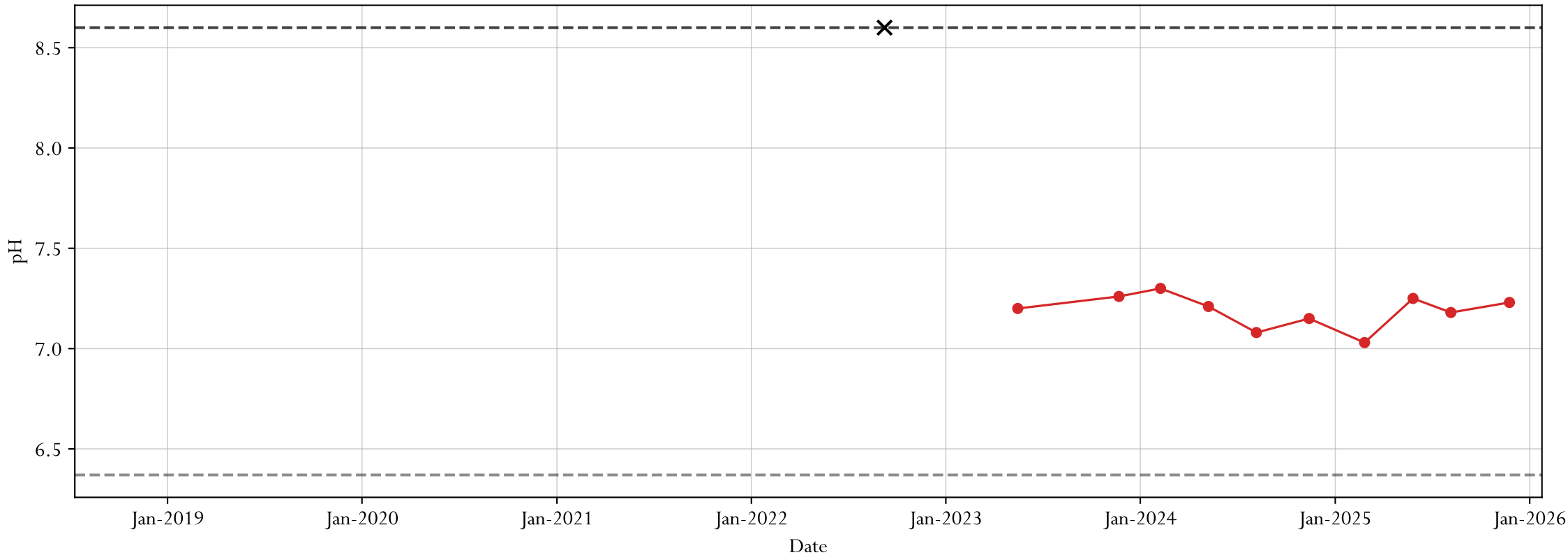
Appendix C Water quality figures

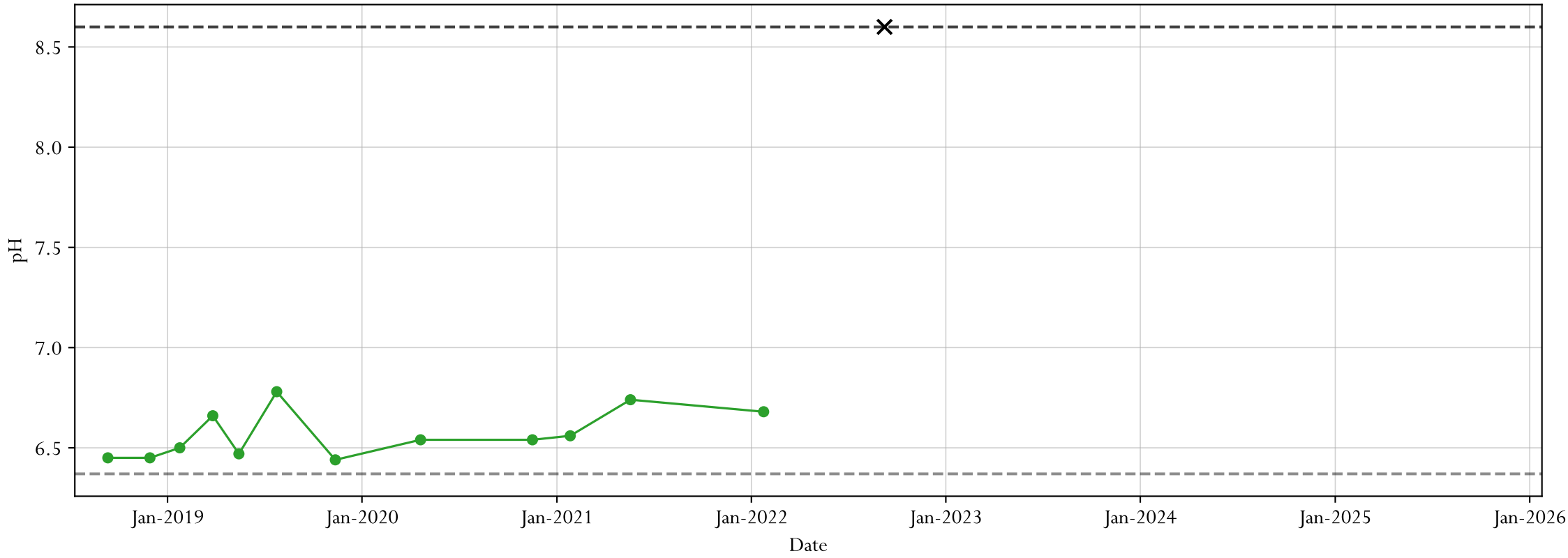


—●— JMR4WA (Alluvium) - - - Upper limit
- - - Lower limit X Water quality limit commence date

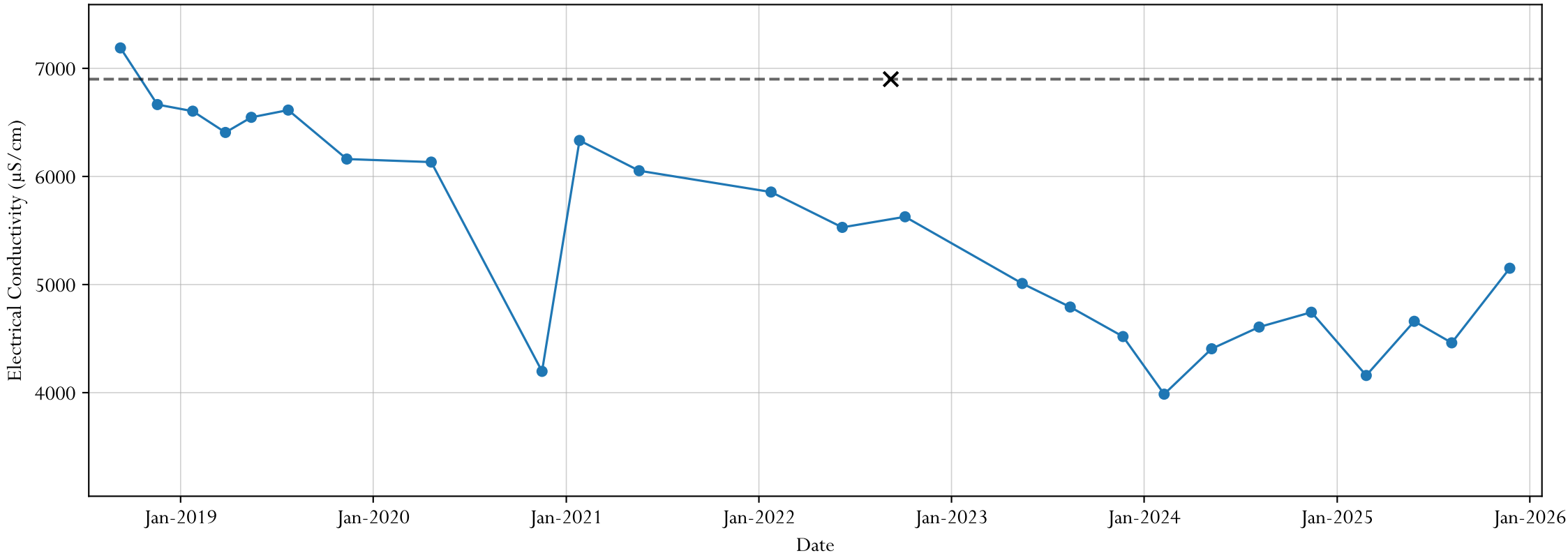


- JMR24WP2 (Permian - Pollux Seam)
- Upper limit
- Lower limit
- × Water quality limit commence date

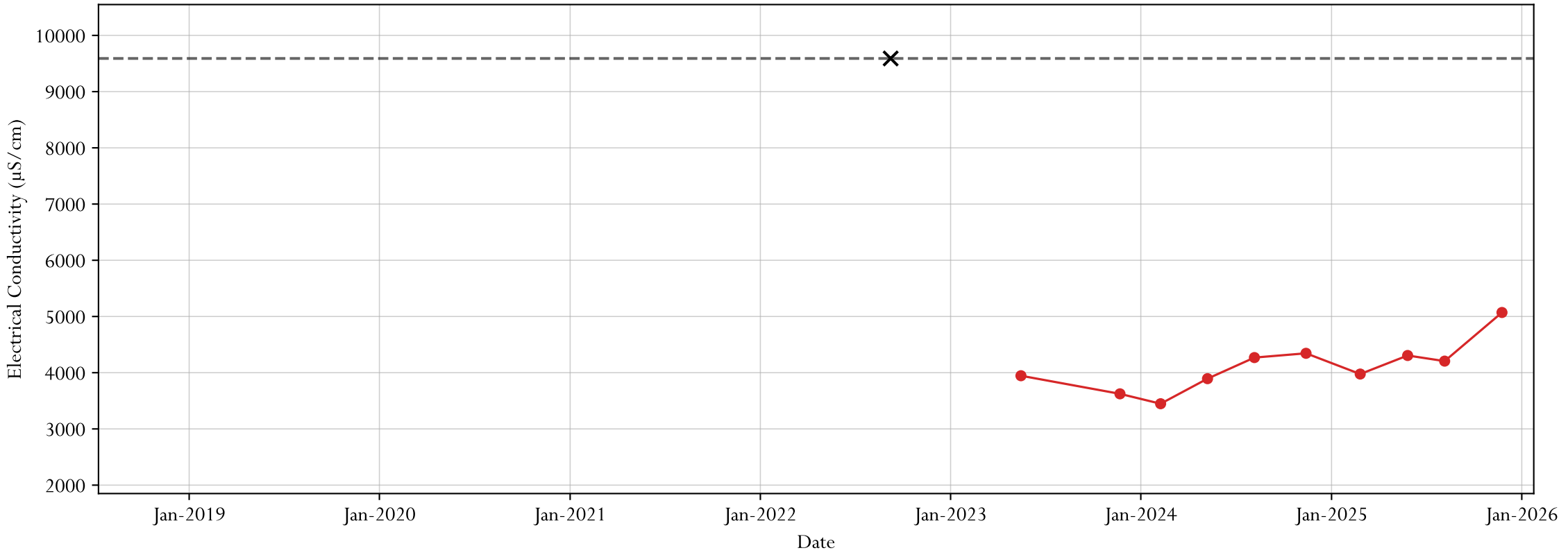




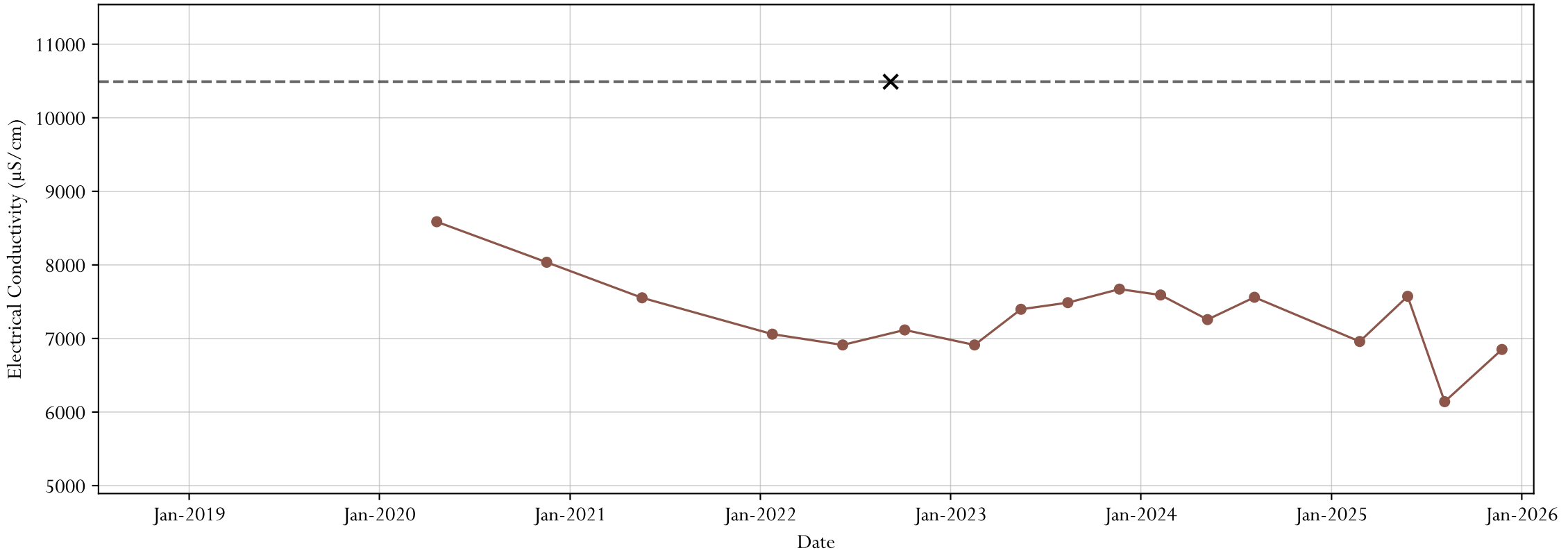
—●— JMR25WA (Alluvium) - - - Upper limit
- - - Lower limit X Water quality limit commence date



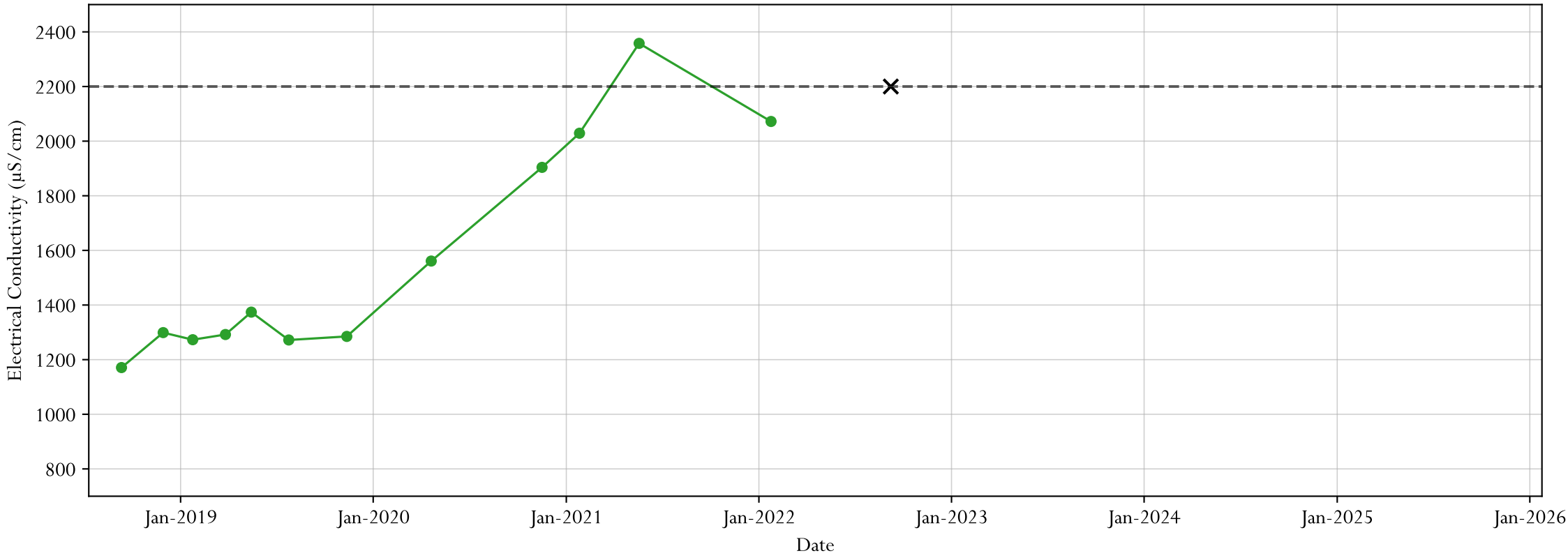
—●— JMR4WA (Alluvium) X Water quality limit commence date
--- Upper limit



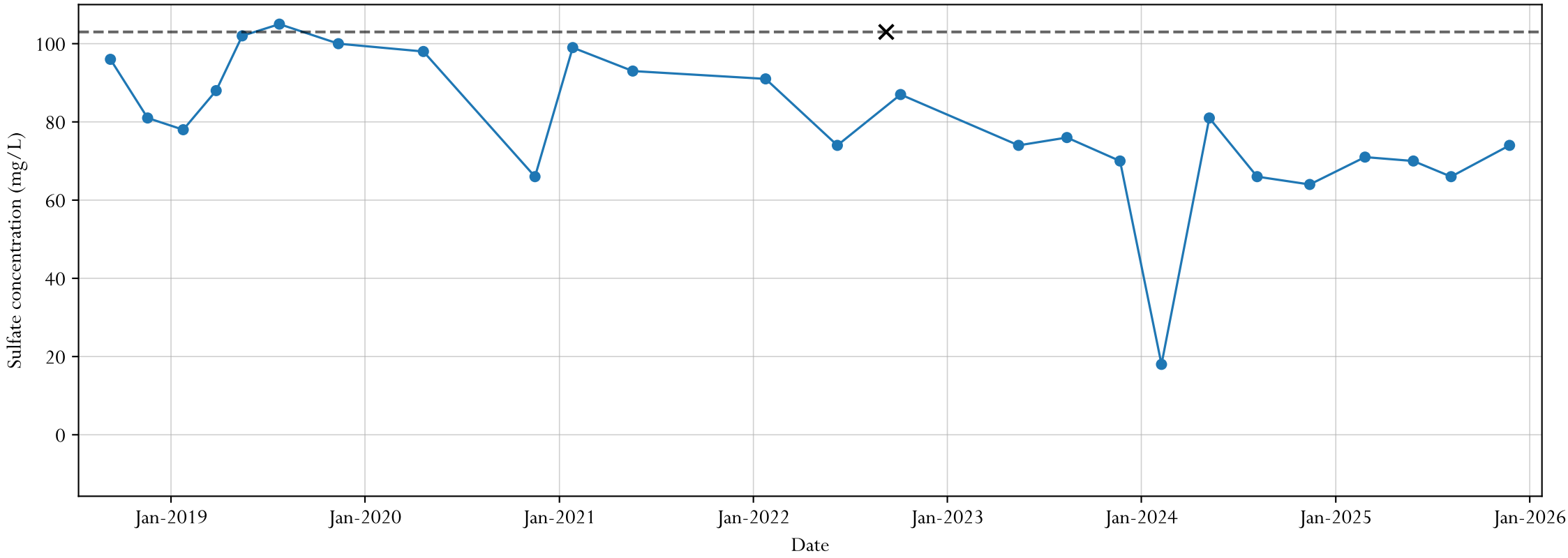
—●— JMR4WP2 (Permian - Pollux Seam) ✕ Water quality limit commence date
--- Upper limit



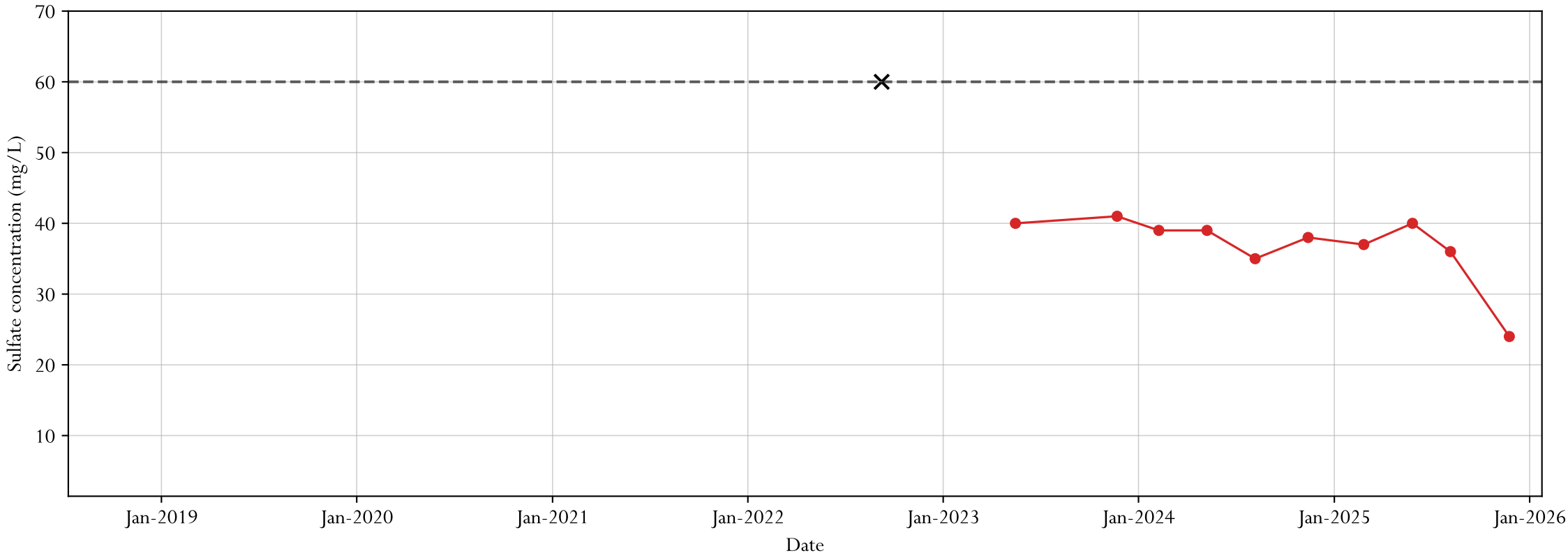
—●— JMR24WP2 (Permian - Pollux Seam) X Water quality limit commence date
--- Upper limit



—●— JMR25WA (Alluvium) ✕ Water quality limit commence date
--- Upper limit

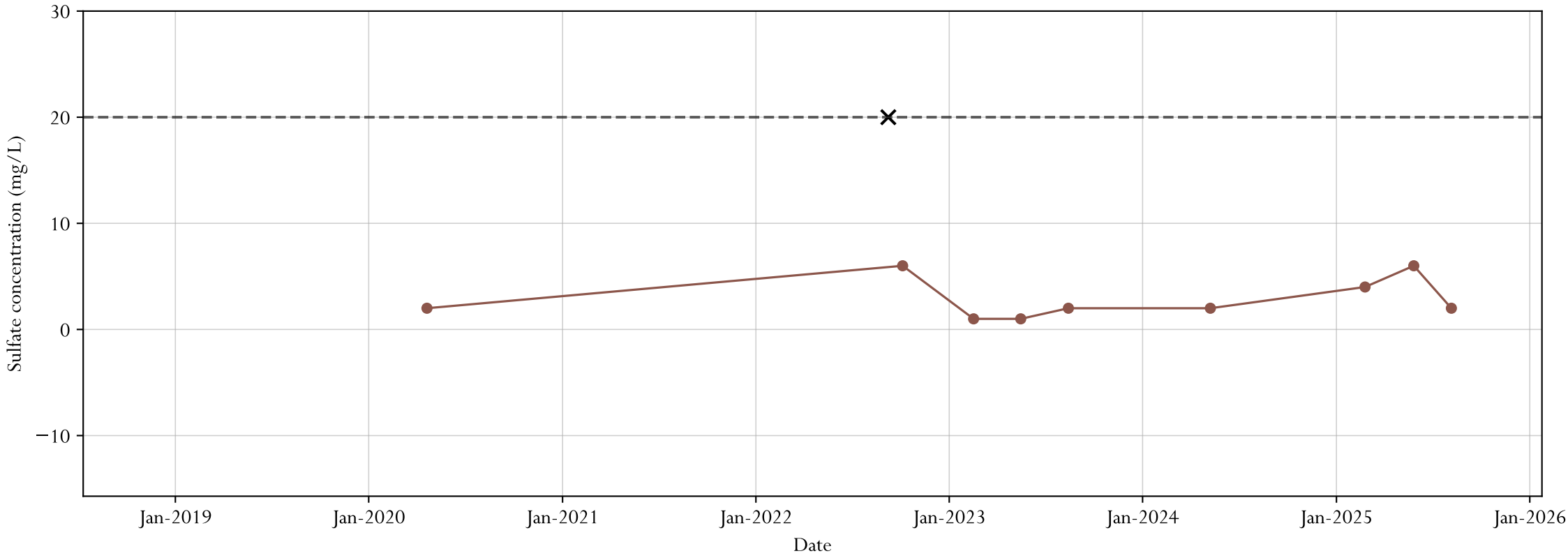


—●— JMR4WA (Alluvium) ✕ Water quality limit commence date
--- Upper limit

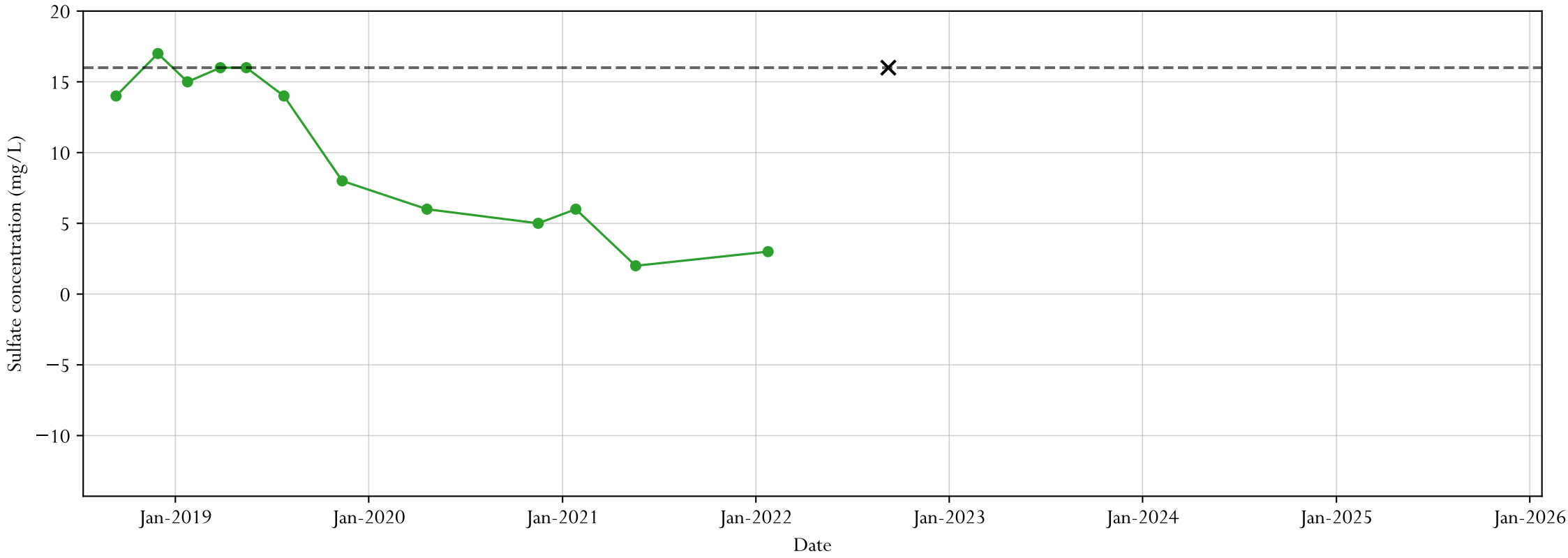


—●— JMR4WP2 (Permian - Pollux Seam) ✕ Water quality limit commence date

--- Upper limit

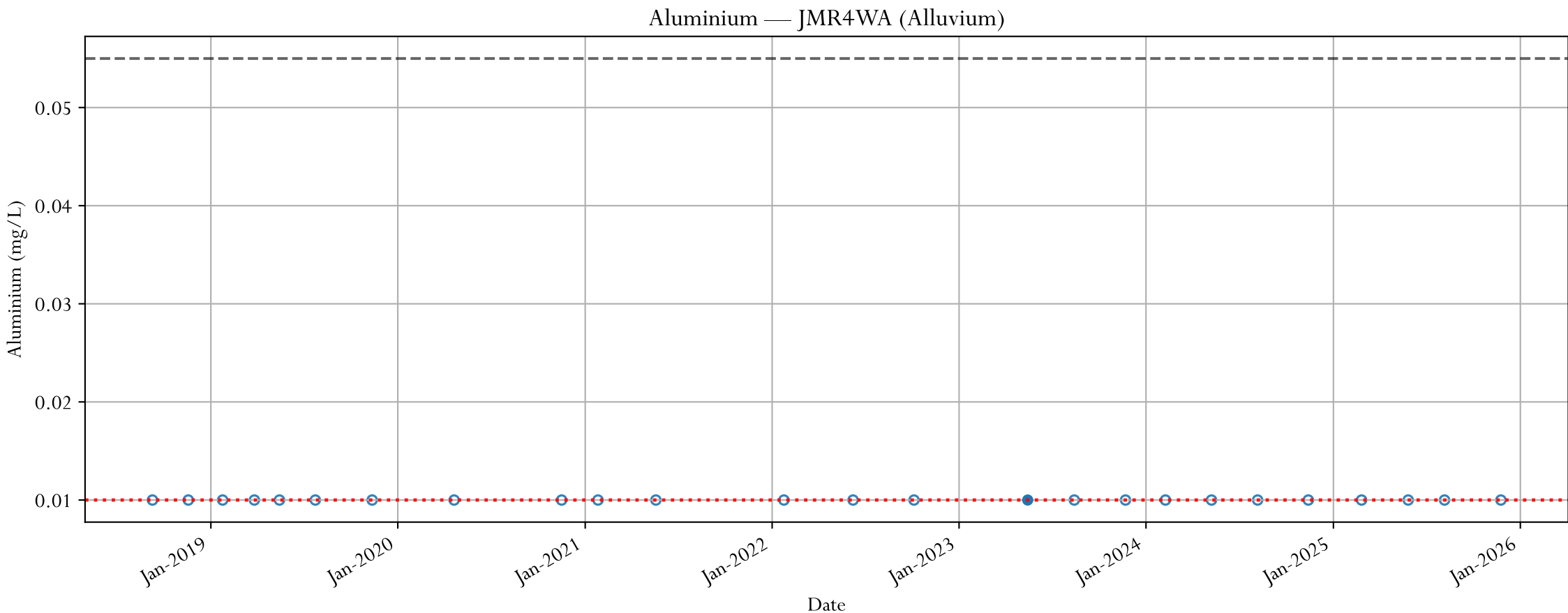


—●— JMR24WP2 (Permian - Pollux Seam) ✕ Water quality limit commence date
- - - Upper limit

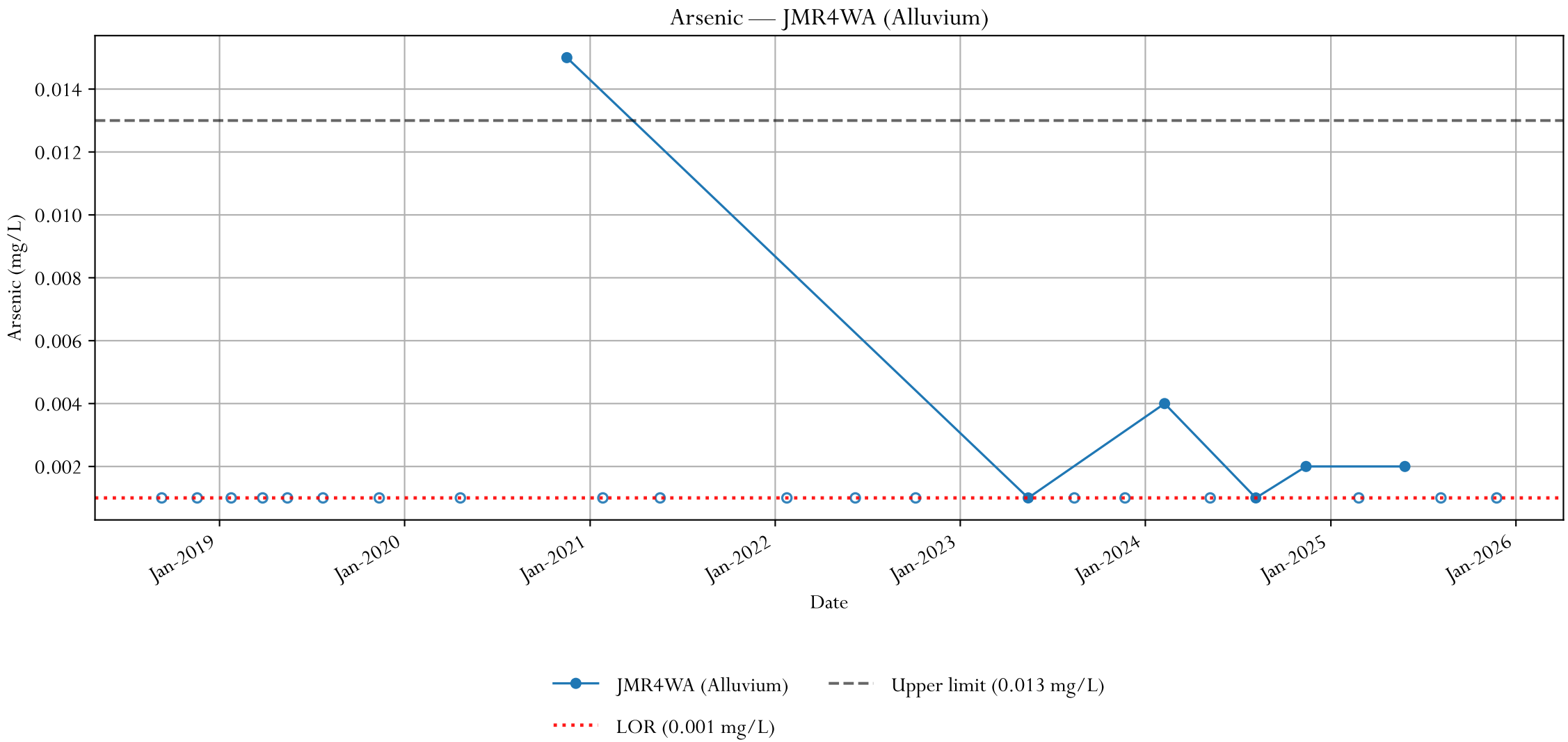


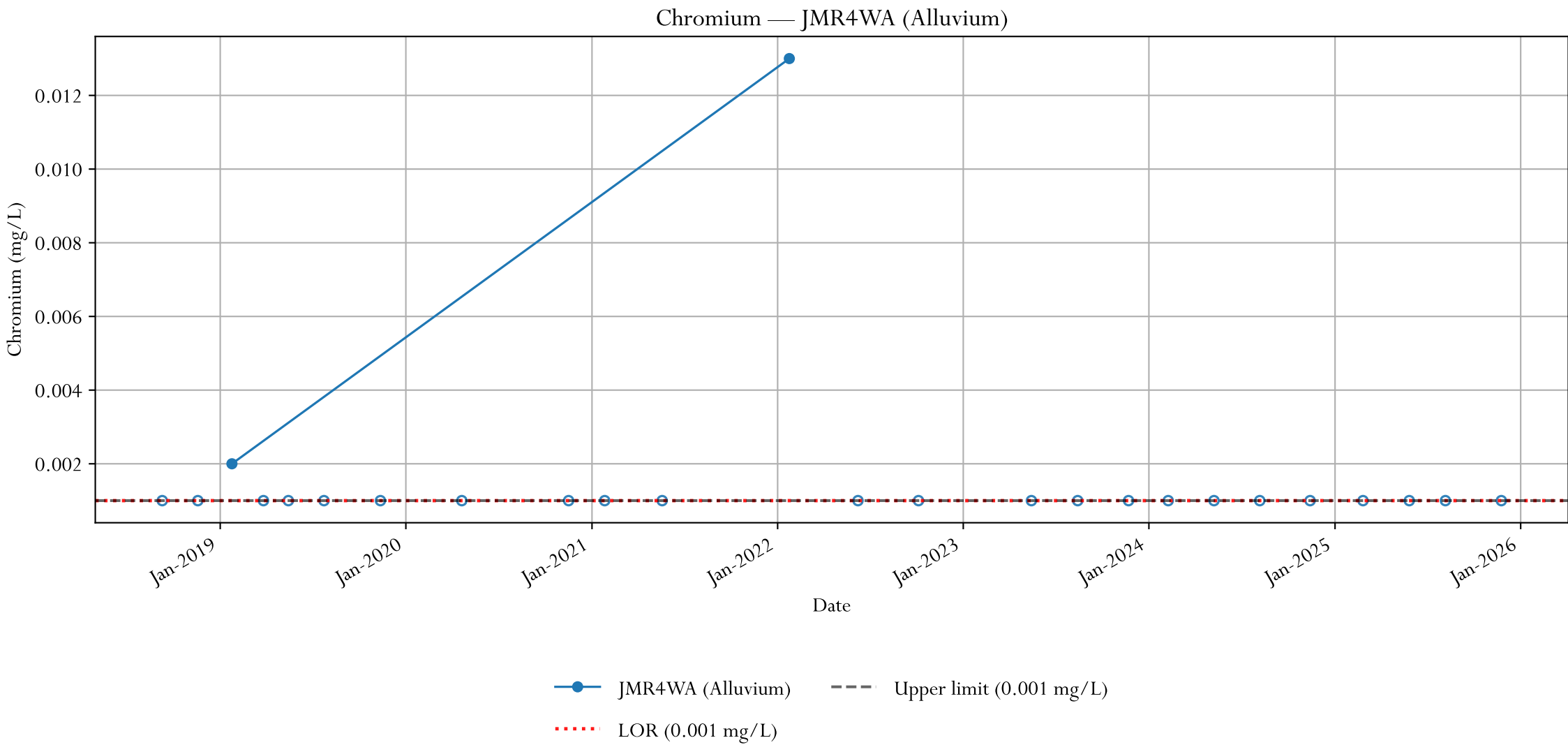
JMR25WA (Alluvium) X Water quality limit commence date

Upper limit

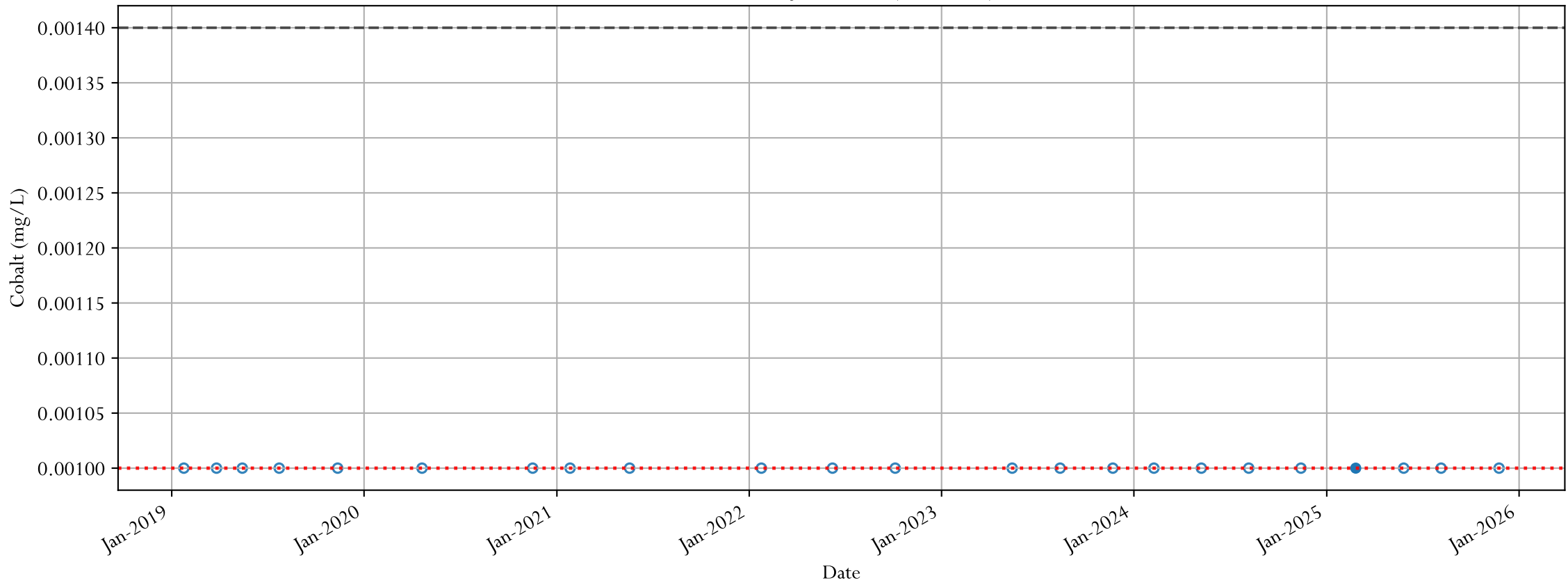


—●— JMR4WA (Alluvium) - - - Upper limit (0.055 mg/L)
... LOR (0.01 mg/L)





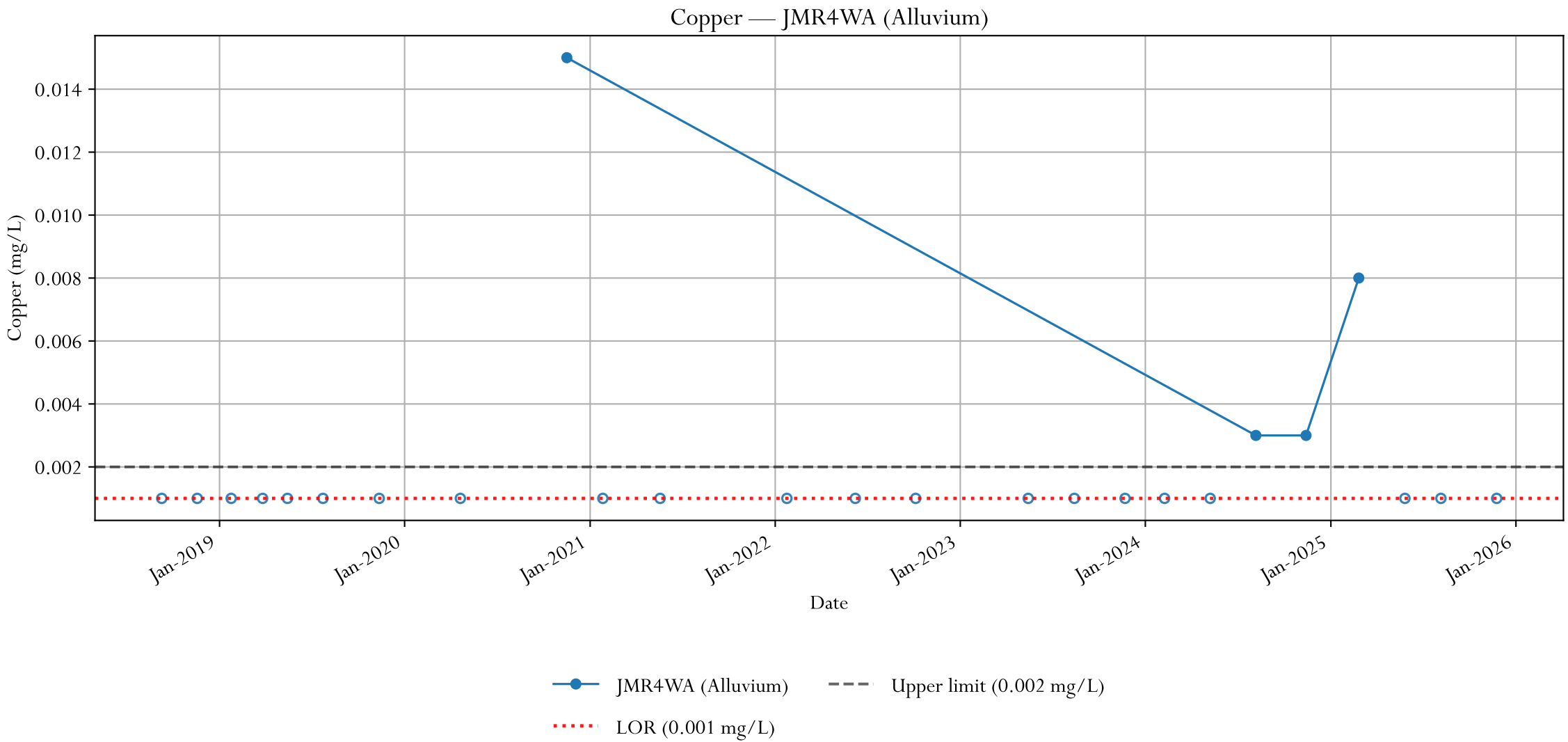
Cobalt — JMR4WA (Alluvium)

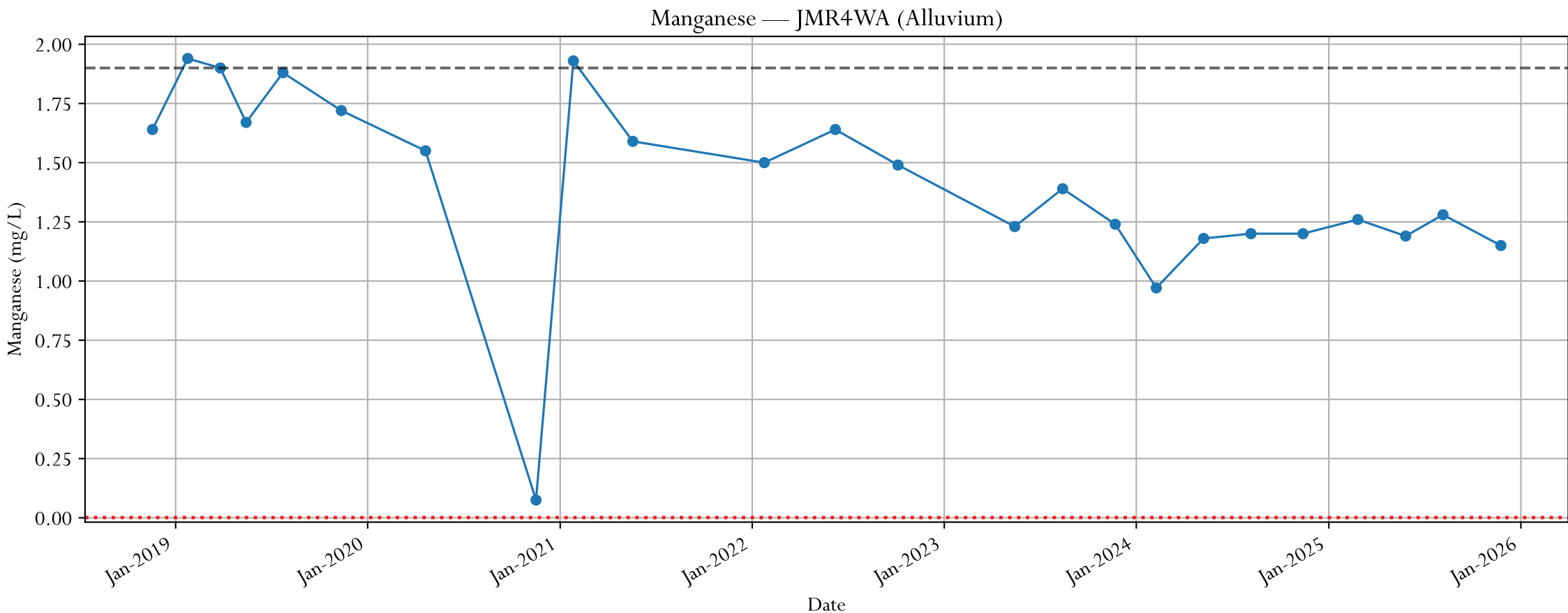


—●— JMR4WA (Alluvium)

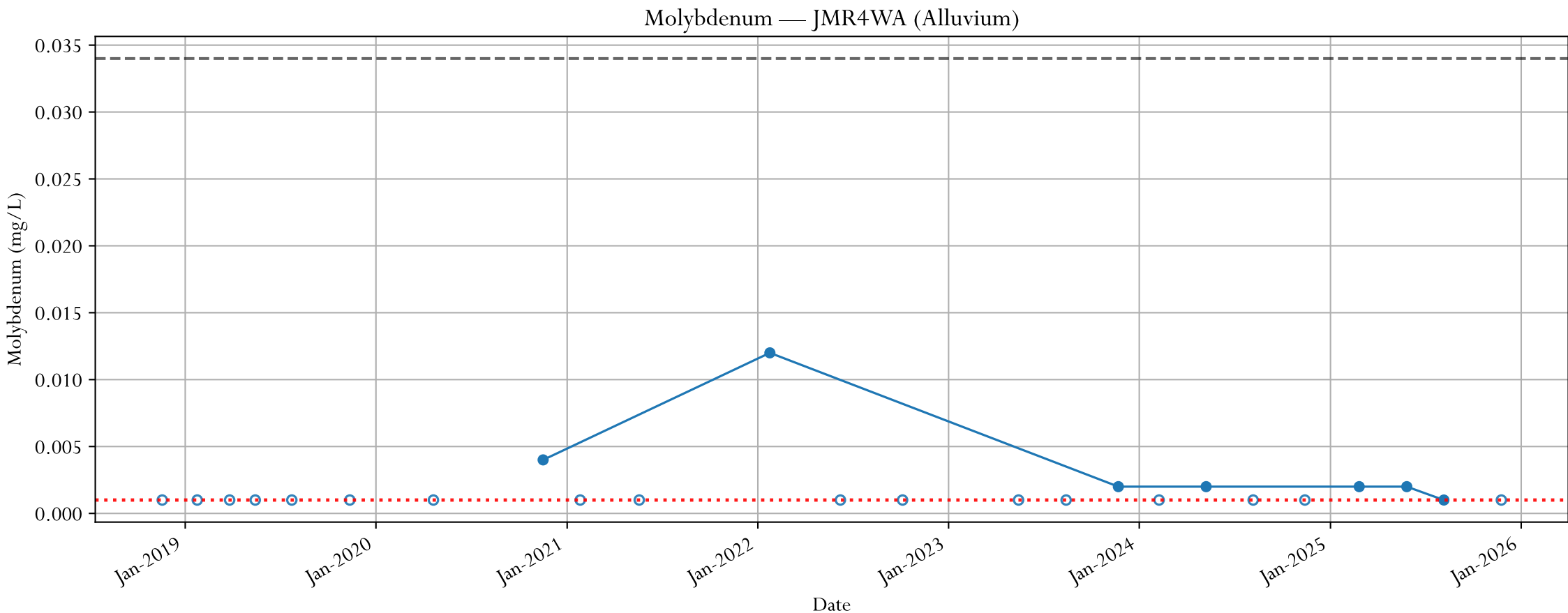
--- Upper limit (0.0014 mg/L)

... LOR (0.001 mg/L)

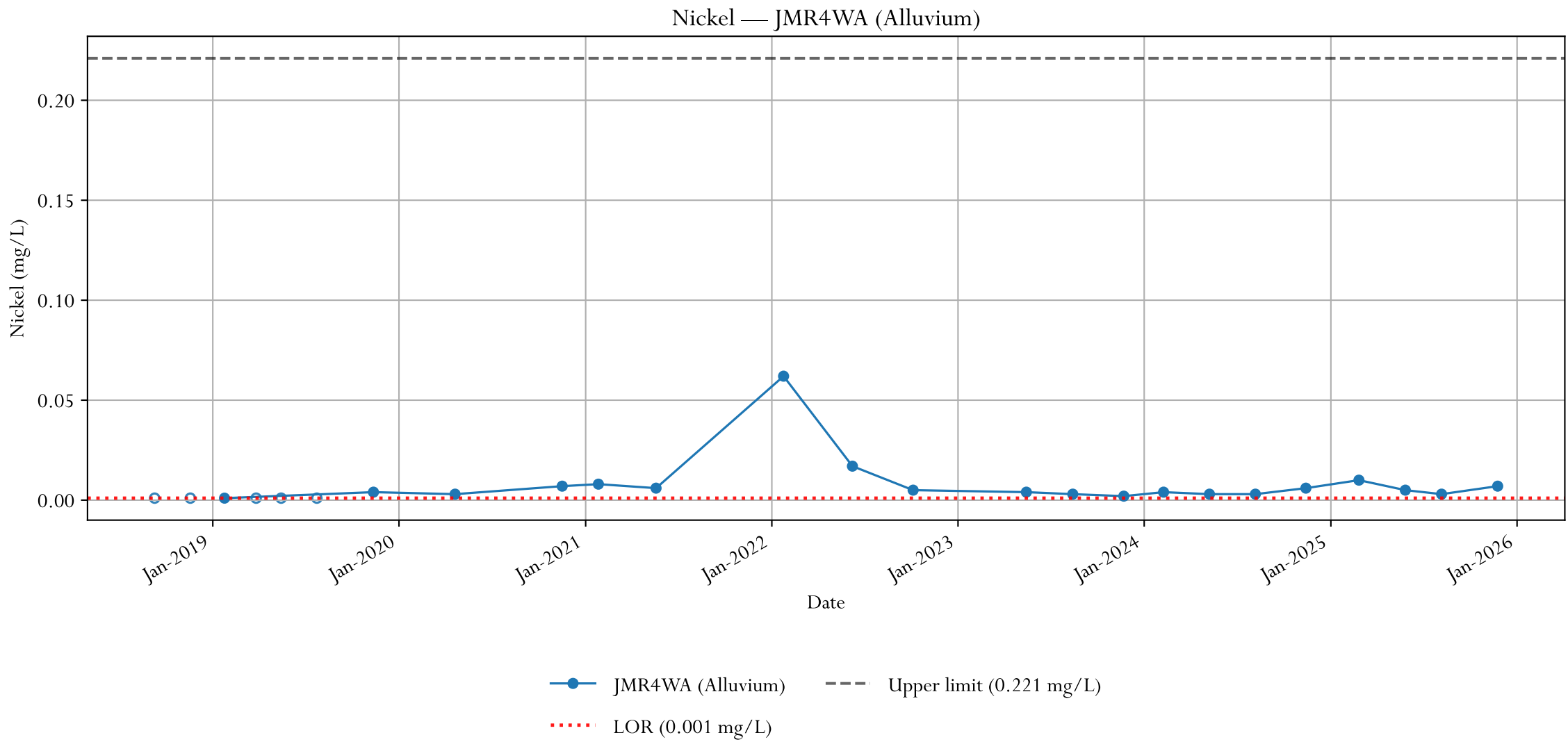




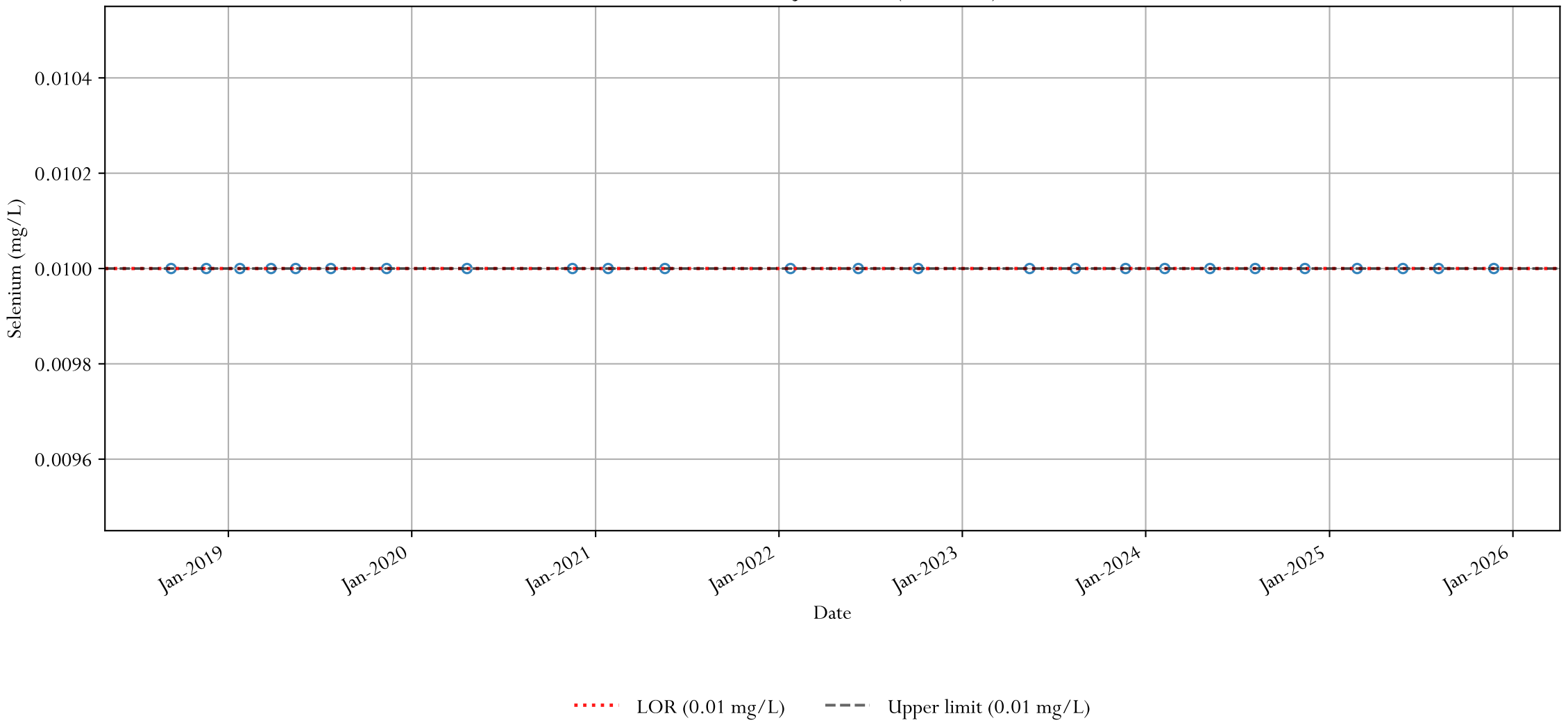
—●— JMR4WA (Alluvium) - - - Upper limit (1.9 mg/L)
..... LOR (0.001 mg/L)



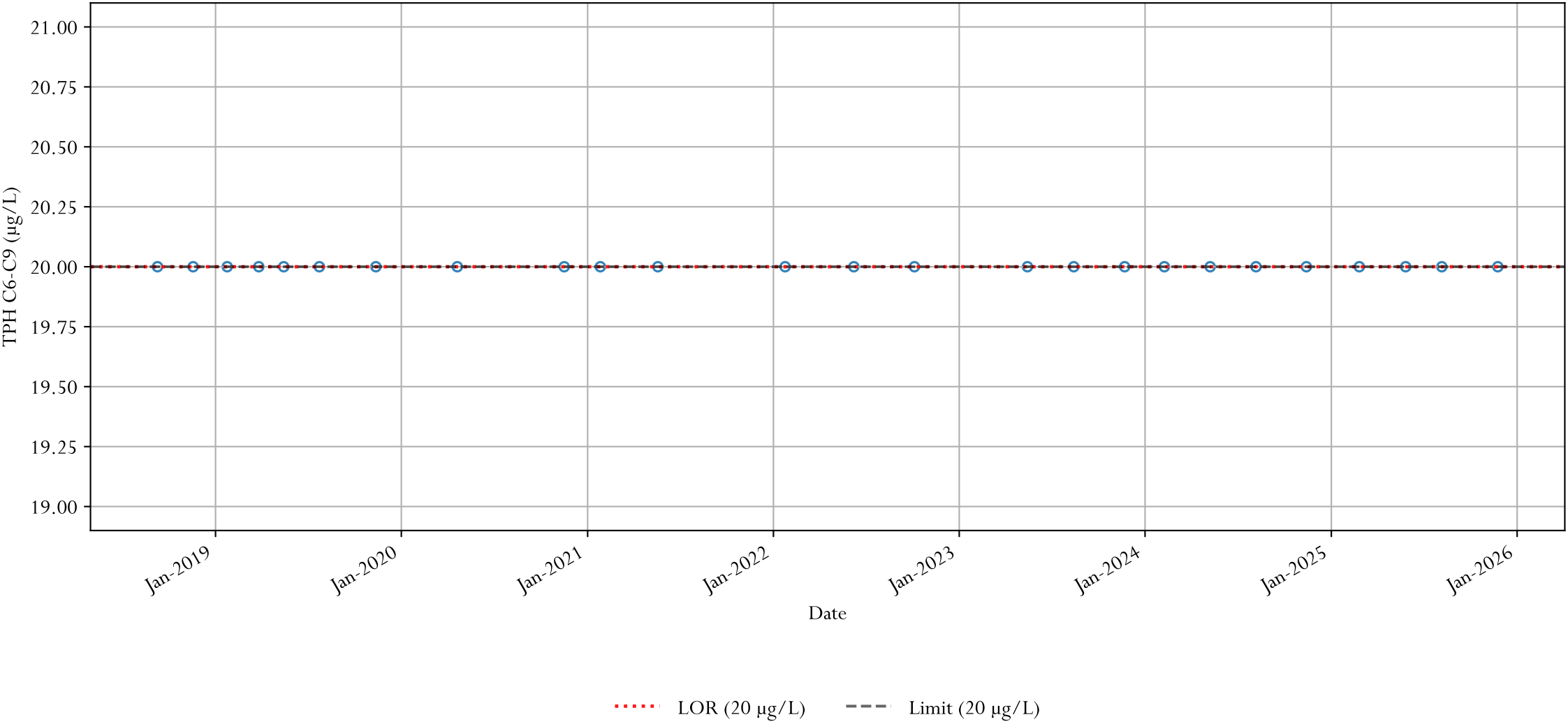
—●— JMR4WA (Alluvium) - - - Upper limit (0.034 mg/L)
- - - LOR (0.001 mg/L)



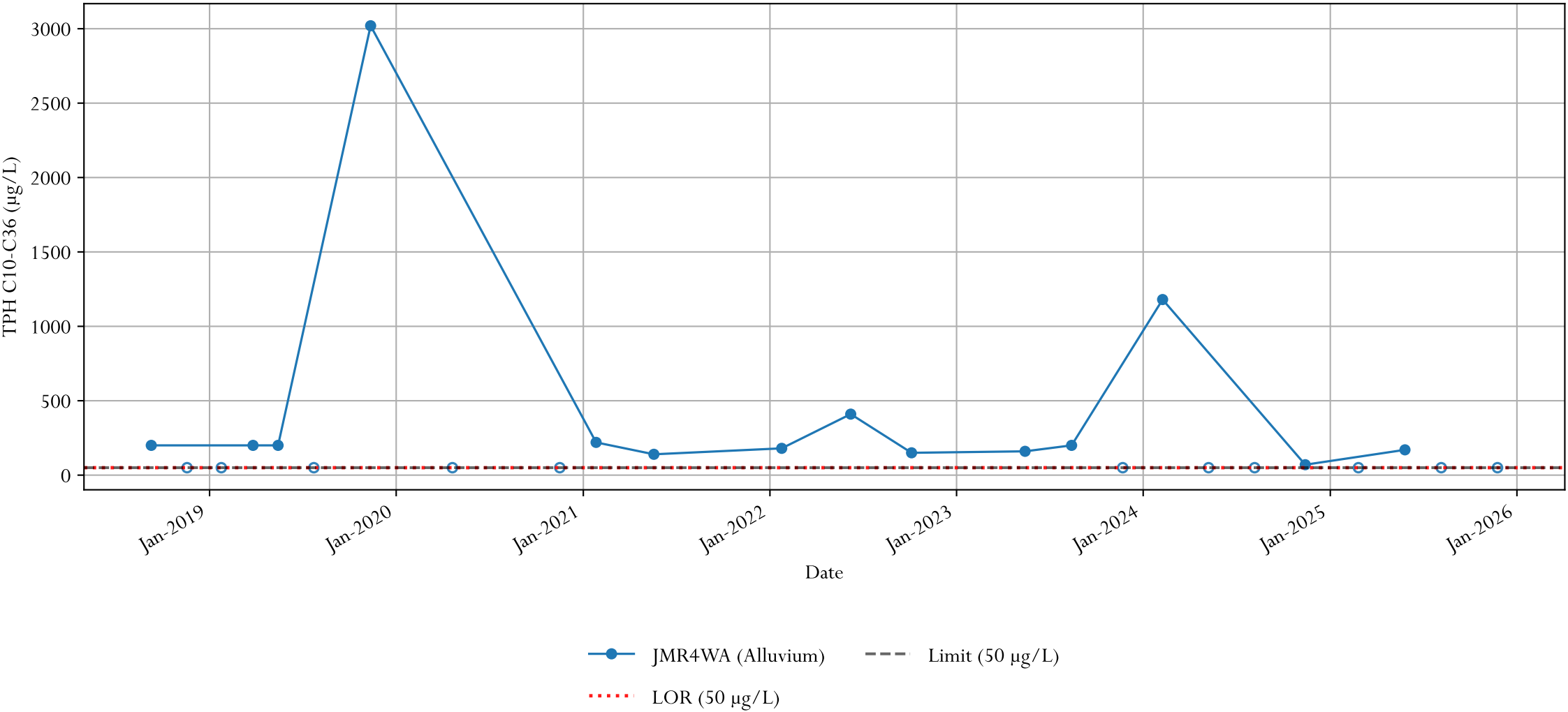
Selenium — JMR4WA (Alluvium)

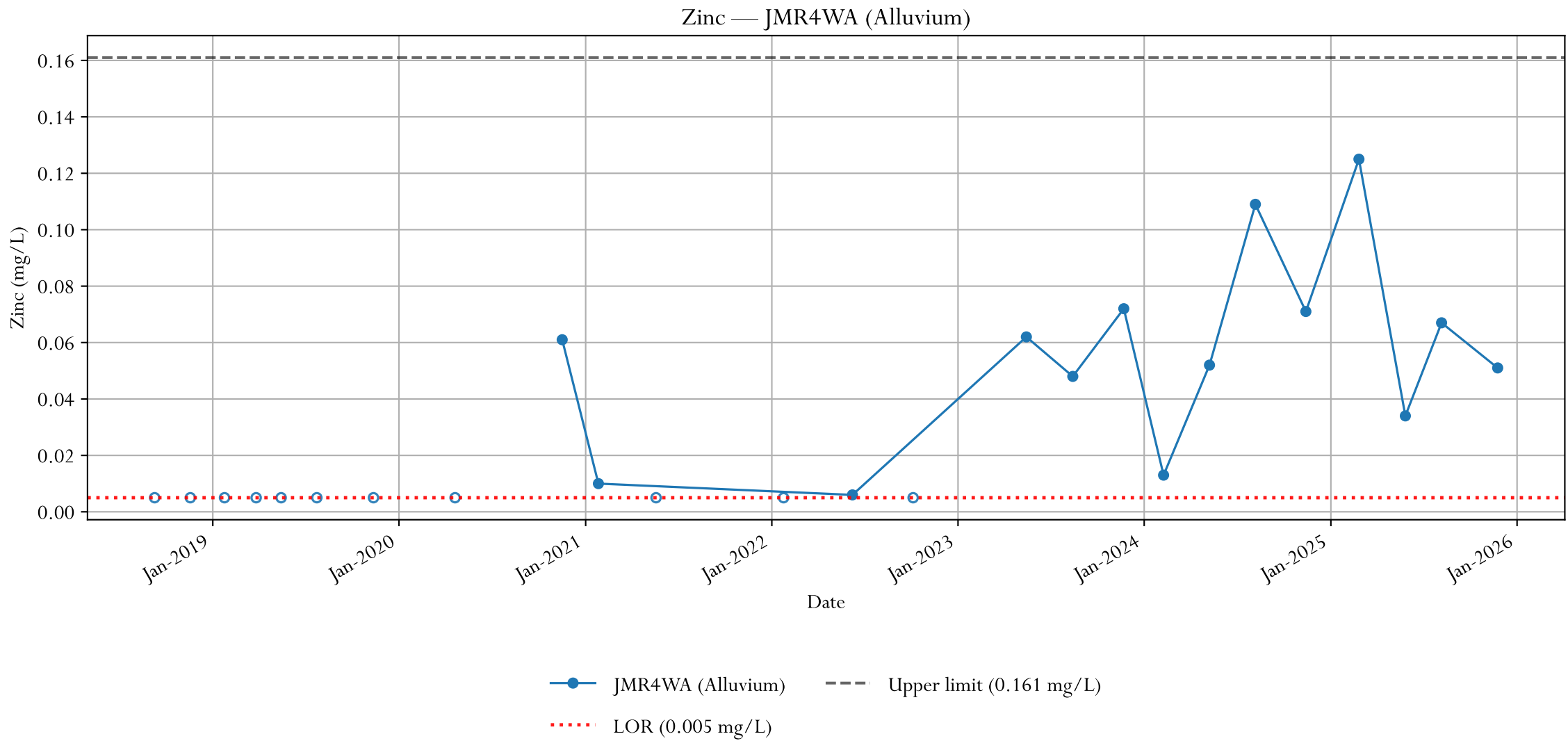


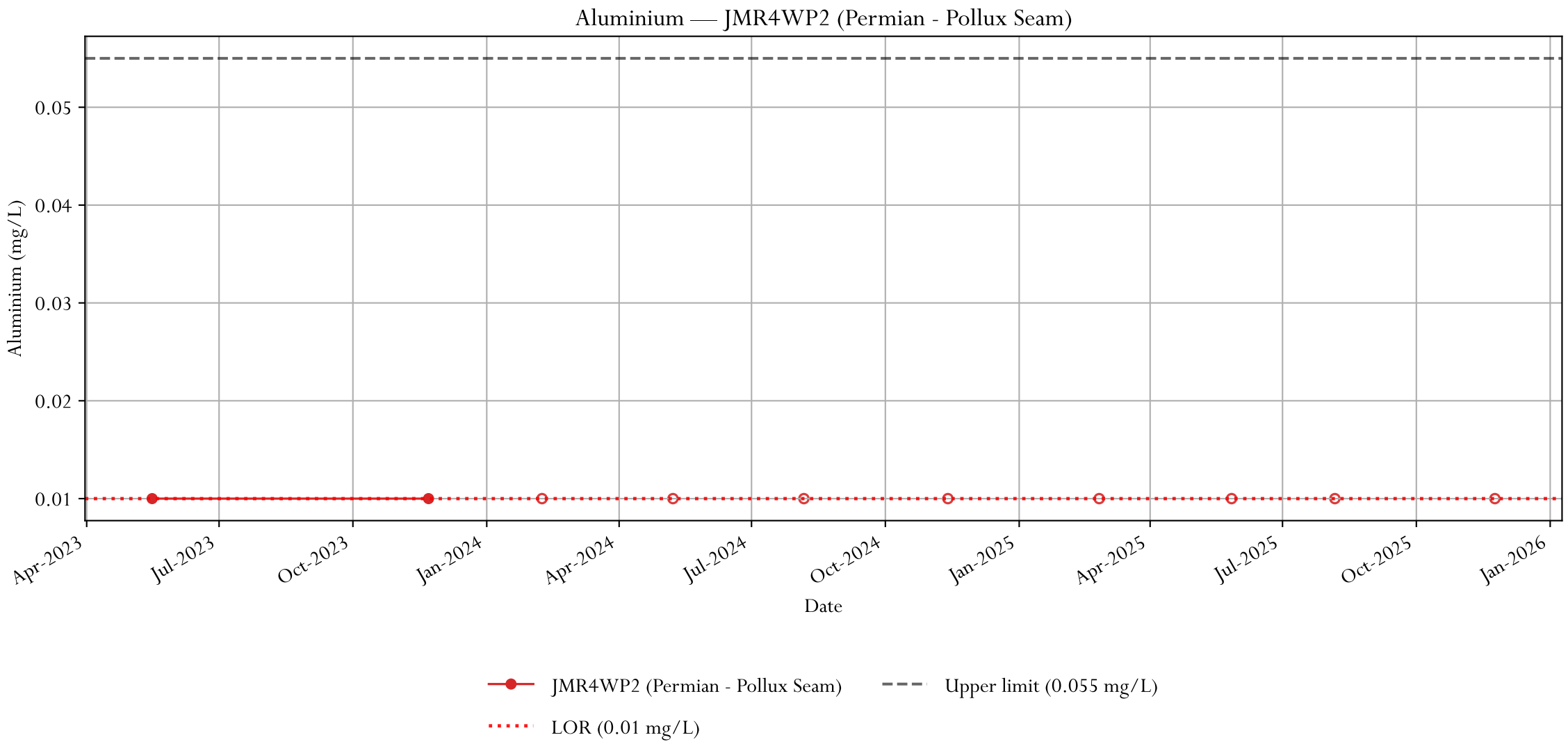
TPH C6-C9 — JMR4WA (Alluvium)

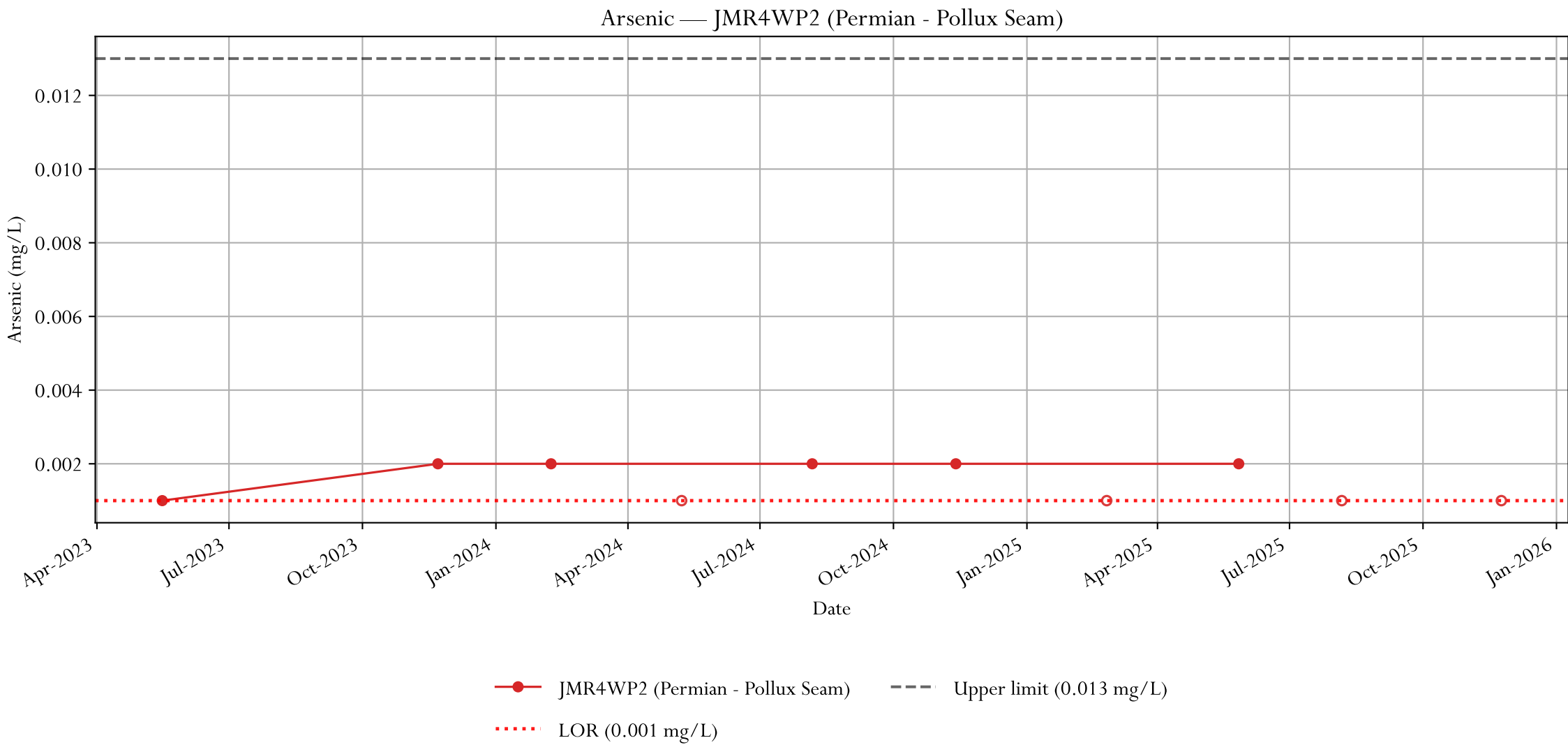


TPH C10-C36 — JMR4WA (Alluvium)

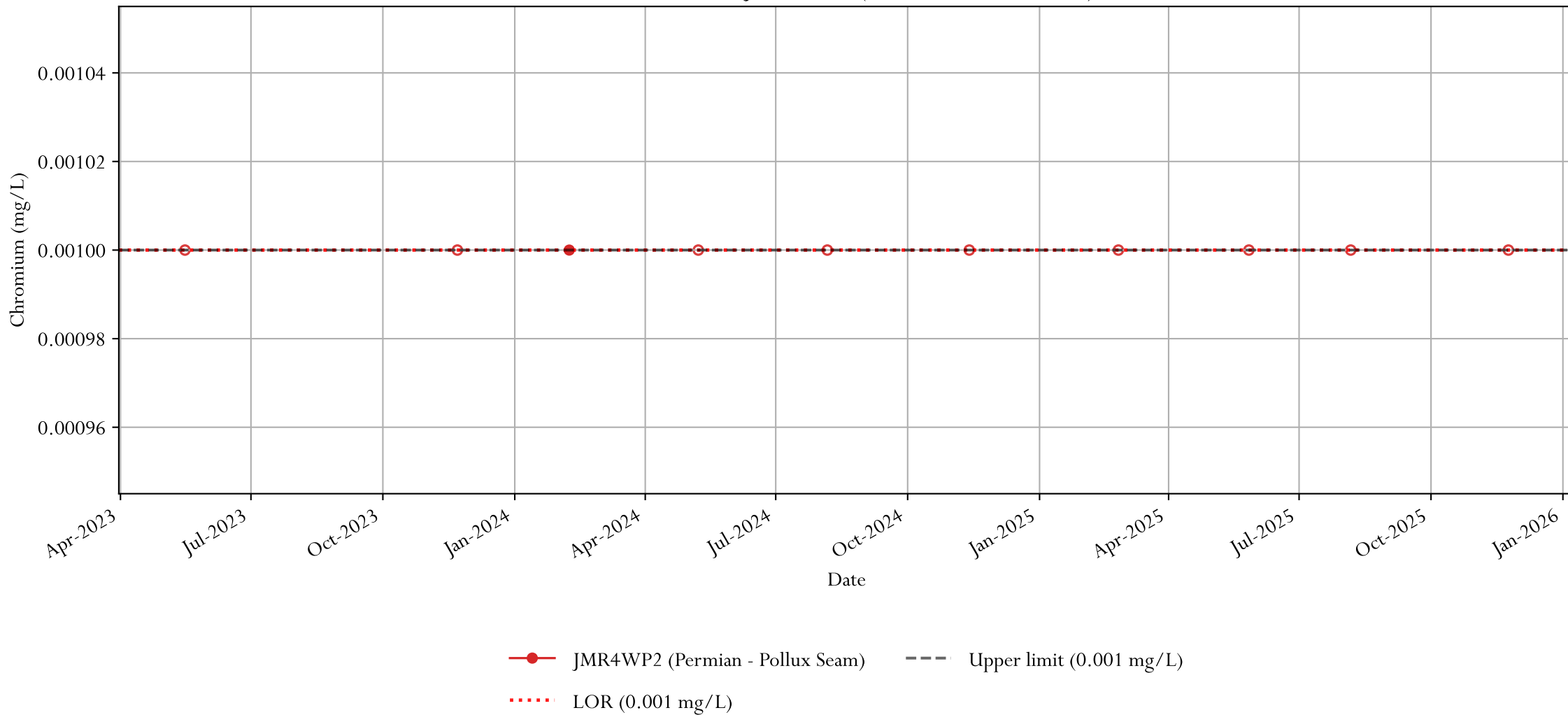




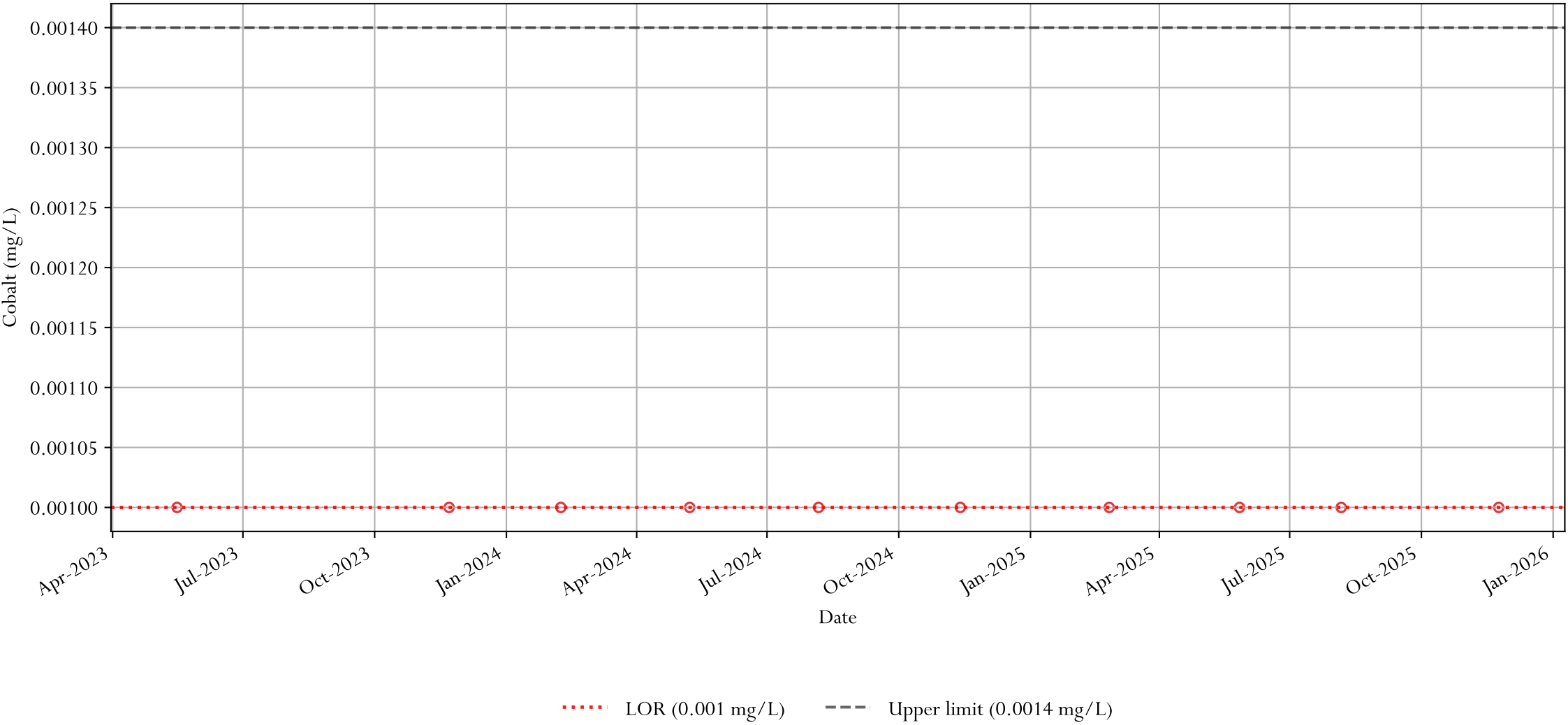




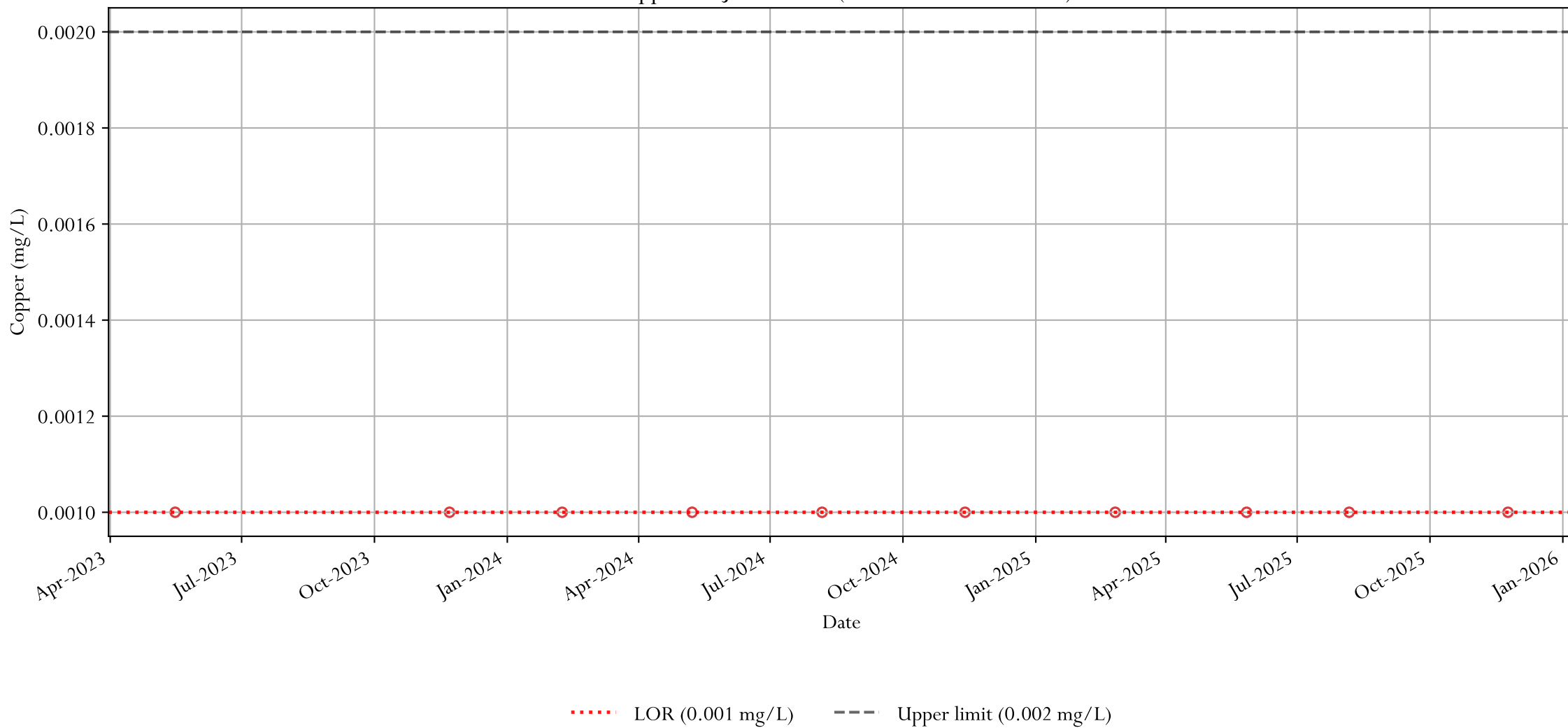
Chromium — JMR4WP2 (Permian - Pollux Seam)

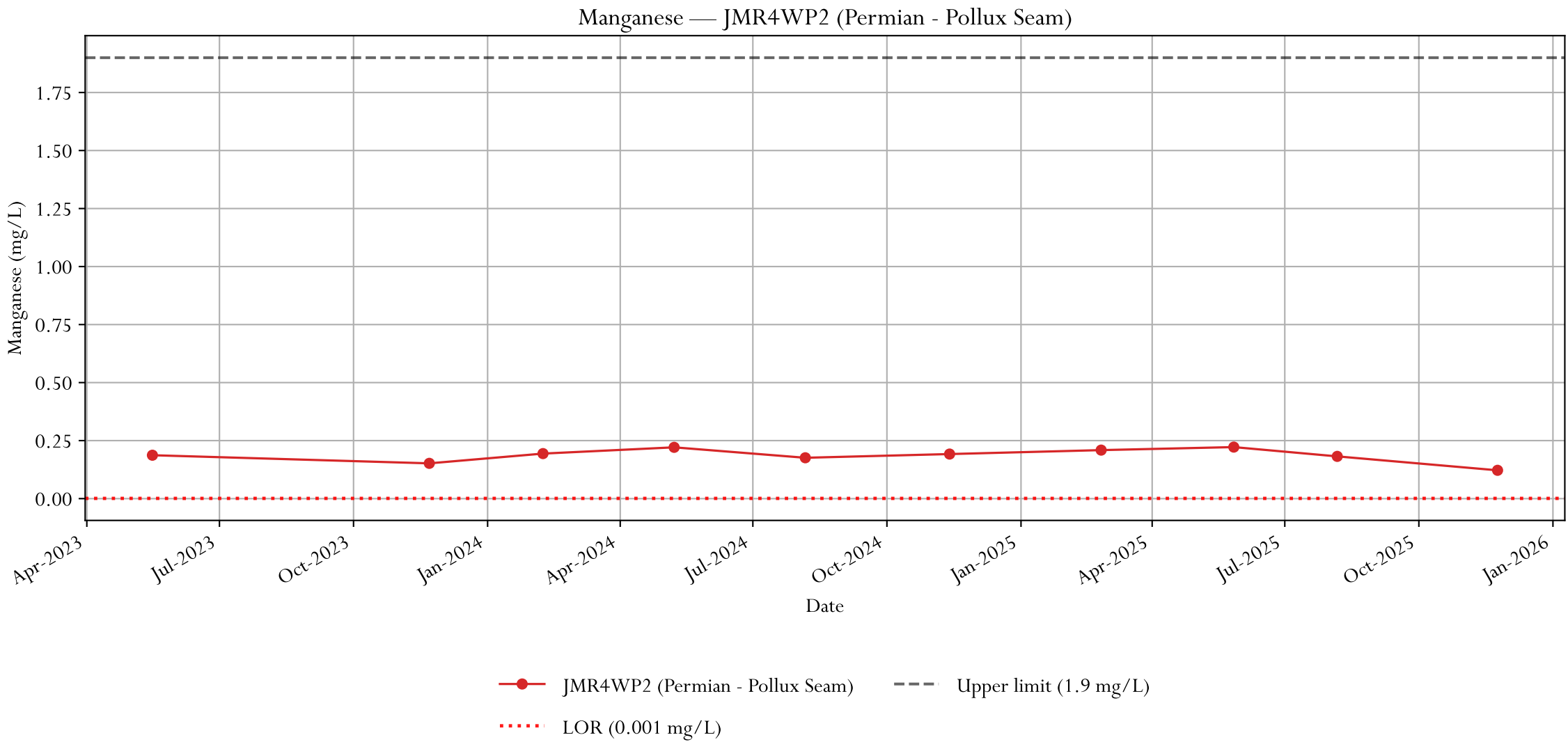


Cobalt — JMR4WP2 (Permian - Pollux Seam)

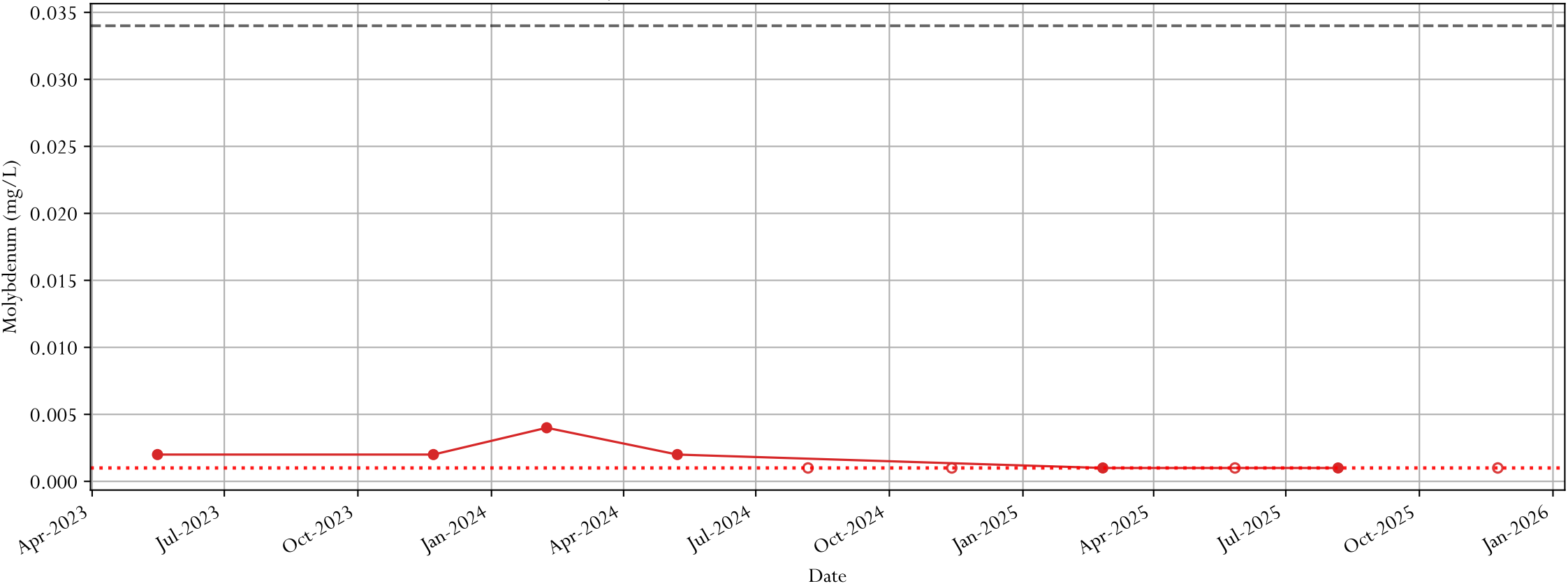


Copper — JMR4WP2 (Permian - Pollux Seam)

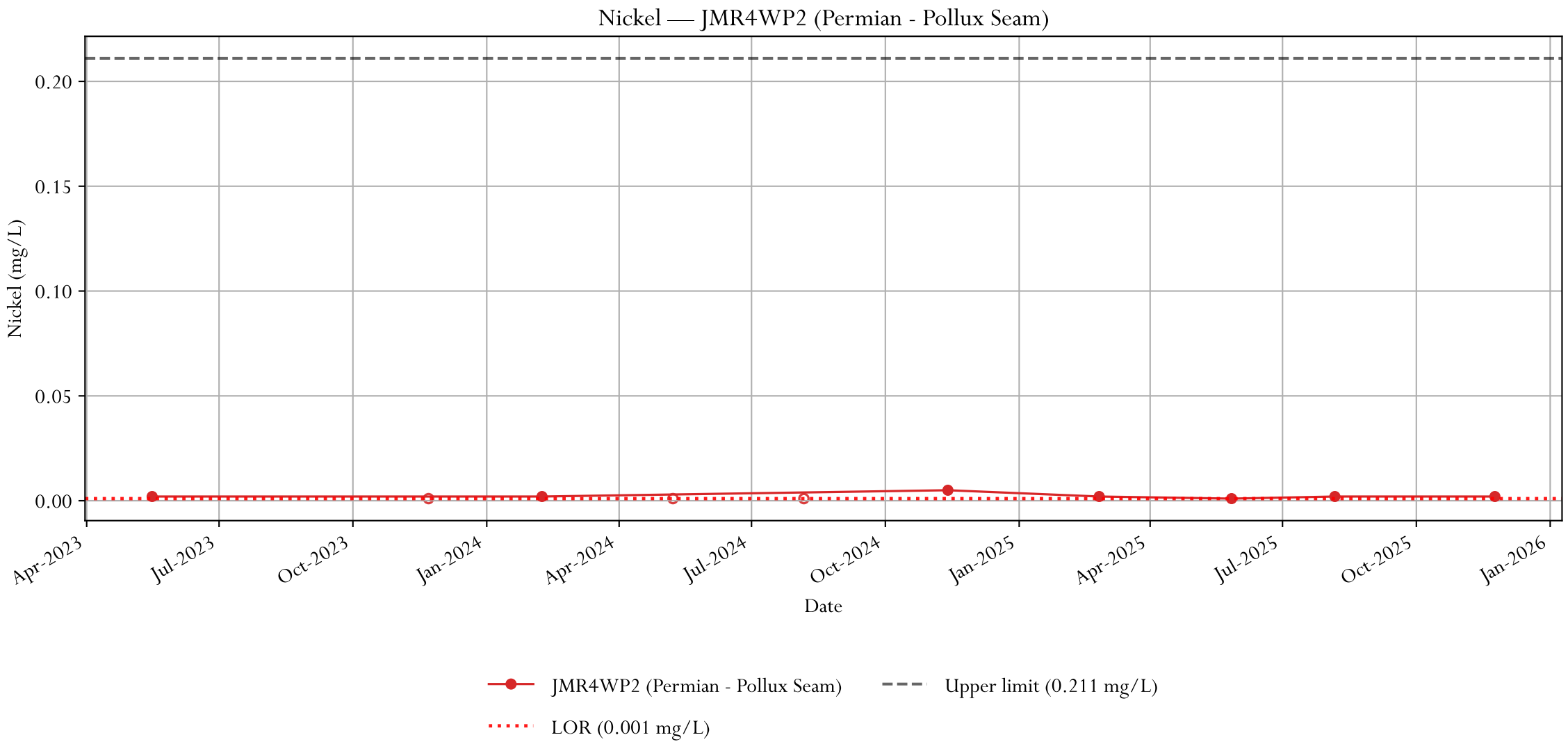




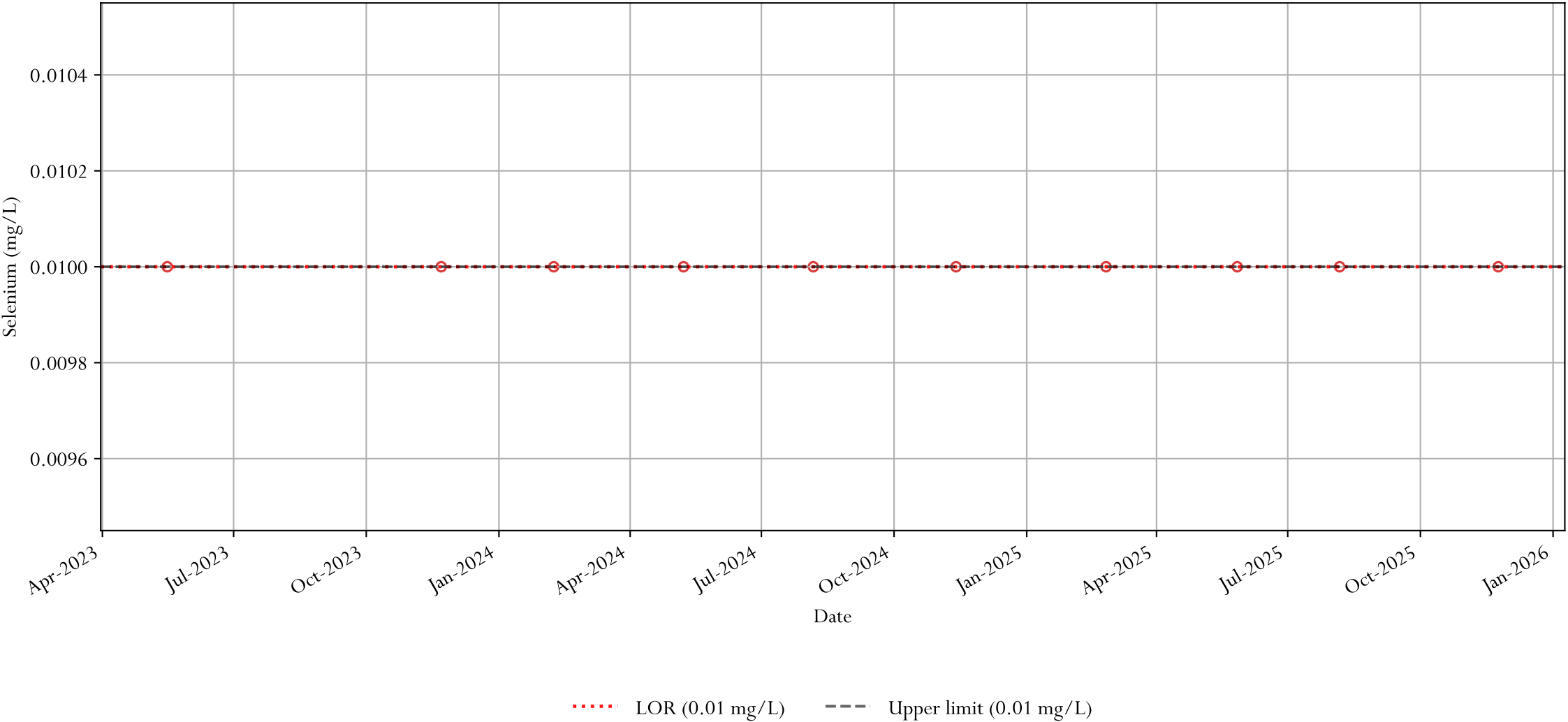
Molybdenum — JMR4WP2 (Permian - Pollux Seam)



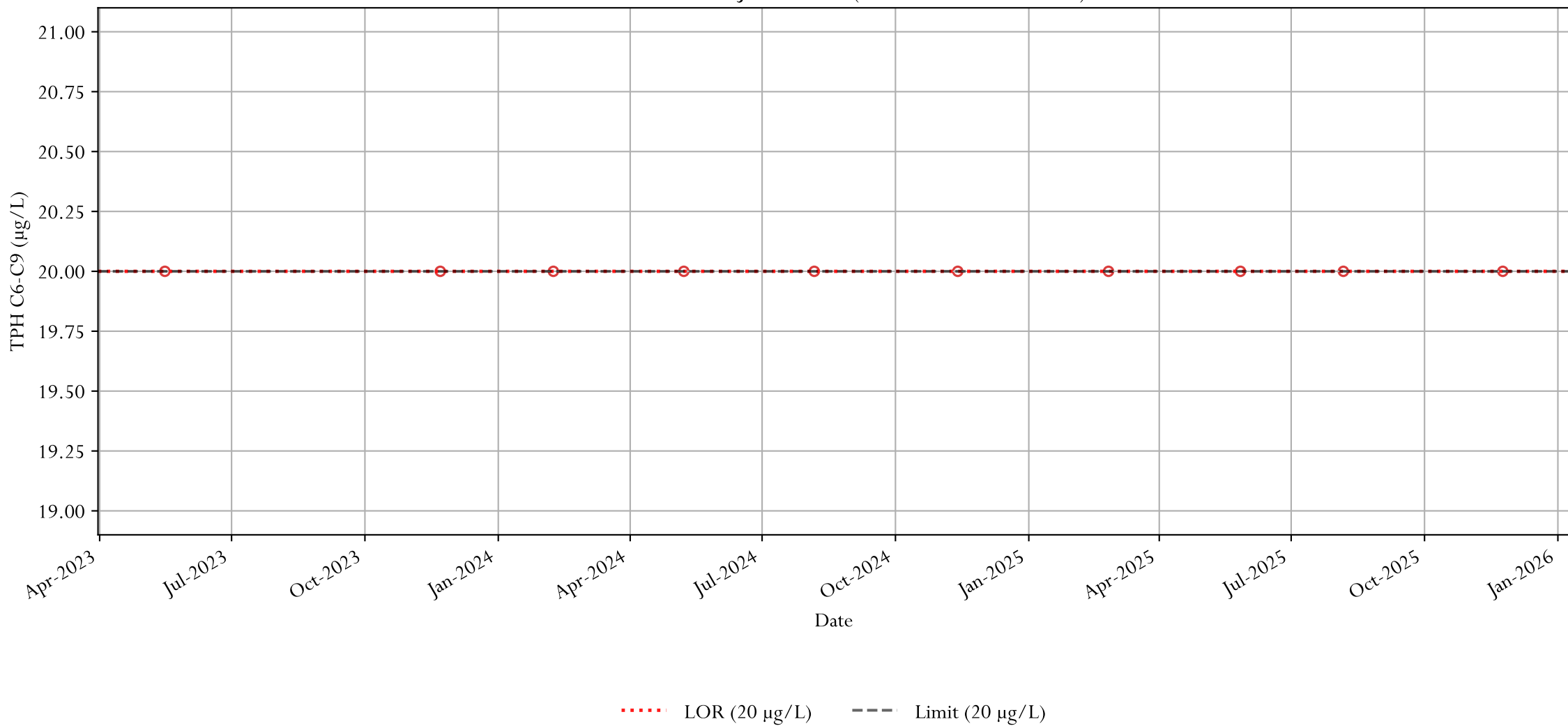
—●— JMR4WP2 (Permian - Pollux Seam) - - - Upper limit (0.034 mg/L)
..... LOR (0.001 mg/L)



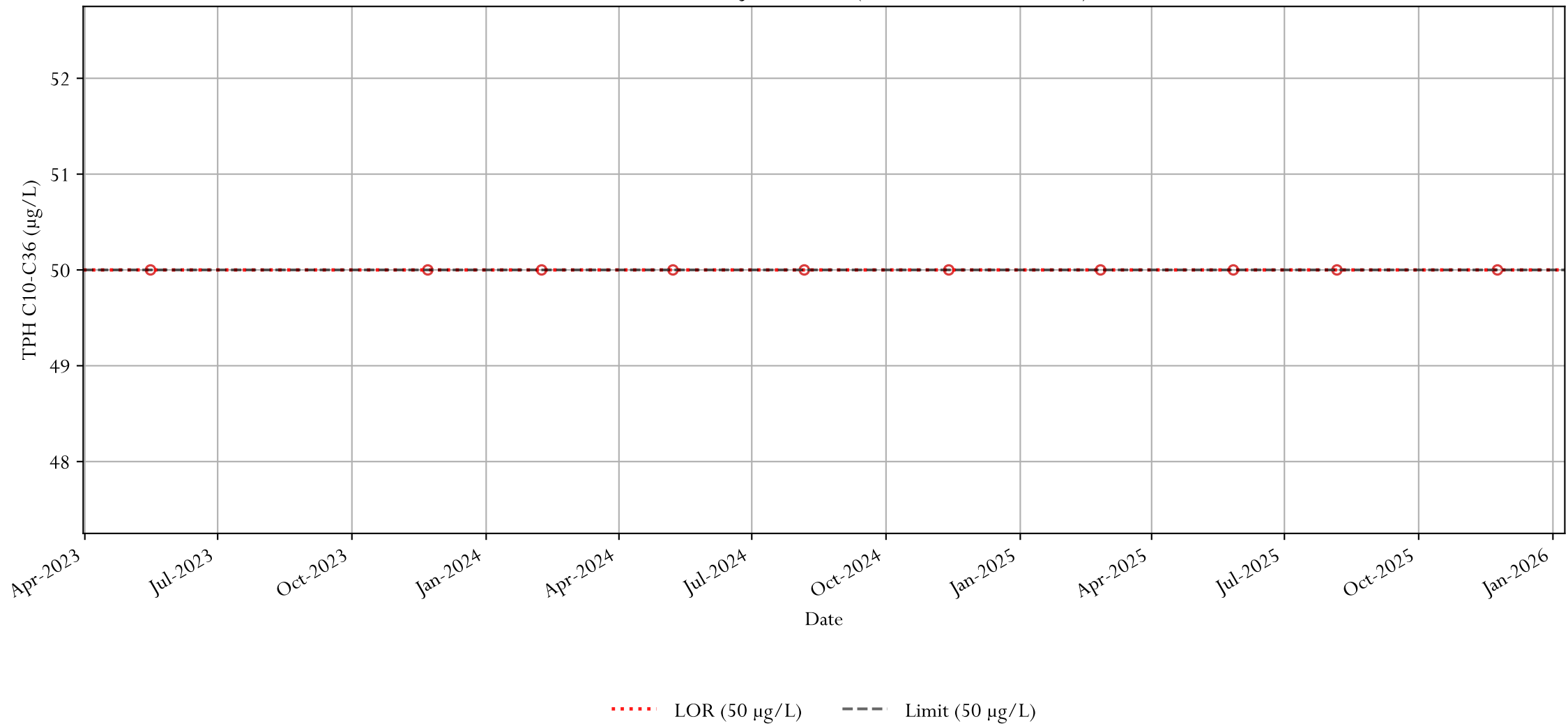
Selenium — JMR4WP2 (Permian - Pollux Seam)

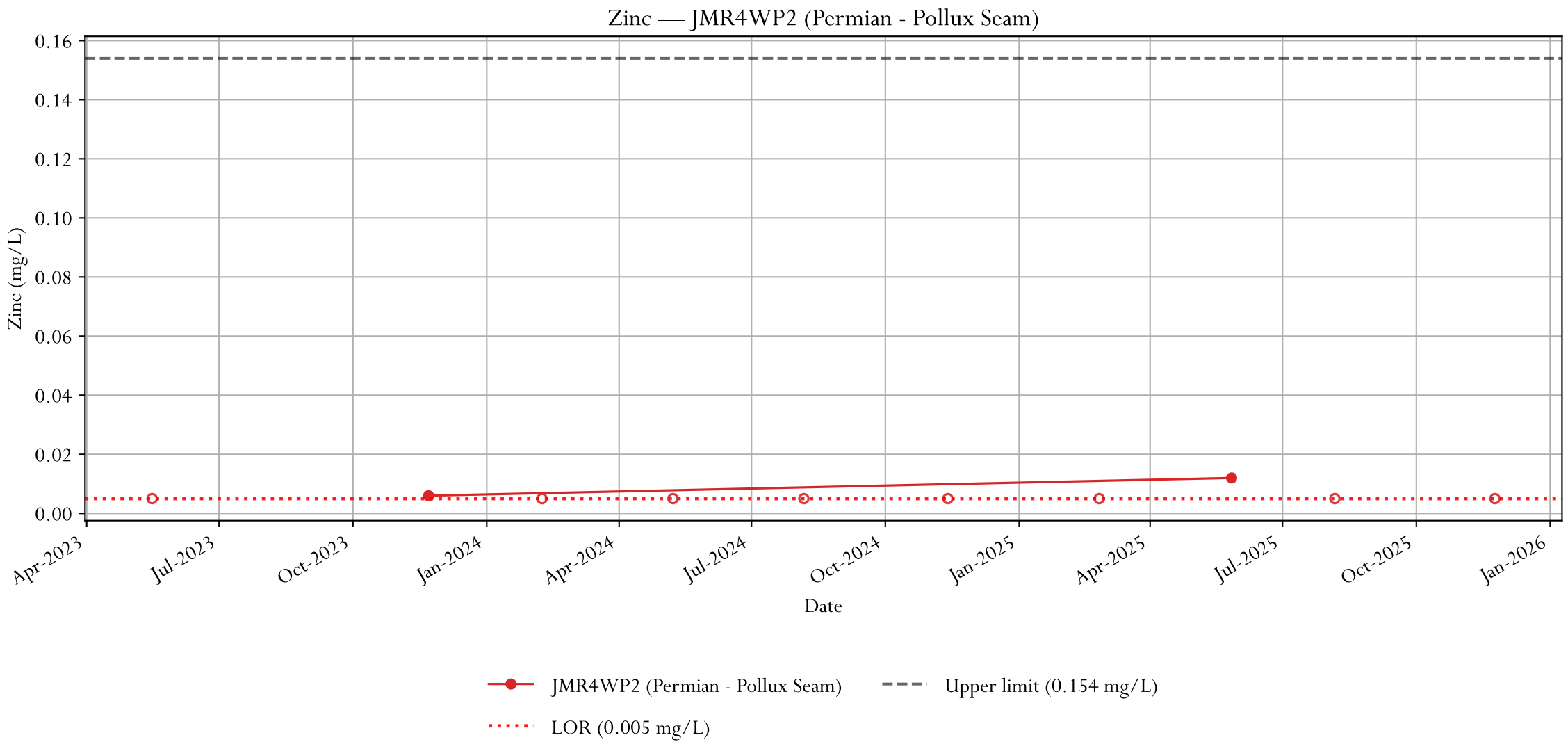


TPH C6-C9 — JMR4WP2 (Permian - Pollux Seam)

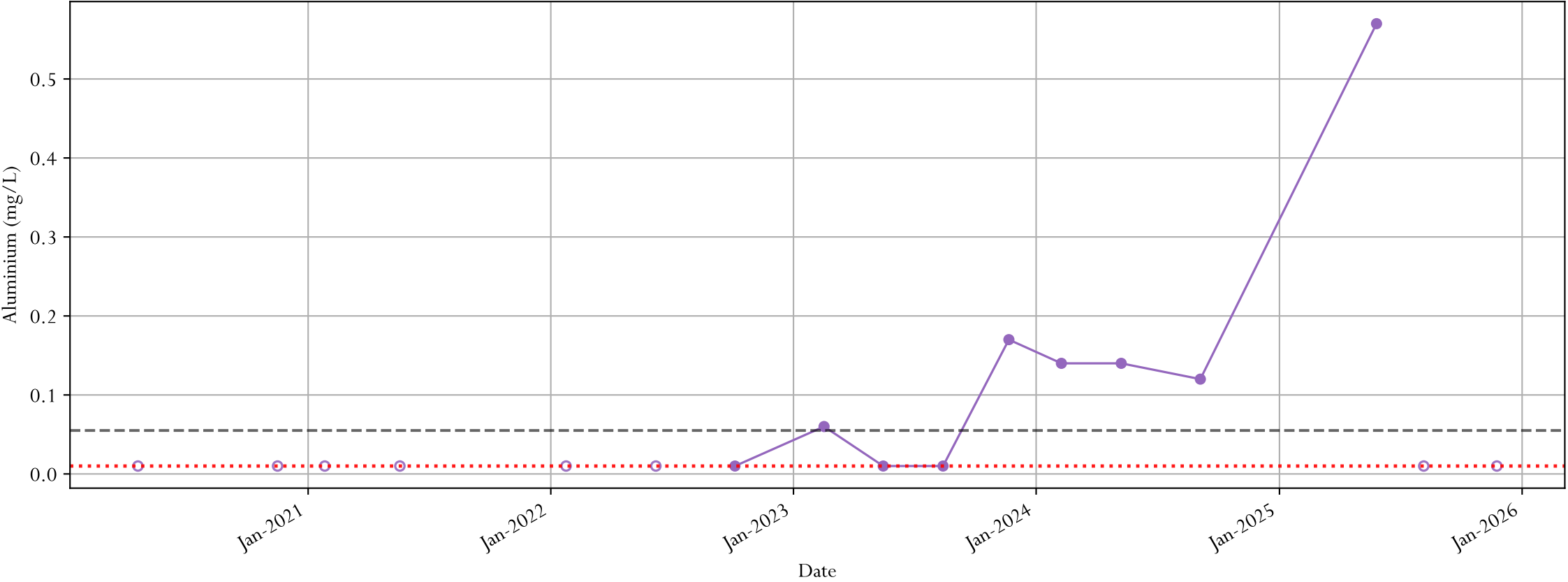


TPH C10-C36 — JMR4WP2 (Permian - Pollux Seam)

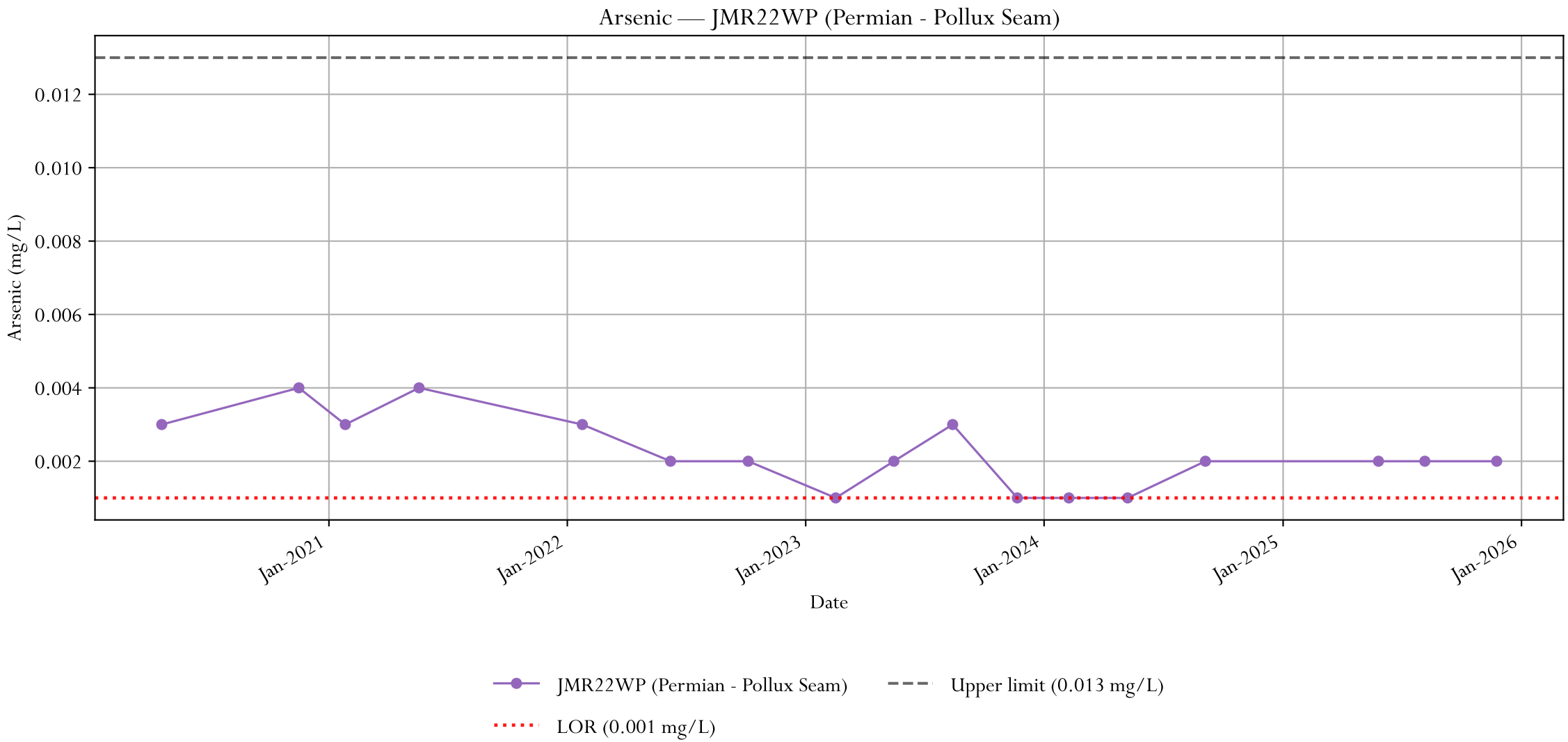




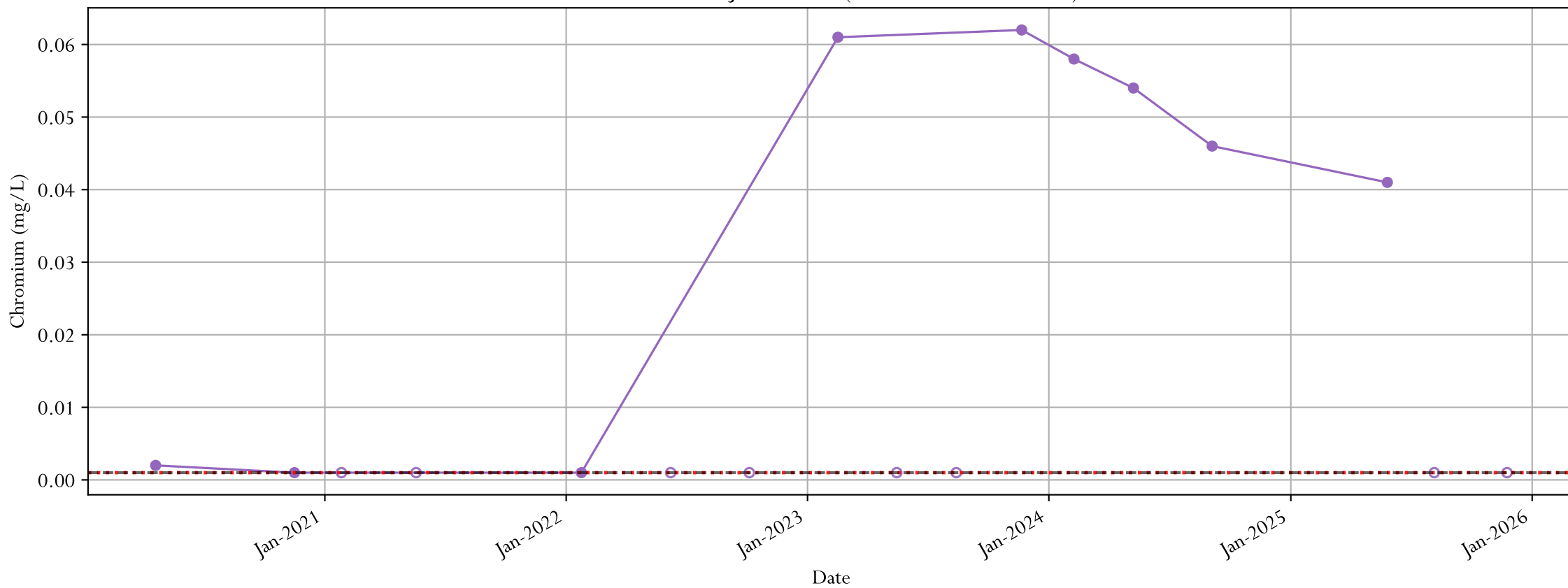
Aluminium — JMR22WP (Permian - Pollux Seam)



—●— JMR22WP (Permian - Pollux Seam) - - - Upper limit (0.055 mg/L)
... LOR (0.01 mg/L)

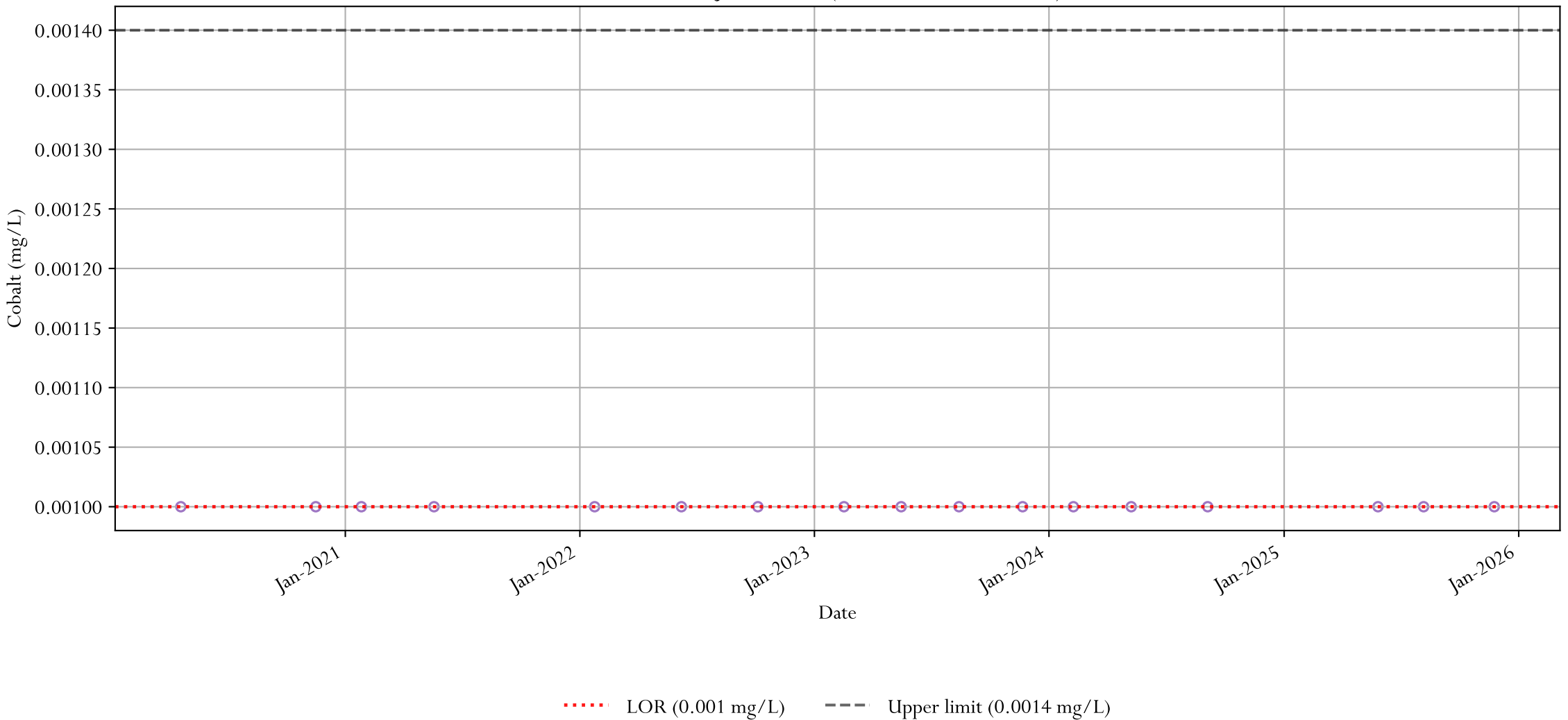


Chromium — JMR22WP (Permian - Pollux Seam)

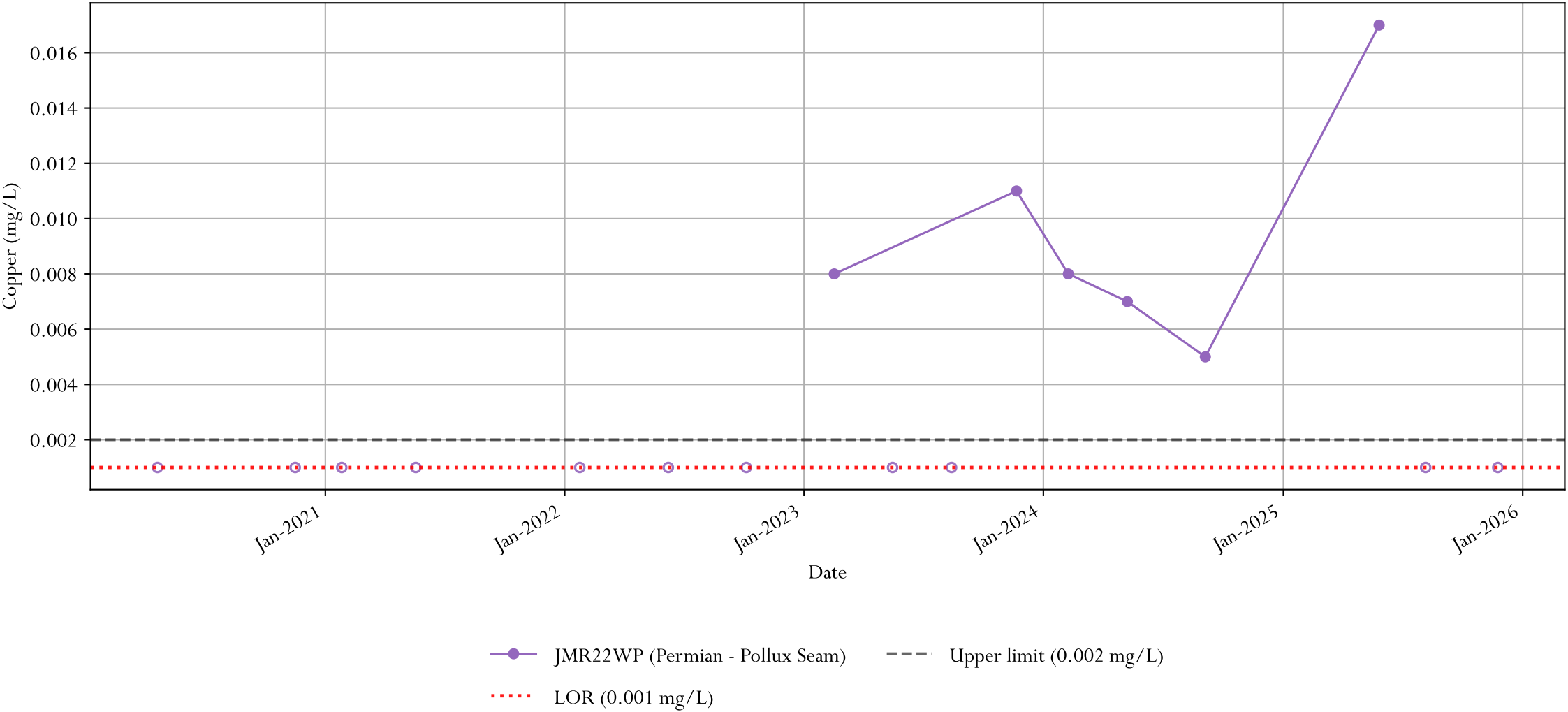


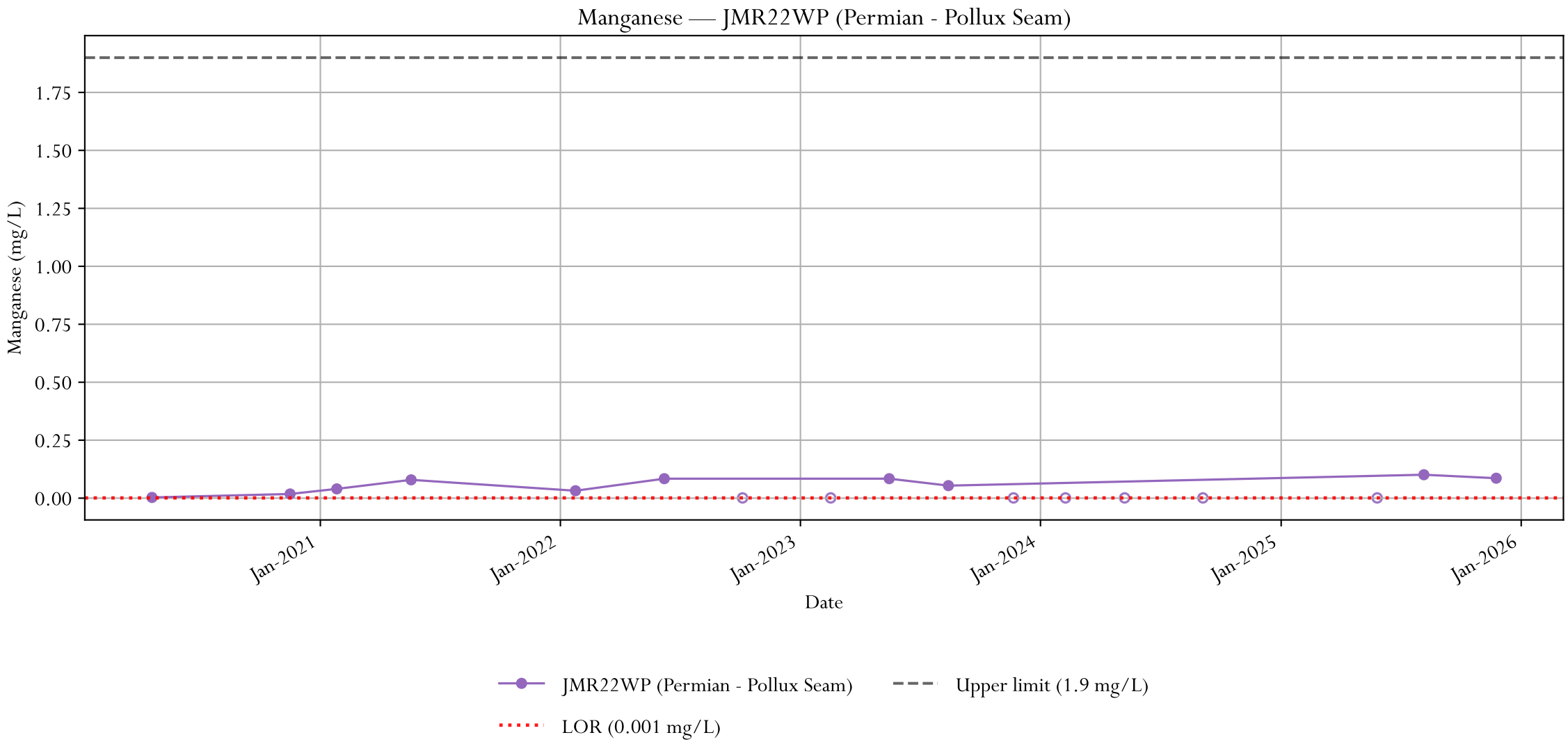
—●— JMR22WP (Permian - Pollux Seam) - - - Upper limit (0.001 mg/L)
- . . . LOR (0.001 mg/L)

Cobalt — JMR22WP (Permian - Pollux Seam)

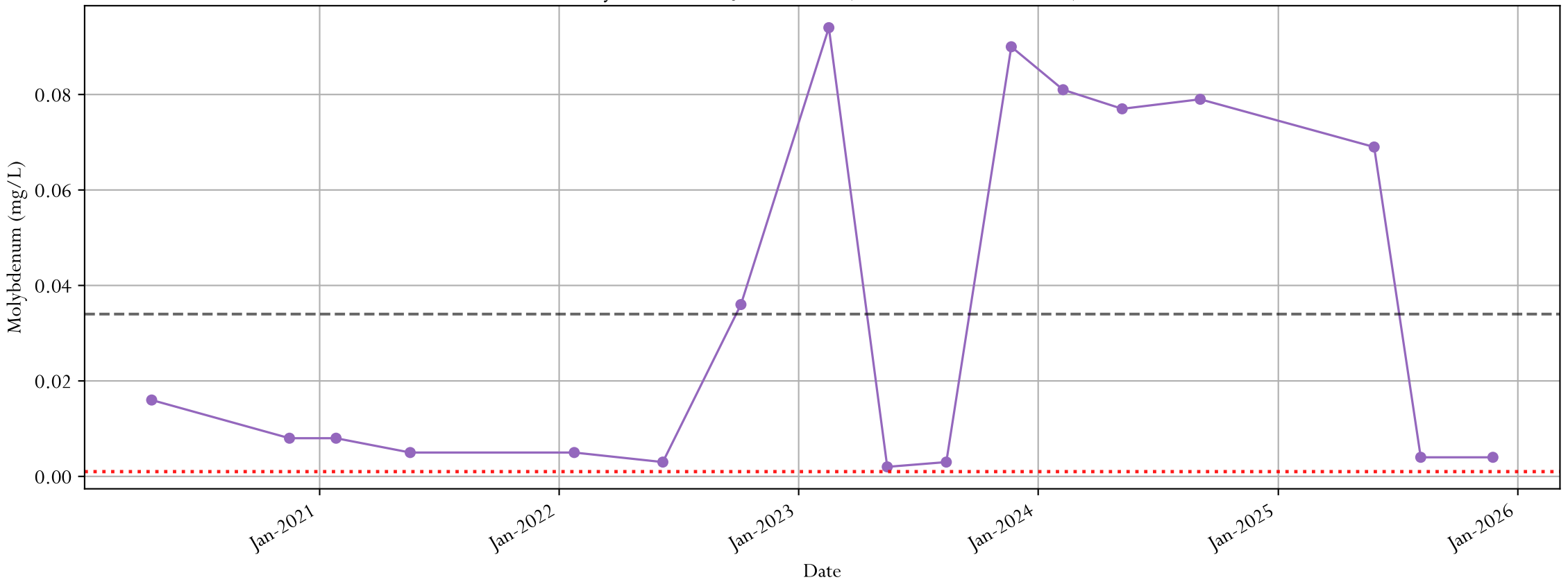


Copper — JMR22WP (Permian - Pollux Seam)

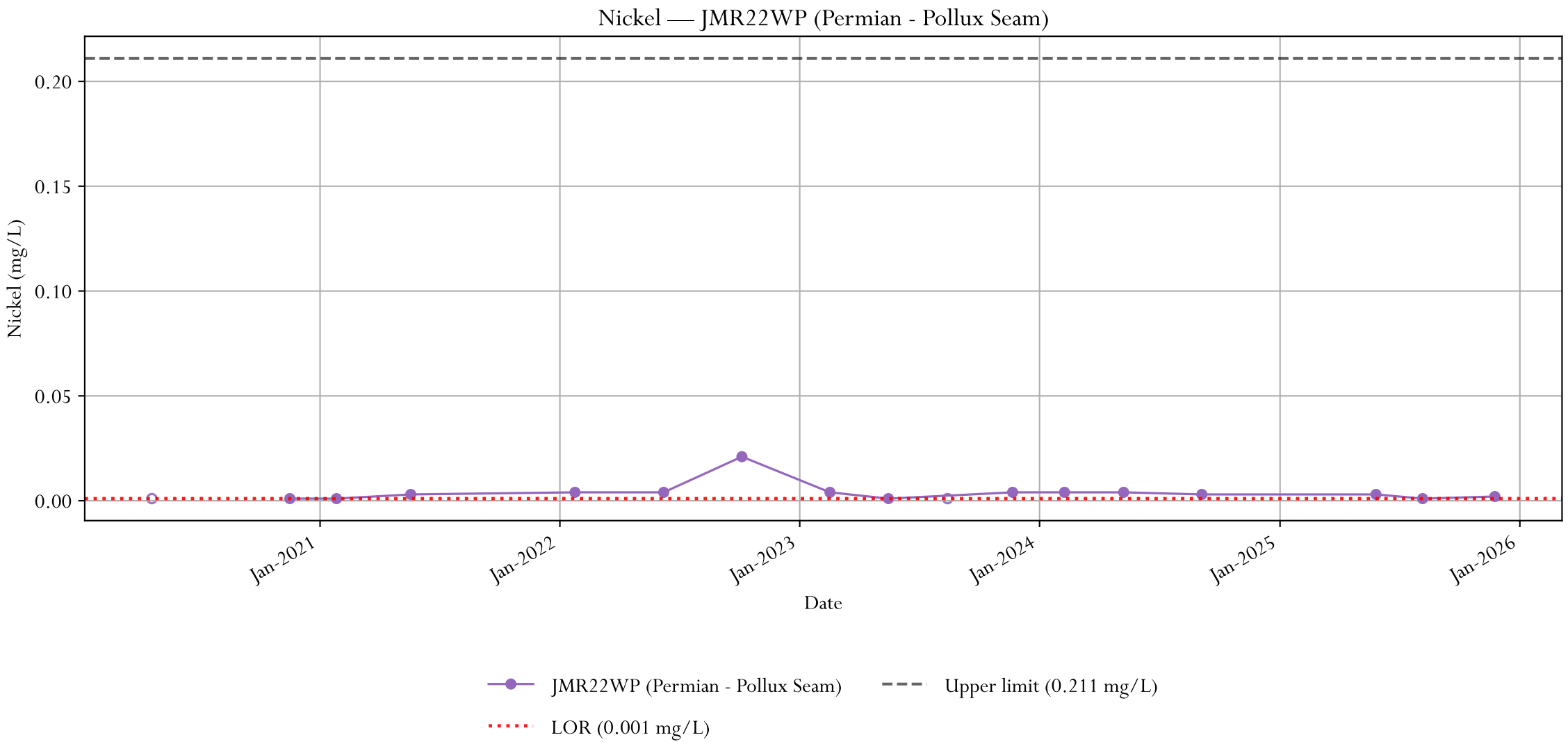




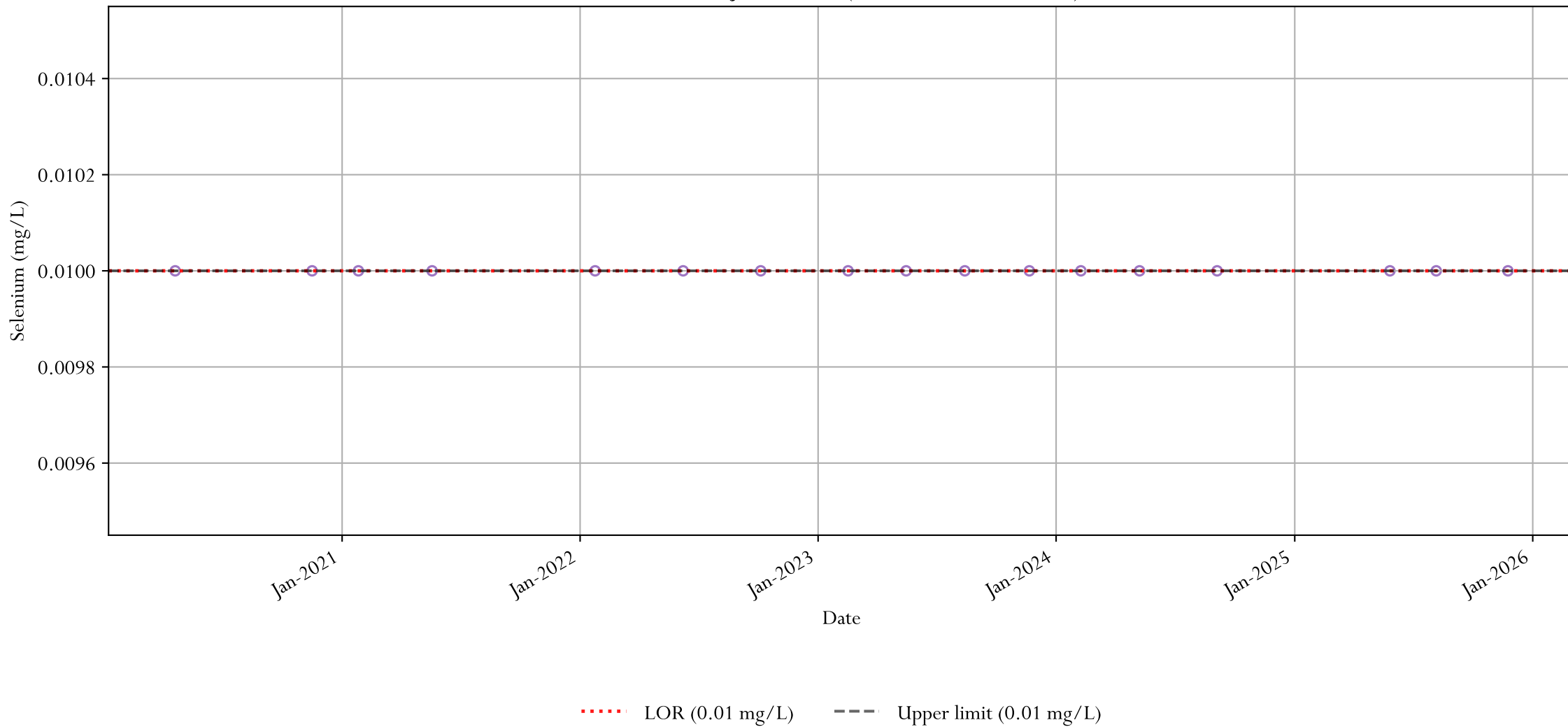
Molybdenum — JMR22WP (Permian - Pollux Seam)



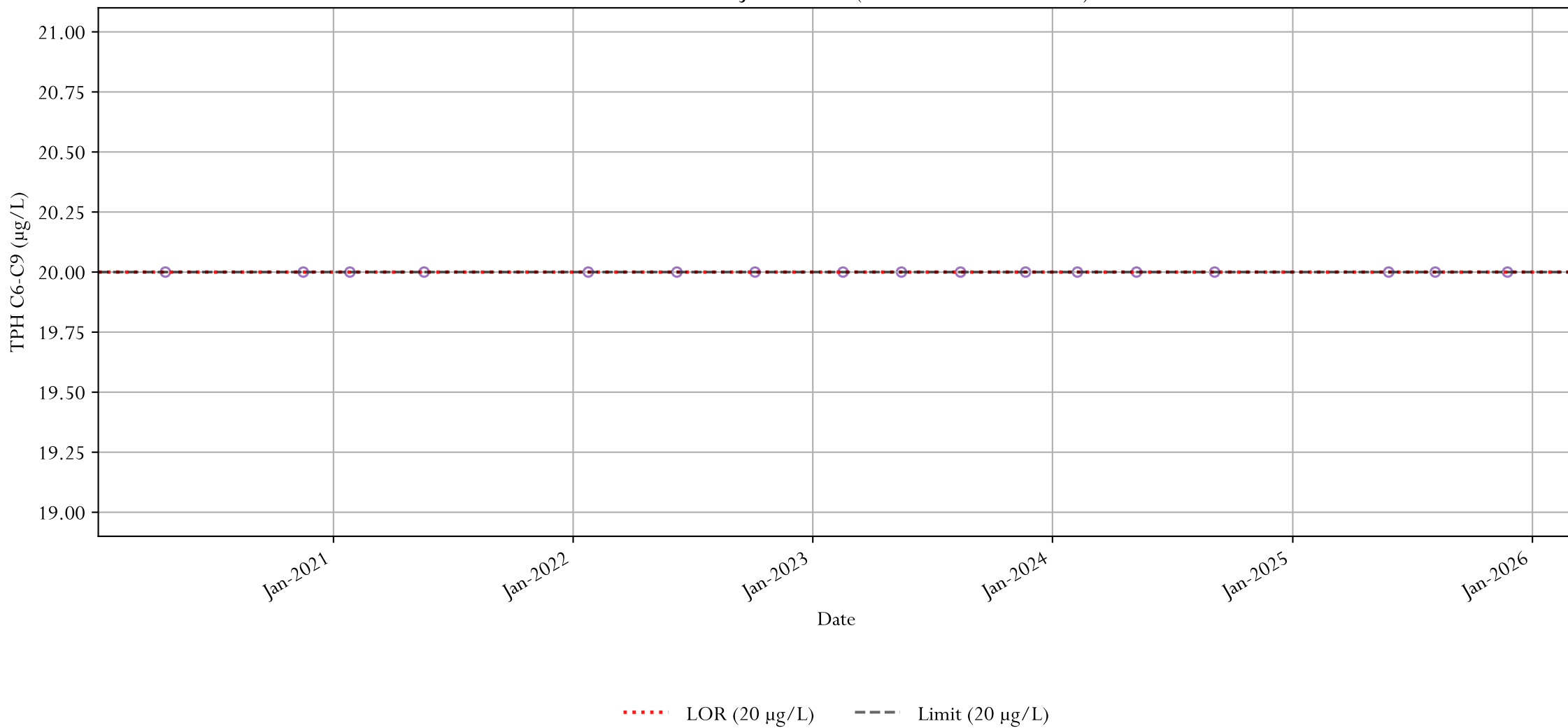
—●— JMR22WP (Permian - Pollux Seam) - - - Upper limit (0.034 mg/L)
..... LOR (0.001 mg/L)



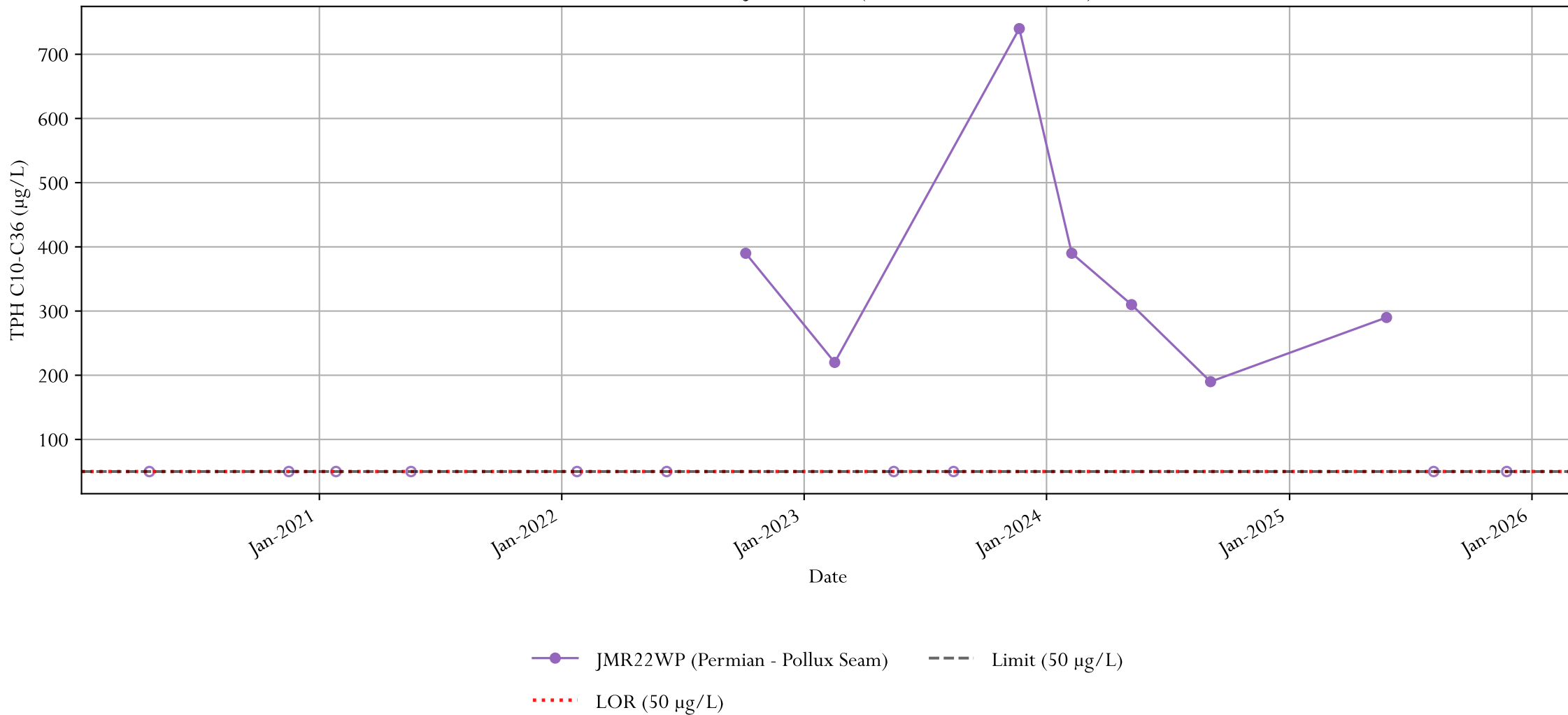
Selenium — JMR22WP (Permian - Pollux Seam)



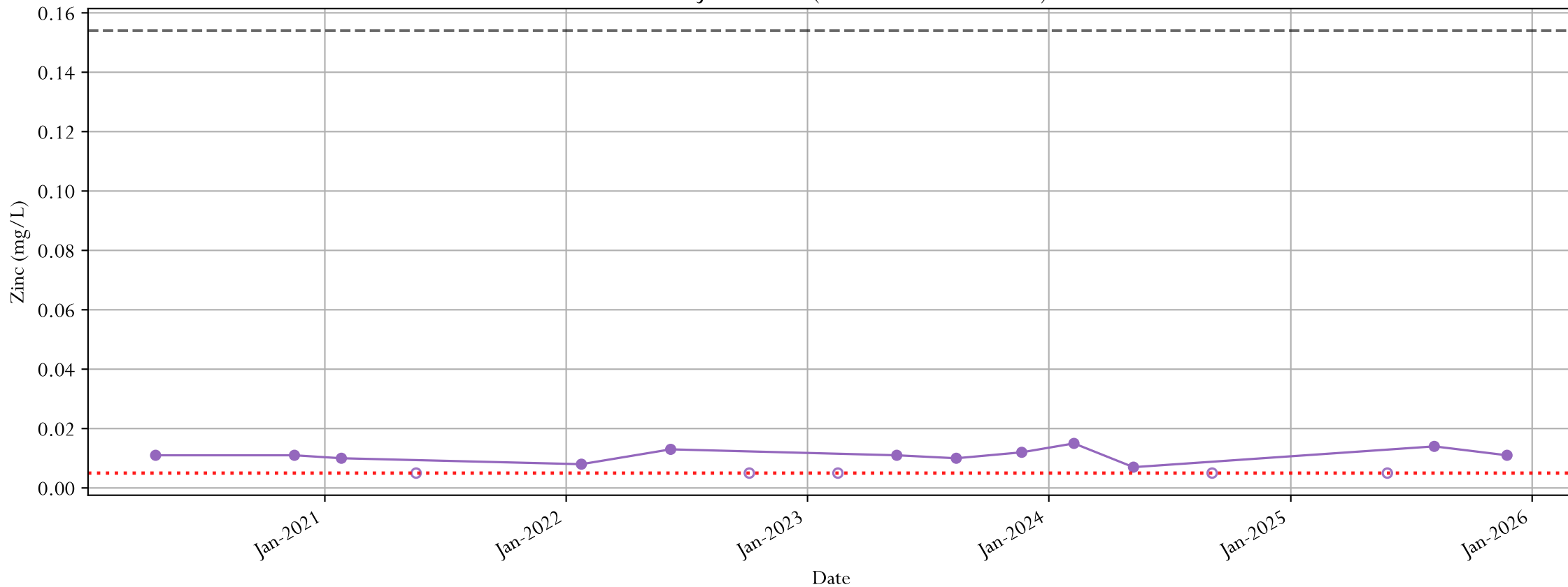
TPH C6-C9 — JMR22WP (Permian - Pollux Seam)



TPH C10-C36 — JMR22WP (Permian - Pollux Seam)



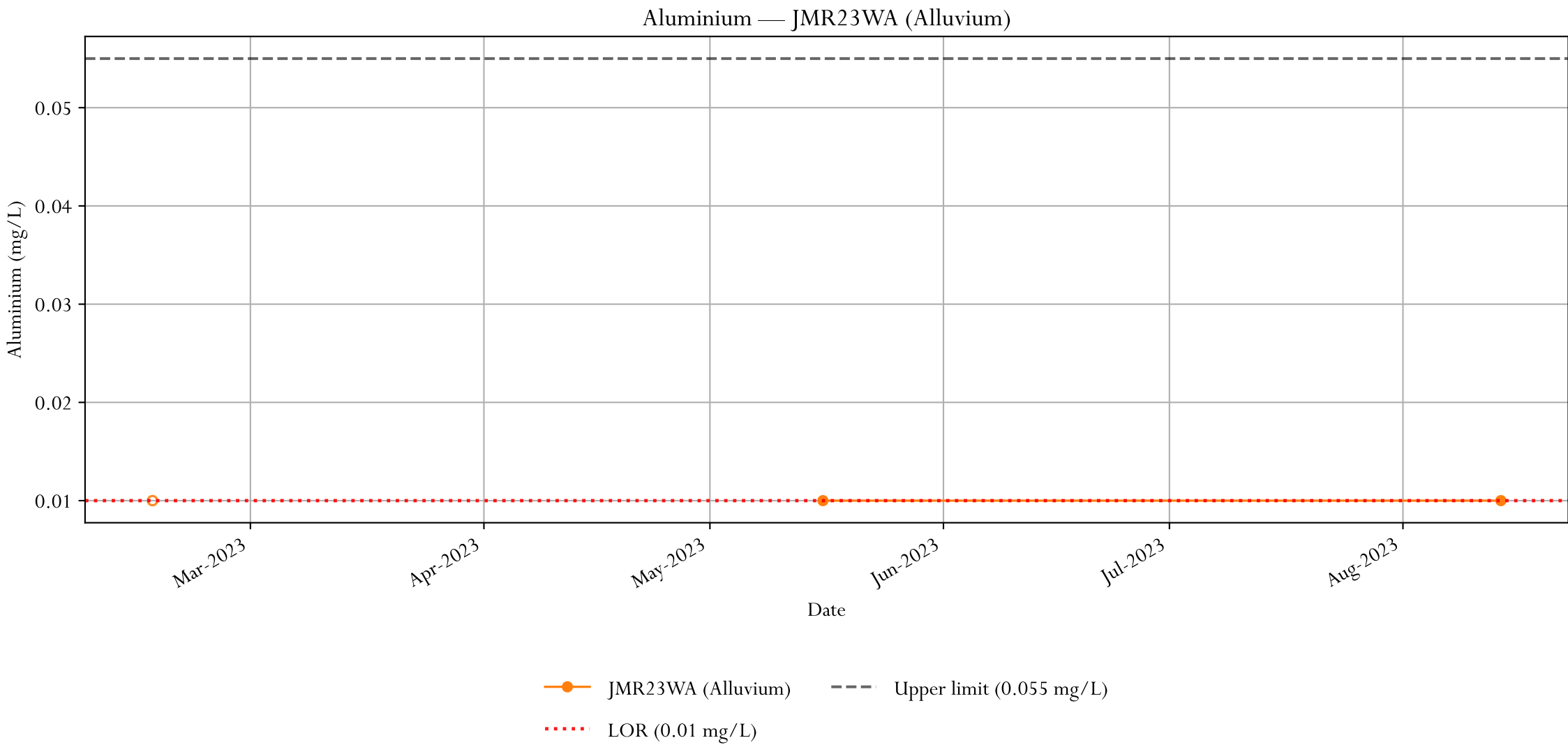
Zinc — JMR22WP (Permian - Pollux Seam)



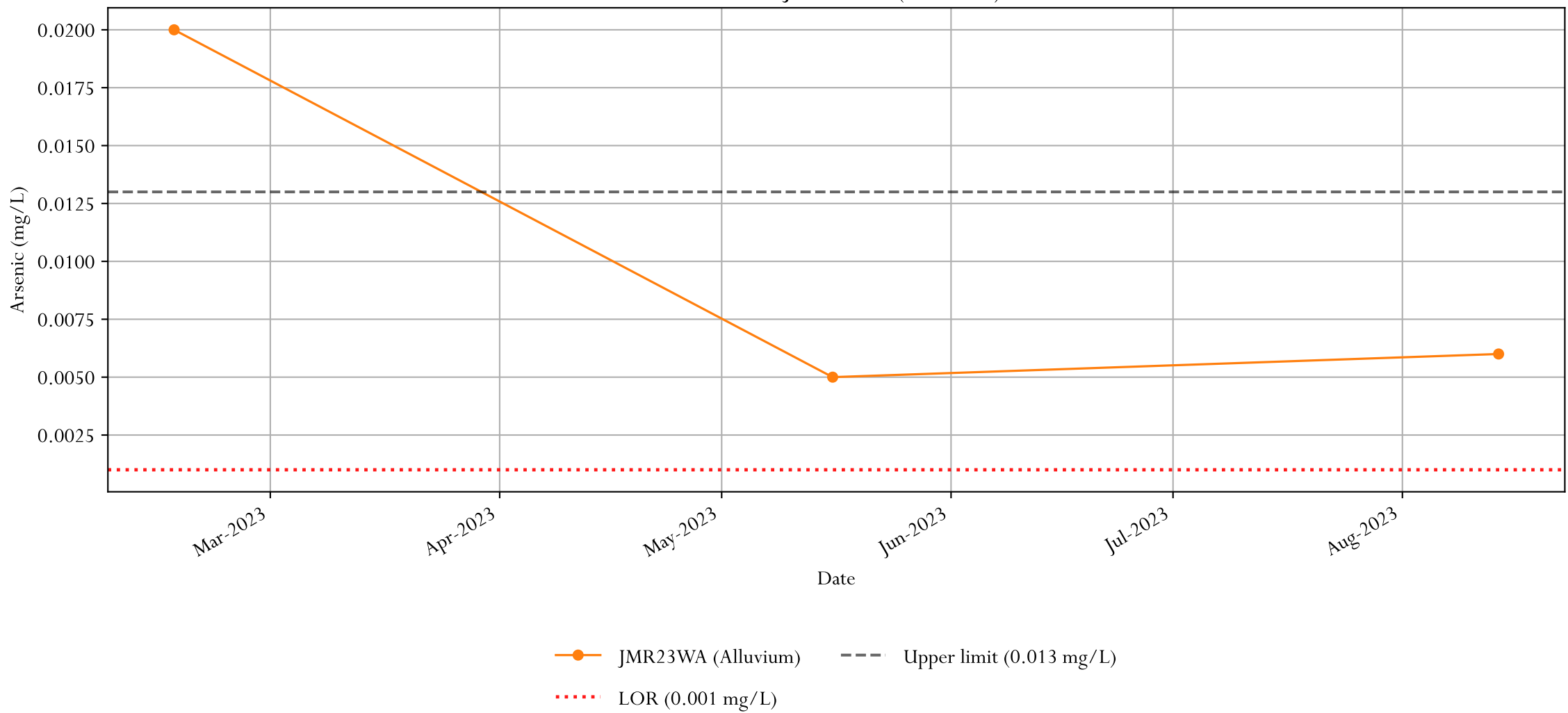
—●— JMR22WP (Permian - Pollux Seam)

--- Upper limit (0.154 mg/L)

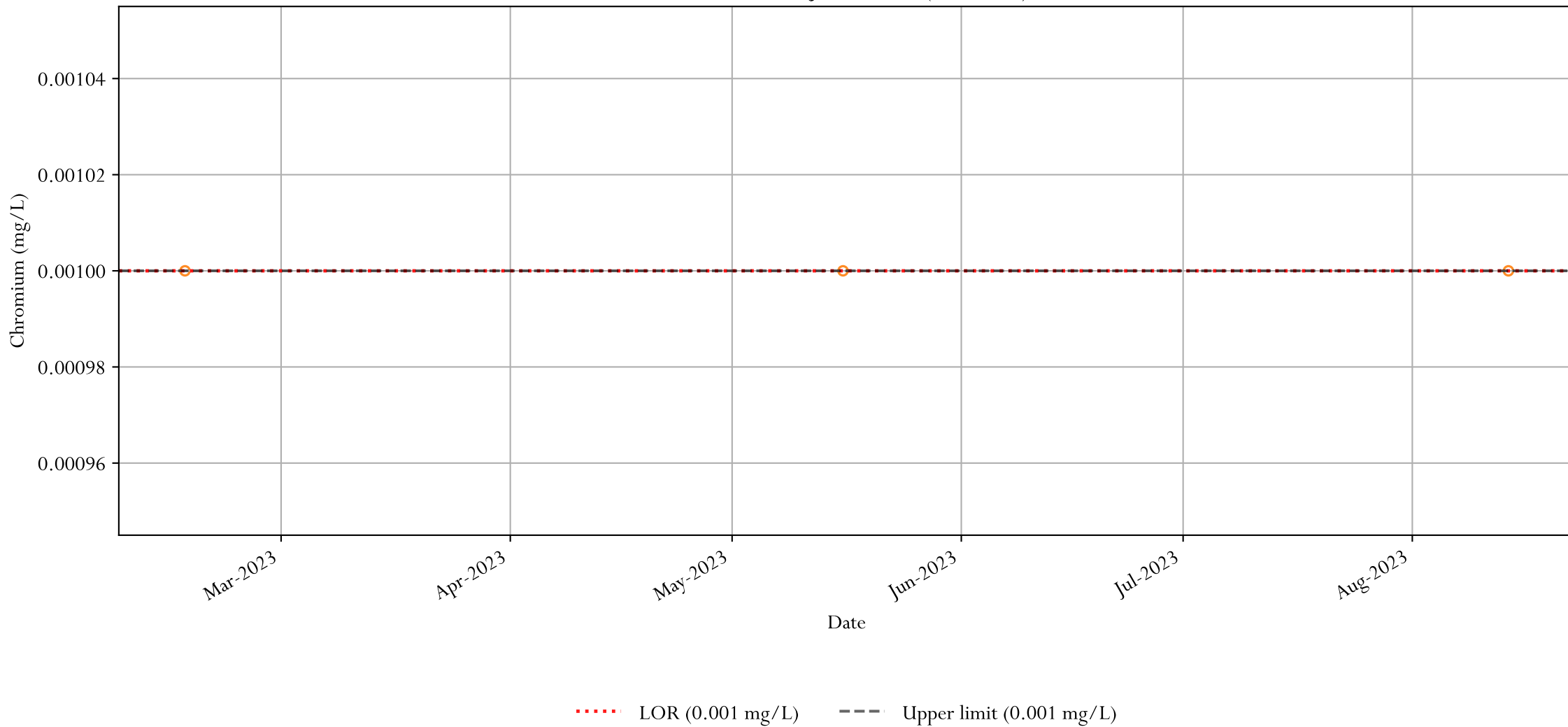
... LOR (0.005 mg/L)



Arsenic — JMR23WA (Alluvium)



Chromium — JMR23WA (Alluvium)

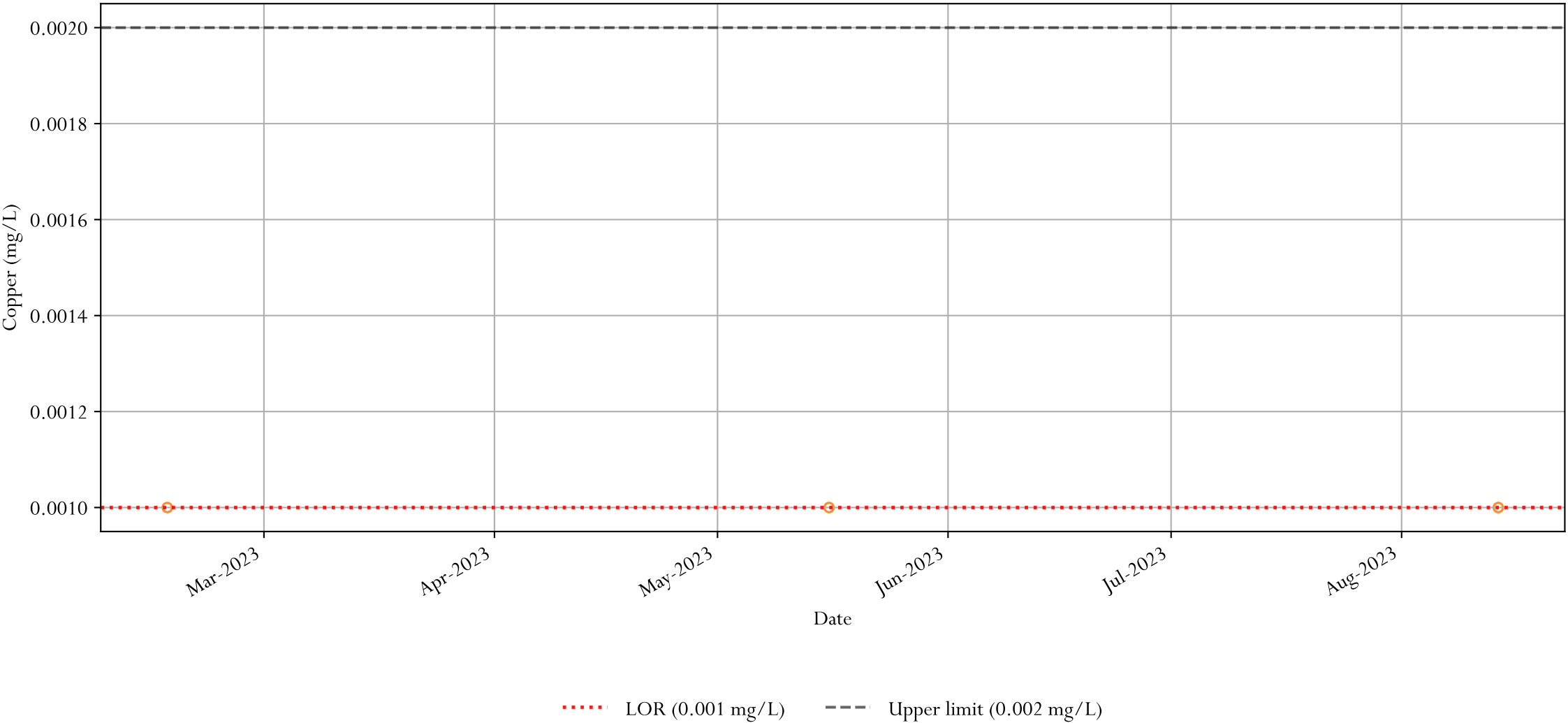


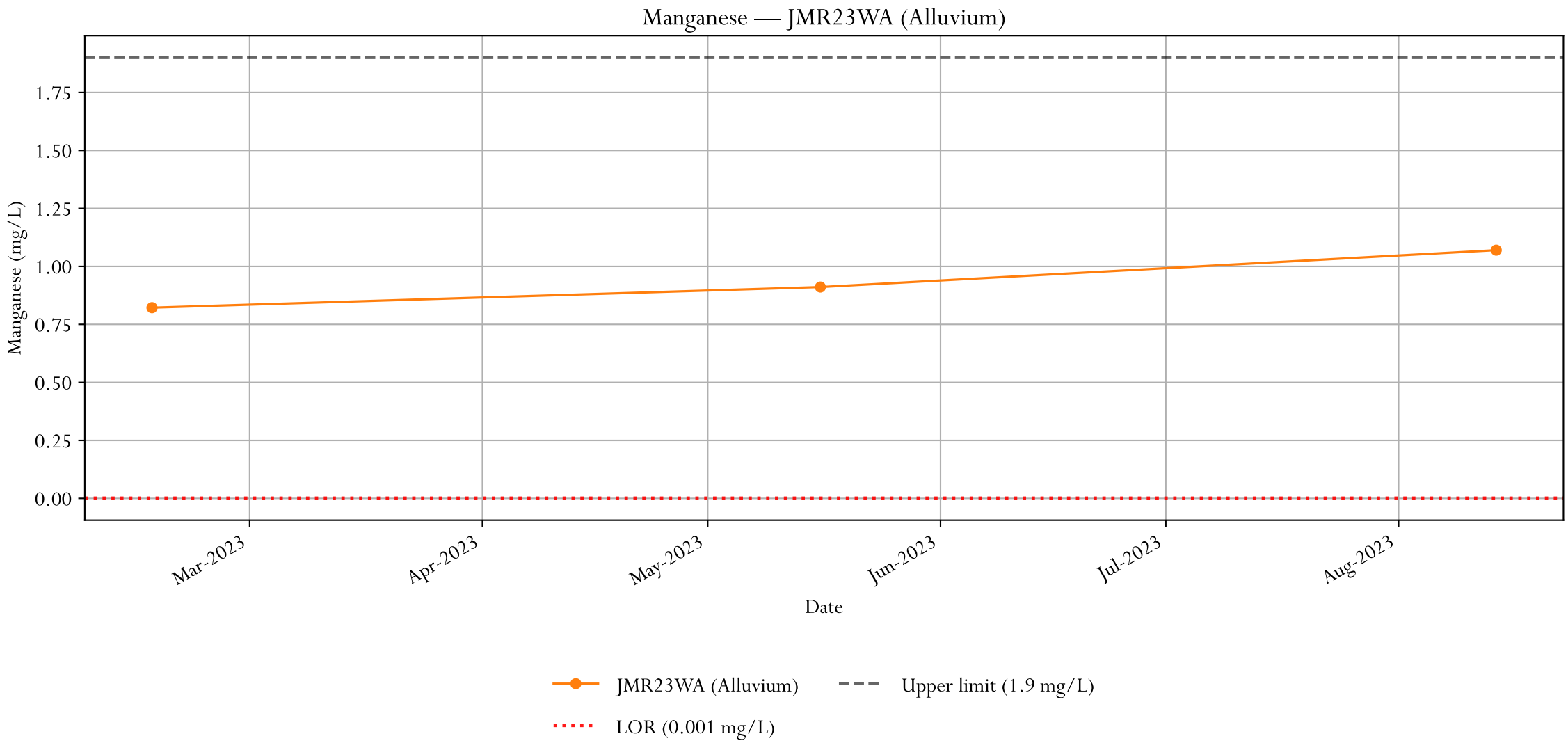
Cobalt — JMR23WA (Alluvium)

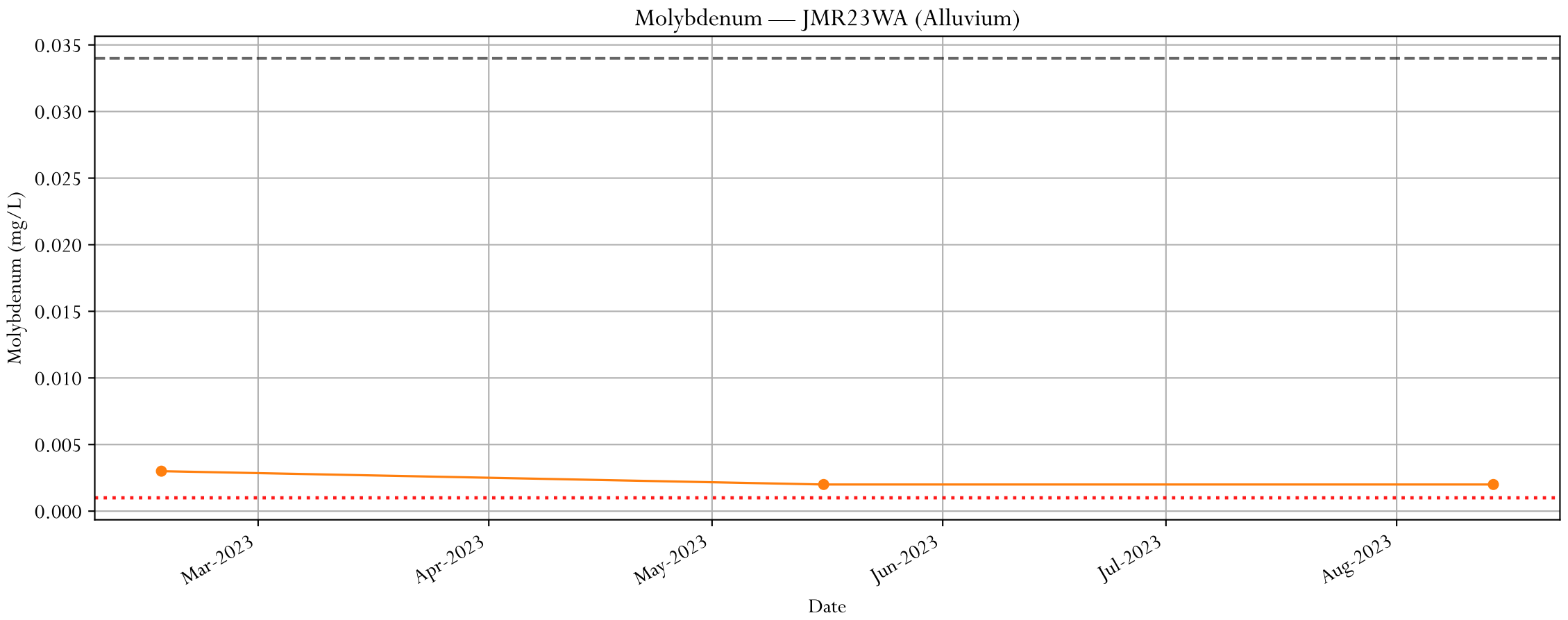


—●— JMR23WA (Alluvium) - - - Upper limit (0.0014 mg/L)
..... LOR (0.001 mg/L)

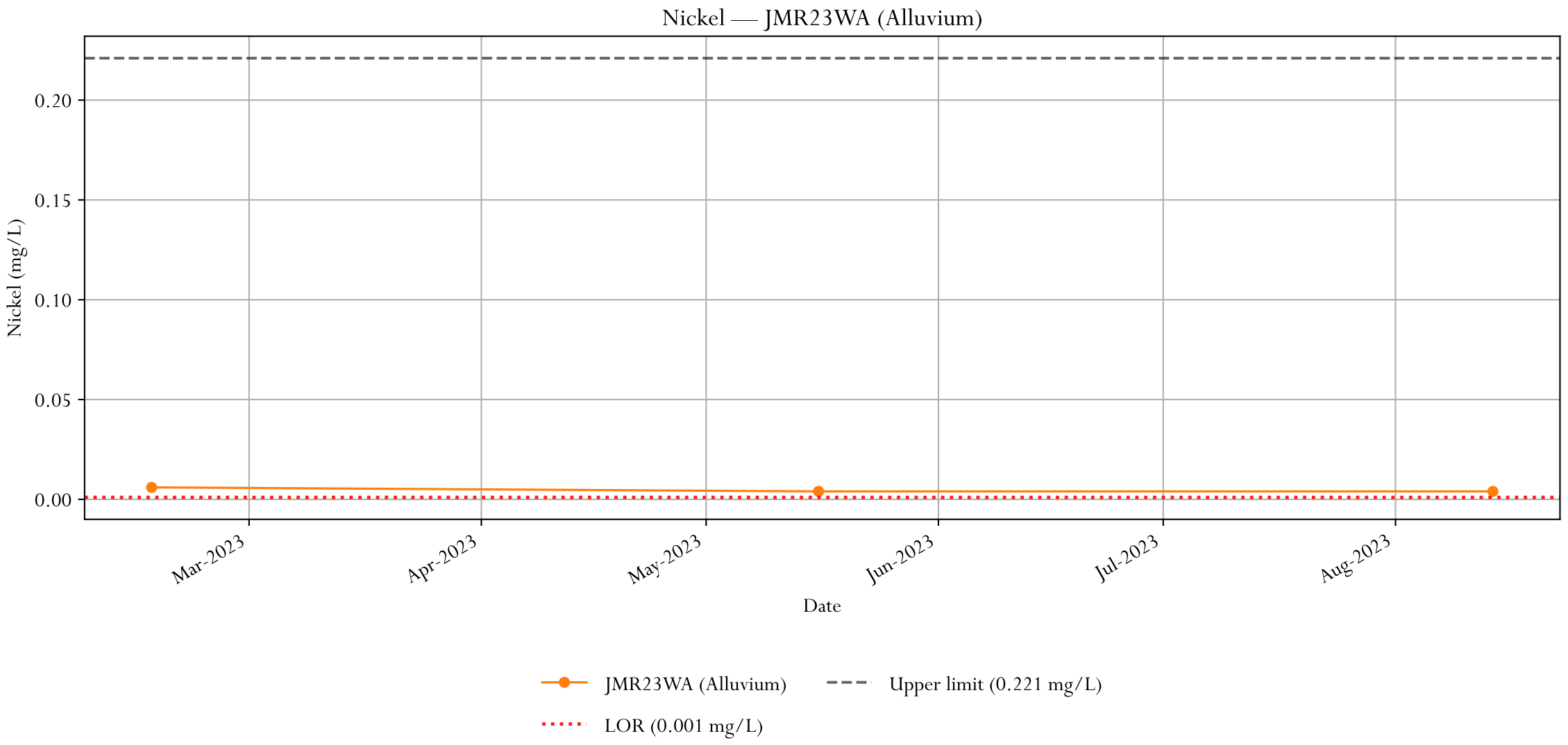
Copper — JMR23WA (Alluvium)



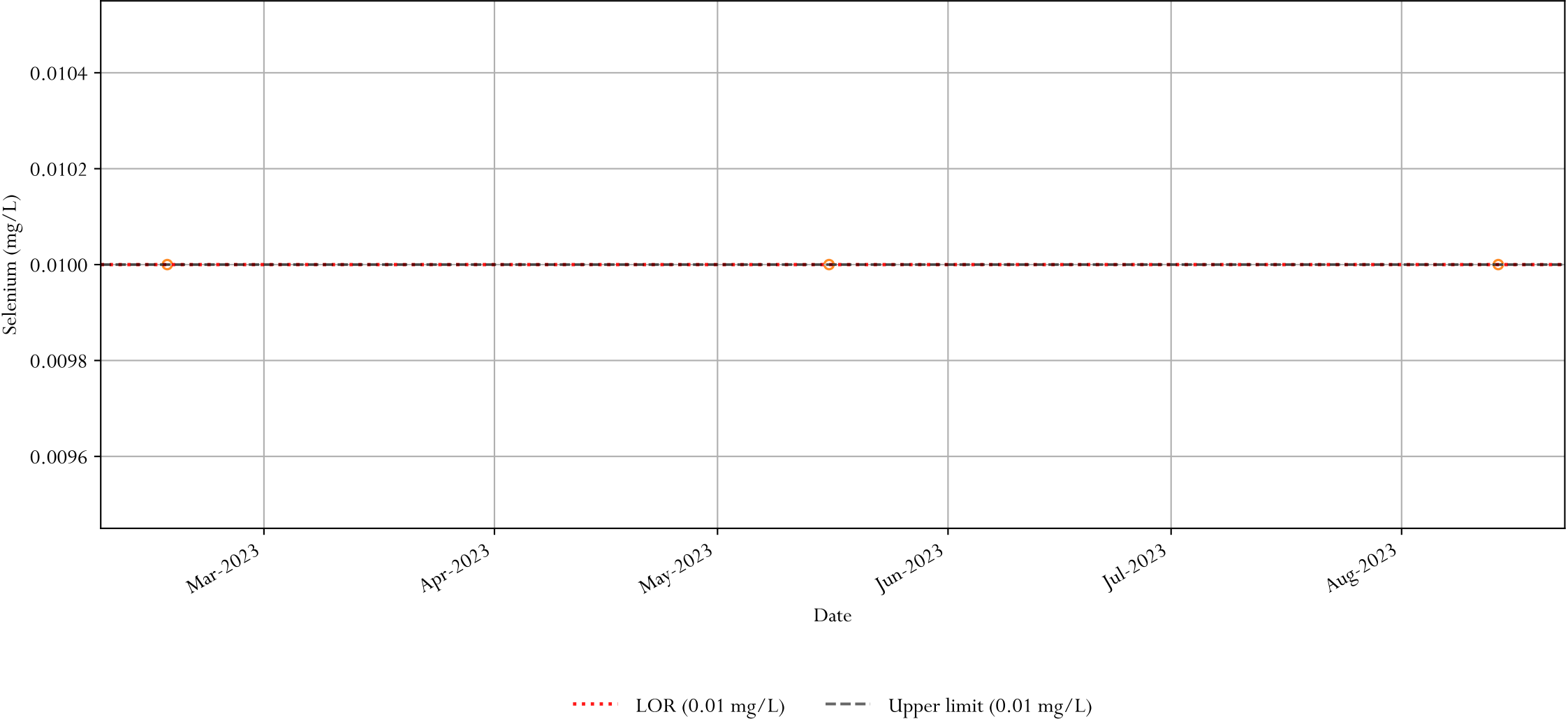




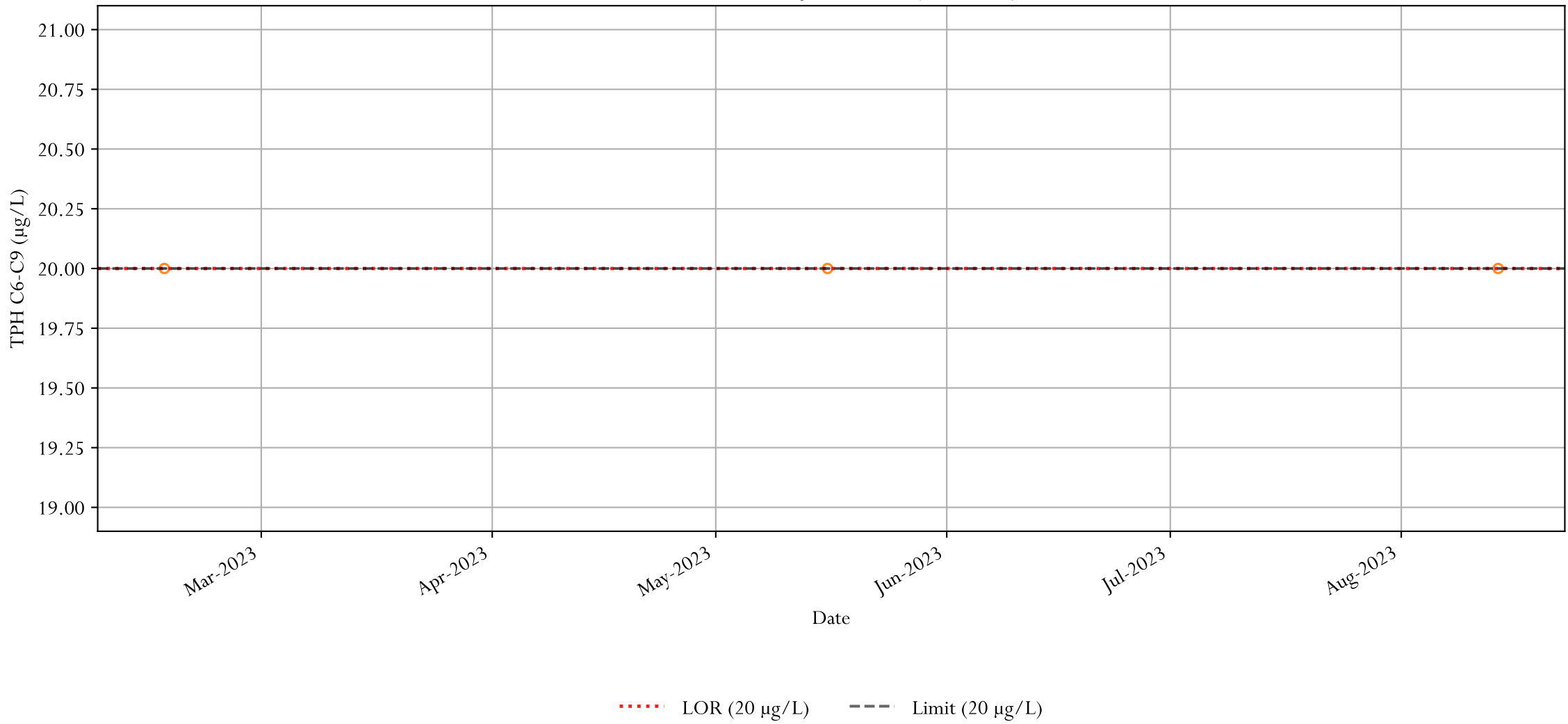
—●— JMR23WA (Alluvium) - - - Upper limit (0.034 mg/L)
..... LOR (0.001 mg/L)



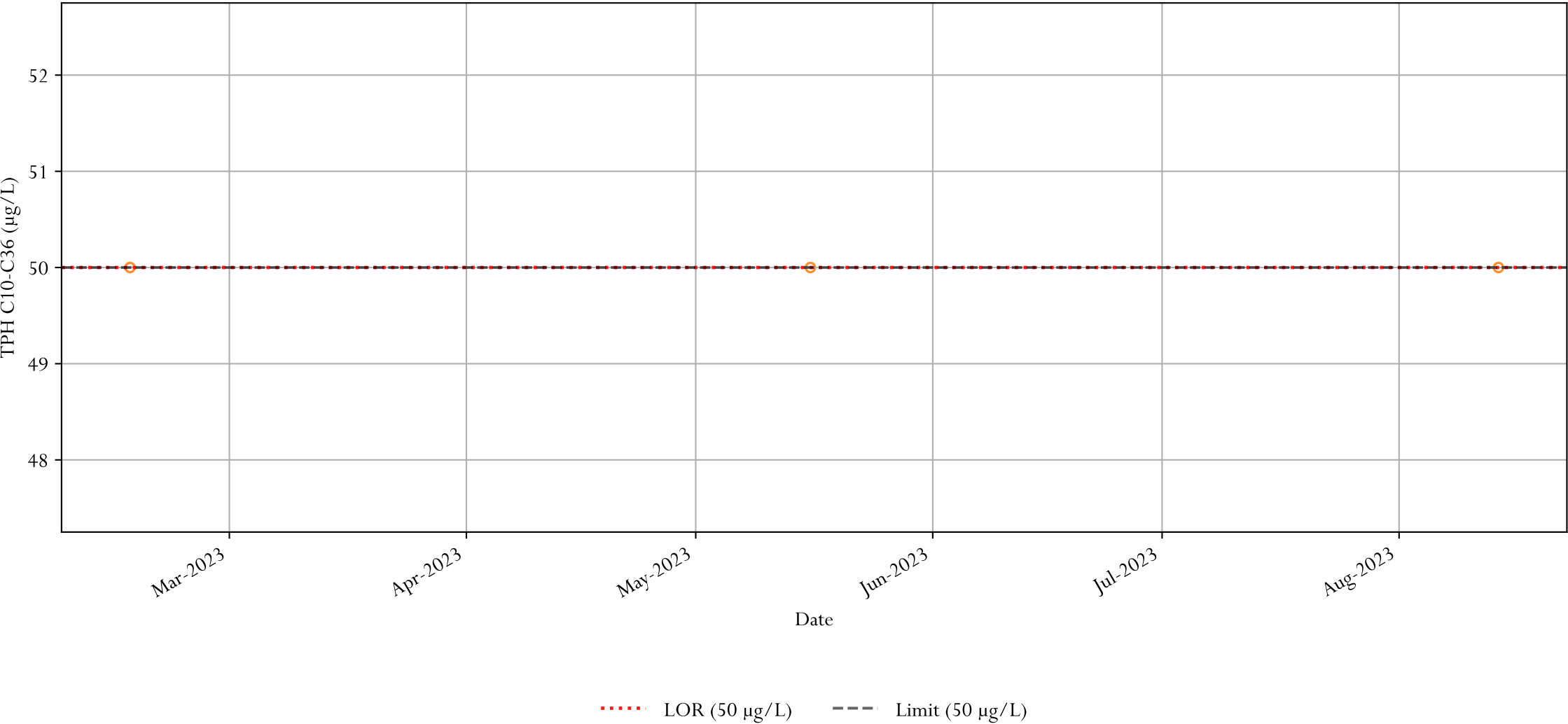
Selenium — JMR23WA (Alluvium)

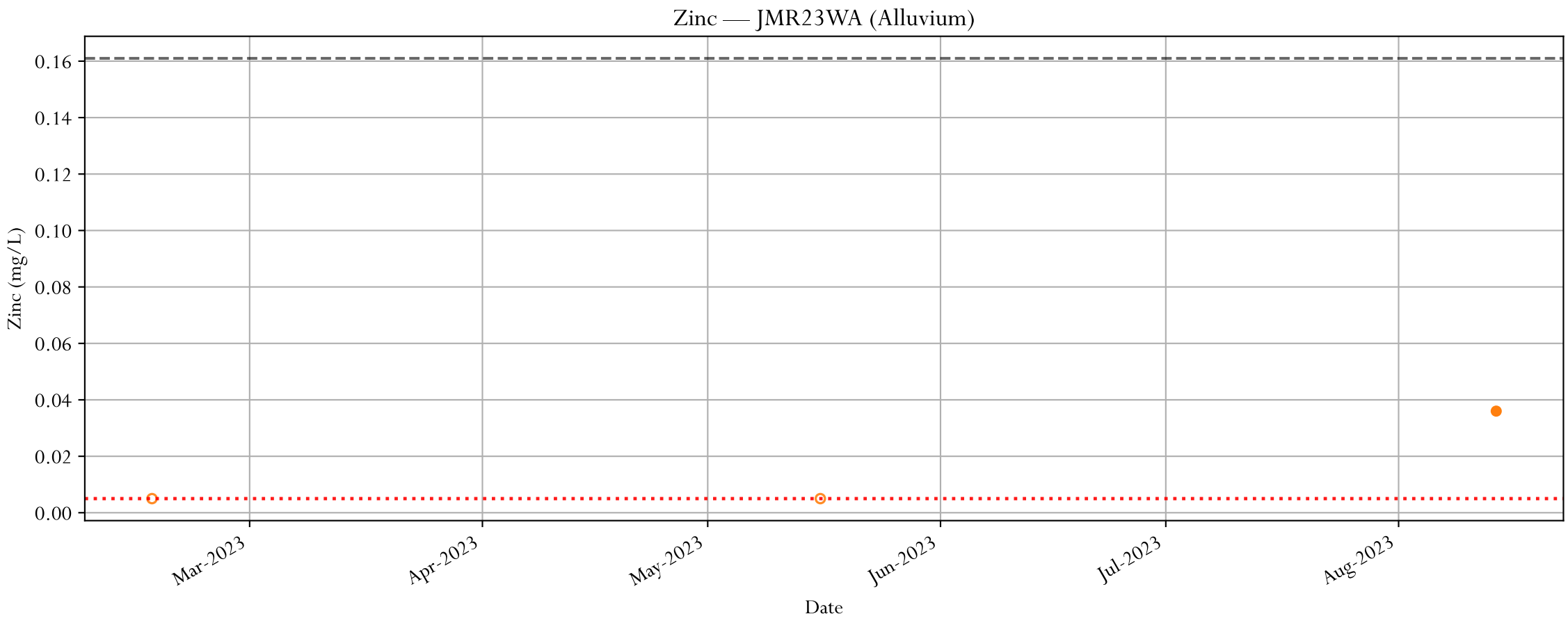


TPH C6-C9 — JMR23WA (Alluvium)



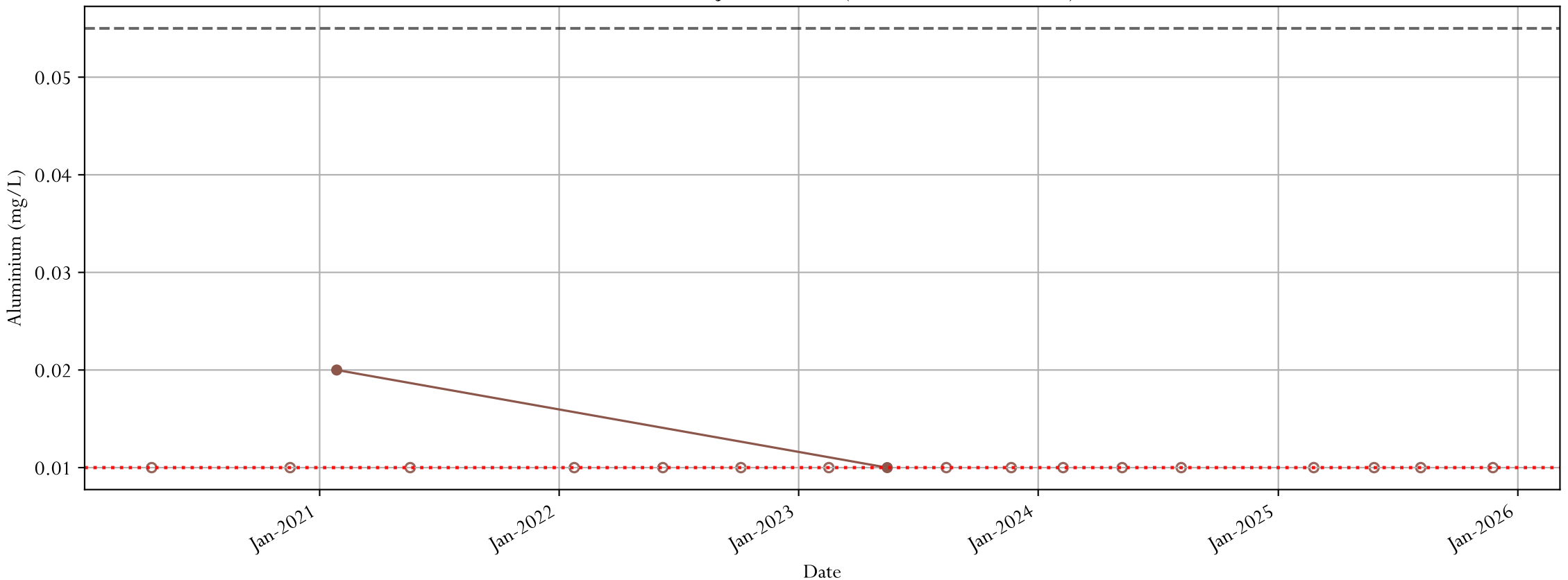
TPH C10-C36 — JMR23WA (Alluvium)



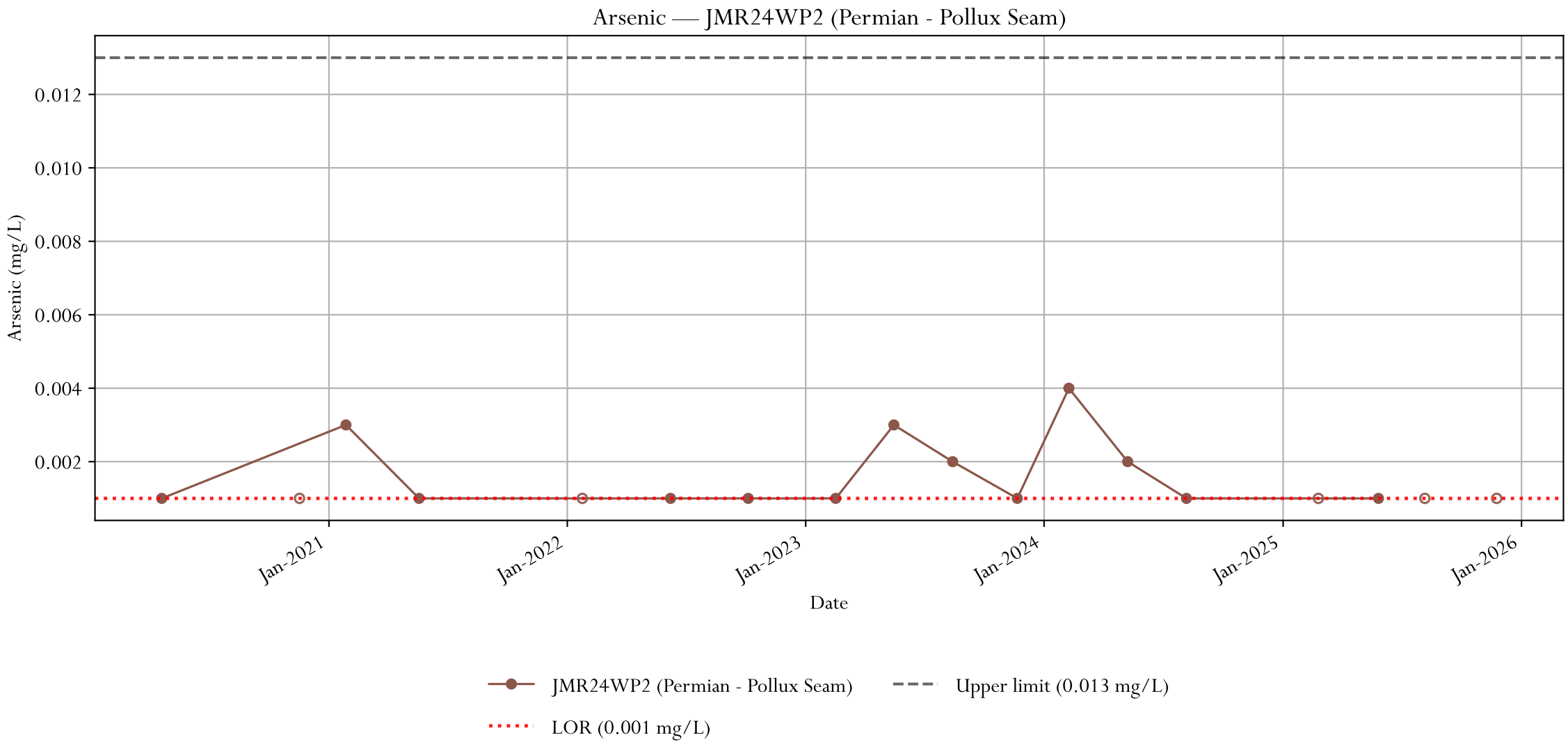


—●— JMR23WA (Alluvium) - - - Upper limit (0.161 mg/L)
..... LOR (0.005 mg/L)

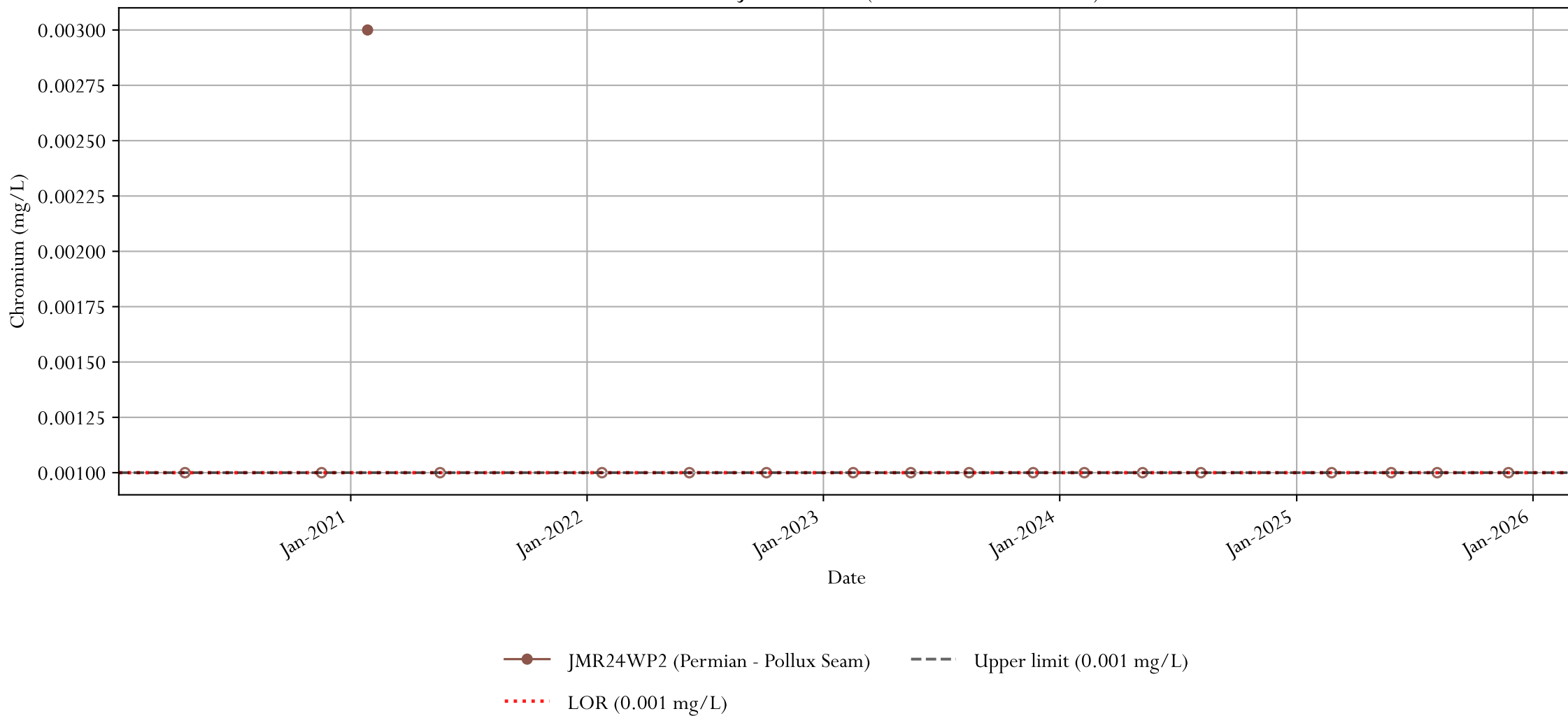
Aluminium — JMR24WP2 (Permian - Pollux Seam)



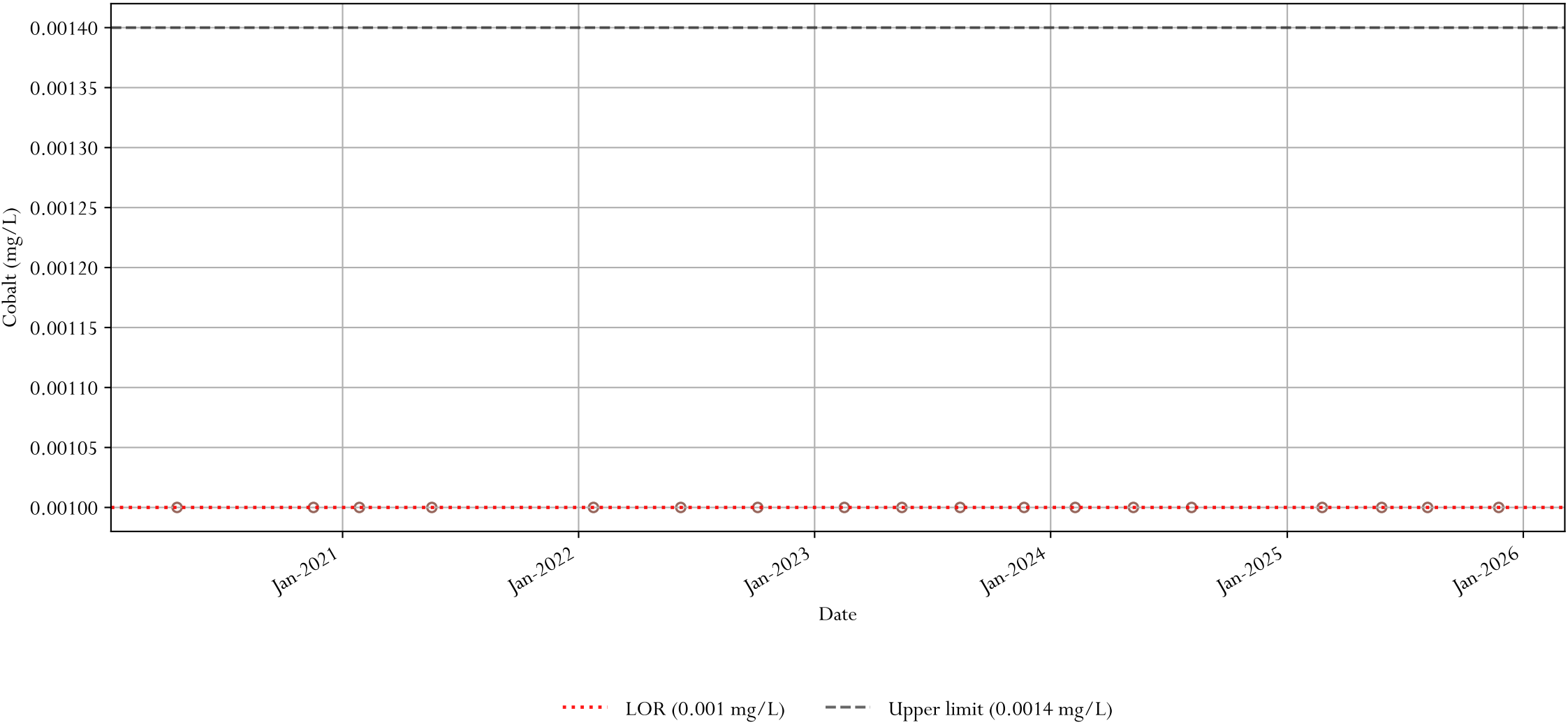
—●— JMR24WP2 (Permian - Pollux Seam) - - - Upper limit (0.055 mg/L)
... LOR (0.01 mg/L)



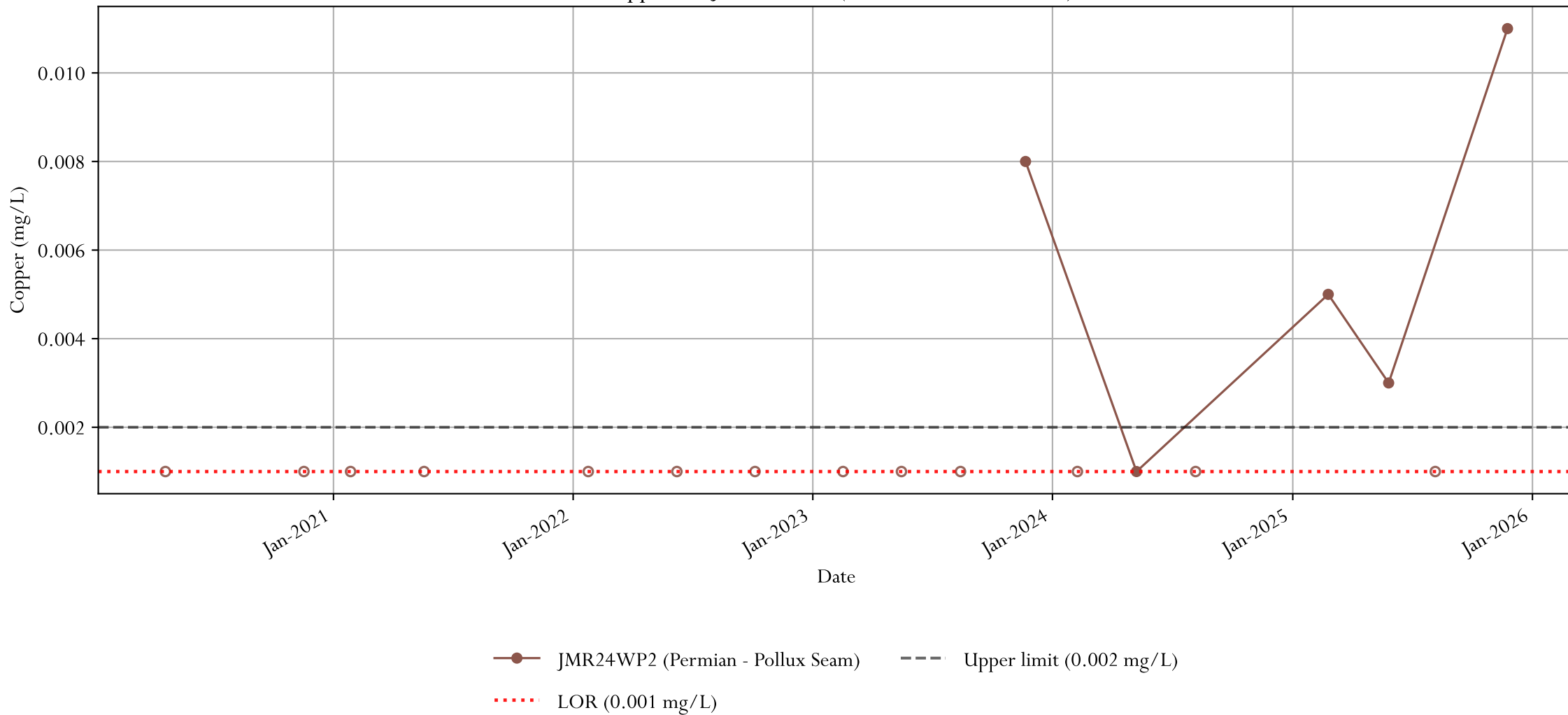
Chromium — JMR24WP2 (Permian - Pollux Seam)



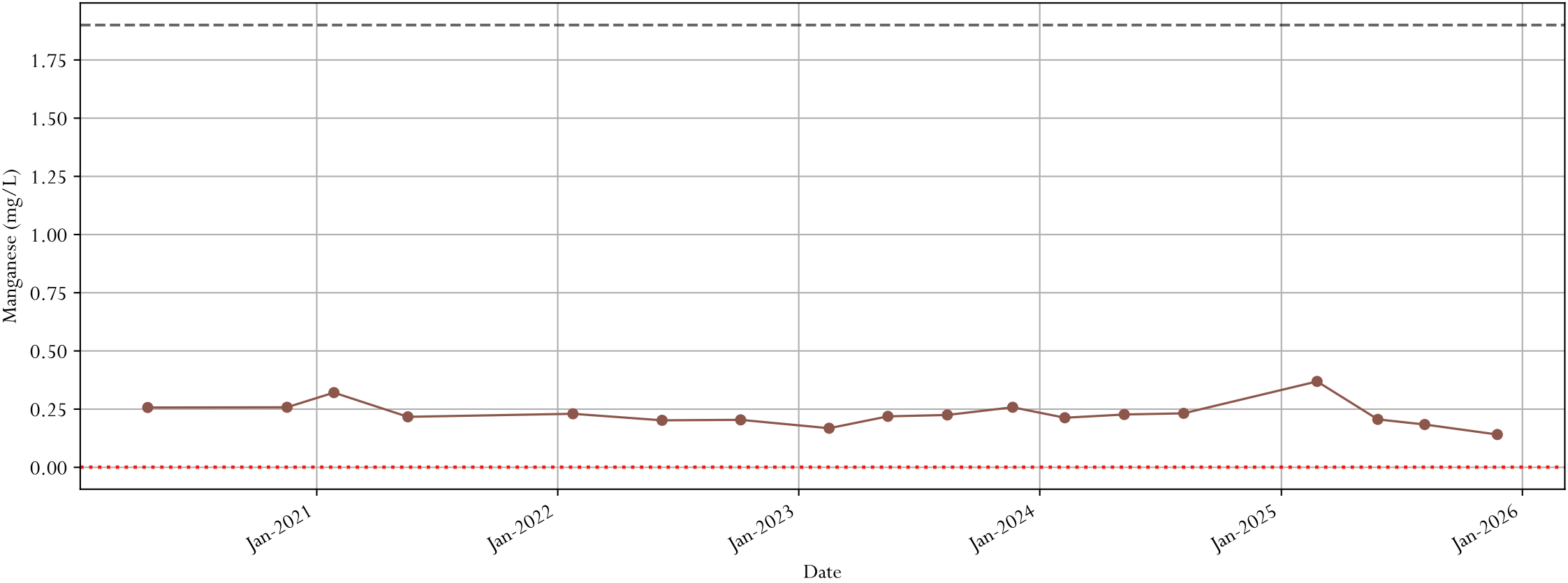
Cobalt — JMR24WP2 (Permian - Pollux Seam)



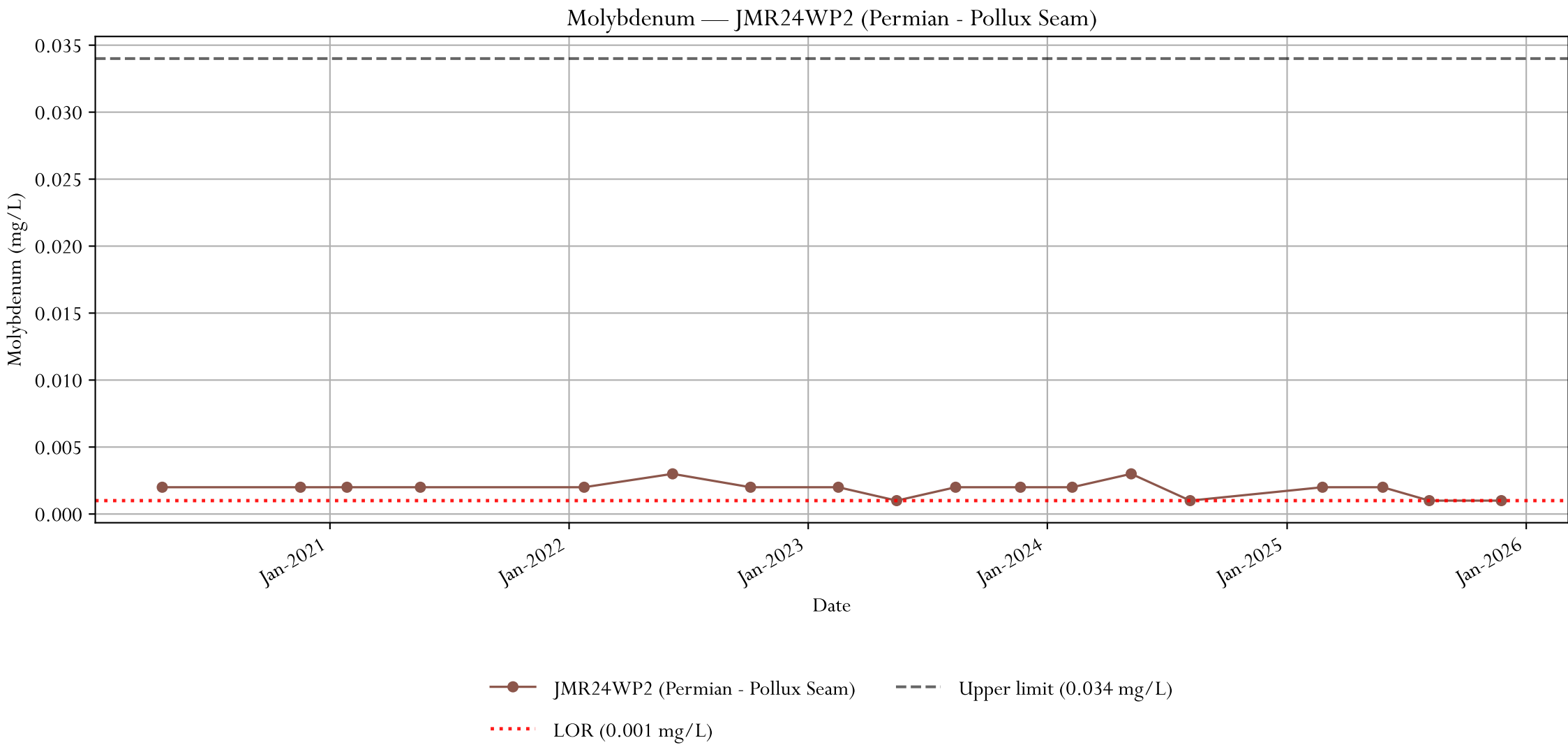
Copper — JMR24WP2 (Permian - Pollux Seam)

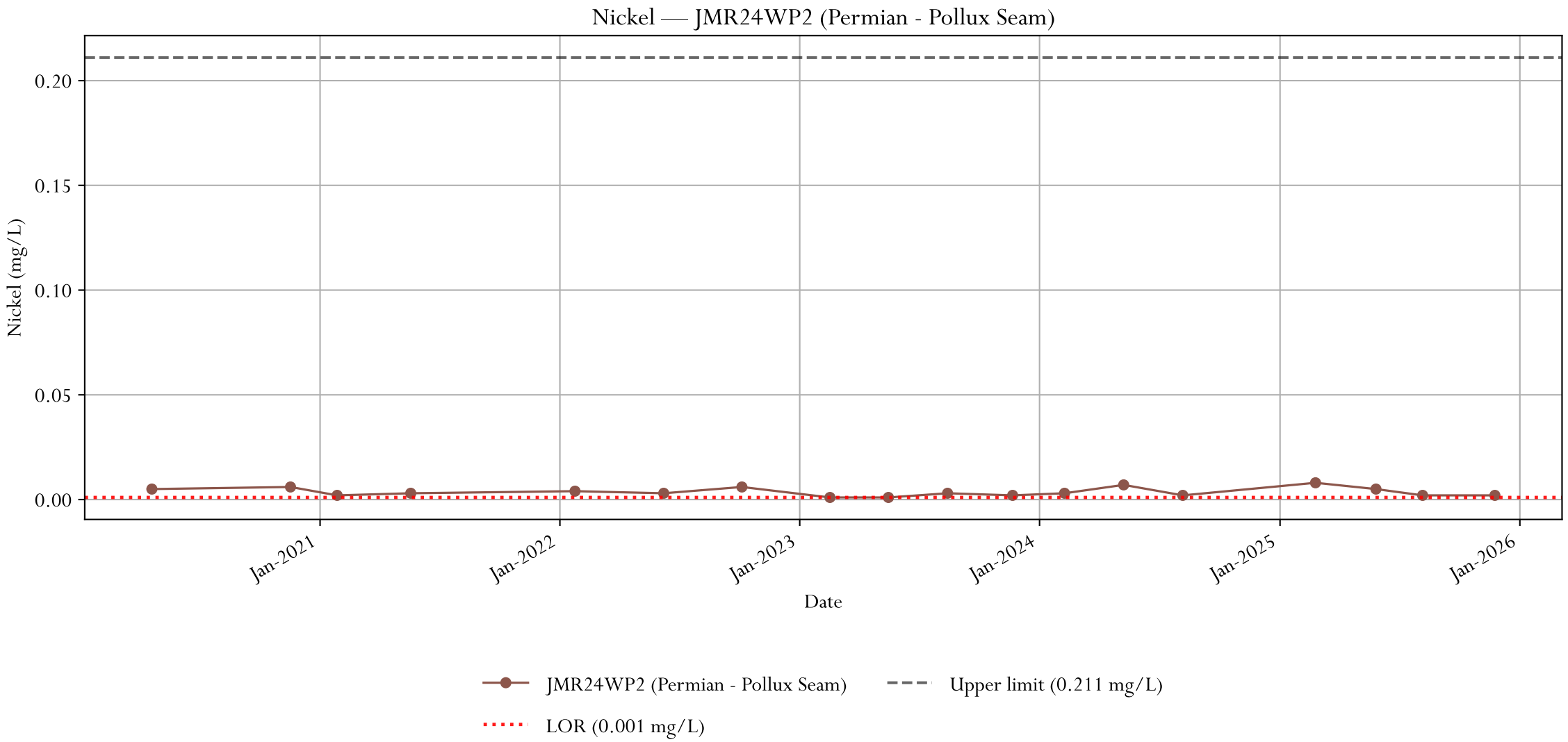


Manganese — JMR24WP2 (Permian - Pollux Seam)

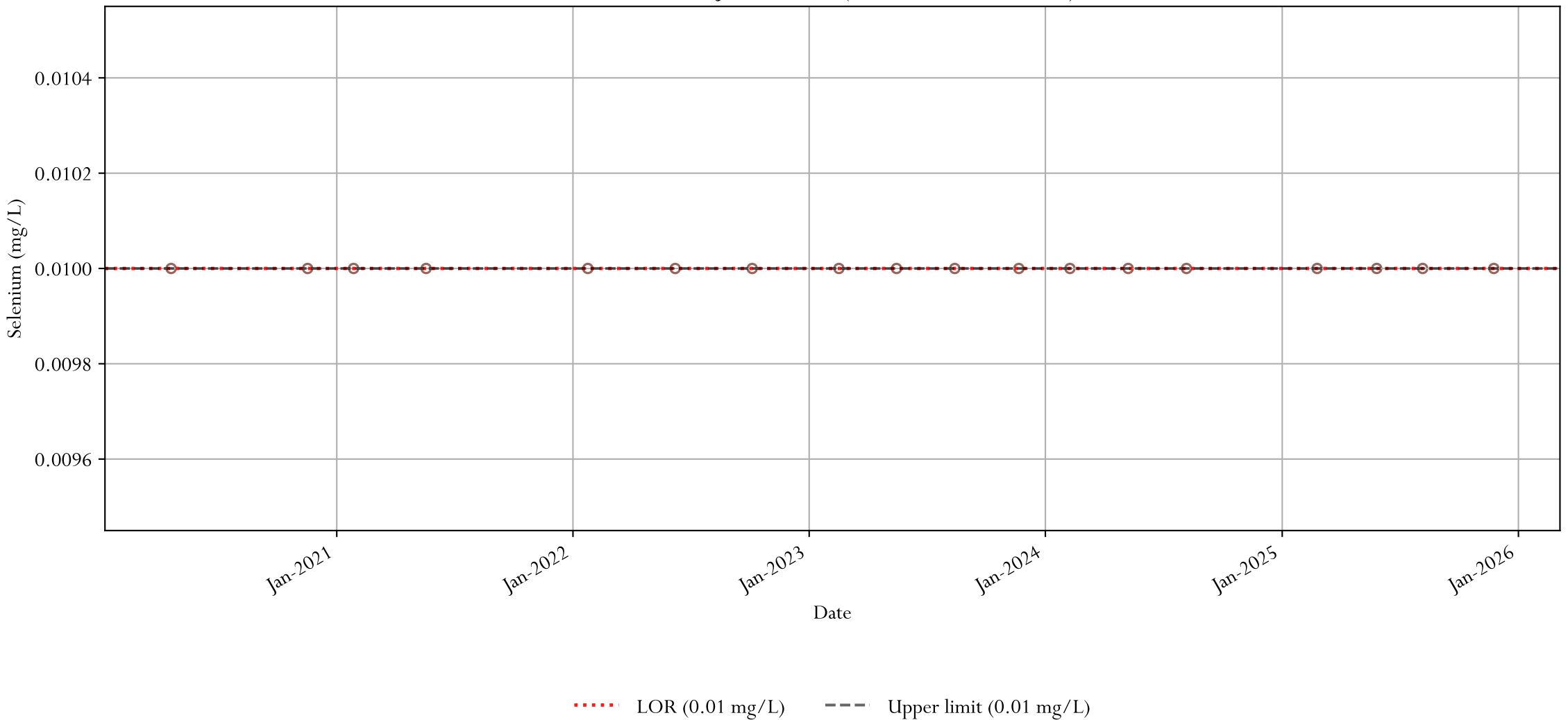


—●— JMR24WP2 (Permian - Pollux Seam) - - - Upper limit (1.9 mg/L)
..... LOR (0.001 mg/L)

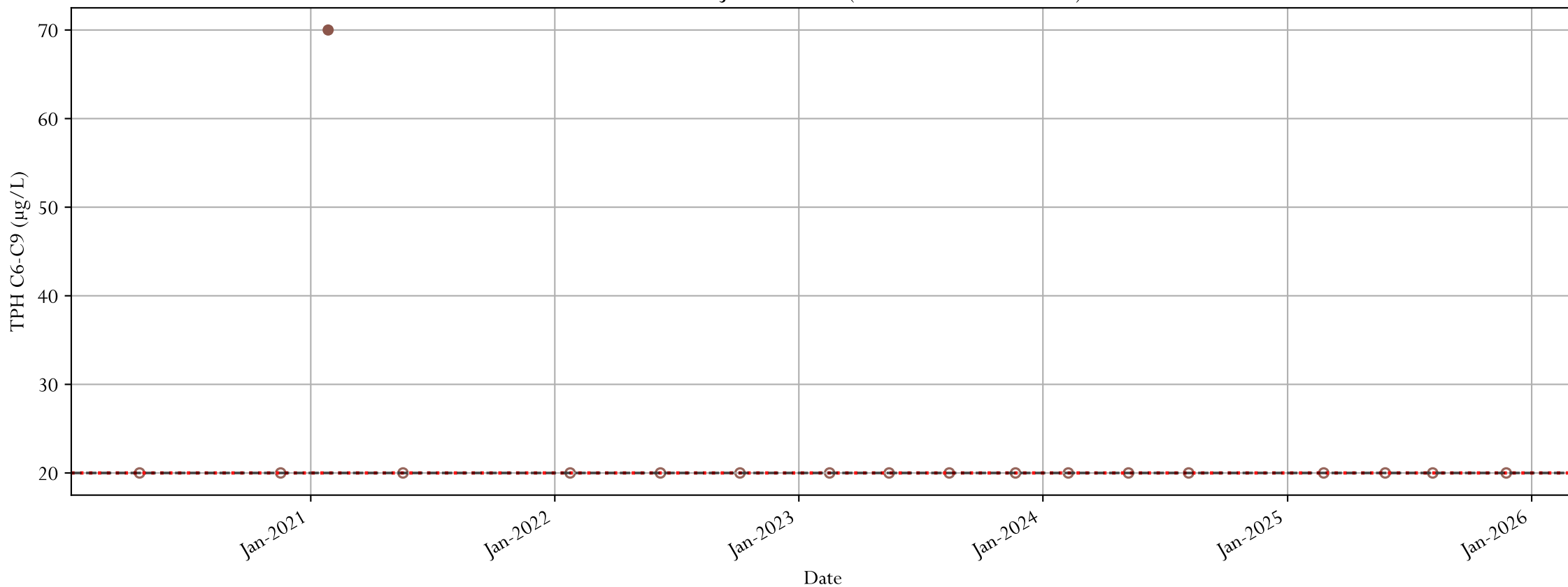




Selenium — JMR24WP2 (Permian - Pollux Seam)

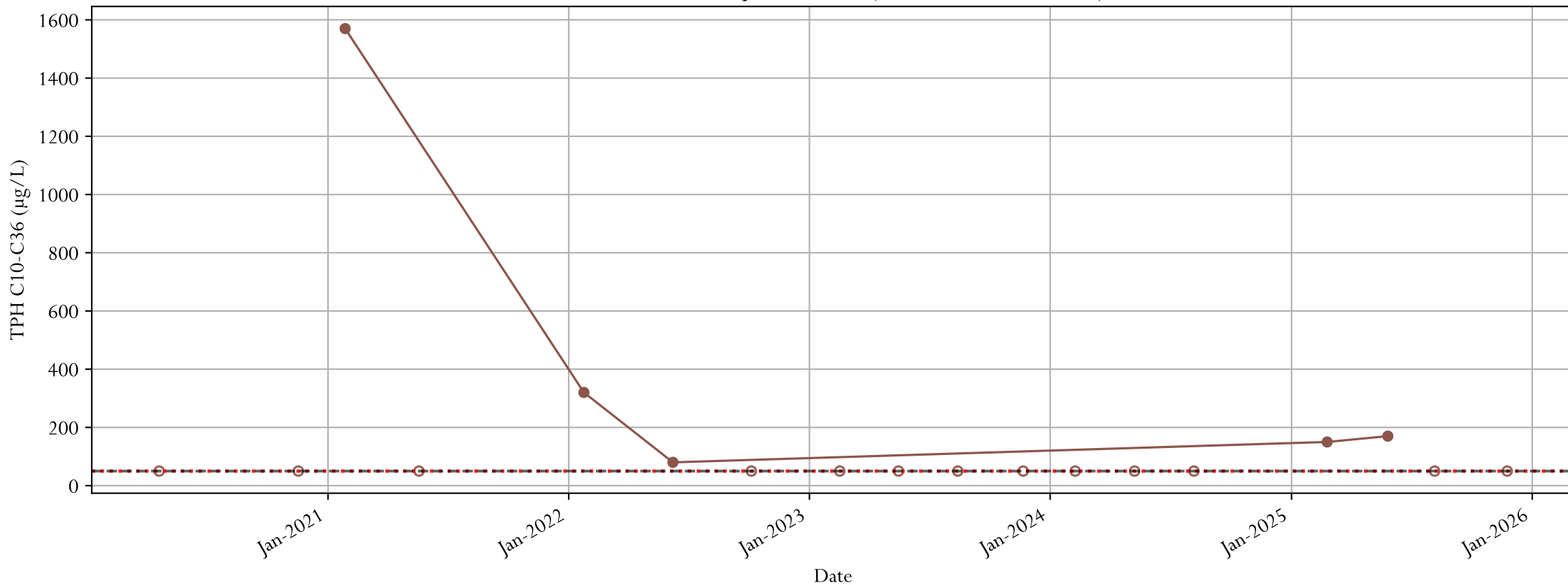


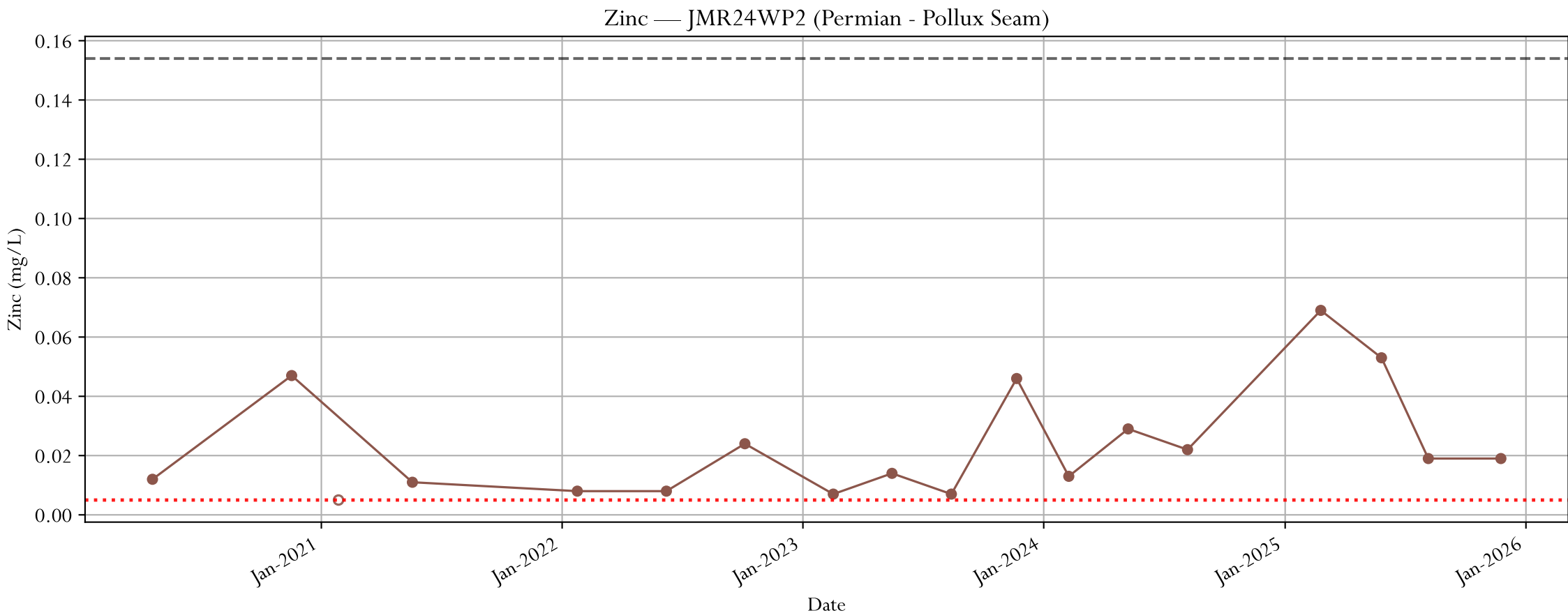
TPH C6-C9 — JMR24WP2 (Permian - Pollux Seam)



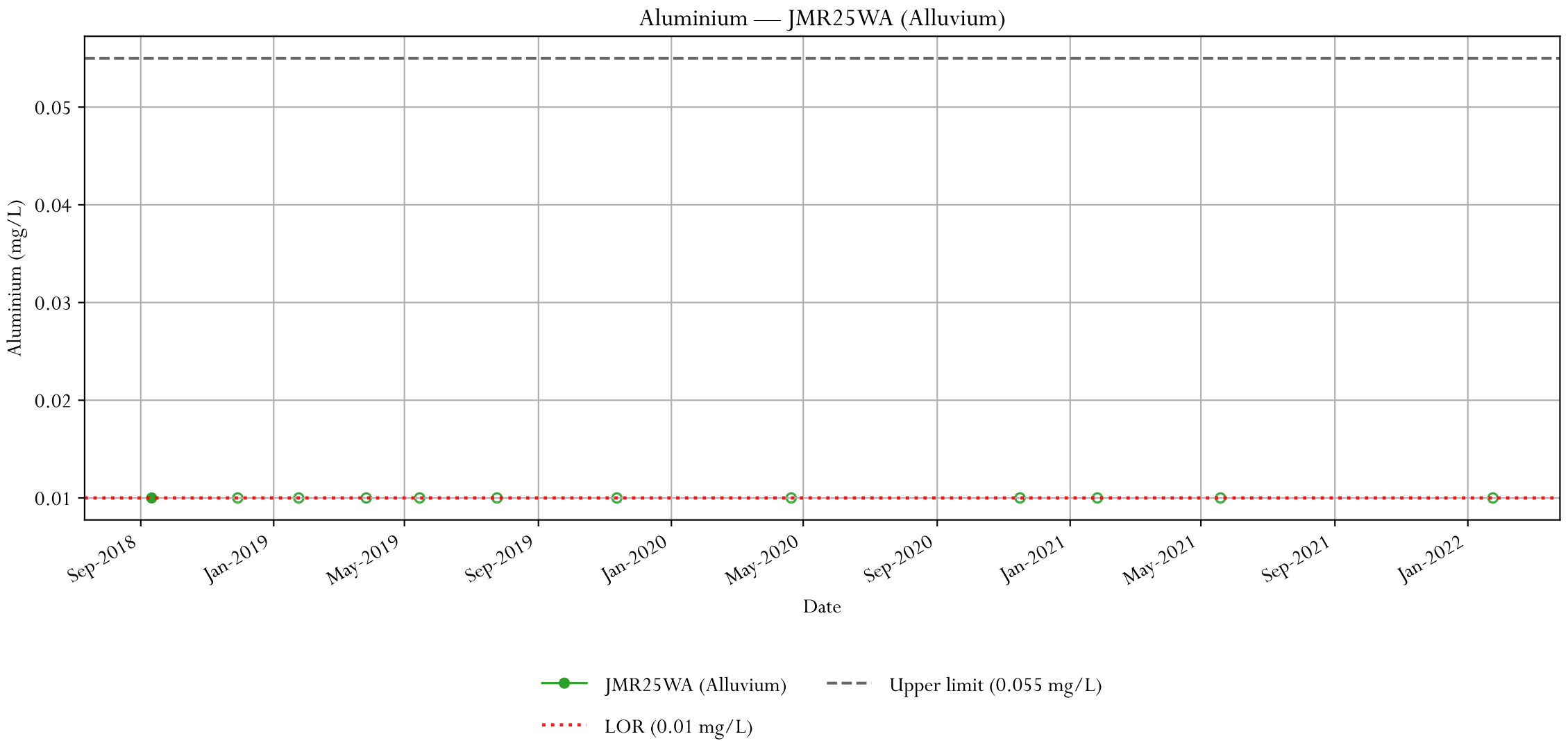
—●— JMR24WP2 (Permian - Pollux Seam)
 - - - Limit (20 µg/L)
 . . . LOR (20 µg/L)

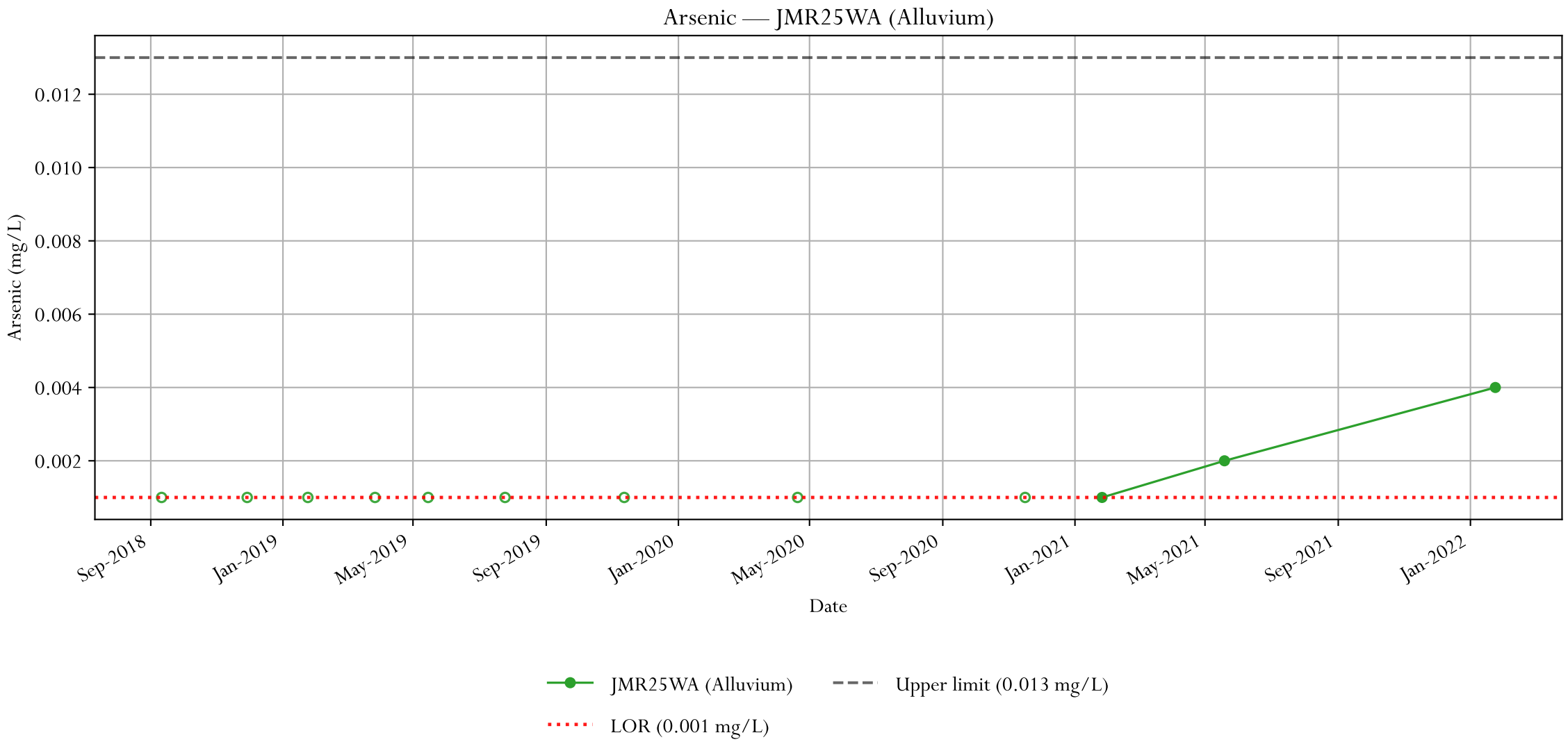
TPH C10-C36 — JMR24WP2 (Permian - Pollux Seam)



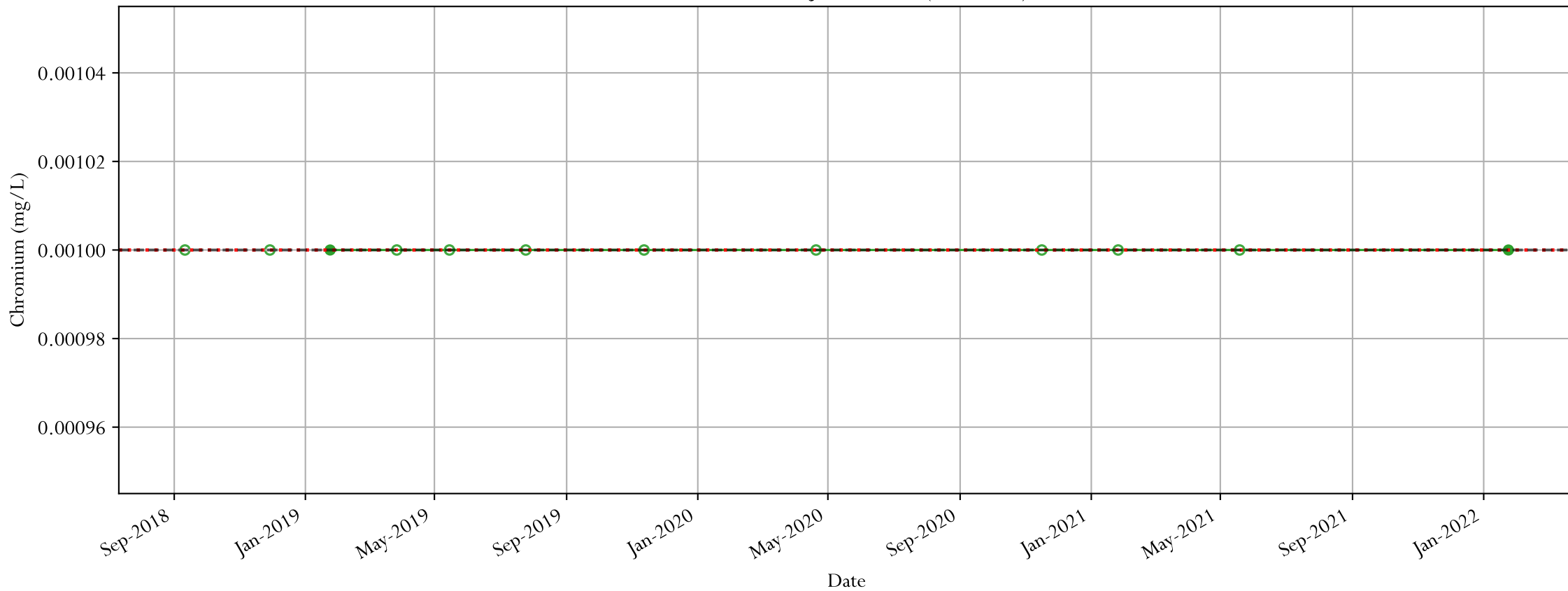


—●— JMR24WP2 (Permian - Pollux Seam) - - - Upper limit (0.154 mg/L)
..... LOR (0.005 mg/L)



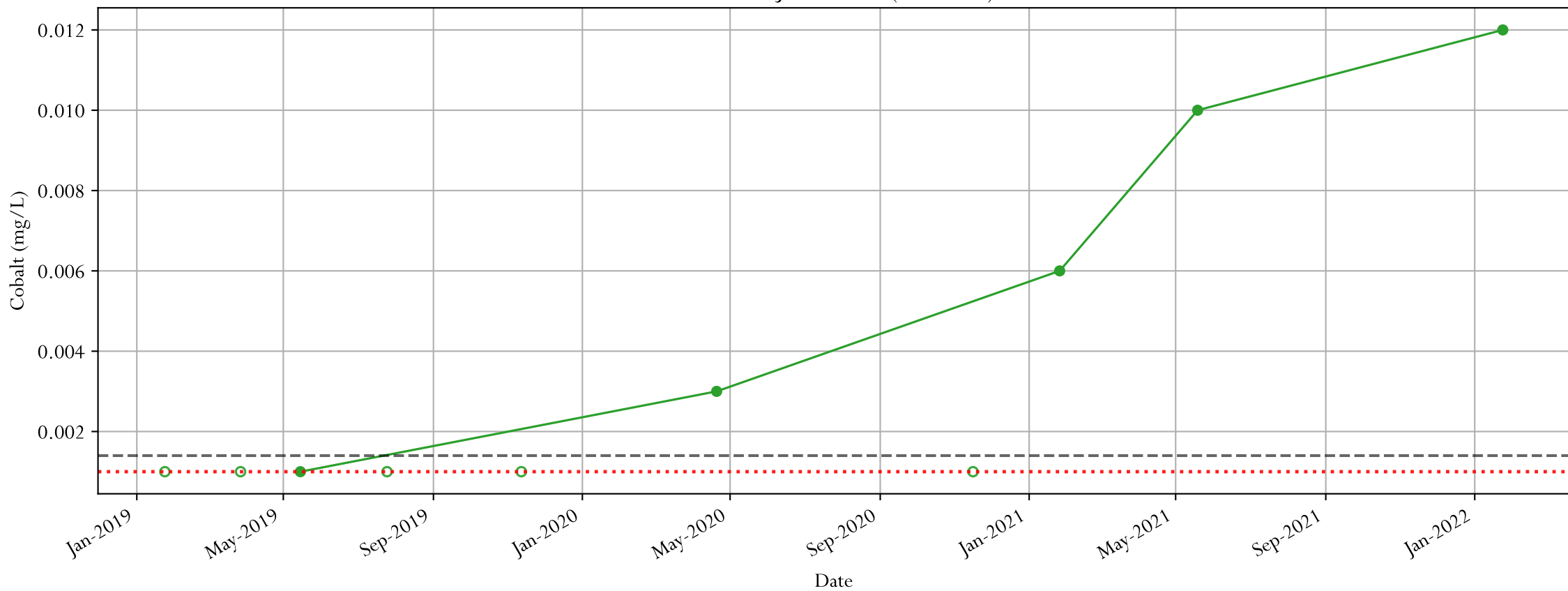


Chromium — JMR25WA (Alluvium)

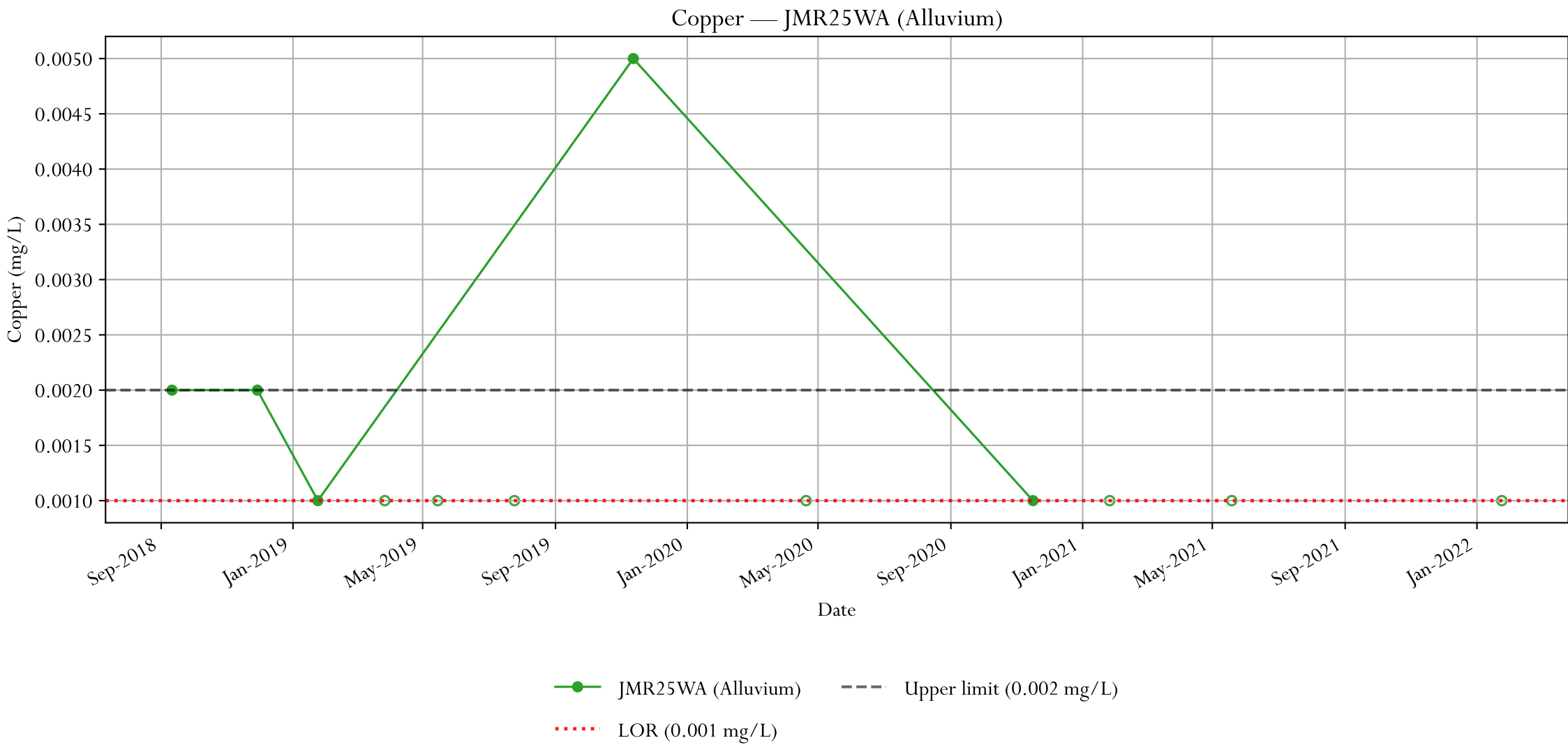


—●— JMR25WA (Alluvium) - - - Upper limit (0.001 mg/L)
... LOR (0.001 mg/L)

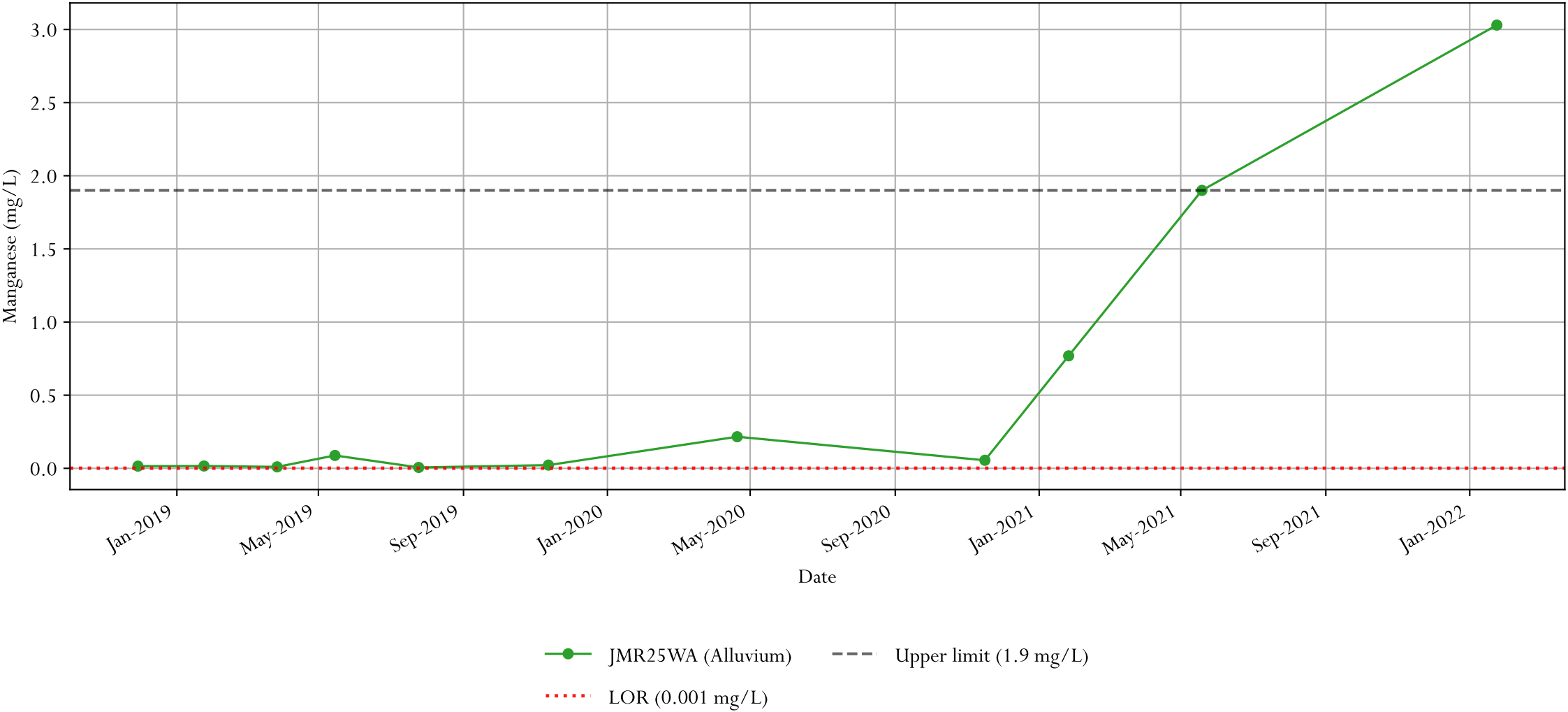
Cobalt — JMR25WA (Alluvium)

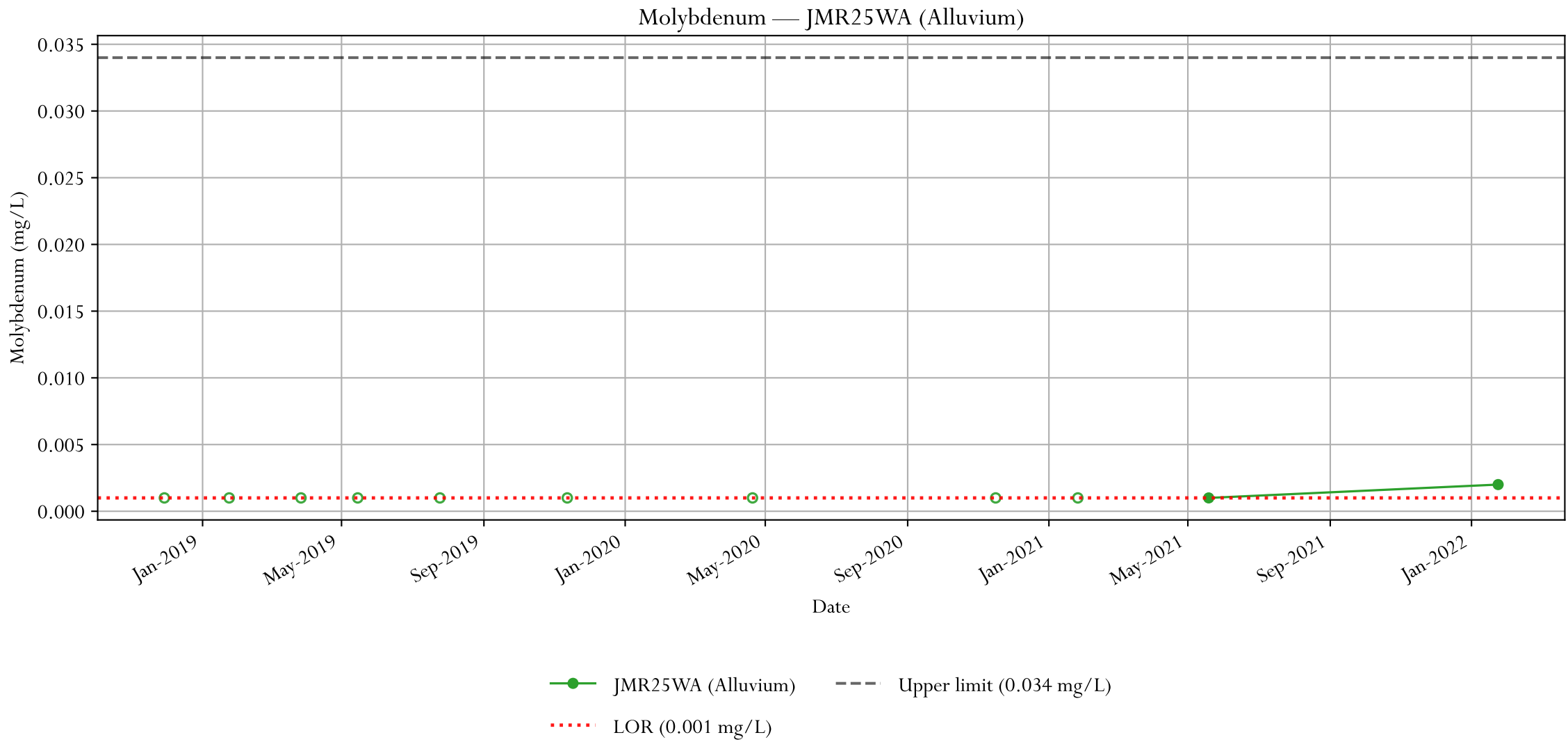


—●— JMR25WA (Alluvium) - - - Upper limit (0.0014 mg/L)
... LOR (0.001 mg/L)

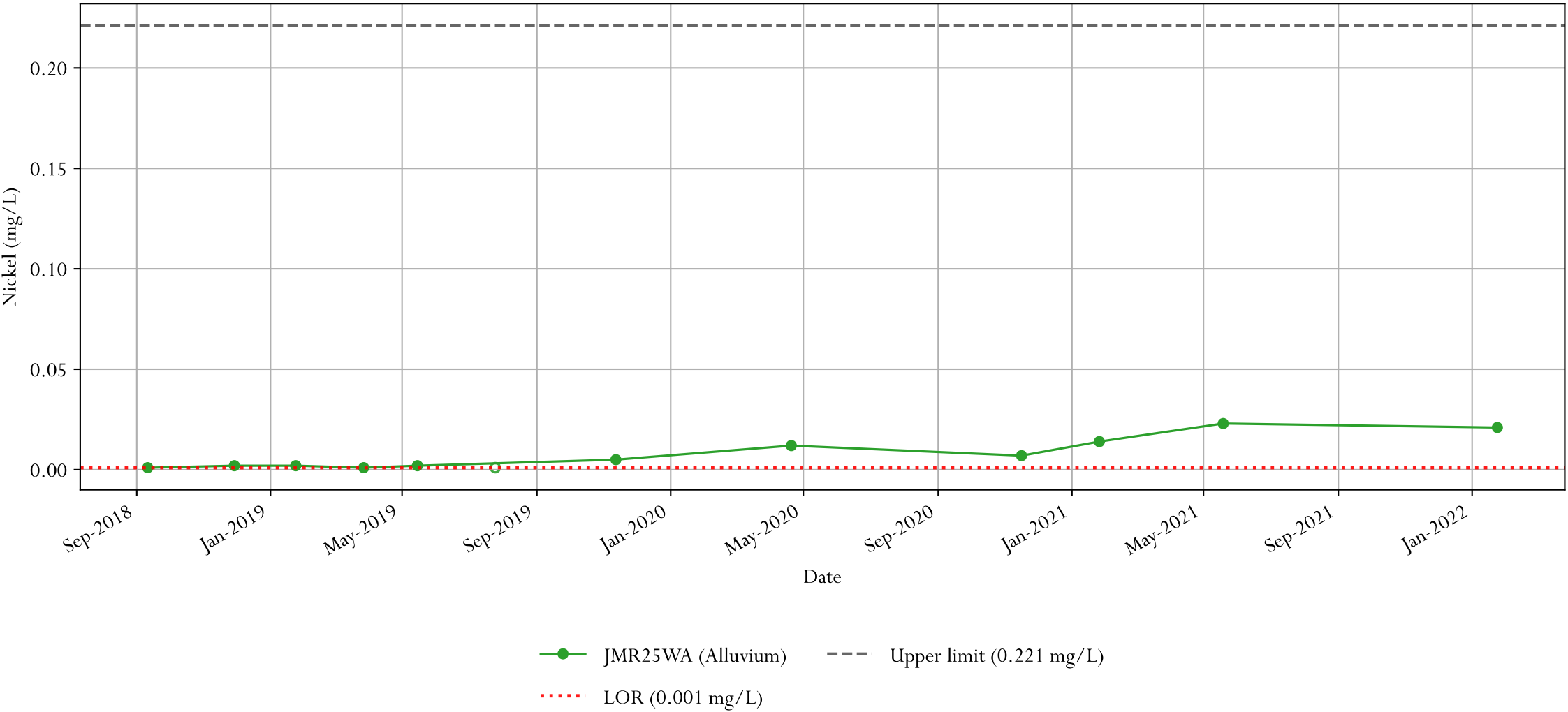


Manganese — JMR25WA (Alluvium)

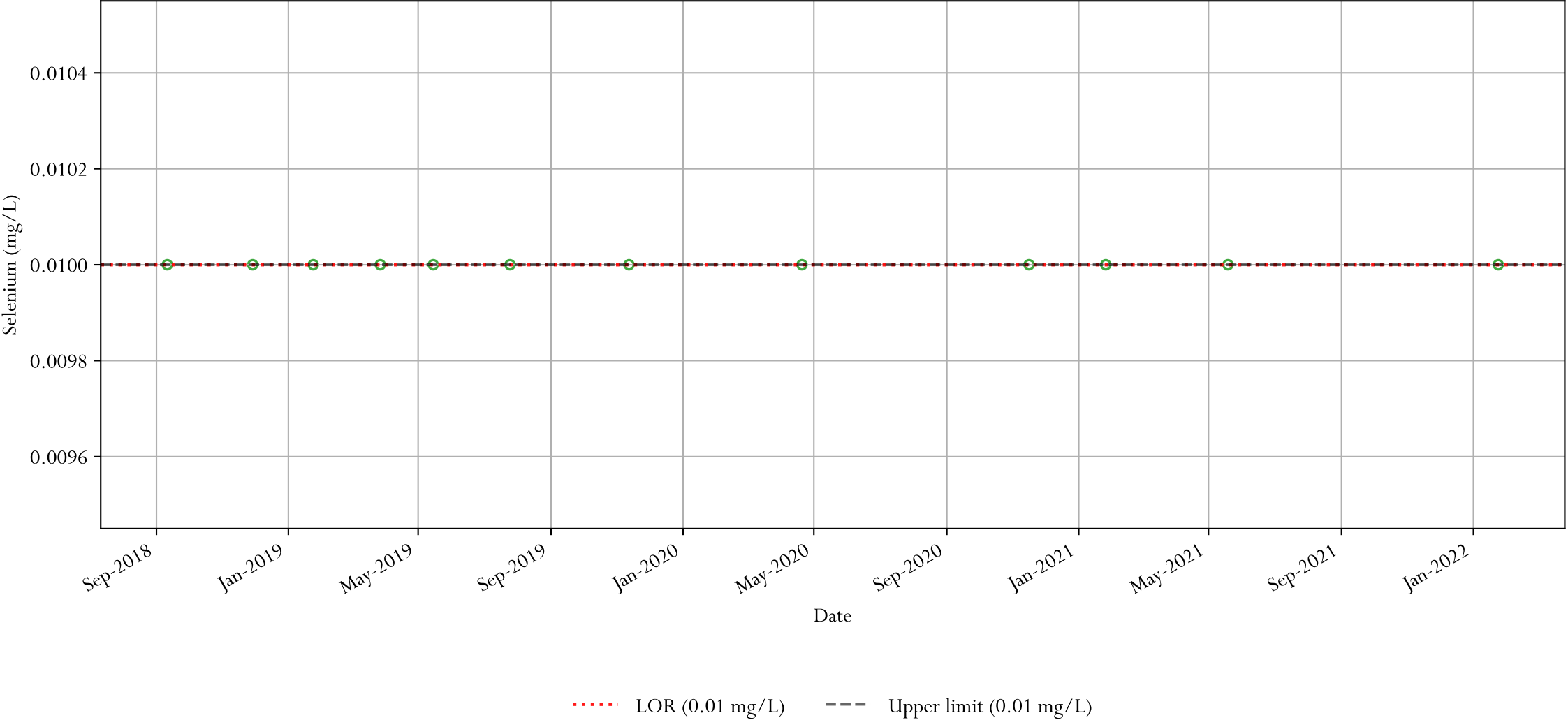




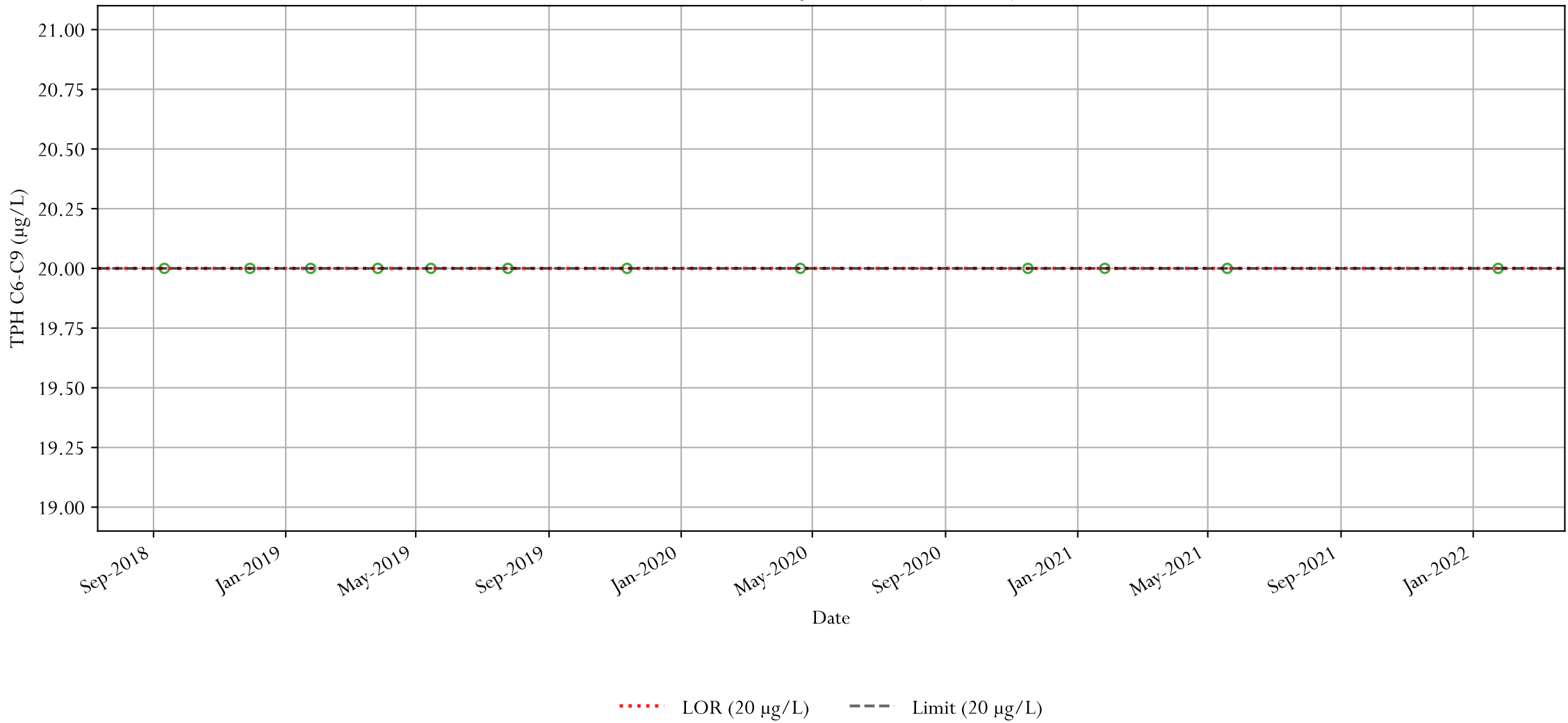
Nickel — JMR25WA (Alluvium)



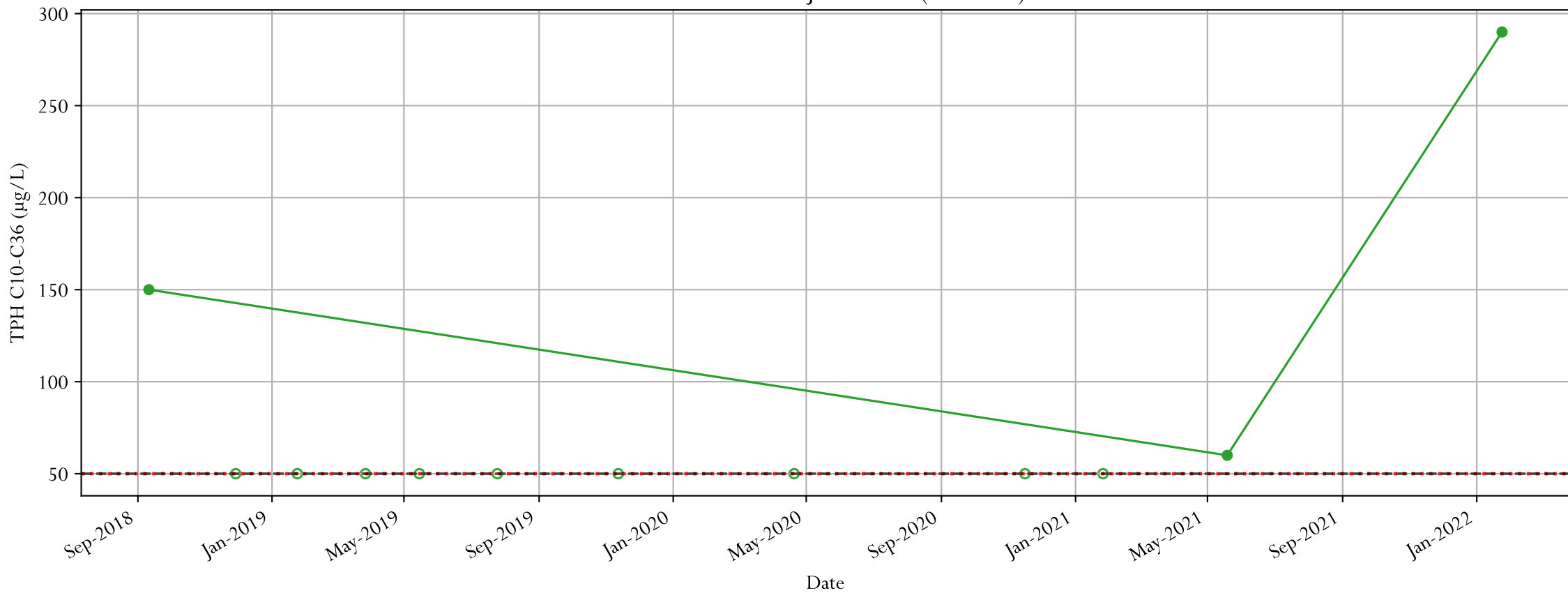
Selenium — JMR25WA (Alluvium)



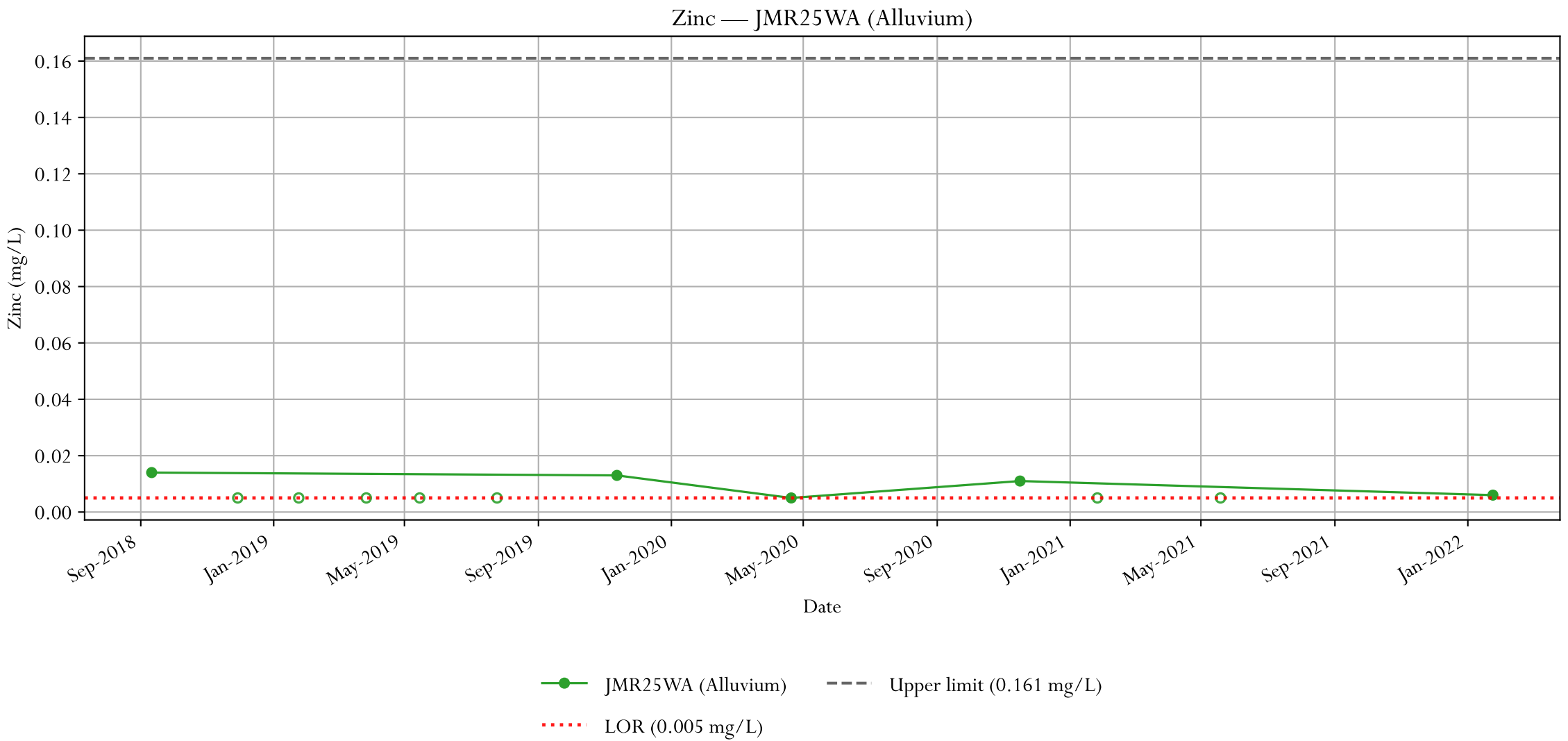
TPH C6-C9 — JMR25WA (Alluvium)



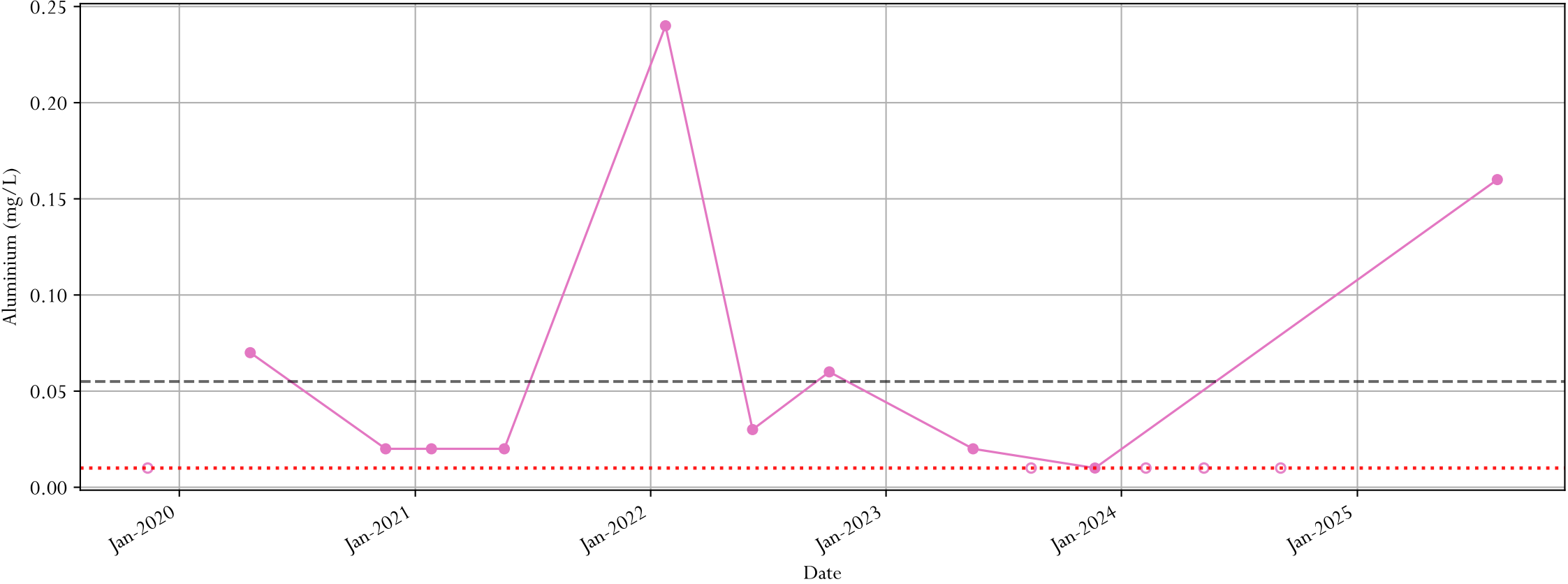
TPH C10-C36 — JMR25WA (Alluvium)



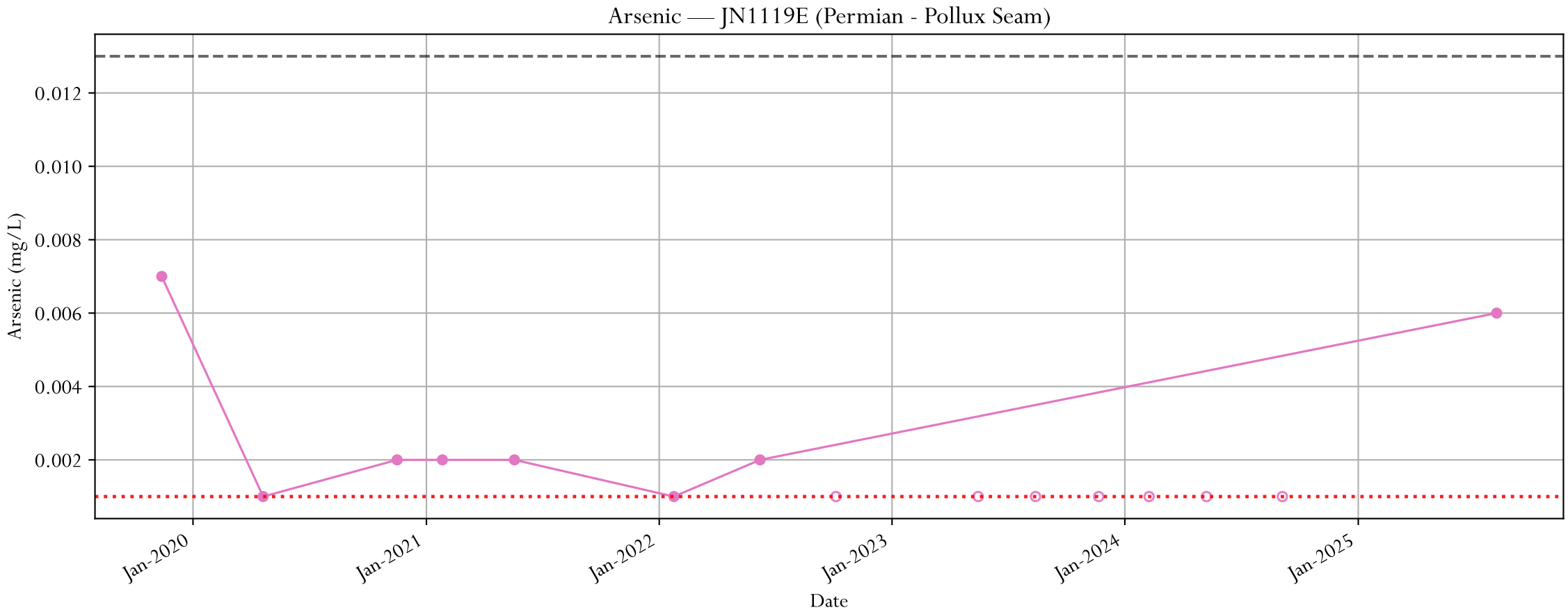
—●— JMR25WA (Alluvium)
 - - - Limit (50 µg/L)
 . . . LOR (50 µg/L)



Aluminium — JN1119E (Permian - Pollux Seam)

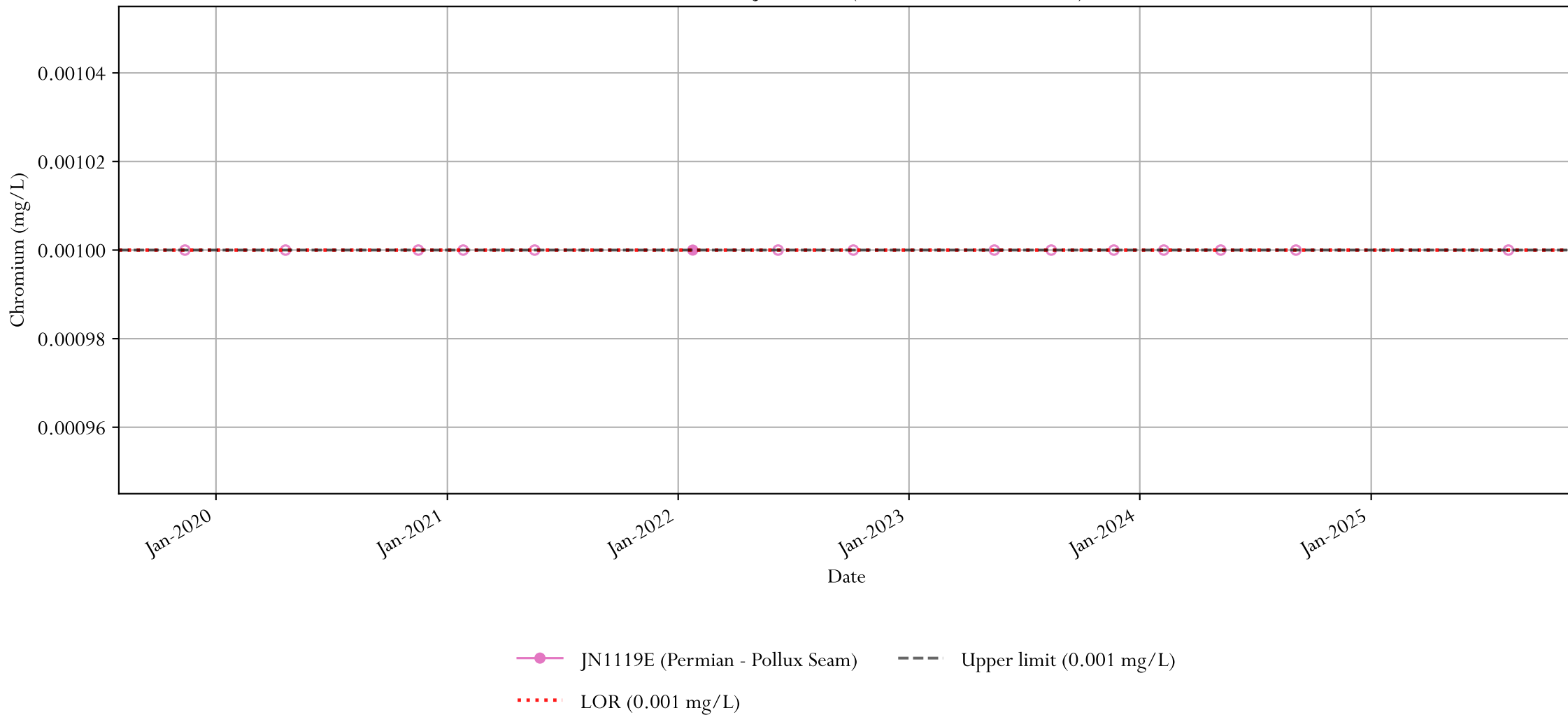


—●— JN1119E (Permian - Pollux Seam) - - - Upper limit (0.055 mg/L)
... LOR (0.01 mg/L)

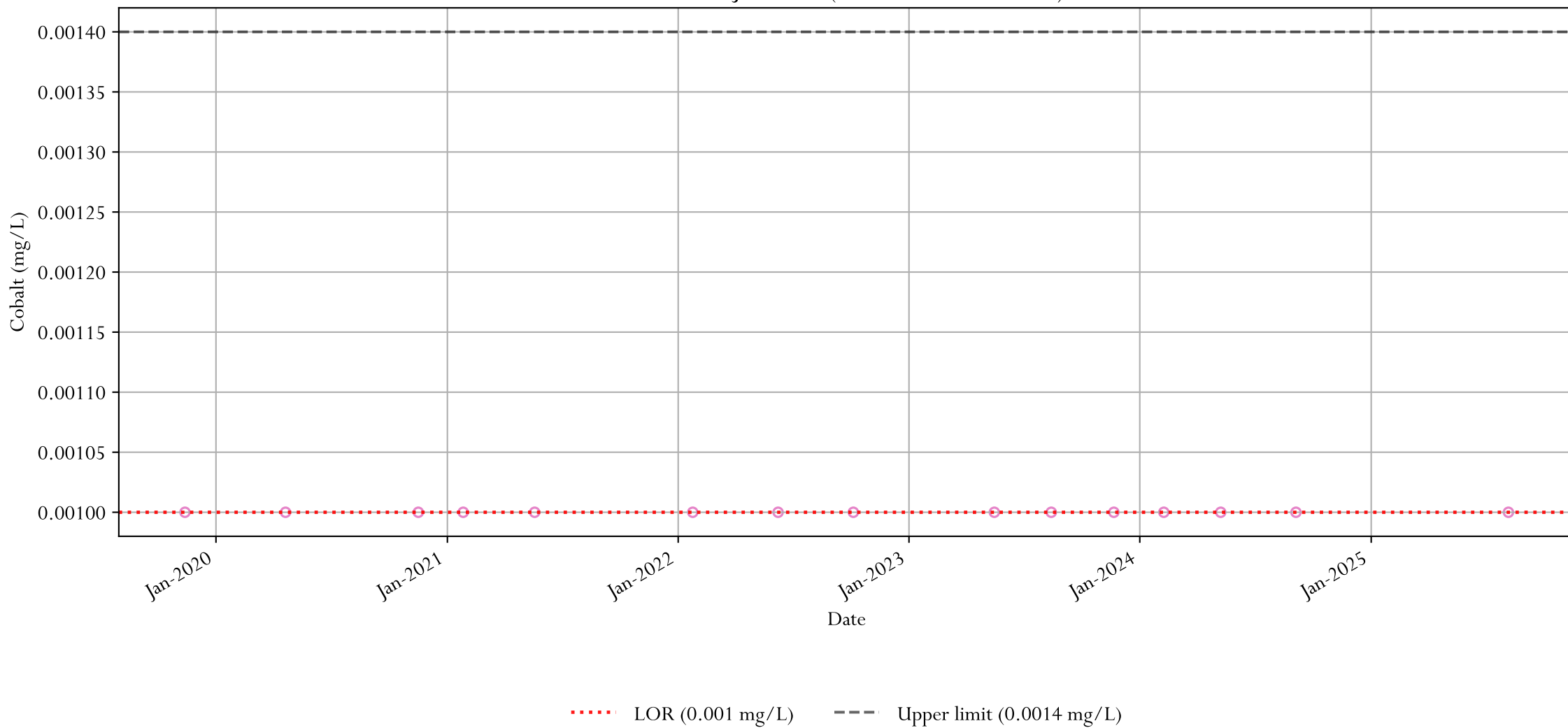


—●— JN1119E (Permian - Pollux Seam) - - - Upper limit (0.013 mg/L)
..... LOR (0.001 mg/L)

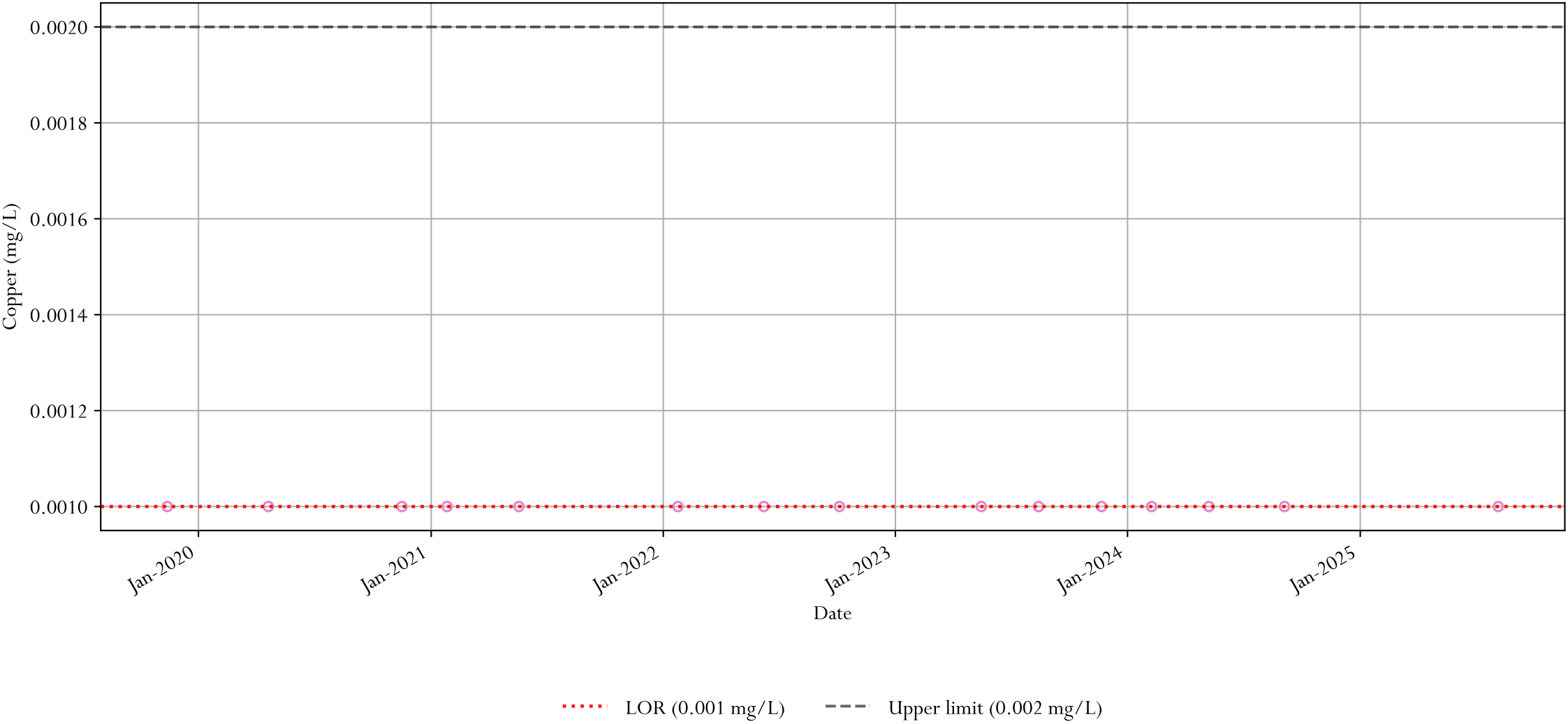
Chromium — JN1119E (Permian - Pollux Seam)



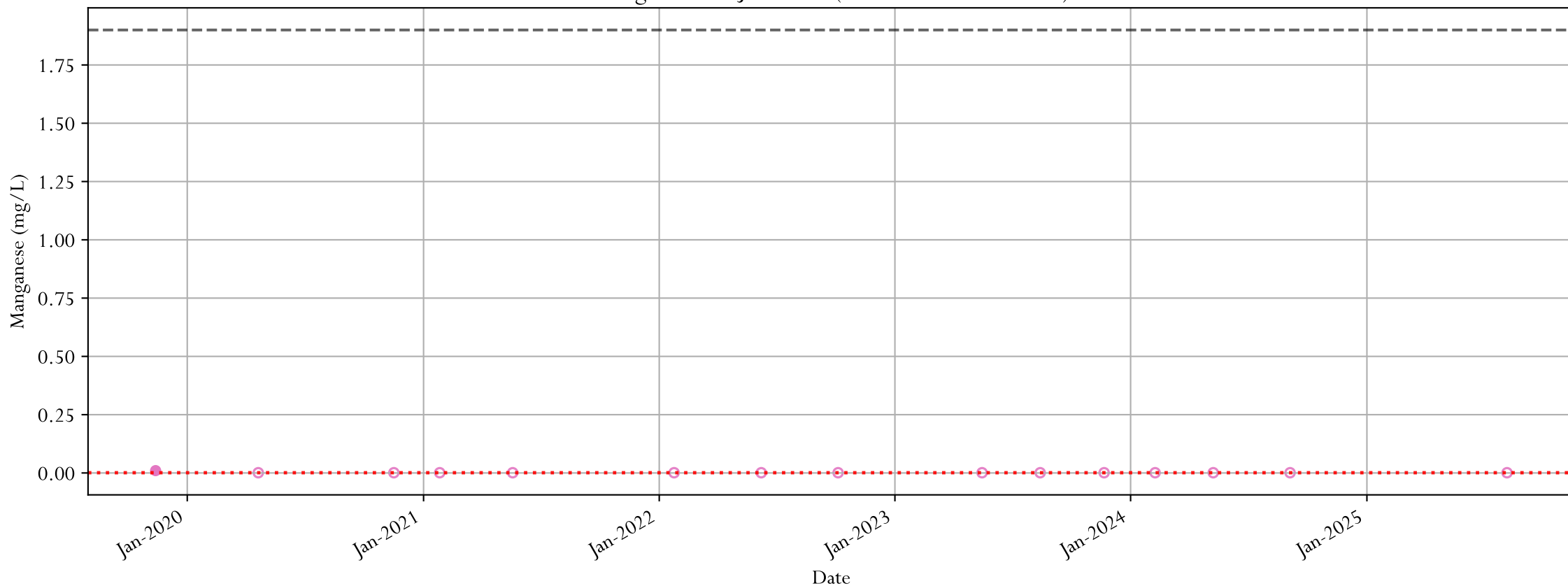
Cobalt — JN1119E (Permian - Pollux Seam)



Copper — JN1119E (Permian - Pollux Seam)

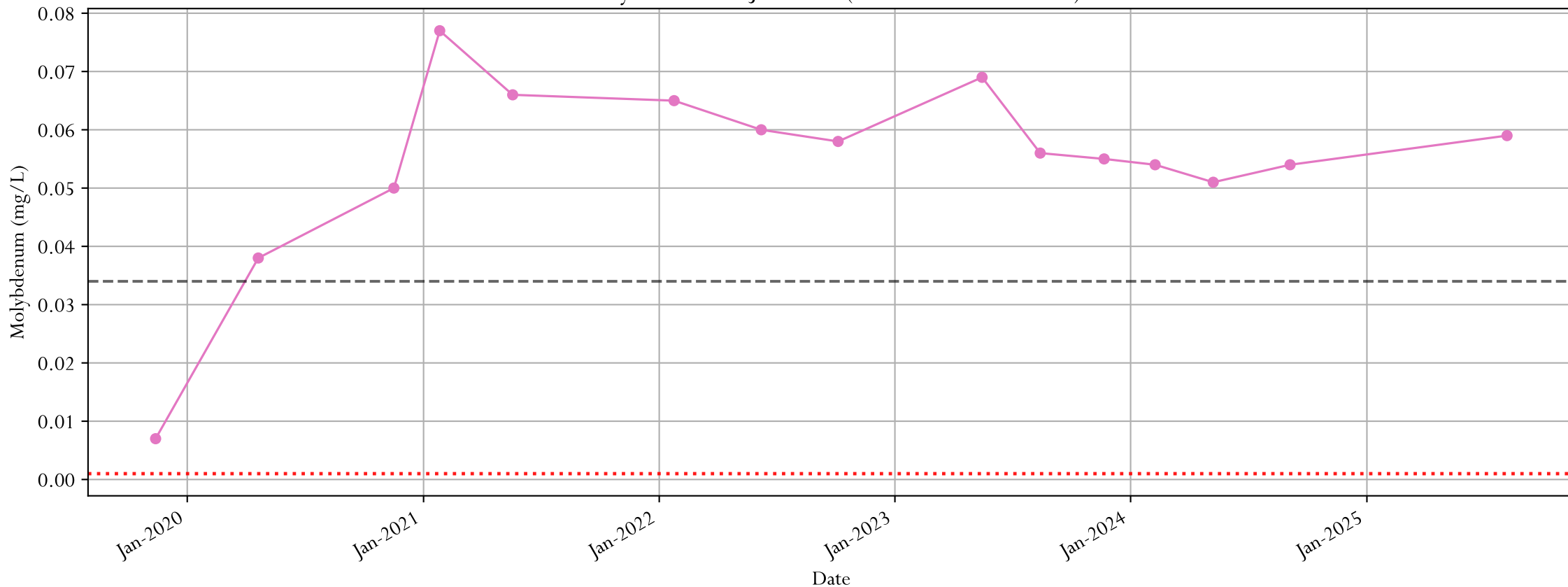


Manganese — JN1119E (Permian - Pollux Seam)

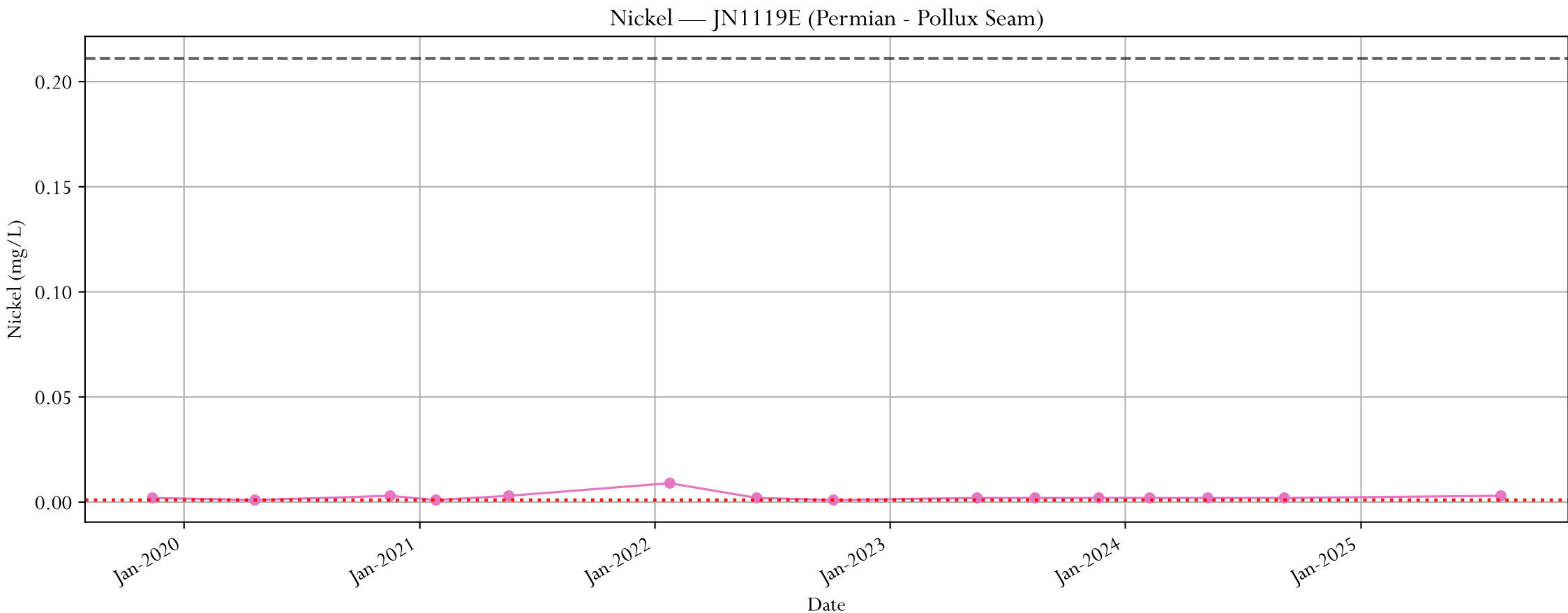


—●— JN1119E (Permian - Pollux Seam) - - - Upper limit (1.9 mg/L)
... LOR (0.001 mg/L)

Molybdenum — JN1119E (Permian - Pollux Seam)



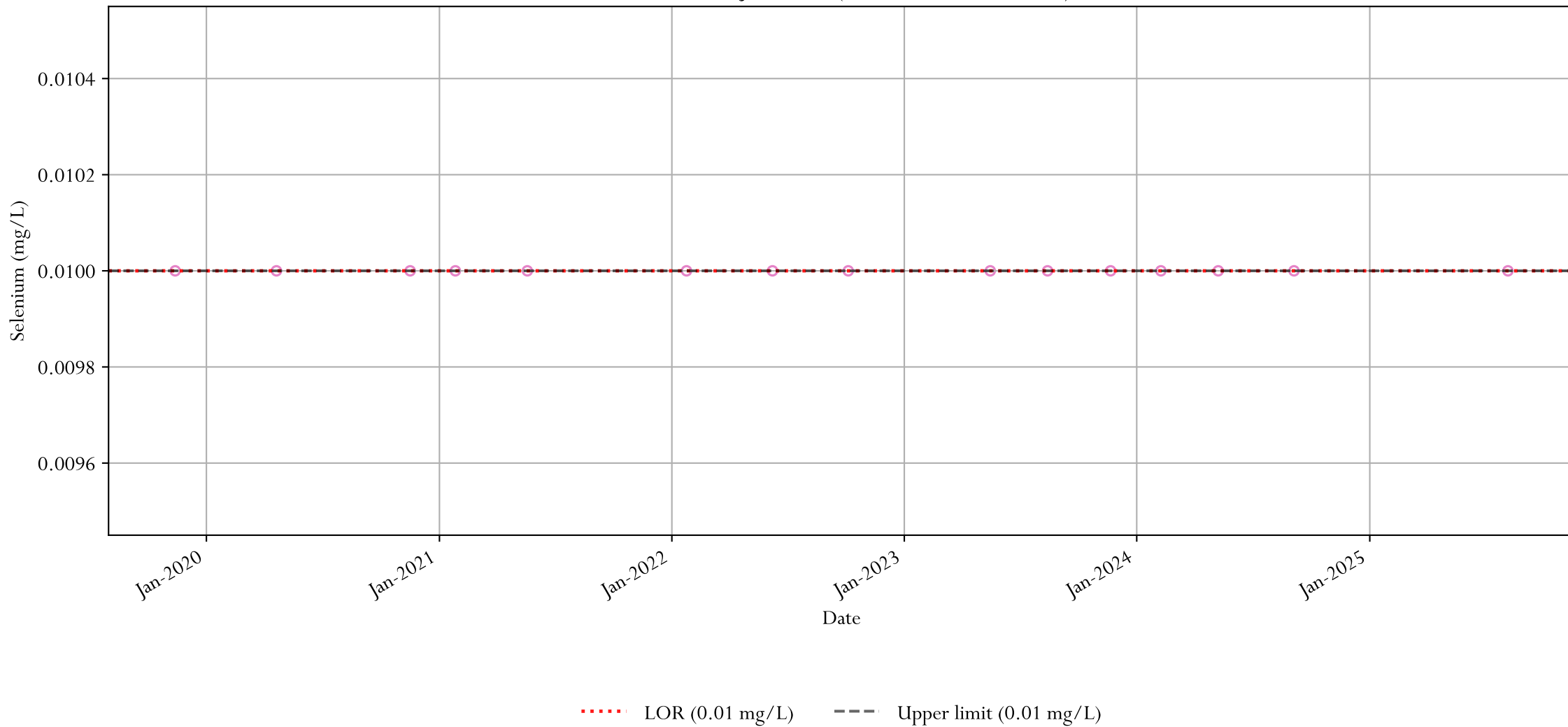
—●— JN1119E (Permian - Pollux Seam) - - - Upper limit (0.034 mg/L)
..... LOR (0.001 mg/L)



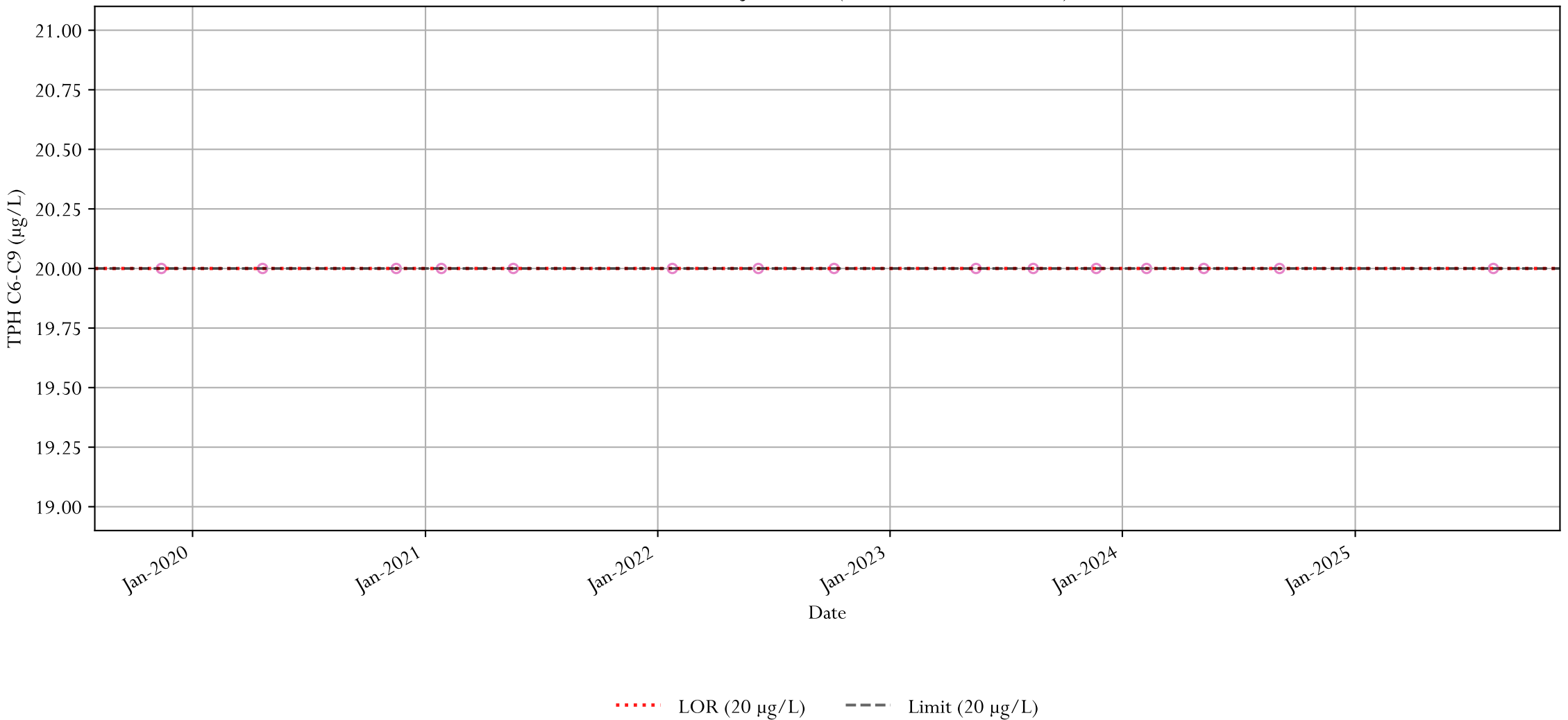
—●— JN1119E (Permian - Pollux Seam) - - - Upper limit (0.211 mg/L)

... LOR (0.001 mg/L)

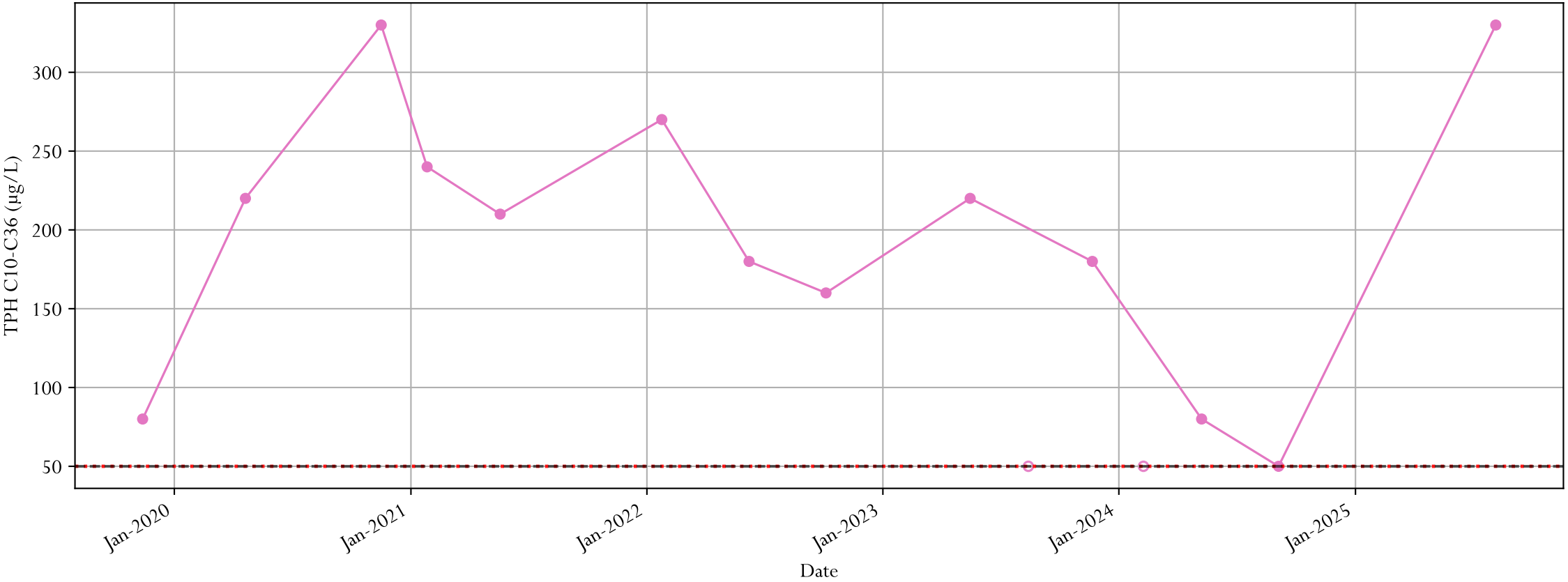
Selenium — JN1119E (Permian - Pollux Seam)



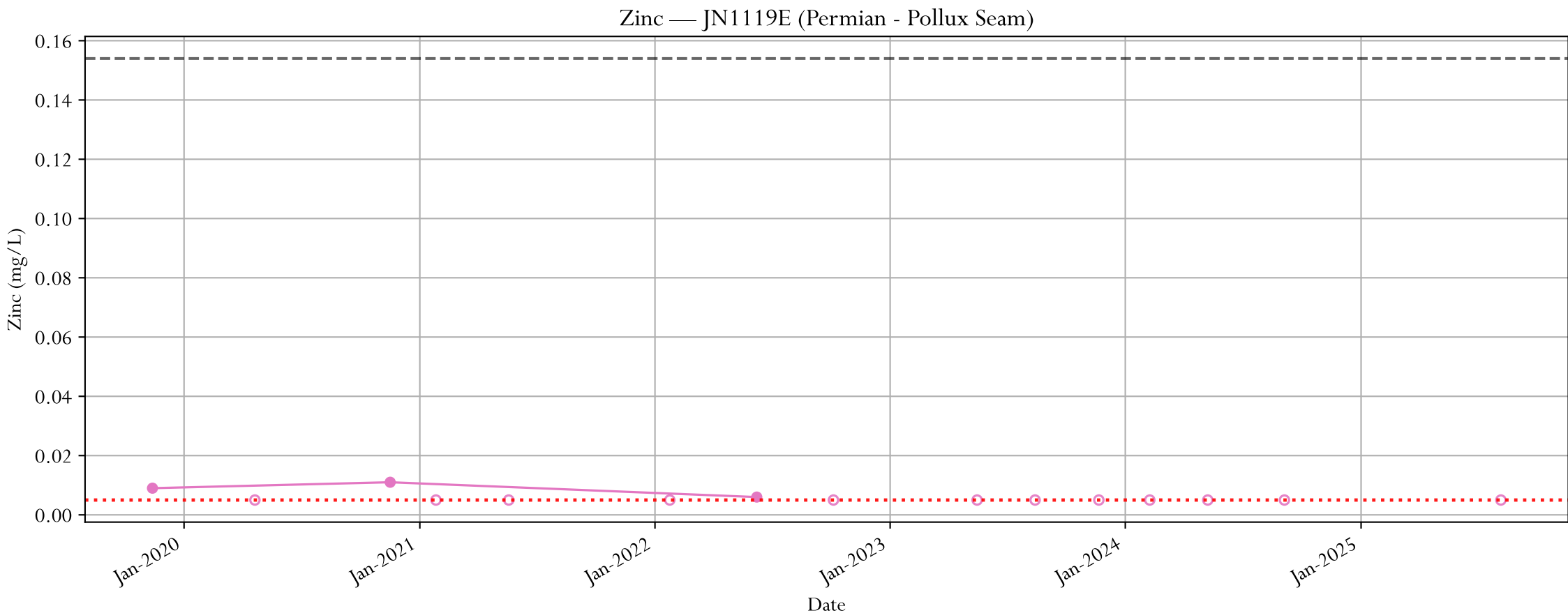
TPH C6-C9 — JN1119E (Permian - Pollux Seam)



TPH C10-C36 — JN1119E (Permian - Pollux Seam)



—●— JN1119E (Permian - Pollux Seam) - - - Limit (50 µg/L)
..... LOR (50 µg/L)



—●— JN1119E (Permian - Pollux Seam) - - - Upper limit (0.154 mg/L)
..... LOR (0.005 mg/L)