



2024 – 2025 Annual Water Monitoring Report

Mt Piper Power Station Brine
Conditioned Fly Ash Co-Placement
Project and EPL 13007

PREPARED FOR
EnergyAustralia NSW Pty Ltd

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2024 – 2025 Annual Water Monitoring Report

Mt Piper Power Station Brine Conditioned Fly Ash Co-Placement Project and EPL 13007

0810778_R01



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CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	3
1.1 BACKGROUND	3
1.2 ENVIRONMENTAL MANAGEMENT FRAMEWORK	3
1.2.1 The MPAR Water Management Plan	4
1.2.2 The LNAR Operational Environmental Management Plan	4
1.2.3 Springvale Water Treatment Project	4
1.3 REGULATORY REQUIREMENTS	4
1.4 OBJECTIVES	5
1.5 CONTACT	5
1.6 SCOPE OF WORK	6
1.7 REPORT STRUCTURE	7
2. INDEPENDENT GROUNDWATER INVESTIGATION	8
2.1 SUMMARY OF MODELLED SPR LINKAGES	9
3. ANNUAL OPERATIONS SUMMARY	10
3.1 ASH PLACEMENT	10
3.2 BRINE COMPOSITION	11
3.3 SITE WATER DISCHARGES	12
3.4 INCIDENTS AND NON-COMPLIANCES	12
3.5 COMMUNITY ENGAGEMENT	13
3.6 ACTIONS AND ACTIVITIES PLANNED FOR 2026	14
4. ENVIRONMENTAL SETTING	15
4.1 CLIMATE	15
4.2 HYDROLOGY	16
4.3 GEOLOGY	16
4.4 HYDROGEOLOGY	17
5. WATER CHARACTERISATION AND MONITORING PROGRAM	18
5.1 STREAM HEALTH, STREAM FLOW AND CHANNEL STABILITY MONITORING	18
5.2 SITE INSPECTIONS	18
5.3 WATER QUALITY MONITORING	18
5.3.1 Monitoring Methods	19
5.3.2 Adopted Guideline Values	19
5.4 MONITORING ZONES	20
5.4.1 Groundwater	20
5.4.2 Surface Water	20
5.5 TREND ASSESSMENT SUMMARY	21
5.5.1 Trend Assessment Approach	21
6. GROUNDWATER DATA ASSESSMENT	22
6.1 OBJECTIVE	22
6.2 GROUNDWATER MONITORING LOCATIONS AND FREQUENCY	22

6.3	GROUNDWATER MONITORING RESULTS	25
6.3.1	Groundwater Elevation and Inferred Flow Directions	25
6.3.2	Hydrogeological Parameters	26
6.3.3	Groundwater Quality	27
6.3.4	Discussion of Results	46
7.	SURFACE WATER DATA ASSESSMENT	50
7.1	OBJECTIVE	50
7.2	SURFACE WATER MONITORING LOCATIONS AND FREQUENCY	50
7.3	SURFACE WATER MONITORING RESULTS	51
7.3.1	Upstream Surface Water Monitoring Results	51
7.3.2	Midstream Surface Water Monitoring Results	53
7.3.3	Downstream Surface Water Monitoring Results	56
7.4	SURFACE WATER FLOW VS CONCENTRATION DATA	58
7.5	DISCUSSION OF RESULTS	61
8.	DEVIATIONS FROM THE MONITORING PROGRAM	63
9.	GROUNDWATER MODEL VALIDATION	64
10.	STREAM HEALTH AND STREAM STABILITY RESULTS	66
10.1	WANGCOL CREEK STREAM STABILITY SURVEY	66
10.2	STREAM HEALTH MONITORING	66
11.	COMPARISON TO THE TARPS	68
11.1	LEACHATE AND BRINE WASTE POND MANAGEMENT TRIGGERS	69
11.2	COVER AND CAP INTEGRITY TRIGGERS	70
11.3	UNSUITABLE OR INSUFFICIENT VEGETATION TRIGGERS	70
11.4	ANALYTE CONCENTRATION TRIGGERS	70
11.4.1	Adopted Guideline Value Exceedance Triggers	70
11.4.2	Historical Maximum Triggers	71
11.4.3	Statistically Significant Increasing Trend Triggers	71
11.5	TARP SUMMARY	71
12.	SUMMARY AND RECOMMENDATIONS	72
13.	REFERENCES	73
14.	STATEMENT OF LIMITATIONS	75

APPENDIX A FIGURES

APPENDIX B REGULATORY REQUIREMENTS

APPENDIX C ASH REPOSITORY SURVEY

APPENDIX D BRINE COMPOSITION DATA

APPENDIX E STORMWATER FLOW VOLUME DATA

APPENDIX F SITE WEATHER DATA

APPENDIX G MONITORING PROGRAM

APPENDIX H	NALCO
APPENDIX I	SCREENING CRITERIA COMPARISON
APPENDIX J	HYDROGRAPHS
APPENDIX K	TABULATED GROUNDWATER DATA
APPENDIX L	TABULATED SURFACE WATER DATA
APPENDIX M	GROUNDWATER TRENDS
APPENDIX N	SURFACE WATER TRENDS
APPENDIX O	MANN-KENDALL METHODOLOGY
APPENDIX P	MANN-KENDALL OUTPUTS
APPENDIX Q	SURFACE WATER STATISTICAL ANALYSIS
APPENDIX R	TARP EVALUATION

LIST OF TABLES

TABLE 1-1	STATEMENT OF COMPLIANCE	5
TABLE 1-2	CONTACT DETAILS	5
TABLE 3-1	ASH REPOSITORIES CCC MEETING MINUTES	13
TABLE 4-1	LOCAL CLIMATE DATA FOR 2024/25	15
TABLE 4-2	LOCAL GEOLOGICAL UNITS	16
TABLE 6-1	GROUNDWATER MONITORING NETWORK	22
TABLE 6-2	GROUNDWATER SEEPAGE VELOCITY CALCULATIONS	27
TABLE 7-1	SURFACE WATER MONITORING LOCATIONS	50
TABLE 11-1	ACTION TRIGGERS AND RESPONSES	68

LIST OF FIGURES

FIGURE 9-1	MODELLED GROUNDWATER FLOW PATHS AND SURFACE WATER INTERACTION	64
FIGURE 9-2	SCENARIO 1 SIMULATED CHLORIDE CONCENTRATIONS	65

ACRONYMS AND ABBREVIATIONS

Acronym	Description
AHD	Australian Height Datum
ALS	ALS Global Pty Ltd
ANZECC	Australia and New Zealand Environment Conservation Council
ANZG	Australia and New Zealand Guidelines
AUSRIVAS	Australian River Assessment System
BCA	Brine conditioned ash
BRWMP	Brine and Residuals Management Plan
CCC	Community Consultative Committee
CSM	Conceptual Site Model

Acronym	Description
CSP	Coal Settling Pond
DA	Development Approval
DOC	Dissolved Organic Carbon
DPHI	Department of Planning, Housing and Infrastructure
EC	Electrical conductivity
EMR	Environmental Monitoring Report
EMP	Ecological Monitoring Program
EnergyAustralia	EnergyAustralia NSW Pty Limited
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPL	Environment Protection Licence
EPT	Ephemeroptera, Plecoptera, Trichoptera (taxa richness index)
ERM	Environmental Resources Management Australia Pty Ltd
FHP	Final Holding Pond
GCB	Groundwater Collection Basin
K	Hydraulic Conductivity
Km	Kilometers
LBMS	Leachate Barrier Management System
LCC	Lithgow City Council
LDP	Licensed Discharge Point
LGA	Local Government Area
LMP	Licensed Monitoring Point
LNAR	Lamberts North Ash Repository
LOR	Limit of Reporting
m btoc	metres below top of casing
m AHD	metres Australia Height Datum
MF	Micro Filtration
mg/L	milligrams per litre
ML	megalitre
MPAR	Mt Piper Ash Repository
MPPS	Mt Piper Power Station
MW	Megawatts
Nalco	Nalco / Ecolab Pty Ltd

Acronym	Description
NATA	National Association of Testing Authorities
NGM	Numerical Groundwater Model
n_{eff}	Effective Porosity
NSW	New South Wales
OEMP	Operational Environmental Management Plan
OE50	Observed / Expected 50% Taxa Index
PA	Project Approval
PDM	Pine Dale Mine
PERMANOVA	Permutational Multivariate Analysis of Variance
POEO Act	Protection of the Environment Operations Act (NSW) 1997
QA/QC	Quality Assurance and Quality Control
QC	Quality Control
RCA	Rapid Condition Assessment
RCE	Rapid Condition for Ecosystems
RCSC	Rapid Condition of Stream Channels
RL	Relative Level
RO	Reverse Osmosis
SHMP	Stream Health Monitoring Program
SIGNAL2	Stream Invertebrate Grade Number Average Level 2
SPR	Source Pathway Receptor Linkages
SSD	State Significant Development
SWTP	Springvale Water Treatment Project
T	Tonnes
TARPs	Trigger Action Response Plans
TDS	Total Dissolved Solids
USGS	United States Geological Survey
v	Seepage Velocity
WCA	Water Conditioned Ash
WMP	Water Management Plan
$\mu\text{g/L}$	micrograms per litre
$\mu\text{S/cm}$	microSiemens per centimetre

EXECUTIVE SUMMARY

EnergyAustralia NSW Pty Ltd (EnergyAustralia) engaged Environmental Resources Management Australia Pty Ltd (ERM) to prepare an Annual Water Monitoring Report for ash placement operations at the Mt Piper Power Station (MPPS), located at 350 Boulder Road, Portland, New South Wales (NSW) (the Site) (Figure 1, Appendix A).

Regulatory Requirements

This report has been prepared to comply with the reporting requirements of the Mt Piper Consent (DA 80/10060, Conditions 44 and 45) and the Environmental Protection Licence (EPL) 13007 (Condition R4.10) for the period 01 July 2024 to 31 December 2025 (i.e. the reporting period). In this context, the Water Management Plan (the WMP, ERM, 2026a) as approved under the Mt Piper Consent outlines water management, monitoring and reporting requirements applicable to the Mt Piper Ash Repository (MPAR). The monitoring and reporting requirements of EPL 13007 apply to the MPAR, and also to the adjacent Lamberts North Ash Repository (LNAR) which is approved under PA09_0186 (the LNAR Project Approval). This report presents the results of the groundwater and surface water monitoring required by the WMP and EPL 13007, along with other water management and monitoring matters over the reporting period, to address the regulatory compliance requirements.

Groundwater and Surface Water Monitoring

Groundwater and surface water monitoring was conducted by Nalco quarterly for groundwater and monthly for surface water, where possible, in general accordance with the requirements of the WMP (Mt Piper Consent) and EPL 13007.

Groundwater and Surface Water Summary

The results of routine groundwater and surface water monitoring indicate that elevated concentrations of key indicator analytes are present in groundwater downgradient from the MPAR. The key indicator analytes are electrical conductivity, total dissolved solids, sulfate, chloride, boron, manganese and nickel, and these have been attributed to leaching and seepage associated with brine conditioned ash (BCA) placement within the MPAR. This is consistent with the findings of previous annual monitoring reports, and consistent with the findings of the Independent Groundwater Investigation.

While some statistically significant increasing trends were identified in groundwater and surface water, generally stable to decreasing concentrations were reported at most monitoring locations. Furthermore, the distribution of key indicator analyte concentrations in groundwater as described in this report is generally consistent with results from previous reports and with the modelled groundwater plume progression.

Brine Waste Pond Leak Detection Bore Summary

Based on the continued elevated concentrations at MPGM5/D5 and the increasing concentrations at MPGM5/D6, it is likely that the integrity of the liner/s at Brine Waste Pond A and/or Brine Waste Pond B may have been compromised. ERM understands that Brine Waste Pond A and Brine Waste Pond B liner replacement works are planned to be completed in 2026.

Stream Stability Survey

The channel stability assessment completed in September 2025 (RCA, 2025) concluded that both the Pine Dale Mine (PDM) and MPPS drainage systems are in good geomorphic condition, with no significant impacts observed since the previous monitoring period.

Stream Health Survey

The results of the stream health survey completed by in December 2025 (Stantec, 2026) indicated that ecological stream health within Wangcol Creek and the Coxs River has not been adversely affected by the LNAR or MPAR approved operations, with observed aquatic conditions reflecting long-standing, site-specific and catchment-scale disturbances rather than project-related impacts.

Recommendations

It is recommended that the effectiveness of the existing and approved mitigation measures continue to be assessed as part of the routine monitoring and reporting, in accordance with the WMP and EPL requirements.

1. INTRODUCTION

EnergyAustralia NSW Pty Ltd (EnergyAustralia) engaged Environmental Resources Management Australia Pty Ltd (ERM) to prepare an Annual Water Monitoring Report for ash placement operations at the Mt Piper Power Station (MPPS), located at 350 Boulder Road, Portland, New South Wales (NSW) (the Site). Refer to Figure 1 showing the location of the Site. All figures are presented in Appendix A.

This report should be read in conjunction with the Statement of Limitations (Section 14).

1.1 BACKGROUND

EnergyAustralia owns and operates the MPPS which is located within the Lithgow Local Government Area (LGA), approximately 110 kilometres (km) west of Sydney and five km east of Portland NSW. The location of the MPPS in a regional context is presented in Figure 1.

The MPPS is authorised by development consent Development Approval (DA) 80/10060 (Mt Piper Consent) granted under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act) on 1 April 1982. The Mt Piper Consent has been modified on nine occasions, with the most recent being Modification 9, approved on 24 June 2025 (Mod 9). The Mt Piper Consent as modified authorises the MPPS and ancillary activities, including the Mt Piper Ash Repository (MPAR).

The MPPS was built between 1984 and 1993 and comprises two coal-fired steam turbine generating units. Each unit was originally constructed to generate up to 660 megawatts (MW), and they have since been upgraded to utilise improvements in turbine technology. The generating units now produce up to 700 MW and 730 MW respectively. The ash produced from coal combustion to generate electricity is beneficially reused where market opportunities permit or placed in purpose-built ash placement repositories. The MPPS has two approved and operating ash placement repositories:

- The MPAR, which was originally approved under development consent 230/89 granted by Lithgow City Council (LCC) on 21 March 1980. DA 230/89 was subsequently incorporated, via subsequent modifications, into the Mt Piper Consent. Most of the ash produced at MPPS to date has been placed within the MPAR; and
- The adjoining Lamberts North Ash Repository (LNAR), which was separately approved in February 2012 under Project Approval (PA) 09_0186 (LNAR Project Approval) as modified, is located immediately adjacent to the MPAR.

The MPAR and the LNAR are collectively referred to as the 'Ash Repositories'. Figure 2 presents the location of the Ash Repositories, along with other relevant features of the MPPS.

1.2 ENVIRONMENTAL MANAGEMENT FRAMEWORK

Noting that the MPAR and the LNAR are adjoining landforms, the 'Ash Repositories' are generally managed as a single operational facility; however, water, leachate, and other environmental aspects at each are managed through the LNAR Operational Environmental Management Plan (EnergyAustralia, 2025) (the OEMP) (for the LNAR) and the MPAR Water Management Plan WMP (ERM, 2026a) (the WMP) (for the MPAR).

The MPPS (including the MPAR and the LNAR) is also regulated under Environment Protection Licence (EPL) 13007 granted under the Protection of the Environment Operations Act 1997 (NSW) (the POEO Act). The EPL regulates the materials authorised for placement in the Ash Repositories, along with water monitoring and reporting requirements.

1.2.1 THE MPAR WATER MANAGEMENT PLAN

Following the approval of Mod 9 to the Mt Piper Consent, the MPAR Water Management Plan (ERM, 2026a) (the WMP) was prepared, submitted to and approved by the NSW Department of Planning, Housing and Infrastructure (DPHI) in accordance with Condition 43 of the Mt Piper Consent. The WMP includes monitoring of defined groundwater and surface water parameters to assess for changing conditions as a potential result of the approved activities. To demonstrate compliance with the WMP, reporting is required on an annual basis for the previous calendar year and the results are presented to key regulatory stakeholders.

1.2.2 THE LNAR OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

Water quality monitoring for the LNAR is conducted in accordance with the OEMP (EnergyAustralia, 2025). The OEMP includes a surface water management plan, a groundwater management plan, and a leachate management plan that stipulate monitoring and reporting requirements for each, in general alignment with the WMP and the EPL.

1.2.3 SPRINGVALE WATER TREATMENT PROJECT

The Springvale Water Treatment Project (SWTP) is separately approved under State Significant Development (SSD) 7592 (the SWTP Consent) and operates adjacent to the MPPS (Figure 2). It treats mine water received from local mines (Springvale and Angus Place) for beneficial re-use at MPPS. The SWTP produces both liquid and solid waste brine streams which are placed in the Ash Repositories, as approved.

A Brine and Residuals Management Plan (GHD, 2019) (the BRWMP) was approved under the conditions of the SWTP Consent. The BRWMP includes, as an attachment, the Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan (Connell Wagner, 2008) previously approved under the Mt Piper Consent (2008 Water Management Plan). The 2008 Water Management Plan was subsequently updated and superseded by the 2020 Water Management Plan (ERM, 2020). The 2008 Water Management Plan and the 2020 Water Management Plan have been superseded by the WMP (ERM, 2026a).

1.3 REGULATORY REQUIREMENTS

The MPPS, including the MPAR, is authorised by development consent Development Approval (DA) 80/10060 (Mt Piper Consent) granted under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act) on 1 April 1982. The Mt Piper Consent has been modified on nine occasions, most recently with Modification 9, approved on 24 June 2025 (Mod 9).

The MPPS (including the MPAR and the LNAR) is also regulated under Environment Protection Licence (EPL) 13007 granted under the Protection of the Environment Operations Act 1997 (NSW) (the POEO Act). There is general consistency between the groundwater and surface water monitoring and analysis schedule required by the Mt Piper Consent, the associated Water Management Plan (WMP) and the EPL, hence the EMR has been developed to satisfy the reporting requirements of each.

This EMR has been developed in relation to water management and monitoring aspects of the MPAR to satisfy Conditions 44 and 45 of the Mt Piper Consent, and the relevant reporting requirements of the approved Water Management and Monitoring Plan (the WMP). The EMR has been prepared in general accordance with the post approval compliance reporting requirements (DPE, 2020) from the NSW Department of Planning, Housing and Infrastructure (DPHI), formerly known as Department of Planning and Environment (DPE).

This EMR has also been developed in relation to water management and monitoring aspects of the Ash Repositories, as required by Conditions R4.10, R4.11 and R4.12 of the EPL.

Table B-1, Appendix B presents a summary of the requirements of the Mt Piper Consent and the WMP, and where they are addressed in the EMR. Consistent with feedback from the DPE on the 2021/22 EMR, Table 1-1 provides a statement of compliance as at the end of the reporting period and based on the information in this EMR.

Table B-2, Appendix B presents a summary of the requirements of the EPL reporting requirements under Condition R4.10, and where they are addressed in the Report.

TABLE 1-1 STATEMENT OF COMPLIANCE

Were the conditions of the relevant approval complied with?		
DC DA80/10060 (Mt Piper Consent)	Conditions 44 and 45	YES

1.4 OBJECTIVES

This report has been prepared to address the relevant reporting requirements of the Mt Piper Consent (Conditions 44 and 45) and the EPL (Condition R4.10) for the period 01 July 2024 to 31 December 2025 (i.e. the reporting period).

The previous reporting period was 01 July 2023 to 30 Jun 2024. With Modification 9 of the Mt Piper Consent in 2025, the historical reporting period was modified to be calendar years, consistent with the current EPL. This report has been prepared to cover the 18 month reporting period from 1 July 2024 through 31 December 2025.

This report does not intend to address the reporting requirements of the OEMP or the BRWMP as these will be addressed in separate documents as required by the relevant approvals.

1.5 CONTACT

The contact details for the key personnel responsible for the environmental management of the MPPS are listed in Table 1-2 below.

TABLE 1-2 CONTACT DETAILS

Contact Person	Organisation	Position	Telephone
Mr Ben Eastwood	EnergyAustralia	NSW Environment Leader	(02) 6354 8111

1.6 SCOPE OF WORK

The following scope of work has been completed by ERM to meet the stated objectives and the requirements of the WMP and EPL 13007:

- Development of an annual review summary to include actions taken from previous annual reporting, including updates regarding ash placement areas, final capping installation, environmental performance, water management, rehabilitation progress, community engagement, incidents and non-compliances, and actions / activities planned to be undertaken;
- Import of environmental monitoring data provided by EnergyAustralia to the existing database for the Site;
- Review of surface water and groundwater quality with comparison to the adopted guideline values as presented in the WMP, as applicable;
- Review of surface water and groundwater quality for the reporting period, including review of trends to enable comparison between years;
- Interpretation and discussion of results, including potential interaction of groundwater from the vicinity of the MPAR with Wangcol Creek water quality;
- Groundwater model validation in accordance with the approach presented in the WMP;
- Update on the Trigger Action Response Plans (TARPS) and contingency measures currently being implemented in accordance with the WMP;
- Assessment of the effectiveness of mitigation measures being implemented, being considered and/or recommendations for improvements where necessary, as required by the EPL;
- Preparation of a summary of the Wangcol Creek Ecological Monitoring Program (EMP) and Wangcol Creek Stream Stability Survey results (based on the outcomes of reports provided by others) in accordance with the WMP;
- Compilation of supporting plans/figures, including, ash placement contours/geometry; location of groundwater and surface water monitoring sites, inferred groundwater contours, and exceedances of adopted guideline values (six figures showing major ions and metals);
- Compilation of supporting appendices including rainfall data, hydrographs for key bores, and concentration trend graphs (major ions and metals) for key groundwater and surface water monitoring locations; and
- Preparation of this report.

1.7 REPORT STRUCTURE

The following outlines the general structure of this report:

- Section 2 presents an overview of the Independent Groundwater Investigation and its outcomes;
- Section 3 presents a summary of annual site operations at the MPAR;
- Section 4 presents a review of the environmental setting, focusing on climate, hydrology, geology and hydrogeology;
- Section 5 presents a summary of the groundwater and surface water characterisation and monitoring program;
- Section 6 presents an assessment of the groundwater data provided by EnergyAustralia;
- Section 7 presents an assessment of the surface water data provided by EnergyAustralia;
- Section 8 presents a summary of deviations from the monitoring program;
- Section 9 presents discussion of groundwater and surface water results in context of the numerical groundwater model;
- Section 10 presents stream health and stream stability results;
- Section 11 presents a comparison to the TARPs;
- Section 12 presents the summary and recommendations of the report;
- Section 13 presents the references used in this report; and
- Section 14 presents the Statement of Limitations.

2. INDEPENDENT GROUNDWATER INVESTIGATION

EnergyAustralia has routinely monitored electrical conductivity (EC), major ions and trace metal concentrations in groundwater and surface water to assess potential effects from ash placement activities at the MPAR, and the adjoining and separately approved LNAR. The results of this monitoring are reported annually (e.g. ERM, 2024) in accordance with the requirements of the Mt Piper Consent.

As detailed in the annual reports, the monitoring results indicated elevated concentrations of total dissolved solids (TDS) and other ions in surface water and groundwater in the vicinity of the MPAR. In this area, TDS is used as a marker for solutes that have entered the local groundwater via leaching from BCA at the MPAR, and includes elevated chloride, sulfate and related dissolved metals.

In accordance with the contingency measures outlined in the previously approved Water Management and Monitoring Plan (Connell Wagner, 2008) (the Previously Approved WMP), due to these monitoring results, in 2016 ERM was engaged to complete the Independent Groundwater Investigation (2016-2023) associated with the elevated concentrations of key indicator analytes (EC, TDS, sulfate, chloride, boron, manganese and nickel) in groundwater and surface water that have since been attributed to leaching and seepage associated with BCA placement within the MPAR. This investigation concluded that:

- The elevated concentrations of TDS in groundwater in the vicinity of the Ash Repositories are predominately associated with the historical placement of BCA in the MPAR as a result of recharge (i.e. percolation of rainfall through the placed ash) and leaching processes of the placed BCA; and
- Application of a low permeability cap over an area of BCA would be effective in slowing the rate of solute migration to regional groundwater (i.e. recharge control), thereby reducing the resulting solute concentrations that migrate beyond the base of the MPAR into the underlying groundwater system and ultimately receiving surface water.

These findings have informed a number of operational changes to the MPAR as authorised as part of Mod 9 to the Mt Piper Consent, including the installation of a low-permeability cap and associated water management features on the MPAR (MPAR Phase 1 Capping and Drainage) and installation of a leachate barrier management system (LBMS) and capping in MPAR Zone 2 (MPAR Zone 2 LBMS and Capping), as detailed below:

The MPAR Phase 1 Capping and Drainage encompasses:

- Installation of an engineered capping layer on the top section of the MPAR (MPAR Phase 1 Capping); and
- Construction of engineered structures and upgraded surface water drainage systems to direct clean water flows from the MPAR Phase 1 Capping, and existing MPAR batters and benches to Wangcol Creek (MPAR Phase 1 Drainage).

The MPAR Zone 2 LBMS and Capping encompasses:

- Installation of an engineered liner and leachate collection system on the eastern end of the MPAR (MPAR Zone 2 LBMS); and
- Installation of an engineered capping layer at the completion of ash placement in MPAR Zone 2 (MPAR Zone 2 Capping).

All placement of BCA in unlined areas of the MPAR has now ceased. Following installation of the MPAR Zone 2 LBMS, future BCA placement in the MPAR will be limited to Zone 2 within the MPAR Zone 2 LBMS, and subject to management in accordance with the controls outlined in Sections 5 to 9 of the WMP (ERM, 2026a).

As a result of the preliminary findings of the Independent Groundwater Investigation, in September 2021, the LNAR Project Approval was modified to authorise amendments to the design and operations of the LNAR (LNAR Mod 1), principally, the installation of a LBMS, with BCA placement approved within the lined areas. The approved final landform for the MPAR as authorised by Mod 9 to the Mt Piper Consent has also been designed to integrate with the separately approved final landform for the LNAR.

These operational changes are intended to achieve the environmental performance objectives for the future decommissioning of the MPAR, as presented in Section 5.1 of the WMP, while supporting the long-term potential for reclamation and beneficial reuse of ash in the future should further market opportunities eventuate.

2.1 SUMMARY OF MODELLED SPR LINKAGES

As part of the Independent Groundwater Investigation, ERM developed a conceptual site model (CSM), groundwater flow model, and a solute transport model. The key outcomes from the modelling are outlined in the above.

The Groundwater Flow Model Report (ERM, 2023a) presents a summary of the CSM and source-pathway-receptor (SPR) linkages related to BCA placement within the MPAR. The primary pathway for migration of solutes derived from BCA in the MPAR is by the vertical migration of leachate (water sourced from rainfall and irrigation across the MPAR) down through the BCA placed within the MPAR. Once the leachate reaches the base of the ash at the MPAR, the vertical migration of leachate is assumed to continue until it mixes with the regional water table that underlies the Site.

Groundwater that flows to the east from the MPAR is primarily received by DML Dam and Cooks Dam due to the higher hydraulic conductivity of mined out areas. A portion of the groundwater that flows to the north-east and east from the MPAR is received by Wangcol Creek at Areas D, E and G, as indicated by relative groundwater and creek elevations and water quality where former open cuts are present in the creek. Consequently, these sections of Wangcol Creek and their associated ecosystems and downstream waterways are receptors of groundwater that have the potential to be impacted because of previous BCA placement in the MPAR.

The groundwater flow model indicates that groundwater is also likely to continue as underflow beyond Wangcol Creek, towards the historical Wallerawang Underground Mine and Eastern Main Underground Mine. There are no registered users of groundwater in proximity to the Site, and one registered domestic household bore located east of the historical Eastern Main Underground Mine, approximately 3 km south-east of the MPAR (ERM, 2023a). Therefore, a complete SPR linkage is present for Wangcol Creek only.

3. ANNUAL OPERATIONS SUMMARY

A summary of operations at the MPAR over the reporting period, and actions taken since the previous reporting period, are provided in the following subsections.

3.1 ASH PLACEMENT

Ash produced at the MPPS includes bottom ash (~10%) and fly ash (~90%). Bottom ash is placed directly onto the Ash Repositories, either temporarily (i.e. recovered and reused) or permanently. Prior to the placement of fly ash within the Ash Repositories, it is conditioned to increase its moisture content in order to achieve required compaction and to maintain geotechnical stability of the Ash Repositories; it also assists in dust suppression. Fly ash is conditioned by the addition of either:

- Water, sourced in accordance with existing MPPS water licences and allocations including recycled process water and fresh (non-potable) water. Fly ash treated with water is referred to as Water Conditioned Ash (WCA). WCA is permitted to be placed within all areas of the MPAR and has been placed into the MPAR since 1993; or
- Brine, a by-product from:
 - Treatment of evaporative cooling water from the cooling towers of MPPS to remove salts and impurities. Treatment at the MPPS Brine Concentrators is approved under the Mt Piper Consent; and
 - The SWTP.

Fly ash treated with brine is referred to as brine conditioned ash (BCA). BCA was authorised to be placed into the MPAR within the MPAR Stage 1 (from 2000) and Stage 2 (from 2008) BCA placement areas at elevations above 946 m AHD (Figure 2). Placement of BCA in unlined areas of the MPAR has stopped. Following the approval of Mod 9, BCA is authorised to be placed above the purpose built MPAR Zone 2 LBMS, once installed. BCA is also placed in the lined cells of the LNAR as approved by Modification 1 to LNAR Project Approval.

Within the MPAR, ash is placed in layers and stepped to produce an overall maximum batter slope of approximately 1(V):4(H), with benches added up to every 10 m in vertical height change.

The approved final surface elevation has been achieved in some portions of the MPAR, including elevations up to 980 m Australian Height Datum (AHD) in the Stage 1 and Stage 2 BCA placement areas. As authorised by Mod 9, BCA is approved to be placed up to 980 m AHD in the MPAR with the engineered capping solution, topsoil and vegetation above this.

With reference to the Ash Repository Survey (Appendix C, and Figure 3 (Appendix A), from October 2025, approximately 51,600 m³ of BCA and 18,400 m³ of WCA was placed in the MPAR Stage 1 and Stage 2 BCA placement areas until the approved height of 980 m AHD was reached in September 2025. Since this time, all BCA produced at the MPPS has been placed in the LNAR.

The elevation of WCA placement within MPAR Zone 2 is approximately 950 to 965 m AHD. This landform will be further altered as part of the MPAR Zone 2 installation and subsequent ash placement operations. As required by Condition 58 of the Mt Piper Consent the MPAR Zone 2 LBMS and Capping design will be submitted to the Secretary prior to installation, with the approved design to determine the base liner elevation.

3.2 BRINE COMPOSITION

Brine from MPPS is derived from the evaporative cooling process in the cooling towers. As water evaporates from the cooling towers, the concentration of salts contained in the circulating water increases, which would eventually impact upon the operation of the cooling system. A portion of the salty water is therefore regularly blown down and replaced with fresh “make up” water.

In addition, the separately approved SWTP produces brine from the treatment of mine water from dewatering facilities related to mining operations in the region. The brine and solid mixed salts from the SWTP are integrated with the MPPS water management system, and are transferred to the MPPS for placement in the Ash Repositories, in accordance with the BRWMP.

During the reporting period, blow down water from the cooling towers was transferred to the Mine Water Buffer Pond for treatment by the SWTP or to the EnergyAustralia Reverse Osmosis (RO) brine concentrators and micro filtration (MF) infrastructure. The EnergyAustralia RO and MF system removes salts from the cooling water system and recycles distillate back into the cooling water cycle. The SWTP brine crystalliser system produces a mixed salt and a dewatered lime salt. Both the EnergyAustralia RO and MF system and the SWTP transfer the brine stream to Brine Waste Pond A and Brine Waste Pond B for temporary storage (Figure 2). This brine is used to condition the ash that is placed in approved BCA placement areas.

Brine from the EnergyAustralia brine concentrators is typically transferred to Brine Waste Pond A, while brine from the SWTP is typically transferred to Brine Waste Pond B. Brine in Waste Pond B can overtop to Brine Waste Pond A, in order to manage stored brine volumes between the ponds. The brine composition depends on the source of water being treated (e.g., inputs from the SWTP and EnergyAustralia RO and MF system). Additionally, ERM understands that further treatment of the brine has been occurring through the EnergyAustralia RO and MF system. This has been implemented as a means of minimising the volume of brine requiring co-placement at the MPAR. Brine composition data has been used to inform the discussion of surface water and groundwater results in this report.

Averages of the historical brine composition reported from Brine Waste Pond A and Brine Waste Pond B are provided in Appendix D. The sample frequency for Brine Waste Pond A is monthly, and Brine Waste Pond B is weekly, when the system is in service.

During the reporting period the average concentrations of key indicator analytes and parameters in brine stored in Brine Waste Pond A and Brine Waste Pond B were reported as follows:

- Alkalinity concentrations reported from Brine Waste Pond A averaged 32,000 mg/L while those in Brine Waste Pond B averaged 41,700 mg/L;
- Electrical conductivity reported from Brine Waste Pond A averaged 68,300 $\mu\text{S}/\text{cm}$ while those in Brine Waste Pond B averaged 66,700 $\mu\text{S}/\text{cm}$;
- TDS concentrations reported from Brine Waste Pond A averaged 71,200 mg/L while those in Brine Waste Pond B averaged 69,900 mg/L;
- Chloride concentrations reported from Brine Waste Pond A averaged 7,500 mg/L while those in Brine Waste Pond B averaged 4,800 mg/L;
- Sulfate concentrations reported from Brine Waste Pond A averaged 22,900 mg/L while those in Brine Waste Pond B averaged 17,200 mg/L;

- Silver concentrations reported from both Brine Waste Pond A and Brine Waste Pond B were consistently reported below the laboratory Limit of Reporting (LOR);
- Chromium (total) concentrations reported from Brine Waste Pond A averaged 150 µg/L while concentrations from Brine Waste Pond B averaged 210 µg/L;
- Iron concentrations reported from Brine Waste Pond A averaged 380 µg/L while concentrations from Brine Waste Pond B averaged 880 µg/L;
- Barium concentrations reported from Brine Waste Pond A averaged 38 µg/L while concentrations from Brine Waste Pond B averaged 14 µg/L;
- Boron concentrations reported from Brine Waste Pond A averaged 9,000 µg/L while concentrations from Brine Waste Pond B averaged 4,200 µg/L;
- Manganese concentrations reported from Brine Waste Pond A averaged 280 µg/L while concentrations from Brine Waste Pond B averaged 61 µg/L;
- Nickel concentrations reported from Brine Waste Pond A averaged 550 µg/L while concentrations from Brine Waste Pond B averaged 280 µg/L; and
- Lead concentrations reported from Brine Waste Pond A averaged 24 µg/L while concentrations from Brine Waste Pond B averaged 13 µg/L.

Note, where applicable, analytes are reported as total (unfiltered) concentrations.

3.3 SITE WATER DISCHARGES

LDP12 is the licensed discharge point for the MPPS under EPL 13007. The licensed discharge point is located at the CSP, which is a sediment basin for the coal stockpile area. During the reporting period, water discharged from the Coal Settling Pond (CSP) via the Licenced Discharge Point (LDP12) under EPL 13007 was estimated to be 106.3 megalitres (ML). LDP12 water quality complied with the discharge water quality criteria under EPL 13007 Condition L3.7 on all occasions.

Records of discharge flows at LDP12 during the reporting period are provided in Appendix E, with associated water quality data presented in Appendix L.

Surface water flow from LDP12 (representative of discharge from the CSP) enters the Western Drain, which is part of the upstream Wangcol Creek catchment, before flowing into the Final Holding Pond (FHP). The FHP holds stormwater from the clean water diversions around the MPPS and has gates that can be closed in the event of an environmental incident to limit the likelihood of adverse impacts to the downstream surface water environment. The FHP was constructed within Wangcol Creek, and it operates as the final pollution control structure for surface water discharges associated with the MPPS.

Surface water monitoring location Licensed Monitoring Point 01 (LMP01) is the sampling location on Wangcol Creek and is representative of instream conditions downstream of the FHP and upstream of the Ash Repositories. Figure 2 presents the locations of the CSP and the FHP. Figure 4a presents the locations of LDP12 and LMP01.

3.4 INCIDENTS AND NON-COMPLIANCES

Based on information provided by EnergyAustralia, no incidents or non-compliances occurred at the MPPS over the period from 1 July 2024 to 31 December 2025.

3.5 COMMUNITY ENGAGEMENT

Based on information provided by EnergyAustralia, no complaints were submitted over the period from 1 July 2024 to 31 December 2025. A summary of the Community Consultative Committee (CCC) meeting minutes related to the Ash Repositories is provided in Table 3-1, below.

TABLE 3-1 ASH REPOSITORIES CCC MEETING MINUTES

Meeting Month	Ash Repository	Relevant Details
August 2024	N/A	Details related to operations at the ash repositories were not discussed during the August 2024 CCC meeting.
November 2024	MPAR	<ul style="list-style-type: none"> The Modification Report for Mod 9 is about to be submitted. It was acknowledged that consultation with NSW Treasury will be required.
February 2025	MPAR and LNAR	<ul style="list-style-type: none"> Forecast estimates for total ash storage volumes within the currently approved Ash Repositories footprint were: <ul style="list-style-type: none"> 24 Mt within the MPAR 8 Mt within the LNAR Projected capacity of the Ash Repositories was dependent upon variables including: <ul style="list-style-type: none"> The amount of power generated, which directly correlates with the amount of coal used and ash produced. The amount of ash that can be reused for other purposes such as concrete and diverted from the repositories. Modelling generally supports capacity going out to station closure in 2040 under most scenarios. The Modification Report for Mod 9 has been updated in response to comments from the regulators. The Modification Report for Mod 9 was submitted to the DPHI for assessment and determination.
May 2025	MPAR	<ul style="list-style-type: none"> Mod 9 to the Mt Piper Consent is close to being determined by the DPHI. When discussing recycling processes at the MPPS, it was raised that waste material from the cooling towers was to be approved for placement in the Ash Repositories.
August 2025	MPAR and LNAR	<ul style="list-style-type: none"> When discussing the potential for new technologies to recover waste products such as ash, it was acknowledged that the LNAR is being set up in cells, with the intention that the ash could be extracted in the future when coal ash is no longer being produced. CCC acknowledged that even with the mitigation measures, solutes from leaching from BCA at the MPAR will continue to influence local groundwater conditions for an extended period. The LNAR continues to receive quantities of BCA associated with MPPS operations. Mod 9 to the Mt Piper Consent has been approved. The WMP would be updated to reflect the Capping Strategy once approved. The Capping Strategy is to be finalised and presented to the EPA and WaterNSW in December 2025. Waste material from the cooling towers requires formalised approval for placement in the Ash Repositories.
September 2025	N/A	Details related to operations at the ash repositories were not discussed during the September 2025 CCC meeting.

Meeting Month	Ash Repository	Relevant Details
December 2025	MPAR	<ul style="list-style-type: none"> • Groundwater monitoring at the MPAR has reported concentrations of chloride above the Environmental Goal in several bores, however these concentrations have remained within historical ranges and no new sources of chloride contamination have been identified. • Once completed the MPAR Phase 1 Capping and Drainage works will reduce infiltration of rainwater and seepage of solutes from BCA to groundwater. However, it will still take some time for chloride concentrations in groundwater to decrease. • Surface water monitoring shows concentrations of key indicator analytes remained below the Environmental Goal in 2025. • When spikes in concentrations of key indicator analytes occur in surface water, they are generally associated with low rainfall periods. • Capping of the MPAR is scheduled for completion in mid-2026. It was noted that, while the capping is a good measure, the groundwater impacts will continue for some time into the future.

3.6 ACTIONS AND ACTIVITIES PLANNED FOR 2026

Progressive ash placement operations will continue at the Ash Repositories in 2026. In addition to these, as outlined in Section 2, a number of operational changes to the MPAR have been authorised as part of Mod 9 to the Mt Piper Consent, including the MPAR Phase 1 Capping and Drainage and installation of the MPAR Zone 2 LBMS and Capping. In 2026, EnergyAustralia plans to begin implementing these operational changes, as detailed further in the WMP.

- Completion of the MPAR Phase 1 Capping and Drainage by mid-2026;
- Replacing the Brine Waste Ponds A and B liners in 2026, in response to elevated EC being detected in leak detection bores D5 and D6 (see Section 6);
- Progressing Modification 10 to Mt Piper Consent for the augmentation of the Coal Settling Pond and construction of pollution control structures;
- Completion of the Wangcol Creek Feasibility Assessment to identify reasonable and feasible options for improving water quality in Wangcol Creek;
- Improving growth medium and rehabilitation on the MPAR batter slopes to further reduce water infiltration; and
- LNAR Stage 1 scheduled for completion in mid-2026.

4. ENVIRONMENTAL SETTING

4.1 CLIMATE

Climate data below was provided by EnergyAustralia and is sourced from a weather station on site at MPPS (see Figure 2). A summary of the climate data is presented in Table 4-1 and a copy of the data is presented in Appendix F. Rainfall data is graphed in the hydrographs included in Appendix J.

TABLE 4-1 LOCAL CLIMATE DATA FOR 2024/25

Month	Rainfall Total (mm)	Min. Temperature (°C)	Max. Temperature (°C)
July 2024	44.0	1.1	9.3
August 2024	60.2	4.1	17.6
September 2024	28.4	2.3	15.9
October 2024	15.2	5.8	18.5
November 2024	122.8	9.3	21.8
December 2024	63.0	9.1	23.6
January 2025	92.6	11.4	23.3
February 2025	64.2	11.8	24.6
March 2025	41.6	12.8	22.4
April 2025	47.6	5.9	19.0
May 2025	64.8	4.8	13.7
June 2025	53.6	-1.7	10.6
July 2025	89.4	-0.4	9.5
August 2025	78.4	1.6	11.4
September 2025	62.0	2.0	17.8
October 2025	21.0	6.4	20.2
November 2025	32.4	6.8	21.6
December 2025	47.6	8.7	24.2
TOTAL / MIN / MAX	1028.8	-1.7	24.6

Data from MPPS Weather Station provided by EnergyAustralia

The total rainfall in the 2025 calendar year was 674.2 mm. This is lower than the total reported rainfall in three of the last four previous calendar years (797.2 mm in 2024, 1121.6 mm in 2022, and 938.7 mm in 2021), but higher than the 634.3 mm recorded for the 2023 calendar year and the 595 mm recorded for the 2020 calendar year. The higher-than-average periods of rain from December 2020 to March 2021 broke the period of relative drought experienced at the site, and more broadly within NSW, between 2017 and 2020.

Overall, the 18 months covered during the reporting period was characterised by slightly lower than average rainfall. The highest rainfall month was November 2024 (122.8 mm), preceded by the lowest rainfall month, in October 2024 (15.2 mm). Overall, the highest rainfall period was from November 2024 through February 2025.

4.2 HYDROLOGY

MPPS and the Repositories are within the Wangcol Creek catchment, and Wangcol Creek is a tributary of the Coxs River. MPPS sits on the eastern edge of the Great Dividing Range and includes the headwaters of Wangcol Creek. Locally, Wangcol Creek is present to the north and north-east of the Ash Repositories. Wangcol Creek flows to the east and south-east and joins the Coxs River approximately 3.2 km east of the Site. As detailed in Section 3.3 and presented in Figure 2, clean water diversions extend around the MPPS and are discharged into Wangcol Creek via the FHP. Clean water diversions are also present that divert clean water from the MPAR Phase 1 Capping and Drainage footprint (via the energy dissipator) and around the Ash Repositories, joining Wangcol Creek downstream of the FHP. Further details regarding water management arrangements are described in the WMP.

4.3 GEOLOGY

The Site is located on the western margin of the Sydney Basin, and the geology is characterised by eastward dipping sedimentary deposits. The sedimentary deposits extend approximately 130 km east towards the NSW coast. Structurally, the western margin of the Sydney Basin is not complex, and no significant faulting or folding structures are present in the region surrounding the Site (CDM Smith, 2012).

The Site is located at an outcrop of the Illawarra Coal Measures, which have been mined throughout the region. The Narrabeen Group, comprised of sandstones, overlies the Illawarra Coal Measures in the vicinity of the Site, forming the surrounding hillsides. The Illawarra Coal Measures host the coal seams that were previously mined out in the vicinity of the Site and overlie the Shoalhaven Group. Some characteristics of these units are listed in Table 4-2.

TABLE 4-2 LOCAL GEOLOGICAL UNITS

Narrabeen Group	Illawarra Coal Measures	Shoalhaven Group
<ul style="list-style-type: none"> Sandstones, shale and claystone. Up to approximately 800 m thick in parts, although generally absent in the immediate vicinity of the Ash Repositories. Deposition in estuarine/alluvial, fluvial, and fluvial-deltaic environments. Unconformably overlies Illawarra Coal Measures (Danis et al., 2011). 	<ul style="list-style-type: none"> Interbedded shale, sandstone, conglomerate, and coal. Dips 1-2 degrees to the east. Outcrops extensively just east of Portland, exposing the Lidsdale and Lithgow coal seams close to the surface with approximately 15-20 m of sandstone overburden (CDM Smith, 2012). 	<ul style="list-style-type: none"> Siltstones, lithic sandstones and conglomerate. Marine sediments. Berry Siltstone / Formation (earlier) & Snapper Point Formation (later). Contains sulfide-bearing material and is acid generating in places where exposed via rock cuttings (SKM, 2010).

4.4 HYDROGEOLOGY

Groundwater beneath the Site is present within the Illawarra Coal Measures, with a regional groundwater flow direction generally to the east / south-east in the vicinity of the Site (Figure 5a to Figure 5c). Groundwater elevation data and other hydrogeological parameters are presented in Section 6. The natural stratigraphy of the Illawarra Coal Measures in the vicinity of the Site is generally as follows:

- Bunnyong Sandstone (Long Swamp Formation) – massive sandstone;
- Lidsdale Coal Seam – interbedded high ash coal and shale;
- Blackmans Flat Conglomerate – coarse sandstone and conglomerate;
- Lithgow Coal Seam; and
- Marrangaroo Conglomerate – massive sandstone and conglomerate.

Considering the former mining in the area, and the current ash placement activities, anthropogenic lithologies in the vicinity of the MPAR include ash, fill and placed overburden, and underground mine workings.

The area surrounding the Ash Repositories is characterised by former open cut and below ground coal mining. The below ground mined out areas are variably filled in with goaf, or in some areas remain as voids. Former open cut mines remain as ponds, including within the alignment of Wangcol Creek to the north of MPAR, or have been filled in. Long-term groundwater monitoring near the Ash Repositories indicates that the water table occurs variably in the former underground mining and open cut areas and, away from the Ash Repositories, predominantly in the overlying Bunnyong Sandstone. The water table elevation range is approximately 919 m AHD to 910 m AHD in the vicinity of the MPAR. Groundwater elevation contours are presented as Figure 5a to Figure 5c.

5. WATER CHARACTERISATION AND MONITORING PROGRAM

The water monitoring program for the MPAR, as outlined in the WMP, includes monitoring locations, monitoring frequency, sampling methods, analytical schedule and reporting requirements. The monitoring program in the WMP was developed to consider outcomes from the Independent Groundwater Investigation and the 'Coal Ash Repository Water Sampling Program' that was completed in accordance with EPL 13007.

In the context of groundwater and surface water related monitoring associated with the Ash Repositories, the monitoring program in the WMP is generally aligned with the monitoring program currently required by the EPL, and the associated data collection is suitable to inform the reporting requirements for the MPAR under the Mt Piper Consent (Conditions 44 and 45) and the MPPS under the EPL (Condition R4.10).

5.1 STREAM HEALTH, STREAM FLOW AND CHANNEL STABILITY MONITORING

As required by the WMP, stream health monitoring was completed as part of the existing Wangcol Creek EMP. The monitoring is undertaken on an annual basis, in spring, by suitably qualified independent consultants. The Wangcol Creek EMP consists of six Australian River Assessment System (AUSRIVAS) sample sites NCR1, NCR2, NCR3 and A16, with NCR4 and NCR5 being added in 2025 to satisfy Condition 43 of the Mt Piper Consent (Mod 9).

As required by the WMP, stream stability monitoring was completed on a bi-annual basis by suitably qualified independent consultants as part of the existing Wangcol Creek Stream Stability Survey. The Wangcol Creek Stream Stability Survey is conducted at 11 sites SH1, SH2, SH3, SH3a, SH4, SH5, with SH6- SH10 being added in 2025 to satisfy Condition 43 of the Mt Piper Consent (Mod 9).

The stream health and channel stability monitoring locations are presented on Figure 4b. A summary of the stream health and stream stability monitoring results (based on the outcomes of reports provided by others) is presented in Section 10.

5.2 SITE INSPECTIONS

Routine site inspections are undertaken by the ash repository contractors to identify any potential environmental hazards or areas that require action. These can include, but are not limited to additional sediment and soil erosion works, noise, dust or lighting controls etc. Work activities and inspections are recorded by the contractor.

Further, visual inspections of the MPAR and LNAR infrastructure (pumps, pipe work, ponds) are conducted to ensure infrastructure remains in working order (e.g. no leaks), and maintenance of infrastructure is conducted as required.

5.3 WATER QUALITY MONITORING

The locations and frequency for water quality monitoring are presented in Table G-1 and G-2, Appendix G, while Table G-3, Appendix G presents a summary of groundwater and surface water analytical schedule as required by the WMP and EPL 13007. Deviations from this monitoring program, when they occurred, are presented in the following subsections.

5.3.1 MONITORING METHODS

Groundwater sampling from the monitoring bore network is undertaken using a submersible pump or via bailing. At locations with poor recharge, bores are purged dry 24 hours before sampling to allow sufficient recharge prior to sampling. Bores with good recharge are purged to remove a minimum of three times the bore volume prior to sampling. Surface water samples are collected via a grab sampling methodology. Field water quality parameters for both groundwater and surface water are collected at the time of sampling and, where required for analysis, samples are filtered in the field prior to collection in laboratory-supplied bottles.

Field sampling and laboratory analysis is conducted by trained personnel in general accordance with the NSW EPA (2022), *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* guidance by Nalco / Ecolab Pty Ltd (Ecolab), with some laboratory analytical services subcontracted to ALS Global Pty Ltd (ALS). These analytical services are National Association of Testing Authorities (NATA) accredited for the services provided. Details regarding the Nalco sampling method and QA/QC program are presented in Appendix H.

5.3.2 ADOPTED GUIDELINE VALUES

5.3.2.1 ENVIRONMENTAL GOALS

The Environmental Goals provide water quality assessment guidelines applicable to the Ash Repositories, in accordance with the Mt Piper Consent (Mod 9).

The Environmental Goals utilise the Australia and New Zealand Environment Conservation Council (ANZECC) (2000) 95% ecosystem protection values, stock watering, irrigation water or drinking water values, in combination with 90th percentile pre-brine placement local environmental (groundwater/surface water) data (whichever is greater). The local guideline values incorporated into the Environmental Goals are based upon the 90th percentile pre-ash placement water quality results, as measured at surface water quality point WX22 (for surface water) or at the former groundwater collection basin (for groundwater).

The Environmental Goals were originally established for the MPAR by Connell Wagner (2007), and subsequently approved in relation to operation of the LNAR as well, providing water quality assessment guidelines applicable to the Ash Repositories, in accordance with the Mt Piper Consent and the Lamberts North Project Approval. The Environmental Goals have been used to assess groundwater conditions in relation to the Ash Repositories for almost 30 years. The Environmental Goals are considered suitable to monitor for changes in water quality that consider the sources of water pollutants, history of investigation and monitoring, and the existing groundwater and surface water conditions.

Where Environmental Goals are not provided for a specific analyte, relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) default guideline values to consider 95% freshwater species protection values have been adopted.

5.3.2.2 HARDNESS CORRECTED GUIDELINE VALUES

The ANZG (2018) slightly to moderately disturbed (95% species protection) guideline value for nitrate (updated in 2025) is hardness dependent, with the recommendation being to apply a guideline value of 1.1 mg/L of nitrate in soft water (< 30 mg/L CaCO₃), 2.6 mg/L of nitrate in moderately hard water (30–150 mg/L CaCO₃) and 29 mg/L of nitrate in hard water (> 150 mg/L CaCO₃).

In order to select the guideline value that are representative of the receiving environment, as outlined in Section 5.3.2.1 above, site-specific hardness corrections were calculated in the Water Characterisation Report (ERM, 2023c) based on the average of the hardness dataset for SW_C (during 2022-2023 monitoring period covered by the PRS report); this resulted in a hardness value of 73 mg/L CaCO₃. Hardness values at SW_C were calculated again as part of this report using data for the reporting period (i.e. 1 July 2024 to 31 December 2025), resulting in a hardness value of 108 mg/L CaCO₃.

Based on these calculations, and in accordance with ANZG (2018) an adopted guideline value of 2.6 mg/L has been applied for nitrate in groundwater and surface water.

5.3.2.3 SUMMARY

Where Environmental Goals are not available, then the ANZG (2018) ecological freshwater (95% species protection) guideline value were applied, with hardness corrections as applicable. Appendix I presents a summary of Environmental Goals and the ANZG (2018) guideline values adopted for this report. The combined Environmental Goals and adopted ANZG (2018) guideline values will henceforth be referred to as the 'adopted guideline values'.

The adopted guideline values are presented in the header portion of Tables K-1 (Appendix K) and L-1 (Appendix L), for surface water and groundwater respectively.

5.4 MONITORING ZONES

5.4.1 GROUNDWATER

Considering the groundwater flow direction, current and historical operations at the Ash Repositories, and their relative locations, the groundwater dataset is assessed based on the following monitoring zones:

- Upgradient of MPAR / background: MPGM4/D4, MPGM4/D5;
- Cross-gradient of MPAR / adjacent to MPAR to the north and adjacent Wangcol Creek: MPGM4/D3, D106, D107, D119;
- Downgradient of MPAR, areas adjacent to Wangcol Creek: MPGM4/D1, MPGM4/D2, MPGM4/D8, MPGM4/D9 and D102 – D105;
- Downgradient of MPAR, including LNAR (north) and historical mining disturbance (east): MPGM4/D10, MPGM4/D19, D110, D113, D117; and
- Cross-gradient of MPAR to the south, including LNAR (south) and historical mining disturbance: D15, D16A, D17, D18.

5.4.2 SURFACE WATER

Considering the surface water flow direction, current and historical operations at the Ash Repositories, and their relative locations, the groundwater data set for the Ash Repositories has been subject to assessment based on the following monitoring zones:

- Upstream of the Ash Repositories: Coal Settling Pond, LDP12, LMP01;
- Mid-stream / adjacent to the MPAR: NC01, SW_C, and SW_E; and
- Downstream of the MPAR: SW_F / WX22 (note correlation to 212055), SW_G.

5.5 TREND ASSESSMENT SUMMARY

In addition to comparing results from the reporting period with the adopted guideline values for surface water and groundwater, a trend assessment for concentrations of key indicator analytes in groundwater and surface water was conducted.

5.5.1 TREND ASSESSMENT APPROACH

For both groundwater and surface water, data including the last five years up to the beginning of the reporting period (i.e. 01 July 2019 to 31 December 2025) was adopted for the trend assessment, which included both statistical and visual assessment of trends.

The visual trend assessments for groundwater and surface water were undertaken for key indicator analytes related to historical BCA placement in the MPAR. Due to the at times elevated concentrations of lead (total) for groundwater, and lead (total) and molybdenum (total) for surface water, visual trend assessment as also conducted for these. Concentrations through time these analytes in groundwater and surface water are presented in Appendix M and Appendix N, respectively.

The statistical tools applied included the Mann-Kendall method (for groundwater) and linear regression (for surface water). These statistical tools evaluate trends in key indicator analyte concentrations in groundwater and surface water from each individual monitoring location. In addition to key indicator analyte concentrations, statistical trend assessments were undertaken for analytes that had historically exceeded the Environmental Goals, including lead (total) in groundwater, and fluoride, arsenic (total), cadmium (total), chromium (total), copper (total), lead (total), mercury (total), molybdenum (total), selenium (total), and zinc (total) in surface water. Further details of the Mann-Kendall and data assessment methodology are provided in Appendix O, with outputs for groundwater presented in Appendix P. Results of the linear regression assessments for surface water are presented in Appendix Q. Where concentrations were reported below the laboratory LOR, half the laboratory LOR concentration was used for the assessment of trends. Furthermore, for consistency with previous annual monitoring reports and due to the available data, statistical trend assessments have only been applied to concentrations of total metals.

The interpretation of statistical and visual assessment of trends is presented in Section 6.3.3 for groundwater, Section 6.3.3.6 for the brine waste pond leak detection bores, and Section 7.3 for surface water. Assessment of trends has not been conducted for the entire historical dataset, as there have been significant changes regarding ash placement operations and ash placement footprints over the entire history of the Ash Repositories. The WMP presents longer-term trend graphs using data for the period 2014 to 2024.

6. GROUNDWATER DATA ASSESSMENT

6.1 OBJECTIVE

The objective of the groundwater monitoring program is to identify water quality changes at an early stage so that potential causes can be investigated and, if necessary, effects mitigated. The groundwater data is compared; between locations, to historical data, and to the adopted guideline values to assess changes in groundwater quality and the extent to which changes may be related to activities associated with BCA placement in the MPAR and brine containment in Brine Waste Pond A and B, and Settling Pond D.

6.2 GROUNDWATER MONITORING LOCATIONS AND FREQUENCY

A summary of the groundwater monitoring locations is presented in Table 6-1 and Figure 4a.

TABLE 6-1 GROUNDWATER MONITORING NETWORK

Bore ID	Location Description	Screened Material	Frequency	No. of Samples in 2024/25
Upgradient of MPAR (background)				
MPGM4/D4	Background groundwater monitoring location, north-west (upgradient) of the MPAR	Fill	Quarterly	6
MPGM4/D5	Background groundwater monitoring location, north-west (upgradient) of the MPAR	Mudstone/Sandstone and coal	Quarterly	6
Cross-gradient MPAR / adjacent MPAR to the north and adjacent Wangcol Creek				
MPGM4/D3	Background groundwater monitoring location, north (cross gradient) of the MPAR	Sandstone and/or siltstone	Quarterly	6
D106	North (cross gradient) of MPAR and adjacent Wangcol Creek	Weathered sandstone and/or Shale	Quarterly	6
D107	North (cross gradient) of MPAR and adjacent Wangcol Creek	Siltstone and/or shale	Quarterly	6
D119	Upgradient / adjacent MPAR	Bedrock (sedimentary)	Quarterly	6

Bore ID	Location Description	Screened Material	Frequency	No. of Samples in 2024/25
Downgradient MPAR, areas adjacent Wangcol Creek				
MPGM4/D1	North-east (downgradient) of the MPAR	Mudstone, sandstone and coal	Quarterly	6
MPGM4/D2	East (downgradient) of the MPAR and adjacent Wangcol Creek	Not known	Quarterly	6
MPGM4/D8	East (downgradient) of the MPAR and adjacent to the northern side of Wangcol Creek	Alluvial deposits	Quarterly	6
MPGM4/D9	North-east (downgradient) of the MPAR and adjacent to Wangcol Creek	Alluvial deposits	Quarterly	6
D102	North-east (downgradient) of the MPAR and adjacent to Wangcol Creek. Nested (deeper) with D9	Siltstone	Quarterly	6
D103	East (downgradient) of the MPAR and adjacent Wangcol Creek	Coal and/or siltstone	Quarterly	6
D104	East (downgradient) of the MPAR and adjacent Wangcol Creek	Sandstone	Quarterly	6
D105	East (downgradient) of the MPAR and adjacent Wangcol Creek	Coal	Quarterly	6
Downgradient MPAR including LNAR (north) and historical mining disturbance (east)				
MPGM4/D10	East (downgradient) of the MPAR, and adjacent to LN Pond 2	Fill / mine spoil	Quarterly	7
MPGM4/D19	East (downgradient) of the Ash Repositories	Fill / mine spoil	Quarterly	6
D20	Within / immediately adjacent LNAR north	Fill (mine spoil)	Quarterly	2 (reported as blocked in March 2025). Not required by the WMP or EPL, data provided for reference only.
D110	Within / immediately adjacent LNAR north	Bedrock (sedimentary)	Quarterly	6

Bore ID	Location Description	Screened Material	Frequency	No. of Samples in 2024/25
D113	Cross- and downgradient of LNAR / adjacent Wangcol Creek	Bedrock (sedimentary)	Quarterly	6
D117	Within / immediately adjacent LNAR north	Fill (mine spoil)	Quarterly	6

Cross-gradient MPAR to the south, including LNAR (south) and historical mining disturbance

MPGM4/D15	South of the Ash Repositories	Sandstone and/or shale	Quarterly	6
MPGM4/D16A [#]	South of the Ash Repositories (commissioned in October 2022 to replace D16)	Sandstone and/or shale	Quarterly	6
MPGM4/D17	South of the Ash Repositories	Sandstone and/or shale	Quarterly	4
MPGM4/D18	South of the Ash Repositories	Sandstone and/or shale	Quarterly	6

Brine Waste Pond Leak Detection Bores

MPGM5/D5	Adjacent (downgradient) Brine Waste Pond A	Not known	Quarterly	6
MPGM5/D6	Adjacent (downgradient) Brine Waste Pond B	Not known	Quarterly	6
MPGM/24 and MPGM/25	Adjacent Settling Pond D (north-west)	Not known	Quarterly	0 (dry)
MPGM/26 and MPGM/27	Adjacent Settling Pond D (south-east)	Not known	Quarterly	0 (dry)

The number of samples in Table 6-1 indicates the number of occasions where a complete, or near complete suite of analysis was conducted during the reporting period.

EnergyAustralia provided clarification as to why some bores were not sampled as frequently as required. D20 was reported as damaged in March 2025, and therefore samples were only able to be collected during two out of the six monitoring rounds. D17 was reported to be blocked during the September and December 2025 monitoring rounds and therefore samples were only able to be collected during four out of six monitoring rounds. It is noted that the results for these groundwater bores have been evaluated as part of the previous EMR's (ERM, 2020; ERM, 2021; ERM, 2022; ERM, 2023c; ERM, 2024; and ERM, 2025) and D20 has been removed as part of the WMP and EPL 13007 monitoring schedule, therefore the results of water quality monitoring at D20 will not be recounted in this report.

6.3 GROUNDWATER MONITORING RESULTS

Groundwater quality monitoring was undertaken by Nalco on behalf of EnergyAustralia. Details regarding the Nalco sampling method and QA/QC program are discussed in Section 5.3, with additional information provided in Appendix H.

6.3.1 GROUNDWATER ELEVATION AND INFERRED FLOW DIRECTIONS

Hydrographs showing groundwater elevations for each bore have been grouped by monitoring zone, as outlined in Section 5.4.1. The hydrographs show measured groundwater elevations from 01 July 2022 to 31 December 2025.

Throughout the reporting period, measured water levels generally remained stable, within a 1 m range, with the lowest levels generally observed at the start of the reporting period (September – December 2024). For select bores, specifically D19, D110 and D17, the discrepancies in groundwater levels between quarterly gauging rounds were larger.

The groundwater elevation at D19 gauged during the March 2025 event is considered to be anomalous, as review of bore construction details indicates that the standing water level during this monitoring round was gauged to be below the maximum depth of the bore. As such, although the level is shown (with a note) in the hydrographs, it is excluded from the groundwater contours. The groundwater elevation at D110 in May 2025 was considered to be anomalous as this was over 4 m higher than the previous and following rounds. The groundwater elevation at D17 during the May 2025 monitoring round is considered anomalous as it is 2 m lower than the previous and following rounds. Overall, however, groundwater elevations at each of D19 and D110 were generally consistent those of previous years.

Hydrographs showing the rainfall data overlaid by groundwater level as measured at each of the groundwater bores are presented in Appendix J.

It is noted that as groundwater levels were not all measured at the same time during each monitoring round, groundwater elevations from different bores may not be directly comparable in these instances.

While groundwater elevations in several bores varied during the reporting period, the groundwater elevation contours generally infer groundwater flow to the east and south-east. The groundwater elevation contours are presented in Figure 5a, Figure 5b, and Figure 5c, which present data from October to November 2024, May to June 2025, and October to November 2025 respectively. The groundwater flow regime is inferred to be generally consistent across the seasons and consistent with previously reported inferred groundwater flow directions.

Bores MPGM5/D5 and MPGM5/D6 are located adjacent and downgradient of Brine Waste Pond A and B, respectively. Survey data is not available for these bores; as such the groundwater levels from these bores are reported as metres below a point of reference (metres below top of casing, m btoc), rather than as groundwater elevation (m AHD). The presence of water in these bores is not inferred to reflect the regional water table as these bores are installed approximately 5 m above the water bearing zone targeted by other nearby monitoring bores. Depth to water measured from MPGM5/D5 increased in January and November 2025 but remained generally consistent for the rest of the reporting period.

The opposite pattern was observed for water levels at MPGM5/D6, with water levels decreasing during the January and November 2025 monitoring rounds. Generally, water levels gauged during other monitoring rounds at these bores throughout the reporting period were consistent with historical water levels.

6.3.2 HYDROGEOLOGICAL PARAMETERS

To provide an indication of groundwater flow rates as well as groundwater flow directions, hydrogeological parameters (measured and estimated) were used to estimate seepage velocities at the site over the reporting period. Seepage velocities were estimated based on the Darcy flux using the following equation.

$$\bar{v} = (K \, dh/dl)/n_{\text{eff}}$$

where:

- \bar{v} is the seepage velocity (m/d);
- K is hydraulic conductivity (m/d) (ERM, 2023a);
- dh/dl is hydraulic gradient along the water table during the reporting period (m/m) (see below); and
- n_{eff} is the effective porosity (assumed based on the host geology derived from the calibrated groundwater model).

Seepage velocities were estimated using groundwater levels from October to November 2024, May to June 2025, and October to November 2025 for the following alignments:

- D110 to D105 which represents groundwater flow from MPAR towards Wangcol Creek to the east. This alignment transects the Bunnyong Sandstone (i.e. unmined host geology) that is generally present in the area north of the MPAR to the Wangcol Creek alignment; and
- D110 to D103 which represents groundwater flow from MPAR to the east. This alignment transects the highly disrupted fill / mine spoil geology that is generally present in the area to the east and south-east of the Ash Repositories.

Data for this assessment and its sources include:

- Groundwater elevation data (Appendix J), as presented in Figure 5a – 5c;
- For the fill / mine spoil geological units, representative porosity (n_{eff}) and horizontal hydraulic conductivity (K, m/day) values were taken from the calibrated groundwater flow model in ERM (2023a). Although hydraulic conductivity values estimated from slug testing previously conducted at individual wells in this area indicated higher and lower values respectively (ERM, 2019), the field values likely represent localised conditions around each bore. By contrast, the K value from the calibrated model is likely to be more representative of conditions throughout the highly heterogeneous fill / mine spoil geological units; and
- For the host geological unit (overburden / Bunnyong sandstone), representative porosity (n_{eff}) and hydraulic conductivity values based on the calibrated groundwater flow model in ERM (2023a). The hydraulic conductivity value derived from slug testing of bore D102 (ERM, 2019) was similar to the model-based values.

Estimated seepage velocity values are presented in Table J-1 and Table J-2 (Appendix J) and are summarised in Table 6-2 below noting that, for the values estimated for fill/mine spoil, water in this area is actively taken from DML and Cooks Dam and likely recharges the system from other open voids in the area. These values are considered to be generally consistent with groundwater conditions, including areas of impacted groundwater from MPAR in the fill/mine spoil of highly disturbed areas and in areas where bedrock remains in place, such as between MPAR and Wangcol Creek.

TABLE 6-2 GROUNDWATER SEEPAGE VELOCITY CALCULATIONS

Time Period	Transect and Geological Unit	Estimated Seepage Velocity (\bar{v}) (m/year)
Oct – Nov 2024	Fill / Mine Spoil D110 – D103	330
May – Jun 2025		370
Oct – Nov 2025		370
Oct – Nov 2024	Sandstone D117 – D105	30
May – Jun 2025		35
Oct – Nov 2025		40

6.3.3 GROUNDWATER QUALITY

Groundwater monitoring data for the reporting period is presented in Appendix K and is summarised in the following sections. Trend graphs of concentrations over time since July 2019 are provided in Appendix M, and statistical analysis is presented in Appendix P.

6.3.3.1 UPGRADIENT OF MPAR / BACKGROUND

Data obtained from bores MPGM4/D4 and MPGM4/D5, located to the north-west and hydraulically upgradient (background) of the MPAR, is summarised below and compared to the adopted guideline values for groundwater. Groundwater results for key indicator analytes relating to historical BCA placement in the MPAR are summarised in Figure 7a.

Field Parameters

Field parameters recorded at the groundwater bores in this monitoring zone are summarised as follows:

- pH values for groundwater from MPGM4-D4 and MPGM4-D5 ranged from 2.97 to 5.96. The pH from bore MPGM4-D4 was consistently acidic, ranging between 2.97 and 3.57 during the reporting period. pH values generally remained within historical ranges during the reporting period, however the lowest pH value measured in groundwater at both bores was reported during the August 2025 monitoring round. Throughout the reporting period the measured pH values were generally stable from these bores, but were consistently more acidic than the adopted guideline value range for groundwater (6.5 to 8.0);
- EC values obtained from field measurements ranged from 631 $\mu\text{S}/\text{cm}$ to 1344 $\mu\text{S}/\text{cm}$ and were generally stable throughout the reporting period. EC values did not exceed the adopted guideline value for groundwater (2,600 $\mu\text{S}/\text{cm}$); and

- TDS values ranged between 374 mg/L and 846 mg/L and were generally stable throughout the reporting period. TDS values did not exceed the adopted guideline value (2,000 mg/L).

Graphs of concentrations over time since July 2019 for up gradient (background) bores MPGM4/D4 and MPGM4/D5 show concentrations of TDS and EC in groundwater have consistently remained stable and below the adopted guideline values.

Major and Minor Ions

Throughout the reporting period, concentrations of major and minor ions, including chloride, sulfate, fluoride, calcium, magnesium, sodium, and potassium, were reported below the adopted guideline values for bores MPGM4/D4 and MPGM4/D5.

Graphs of concentrations over time since July 2019 for bores MPGM4/D4 and MPGM4/D5 show concentrations of chloride and sulfate follow trends consistent with TDS and have been stable and below the adopted guideline values for groundwater throughout the historical dataset.

Nutrients

Throughout the reporting period, concentrations of nutrients including ammonia, nitrate, and nitrite were reported below the adopted guideline values at MPGM4/D4 and MPGM4/D5 for groundwater. Concentrations of nitrite and nitrate (as N) were reported above the adopted guideline value on two occasions at MPGM4/D4 and on three occasions at MPGM4/D5.

Metals

Throughout the reporting period, the following concentrations of metals in groundwater from bores MPGM4/D4 and MPGM4/D5 were reported above the adopted guideline values:

- Aluminium (total) on all occasions at MPGM4/D4 and MPGM4/D5;
- Aluminium (filtered) on all occasions at MPGM4/D4 and on five occasions at MPGM4/D5;
- Arsenic (filtered) on two occasions, and arsenic (total) on three occasions at MPGM4/D4;
- Hexavalent chromium (total) during the January, August, and November 2025 monitoring rounds at MPGM4/D4;
- Cobalt (total) on all occasions at MPGM4/D4 and MPGM4/D5;
- Copper (total and filtered) on two occasions at MPGM4/D4, and on one occasion at MPGM4/D5;
- Iron (total) on all occasions at MPGM4/D4 and MPGM4/D5;
- Iron (filtered) on all occasions at MPGM4/D4, and on four occasions at MPGM4/D5;
- Lead (total) on all occasions at MPGM4/D4;
- Manganese (total and filtered) on five occasions at MPGM4/D5; and
- Silver (total) during the August 2025 monitoring round at MPGM4/D4.

Concentrations of aluminium (total and filtered), arsenic (total and filtered), iron (total and filtered), and lead (total) and were higher in groundwater from bore MPGM4/D4 when compared to groundwater from bore MPGM4/D5, noting the lower pH recorded from MPGM4/D4 is likely to influence the dissolved metals concentrations. However, manganese concentrations have consistently been an order of magnitude higher at MPGM4/D5 than MPGM4/D4 over time since July 2019.

Graphs of concentrations over time since July 2019 for bores MPGM4/D4 and MPGM4/D5 show concentrations of boron (total and filtered) and nickel (total and filtered) have remained stable and below the adopted guideline values for groundwater throughout the historical dataset. Manganese (total and filtered) concentrations in groundwater from MPGM4/D5 have remained above the adopted guideline value historically and during the reporting period. However, during the August 2025 monitoring round, concentrations of manganese (total and filtered) were reported below the adopted guideline value for the first time since July 2019. Concentrations of lead (total) have consistently remained above the adopted guideline value at MPGM4/D4, with a historical maximum reported during the August 2025 monitoring round.

Statistical Trend Summary

For the groundwater bores located in this monitoring zone, review of the data collected since July 2019 identified the following statistically significant increasing and decreasing trends:

- MPGM4/D4 – An increasing trend was identified for chloride with concentrations ranging between 11.4 mg/L and 20.5 mg/L; decreasing trends were identified for EC, iron (total), lead (total), manganese (total), nickel (total), sulfate, and TDS; and
- MPGM4/D5 – An increasing trend was identified for nickel (total) with concentrations ranging between 33 µg/L and 69 µg/L; decreasing trends were identified for boron (total), EC, iron (total), sulfate, and TDS.

6.3.3.2 CROSS GRADIENT MPAR / ADJACENT MPAR TO THE NORTH AND ADJACENT WANGCOL CREEK

Data obtained from groundwater bores situated cross gradient of the MPAR, adjacent to the north of the MPAR and adjacent to Wangcol Creek (MPGM4/D3, D106, D107, and D119) are summarised below and compared to the adopted guideline values for groundwater.

Groundwater results for key indicator analytes relating to historical BCA placement in the MPAR are summarised in Figure 7b.

Field Parameters

Field parameters monitored at the groundwater bores in this monitoring zone are summarised as follows:

- pH of groundwater in this area is slightly acidic but remained relatively stable, ranging from 5.95 to 6.78 over the reporting period. pH values were consistently more acidic than the adopted guideline value range (6.5 – 8), with the exception of MPGM4/D3 which was reported within the adopted guideline value range between March and September 2025. pH values remained within historical ranges during the reporting period;
- EC values obtained from field measurements ranged from 258 µS/cm to 11,733 µS/cm and were generally stable to decreasing throughout the reporting period. EC values consistently exceeded the adopted guideline value for groundwater (2,600 µS/cm) at D106 and D107; and
- TDS generally followed a similar trend to EC over the reporting period, with TDS values consistently exceeding the adopted guideline value for groundwater (2000 mg/L) at D106 and D107. TDS values over the reporting period ranged between 168 mg/L and 10,800 mg/L and were generally stable to decreasing throughout the reporting period.

Graphs of concentrations over time since July 2019 for bores located cross gradient of the MPAR (adjacent MPAR to the north) demonstrate that EC and TDS follow a similar pattern. Whilst EC and TDS at D106 and D107 have consistently been reported above the adopted guideline values, they have demonstrated a steady decline since 2022. EC and TDS at MPGM4/D3 and D119 have remained lower and stable over time since July 2019, however D119 has fluctuated above the adopted guideline value on occasions between 2020 and 2022, and again in February 2024.

Major and Minor Ions

Throughout the reporting period, major and minor ions including chloride, sulfate, fluoride, calcium, magnesium, sodium, and potassium were consistently reported below the adopted guideline values at MPGM4/D3 and D119, with the exception of sulfate at D119 which was reported above the adopted guideline value (1000 mg/L) during the August 2024 monitoring round and sodium at D119 which was reported above the adopted guideline value on all occasions.

Sulfate, chloride and sodium were consistently reported above the adopted guideline values at D106 and D107. Concentrations of all other major and minor ions in groundwater from bores D106 and D107 remained below the adopted guideline values throughout the reporting period.

Graphs of concentrations of sulfate and chloride over time since July 2019 have demonstrated a similar trend to EC and TDS, with concentrations of sulfate and chloride at D106 and D107 consistently being reported above the adopted guideline values but demonstrating a steady decline since 2023. A statistically decreasing trend in chloride and sulfate concentrations since 2019 was identified for groundwater from D107. Similar to EC and TDS trends, TDS concentrations in groundwater from MPGM4/D3 and D119 have remained low and stable. Whilst sulfate was reported above the adopted guideline value at D119 during the August 2024 monitoring round, sulfate concentrations remained within historical ranges at D119 over the reporting period.

Nutrients

Throughout the reporting period, concentrations of nutrients including ammonia, nitrate, and nitrite were reported below the adopted guideline values at MPGM4/D3, D106, D107, and D119 for groundwater. Concentrations of nitrite and nitrate (as N) were reported above the adopted guideline value on four occasions at D106, on three occasions at D119, and on one occasion at D107 and MPGM4/D3.

Metals

Throughout the reporting period, the following concentrations of metals in groundwater from bores MPGM4/D3, D106, D107, and D119 were reported above the adopted guideline values:

- Aluminium (total) on all occasions at D106, D107, and D119, and on four occasions at MPGM4/D3;
- Aluminium (filtered) on all occasions at D106, D107, and D119, and on three occasions at MPGM4/D3;
- Arsenic (total) at D106 during the May 2025 monitoring round, and at D119 during the June and July 2025 monitoring rounds;

- Boron (total and filtered) during all monitoring rounds at D106 and D107 and during one monitoring round at D119;
- Cadmium (total) and Zinc (total) during the July 2025 monitoring round at D119;
- Cobalt (total) on all occasions at D106, D107, and D119;
- Copper (total) on two occasions at D106 and D119, and on one occasion at D107;
- Iron (total) on all occasions at D106, D107, and D119, and on three occasions at MPGM4/D3;
- Iron (filtered) on all occasions at D106 and D119, on seven occasions at D107, and on two occasions at MPGM4/D3;
- Lead (total) on all occasions at D107 and D119, and on two occasions at D106;
- Manganese (total and filtered) and nickel (total and filtered) on all occasions at D106 and D117;
- Manganese (filtered) and nickel (filtered) on all occasions at D106 and D107;
- Mercury (total) on one occasion at D106 and D119;
- Molybdenum (total) during the June and July 2025 monitoring rounds at D119;
- Selenium (total) during the June 2025 monitoring round at D119;
- Silver (total) during the May and July 2025 monitoring rounds at D106 and D107, and between June and November 2025 at D119; and
- Vanadium (total) on two occasions at D106 and D119.

Graphs of concentrations over time since July 2019 for groundwater bores in this monitoring zone indicate that concentrations of manganese (total and filtered) and nickel (total and filtered) in groundwater from D106 and D107 have fluctuated and remained above the adopted guideline value but have generally decreased in since 2022. Manganese (total and filtered) and nickel (total and filtered) have consistently remained stable and below the adopted guideline value at MPGM4/D3 and D119. Concentrations of iron (total and filtered) have fluctuated for all bores within this area but have generally remained above the adopted guideline value.

Boron (total and filtered) concentrations have consistently remained above the adopted guideline value at D106 and D107 and remained consistently below the adopted guideline value at MPGM4/D3. Concentrations of boron (total and filtered) at D119 have fluctuated both above and below the adopted guideline value but remained within historical ranges throughout the reporting period.

At D107 and D119, concentrations of lead (total) have fluctuated above the adopted guideline value but have generally remained within historical ranges since 2020, with the exception of a new historical maximum at D119 reported during the July 2025 monitoring round. Lead (total) concentrations at D106 and MPGM4/D3 have remained stable and generally below the adopted guideline value, however the highest concentration over time since July 2019 for D106 was reported during the May 2025 sampling event.

Statistical Trend Summary

For the groundwater bores located in this monitoring zone, review of the data collected since July 2019 identified the following statistically significant increasing and decreasing trends:

- MPM4/D3 – Increasing trends were identified for chloride and nickel (total), with concentrations ranging between 13.8 mg/L and 184 mg/L for chloride and between 2 µg/L and 32 µg/L for nickel (total); decreasing trends were identified for iron (total), manganese (total), and sulfate;
- D106 – Increasing trends were identified for boron (total) and lead (total), with concentrations ranging between 1210 µg/L and 3370 µg/L for boron (total) and between <LOR and 23 µg/L for lead (total); a decreasing trend was identified for manganese (total);
- D107 – Increasing trends were identified for boron (total) and lead (total), with concentrations ranging between 3520 µg/L and 6140 µg/L for boron (total) and between 2 µg/L and 26 µg/L for lead (total); decreasing trends were identified for chloride, iron (total), manganese (total), nickel (total), and TDS; and
- D119 – No statistically significant increasing trends were identified at D119; decreasing trends were identified for chloride, EC, and sulfate.

6.3.3.3 DOWNGRADIENT MPAR, AREAS ADJACENT WANGCOL CREEK

Data obtained from groundwater bores situated downgradient MPAR and adjacent to Wangcol Creek (MPGM4/D1, MPM4/D2, MPM4/D8, MPM4/D9 and D102 – D105) are summarised below and compared to the adopted guideline values for groundwater. Groundwater results for key indicator analytes relating to historical BCA placement in the MPAR are summarised in **Figure 7c**.

Field Parameters

Field parameters recorded at the groundwater bores in this monitoring zone are for the reporting period are summarised as follows:

- pH values for groundwater from bores located downgradient of MPAR and adjacent Wangcol Creek ranged from 5.36 to 6.91. pH values were generally more acidic than the adopted guideline value range (6.5 – 8). pH values generally remained within historical ranges during the reporting period, however the highest pH at D105 was reported during the February 2025 monitoring round, at MPM4/D1 and MPM4/D8 during the September 2025 monitoring round, and at MPM4/D9 during the November 2025 monitoring round;
- EC values obtained from field measurements ranged from 293 µS/cm to 11,520 µS/cm and were generally stable throughout the reporting period. EC values consistently exceeded the adopted guideline value (2,600 µS/cm) in groundwater from MPM4/D1, D102, D103, D105 and MPM4/D9; and
- TDS generally followed a similar trend to EC over the reporting period, with TDS values consistently exceeding the adopted guideline value for groundwater (2000 mg/L) at MPM4/D1, D102, D103, and MPM4/D9. TDS was reported above the adopted guideline value on five occasions at D104 and on one occasion at MPM4/D2. TDS values over the reporting period ranged between 168 mg/L and 10,500 mg/L and were generally stable throughout the reporting period.

Graphs of concentrations over time since July 2019 indicate that EC and TDS at MPGM4/D1, MPGM4/D9, D102, D103, and D105 have generally remained above the adopted guideline values, noting that TDS at D105 was reported below the adopted guideline value for the first time during the October 2025 monitoring round. The highest concentrations of EC and TDS over time since July 2019 at MPGM4/D9 were reported in the November 2024 (EC) and March 2025 (TDS) monitoring rounds. EC and TDS concentrations at D104 and MPGM4/D8 have consistently remained stable and below the adopted guideline values over the reporting period. During the May 2025 monitoring round, concentrations of EC and TDS at MPGM4/D2 were reported above the adopted guideline values for the first time since January 2020, however these analytes have generally remained stable and below the adopted guideline values over time since July 2019 at MPGM4/D2.

Major and Minor Ions

Throughout the reporting period, calcium and fluoride were consistently reported below the adopted guideline values at all the groundwater bores in this monitoring zone .

Chloride, sulfate, and sodium were consistently reported below the adopted guideline values at D104 and MPGM4/D8. Chloride was consistently reported below the adopted guideline value at D105 and MPGM4/D2.

Sulfate was reported above the adopted guideline value during the May 2025 sampling round at MPGM4/D2 and on all occasions at MPGM4/D1, D102, D103, D105, and MPGM4/D9. Chloride was reported above the adopted guideline value during the July 2025 monitoring round at D103, and on all occasions at MPGM4/D1, D102, and MPGM4/D9. Sodium was reported above the adopted guideline value on all occasions at MPGM4/D1, D102, D103, D105, and MPGM4/D9, and on two occasions at MPGM4/D2.

Graphs of concentrations over time since July 2019 show concentrations of sulfate follow a similar patten to EC and TDS. Concentrations of sulfate at MPGM4/D1, MPGM4/D9, D102, D103, and D105 have generally remained stable above the adopted guideline value, noting that the highest concentrations of sulfate over time since July 2019 were reported at D102 during the February 2025 monitoring round, and at D103 during the July 2025 monitoring round. Sulfate at D104 and MPGM4/D8 has consistently remained below the adopted guideline value. Concentrations of sulfate at MPGM4/D2 have generally remained below the adopted guideline value with the exception of the May 2025 monitoring round.

Graphs of chloride concentrations over time since July 2019 indicate that chloride at MPGM4/D1, D102, and MPGM4/D9 has generally remained above the adopted guideline value. Concentrations of chloride for all other bores within this grouping have generally remained stable and below the adopted guideline value, with the exception of D103 which reported an exceedance of the adopted guideline value during the July 2025 monitoring round, for the first time since September 2019.

Nutrients

Throughout the reporting period, concentrations of nutrients including ammonia, nitrate, and nitrite were reported below the adopted guideline values for groundwater at MPGM4/D1, MPGM4/D2, MPGM4/D8, MPGM4/D9 and D102 - D105. Concentrations of nitrite and nitrate were reported above the adopted guideline value on five occasions at MPGM4/D8, on four occasions at D104, and on two occasions at MPGM4/D1, D103, D105, and MPGM4/D9.

Metals

Throughout the reporting period, the following concentrations of metals in groundwater from bores MPGM4/D1, MPGM4/D2, MPGM4/D8, MPGM4/D9 and D102 – D105 were reported above the adopted guideline values:

- Aluminium (total) on all occasions at MPGM4/D1, MPGM4/D2, MPGM4/D8, MPGM4/D9 and D102 – D105;
- Aluminium (filtered) on all occasions at MPGM4/D1, MPGM4/D2, MPGM4/D8 and D102 – D105, and on five occasions at MPGM4/D9;
- Arsenic (total) at D104 during the October 2025 monitoring round, and at D105 during the May 2025 monitoring round;
- Boron (total) during all monitoring rounds at MPGM4/D1, D102, D103, MPGM4/D2, and MPGM4/D9, and during five monitoring rounds at D105;
- Boron (filtered) during all monitoring rounds at D102, D103, and MPGM4/D9, and during five monitoring rounds at MPGM4/D1, MPGM4/D2, and D105;
- Hexavalent chromium (total) during the January, August, and November 2025 monitoring rounds at MPGM4/D2;
- Cobalt (total) on all occasions at MPGM4/D1, MPGM4/D2, MPGM4/D9 and D102 – D105, and on five occasions at MPGM4/D8;
- Copper (total) during four monitoring rounds at MPGM4/D2 and MPGM4/D8, during three monitoring rounds at MPGM4/D9, during two monitoring rounds at D104, and on one occasion at D102 and D105;
- Copper (filtered) between July 2024 and January 2025 at MPGM4/D2 and during the March and May 2025 monitoring rounds at MPGM4/D8;
- Iron (total) on all occasions at MPGM4/D1, MPGM4/D2, MPGM4/D9 and D102 – D105, and between March and September 2025 at MPGM4/D8;
- Iron (filtered) on all occasions at D102, D103, D105, MPGM4/D2, and MPGM4/D9, and on five occasions at MPGM4/D1 and D104;
- Lead (total) on two occasions at MPGM4/D2 and MPGM4/D9, and on one occasion at D104 and D105;
- Manganese (total and filtered) on all occasions at MPGM4/D1, D102, D103, D105, and MPGM4/D9;
- Mercury (total) during the May and September 2025 monitoring rounds at MPGM4/D9, and during the November 2025 monitoring round at MPGM4/D2;
- Nickel (total and filtered) on all occasions at MPGM4/D1, D102, D103, and MPGM4/D9, and during the May and July 2025 monitoring rounds at D105; and
- Silver (total) on two occasions at D104 and MPGM4/D9, and on one occasion at D102, D103, and D105.

Graphs of concentrations over time since July 2019 for metals at all the groundwater bores in this monitoring zone indicate that concentrations of nickel (total and filtered) and manganese (total and filtered) have generally remained stable below the adopted guideline values at MPGM4/D2, MPGM4/D8, and D104. A similar pattern is apparent for boron (total and filtered) at these groundwater bores however concentrations of boron at MPGM4/D2 have steadily increased since April 2023, peaking during the May 2025 monitoring round for boron (filtered).

Concentrations of iron (total and filtered) have fluctuated but generally remained above the adopted guideline value for MPGM4/D2 and D104. The highest concentration of iron (total) at D104 over time since July 2019 was reported during the October 2025 monitoring round, however iron (filtered) concentrations at D104 from the same monitoring round remained within historical ranges. Since April 2021, concentrations of iron (total) have generally remained stable and below the adopted guideline value at MPGM4/D8 but were reported above the adopted guideline value between March and September 2025. Similarly, concentrations of iron (filtered) at MPGM4/D8 have generally remained stable and below the adopted guideline value since January 2020 but were reported above the adopted guideline value during the November 2025 monitoring round.

Similar to trends for other analytes at MPGM4/D1, MPGM4/D9, D102, and D103, concentrations of metals in groundwater from these bores have generally remained stable and above the adopted guideline values. Concentrations of manganese (total and filtered) have generally demonstrated a decline since 2019 for these groundwater bores, whereas other metals such as boron (total and filtered), nickel (total and filtered) and iron (total and filtered) have generally demonstrated a stable trend. At MPGM4/D9, the highest concentration of iron (total) over time since July 2019 was reported during the November 2025 monitoring round, however iron (filtered) concentrations at MPGM4/D9 from the same monitoring round remained within historical ranges. The highest concentrations of boron (total and filtered) at MPGM4/D9 over time since July 2019 were also observed during the reporting period, however concentrations subsequently declined to within historical ranges.

Concentrations of metals at D105 either fluctuated above and below the adopted guideline values, as is the case for nickel (total and filtered) and boron (total and filtered), or have been consistently reported above the adopted guideline values, as observed for manganese (total and filtered) and iron (total and filtered). Concentrations of metals at D105 have generally remained stable over time since July 2019. During the May 2025 monitoring round the highest concentration of iron (total) over time since July 2019 was reported, however iron (filtered) concentrations at D105 from the same monitoring round remained within historical ranges. The highest concentration of boron (total and filtered) at D105 over time since July 2019 was also observed during the reporting period, however concentrations subsequently declined to within historical ranges.

Lead (total) concentrations at all the groundwater bores in this monitoring zone have fluctuated but have generally remained below the adopted guideline value. Concentrations of lead (total) at MPGM4/D2, MPGM4/D9, D104, and D105 have demonstrated the greatest amount of variability, with concentrations elevated above historical ranges reported during the May 2025 monitoring round at D105, October 2025 monitoring round at D104, and November 2025 monitoring round at MPGM4/D9. A steady increase in concentrations of lead (total) has been apparent at MPGM4/D9 and D104 since November 2024.

Statistical Trend Summary

For the groundwater bores located in this monitoring zone, review of the data collected since July 2019 identified the following statistically significant increasing and decreasing trends:

- MPGM4/D1 – Increasing trends were identified for boron (total) and EC; with concentrations ranging between 560 µg/L and 3590 µg/L for boron (total) and between

2020 $\mu\text{S}/\text{cm}$ and 12,370 $\mu\text{S}/\text{cm}$ for EC; decreasing trends were identified for iron (total) and manganese (total);

- MPGM4/D2 – Increasing trends were identified for lead (total), with concentrations ranging between the LOR and 8 $\mu\text{g}/\text{L}$; no statistically significant decreasing trends were identified at D2;
- MPGM4/D8 – No statistically significant trends were identified at D8;
- MPGM4/D9 – Increasing trends were identified for boron (total), EC, and sulfate, with concentrations ranging between 1440 $\mu\text{g}/\text{L}$ and 2740 $\mu\text{g}/\text{L}$ for boron (total), between 7498 $\mu\text{S}/\text{cm}$ and 11,520 $\mu\text{S}/\text{cm}$ for EC, and between 3480 mg/L and 5160 mg/L for sulfate; decreasing were identified for manganese (total);
- D102 – No increasing trends were identified at D102; decreasing trends were identified for boron (total), EC, manganese (total), nickel (total), and TDS;
- D103 – Increasing trends were identified for boron (total), with concentrations ranging between 1140 $\mu\text{g}/\text{L}$ and 2010 $\mu\text{g}/\text{L}$; decreasing trends were identified for chloride, EC, manganese (total), nickel (total), sulfate, and TDS;
- D104 – Increasing trends were identified for iron (total) and nickel (total); with concentrations ranging between 1110 $\mu\text{g}/\text{L}$ and 34,800 $\mu\text{g}/\text{L}$ for iron (total) and between 19 $\mu\text{g}/\text{L}$ and 183 $\mu\text{g}/\text{L}$ for nickel (total); no decreasing trends were identified at D104; and
- D105 – Increasing trends were identified for boron (total), with concentrations ranging between 330 $\mu\text{g}/\text{L}$ and 840 $\mu\text{g}/\text{L}$; decreasing trends were identified for chloride, EC, iron (total), manganese (total), nickel (total), sulfate, and TDS.

6.3.3.4 DOWNGRADIENT MPAR, INCLUDING LNAR (NORTH) AND HISTORICAL MINING DISTURBANCE (EAST)

Data obtained from groundwater bores situated downgradient MPAR including LNAR (north) and historical mining disturbance (east) (MPGM4/D10, MPGM4/D19, D110, D113, D117) are summarised below and compared to the adopted guideline values for groundwater.

Groundwater results for key indicator analytes relating to historical BCA placement in the MPAR are summarised in Figure 7d.

Field Parameters

Field parameters recorded at the groundwater bores in this monitoring zone are summarised as follows:

- pH values for groundwater from bores located downgradient of MPAR and adjacent Wangcol Creek ranged from 5.78 to 6.47. pH values were consistently more acidic than the adopted guideline value range (6.5–8). pH values generally remained within historical ranges during the reporting period, however the highest pH at MPGM4/D10 and MPGM4/D19 was reported during the March 2025 monitoring round, and at D110 and D113 during the July 2025 monitoring round;
- EC values obtained from field measurements ranged from 3327 $\mu\text{S}/\text{cm}$ to 11,405 $\mu\text{S}/\text{cm}$ and were generally stable throughout the reporting period. EC values consistently exceeded the adopted guideline value for groundwater (2,600 $\mu\text{S}/\text{cm}$) at all groundwater bores within this area; and

- TDS generally followed a similar trend to EC over the reporting period, with TDS values consistently exceeding the adopted guideline value for groundwater (2000 mg/L) at all groundwater bores. TDS values over the reporting period ranged between 2520 mg/L and 8960 mg/L and were generally stable throughout the reporting period.

Graphs of concentrations over time since July 2019 indicate that EC and TDS at MPGM4/D10, MPGM4/D19, D110, D113 and D117 have generally remained above the adopted guideline values. Concentrations of EC and TDS in groundwater from D113, D117 and D19 have all followed a similar pattern, remaining generally stable since September 2020. D110 has remained stable since 2020 for EC and TDS, but has consistently reported higher concentrations than D113, D117 and D19. EC and TDS concentrations in groundwater from D10 have steadily increased since 2022 but demonstrated a decline during the reporting period.

Major and Minor Ions

Throughout the reporting period, sulfate and sodium were consistently reported above the adopted guideline values at all the groundwater bores in this monitoring zone. Groundwater bores within this area did not report concentrations of calcium above the adopted guideline value during the reporting period.

Chloride was reported above the adopted guideline value on all occasions at D110, on five occasions at D10, and on two occasions at D113. Fluoride was reported below the adopted guideline value at all groundwater bores, except for D117 during the August 2024, June 2025, and November 2025 monitoring rounds.

Graphs of concentrations over time since July 2019 show concentrations of sulfate follow trends are generally consistent with EC and TDS, with bores MPGM4/D10, MPGM4/D19, D110, D113 and D117 generally remaining above the adopted guideline value since July 2019. The highest concentration of sulfate in groundwater from D110 since July 2019 was reported during the October 2025 monitoring round.

Graphs of chloride concentrations over time since July 2019 indicate that D110 has remained generally stable above the adopted guideline value. Similar to other analytes at MPGM4/D10, concentrations of chloride in groundwater have been increasing since 2022 but declined during the reporting period. Chloride concentrations in groundwater from D110, D113 and D117 have generally remained stable and below the adopted guideline value since 2020, however chloride at D113 was reported above the adopted guideline value during two monitoring rounds during the reporting period. Chloride concentrations at D113 were reported below the adopted guideline value during subsequent monitoring rounds.

Nutrients

Throughout the reporting period, concentrations of nitrate, and nitrite were reported below the adopted guideline values for groundwater at all the groundwater bores in this monitoring zone. Concentrations of ammonia were reported above the adopted guideline value for groundwater between March and November 2025 at MPGM4/D10, and during the July 2025 monitoring round at D110. Concentrations of nitrite and nitrate (as N) were reported above the adopted guideline value on all occasions at D117, on four occasions at D110, on three occasions at MPGM4/D10 and D113, and on two occasions at MPGM4/D19.

Metals

Throughout the reporting period, the following concentrations of metals in groundwater from bores MPGM4/D10, MPGM4/D19, D110, D113 and D117 were reported above the adopted guideline values:

- Aluminium (total) on all occasions at MPGM4/D10, D110, D117, and D19, and on four occasions at D113;
- Aluminium (filtered) on all occasions at MPGM4/D10 and D117, on three occasions at D110, and on one occasion at D113;
- Antimony (total) during the March 2025 monitoring round at D113;
- Arsenic (total) at D117 and D19 on two occasions;
- Boron (total and filtered) on all occasions for all groundwater bores within this area;
- Cadmium (total) on all occasions at D117;
- Chromium (total) on two occasions at D19, and on one occasion at D110 and D117;
- Hexavalent chromium (total) on two occasions at MPGM4/D10, and on one occasion at D110, D113, and D19;
- Cobalt (total) on all occasions for all groundwater bores within this area;
- Copper (total) on four occasions at D110, on three occasions at MPGM4/D10, and on two occasions at D113, D117 and D19;
- Copper (filtered) on one occasion at D110 and D113;
- Iron (total and filtered) on all occasions at MPGM4/D10, D110, D113 and D19;
- Iron (total) on five occasions at D117;
- Lead (total) on all occasions at D10 and D19 on three occasions at D113, and on two occasions at D117;
- Manganese (total) on all occasions at D110, D117 and D19 on five occasions at D10, and on four occasions at D113;
- Manganese (filtered) on all occasions at D110 and D117 on four occasions at D10 and D113, and on three occasions at D19;
- Mercury (total) during the May 2025 sampling round at D19;
- Molybdenum (total) on all occasions at D117, on three occasions at D110, and on two occasions at D10 and D19;
- Nickel (total) on all occasions all occasions at D110 and D19, on five occasions at D10, and on four occasions at D113;
- Nickel (filtered) on all occasions all occasions at D110, on five occasions at D10, and on four occasions at D113 and D19;
- Selenium (total) on all occasions at D117 and during the May and September 2025 monitoring rounds at D19;
- Silver (total) on two occasions at D110 and D19, and on one occasion at D10, D113, and D117;
- Vanadium (total) on four occasions at D117, on two occasions at D19, and on one occasion at D110; and
- Zinc (total) at D19 during the May and September 2025 monitoring rounds.

Graphs of concentrations of metals over time since July 2019 for metals at all the groundwater bores in this monitoring zone indicate that concentrations of nickel (total and filtered) have generally remained stable and below the adopted guideline value in groundwater from D117 since 2021. Nickel (total) concentrations in groundwater from MPGM4/D10 and D110 have fluctuated above the adopted guideline value since 2019 (D110) and 2022 (MPGM4/D10) but concentrations declined during the reporting period. Similar trends are apparent for nickel (filtered) at D110 and MPGM4/D10. Nickel (total and filtered) concentrations in groundwater from D113 and D19 have demonstrated a steady increase since 2023, peaking during the reporting period for nickel (filtered).

Concentrations of manganese (total and filtered) in groundwater have generally remained stable and either fluctuated above or below the adopted guideline value (MPGM4/D10, D113, D117, and D19), or consistently remained above the adopted guideline value (D110) over time since July 2019. Concentrations of manganese (total and filtered) have consistently been more elevated at D110 and D117, with concentrations at D117 demonstrating an increase since 2022. The highest concentrations of manganese (filtered) in groundwater from D117 were reported during the November 2025 monitoring round.

Iron (total) concentrations in groundwater have generally remained stable above the adopted guideline value for MPGM4/D10, D110, D113. Concentrations of iron (total) at D19 have steadily increased since 2022, with the highest concentration over time since July 2019 reported during the May and September 2025 sampling events. Whilst iron (total) concentrations at D117 have generally remained stable above the adopted guideline value, the highest concentration over time since July 2019 was reported during the March 2025 sampling event. Concentrations of iron (total) at D19 and D117 declined to within historical ranges during subsequent monitoring rounds.

Similarly, concentrations of iron (filtered) in groundwater have generally remained stable above the adopted guideline value for D110, D113, and D117. Iron (filtered) concentrations have fluctuated but remained above the adopted guideline value, with the highest concentration over time since July 2019 was reported during the November 2025 sampling event. Concentrations of iron (filtered) in groundwater from MPGM4/D10 have demonstrated a slight increasing trend since 2022, peaking during the November 2024 monitoring round, but declining to within historical ranges during subsequent monitoring rounds.

Concentrations of boron (total and filtered) at D19, D110 and D113 have generally remained stable above the adopted guideline value over time since July 2019. MPGM4/D10 has followed a similar trend to other analytes, with concentrations increasing since 2022, peaking during the November 2024 monitoring round for boron (filtered), but declining to within historical ranges during subsequent monitoring rounds. Boron (total and filtered) concentrations in groundwater at D117 have consistently remained above the adopted guideline value at generally an order of magnitude higher than other groundwater bores within this area. The highest concentration of boron (total) at D117 over time since July 2019 was reported during the March 2025 monitoring round, however concentrations declined to within historical ranges during subsequent monitoring rounds.

Lead (total) concentrations in groundwater from MPGM4/D10, D110, D113, and D117 have fluctuated both above and below the adopted guideline value, however the highest concentration of lead (total) at D117 over time since July 2019 was reported during the March

2025 monitoring round. Concentrations of lead (total) at D117 declined to within historical ranges during subsequent monitoring rounds. Whilst D19 has demonstrated some fluctuation, D19 has consistently reported the highest concentrations of lead (total) in groundwater out of the bores within this area. The highest concentration of lead (total) at D19 over time since July 2019 was reported during the May 2025 monitoring round, however concentrations declined to within historical ranges during subsequent monitoring rounds.

Statistical Trend Summary

For the groundwater bores located in this monitoring zone, review of the data collected since July 2019 identified the following statistically significant increasing and decreasing trends:

- D10 – Increasing trends were identified for lead (total), with concentrations ranging between the LOR and 32 µg/L; no statistically significant decreasing trends were identified at D10;
- D19 – Increasing trends were identified for iron (total), with concentrations ranging between 506 µg/L and 231,000 µg/L noting that iron concentrations subsequently declined to 19,400 µg/L; no statistically significant decreasing trends were identified at D19;
- D110 – Increasing trends were identified for EC, iron (total), and sulfate, with concentrations ranging between 4198 µS/cm and 9760 µS/cm for EC, between 19,100 µg/L and 70,800 µg/L for iron (total), and between 2760 mg/L and 5460 mg/L for sulfate; decreasing trends were identified for manganese (total);
- D113 – No increasing trends were identified at D113; decreasing trends were identified for iron (total) and manganese (total); and
- D117 – Increasing trends were identified for boron (total), with concentrations ranging between the LOR and 16,600 µg/L; decreasing trends were identified for nickel (total) and sulfate.

6.3.3.5 CROSS GRADIENT MPAR TO THE SOUTH, INCLUDING LNAR (SOUTH) AND HISTORICAL MINING DISTURBANCE

Data obtained from groundwater bores that are considered to be situated cross gradient MPAR to the south, including LNAR (south) and historical mining disturbance are summarised below and compared to the adopted guideline values for groundwater. Bores in this area include D15, D16A, and D18. Groundwater results for key indicator analytes relating to historical BCA placement in the MPAR are summarised in Figure 7e.

Field Parameters

Field parameters recorded at the groundwater bores in this monitoring zone are summarised as follows for the reporting period:

- pH values were, at times, more acidic than the adopted guideline value range in groundwater from D15 although values were generally stable ranging between 6.05 and 6.86. pH values at D18 and D16A were generally stable, ranging between 6.79 and 7.33, and within the adopted guideline value range (6.5 to 8.0). pH values generally remained within historical ranges during the reporting period, however the highest pH at D15 and D16A was reported during the March 2025 monitoring round;

- EC values obtained from field measurements ranged from 584 $\mu\text{S}/\text{cm}$ to 2192 $\mu\text{S}/\text{cm}$ and were generally stable throughout the reporting period. EC values were consistently reported below the adopted guideline value for groundwater (2,600 $\mu\text{S}/\text{cm}$) at all groundwater bores within this area; and
- TDS generally followed a similar trend to EC over the reporting period, with TDS values consistently being reported below the adopted guideline value for groundwater (2000 mg/L, with the exception of the May 2025 monitoring round at D15. TDS values over the reporting period ranged between 278 mg/L and 2210 mg/L and were generally stable throughout the reporting period.

Graphs of concentrations of EC and TDS over time since July 2019 for groundwater bores D15, D16A and D18 indicate that EC and TDS have generally remained below the adopted guideline values. EC and TDS at D16A and D18 have consistently remained stable. Concentrations of EC and TDS in groundwater at D15 have demonstrated a steady decline over time since July 2019, and have remained below the adopted guideline values since 2022 with the exception of TDS during the May 2025 monitoring round. TDS concentrations declined to within historical ranges during subsequent monitoring rounds.

Major and Minor Ions

Throughout the reporting period, concentrations of major and minor ions, including calcium, chloride, sulfate and fluoride were reported below the adopted guideline values for bores D15, D16A and D18. Sodium was also reported below the adopted guideline value at D16A and D18 but was reported above the adopted guideline value on all occasions at D15.

Graphs of concentrations of sulfate and chloride over time since July 2019 for D15, D16A, and D18 follow a similar trend to EC and TDS. Sulfate and chloride concentrations in groundwater at D16A and D18 and have consistently remained stable and below the adopted guideline values. Sulfate and chloride at D15 have demonstrated a steady decline since 2019. Chloride concentrations have generally remained below the adopted guideline value over time since July 2019 at D15, however sulfate concentrations have been reported below the adopted guideline value since 2022.

Nutrients

Throughout the reporting period, concentrations of ammonia, nitrate, and nitrite were reported below the adopted guideline values for groundwater at D15, D16A and D18. Concentrations of nitrite and nitrate (as N) were reported above the adopted guideline value on five occasions at D18, and on four occasions at D15 and D16A.

Metals

Throughout the reporting period, the following concentrations of metals in groundwater from bores D15, D16A and D18 were reported above the adopted guideline values:

- Aluminium (total) on all occasions at D15 and D16A, and on five occasions at D18;
- Arsenic (total) on two occasions at D15 and D18;
- Arsenic (filtered) on one occasion at D15 and D18;
- Barium (total), boron (total), chromium (total), cadmium (total), nickel (total), selenium (total), vanadium (total), and zinc (total) during the September 2024 and May 2025 monitoring rounds at D15;

- Hexavalent chromium (total) on one occasion at D15 and D18;
- Cobalt (total) on all occasions at D15 and D18, and on three occasions at D16A;
- Copper (total) during the September 2024 and May 2025 monitoring rounds at D15 and D17, and on one occasion at D16A and D18;
- Iron (total) on all occasions at D15 and D18, and on five occasions at D16A;
- Iron (filtered) on five occasions at D15, D16A, and D18;
- Lead (total) during the September 2024 and May 2025 monitoring rounds at D15, and during the May 2025 monitoring round at D16A;
- Molybdenum (total) on five occasions at D18, during the September 2024 and May 2025 monitoring rounds at D15, and during the March 2025 sampling round at D16A; and
- Silver (total) during the September 2024 and May 2025 monitoring rounds at D15.

Graphs of concentrations over time since July 2019 groundwater bores in this monitoring zone demonstrate that concentrations of nickel (total and filtered), manganese (total and filtered), and boron (total and filtered) have generally remained stable below the adopted guideline values for D16A and D18. Concentrations of iron (total) in groundwater from D16A and D18 have exhibited some fluctuation and have generally remained above the adopted guideline value since 2022. Iron (filtered) at D18 has remained stable with concentrations generally at, or slightly above, the adopted guideline value. Iron (filtered) concentrations in groundwater from D16A have fluctuated, with a historical maximum and historical minimum reported during the reporting period. Lead (total) concentrations at D16A and D18 have generally remained stable and below the adopted guideline value, however the highest concentration of lead (total) at D16A since monitoring began in 2022 was reported during the May 2025 monitoring round. Concentrations of lead (total) in groundwater from D16A declined to within historical ranges during subsequent monitoring rounds.

Concentrations of nickel (total), iron (total), and lead (total) in groundwater from D15 have declined over time since July 2019, but were more variable over the reporting period with both a historical maximum and a historical minimum reported between July 2024 and December 2025. Although concentrations of nickel (filtered) manganese (total and filtered) in groundwater from D15 have varied, the data indicates an overall decreasing trend since 2019 which continued into the reporting period. Whilst iron (filtered) concentrations in groundwater at D15 have exhibited a sustained decreasing trend, concentrations began to increase during the reporting period and have consistently remained above the adopted guideline value. Boron (total and filtered) concentrations in groundwater at D15 have displayed some variability over time since July 2019 but have generally remained below the adopted guideline values. Concentrations of boron (total) at D15 have fluctuated above the adopted guideline values on four occasions, in 2019, 2023, 2024, and 2025, but returned to concentrations within historical ranges during subsequent monitoring rounds.

Statistical Trend Summary

For the groundwater bores located in this monitoring zone, the groundwater data collected over time since July 2019 identified the following statistically significant increasing and decreasing trends:

- D15 – No statistically significant increasing trends were identified for D15; decreasing trends were identified for chloride, EC, iron (total), lead (total), manganese (total), nickel (total), sulfate, and TDS;
- D16A – No statistically significant increasing trends were identified for D16A; a decreasing trend was identified for chloride; and
- D18 – Statistically significant increasing trends were identified for iron (total), manganese (total), and nickel (total), with concentrations ranging between 15 µg/L and 12,000 µg/L for iron (total), between 48 µg/L and 436 µg/L for manganese (total), and between 2 µg/L and 33 µg/L for nickel; no decreasing trends were identified for D18.

6.3.3.6 BRINE WASTE POND LEAK DETECTION BORES

Water quality results from monitoring bores MPGM5/D5 and MPGM5/D6, located adjacent to the Brine Waste Holding Ponds (A / B) and to the west and upgradient of the MPAR, are summarised with reference to the adopted guideline values for groundwater in the sections below. These bores are installed to approximately 10 m below ground level and were constructed for the purpose of leak detection from the Brine Waste Holding Ponds. The presence of water in these bores is not inferred to reflect the regional water table as these bores are installed to approximately 5 m above the water bearing zone targeted by other nearby monitoring bores.

Field Parameters

Field parameters recorded at bores adjacent to the Brine Waste Holding Ponds (A/B) for the reporting period are summarised as follows:

- pH values for groundwater from groundwater bores MPGM5/D5 and MPGM5/D6 located downgradient of MPAR and adjacent Wangcol Creek ranged from 6.6 to 7.02. pH values were consistently within the adopted guideline value range (6.5 – 8). pH values generally remained within historical ranges during the reporting period, however the highest pH at MPGM5/D5 was reported during the January 2025 monitoring round;
- EC values obtained from field measurements ranged from 10,247 µS/cm to 45,443 µS/cm and demonstrated some fluctuation throughout the reporting period. EC values consistently exceeded the adopted guideline value for groundwater (2,600 µS/cm) at both leak detection bores; and
- TDS generally followed a similar trend to EC over the reporting period, with TDS values exceeding the adopted guideline value for groundwater (2,000 mg/L) on all occasions at both leak detection bores. TDS values over the reporting period ranged between 7550 mg/L and 43,300 mg/L.

Graphs of concentrations of EC and TDS over time since July 2019 for leak detection bores indicate that EC and TDS have fluctuated but generally remained above the adopted guideline values.

Since 2022, an increasing trend at both leak detection bores has been apparent. Concentrations of EC and TDS at MPGM5/D5 have generally been more elevated than concentrations from MPGM5/D6 over time since July 2019, with the exception of a short period in 2021 for EC. Concentrations of EC and TDS during the reporting period at the brine leak detection bores remained within the concentrations ranges since July 2019.

Major and Minor Ions

Concentrations of chloride, sodium and sulfate were consistently reported above the adopted guideline values in water from bores MPGM5/D5 and MPGM5/D6 during the reporting period. Fluoride was reported above the adopted guideline value for groundwater during the November 2025 monitoring round at MPGM5/D5.

Graphs of concentrations of sulfate and chloride over time since July 2019 for leak detection bores MPGM5/D5 and MPGM5/D6 indicate that chloride generally follow similar trends to EC and TDS and have demonstrated an increasing pattern since 2021. Chloride concentrations at MPGM5/D5 peaked during the November 2025 monitoring round. Concentrations of sulfate and chloride during the reporting period at MPGM5/D6 remained within the concentrations ranges since July 2019.

Following the peak concentrations observed in 2019, sulfate concentrations have generally remained stable since 2021 at MPGM5/D5. However, sulfate concentrations at MPGM5/D6 have demonstrated the similar increasing pattern observed for TDS, EC, and chloride. During the reporting period, whilst sulfate concentrations at MPGM5/D5 fluctuated, they remained within the range of concentrations reported over time since July 2019.

Nutrients

Concentrations of nitrate, and nitrite were reported below the adopted guideline values for groundwater at MPGM5/D5 and MPGM5/D6 during the reporting period, however concentrations of nitrite and nitrate (as N) were reported above the adopted guideline value during the January and August 2025 events at MPGM5/D6. Ammonia was reported at concentrations above the adopted guideline value for groundwater on all occasions at MPGM5/D6 and on five occasions at MPGM5/D5.

Metals

The following concentrations of metals in water samples from the leak detection bores (MPGM5/D5 and MPGM5/D6) were reported above the adopted guideline values during the reporting period:

- Nickel (total and filtered), aluminium (total), cobalt (total), iron (total) and molybdenum (total) on all occasions at MPGM5/D5 and MPGM5/D6;
- Antimony (total) during the August 2025 monitoring round at MPGM5/D5;
- Boron (total) and cadmium (total) on all occasions at MPGM5/D5 and on one occasion at MPGM5/D6;
- Boron (filtered) and zinc (total and filtered) on all occasions at MPGM5/D5;
- Chromium (total) during the July 2024 monitoring round at MPGM5/D6;
- Copper (total) and iron (filtered) on all occasions at MPGM5/D5 and five occasions at MPGM5/D6;
- Copper (filtered) on four occasions at MPGM5/D5 and on one occasion at MPGM5/D6;
- Lead (total), manganese (total), and mercury (total) on all occasions at MPGM5/D5 and on two occasions at MPGM5/D6;
- Manganese (filtered) on all occasions at MPGM5/D5 and three occasions at MPGM5/D6;
- Selenium (total) on four occasions at MPGM5/D5;

- Silver (total) on five occasions at MPGM5/D5 and on four occasions at MPGM5/D6; and
- Vanadium (total) during the July 2024 sampling round at MPGM5/D6.

Graphs of concentrations of metals over time since July 2019 indicate that nickel (total) follows a similar trend to EC, TDS, and chloride, demonstrating a spike in concentrations in 2019, followed by a decline until 2021/2022. Whilst nickel (filtered) data was not available until 2021, a similar increasing trend is apparent from 2021. Concentrations of nickel (total and filtered) increased at MPGM5/D5 and MPGM5/D6 until mid to late 2024 but have fluctuated since, with the highest concentrations of nickel (filtered) over time since July 2019 reported for MPGM5/D5 during the July 2025 monitoring round.

Concentrations of manganese (total and filtered) at the leak detection bores have generally remained stable at or below the adopted guideline value (MPGM5/D6) or above the adopted guideline value (MPGM5/D5) since 2019. Iron (total and filtered) concentrations have generally declined (MPGM5/D6) or remained stable (MPGM5/D5) above the adopted guideline value over time since July 2019. Boron (total and filtered) concentrations at MPGM5/D5 have demonstrated significant variability since 2019, but concentrations throughout the reporting period remained within the range of concentrations reported over time since July 2019. However, boron (total and filtered) concentrations at MPGM5/D6 have generally remained stable below the adopted guideline value until the reporting period, with the highest concentrations of boron (total) since July 2019 reported for MPGM5/D6 during the October 2024 monitoring round. Concentrations of lead (total) have demonstrated a different pattern to other key indicator analytes at the leak detection bores, with concentrations demonstrating significant fluctuation since 2023.

Statistical Trend Summary

For the brine waste pond leak detection bores, the groundwater data collected over time since July 2019 identified the following statistically significant increasing and decreasing trends:

- MPGM5/D5 – Increasing trends were identified for chloride, iron (total), lead (total), and nickel (total). Concentrations of chloride ranged between 181.2 mg/L and 9420 mg/L, concentrations of iron (total) ranged between 1200 µg/L and 7420 µg/L, concentrations of lead (total) ranged between 2 µg/L and 149 µg/L, and concentrations of nickel (total) ranged between 1580 µg/L and 11,700 µg/L; decreasing trends were identified for manganese (total); and
- MPGM5/D6 – Increasing trends were identified for chloride, EC, nickel (total), sulfate, and TDS, with concentrations ranging between 98.91 mg/L and 4390 mg/L for chloride, between 200 µS/cm and 28,820 µS/cm for EC, between 1 µg/L and 83 µg/L for lead (total), between 67 µg/L and 2690 µg/L for nickel (total), between 272.6 mg/L and 8810 mg/L for sulfate, and between 714 mg/L and 24,500 mg/L for TDS; decreasing trends were identified for iron (total).

6.3.4 DISCUSSION OF RESULTS

6.3.4.1 UPGRADIENT OF MPAR / BACKGROUND

Acidic groundwater and concentrations of nutrients and metals elevated above the adopted guideline values were identified in groundwater from background bores MPGM4/D4 and MPGM4/D5. During the reporting period statistically significant increasing concentrations of chloride (MPGM4/D4) and nickel (total) (MPGM4/D5) were identified.

The area surrounding the MPAR has been highly disturbed by historical mining activities, and the low pH in this area is reported to have resulted from the oxidation of iron sulfide (Connell Wagner, 2007). The elevated concentrations of metals are likely associated with this oxidation and acidification mobilising metals into groundwater. With the exception of manganese (total and filtered) (MPGM4/D4), iron (total and filtered), and lead (total) (MPGM4/D4), concentrations key indicator analytes over time since July 2019 have remained relatively stable in this area historically as well as during the reporting period. It is noted that the lower pH recorded from MPGM4/D4 is likely to influence the dissolved metals concentrations.

Given the hydraulic gradient observed, with an inferred local groundwater flow direction towards the east, concentrations recorded at MPGM4/D4 and MPGM4/D5 are not considered to be associated with the activities at the Ash Repositories.

6.3.4.2 CROSS GRADIENT MPAR / ADJACENT MPAR TO THE NORTH AND ADJACENT WANGCOL CREEK

Groundwater quality at MPGM4/D3 and D119, which are located cross- gradient of the MPAR were similar to the groundwater conditions identified at background bores MPGM4/D4 and MPGM4/D5.

Concentrations of EC, pH, TDS, nutrients, major and minor ions, and metals were above the adopted guideline values in groundwater from bores D106 and D107, located to the north-east of the MPAR. During the reporting period statistically significant increasing concentrations of chloride (MPGM4/D3), boron (D106 and D107), lead (D106 and D107), and nickel (MPGM4/D3) were identified.

During the current monitoring period concentrations of iron (total) and other total metals, particularly lead (total) and silver (total), have fluctuated above historical ranges at select bores, particularly at D106 and D119. Considering that concentrations of other key indicator analytes relating to historical BCA placement in the MPAR (i.e. chloride) have remained within historical ranges, and that the uncharacteristic concentrations of metals reported during this monitoring period at these groundwater bores occur in samples with elevated total concentrations relative to filtered concentrations (where available), the total metals concentrations in groundwater from these samples may be the result of entrained solid material in the sample.

Iron (total and filtered) and a component of manganese (total and filtered) concentrations are considered to be related to background water quality in the area, based on concentrations in groundwater from the background bores MPGM4/D4 and MPGM4/D5. However, EC, TDS, chloride, sulfate, boron (total and filtered) and nickel (total and filtered) concentrations in groundwater from bores D106 and D107 are considered to be related to historical BCA placement activities at the MPAR. The seepage of constituents from the BCA placement area to underlying and adjacent groundwater has been assessed as part of the independent

groundwater investigation, detailed in Section 2. The decreasing concentrations of key indicator analytes at D106 and D107 is indicative of the plume migrating through this area, with these bores now intersect lower sulfate, chloride, nickel, manganese, and iron concentrations in groundwater, although still above adopted guidelines for key indicator analytes.

6.3.4.3 DOWNGRADIENT MPAR, AREAS ADJACENT WANGCOL CREEK

pH values were generally more acidic than the adopted guideline value range for groundwater at all groundwater bores within this area. The lower pH values are considered to be consistent with background conditions in the area and may result from historical mine disturbance and/or represent regional groundwater quality.

Concentrations of TDS, EC, sulfate, chloride, boron (total and filtered), iron (total and filtered), nickel (total and filtered) and manganese (total and filtered) in groundwater generally remained above the adopted guideline values for MPGM4/D1, MPGM4/D9, D102, D103, and D105, located down hydraulic gradient of the MPAR. During the reporting period statistically significant increasing concentrations of EC (MPGM4/D1 and MPGM4/D9), sulfate (MPGM4/D9), boron (total) (MPGM4/D1, MPGM4/D9, D103, and D105), lead (total) (MPGM4/D2), iron (total) (D104), and nickel (total) (D104) were identified.

The concentrations of EC and TDS, chloride, sulfate, boron (total and filtered) and nickel (total and filtered) that were above the adopted guideline values are considered to represent changes to water quality and are not primarily related to background and pre-ash placement conditions. These analytes are present at elevated concentrations in the brine used to condition the BCA, and in groundwater beneath and immediately downgradient of the MPAR. Concentrations of these analytes in groundwater from bores MPGM4/D1, MPGM4/D9, D102, D103 and D105 are considered to be related to BCA placement activities at the MPAR.

Whilst some exceedances of the adopted guideline values for these key indicator analytes were apparent at MPGM4/D2, MPGM4/D8, and D104, concentrations of key indicator analytes in these groundwater bores were consistently lower than the other groundwater bores located downgradient of the MPAR and adjacent Wangcol Creek.

6.3.4.4 DOWNGRADIENT MPAR, INCLUDING LNAR (NORTH) AND HISTORICAL MINING DISTURBANCE (EAST)

pH values in groundwater from D10, D110, D113, D117, and D19 were consistently more acidic than the adopted guideline value range. The lower pH values are considered to be consistent with background conditions in the area and may result from historical mine disturbance and/or represent regional groundwater quality.

Elevated EC and TDS values as well as concentrations of sulfate, chloride (D10, D110, and D113) and key indicator metals including boron (total and filtered), iron (total and filtered), nickel (total and filtered) (except for D117) and manganese (total and filtered), were identified at concentrations at or above the adopted guideline values in groundwater from bores within the MPAR and the mine disturbance area to the east. During the reporting period statistically significant increasing concentrations of EC (D110), sulfate (D110), boron (total) (D117), lead (total) (D10), and iron (total) (D19 and D110) were identified.

Concentrations of iron (total and filtered) and manganese (total and filtered) in groundwater from the bores in this area were within a similar order of magnitude to those in groundwater from the background monitoring bores (MPGM4/D4 and MPGM4/D5). These concentrations are considered to be related to background groundwater conditions, except for potentially manganese at D110 and D113, which were reported at concentrations an order of magnitude above MPGM4/D4 and MPGM4/D5.

The reported TDS, EC, sulfate, chloride, boron (total and filtered), chromium (total) and nickel (total and filtered) concentrations in groundwater from bores in this area are considered elevated relative to upgradient locations. Connell Wagner (2007) reported elevated levels of sulfate, boron, nickel, zinc, manganese and iron previously in this area based on pre-ash placement data from bore B904 (operational between 1997 and 2000), which may have been influenced by goaf underground mine workings to the south of this area. However, concentrations of sulfate, chloride, boron, nickel and zinc and potentially the other metals indicate a different composition relative to the background bores and pre-placement groundwater data from historical bore B904 (from Aurecon, 2017).

6.3.4.5 CROSS GRADIENT MPAR TO THE SOUTH, INCLUDING LNAR (SOUTH) AND HISTORICAL MINING DISTURBANCE

pH values in groundwater from D15, D16A, and D18 were generally within the adopted guideline value range. Concentrations of analytes including sulfate, chloride and metals were typically lower in groundwater from D18 and D16A than in D15. D18 results were also lower than when compared to background concentrations in groundwater from bores MPGM4/D4 and MPGM4/D5.

Elevated concentrations of iron (total and filtered) from groundwater bores within this area were lower than those reported in groundwater from background bores MPGM4/D4 and MPGM4/D5, except at D15. During the reporting period statistically significant increasing concentrations of iron at D18 were identified. Iron (total and filtered) concentrations at D16A and D18, which were above the adopted guideline value, are considered to be consistent with background groundwater conditions.

Concentrations of sulfate, chloride, and EC in groundwater from D16A and D18 were generally consistent with the background bores MPGM4/D4 and MPGM4/D5, however concentrations in D15 were slightly higher than background bores. Metal concentrations above the adopted guideline values, apart from iron (total and filtered) and aluminium (total and filtered), were mostly recorded from D15.

Concentrations of key indicator analytes in groundwater from bore D15 that exceeded adopted guideline values are considered likely to have been influenced by activities at the MPAR. Bore D15 is located cross-gradient, rather than directly down hydraulic gradient of the MPAR, however the presence of preferential flow paths associated with former mine workings and other water management activities are likely to be factors in the apparent distribution of the analytes in groundwater.

6.3.4.6 BRINE WASTE POND LEAK DETECTION BORES

pH values at bores MPGM5/D5 and MPGM5/D6 generally remained within historical ranges during the reporting period, however the highest pH at MPGM5/D5 was reported during the March 2025 monitoring round. Concentrations of analytes including sulfate, chloride and the

majority of metals were typically higher in MPGM5/D5 than MPGM5/D6, however concentrations appear to be increasing at MPGM5/D6.

During the reporting period statistically significant increasing trends were apparent for chloride, iron (total), lead (total), and nickel (total) at MPGM5/D5, and chloride, EC, nickel (total), sulfate and TDS at MPGM5/D6, however statistically significant decreasing trends were also apparent for manganese (total) at MPGM5/D5 and iron (total) at MPGM5/D6.

It is considered likely that based on the continued elevated concentrations at MPGM5/D5 and the increasing concentrations at MPGM5/D6, the integrity of the brine waste pond liner may have been compromised. Further assessment of this is warranted.

As further background regarding previous known or suspected Brine Waste Pond leaks, concentrations of key indicator analytes at MPGM5/D5 and MPGM5/D6 increased in 2019. This was related to a leak from Brine Waste Pond A, which was subsequently repaired and reported to the Environment Protection Authority (EPA). Groundwater conditions had improved at MPGM5-D5 and MPGM5-D6 toward pre-leak levels or below the adopted guideline values until early 2021. From early 2021 to 2022, concentrations of key indicator analytes increased in water from the leak detection bores. It is considered likely that the observed increase in concentrations at bore MPGM5/D5 during 2021 and 2022 are associated with residual brine from the 2019 leak that has remained in the ground near the ponds, and that is being mobilised by shallower groundwater levels following higher rainfall, particularly in late 2021 and into 2022.

The suspected source of increasing concentrations in water from MPGM5/D5 in 2021 and 2022 was subject to review by ERM (2022), and the following conclusions were made:

- The results do not indicate a new or recent leak that would have led to the changes in water quality observed at bore MPGM5/D5 in 2021 and 2022. The recent composition of water from this bore is generally consistent with the composition and water quality observed from the 2019 leak from Brine Waste Pond A;
- It is likely that the observed increase in concentrations at bore MPGM5/D5 during 2021 and 2022 are associated with residual brine from the 2019 leak that has remained in the ground near the ponds, and that is being mobilised by higher water levels following higher rainfall, particularly in late 2021 and into 2022; and
- The groundwater impacts associated with the original 2019 leak from Brine Waste Pond A are delineated downgradient of bore MPGM5/D5 based on the field survey of EC conducted by ERM in March 2022.

7. SURFACE WATER DATA ASSESSMENT

7.1 OBJECTIVE

The objective of the surface water monitoring program is to identify water quality changes at an early stage so that potential causes can be investigated and, if necessary, effects mitigated. The surface water data is compared between locations and to the established adopted guideline values to assess changes in water quality and to assess whether the TARPs or contingency measures should be considered and/or implemented.

7.2 SURFACE WATER MONITORING LOCATIONS AND FREQUENCY

A summary of the surface water monitoring locations is presented in Table 7-1 and the locations are presented on Figure 4a.

TABLE 7-1 SURFACE WATER MONITORING LOCATIONS

Site ID	Position	Location Description	Frequency	No. of Samples in 2024/25
CSP	Upstream	Samples from the CSP are routinely collected monthly prior to planned discharge events and at times during discharge. These samples are differentiated as LDP12 (when discharge is occurring) and CSP (not discharging). The data from LDP12 and CSP is not representative of instream surface water conditions. Data from LDP12 is not regulated by the adopted guideline values and is provided in this report for comparison only.	As required during discharge ¹	34
LDP12	Upstream			18
LMP01	Upstream	This monitoring point is located north-west of the MPAR and immediately downstream of the FHP. It is located in an upstream position relative to the Ash Repositories and is the location where water from the headwaters of Wangcol Creek flows out from the MPPS operational area, downstream of the FHP.	Monthly	18
NC01	Mid-stream	Located midstream in the monitored area of Wangcol Creek, upstream to the Ash Repositories.	Monthly	8
SW_C	Mid-stream	Located within Wangcol Creek, the monitoring location is located midstream of the monitored area of Wangcol Creek and near groundwater monitoring bore D107.	Monthly	18
SW_E	Mid-stream	Located within Wangcol Creek, downstream of former open cuts "Area D" and "Area E" between the locations of groundwater monitoring bores D9 and D105.	Monthly	18

WX22 / SW_F	Downstream	Located in Wangcol Creek at a stream gauge to the east/downstream of the Ash Repositories. Also serves as WaterNSW monitoring point 212055.	Monthly	18
SW_G	Downstream	Located within the downstream portion of Wangcol Creek, and downstream of WX22, within a former open cut mine working and in the vicinity of groundwater monitoring bore D103.	Monthly	18

The number of samples in Table 7-1 indicates the number of occasions where a complete, or near complete suite of analysis was conducted. It is noted that NC01 was unable to be sampled on a monthly basis due to insufficient water as a result of dry conditions between December 2024 to July 2025 and between September 2025 to December 2025.

7.3 SURFACE WATER MONITORING RESULTS

The surface water data for the reporting period is presented in Appendix L, where the surface water results are compared to the adopted guideline values. Graphs of concentrations of key indicator analytes over time since July 2019 are presented in Appendix N, and statistical analysis is presented in Appendix Q. Figure 6, Appendix A summarises the surface water data for key indicator analytes during the reporting period.

7.3.1 UPSTREAM SURFACE WATER MONITORING RESULTS

LDP12 and LMP01 are located upstream of the MPAR and water quality at these locations is not considered to be influenced by activities at the Ash Repositories. However, other aspects of the Project (e.g., brine transfer pipelines and brine waste holding ponds) are located within the catchment upstream of these sampling locations.

Data for LDP12 (discharging) is presented in the following written sections of this report and in Table L-2, Appendix L; however, assessment of trends and statistical assessment of LDP12, and comparison with adopted guideline values has not been conducted as this location is not representative of in-stream conditions. Assessment of trends at LMP01, which receives flow from LDP12 and other upstream portions of the Wangcol Creek catchment, has been conducted as it is considered most appropriate for assessment of potential impacts from the Project on the upstream section of Wangcol Creek. Graphs showing the concentrations of key analytes over time are presented in Appendix N.

7.3.1.1 FIELD PARAMETERS

Field parameters monitored at LDP12 and LMP01 for the reporting period are summarised as follows:

- pH values of surface water samples from LMP01 ranged from 6.96 to 8.30. The pH at LMP01 was outside of the range of the adopted guideline value (6.5 to 8.0) during four sampling events of the reporting period (July and August). pH values at LMP01 remained within historical ranges throughout the reporting period. pH values at LDP12 ranged from 6.85 to 7.99, within the EPL 13007 discharge limits;

- EC values for surface water from LMP01 were consistently reported below the adopted guideline value (2200 $\mu\text{S}/\text{cm}$), and ranged from 209 $\mu\text{S}/\text{cm}$ to 526 $\mu\text{S}/\text{cm}$. EC measured at LDP12 ranged from 245 $\mu\text{S}/\text{cm}$ to 471 $\mu\text{S}/\text{cm}$, below the EPL 13007 discharge limits;
- TDS generally followed a similar trend to EC over the reporting period at LMP01, with TDS values consistently remaining below the adopted guideline value for surface water (1500 mg/L). TDS values over the reporting period at LMP01 ranged from 155 mg/L to 370 mg/L. TDS at LDP12 ranged from 132 mg/L to 311 mg/L; and
- Turbidity was reported above the adopted guideline value range for surface water (2 to 25 mg/L) on seven occasions at LMP01 and ranged between 2 mg/L and 245 mg/L. Turbidity at LDP12 ranged from 1.67 mg/L to 18.4 mg/L, below the EPL 13007 discharge limits.

Graphs of concentrations over time since July 2019 demonstrate that concentrations of EC and TDS at LMP01 have consistently remained stable and below the adopted guideline values.

7.3.1.2 MAJOR AND MINOR IONS

Concentrations of major and minor ions in surface water, including sulfate, chloride, fluoride, calcium (total), and sodium (total), at LMP01 were consistently reported below the adopted guideline values for surface water during the reporting period.

Graphs of chloride and sulfate concentrations at LMP01 over time since July 2019 demonstrate concentrations have generally remained stable and below the adopted guideline value. Concentrations of major and minor ions remained within the historical range and below the adopted guideline values for surface water throughout the reporting period.

7.3.1.3 NUTRIENTS

Concentrations of nutrients including ammonia, nitrate, and nitrite were reported below the adopted guideline values for surface water at LMP01 during the reporting period.

Concentrations of nutrients in surface water reported above the adopted guideline values during the reporting period are as follows:

- Nitrite and nitrate (as N) on 16 occasions;
- Total nitrogen on 16 occasions; and
- Total phosphorus on 10 occasions.

7.3.1.4 METALS

The following concentrations of metals in surface water from LMP01 were reported above the adopted guideline values during the reporting period:

- Aluminium (total) during 17 monitoring rounds;
- Aluminium (filtered) during the October 2024, January 2025, and August 2025 monitoring rounds;
- Cobalt (total) during the December 2024 and December 2025 monitoring rounds;
- Copper (total) during nine monitoring rounds;
- Copper (filtered) during the January 2025 monitoring round;
- Iron (total) during 10 monitoring rounds;
- Lead (total) during the December 2024 monitoring round; and
- Molybdenum (total) during 12 monitoring rounds.

Graphs of concentrations over time since July 2019 for LMP01 indicate concentrations of iron (total), lead (total), molybdenum (total), and nickel (total and filtered) have demonstrated variability over time. The highest iron (total) concentration since February 2020 was observed during the December 2024 monitoring round at LMP01. Similarly, the highest lead (total) concentration at LMP01 since July 2022 was reported during the December 2024 monitoring round. However, concentrations of both these metals subsequently declined to within historical ranges.

Whilst manganese (total) and boron (total) have consistently remained below the respective adopted guideline values, the highest concentrations of these analytes over time since July 2019 were reported during the December 2025 monitoring round. Filtered concentrations of boron, manganese, and iron consistently remained stable and below the adopted guideline values.

7.3.1.5 STATISTICAL ASSESSMENT OF TRENDS

No statistically significant trends were identified for key indicator analytes at LMP01 over time since July 2019.

7.3.2 MIDSTREAM SURFACE WATER MONITORING RESULTS

Locations NC01, SW_C and SW_E are considered to represent midstream conditions relative to the MPAR in the monitored area of Wangcol Creek. Locations NC01 and SW_C are located north of the MPAR along an area of Wangcol Creek that is not known to have been subject to open cut mining operations. SW_E is located further downstream of NC01 and SW_C, to the east of the MPAR and immediately downstream from an area of Wangcol Creek that was historically subject to open cut mining activities.

7.3.2.1 FIELD PARAMETERS

Field parameters monitored at NC01, SW_C, and SW_E for the reporting period are summarised as follows:

- pH at midstream surface water monitoring locations ranged from 6.36 to 8.4. pH at the midstream surface water monitoring locations were generally reported within the adopted guideline value range (6.5 to 8.0), however pH at NC01 during the September 2024 monitoring round, and at SW_C during the August 2024 and June 2025 monitoring rounds were more basic than the guideline value range. pH at SW_E during the May 2025 monitoring round was more acidic than the adopted guideline value range. pH values at midstream surface water monitoring locations generally remained within historical ranges throughout the reporting period, however the highest pH value was reported at SW_C during the August 2024 monitoring round;
- EC values for surface water from SW_C and NC01 were consistently reported below the adopted guideline value (2200 $\mu\text{S}/\text{cm}$), however EC at SW_E was reported above the adopted guideline value during eight monitoring rounds. EC at midstream surface water monitoring locations ranged from 150 $\mu\text{S}/\text{cm}$ to 6929 $\mu\text{S}/\text{cm}$;
- TDS generally followed a similar trend to EC over the reporting period, with TDS at NC01 and SW_C consistently reported below the adopted guideline value (1500 mg/L). TDS was reported above the adopted guideline value at SW_E during the same eight monitoring rounds as EC. TDS concentrations ranged from 116 mg/L to 5760 mg/L; and

- Turbidity exceeded the adopted guideline value range for surface water (2 to 25 mg/L) during the September 2025 monitoring round at SW_C and NC01, and on five occasions at SW_E. Turbidity at midstream surface water monitoring locations ranged from 2.1 mg/L to 74.8 mg/L.

Graphs of concentrations over time since July 2019 show EC and TDS concentrations at NC01 and SW_C have remained low and stable, below the adopted guideline values for surface water. EC and TDS concentrations at SW_E have demonstrated a greater level of variability over time since July 2019, particularly since 2023, however concentrations remained within historical ranges throughout the reporting period.

7.3.2.2 MAJOR AND MINOR IONS

Major and minor ions including chloride, sulfate, fluoride, calcium, and sodium were reported at NC01 and SW_C at concentrations below the adopted guideline values for surface water during the reporting period.

At SW_E, sodium was reported above the adopted guideline value on 10 occasions, sulfate was reported above the adopted guideline value on seven occasions, and chloride was reported above the adopted guideline during the December 2025 monitoring round. Fluoride and calcium were consistently reported below the adopted guideline values for surface water at SW_E during the reporting period.

Graphs of concentrations over time since July 2019 for chloride and sulfate are consistent with the trends identified for EC and TDS. Chloride and sulfate concentrations at NC01 and SW_C have consistently remained low and stable, below the adopted guideline values. Concentrations of sulfate at SW_E have fluctuated around the adopted guideline value since 2023 but remained within historical ranges during the reporting period. Whilst chloride concentrations at SW_E have demonstrated a similar variability, remained below the adopted guideline value during the reporting period, with the exception of the December 2025 sampling round. Chloride at SW_E also remained within historical ranges throughout the reporting period.

7.3.2.3 NUTRIENTS

Concentrations of ammonia, nitrate, and nitrite were consistently reported below the adopted guideline values for all midstream surface water monitoring locations during the reporting period. Concentrations of nutrients in surface water reported above the adopted guideline values during the reporting period are as follows:

- Nitrite and nitrate (as N) at SW_E and NC01 on five occasions, and SW_C on seven occasions;
- Total nitrogen at SW_C on 14 occasions, SW_E on 17 occasions, and NC01 on seven occasions; and
- Total phosphorus at SW_C on seven occasions, SW_E on four occasions, and NC01 on five occasions.

7.3.2.4 METALS

The following concentrations of metals in surface water from midstream monitoring locations were reported above the adopted guideline values during the reporting period:

- Aluminium (total) on 14 occasions at SW_C, on seven occasions at NC01, and on two occasions at SW_E;
- Aluminium (filtered) on four occasions at SW_C and during the September 2025 monitoring round at NC01 and SW_E;
- Boron (total and filtered) concentrations in surface water from SW_E on eight occasions;
- Hexavalent chromium (total) during the December 2024 monitoring round at NC01;
- Cobalt (total) on 17 occasions at SW_E;
- Copper (total) on five occasions at SW_C and SW_E, and two occasions at NC01;
- Copper (filtered) during the September 2025 monitoring round at SW_C and NC01;
- Iron (total) on all occasions at SW_E, on 15 occasions at SW_C, and on seven occasions at NC01;
- Iron (filtered) on 17 occasions at SW_E, on two occasions at SW_C and during the September 2025 monitoring round at NC01;
- Manganese (total and filtered) on nine occasions at SW_E;
- Molybdenum (total) during the September 2024 monitoring round at NC01;
- Nickel (total and filtered) on 17 occasions at SW_E; and
- Silver (total) during the December 2024, October 2025, and December 2025 monitoring rounds at SW_E.

Graphs of concentrations over time since July 2019 for boron (total and filtered), manganese (total and filtered), and nickel (total and filtered) are generally consistent with TDS; specifically, concentrations of these selected metals in surface water samples from NC01 and SW_C have remained below the adopted guideline values. However, the highest concentration of boron (filtered) at NC01 over time since July 2019 was reported during the August 2024 monitoring round. Additionally, the highest concentration of nickel (filtered) over time since July 2019 at SW_C was reported during the September 2025 monitoring round. Iron (total and filtered) have fluctuated above the adopted guideline value at SW_C and NC01, however remained within historical ranges throughout the reporting period.

Concentrations of iron (total and filtered), manganese (total and filtered), and nickel (total and filtered) at SW_E have fluctuated above the adopted guideline value since 2023, however remained within historical ranges throughout the reporting period. Boron (total and filtered) at SW_E has demonstrated a similar trend, however the highest concentrations of both total and filtered boron over time since July 2019 were observed during the December 2025 sampling round. Concentrations of lead (total) and molybdenum (total) have generally remained at, or below, the adopted guideline value for all midstream surface water monitoring locations.

7.3.2.5 STATISTICAL ASSESSMENT OF TRENDS

Linear regression analysis undertaken for concentrations of key indicator analytes in surface water from midstream monitoring locations identified statistically significant increasing trends at SW_C for molybdenum (total) ($R = 0.52$), with concentrations ranging between the LOR and 21 µg/L.

7.3.3 DOWNSTREAM SURFACE WATER MONITORING RESULTS

Locations WX22 (SW_F) and SW_G are considered to represent downstream conditions relative to the MPAR in the monitored area of Wangcol Creek. Both WX22 and SW_G are located east of the MPAR along an area of Wangcol Creek that, in the case of SW_G, has been subject to open cut mining operations.

7.3.3.1 FIELD PARAMETERS

Field parameters monitored at WX_22 and SW_G for the reporting period are summarised as follows:

- pH at downstream surface water monitoring locations ranged from 6.86 to 8.7. pH at SW_G and WX22 were generally reported within the adopted guideline value range (6.5 to 8.0), however pH at SW_G during the June and October 2025 monitoring rounds, and at WX22 during the August 2024 and June 2025 monitoring rounds were more basic than the guideline value range. pH values at midstream surface water monitoring locations generally remained within historical ranges throughout the reporting period, however the highest pH value was reported at SW_G and WX22 during the June 2025 monitoring round;
- EC values for surface water from downstream monitoring locations were reported below the adopted guideline value (2200 $\mu\text{S}/\text{cm}$) on all occasions except for the March and December 2025 monitoring rounds at SW_G and WX22. EC at downstream surface water monitoring locations ranged from 250 $\mu\text{S}/\text{cm}$ to 3209 $\mu\text{S}/\text{cm}$;
- TDS generally followed a similar trend to EC over the reporting period, with concentrations reported below the adopted guideline value (1500 mg/L) on all occasions except for the March and December 2025 monitoring rounds at SW_G and WX22. TDS concentrations ranged from 166 mg/L to 2440 mg/L; and
- Turbidity was reported outside the adopted guideline value range for surface water (2 to 25 mg/L) on 14 occasions at SW_G and on seven occasions at WX22. Turbidity at downstream surface water monitoring locations ranged from 1 mg/L to 61.6 mg/L.

Graphs of concentrations over time since July 2019 for SW_G and WX22 show EC and TDS concentrations at these locations are very similar and have generally remained below the respective adopted guideline values, however have demonstrated a steady increase since 2022. EC and TDS typically increase during summer months at these locations; with the highest concentrations of EC over time since July 2019 reported during the December 2025 sampling round at both SW_G and WX22. The highest concentration of TDS over time since July 2019 was also reported during the December 2025 monitoring round at SW_G.

7.3.3.2 MAJOR AND MINOR IONS

Concentrations of chloride, fluoride, and calcium were reported below the adopted guideline values for surface water at WX22 and SW_G during the reporting period. Sulfate was reported above the adopted guideline value at both locations during the December 2025 sampling event. Sodium was reported above the adopted guideline value on seven occasions at SW_G, and on six occasions at WX22.

Graphs of concentrations over time since July 2019 for WX22 and SW_G indicate that chloride and sulfate concentrations are generally consistent with EC and TDS trends and have

demonstrated a steady increase since 2022. Whilst concentrations of chloride at both downstream locations have generally remained below the adopted guideline value, the highest concentrations over time since July 2019 were reported during the December 2025 sampling round at both SW_G and WX22. During the December 2025 monitoring round, concentrations of sulfate at WX22 were reported above the adopted guideline value for the first time since 2020. Furthermore, the highest concentration of sulfate, and the only concentration above the adopted guideline value, at SW_G over time since July 2019 was reported during the December 2025 monitoring round

7.3.3.3 NUTRIENTS

Concentrations of ammonia, nitrate, and nitrite were reported below the adopted guideline values for surface water at WX22 and SW_G during the reporting period. Concentrations of nutrients in surface water reported above the adopted guideline values during the reporting period are as follows:

- Nitrite and nitrate (as N) at SW_G on two occasions, and at WX22 on four occasions;
- Total nitrogen at SW_G and WX22 on 13 occasions; and
- Total phosphorus at SW_G on 10 occasions, and at WX22 on six occasions.

7.3.3.4 METALS

The following concentrations of metals in surface water from downstream monitoring locations were reported above the adopted guideline values during the reporting period:

- Aluminium (total) at SW_G and WX22 during the September 2025 monitoring round;
- Aluminium (dissolved) at WX22 during the September 2025 monitoring round;
- Boron (total) at SW_G on four occasions, and at WX22 on two occasions;
- Boron (filtered) at SW_G on two occasions, and at WX22 on four occasions;
- Hexavalent chromium (total) during the December 2024 monitoring round at WX22;
- Cobalt (total) during the May 2025 monitoring round at SW_G, and on three occasions at WX22.
- Copper (total) during the September 2024 monitoring round at SW_G, and on six occasions at WX22;
- Copper (filtered) and iron (filtered) during the September 2025 monitoring round at WX22;
- Iron (total) on three occasions at SW_G, and on four occasions at WX22;
- Manganese (total and filtered) during the March 2025 monitoring round at SW_G and WX22;
- Nickel (total) on 17 occasions at SW_G and WX22;
- Nickel (filtered) on 17 occasions at WX22, and on 15 occasions at SW_G; and
- Silver (total) on two occasions at WX22, and during the July 2025 monitoring round at SW_G.

Graphs of concentrations over time since July 2019 for boron (total and filtered) and nickel (total and filtered) are generally consistent with EC and TDS; specifically concentrations of these metals in surface water at downstream monitoring locations have demonstrated a steady increase since 2022. The highest concentrations of boron (total) over time since July 2019 were reported during the March 2025 monitoring round at WX22, however concentrations

subsequently declined to within historical ranges. The highest concentrations over time since July 2019 for boron (total) (SW_G), boron (filtered) and nickel (total and filtered) (SW_G and WX22) were all reported during the December 2025 monitoring round.

Concentrations of iron (total) in surface water from downstream monitoring locations have fluctuated above and below the adopted guideline value but generally demonstrate a stable trend over time since July 2019. Whilst iron (filtered) has also demonstrated some variability, concentrations have generally remained below the adopted guideline value since 2022, with the exception of the September 2025 monitoring round at WX22. Manganese (total and filtered) concentrations in surface water from SW_G and WX22 have generally remained stable and below the adopted guideline value, however minor fluctuations have occurred during the March 2023, March 2024, and March 2025 monitoring rounds at both downstream locations. The highest concentrations of manganese (total and filtered) at SW_G over time since July 2019 were reported during the March 2025 monitoring round, however concentrations subsequently declined to within historical ranges. Concentrations of lead (total) and molybdenum (total) have displayed some variability over time since July 2019, but remained within historical ranges throughout the reporting period.

7.3.3.5 STATISTICAL ASSESSMENT OF TRENDS

Linear regression analysis undertaken for concentrations of key indicator analytes in surface water from downstream monitoring locations identified statistically significant increasing trends at SW_G for boron (total) ($R = 0.58$) and nickel (total) ($R = 0.53$) with concentrations ranging between the LOR and 630 $\mu\text{g/L}$ for boron (total), and between 6 $\mu\text{g/L}$ and 256 $\mu\text{g/L}$ for nickel (total).

7.4 SURFACE WATER FLOW VS CONCENTRATION DATA

To assess the relationship between the concentrations of key analytes measured from the surface water monitoring locations and the surface water flow volume of Wangcol Creek, Plate 1 and Plate 2 show TDS and chloride concentrations, respectively, plotted against the daily average surface water flow rate of Wangcol Creek (in megalitres (ML) per day) (i.e. stream flow) over the period since July 2019. Flow volume data was sourced from WaterNSW via [Real-time water data \(watarnsw.com.au\)](https://www.watarnsw.com.au), using NSW site 212055 which correlates with the downstream monitoring point WX22.

Over the past three years of monitoring (December 2022 to December 2025), and as outlined in Section 7.3, concentrations of select metals in surface water from midstream (particularly SW_E) and downstream locations showed similar patterns to TDS, sulfate and chloride. The trend graphs, presented in Appendix N, indicate that metals including boron (total and filtered), iron (total and filtered), manganese (total and filtered), and nickel (total and filtered) have demonstrated increasing trends since 2022. This period correlates with periods of lower stream flow. This pattern was also observed in key heavy metal analytes during the late 2019 period and again since 2022, further indicating that there is a relationship between low stream flow and more concentrated levels of key indicator analytes.

This pattern is consistent with that seen previously, with higher TDS and chloride concentrations occurring towards the end of extended periods of low surface water stream flow, including during the 2018 – 2020 drought period (Plate 1 and Plate 2). Plate 3 demonstrates a relationship between stream flow and rainfall; however, the highest rainfall events in 2024-2025 did not directly correlate with high stream flow.

The stream flow volume vs surface water analytical data highlights that the concentrations of key analytes in surface water are influenced by both surface water flow conditions in Wangcol Creek and also by local rainfall, which alter the ratio of surface water flow within compared to groundwater seepage into Wangcol Creek. This relationship is most apparent at SW_E and downstream surface water monitoring locations WX22 and SW_G, which are in the portions of Wangcol Creek that are more connected to groundwater as a result of historical open cut mining voids within the Wangcol Creek stream channel.

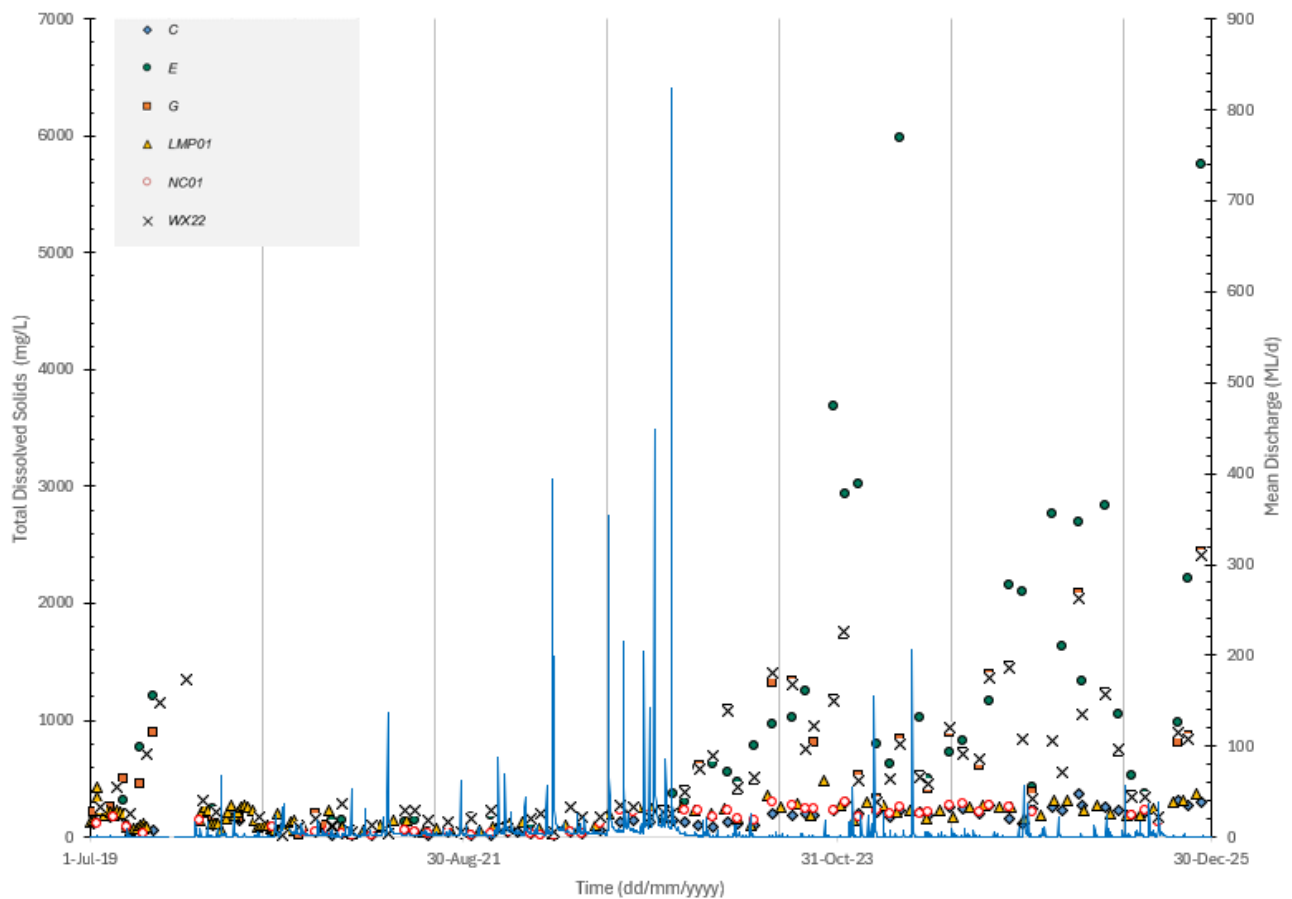


PLATE 1 TOTAL DISSOLVED SOLIDS VS WATER DISCHARGE

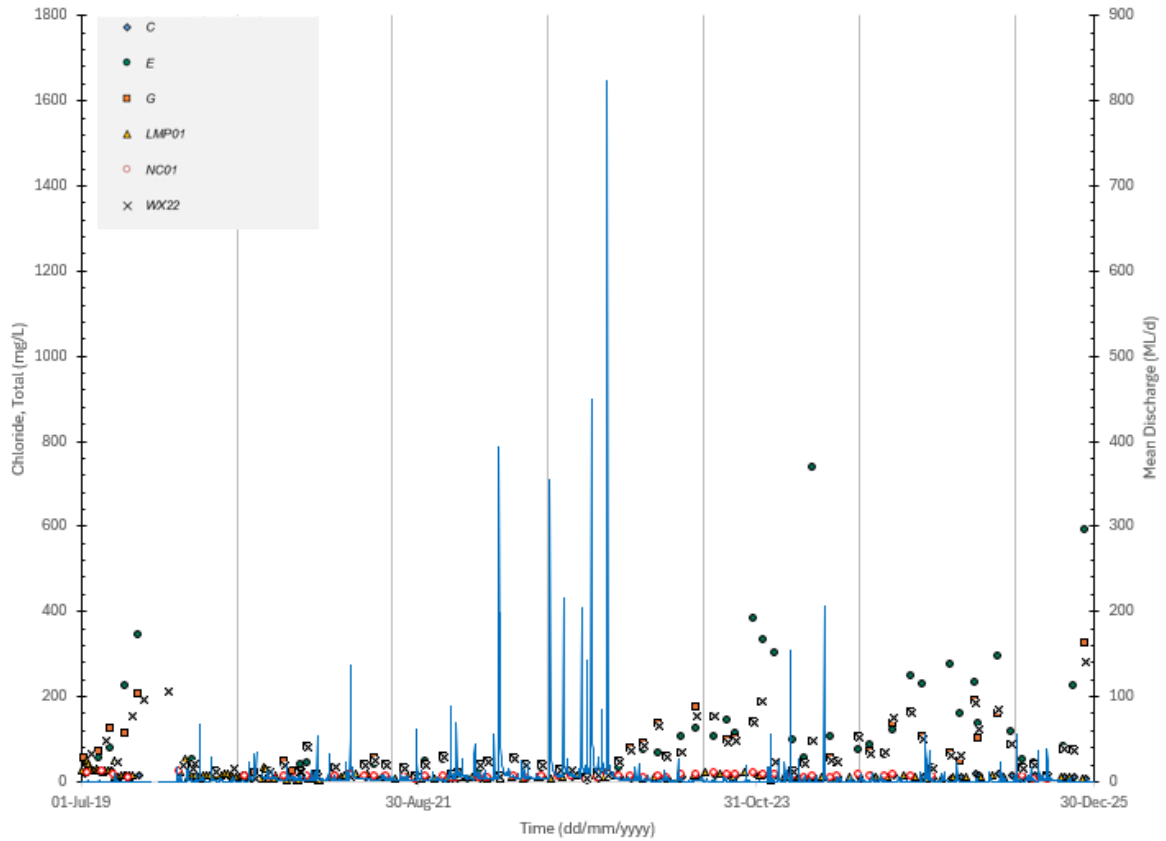


PLATE 2 CHLORIDE CONCENTRATIONS VS SURFACE WATER DISCHARGE

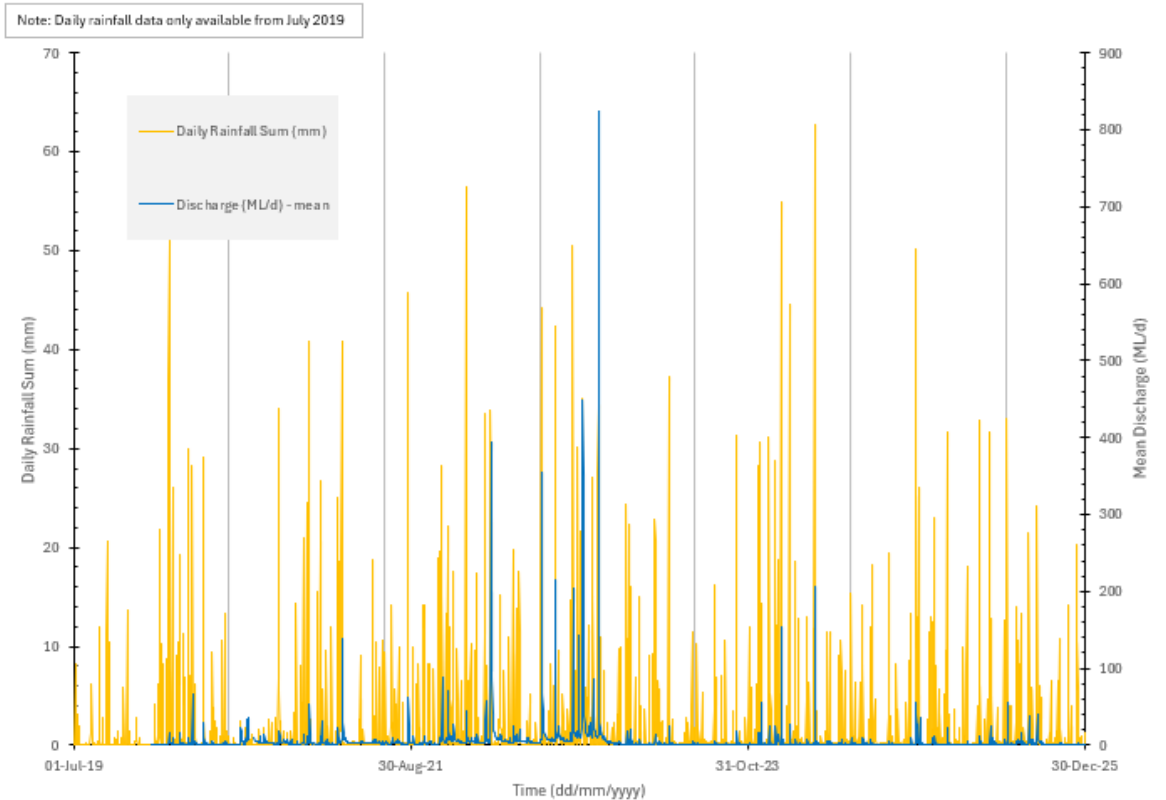


PLATE 3 DAILY RAINFALL DATA AND SURFACE WATER DISCHARGE

7.5 DISCUSSION OF RESULTS

During the reporting period, concentrations of pH, turbidity, nitrite and nitrate, total nitrogen, total phosphorus, aluminium (total and filtered), cobalt (total), copper (total and filtered), iron (total), lead (total), and molybdenum (total) at upstream location LMP01 were above the adopted guideline values on one or more occasions.

pH, turbidity, EC, TDS, sulfate, chloride, sodium, aluminium (total and filtered), boron (total and filtered), hexavalent chromium (total), copper (total and filtered), iron (total and filtered), manganese (total and filtered), molybdenum (total), nickel (total and filtered) and silver (total) were reported above the adopted guideline values on one or more occasions from at least one of the midstream monitoring locations NC01, SW_C and SW_E. Iron (total) concentrations were consistently above the adopted guideline value during the reporting period at SW_E, and during majority of the monitoring rounds at SW_C and NC01. The majority of concentrations reported above adopted guideline values during the reporting period were measured in surface water at SW_E.

Given that LMP01, NC01, and SW_C are located upstream of the MPAR, and that the groundwater table in these locations is below the base of the stream bed, the water quality at these locations is considered to represent regional upgradient conditions and is not considered to have been impacted by seepage from the Ash Repositories.

The highest concentrations of measured analytes occurred in surface water from the midstream locations during the summer months (between January and March, and November to December 2025) and in May 2025 (particularly at SW_E). This was generally similar to observations during the previous two reporting periods (2022/23 and 2023/24) although graphs of concentrations over time since July 2019 indicated that concentrations tended to be higher for a more extended period of time during the 2023/24 summer peak than in the reporting period (2024/25).

At the downstream monitoring locations (WX22 and SW_G), concentrations of both total and filtered nickel in surface water were above the adopted guideline value for the majority of monitoring events during the reporting period. TDS, EC, boron (total and filtered), and manganese (total and filtered) concentrations were reported above the adopted guideline values for surface water for both downstream monitoring locations during the March 2025 and December 2025 monitoring rounds. Silver (total) was detected above the adopted guideline value during the July 2025 monitoring round for both downstream monitoring locations. Total iron concentrations were reported above the adopted guideline values at WX22 and SW_G periodically over the summer months between December 2024 and April 2025.

Concentrations of key indicator analytes at both midstream and downstream monitoring locations generally declined following increased water flow in July 2025. As conditions began to warm and dry towards the end of the monitoring period, a gradual increase in key indicator analytes was observed.

Iron concentrations are related to background conditions in the local environment, resulting from the long-term mining activities and disturbed geology. Nickel concentrations in surface water are considered to be influenced by interaction between groundwater and the surface water of Wangcol Creek. When compared to previous reporting periods, concentrations of key indicator analytes in surface water at SW_E, WX22, and SW_G were generally higher than

concentrations observed between 2020 and 2023 but were generally lower than in 2018/19 and 2023/24.

Higher concentrations of key indicator analytes are reported in Wangcol Creek during periods of low streamflow. During periods of low rainfall, lower surface water flows in Wangcol Creek result in lower surface water to groundwater volume ratios, with indicator analyte concentrations in surface water increasing as a result of relatively more groundwater input. This is particularly apparent in previously mined out areas such as SW_E and SW_G. In addition to stream flow, the solute mass discharge to Wangcol Creek is predicted to change over time as the solute plume moves east from the MPAR toward Wangcol Creek and further downstream (ERM, 2026b).

8. DEVIATIONS FROM THE MONITORING PROGRAM

It is noted that chloride, sulfate, Ba, Be, Co, Cd, Cr, Pb, Mg, Hg, Mo, Sb, Se, Sr and Ag were only analysed for total (unfiltered) concentrations throughout the reporting period, although the WMP and EPL 13007 specify analysis of dissolved (filtered) concentrations of these analytes for both surface water and groundwater. Analysis of cyanide, dissolved organic carbon (DOC), and hardness (as CaCO₃) for surface water and groundwater was not undertaken during the reporting period. To account for this, calculations of hardness (as CaCO₃) for surface water are presented in Section 5.3.2.2.

On some occasions, filtered metals were reported at concentrations that were higher than concentrations for the un-filtered samples from the same monitoring round. The differences between these total and filtered concentrations were confirmed by the laboratory to be within the laboratory's acceptance criteria for experimental variation.

On a number of occasions, concentrations of hexavalent chromium (total) were reported above the total chromium concentrations from the same monitoring round. The differences between total and hexavalent chromium (total) concentrations were confirmed by the laboratory to be within the laboratory's acceptance criteria for experimental variation.

The laboratory LORs for fluoride, aluminum (total and filtered), antimony (total), hexavalent chromium (total), trivalent chromium (total), copper (filtered) selenium (total), mercury (total), silver (total) and vanadium (filtered) were above the adopted guideline values for surface water and groundwater for one or more sampling events throughout the reporting period. This is consistent with previous reporting periods.

Evidence of the collection of field Quality Assurance and Quality Control (QA/QC) samples (i.e. rinsate, trip blanks or trip spikes) during the field-based programs was not provided. Results of laboratory QC measures including laboratory duplicate, triplicate, method blanks or spike data were not presented for review and, as such, are not considered in this report.

9. GROUNDWATER MODEL VALIDATION

As detailed in Section 2.1 and presented on Figure 9-1, the groundwater flow paths and surface water interaction modelled by ERM (2023a) indicate that groundwater that flows to the east from the MPAR is primarily received by DML Dam and Cooks Dam, and a portion of the groundwater that flows to the north-east and east from the MPAR is received by Wangcol Creek at Areas D, E and G. The groundwater elevation contours developed using groundwater elevation data for the reporting period, presented in Figure 5a – 5c (Appendix A), are generally consistent with the modelled groundwater flow paths.

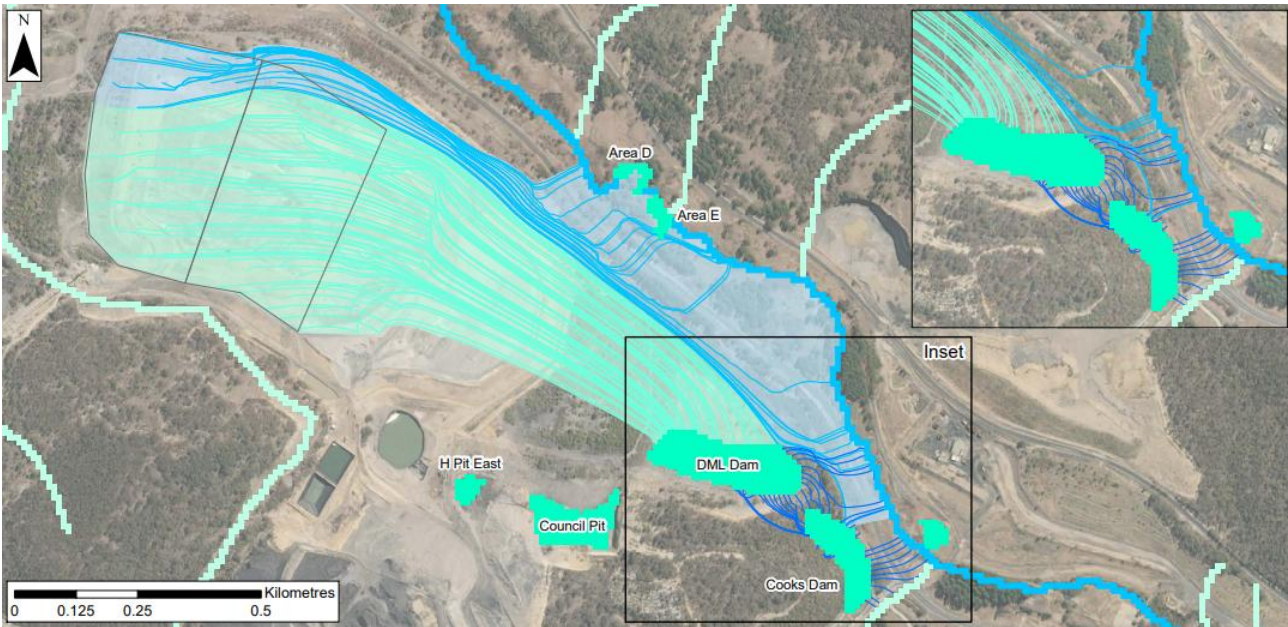


FIGURE 9-1 MODELLED GROUNDWATER FLOW PATHS AND SURFACE WATER INTERACTION

ERM (2023a) formed the basis for the Solute Transport Model (ERM, 2023b), which modelled chloride solute migration in groundwater based on the previously approved decommissioning scenario for the MPAR (i.e. Scenario 1). The simulated chloride outcomes for Layer 3 under Scenario 1 are presented in Figure 9-2 below, where Year 0 is 2019 and Year 6 is 2025. Chloride is used as a primary indicator of potential impacts associated with brine because the local area is highly mineralised and it is difficult to distinguish the origin of other solutes. Additionally, chloride is unlikely to undergo chemical alteration in groundwater or surface water at the Site.

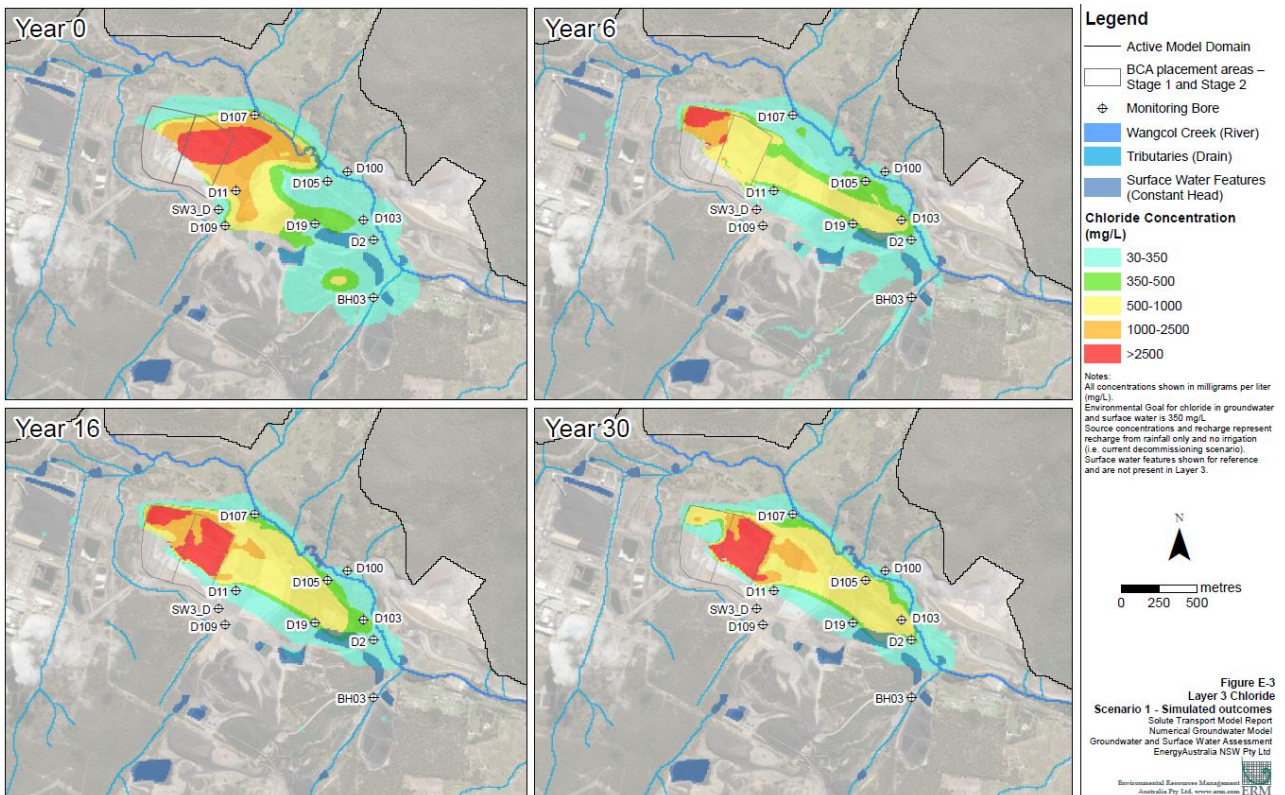


FIGURE 9-2 SCENARIO 1 SIMULATED CHLORIDE CONCENTRATIONS

The distribution of chloride concentrations in groundwater as described in this report is generally aligned with the modelled chloride plume under Scenario 1. However, as outlined in Section 2.1, the Stage 1 and Stage 2 BCA placement areas reached their approved final landform height in September 2025, and as authorised by Mod 9 to the Mt Piper Consent, recharge control measures for BCA placement areas in the MPAR are currently being implemented (see Section 2). As such, the nominal “start date” in the model is offset by approximately 6 years. In the future, as the source control measures are implemented at the MPAR, the groundwater model validation may consider Scenario 3a as described by ERM (2023b), which modelled a low permeability cap over a targeted area of the MPAR.

Overall, the conceptual basis of the NGM, i.e. the conceptual groundwater model, and the underpinning assumptions to the groundwater flow and solute transport model, remain valid. This report has not identified material unexpected changes to the local groundwater system that may be attributable to the Ash Repositories, and the CSM does not require an update at this time. Monitoring will continue in accordance with the WMP and EPL and groundwater model validation will continue to form part of the annual reporting as required.

10. STREAM HEALTH AND STREAM STABILITY RESULTS

10.1 WANGCOL CREEK STREAM STABILITY SURVEY

The stream stability assessment undertaken by RCA Australia in September 2025 (RCA Australia, 2025), comprised the visual inspection of channel stability and riparian vegetation health and the profiling of the water course at 0.3 – 0.5m intervals for six locations (SH1 – SH3, SH3a, and SH4 – SH10) across Wangcol Creek and the Coxs River, situated within and downgradient of, the Pine Dale Mine (PDM).

Stream health monitoring across Wangcol Creek and the Coxs River found that most drainage lines were stable, with channel profiles generally flat and comprising cohesive, fine-textured beds. Stability classifications across sites typically ranged from stable to very stable, with only SH3 and SH10 assessed as potentially stabilising. Whilst it was concluded that no immediate rehabilitation works were required for these locations, continued monitoring was required.

Within the PDM area (SH1–SH5), minor disturbances such as exposed soils and vegetation damage were observed however these were primarily attributed to cattle access or natural high-flow events. All assessed PDM sites remained either stable or potentially stabilising, with the Coxs River site (SH5) showing very high stability (94%).

As required in relation to Mod 9 to the Mt Piper Consent, newer monitoring sites associated with the MPAR Phase 1 Capping and Drainage works (SH6–SH10) also exhibited generally stable drainage conditions. Sites SH6, SH7, SH8, and SH9 were all assessed as stable to very stable, characterised by cohesive bed material, armouring, and gently sloped banks.

The monitored drainage channels ranged from shallow ephemeral systems to deeper confined sections. Maximum recorded water depths were 0.52 m downstream of MPPS and 1.54 m within the PDM area, reflecting natural variability across the catchment. Longitudinal profiles showed consistent channel form with only minor localised disturbances (e.g., rock outcrops).

The assessment concluded that both PDM and MPPS drainage systems are in good geomorphic condition, with no significant impacts observed since the previous monitoring period. The majority of channels maintain structural integrity, vegetation cover is generally healthy, and stream stability scores indicate low risk of channel degradation under current management and environmental conditions.

10.2 STREAM HEALTH MONITORING

The assessment of aquatic ecosystem health in Wangcol Creek and the Coxs River was undertaken by Stantec in December 2025 (Stantec, 2026) using a combination of biological, habitat and water quality monitoring at six sites (NCR1–NCR5 and A16). Long-term surface water quality datasets were supplemented using data from LMP01 and WaterNSW gauging station 212055 (WX22). Macroinvertebrate communities were assessed in accordance with AUSRIVAS protocols and evaluated against long-term datasets spanning from 2012 to 2025. Aquatic habitat condition was assessed using Rapid Condition for Ecosystems (RCE) and Rapid Condition of Stream Channels (RCSC) methods, while water quality monitoring included in situ measurements of temperature, EC, pH, dissolved oxygen and turbidity, supported by laboratory analysis of selected metals.

Data interpretation was informed by standard biotic indices (OE50, SIGNAL2, EPT taxa richness) and multivariate statistical analyses, including PERMANOVA and principal coordinates analysis, to assess spatial, temporal and impact versus control differences.

The results of the stream health survey completed by in December 2025 indicated that ecological stream health within Wangcol Creek and the Coxs River has not been adversely affected by the activities authorised under the Mt Piper Consent and the LNAR Project Approval, with observed aquatic conditions reflecting long standing, site specific and catchment scale disturbances rather than project related impacts. Continuation of the routine Wangcol Creek Environmental Monitoring Program (EMP) and SHMP was recommended to track long term trends.

11. COMPARISON TO THE TARPS

In accordance with the WMP, the TARPs, presented in Table 11-1 below, have been prepared in relation to reported results, including water quality monitoring and Site inspections to provide a means of detecting potential changes in risk profile relating to conditions at the MPAR.

TABLE 11-1 ACTION TRIGGERS AND RESPONSES

Area	Trigger	Response
Leachate management system / Brine Waste Storage Ponds	A leak is identified in the leachate barrier system, leachate storage ponds or pipelines, or Brine Waste Storage Ponds.	<ul style="list-style-type: none"> • Any leaks that are detected will be repaired. During the repair period, the leachate/brine may be transferred to another double lined pond at the MPPS while the defective liner is repaired. Construction of an additional temporary storage feature could also be considered if the adjacent ponds were not suitable for brine storage; and • If changes are considered to be associated with the BCA liner barrier system or the Brine Waste Storage Ponds, an investigation will be carried out to assess short-term and, if required, long-term mitigation measures and the relevant regulatory stakeholders will be notified and consulted regarding assessment requirements and mitigation options.
Cover and cap integrity	<p>Erosion of the cover layers, or erosion of other areas at MPAR.</p> <p>Exposure of the very low permeability capping layer.</p> <p>Gaps or holes identified within the very low permeability capping layer or cover layers.</p>	<ul style="list-style-type: none"> • Erosion and sediment control measures to be implemented as needed relative to the nature of the observation. Periodic weekly monitoring to be considered in the localised areas where erosion has been identified and control measures have been implemented; • Cover layers to be reinstated <ul style="list-style-type: none"> ◦ Cover materials to be reinstated to their original survey levels; ◦ If necessary, updated reference levels to be provided to ensure thickness requirements have been met; and ◦ Provide photographic evidence as a record of cover reinstatement following works. • Very low permeability cap to be repaired: <ul style="list-style-type: none"> ◦ Capping materials to be reinstated to their original survey levels; ◦ If necessary, updated reference levels to be provided to ensure thickness requirements have been met; ◦ Any damage to geotextile layers to be repaired prior to reinstatement of capping layers; ◦ Any vegetation removed to be replaced to ensure stabilisation of capping materials; and ◦ Provide photographic evidence as a record of capping reinstatement following works.
Unsuitable or insufficient vegetation	Unsuitable or insufficient vegetation is identified growing on the capped area or anywhere else within the Site.	<p><i>MPAR Phase 1 Capping and MPAR Zone 2 Capping</i></p> <ul style="list-style-type: none"> • Unsuitable vegetation (i.e. trees and large shrubs) is to be carefully removed from the capping area and the capping layers assessed for damage; • If capping layers have been damaged and require reinstatement, adhere to trigger response above;

Area	Trigger	Response
		<ul style="list-style-type: none"> • If vegetation is not sufficient, additional planting or support of target species should occur; and • Unsuitable vegetation (i.e. weeds and invasive species) identified are to be removed and/or treated to mitigate growth and spread. <p><i>Batters and benches and MPAR Phase 1 Drainage</i></p> <ul style="list-style-type: none"> • Unsuitable vegetation (i.e. trees) is to be carefully removed from the batters and benches, including drains, and the cover layers assessed for damage; • If cover layers have been damaged and require reinstatement, adhere to trigger response above; • If vegetation is not sufficient, additional planting or support of target species should occur; and • Unsuitable vegetation (i.e. weeds and invasive species) identified are to be removed and/or treated to mitigate growth and spread.
<p>Analyte concentrations in surface water or groundwater</p>	<p>Concentrations of a monitored parameter at a given location are reported above the Environmental Goal or adopted ANZG value for the first time. Concentrations at a given location reported an order of magnitude above the historical maximum. Concentrations at a given location indicate a statistically significant increasing trend.</p>	<ul style="list-style-type: none"> • Confirm the data with analytical laboratory; • Resample the monitoring location(s). If the concentrations are consistent; <ul style="list-style-type: none"> ◦ Review the concentration trends in light of other data (e.g. groundwater elevations and recent MPPS / surrounding land use activities); and ◦ Assess the potential for changes to the risk profile, including review of the NGM and CSM in the context of expected concentrations. • If potential for changes to the risk profile is possible, review the frequency/coverage of the monitoring plan and update/revise the WMP as appropriate, in consultation with relevant regulatory stakeholders (as appropriate).

11.1 LEACHATE AND BRINE WASTE POND MANAGEMENT TRIGGERS

Construction for the MPAR Phase 1 Capping and MPAR Zone 2 LBMS and Capping, including the installation of an engineered liner and leachate collection system on the eastern end of the MPAR (MPAR Zone 2 LBMS), had not commenced at the time of this report. As the triggers are dependent on the implementation of the operational changes approved as part of Mod 9, assessment of leachate management will be documented and evaluated in future reports as construction progresses.

During the reporting period statistically significant increasing trends were apparent for chloride, lead (total), iron (total), and nickel (total) at MPGM5/D5, and chloride, EC, nickel (total), sulfate and TDS at MPGM5/D6, however statistically significant decreasing trends were also apparent for manganese (total) and sulfate at MPGM5/D5 and iron (total) at MPGM5/D6. It is considered likely that based on the continued elevated concentrations at MPGM5/D5 and the increasing concentrations at MPGM5/D6, the integrity of the brine waste pond liner may have been compromised. ERM understands that Brine Waste Pond A and Brine Waste Pond B liner replacement works are planned to be completed in 2026.

11.2 COVER AND CAP INTEGRITY TRIGGERS

Construction for the MPAR Phase 1 Capping and MPAR Zone 2 LBMS and Capping, including the installation of an engineered capping layer on the top section of the MPAR (MPAR Phase 1 Capping), had not commenced at the time of this report. As the triggers are dependent on the implementation of the operational changes approved as part of Mod 9, assessment of these TARPs will be documented and evaluated in future reports as construction progresses.

11.3 UNSUITABLE OR INSUFFICIENT VEGETATION TRIGGERS

Construction for the MPAR Phase 1 Capping and MPAR Zone 2 LBMS and Capping, including the vegetation of batters and benches and MPAR Phase 1 Drainage, had not commenced at the time of this report. As the triggers are dependent on the implementation of the operational changes approved as part of Mod 9, assessment of these TARPs will be documented and evaluated in future reports as construction progresses.

11.4 ANALYTE CONCENTRATION TRIGGERS

11.4.1 ADOPTED GUIDELINE VALUE EXCEEDANCE TRIGGERS

Triggers pertaining to a new exceedance of relevant screening criteria for surface water and groundwater samples collected over the reporting period are outlined in Table R-1, Appendix R.

Consistent with the approach described in Section 5.3.2 where Environmental Goals have not been established for a given analyte, the ANZG (2018) guideline criteria has been applied. The application of the ANZG (2018) guideline criteria has resulted in several newly identified exceedances that have not previously been reported. In these instances, exceedance triggers have been interpreted in the context of the historical dataset for these analytes, where available.

Filtered metal concentrations provide a more readily comparable indications of water quality because they capture only the dissolved fraction present in the aquifer and / or surface water system, excluding the suspended sediments and particulates that can be mobilised during sampling and which are unlikely to be transported in aquifer systems. The adopted guideline values are based on dissolved and bioavailable forms of metals. Accordingly, although TARP triggers are present for total metal concentrations, the filtered (dissolved) fractions provide the appropriate basis for assessment and should be applied when interpreting groundwater and surface water quality.

Nitrite and nitrate (dominated by nitrate) and ammonia concentrations over the reporting period fluctuated below to above (same order of magnitude) to the adopted guideline values. The concentrations in some groundwater monitoring bores were reported up to two orders of magnitude in mid- to late 2025, however in most cases these declined back toward the historical ranges.

As detailed in Section 8, LORs for several key indicator analytes have consistently exceeded the adopted guideline values both historically and throughout the reporting period. For the purposes of this TARP assessment, results reported at concentrations above the adopted guideline criteria solely due to elevated LORs have not been interpreted as guideline exceedances.

11.4.2 HISTORICAL MAXIMUM TRIGGERS

As detailed in Section 6 and Section 7, several target analytes have consistently been reported below the LOR. Where an analyte was reported above the LOR during the current monitoring round, but all corresponding historical results were below the LOR, the historical data has not been considered as a historical maximum and has therefore been excluded from this TARP analysis. As detailed in Section 11.4.1 above, although TARP triggers are present for total metal concentrations, the filtered (dissolved) fractions provide the appropriate basis for assessment and should be applied when interpreting groundwater and surface water quality.

Concentrations of target analytes in the brine leak detection bores and at all surface water sampling locations did not exceed the historical maximums by an order of magnitude throughout the reporting period.

As discussed in previous sections, Table R-2, Appendix R, presents the groundwater results for the reporting period that were reported at an order of magnitude above the historical maximum. The historical maximum for each analyte was calculated using all available data from 2003 to 1 July 2024.

11.4.3 STATISTICALLY SIGNIFICANT INCREASING TREND TRIGGERS

Statistically significant increasing trends have been detailed for groundwater in Section 6.3.3, and for surface water in Section 7.3. As statistically significant increasing trends were identified in surface water and groundwater, a review of the NGM and CSM was undertaken in Section 9 which identified that the conceptual basis of the NGM, i.e. the conceptual groundwater model, and the underpinning assumptions to the groundwater flow and solute transport model remain valid.

11.5 TARP SUMMARY

A summary of the comparison to the TARPs is as follows:

- Construction activities related to the implementation of Mod 9 had not commenced at the time of this report, and therefore triggers related to leachate management, cover and cap integrity, and vegetation will be evaluated in future reports;
- There was no reason to suspect the data needed clarification with the laboratory, beyond that presented, or that confirmatory re-sampling was required;
- The application of the ANZG (2018) guideline criteria has resulted in several newly identified exceedances that have not previously been reported. In these instances, first time exceedance triggers were interpreted in conjunction with the additional lines of evidence to evaluate the relationship of the exceedances to site conditions;
- At all surface water sampling locations, in the cases where concentrations of key indicator analytes reported during the reporting period were above the historical maximums, they were within the same order of magnitude as previously reported;
- Increasing concentrations of key indicator analytes in the brine waste pond leak detection bores warrant further assessment; and
- A number of statistically significant increasing trends were identified for key indicator analytes in groundwater and surface water, however the results are consistent with modelled outcomes and were not considered to alter the previously assessed risk profile.

Overall, the trigger responses outlined by the WMP were generally completed as prescribed.

12. SUMMARY AND RECOMMENDATIONS

Based on the continued elevated concentrations at MPM5/D5 and the increasing concentrations at MPM5/D6, the integrity of the liner/s at Brine Waste Pond A and/or Brine Waste Pond B may have been compromised. ERM understands that liner repair / replacement activities are planned to be completed by Q4 2026.

The results of routine groundwater and surface water monitoring have reported that elevated concentrations of key indicator analytes are present in groundwater downgradient from the MPM. This is consistent with the findings of previous annual monitoring reports, and consistent with the findings of the Independent Groundwater Investigation.

Overall, the distribution of key indicator analyte concentrations in groundwater as described in this report is generally consistent with the findings of previous annual monitoring reports, and consistent with the modelled groundwater plume progression, including decreasing (although still above the adopted guideline values) concentrations at bores D106, D107 and D119, and slightly increasing concentrations at bore D3.

The solutes in groundwater at times impact on water quality within Wangcol Creek due to the discharge of impacted groundwater to surface water. The higher solute concentrations in surface water in Wangcol Creek occur predominantly in areas of former mine disturbance (Areas D, E, F and G) compared to upstream areas and are most apparent typically during extended periods of low rainfall. This is due to the lower surface water flows in Wangcol Creek resulting in lower surface water to groundwater volume ratios, and therefore groundwater conditions having a greater influence on surface water quality.

Consistent with these observations and with the CSM (see Section 2.1), a complete SPR linkage is present for Wangcol Creek; however, no other potentially complete SPR linkages have been identified in relation to groundwater that is impacted by seepage of BCA leachate from the MPM.

Implementation of the MPM Phase 1 Capping and Drainage and the MPM Zone 2 LBMS works will improve the design of surface water drainage from the MPM and substantially reduce the amount of recharge in BCA areas of the MPM. Reduced infiltration over areas where BCA was placed in the MPM will reduce the rate of leachate production and seepage from these areas to the underlying groundwater system. The improved recharge control and drainage arrangements will also increase the volume of clean water flows from the MPM to Wangcol Creek, ultimately resulting in improved water quality outcomes in Wangcol Creek in the medium to longer term. This source control approach is the primary means of mitigating the discharge of BCA impacted groundwater from MPM to Wangcol Creek, and is currently being implemented by EnergyAustralia.

The effectiveness of the currently approved mitigation measures will continue to be assessed as part of the routine monitoring and reporting required by the WMP and the EPL. Based on the review of the surface water and groundwater quality data obtained in accordance with the WMP and the EPL, and the outcomes presented in this report, it is considered that the reporting requirements of the Mt Piper Consent (Conditions 44 and 45) and the EPL (Condition R4.10) have been met. Appendix B presents a summary of the specific requirements of each of the Mt Piper Consent and the WMP, and the EPL, and where they are addressed in this report.

13. REFERENCES

- Australia and New Zealand Governments (ANZG), 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
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14. STATEMENT OF LIMITATIONS

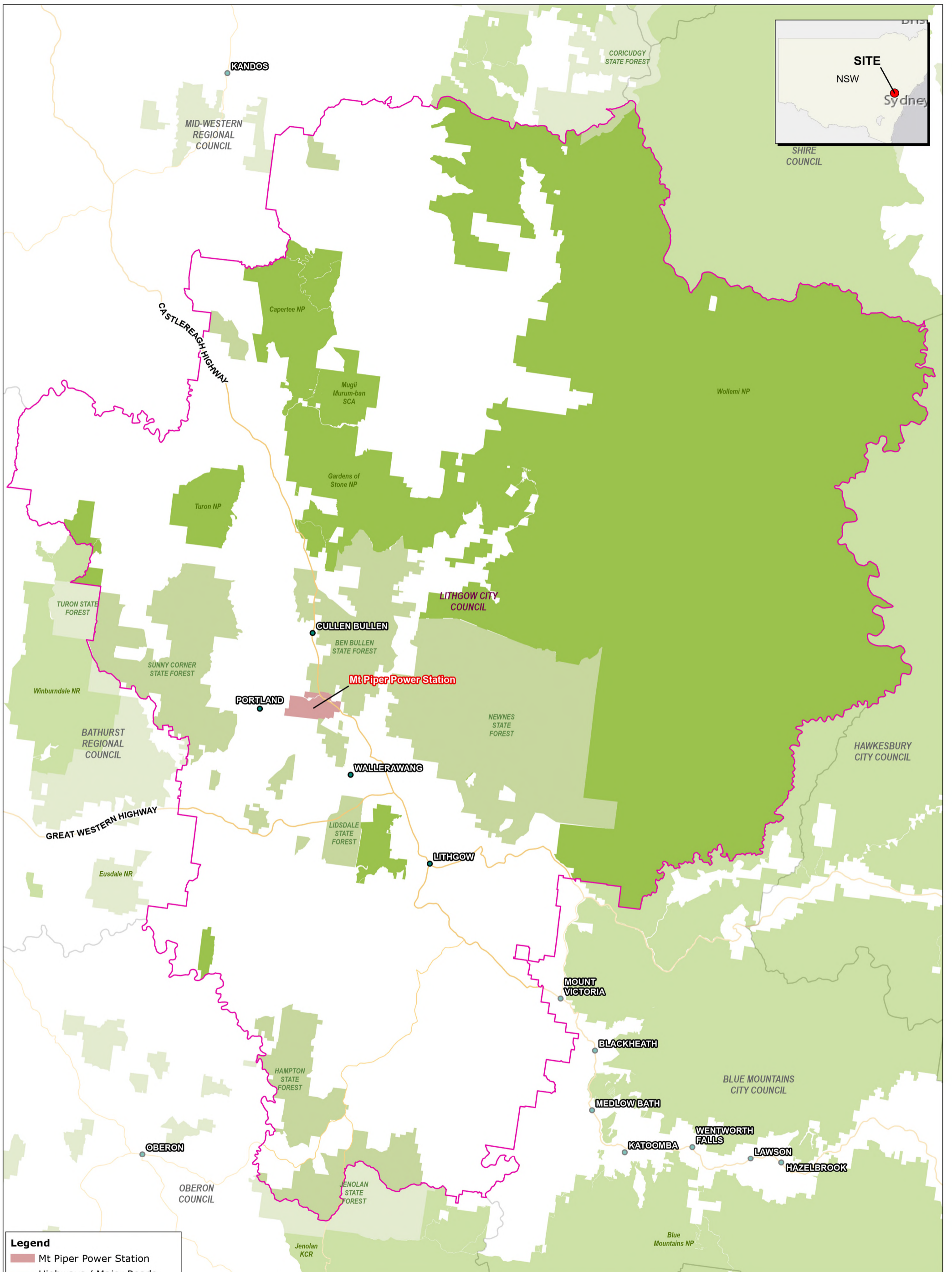
1. This report is based solely on the scope of work described in the ERM proposal P0807133 dated 17 December 2025 (**Scope of Work**) and performed by Environmental Resources Management Australia Pty Ltd (**ERM**) for Generator Property Management Pty Ltd (GPM) (the **Client**). The Scope of Work was governed by a contract between ERM and the Client (**Contract**);
2. No limitation, qualification or caveat set out below is intended to derogate from the rights and obligations of ERM and the Client under the Contract;
3. The findings of this report are solely based on, and the information provided in this report is strictly limited to that required by, the Scope of Work. Except to the extent stated otherwise, in preparing this report ERM has not considered any question, nor provides any information, beyond that required by the Scope of Work;
4. This report was prepared between January 2026 and 24 April 2026 and is based on conditions encountered and information reviewed at the time of preparation. The report does not, and cannot, take into account changes in law, factual circumstances, applicable regulatory instruments or any other future matter. ERM does not, and will not, provide any on-going advice on the impact of any future matters unless it has agreed with the Client to amend the Scope of Work or has entered into a new engagement to provide a further report;
5. Unless this report expressly states to the contrary, ERM's Scope of Work was limited strictly to identifying typical environmental conditions associated with the subject site(s) and does not evaluate the condition of any structure on the subject site nor any other issues. Although normal standards of professional practice have been applied, the absence of any identified hazardous or toxic materials or any identified impacted soil or groundwater on the Site(s) should not be interpreted as a guarantee that such materials or impacts do not exist;
6. This report is based on one or more site inspections conducted by ERM personnel, the sampling and analyses described in the report, and information provided by the Client or third parties (including regulatory agencies). All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved. Whilst normal checking of data accuracy was undertaken, except to the extent expressly set out in this report ERM:
 - a) did not, nor was able to, make further enquiries to assess the reliability of the information or independently verify information provided by; and
 - b) assumes no responsibility or liability for errors in data obtained from, the Client, any third parties or external sources (including regulatory agencies).
7. Although the data that has been used in compiling this report is generally based on actual circumstances, if the report refers to hypothetical examples those examples may, or may not, represent actual existing circumstances;
8. Only the environmental conditions and or potential contaminants specifically referred to in this report have been considered. To the extent permitted by law and except as is specifically stated in this report, ERM makes no warranty or representation about:

- a) the suitability of the Site(s) for any purpose or the permissibility of any use;
 - b) the presence, absence or otherwise of any environmental conditions or contaminants at the Site(s) or elsewhere; or
 - c) the presence, absence or otherwise of asbestos, asbestos containing materials or any hazardous materials on the Site(s).
9. Use of the Site for any purpose may require planning and other approvals and, in some cases, environmental regulator and accredited site auditor approvals. ERM offers no opinion as to the likelihood of obtaining any such approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environment works;
10. The ongoing use of the Site or use of the Site for a different purpose may require the management of or remediation of site conditions, such as contamination and other conditions, including but not limited to conditions referred to in this report;
11. This report should be read in full and no excerpts are to be taken as representative of the whole report. To ensure its contextual integrity, the report is not to be copied, distributed or referred to in part only. No responsibility or liability is accepted by ERM for use of any part of this report in any other context;
12. Except to the extent that ERM has agreed otherwise with the Client in the Scope of Work or the Contract, this report:
- a) has been prepared and is intended only for the exclusive use of the Client;
 - b) must not to be relied upon or used by any other party;
 - c) has not been prepared nor is intended for the purpose of advertising, sales, promoting or endorsing any Client interests including raising investment capital, recommending investment decisions, or other publicity purposes;
 - d) does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise in or in relation to the Site(s); and
 - e) does not purport to provide, nor should be construed as, legal advice.



APPENDIX A

FIGURES



Legend

- Mt Piper Power Station
- Highways / Major Roads
- State Forest
- National Park
- LGA Boundary

Source:
 Base Data: NSW DCDB/DTDB,
 Geoscience Australia

Coordinate System:
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Date: 11/03/2026

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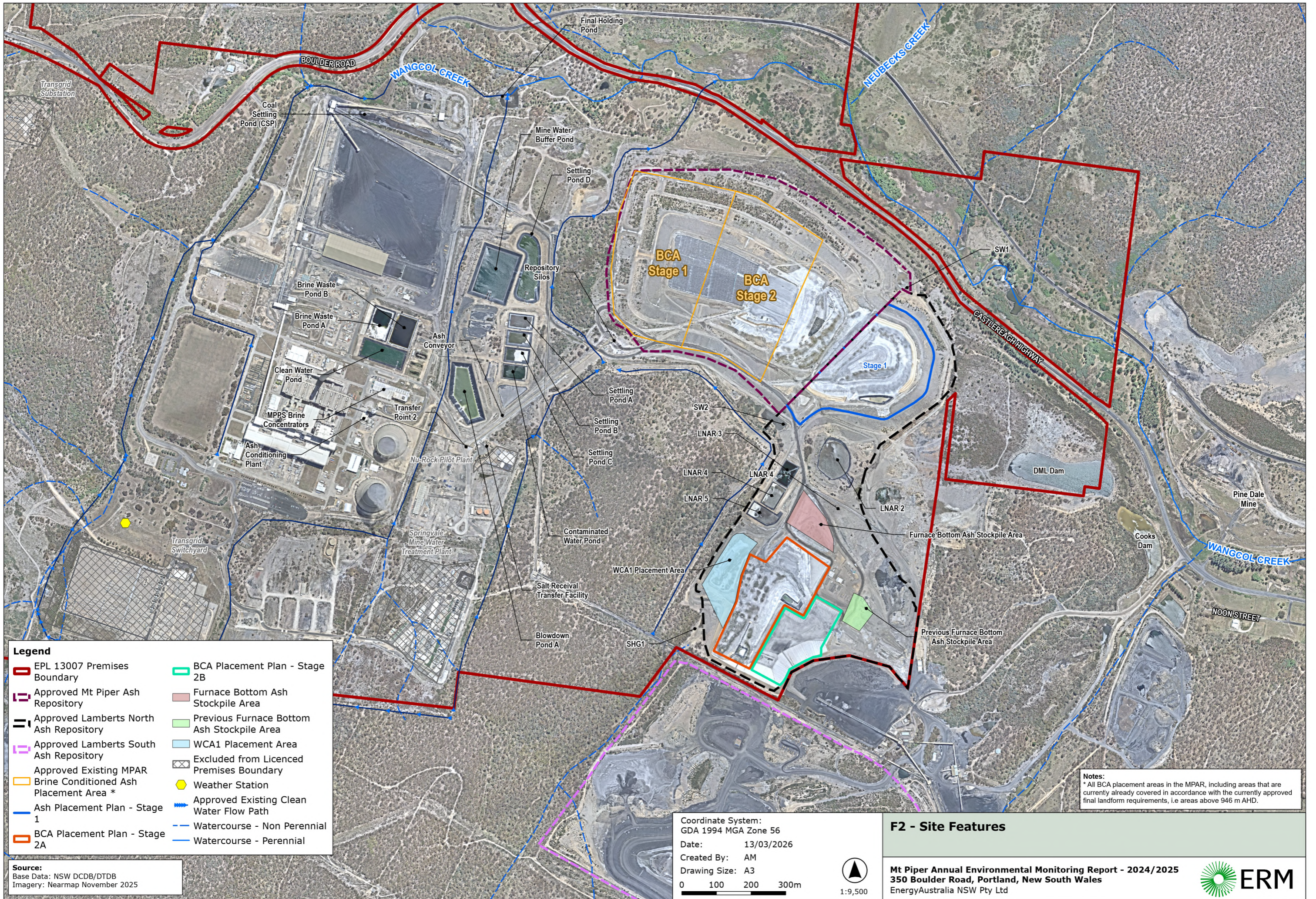
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F1 - Regional Context

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd





- Legend**
- EPL 13007 Premises Boundary
 - Approved Mt Piper Ash Repository
 - Approved Lamberts North Ash Repository
 - Approved Lamberts South Ash Repository
 - Approved Existing MPAR
 - Brine Conditioned Ash Placement Area *
 - Ash Placement Plan - Stage 1
 - BCA Placement Plan - Stage 2A
 - BCA Placement Plan - Stage 2B
 - Furnace Bottom Ash Stockpile Area
 - Previous Furnace Bottom Ash Stockpile Area
 - WCA1 Placement Area
 - Excluded from Licenced Premises Boundary
 - Weather Station
 - Approved Existing Clean Water Flow Path
 - Watercourse - Non Perennial
 - Watercourse - Perennial

Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap November 2025

Coordinate System:
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 Date: 13/03/2026
 Created By: AM
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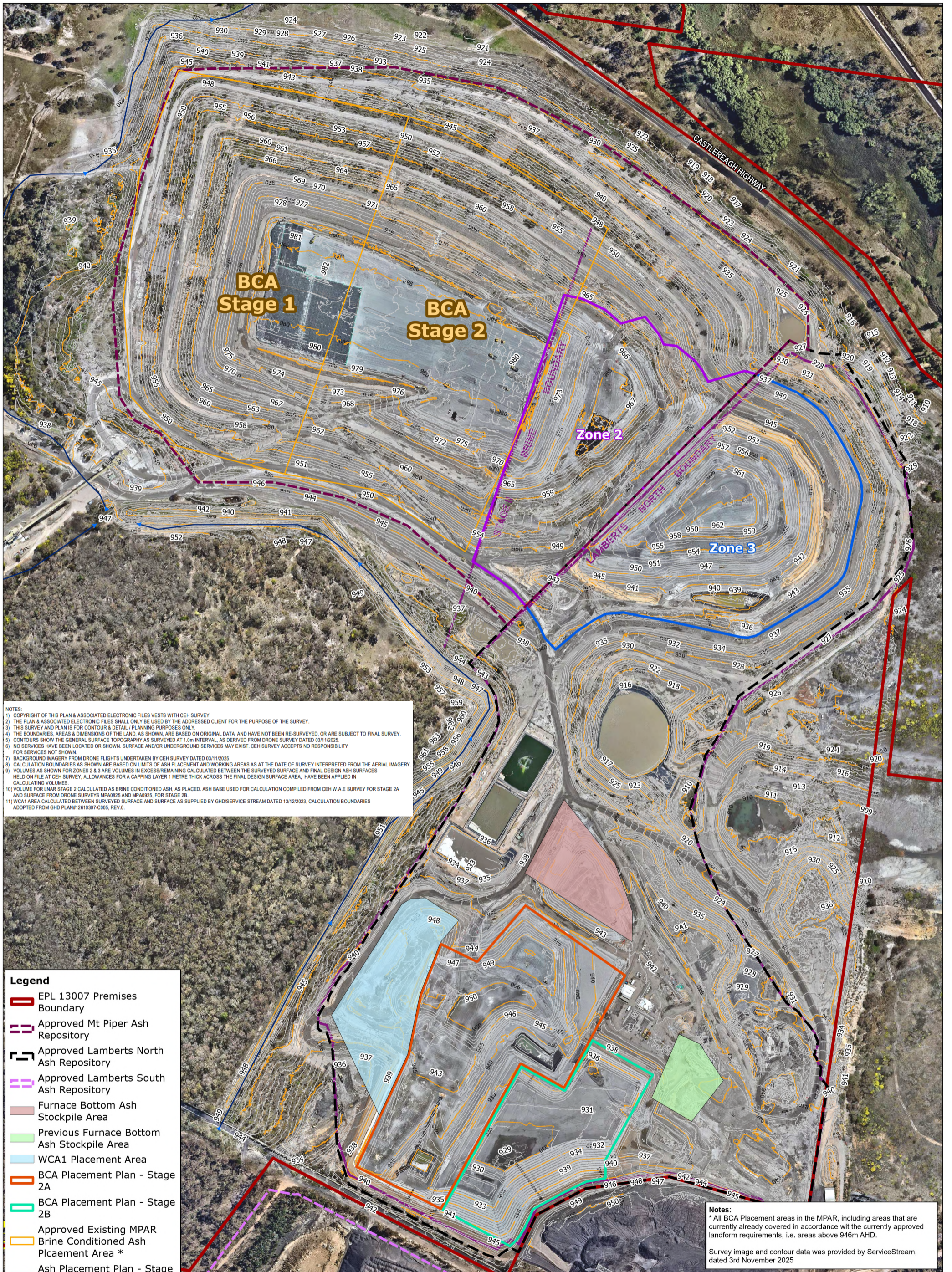


F2 - Site Features

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd



Notes:
 * All BCA placement areas in the MPAR, including areas that are currently already covered in accordance with the currently approved final landform requirements, i.e areas above 946 m AHD.



NOTES:
 1) COPYRIGHT OF THIS PLAN & ASSOCIATED ELECTRONIC FILES VESTS WITH CEH SURVEY.
 2) THE PLAN & ASSOCIATED ELECTRONIC FILES SHALL ONLY BE USED BY THE ADDRESSED CLIENT FOR THE PURPOSE OF THE SURVEY.
 3) THIS SURVEY AND PLAN IS FOR CONTOUR & DETAIL / PLANNING PURPOSES ONLY.
 4) THE BOUNDARIES, AREAS & DIMENSIONS OF THE LAND, AS SHOWN, ARE BASED ON ORIGINAL DATA AND HAVE NOT BEEN RE-SURVEYED, OR ARE SUBJECT TO FINAL SURVEY.
 5) CONTOURS SHOW THE GENERAL SURFACE TOPOGRAPHY AS SURVEYED AT 1.0m INTERVAL, AS DERIVED FROM DRONE SURVEY DATED 03/11/2025.
 6) NO SERVICES HAVE BEEN LOCATED OR SHOWN. SURFACE AND/OR UNDERGROUND SERVICES MAY EXIST. CEH SURVEY ACCEPTS NO RESPONSIBILITY FOR SERVICES NOT SHOWN.
 7) BACKGROUND IMAGERY FROM DRONE FLIGHTS UNDERTAKEN BY CEH SURVEY DATED 03/11/2025.
 8) CALCULATION BOUNDARIES AS SHOWN ARE BASED ON LIMITS OF ASH PLACEMENT AND WORKING AREAS AS AT THE DATE OF SURVEY INTERPRETED FROM THE AERIAL IMAGERY.
 9) VOLUMES AS SHOWN FOR ZONES 2 & 3 ARE VOLUMES IN EXCESS/REMAINING CALCULATED BETWEEN THE SURVEYED SURFACE AND FINAL DESIGN ASH SURFACES HELD ON FILE AT CEH SURVEY. ALLOWANCES FOR A CAPPING LAYER 1 METRE THICK ACROSS THE FINAL DESIGN SURFACE AREA, HAVE BEEN APPLIED IN CALCULATING VOLUMES.
 10) VOLUME FOR LNR STAGE 2 CALCULATED AS BRINE CONDITIONED ASH, AS PLACED. ASH BASE USED FOR CALCULATION COMPILED FROM CEH W.A.E SURVEY FOR STAGE 2A AND SURFACE FROM DRONE SURVEYS MPA0825 AND MPA0925, FOR STAGE 2B.
 11) WCA1 AREA CALCULATED BETWEEN SURVEYED SURFACE AND SURFACE AS SUPPLIED BY GHD/SERVICE STREAM DATED 13/12/2023. CALCULATION BOUNDARIES ADOPTED FROM GHD PLAN#12810307-C005, REV.0.

- Legend**
- EPL 13007 Premises Boundary
 - Approved Mt Piper Ash Repository
 - Approved Lamberts North Ash Repository
 - Approved Lamberts South Ash Repository
 - Furnace Bottom Ash Stockpile Area
 - Previous Furnace Bottom Ash Stockpile Area
 - WCA1 Placement Area
 - BCA Placement Plan - Stage 2A
 - BCA Placement Plan - Stage 2B
 - Approved Existing MPAR
 - Brine Conditioned Ash Placement Area *
 - Ash Placement Plan - Stage 1
 - MPAR Zone 2
 - Approved Existing Clean Water Flow Path
 - Topographic Contours
 - Topographic Contours

Notes:
 * All BCA Placement areas in the MPAR, including areas that are currently already covered in accordance with the currently approved landform requirements, i.e. areas above 946m AHD.
 Survey image and contour data was provided by ServiceStream, dated 3rd November 2025

Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap November 2025
 Ash Placement Plan: Client provided 2024

Coordinate System:
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Date: 23/04/2026

Created By: AM

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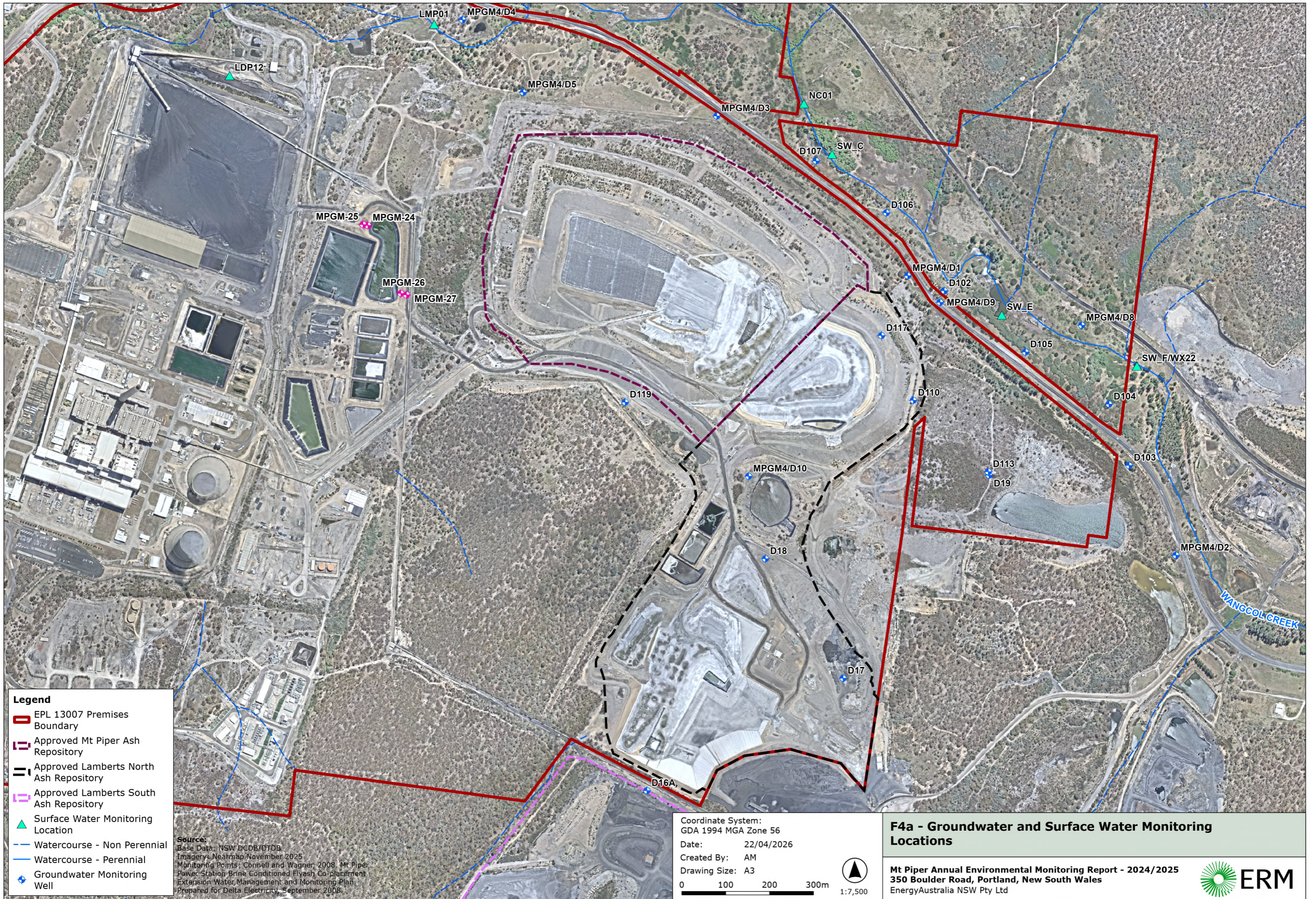
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F3 - Ash Placement Plan

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd





- Legend**
- ▬ EPL 13007 Premises Boundary
 - ▬ Approved Mt Piper Ash Repository
 - ▬ Approved Lamberts North Ash Repository
 - ▬ Approved Lamberts South Ash Repository
 - ▲ Surface Water Monitoring Location
 - Watercourse - Non Perennial
 - Watercourse - Perennial
 - + Groundwater Monitoring Well

Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap/November 2025
 Monitoring Points: Connell and Wagner, 2008. Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.

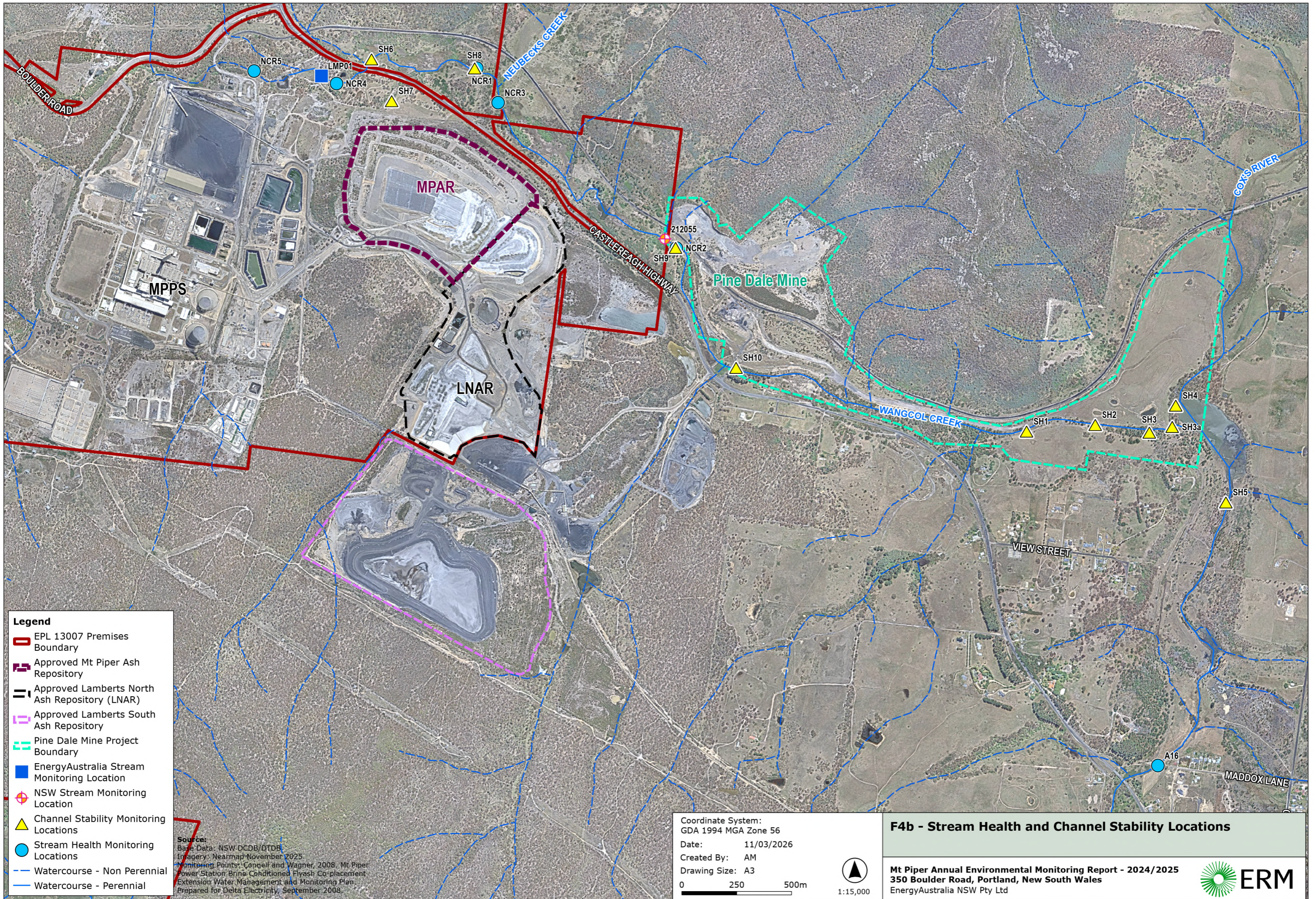
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 Created By: AM
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F4a - Groundwater and Surface Water Monitoring Locations

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd






- Legend**
- ▭ EPL 13007 Premises Boundary
 - ▭ Approved Mt Piper Ash Repository
 - ▭ Approved Lamberts North Ash Repository (LNAR)
 - ▭ Approved Lamberts South Ash Repository
 - ▭ Pine Dale Mine Project Boundary
 - EnergyAustralia Stream Monitoring Location
 - ⊕ NSW Stream Monitoring Location
 - ▲ Channel Stability Monitoring Locations
 - Stream Health Monitoring Locations
 - Watercourse - Non Perennial
 - Watercourse - Perennial

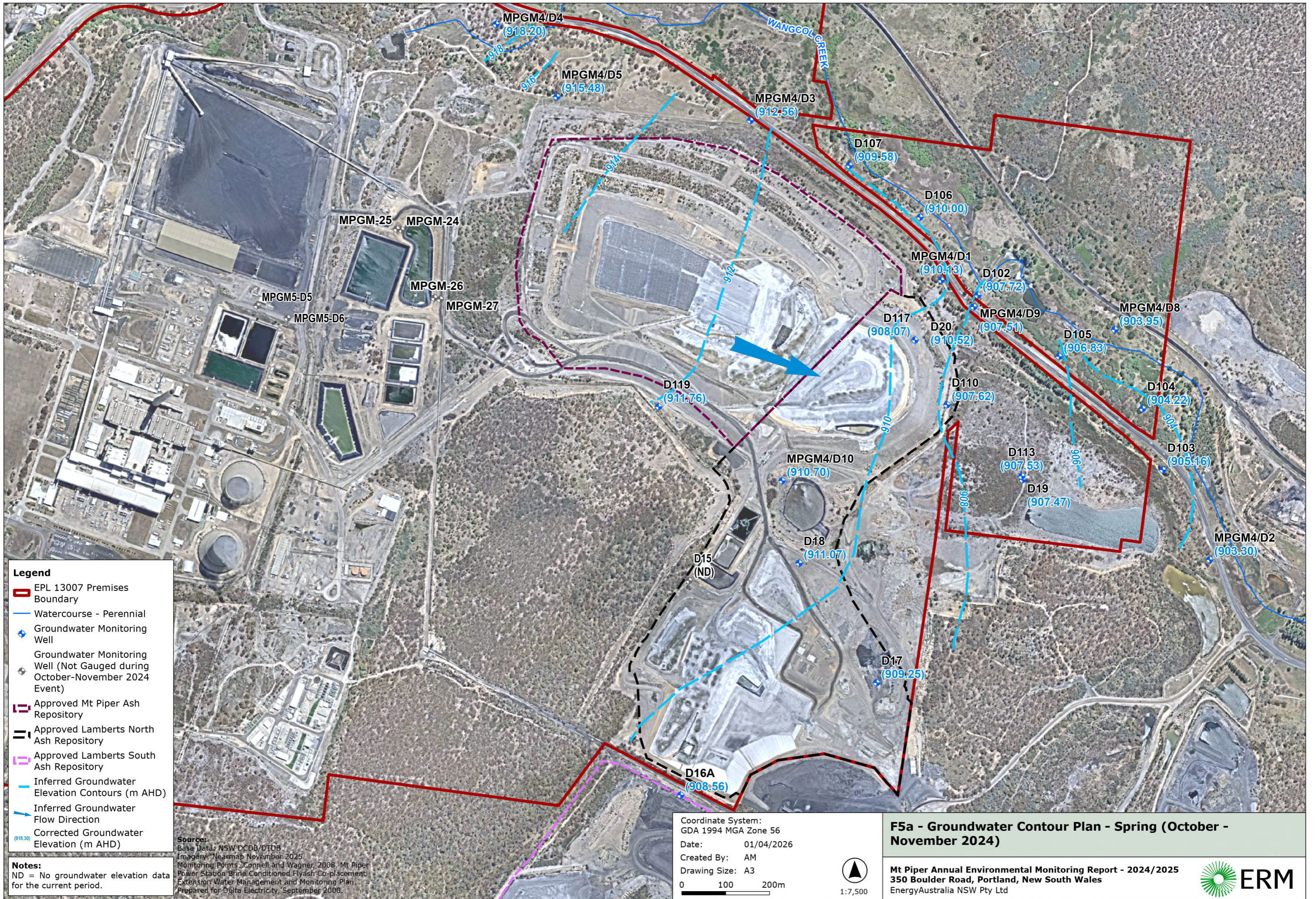
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 Imagery: Nearmap November 2025
 Monitoring Points: Cancell and Wagner, 2008, Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.

Coordinate System:
 GDA 1994 MGA Zone 56
 Date: 11/03/2026
 Created By: AM
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F4b - Stream Health and Channel Stability Locations

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd





- Legend**
- ▬ EPL 13007 Premises Boundary
 - Watercourse - Perennial
 - + Groundwater Monitoring Well
 - + Groundwater Monitoring Well (Not Gauged during October-November 2024 Event)
 - ▬ Approved Mt Piper Ash Repository
 - ▬ Approved Lamberts North Ash Repository
 - ▬ Approved Lamberts South Ash Repository
 - - - Inferred Groundwater Elevation Contours (m AHD)
 - Inferred Groundwater Flow Direction
 - (918.30) Corrected Groundwater Elevation (m AHD)

Notes:
 ND = No groundwater elevation data for the current period.

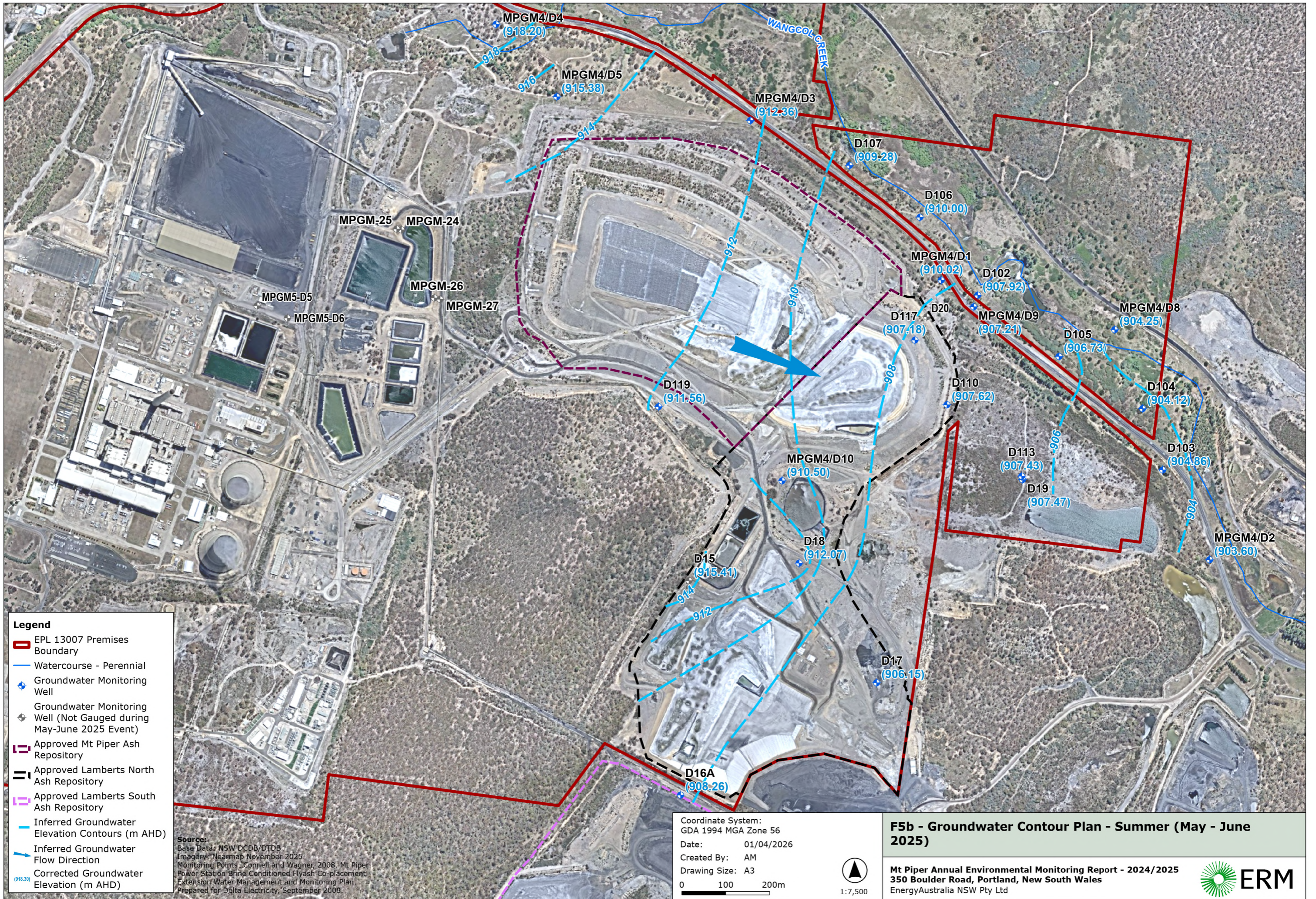
Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap November 2025
 Monitoring Points: Connell and Wagner, 2008. Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.

Coordinate System:
 GDA 1994 MGA Zone 56
 Date: 01/04/2026
 Created By: AM
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F5a - Groundwater Contour Plan - Spring (October - November 2024)

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd





Legend

- ▭ EPL 13007 Premises Boundary
- Watercourse - Perennial
- + Groundwater Monitoring Well
- + Groundwater Monitoring Well (Not Gauged during May-June 2025 Event)
- ▭ Approved Mt Piper Ash Repository
- ▭ Approved Lamberts North Ash Repository
- ▭ Approved Lamberts South Ash Repository
- Inferred Groundwater Elevation Contours (m AHD)
- Inferred Groundwater Flow Direction
- + Corrected Groundwater Elevation (m AHD)

Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap November 2025
 Monitoring Points: Connell and Wagner, 2008. Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.

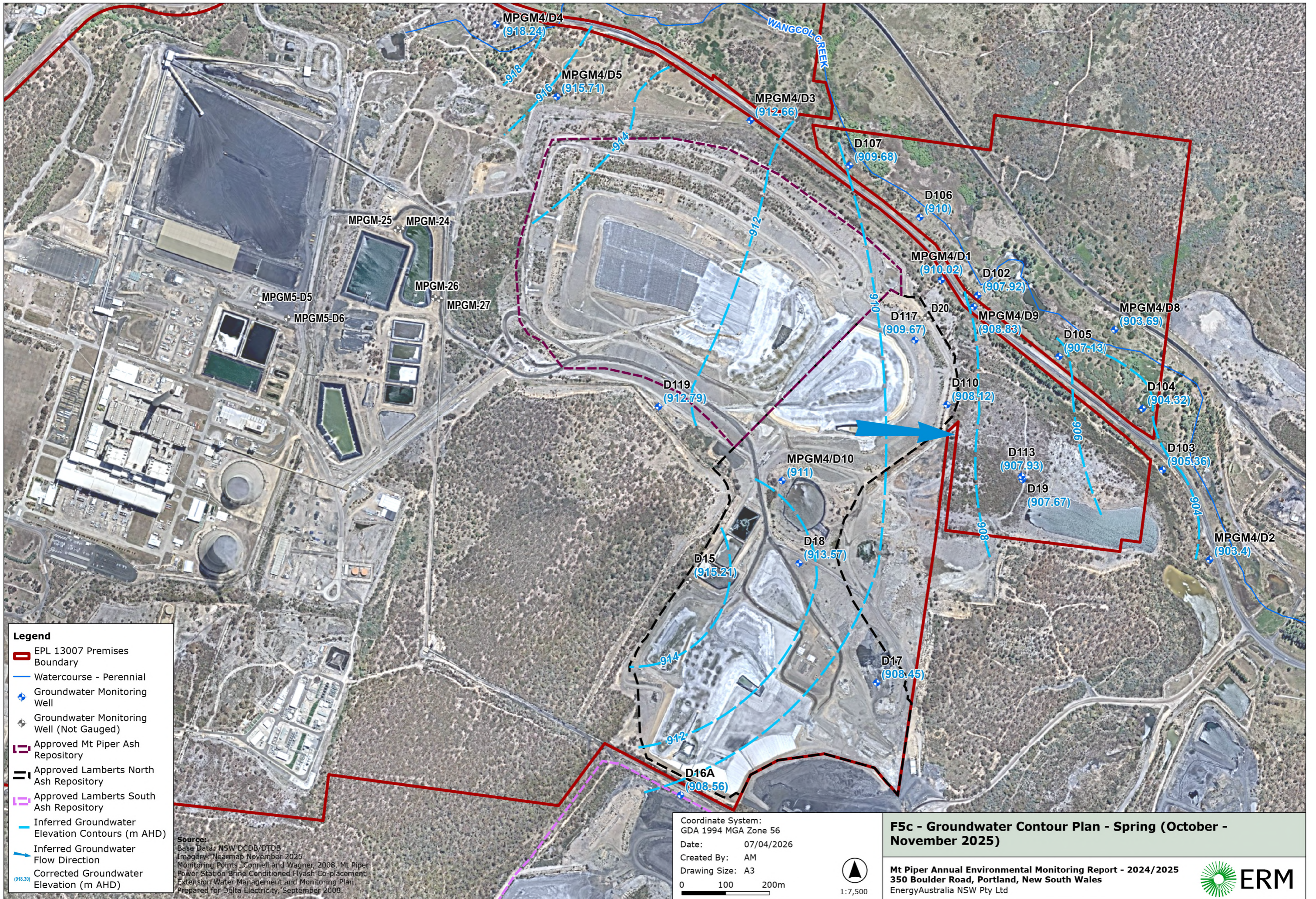
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F5b - Groundwater Contour Plan - Summer (May - June 2025)

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd





Legend


- ▭ EPL 13007 Premises Boundary
- Watercourse - Perennial
- + Groundwater Monitoring Well
- + Groundwater Monitoring Well (Not Gauged)
- - - Approved Mt Piper Ash Repository
- - - Approved Lamberts North Ash Repository
- - - Approved Lamberts South Ash Repository
- Inferred Groundwater Elevation Contours (m AHD)
- Inferred Groundwater Flow Direction
- + Corrected Groundwater Elevation (m AHD)

Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap November 2025
 Monitoring Points: Connell and Wagner, 2008. Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.

Coordinate System:
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F5c - Groundwater Contour Plan - Spring (October - November 2025)

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd



Environmental Goals	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Boron (Filtered)	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)
Adopted Guideline Values - Surface Water	2200	6.5-8	350	1.5	1000	1500	24	370	2	3.5	300	5	1900	0.06	10	17

LMP01	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Boron (Filtered)	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Date Range	Number of Samples
Min	209	7.4	5.81	0.098	38.7	155	1	50	1	1	50	1	1	0	6	1	24/07/2024 - 10/12/2025	18
Max	526	8.3	14.9	0.278	132	370	1	100	2	6	300	6	83	0	24	6		
Mean	381.8333	7.7	10.285	0.1501	89.4333	248.8889	1	56.1	1.2	2.1	70	1.5	38.6	0	13.3	4		

NC01	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Boron (Filtered)	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Date Range	Number of Samples
Min	176	7.09	4.81	0.037	24.7	130	1	50	1	1	80	1	139	0	1	2	24/07/2024 - 11/09/2025	8
Max	497	8.19	13.2	0.344	142	288	1	190	1	5	350	2	682	0	12	4		
Mean	371.125	7.45	10.0075	0.1654	80.8625	223.25	1	71.2	1	1.6	165	1.1	309	0	6.5	2.9		

SW_C	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Boron (Filtered)	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Date Range	Number of Samples
Min	150	6.95	6.36	0.067	27.1	116	1	50	1	1	50	1	34	0	2	1	24/07/2024 - 10/12/2025	18
Max	588	8.4	17.7	0.491	131	375	1	120	1	4	400	2	954	0	10	8		
Mean	377.8889	7.37	12.1339	0.164	81.8566	236.9444	1	61.2	1	1.4	138.9	1.1	260.2	0	5.9	3.1		

SW_E	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Boron (Filtered)	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Date Range	Number of Samples
Min	155	6.36	10.3	0.065	52.9	160	1	50	1	1	170	1	72	0	1	8	24/07/2024 - 10/12/2025	18
Max	6929	7.96	591	0.63	3470	5760	1	1690	1	3	5000	1	6500	0	5	948		
Mean	2339.1111	6.93	165.0944	0.2443	901.6611	1644.9444	1	486.1	1	1.2	1342.8	1	2488.1	0	1.8	230.6		

WX22	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Boron (Filtered)	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Date Range	Number of Samples
Min	250	6.86	10.9	0.072	57.6	166	1	50	1	1	50	1	46	0	1	10	24/07/2024 - 10/12/2025	18
Max	3197	8.7	280	0.636	1460	2410	1	570	2	4	340	2	2240	0	5	258		
Mean	1388	7.52	98.6333	0.1778	485.4778	932.8889	1	26.17	1.1	1.4	87.2	1.1	395.2	0	2	91.4		

SW_G	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Boron (Filtered)	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Date Range	Number of Samples
Min	250	7.36	10.8	0.064	60.5	172	1	50	1	1	50	1	1	0	1	1	24/07/2024 - 10/12/2025	18
Max	3209	8.22	324	0.623	1660	2440	1	590	2	1	110	1	1930	0	7	253		
Mean	1379.1667	7.69	97.3778	0.1732	487.1944	932.7222	1	23.61	1.1	1	63.89	1	324.7	0	2.1	85.4		

- Legend**
- EPL 13007 Premises Boundary
 - Surface Water Monitoring Location
 - Surface Water Monitoring Location
 - Approved Mt Piper Ash Repository
 - Approved Lamberts North Ash Repository
 - Approved Lamberts South Ash Repository
 - Watercourse - Perennial

Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap November 2025
 Monitoring Points: Connell and Wagner, 2008, Mt Piper Power Station Brine Conditioned Fresh Co-placement Extension Water Management and Monitoring Plan, Prepared for Delta Electricity, September 2008.

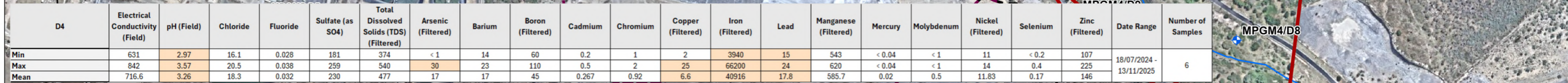
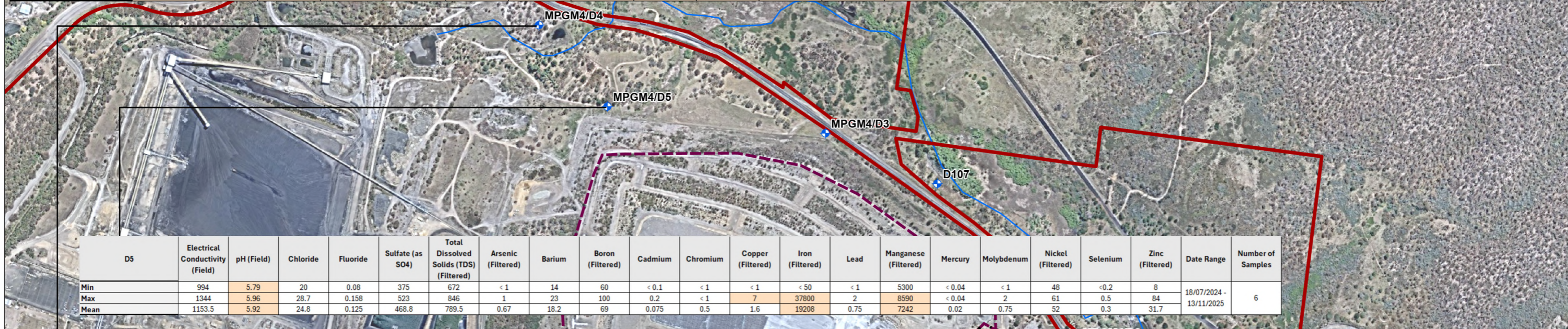
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F6 - Surface Water Results Summary

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd



Environmental Goals	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)
Adopted Guideline Values - Groundwater	2600	6.5-8	350	1.5	1000	2000	24	700	370	2	5	5	664	5	5704	0.06	10	550.9	5	908



Legend

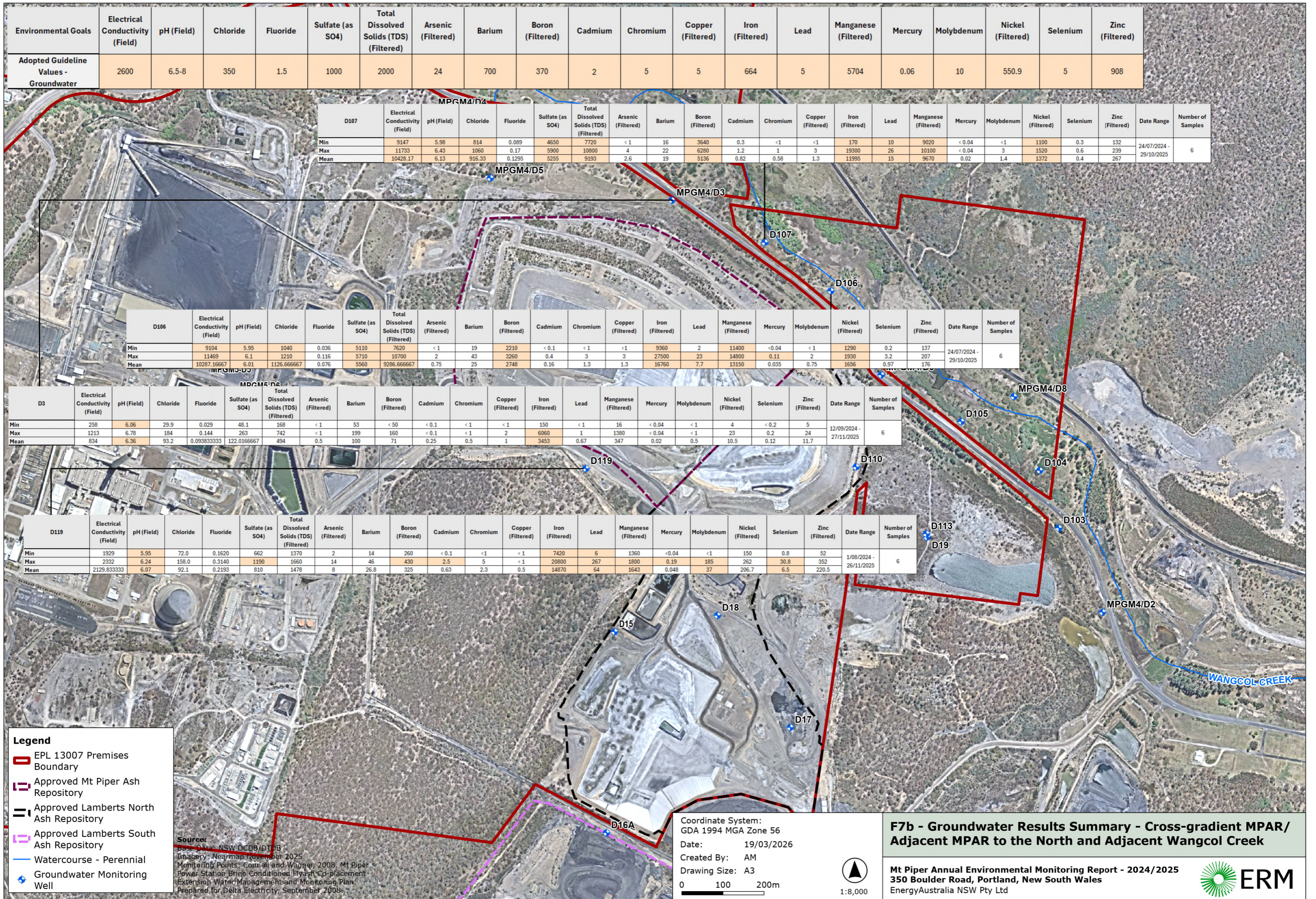
- EPL 13007 Premises Boundary
- Approved Mt Piper Ash Repository
- Approved Lamberts North Ash Repository
- Approved Lamberts South Ash Repository
- Watercourse - Perennial
- Groundwater Monitoring Well

Source: Base Data: NSW DCDB/DTDB; Imagery: Nearmap November 2025; Monitoring Points: Connell and Wagner, 2008; Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan; Prepared for Delta Electricity, September 2008.

Coordinate System: GDA 1994 MGA Zone 56
 Date: 19/03/2026
 Created By: AM
 Drawing Size: A3
 0 100 200m
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F7a - Groundwater Results Summary - Upgradient MPAR/ Background

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd



Environmental Goals	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)
Adopted Guideline Values - Groundwater	2600	6.5-8	350	1.5	1000	2000	24	700	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

D107	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	9147	5.98	814	0.089	4650	7720	< 1	16	3640	0.3	< 1	< 1	170	10	9020	< 0.04	< 1	1100	0.3	132	24/07/2024 - 29/10/2025	6
Max	11733	6.43	1060	0.17	5900	10800	4	22	6280	1.2	1	3	19300	26	10100	< 0.04	3	1520	0.6	239		
Mean	10428.17	6.13	916.33	0.1295	5255	9193	2.6	19	5136	0.82	0.58	1.3	11995	15	9670	0.02	1.4	1372	0.4	267		

D106	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	9104	5.95	1040	0.036	5110	7620	< 1	19	2210	< 0.1	< 1	< 1	9360	2	11400	< 0.04	< 1	1290	0.2	137	24/07/2024 - 29/10/2025	6
Max	11469	6.1	1210	0.116	5710	10700	2	43	3260	0.4	3	3	27500	23	14800	0.11	2	1930	3.2	207		
Mean	10287.16667	6.01	1126.66667	0.076	5560	9286.66667	0.75	25	2748	0.16	1.3	1.3	16760	7.7	13150	0.035	0.75	1656	0.97	176		

D3	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	258	6.06	29.9	0.029	48.1	168	< 1	53	< 50	< 0.1	< 1	< 1	150	< 1	16	< 0.04	< 1	4	< 0.2	5	12/09/2024 - 27/11/2025	6
Max	1213	6.78	184	0.144	263	742	< 1	199	160	< 0.1	< 1	2	6060	1	1380	< 0.04	< 1	23	0.2	24		
Mean	834	6.36	93.2	0.093833333	122.0166667	494	0.5	100	71	0.25	0.5	1	3453	0.67	347	0.02	0.5	10.5	0.12	11.7		

D119	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	1929	5.95	72.0	0.1620	662	1370	2	14	260	< 0.1	< 1	< 1	7420	6	1360	< 0.04	< 1	150	0.8	52	1/08/2024 - 26/11/2025	6
Max	2332	6.24	158.0	0.3140	1190	1660	14	46	430	2.5	5	< 1	20800	267	1800	0.19	185	262	30.8	352		
Mean	2129.83333	6.07	92.1	0.2193	810	1478	8	26.8	325	0.63	2.3	0.5	14870	64	1643	0.048	37	206.7	6.5	220.5		

- Legend**
- EPL 13007 Premises Boundary
 - Approved Mt Piper Ash Repository
 - Approved Lamberts North Ash Repository
 - Approved Lamberts South Ash Repository
 - Watercourse - Perennial
 - Groundwater Monitoring Well

Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap November 2025
 Monitoring Points: Connell and Wagner, 2008, Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan, Prepared for Delta Electricity, September 2008.

Coordinate System:
 GDA 1994 MGA Zone 56
 Date: 19/03/2026
 Created By: AM
 Drawing Size: A3
 0 100 200m
 1:8,000

F7b - Groundwater Results Summary - Cross-gradient MPAR/ Adjacent MPAR to the North and Adjacent Wangcol Creek

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd



Environmental Goals	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)
Adopted Guideline Values - Groundwater	2600	6.5-8	350	1.5	1000	2000	24	700	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

D1	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	6923	5.89	682	<0.05	3550	5710	<1	15	140	<0.1	<1	<1	60	<1	5890	<0.04	<1	975	0.2	73	11/09/2024 - 26/11/2025	6
Max	10378	6.38	939	<1	5060	9440	5	23	3560	<0.1	<1	2	41400	5	19100	0.04	1	1680	0.4	128		
Mean	8927	6.02	802	0.2800	4233	7627	3	20.2	2366.7	0.05	0.5	0.92	18588	1.3	14348	0.023	0.58	1454	0.3	109.5		

D102	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	8685	6.05	1030	0.086	3930	7810	<1	20	1290	<0.1	<1	<1	29700	<1	12900	<0.04	<1	1430	0.2	34	25/07/2024 - 30/10/2025	6
Max	9018	6.2	1530	<1	5580	9510	1	28	1480	<0.1	2	1	68000	4	14200	<0.04	2	1580	0.5	68		
Mean	8911	6.13	1237	0.31	4642	8142	0.67	23	1398	0.05	0.75	0.58	45550	1.7	13433	0.02	0.83	1493.3	0.4	48.2		

D9	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	7781	6.08	730	<0.01	3680	5950	<1	25	520	<0.1	<1	<1	22800	<1	10500	<0.04	<1	731	0.3	35	12/09/2024 - 26/11/2025	6
Max	11520	6.91	1060	<1	4890	10500	9	72	2540	0.2	1	4	121000	19	15600	0.16	6	1820	0.4	93		
Mean	9656	6.23	933	0.21	4448	8230	2.7	35	1925	0.1	0.58	1.3	50200	7	13417	0.06	1.40	1475	0.35	70.3		

D105	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	2790	5.93	184	0.099	1140	1950	<1	15	340	<0.1	<1	<1	6660	<1	8180	<0.04	<1	468	<0.1	27	24/07/2024 - 29/10/2025	6
Max	3566	6.3	319	<0.5	1760	2820	<1	20	900	<0.1	1	2	24900	15	12400	<0.04	3	611	1	98		
Mean	3115	6.05	238.7	0.17	1373	2443	0.5	17	598	0.05	0.58	0.92	17710	3.7	9722	0.02	1.2	527.7	0.33	60.2		

D104	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	992	5.76	82.1	0.042	342	684	<1	66	50	<0.1	<1	<1	50	<1	2070	<0.04	<1	48	<0.2	38	24/07/2024 - 30/10/2025	6
Max	1686	6.09	122	<0.2	745	1330	10	179	150	<0.1	5	2	10600	15	3470	<0.04	3	68	0.3	118		
Mean	1173.5	5.92	90.8	0.061	429.2	832.3	2.8	93	108	0.05	1.3	0.83	5052	3.3	2420	0.02	1	55.5	0.13	67		

D103	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	3860	6.07	216	0.069	1660	3020	2	17	1110	<0.1	<1	<1	50	<1	8410	<0.04	<1	8850	<0.04	<1	24/07/2024 - 30/10/2025	6
Max	4431	6.22	355	<0.5	2610	3820	4	21	2090	<0.1	<1	2	20900	<1	11700	<0.04	3	954	0.4	142		
Mean	4230.5	6.14	279.5	0.18	2070	3387	2.7	19	1837	0.05	0.5	0.83	13228	0.58	10582	0.02	1.2	829.5	0.18	112.2		

D8	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	293	5.36	13.7	0.023	95.3	168	<1	28	<50	<0.1	<1	<1	<50	<1	14	<0.04	<1	18	<0.2	34	12/09/2024 - 27/11/2025	6
Max	910	6.72	49.8	<0.05	290	495	1	52	<50	0.3	<1	9	240	4	1220	<0.04	<1	122	0.3	150		
Mean	517	5.56	27.45	0.027	178	334	0.58	43.5	25	0.092	0.5	4.8	136	1.4	611.8	0.02	0.5	86.7	0.1	99.8		

D2	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	1078	5.82	56.8	0.062	377	730	<1	26	360	<0.1	<1	1	1430	3	1070	<0.04	<1	85	0.3	70	18/07/2024 - 12/11/2025	6
Max	2820	6.46	182	<0.2	1310	2240	1	84	1070	<0.1	2	10	21000	8	5290	0.07	2	255	0.6	264		
Mean	1961	6.11	112	0.093	799	1418	0.67	46	652	0.05	0.83	5	6993	5	3097	0.032	1.2	173	0.47	122.8		

- Legend**
- EPL 13007 Premises Boundary
 - Approved Mt Piper Ash Repository
 - Approved Lamberts North Ash Repository
 - Approved Lamberts South Ash Repository
 - Watercourse - Perennial
 - Groundwater Monitoring Well

Source:
 Base Data: NSW DCDB/DDB
 Imagery: Nearmap November 2025
 Monitoring Points: Cornell and Wagner, 2008, Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.

Coordinate System:
 GDA 1994 MGA Zone 56
 Date: 19/03/2026
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 Drawing Size: A3
 0 100 200m
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F7c - Groundwater Results Summary - Downgradient MPAR, Areas Adjacent Wangool Creek

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd



Environmental Goals	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)
ANZECC (2000) or Local Guidelines - Groundwater	2600	6.5-8	350	1.5	1000	2000	24	700	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

D117	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	4355	6.02	105	1.26	1980	3660	<1	27	11800	16.6	<1	<1	<50	<1	9790	<0.04	273	287	115	480	2/08/2024 - 27/11/2025	6
Max	5144	6.21	178	2.22	3110	4060	2	36	14500	23.1	6	<1	240	15	13300	<0.04	1610	318	501	692		
Mean	4618	6.09	137.7	1.58	2392	3823	0.83	31.5	13483	20	2	0.5	109	5.1	11632	0.02	723	304	228	585		

D110	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	8015	5.91	882	0.448	4080	6570	<1	11	2210	<0.1	<1	<1	29900	<1	13400	<0.04	<1	877	0.5	32	1/08/2024 - 30/10/2025	6
Max	9014	6.38	1260	<1	5460	8340	8	34	2550	0.2	6	6	50900	5	15600	<0.04	31	1700	1.6	371		
Mean	8461	6.11	1014.7	0.5	4538	7482	3.8	23.5	2343	0.075	3.3	1.5	42817	2.7	14167	0.02	12	1388	0.85	196.5		

D10	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	4771	5.78	293.0	0.43	2030	3700	<1	15	1450	<0.1	<1	<1	5680	9	3250	<0.04	5	418	0.4	15	26/07/2024 - 26/11/2025	7
Max	11405	6.47	675.0	1.23	4570	8960	4	31	4410	1.7	3	2	12100	29	8670	<0.04	34	1090	3.9	849		
Mean	7936	6.02	501.9	0.61	3403	6343	2	20	2824	0.84	1.1	0.93	8894	15	5980	0.02	12.6	771.1	1.6	382.4		

D19	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	3327	6.01	181	0.186	1280	2520	<1	15	1410	<0.1	<1	<1	6880	6	5100	<0.04	6	484	<0.2	155	11/09/2024 - 26/11/2025	6
Max	5814	6.19	314	<0.5	2340	4270	1	686	1840	0.4	70	<1	17500	802	7640	0.14	23	665	12.3	244		
Mean	4747	6.09	249.8	0.27	1873	3607	0.83	172	1617	0.21	16	0.5	12863	222	6117	0.045	9.2	590	3.5	206.5		

D113	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	4513	5.91	289	0.281	2060	3510	<1	11	1810	0.2	<1	<1	4430	2	5000	<0.04	<1	515	<0.2	241	25/07/2024 - 30/10/2025	6
Max	5478	6.24	360	<1	2460	4530	1	19	2110	0.8	<1	8	13600	10	6930	<0.04	7	688	1.3	314		
Mean	4947	6.10	325.3	0.38	2310	3970	0.75	14.2	1970	0.3	0.5	3.6	10455	5.17	5812	0.02	1.6	601	0.42	278		

- Legend**
- EPL 13007 Premises Boundary
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 - Watercourse - Perennial
 - Groundwater Monitoring Well

Source:
 Base Data: NSW DCDB/D/DB
 Imagery: Nearmap November 2025
 Monitoring Points: Connell and Wagner, 2008, Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.

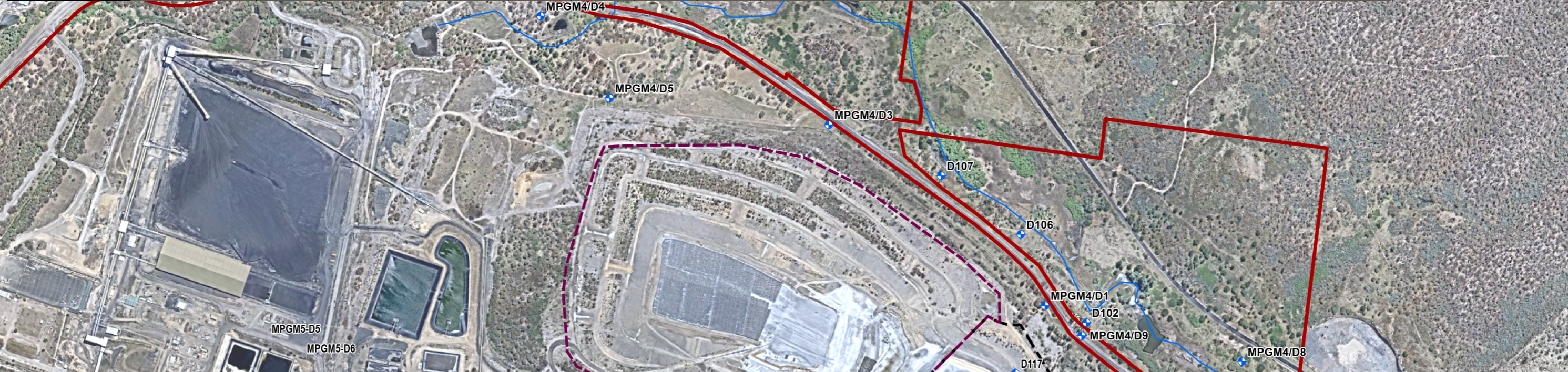
Coordinate System:
 GDA 1994 MGA Zone 56
 Date: 23/03/2026
 Created By: AM
 Drawing Size: A3
 0 100 200m
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F7d - Groundwater Results Summary - Downgradient MPA, Including LNAR (North) and Historical Mining Disturbance (East)

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd



Environmental Goals	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)
ANZECC (2000) or Local Guidelines - Groundwater	2600	6.5-8	350	1.5	1000	2000	24	700	370	2	5	5	664	5	5704	0.06	10	550.9	5	908



D15	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	1556	6.05	49.2	0.089	224	962	2	23	70	<0.1	<1	<1	<50	<1	83	<0.04	2	41	0.4	13	13/09/2024 - 27/11/2025	6
Max	2192	6.86	94.1	0.321	876	2210	25	1770	240	16.4	293	1	5320	1950	732	<0.4	100	196	95.8	173		
Mean	1776	6.44	66.5	0.200	490	1267	14	478.8	140	4.3	86	0.58	3756	564	480.2	0.05	36.7	108.3	20.5	80.5		

D18	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	584	6.75	4.54	0.367	11.8	278	2	439	<50	<0.1	<1	<1	270	<1	139	<0.04	10	5	0.5	8	12/09/2024 - 27/11/2025	6
Max	734	6.91	11.5	0.556	40.4	439	29	621	100	<0.1	3	2	3640	3	449	<0.04	20	11	1.4	35		
Mean	674.5	6.82	8.37	0.473	20.9	352.3	14.7	576.83	64	0.05	1.2	1	2410	1.8	238.8	0.02	14.5	8.3	0.95	21.7		

D16A	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	1029	6.79	15.1	0.327	150	587	<1	56	<50	<0.1	<1	<1	10	<1	90	<0.04	3	3	0.2	11	11/09/2024 - 27/11/2025	6
Max	1181	7.33	20.6	0.543	211	714	<1	71	80	<0.1	2	<1	1660	7	148	<0.04	16	5	<10	47		
Mean	1097	6.91	17.3	0.460	168	658.7	0.5	64.17	55	0.05	0.92	0.5	1042	2.8	121	0.02	6.7	3.8	2.1	25		

Legend

- EPL 13007 Premises Boundary
- Approved Mt Piper Ash Repository
- Approved Lamberts North Ash Repository
- Approved Lamberts South Ash Repository
- Watercourse - Perennial
- Groundwater Monitoring Well

Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap November 2025
 Monitoring Points: Connell and Wagner, 2008, Mt Piper Power Station Brine-Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan, Prepared for Delta Electricity, September 2008.

Coordinate System:
 GDA 1994 MGA Zone 56
 Date: 23/03/2026
 Created By: AM
 Drawing Size: A3
 0 100 200m
 1:8,000

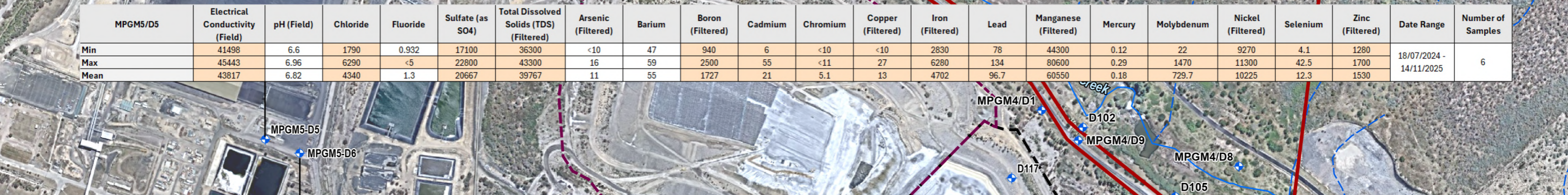
F7e - Groundwater Results Summary - Cross-Gradient MPAR to the South, Including LNR (South) and Historical Mining Disturbance

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd

Environmental Goals	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)
ANZECC (2000) or Local Guidelines - Groundwater	2600	6.5-8	350	1.5	1000	2000	24	700	370	2	5	5	664	5	5704	0.06	10	550.9	5	908



MPGM5/D5	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	41498	6.6	1790	0.932	17100	36300	<10	47	940	6	<10	<10	2830	78	44300	0.12	22	9270	4.1	1280	18/07/2024 - 14/11/2025	6
Max	45443	6.96	6290	<5	22800	43300	16	59	2500	55	<11	27	6280	134	80600	0.29	1470	11300	42.5	1700		
Mean	43817	6.82	4340	1.3	20667	39767	11	55	1727	21	5.1	13	4702	96.7	60550	0.18	729.7	10225	12.3	1530		



MPGM5/D6	Electrical Conductivity (Field)	pH (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids (TDS) (Filtered)	Arsenic (Filtered)	Barium	Boron (Filtered)	Cadmium	Chromium	Copper (Filtered)	Iron (Filtered)	Lead	Manganese (Filtered)	Mercury	Molybdenum	Nickel (Filtered)	Selenium	Zinc (Filtered)	Date Range	Number of Samples
Min	10247	6.68	1420	0.309	2600	7550	2	52	<50	0.3	<1	2	410	2	4850	<0.04	72	934	0.6	19	18/07/2024 - 14/11/2025	6
Max	25596	7.02	9420	<2	6180	18200	<10	144	<100	3.4	10	14	8680	52	6810	0.1	625	2190	2.8	170		
Mean	16423	6.88	4182	0.6	4053	12420	4.5	81.8	38	1	3.2	4.8	5075	14	5692	0.042	237	1498	1.42	64		



Legend

- EPL 13007 Premises Boundary
- Approved Mt Piper Ash Repository
- Approved Lamberts North Ash Repository
- Approved Lamberts South Ash Repository
- Watercourse - Non Perennial
- Watercourse - Perennial
- Groundwater Monitoring Well

Source:
 Base Data: NSW DCDB/DTDB
 Imagery: Nearmap November 2025
 Monitoring Points: Connell and Wagner, 2008, Mt Piper Power Station Brine Conditioned Flyash Co-placement Extension Water Management and Monitoring Plan. Prepared for Delta Electricity, September 2008.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 23/04/2026

Created By: AM

Drawing Size: A3

0 100 200m

1:8,000

F7f - Water Results Summary - Brine Leak Detection Bores

Mt Piper Annual Environmental Monitoring Report - 2024/2025
 350 Boulder Road, Portland, New South Wales
 EnergyAustralia NSW Pty Ltd



APPENDIX B

REGULATORY REQUIREMENTS

TABLE B-1 SUMMARY OF MT PIPER CONSENT AND WMP REQUIREMENTS

Project Approval Doc	Condition	Consent Requirements	How addressed by the EMR	Compliance Status
Mt Piper Consent (Modification 9, dated 24 June 2025)	38A	<p>38A. Notwithstanding the provisions of Condition No. 38, the brine and ash co-placement area may be extended and shall be undertaken generally in accordance with the Statement of Environmental Effects: Mount Piper Power Station Extension of Brine Conditioned Ash Placement Area, prepared by Connell Wagner Pty Ltd and dated June 2007. This includes:</p> <p>(i) The extended area must lie within the existing ash placement area;</p> <p>(ii) Co-placement activities in the proposed extended area must use existing facilities and methods;</p> <p>(iii) The placement of brine conditioned ash may only occur between the levels of RL 946 metres (the endpoint of the water conditioned ash layer) and RL 980 metres.</p>	Refer to Appendix A, Appendix C and Section 3 of the EMR.	Compliant
	43	<p>43. Prior to commencing the works as described in Modification 9, or as otherwise agreed by the Secretary, the Applicant must prepare a Water Management Plan for the MPAR to the satisfaction of the Secretary. The Water Management Plan must be prepared by a suitably qualified and experienced person/s, and in consultation with DCCEEW Water, WaterNSW and the EPA. The Water Management Plan must include, and not be limited to:</p> <p>(a) details of the monitoring programs for surface water and groundwater:</p> <ul style="list-style-type: none"> • detailed baseline data and monitoring programs presented in the Statement of Environmental Effects of Modification 5 (as updated by subsequent modifications), including baseline data on surface water flows and quality in creeks and waterbodies that could be affected by the MPAR (including Wangcol Creek); • monitoring of surface water flows and quality, stream health and channel stability in Wangcol Creek, and downstream of the energy dissipater as described in Modification 9; and • water quality testing at a minimum frequency of every three months, including details of water quality management criteria and measures to manage surface water and groundwater impacts, including trigger action response plans. <p>(b) a site water balance, including details of:</p> <ul style="list-style-type: none"> • water management on site, including measures to be employed to control and/or capture surface water run-off from the site; and • off-site water discharges. <p>(c) contingency plans for the mitigation of environmental impacts should run-off or leachate from the site be found to be negatively impacting on natural surface water or groundwater.</p> <p>(d) brine management objectives and strategies, with specific reference to measures aimed at reducing the volume of brine produced at the Mount Piper Power Station.</p> <p>(e) a program for the ongoing verification and refinement of the groundwater model for the MPAR.</p> <p>(f) Identification of activities that could cause soil erosion and generate sediment and describe measures to minimise soil erosion and the potential for the transport of sediment to downstream waters.</p>	Condition is met by the WMP dated 22 January 2026 (Water Management Plan, Mt Piper Power Station, DA80/10060, Mt Piper Ash Repository, 22 January 2026, ERM; the WMP), as outlined in the covering letter and Section 1.2.1 of the EMR.	Compliant
	43A	43A. The Applicant must implement the approved Water Management Plan.	Condition is met by the WMP dated 22 January 2026 and the EMR from Section 3 onwards.	Compliant
	43B	The Applicant must provide a copy of the approved Water Management Plan to the EPA, WaterNSW, DCCEEW Water and Council.	Condition was met as evidenced by the regulatory stakeholder communications included as Appendix C of the WMP, following DPHI approval on 06 February 2026.	Compliant
	43C	Prior to the approval of the revised Water Management Plan as detailed in condition 43, the project's Water Management Plan, as approved following Modification 8, must continue to be implemented, to the satisfaction of the Secretary.	Condition is met by the development of this report (2024-2025 Annual Water Monitoring Report, Mt Piper Power Station Brine Conditioned Fly Ash Co-Placement Project and EPL 13007, Final, dated 24 April 2026 ERM; the EMR) in its entirety.	Compliant

Project Approval Doc	Condition	Consent Requirements	How addressed by the EMR	Compliance Status
	44	44. The Applicant must provide to the Secretary, EPA, DCCEEW Water, WaterNSW and Council, an Environmental Monitoring Report for the MPAR on a yearly basis, to the satisfaction of the Secretary. The Environmental Monitoring Report must be prepared by a suitably qualified and experienced person/s approved by the Secretary.	Condition is met by the development of this report in its entirety, along with the regulatory stakeholder communications dated 08 December 2025 endorsing the signatories of this report as suitably qualified and experienced persons.	Compliant
	45	45. The Environmental Monitoring Report shall include, but not be limited to: (a) a comprehensive review of the monitoring results from the Water Management Plan over the previous calendar year and identify any trends in the water monitoring data over the life of the project; (b) a discussion of the aims of the Water Management Plan and to what degree these aims have been attained in the context of results and analyses of the Water Monitoring Program, as part of the Water Management Plan; (c) actions taken, or intended to be taken, if any, to mitigate any adverse environmental impacts and to meet the reasonable requirements of the Secretary, EPA, DCCEEW Water, WaterNSW or Council; (d) a revised groundwater modelling report to include any potential and/ or the progressive improvements to the existing batters and benches that may contribute towards reducing the impacts from MPAR to the surrounding environment; (e) identification of any non-compliance or incident which occurred in the previous calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence; and (f) complaints record of the project's water related impacts (quality and quantity) over the previous calendar year.	Refer to Section 5 to Section 112, along with Appendix J through to Appendix R of the EMR. Note that (d) is addressed by Section 8 of the EMR, in accordance with the approach detailed in the WMP.	Compliant
	58	58. Prior to the commencement of construction of the leachate barrier management system in Zone 2 of the MPAR, as detailed in Modification 9, the Applicant must demonstrate to the satisfaction of the EPA that the design of the leachate management system is generally consistent with the relevant requirements of the Environmental Guidelines, Solid Waste Landfills (EPA, 2016), including: (a) the leachate barrier system, including liner and leachate collection system; and (b) the leachate storage dam/s including freeboard, appropriate sizing based on site water balance modelling and liner.	Not addressed in the EMR. EnergyAustralia will prepare separate documentation to demonstrate that the design of MPAR Zone 2 LBMS is generally consistent with the relevant requirements of the Environmental Guidelines, Solid Waste Landfills (EPA, 2016). This will be completed in a manner as required to align with the planned installation timelines.	Compliant
	59	59. Within six months of approval of Modification 9, or other timeframe agreed by the Secretary, the Applicant must develop a capping strategy for the entire MPAR to the satisfaction of the EPA. The design for the MPAR capping strategy must provide details of: (a) short, medium and long-term solutions for control of migration of the solutes from the entire MPAR and into the receiving environment, including consideration of post-closure measures; and (b) additional works required and assessment of measures to reduce water infiltration on the batter slopes of the MPAR.	The Capping Strategy was initially provided to the DPHI on 12 March 2026. A revised version of the Capping Strategy was provided to the Department on 20 April 2026. The Capping Strategy was endorsed by the NSW EPA on 05 March 2026. Feedback from the Department is pending.	Compliant
	60	60. Within three months of approval of the capping strategy in condition 59, the Applicant must review and revise the Water Management Plan in condition 43 and condition 43A, incorporating any outcomes.	Condition 60 will be addressed via update of the WMP following approval of the MPAR Capping Strategy.	Compliant
	64	64. Within three months, unless the Secretary agrees otherwise of: (a) the submission of the Environmental Monitoring Report under condition 44 above; (b) the submission of an incident report under condition 66 or 67 below; (c) any modification of this consent; or (e) a direction of the Secretary under condition 61 above; the Applicant must review and, if necessary, revise the studies, strategies or plans required under the conditions of consent to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval, unless otherwise agreed with the Secretary.	Condition 64 is not addressed by this EMR, which is separately required to be prepared under Condition 45.	Compliant

Project Approval Doc	Condition	Consent Requirements	How addressed by the EMR	Compliance Status
	66	66. The Applicant must notify the Department within 24 hours of becoming aware of an incident. The notification must be made via the NSW planning portal (Major Projects) and address details of the incident including: (a) date, time and location; (b) a brief description of what occurred and why it has been classified as an incident; (c) a description of what immediate steps were taken in relation to the incident; and (d) identifying a contact person for further communication regarding the incident.	This is addressed by Section 3.4 of the EMR.	Compliant
	67	67. The Applicant must provide the Department with a subsequent incident report in accordance with Appendix 1	Not applicable.	Compliant
	68	68. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing and must be submitted via the NSW planning portal (Major Projects). The notification must identify the development (including the development application number and name), set out the condition of this consent that the development is noncompliant with, why it does not comply, the reasons for the non-compliance (if known), and what actions have been undertaken, or will be undertaken, and when, to address the non-compliance.	Not applicable.	Compliant
	69	69. Within three months of approval of Modification 9 and until the completion of all rehabilitation required under this consent, the applicant must: (a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website: <ul style="list-style-type: none"> the Environmental Impact Statement; all current statutory approvals for the project; all approved strategies, plans and programs required under the conditions of this consent; contact details to enquire about the project or to make a complaint; a complaints register, updated monthly; the Environmental Monitoring Reports of the project and the Applicant's response to the recommendations in any Environmental Monitoring Report; any other matter required by the Secretary; and (b) keep such information up to date.	Condition 64 is not addressed by this EMR, though the required information is available on EnergyAustralia's website. Mt Piper Power Station EnergyAustralia.	Compliant
The WMP (ERM, 2026)	N/A	Section 10.8 of the WMP outlines the following approach to preparation of the EMR to address Condition 45 (a): <ul style="list-style-type: none"> Review of surface water and groundwater quality data, including the spatial distribution of water quality parameters; Review of long-term water quality concentration trends, with reference to statistical assessment of concentration trends and triggers; Assessment of the data to evaluate potential interactions with Wangcol Creek and potential changes to water quality; Reporting when the Environmental Goals have not been achieved; Interpretation and discussion of results; A summary of the Wangcol Creek EMP and Wangcol Creek Stream Stability Survey results; Update on the TARPs and contingency measures currently being implemented in accordance with this WMP; and Provision of the final report to the Planning Secretary, EPA, DCCEEW Water, WaterNSW and Council. <p><i>Commentary regarding any exceedances of the Environmental Goals will form a part of the EMR. The data assessment and reporting will also consider where changes in water quality are attributable to seepage from the MPAR, and particularly where changes in water quality may differ to those anticipated based on the current understanding of the CSM.</i></p> <p><i>Noting the management mitigation measures and the TARPs (Section 11), the EMR will also include a review of the water quality monitoring program every 3 years to confirm whether, based on the data review, any updates are required to monitoring locations (added or removed), frequency, and/or analytes so that the monitoring program continues to meet the overall purpose of this WMP.</i></p>	<ul style="list-style-type: none"> Requirement is met by Sections 6 and 7 of the EMR. Requirement is met by Sections 6 and 7 of the EMR. Requirement is met by Sections 6 and 7 of the EMR. Requirement is met by Sections 6 and 7 of the EMR. Requirement is met by Sections 6, 7 and 11 of the EMR. Requirement is met by Section 9 of the EMR. Requirement is met by Section 10 of the EMR. A copy of the final EMR will be distributed accordingly. Requirement is met by the EMR from Section 6 onwards. <p>Data review and continuous improvement forms part of the approach to preparing the EMR. This will be formally addressed in 2028 in accordance with the 3-year timeframe.</p> <p>Deviations from the WMP monitoring program are described in Section 8 of the EMR.</p>	Compliant

TABLE B-2 SUMMARY EPL 13007 REQUIREMENTS

Project Approval Doc	Consent Requirements	How addressed by the EMR	Compliance Status
EPL 13007	<p>Surface Water and Groundwater Monitoring Reporting</p> <p>R4.10 The licensee must prepare an annual report detailing the results of all surface water and groundwater monitoring required by the licence (the Water Monitoring Report), including condition M2.6, condition M8.1 and Special Condition E10. The Water Monitoring Report must include, but is not limited to the following:</p> <ol style="list-style-type: none"> 1. An executive summary that summarises the monitoring results, any potential water pollution risks, and where relevant, includes recommended actions to address these risks. 2. All monitoring data collected during the reporting period. 3. Analysis and graphical representation of temporal trends and patterns in monitoring data collected during the reporting period and over the entire historical dataset, including concentrations and discharge frequencies and volumes. 4. Comparison of data against current guideline values to identify potential water pollution risks. 5. Identification of any potential water pollution risks. 6. Identification of relevant hydrogeological parameters, i.e., groundwater levels, flow direction, gradient, seepage velocity. 7. Assessment of the effectiveness of measures to reduce water discharges and associated water pollution impacts, and recommendations for improvements where necessary to address these; and <p><i>Assessment of the effectiveness of measures to mitigate potential off-site impacts and identification of any associated recommendations.</i></p>	<ul style="list-style-type: none"> • Requirement is met by the Executive Summary of the Report. • Requirement is met by the Report in its entirety. • Requirement is met by Appendix J of the report onwards. Historical baseline data is presented and discussed in the WMP. • Requirement is met by Appendix K and Appendix L of the Report. • Requirement is met by Sections 11 and 12 of the Report. • Requirement is met by Sections 6.3.1 and 6.3.2 of the Report. • Requirement is met by Sections 11 and 12 of the Report. • Requirement is met by Sections 11 and 12 of the Report. • A copy of the final Report will be distributed accordingly. • Requirement is met by the Report from Section 6 onwards. <p>Deviations from the EPL monitoring program are described in Section 8 of the Report.</p>	Compliant
	<p><i>Condition R4.11 The licensee must provide a copy of the Water Monitoring Report as required by condition R4.10 to the EPA at info@epa.nsw.gov.au by no later than 1 May of each year.</i></p>	The Report was provided by 01 May 2026.	Compliant
	<p><i>Condition 4.12 The licensee must notify the EPA in the event the leak detection system surrounding the leachate ponds has been triggered. The notification must include the location of any potential leak along with an analysis of dispersion and any potential impacts.</i></p>	Not applicable.	Compliant



APPENDIX C

ASH REPOSITORY SURVEY



- NOTES:
- 1) COPYRIGHT OF THIS PLAN & ASSOCIATED ELECTRONIC FILES VESTS WITH CEH SURVEY.
 - 2) THE PLAN & ASSOCIATED ELECTRONIC FILES SHALL ONLY BE USED BY THE ADDRESSED CLIENT FOR THE PURPOSE OF THE SURVEY.
 - 3) THIS SURVEY AND PLAN IS FOR CONTOUR & DETAIL / PLANNING PURPOSES ONLY.
 - 4) THE BOUNDARIES, AREAS & DIMENSIONS OF THE LAND, AS SHOWN, ARE BASED ON ORIGINAL DATA AND HAVE NOT BEEN RE-SURVEYED, OR ARE SUBJECT TO FINAL SURVEY.
 - 5) CONTOURS SHOW THE GENERAL SURFACE TOPOGRAPHY AS SURVEYED AT 1.0m INTERVAL, AS DERIVED FROM DRONE SURVEY DATED 03/11/2025.
 - 6) NO SERVICES HAVE BEEN LOCATED OR SHOWN. SURFACE AND/OR UNDERGROUND SERVICES MAY EXIST. CEH SURVEY ACCEPTS NO RESPONSIBILITY FOR SERVICES NOT SHOWN.
 - 7) BACKGROUND IMAGERY FROM DRONE FLIGHTS UNDERTAKEN BY CEH SURVEY DATED 03/11/2025.
 - 8) CALCULATION BOUNDARIES AS SHOWN ARE BASED ON LIMITS OF ASH PLACEMENT AND WORKING AREAS AS AT THE DATE OF SURVEY INTERPRETED FROM THE AERIAL IMAGERY.
 - 9) VOLUMES AS SHOWN FOR ZONES 2 & 3 ARE VOLUMES IN EXCESS REMAINING CALCULATED BETWEEN THE SURVEYED SURFACE AND FINAL DESIGN ASH SURFACES HELD ON FILE AT CEH SURVEY. ALLOWANCES FOR A CAPPING LAYER 1 METRE THICK ACROSS THE FINAL DESIGN SURFACE AREA, HAVE BEEN APPLIED IN CALCULATING VOLUMES.
 - 10) VOLUME FOR LINAIR STAGE 2 CALCULATED AS BRINE CONDITIONED ASH, AS PLACED, ASH BASE USED FOR CALCULATION COMPILED FROM CEH W.A.E SURVEY FOR STAGE 2A AND SURFACE FROM DRONE SURVEYS MPA0825 AND MPA0925, FOR STAGE 2B.
 - 11) WCA1 AREA CALCULATED BETWEEN SURVEYED SURFACE AND SURFACE AS SUPPLIED BY GHD/SERVICE STREAM DATED 13/12/2023. CALCULATION BOUNDARIES ADOPTED FROM GHD PLAN#12610307-C005, REV.0.

**SERVICESTREAM
MOUNT PIPER - ASH PLACEMENT
SURVEY : 3rd NOVEMBER 2025**

SCALE - 1:5000 (A3 SHEET)

DATUM: MGA (ZONE56)



CEH SURVEY

CONSULTING LAND, ENGINEERING AND MINING SURVEYORS

"Astrolabe" 1 Rutherford Lane,
LITHGOW 2790

ABN: 68 056 544 551 Office: (02) 6351 2281
Email: survey@ceh.com.au Website: www.ceh.com.au



Liability limited by a scheme approved under Professional Standards Legislation.

DATE	03-11-2025
AMENDED	14-11-2025
SURVEYOR	TH/BN
DRAWN	TH/GM
CHECKED	

DRAWING No:
MPA1025
(as surveyed)

CCAD6 JOB & DWG:
MPA1025_gm - MPA1025 as survey



APPENDIX D

BRINE COMPOSITION DATA

Parameter	Values from 1999 SEE Average ^b	2003 – 2006 Average ^b	July 2017 - Dec 2017 Average ^a	July 2019 – June 2020 Average ^c	July 2020 – June 2021 Average ^d	July 2021 – June 2022 Average Waste Pond A ^e	July 2021 – June 2022 Average Waste Pond B ^e	July 2022 – June 2023 Average Waste Pond A ^f	July 2022 – June 2023 Average Waste Pond B ^f	July 2023 – June 2024 Average Waste Pond A ^g	July 2023 – June 2024 Average Waste Pond B ^g	July 2024 – December 2025 Average Waste Pond A ^h	July 2024 – December 2025 Average Waste Pond B ^h
pH	7.9	8.1	7.9	9.3	8.75	10	10	10	9.82	11	11	10.5	10.7
Cond (us/cm)	63,664	127,982	88,556	61,320	73,196	58,797	51,302	68,118	67,757	69,253	64,596	68,330	66,702
TDS (mg/L)	116,650	137,170	118,500	64,257	89,948	61,111	51,341	75,264	75,000	79,589	69,810	71,244	69,921
Alk (CaCO ₃)	1,360	1,346	976	14,735	6,067	11,836	22,943	14,243	19,708	33,904	41,621	32,024	41,707
Cl (mg/L)	19,864	23,889	10,390	7,776	8,270	10,298	7,905	9,700	8,887	7567	4927	7,452	4,763
F	21.178*	125.66	64.65	55.40	72.63	38.00	48.00	46.00	72.00	62	62	71	79
SO ₄ (mg/L)	49,670	66,767	67,378	28,302	47,395	19,172	7,943	12,934	10,602	22,171	16,308	22,949	17,208
Na (mg/L)	25,678	30,103	37,400	23,475	28,694	19,797	17,305	26,418	28,685	28,456	26,724	26,470	27,659
K (mg/L)	4,258	7,362	3,460	1,721	2,518	1,738	1,498	2,380	2,045	1938	1580	1683	1750
Ca (mg/L)	645	606	780	696	458	146	29	164	22	25	26	43	26
Mg (mg/L)	5,480	9,010	4,010	1,540	2,541	88	57	194	71	43	50	76	34
ug/L													
As	409 ^{^^^}	143	438	522	199	209	209	225	255	663	310	2688	449
Ag	1.4 ^{^^}	<50	10	<1	<1	4.7	6.6	5.5	5.7	5.7	4.9	<10	<10
Ba	272 [*]	30	1,000	6.43	116	95	5.9	136	11	14	5.3	37.6	14
Be	17 [^]	5.8	-	<10	<10	5	5	5.5	5.7	5.7	5	<10	<10
B	73,560 [*]	115,000	35,800	41,500	9,570	4,738	2,847	6,897	3,612	4841	3152	9022	4178
Cd	19 ⁺	42	5.3	2.3	3.58	4	2.7	4.5	4.1	4	2.5	12.5	1.7
Cr ^{***}	49 ⁺	<50	1,050	50	40.4	34	48	26	53	79	97	146.5	209.5
Cu	7,858 [*]	7,197	12,400	5,991	4,626	764	237	1,746	245	422	365	698.7	448
Fe	833 [*]	-	1,580	151	340	884	201	172	234	160	113	380	876
Hg	1.35 ^{^^}	-	0.04	0.11	0.23	0.23	0.23	0.19	0.14	0.14	0.4	< 0.4	0.7
Mn	17,530 [*]	34,000	7,210	5,170	231	427	17	639	20	59	16	275	60.8
Mo	2,600 ^{^^}	-	-	2,625	2,490	5,146	4,877	8,505	8,602	7096	6317	9413	7355
Ni	4,187 [*]	4,017	3,880	348	1,570	492	309	808	455	367	307	553	276.7
Pb	6 ^{^^}	-	10	<10	11.6	7.2	5	25	6.1	7.4	5.3	24	13
Se	245 [*]	-	130	115	114	99	50	166	68	564	119	2789	264.5
Zn	2,020 [*]	-	1,050	2,180	1,373	1,477	223	3,679	336	493	377	779	288

a. Brine composition data provided by EnergyAustralia on 01 August 2018;
b. Connell Wagner (2007). Statement of Environmental Effects, Mount Piper Power Station, Extension of Brine Conditions Ash Placement Area. Prepared by Environmental Services, Pacific Power International for Delta Electricity, 21 June 2007.
c. data based on Nalco monitoring point reference 1050, EA BC Waste Pond
Notations relate to Average Trace element values, from 1999 Statement of Environmental Effects including:
* mostly 10 – 15 analyses (sources Hodgson, 1999) – AWT, 1996
** EPA (1999a) ^ one analysis ^^ 3 analyses ^^^ 5 analyses + 6 analyses
*** Total chromium reported (CrVI <25ug/l)
d. Brine composition data provided by EnergyAustralia in July 2021 – combined data of BC Waste Pond A & B.
e. Brine composition data provided by EnergyAustralia in August 2022 – averages of data for BC Waste Pond A & BC Pond B.
f. Brine composition data provided by EnergyAustralia on July 2023 – averages of data for BC Waste Pond A & BC Pond B.
g. Brine composition data provided by EnergyAustralia on July 2024 - averages of data for BC Waste Pond A & BC Pond B.
h. Brine composition data provided by EnergyAustralia on July 2024 - averages of data for BC Waste Pond A & BC Pond B.



APPENDIX E

STORMWATER FLOW VOLUME DATA

Mt Piper Power Station - LDP12 (formerly LDP01) discharge volumes

Date	Kilolitres / day	Start Pump (hh.mm)	Cease Pumping (hh.mm)	Pump Duration (hrs)	Pump Rate (L/sec)
2/07/2024	5409.93	1350	1629	10.567	142.22
3/07/2024	3522.04	805	1515	7.183	136.20
2/08/2024	3085.27	1102	1722	6.350	134.96
5/08/2024	2470.10	1043	1559	5.283	129.87
2/10/2024	2739.31	1107	1647	5.667	134.28
3/10/2024	2021.18	739	1157	4.317	130.06
28/11/2024	1986.51	1030	1449	4.333	127.34
11/12/2024	1613.69	1220	1655	3.050	183.00
12/12/2024	3405.88	841	1702	6.550	144.44
13/12/2024	3183.58	906	1541	6.317	140.00
16/12/2024	3507.02	957	1653	6.967	139.83
17/12/2024	1488.59	851	1151	3.017	137.07
9/01/2025	3802.08	1033	1620	5.500	192.02
10/01/2025	574.22	819	928	1.150	138.70
14/01/2025	2333.02	1122	1602	4.683	138.38
15/01/2025	588.14	854	1003	1.200	136.14
12/02/2025	3550.18	1024	1712	6.817	144.67
13/02/2025	1574.58	746	1050	3.083	141.85
14/02/2025	1650.30	832	1151	3.317	138.22
26/02/2025	948.20	1302	1456	1.917	137.42
29/04/2025	2433.49	1205	1651	4.767	141.81
30/04/2025	4358.13	753	1637	8.750	138.35
1/05/2025	1105.20	753	1007	2.250	136.44
29/05/2025	1799.05	1333	1658	3.450	144.85
30/05/2025	4566.45	802	1656	8.933	141.99
2/06/2025	3013.92	1003	1611	6.150	136.13
3/06/2025	603.51	755	910	1.267	132.35
1/07/2025	2231.64	1126	1558	4.550	136.24
8/07/2025	2691.39	1126	1641	5.267	141.95
9/07/2025	3811.11	817	1341	7.617	138.99
11/07/2025	1952.18	832	1229	3.967	136.71
24/07/2025	2018.90	1305	1711	4.117	136.23
25/07/2025	1465.08	1129	1431	3.050	133.43
5/08/2025	2060.22	1305	1709	4.083	140.15
6/08/2025	3254.37	811	1444	6.567	137.66
8/08/2025	1902.94	803	1157	3.917	134.96
27/08/2025	2234.22	1116	1646	4.850	127.96
28/08/2025	528.57	741	856	1.233	119.05
29/08/2025	1955.31	756	1232	4.617	117.65
3/09/2025	2288.18	1103	1630	5.467	116.27
4/09/2025	1660.54	748	1147	4.000	115.32
12/09/2025	2922.74	1116	1657	5.700	142.43
15/09/2025	2419.63	1053	1543	4.850	138.58
17/09/2025	2466.57	745	1339	5.917	115.80
18/09/2025	1135.14	745	1027	2.717	116.07
TOTAL	106332	-	-	-	-



APPENDIX F

SITE WEATHER DATA

Month	Jul-24			Aug-24			Sep-24			Oct-24			Nov-24			Dec-24		
Measurement	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall
Date	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm
1	-0.9	8.5	0.2	-1.8	9.3	0.0	3.9	17.3	0	4.0	17.9	0	4.9	20.4	0	9.8	19.0	1.6
2	4.4	8.2	0.2	3	10.7	0.2	4.8	14.3	0	9.1	16.0	0.2	9.5	18.3	0	7.8	25.1	0.2
3	4.5	8.5	0.6	33	121	0.2	-1.1	14.2	0	6.7	16.6	0	10.6	25.3	0	12.2	19.6	13
4	5.7	10	0.6	-4.6	11.5	0.2	-3.3	17.7	0	2.5	17.7	0.4	10.3	23.0	0	13.4	21.1	0.2
5	5	9.6	1.0	0	10.8	0.2	2.1	19.3	0	9.1	17.1	1	12.3	23.1	0	12.6	25.8	5
6	4.2	9.2	0.2	-1.5	9.9	0.2	4.1	20.3	0.2	10.5	18.2	0	9.9	29.3	0	13.0	23.6	2.8
7	1.4	11	0.0	-25	14.7	0.2	6.1	20.5	0	7.2	20.3	0	9.7	27.2	4.4	14.3	21.4	26
8	7	11.4	6.4	-3.3	14.2	0.2	5.5	13.9	0	5.6	16.4	0	6.7	19.9	0.2	13.1	24.1	0.2
9	3.8	11.7	2.0	1.1	13	0.6	2.6	14.9	0	5.4	8.9	0	2.8	23.5	0	10.7	23.0	0
10	5.7	9.9	0.2	-1.2	14.2	0.2	0.1	18.4	0	6.5	20.0	0.2	9.1	25.8	0	10.0	22.5	0
11	-0.8	11.9	0.2	4.9	13.8	0.0	0.5	19.1	0.2	4.5	21.6	0.2	9.4	15.9	0	7.7	22.0	0
12	-0.2	11.1	0.0	8	10.9	2.6	5.9	14.0	0.2	5.3	12.0	0	10.0	21.1	0	4.5	24.3	0
13	4	9.1	0.0	8.8	15.4	1.6	0.9	14.9	0.2	5.0	17.2	0	8.3	19.1	8.6	7.3	25.5	0
14	2.8	5.6	0.0	9.5	13.2	12.0	-1.4	15.2	0.2	4.5	18.2	8.2	11.8	19.5	0.2	11.7	27.3	0
15	1.3	4.1	0.4	8.8	14.1	2.0	-3.3	10.6	0	7.6	12.5	0	11.8	15.8	0	11.5	29.5	0
16	1.9	4.4	0.8	7.3	14.7	0.6	-6.3	13.0	0.2	7.1	12.5	0.2	12.8	23.2	0	10.6	29.1	0
17	4.3	8.4	0.0	5.6	10.5	1.0	-3.5	15.0	0	2.4	21.0	0	12.8	26.4	13.4	10.9	28.1	0
18	2.7	8.1	0.0	5.6	11.8	11.4	-4.3	16.8	0.2	12.0	20.1	3.6	10.1	20.5	10.2	8.2	14.6	0
19	0.7	7	0.0	6.1	11.7	18.2	3.5	17.8	0	8.3	17.9	0	10.1	20.3	0	8.0	18.2	0
20	3.3	7.1	6.4	4.6	16	0.0	1.5	14.8	0	5.9	22.5	0.4	11.0	21.0	0	3.8	24.0	0
21	2.1	7.4	0.0	7.4	16.7	0.2	4.1	13.8	0	4.8	19.4	0	6.5	20.4	0	6.6	26.4	0
22	-0.8	10	0.0	2.6	14.2	0.0	5.1	16.3	0	2.1	23.8	0	4.1	21.5	0	10.4	26.2	0
23	-22	11.4	0.4	-0.6	15.6	0.2	1.2	19.4	0	4.2	23.3	0.2	5.8	22.6	0	6.6	16.6	0
24	-3.2	14	0.2	6.8	19.1	2.4	2.0	21.2	0	6.4	19.3	0	6.6	25.1	0	5.8	21.9	0
25	4.6	14.6	1.0	10.7	15.5	4.6	7.9	20.1	3	2.1	15.3	0	6.7	25.2	0	3.4	26.0	0
26	-7	13.3	14.2	4.2	15.4	0.8	4.1	11.0	19.4	2.5	16.7	0	9.2	25.7	0	6.3	27.7	0
27	-1	11.5	8.0	-0.4	18	0.4	4.4	9.0	0.6	3.8	20.4	0	9.7	23.0	0.4	13.3	26.8	2.6
28	1.3	5.4	0.2	8.7	18.7	0.0	5.7	12.1	0	2.9	22.9	0	11.3	20.8	50.2	6.4	20.9	0
29	-1.5	7.6	0.2	5.7	15.2	0.0	8.1	15.9	3	8.6	22.8	0	11.5	15.1	10	2.5	24.1	0
30	-3.7	9.4	0.2	3.9	20.1	0.0	7.1	17.2	1	7.5	23.7	0	12.6	14.6	25.2	10.1	24.3	0
31	4	8.8	0.4	7.7	15.6	0.0	-	-	-	5.2	22.3	0.6	-	-	-	9.9	22.1	11.4
Min	-22.0	4.1	0.0	-25.0	9.3	0.0	-6.3	9.0	0.0	2.1	8.9	0.0	2.8	14.6	0.0	2.5	14.6	0.0
Max	7.0	14.6	14.2	33.0	121.0	18.2	8.1	21.2	19.4	12.0	23.8	8.2	12.8	29.3	50.2	14.3	29.5	26.0
Average	1.1	9.3		4.1	17.6		2.3	15.9		5.8	18.5		9.3	21.8		9.1	23.6	
Total			44.0			60.2			28.4			15.2			122.8			63.0

Note:
 "-." signifies data not provided
 Weather Observations from Mt Piper Weather Station

Month	Jan-25			Feb-25			Mar-25			Apr-25			May-25			Jun-25			
Measurement	AT 2M 1Hr Min	AT 2M 1Hr Max	Rain	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min
Date	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C
1	9.8	25.7	0.2	15.3	22.4	0	11.0	31.3	0	9.2	17.1	0.0	5.7	11.4	0	-1.7	14.9	0.4	3.2
2	10.1	16.5	0.2	14.5	25.2	0	12.7	29.8	0.2	6.5	20.9	0.0	4.9	13.1	0.2	1.2	13.5	0.2	4.2
3	10.1	20.3	0	11.2	27.3	0	14.2	22.0	0	3.8	19.7	0.0	4.4	14.8	0.2	2.2	13.5	0.2	4.8
4	9.5	24.1	13	11.7	29.8	5.2	14.2	19.8	0.6	3.0	21.4	0.0	3.7	17.6	0.2	-3.0	8.6	0	-0.2
5	7.8	27.4	11.8	13.9	26.7	4.6	13.5	21.3	0.2	2.5	19.3	0.0	6.3	17.7	0	-4.9	12.0	0.2	-3.0
6	9.5	28.5	12.4	15.7	26.1	0.2	14.0	19.6	0	-0.2	19.7	0.0	5.9	18.4	0.2	-4.0	10.8	0.2	2.7
7	9.1	15.4	6	11.6	30.5	0	12.9	17.9	0.2	4.6	18.4	0.0	6.1	17.9	0	3.9	9.3	0	2.3
8	8.4	14.1	0.2	13.0	27.2	9.6	12.6	19.6	0.4	4.6	18.3	0.0	7.7	17.1	0	0.3	4.2	3.8	0.6
9	8.5	17.8	1.6	11.8	26.1	0.4	14.1	21.0	0.2	8.5	20.7	0.0	3.1	14.5	0	0.4	4.7	2.6	1.1
10	12.1	21.8	0.4	11.9	18.7	31.6	15.3	21.3	0.2	7.1	19.2	0.0	3.6	14.1	0.4	3.5	5.9	0.2	2.1
11	14.3	21.2	23	9.7	21.3	5.4	15.6	20.5	0	4.7	22.8	0.2	9.4	13.9	2.6	-1.1	5.5	0	2.2
12	13.1	21.6	1.4	13.1	21.5	0	14.2	19.4	1.8	9.0	20.2	0.0	10.2	17.0	0.2	-3.7	7.7	0.2	-1.5
13	14.0	27.7	0	16.0	25.3	0	11.8	27.2	0.2	7.0	22.2	0.2	10.5	14.4	0.2	-2.4	9.6	0	-1.8
14	15.8	29.1	0	17.3	24.8	3.2	11.5	29.6	0	6.9	23.2	0.0	5.8	16.9	0	-1.1	11.6	0.2	-4.0
15	13.6	30.6	8	6.9	20.2	0.2	12.9	31.4	0	6.0	16.2	0.2	5.4	13.0	0	-1.4	9.8	0.4	-4.1
16	11.1	18.3	0.2	3.5	17.6	0	14.9	28.6	0	5.2	18.8	0.0	9.0	13.1	4.6	-4.4	10.0	0.2	-5.3
17	8.2	14.4	0	5.7	21.5	0	7.0	19.2	0	4.1	20.1	0.0	1.8	15.8	0.2	-0.8	10.4	0	-7.9
18	10.1	18.7	1.8	4.0	23.3	0.2	8.4	18.4	0	1.7	23.4	0.2	1.9	9.2	0	-3.6	11.4	0.2	-5.2
19	10.2	17.9	1.8	7.9	24.6	0	9.6	26.2	0	2.4	23.4	0.0	5.2	9.0	0.2	-5.7	13.0	0.2	-5.6
20	6.4	26.1	0	12.7	17.7	0	11.8	27.6	0	3.3	22.7	0.0	5.4	10.5	0.0	-6.6	16.1	0.2	-7.3
21	8.7	28.3	0	12.5	21.8	0	12.0	22.8	10	5.3	16.8	0.0	8.9	11.5	0.8	-5.9	16.0	0.2	-1.6
22	12.6	30.3	5.6	12.3	25.6	0	14.4	24.9	0	4.5	14.7	3.4	9.8	12.1	31.6	-6.2	15.5	0	5.7
23	12.8	17.6	0	10.0	26.2	0	15.0	17.8	1	11.3	15.8	4.0	6.4	14.1	5.2	-2.1	13.2	0.2	1.8
24	11.8	23.9	3.2	12.3	29.5	0	14.6	21.8	0.2	8.8	18.6	0.2	3.2	11.4	0	7.6	11.8	12.6	-5.1
25	12.8	27.8	0	15.2	20.2	0	14.8	20.6	0	7.3	19.4	0.0	1.6	12.1	0	2.0	6.5	9.6	-7.8
26	11.8	27.5	0	13.8	28.0	0	12.9	22.3	0.2	8.6	18.3	0.0	-1.0	12.8	12.8	-4.2	7.9	0	3.2
27	13.7	31.8	0	14.0	29.8	3.6	10.7	18.2	0.2	10.4	12.7	32.8	3.9	11.4	4.8	-5.5	9.6	0.2	4.4
28	15.8	33.7	0.2	13.6	29.6	0	12.6	17.2	8	6.3	16.5	0.2	1.2	10.3	0	0.6	11.9	0	3.5
29	11.9	26.2	0.8	-	-	-	12.8	17.5	18	7.5	17.6	6.0	0.4	9.5	0	-2.1	11.0	0.2	2.8
30	15.0	21.5	0.6	-	-	-	12.8	20.5	0	6.2	10.5	0.2	-1.7	14.9	0.4	-3.5	11.7	0.2	1.6
31	15.1	18.0	0.2	-	-	-	11.3	19.0	0	-	-	-	-0.6	14.5	0	-	-	-	3.2
Min	6.4	14.1	0.0	3.5	17.6	0.0	7.0	17.2	0.0	-0.2	10.5	0.0	-1.7	9.0	0.0	-6.6	4.2	0.0	-7.9
Max	15.8	33.7	23.0	17.3	30.5	31.6	15.6	31.4	18.0	11.3	23.4	32.8	10.5	18.4	31.6	7.6	16.1	12.6	5.7
Average	11.4	23.3		11.8	24.6		12.8	22.4		5.9	19.0		4.8	13.7		-1.7	10.6		-0.4
Total			92.6			64.2			41.6			47.6			64.8			32.6	

Note:
 "-" signifies data not provided
 Weather Observations from Mt Piper Weather Station

Month	Jul-25		Aug-25			Sep-25			Oct-25			Nov-25			Dec-25		
Measurement	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall
Date	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm
1	7.0	33	2.4	6.3	1.4	-4.2	16.7	0.2	4.6	17.5	0	9.6	19.3	10.8	4.5	13.3	2
2	8.5	1.4	4.6	7.9	13.4	0.0	14.6	0	1.2	14.2	0.6	7.9	23.7	0.2	3.7	15.6	0
3	9.5	0	7.0	9.9	2	-1.6	15.1	0.2	3.4	14.7	0	9.0	26.7	0.6	1.5	22.9	0
4	12.1	0	4.7	12.6	1	2.0	16.5	0	1.5	20.7	0	7.4	12.2	1.6	4.1	26.8	0
5	13.0	0.2	2.4	14.2	0.2	-2.3	18.1	0	2.2	22.5	0	3.4	16.6	0	7.3	30.0	0
6	13.2	4	-1.5	11.6	0.2	2.9	17.2	0	10.0	22.0	0.2	0.3	23.5	0	12.2	30.8	0
7	7.8	0.4	-4.0	9.7	0	0.1	21.0	0.2	9.6	17.3	0	11.2	24.3	0	12.2	24.1	0
8	8.4	0.2	4.3	8.0	0	5.5	20.7	0	6.5	24.7	1.2	11.7	25.4	0	9.9	26.9	0
9	11.7	0	5.0	9.4	1.8	6.6	17.0	21.8	11.6	17.9	1	4.9	16.4	0	5.8	30.1	0
10	8.1	4	4.9	9.7	0.6	4.7	12.7	24.2	6.6	21.0	0	3.9	19.1	0	13.1	27.6	0
11	7.2	0.2	2.4	9.8	0.2	3.2	11.2	1	4.6	20.7	0	1.2	18.0	0	11.3	15.4	20.2
12	9.8	0	-1.0	14.0	0	-1.4	13.6	0.2	4.2	21.4	6.6	-0.5	17.0	0	10.6	16.7	5.6
13	10.6	0.4	-3.7	11.4	0	-2.3	17.3	0.2	4.1	16.4	0	0.5	22.2	0	8.2	24.2	10.4
14	9.5	0	3.5	11.5	0.2	-2.4	17.8	0.2	4.6	17.8	0	3.5	24.3	0	11.1	23.8	5.6
15	5.0	0.2	1.7	14.7	0	-0.3	20.1	0	0.9	23.5	0	11.8	25.2	0.8	7.2	25.0	0
16	7.3	0.2	0.8	9.1	0.4	9.5	21.5	0.2	4.6	24.9	0	10.5	22.5	0	11.4	19.8	0
17	13.4	0.4	-4.2	8.5	0.2	5.1	16.1	6	11.3	25.7	0.2	5.7	15.2	0	11.9	27.9	0
18	8.7	0	-5.7	10.2	0.2	-0.7	19.3	0	10.4	22.3	0	4.6	23.3	0	11.7	30.2	0
19	12.4	0.4	2.4	10.7	1.4	-2.0	18.6	2.8	8.9	24.3	0	4.5	26.8	0	14.8	31.0	0.2
20	12.6	0.2	4.0	7.5	14.2	3.1	11.7	4.8	9.5	27.7	0	6.9	25.7	0.2	16.0	28.1	0.8
21	14.2	0	4.8	7.9	21.4	0.5	13.1	0	9.9	28.8	0	11.0	14.7	0	16.3	30.9	0.6
22	13.0	2.4	5.8	14.2	5.2	2.4	13.6	0	12.5	28.1	0.8	11.6	16.4	0	11.5	23.7	1
23	8.9	14	1.8	14.2	0.2	-4.2	15.2	0	6.8	21.4	0	10.9	24.0	14.2	9.5	23.6	0
24	8.7	0.2	-1.1	14.2	0	4.1	17.4	0	4.2	18.2	0	8.0	27.4	0	9.3	24.9	0
25	10.4	0.2	2.3	19.6	0.2	4.1	18.0	0	4.0	18.5	0	12.5	28.1	0	5.6	23.3	0
26	10.0	10.6	2.1	20.2	0.2	3.5	22.0	0	8.7	17.7	1.4	11.1	25.4	0	6.7	15.5	0
27	5.9	6.6	5.5	13.3	5.6	4.7	24.7	0	5.9	16.9	0.6	6.1	21.3	0	2.1	21.1	0
28	6.3	1.4	2.9	9.7	0.6	6.9	25.6	0	4.5	6.4	6.6	3.7	24.9	0	4.3	19.7	0
29	9.3	0.2	0.8	11.0	5.8	6.1	22.8	0	6.2	12.0	1.6	7.4	19.5	4	1.8	24.5	0
30	4.7	8.2	-0.2	6.5	1.6	6.6	26.1	0	4.2	19.2	0.2	4.2	17.5	0	4.2	28.6	0
31	7.1	0.4	-4.2	14.9	0.2	-	-	-	10.5	21.3	0.0	-	-	-	9.1	25.0	1.2
Min	4.7	0.0	-5.7	6.3	0.0	-4.2	11.2	0.0	0.9	6.4	0.0	-0.5	12.2	0.0	1.5	13.3	0.0
Max	14.2	33.0	7.0	20.2	21.4	9.5	26.1	24.2	12.5	28.8	6.6	12.5	28.1	14.2	16.3	31.0	20.2
Average	9.5		1.6	11.4		2.0	17.8		6.4	20.2		6.8	21.6		8.7	24.2	
Total		89.4			78.4			62.0			21.0			32.4			47.6



APPENDIX G

MONITORING PROGRAM

Monitoring Location	Location Type	Sampling Frequency	Number of Samples in 2024/25	Notes
MPGM4/D1	Groundwater	Quarterly	6	
MPGM4/D2	Groundwater	Quarterly	6	
MPGM4/D3	Groundwater	Quarterly	6	
MPGM4/D4	Groundwater	Quarterly	6	
MPGM4/D5	Groundwater	Quarterly	6	
MPGM4/D8	Groundwater	Quarterly	6	
MPGM4/D9	Groundwater	Quarterly	6	
MPGM5/D5	Groundwater	Quarterly	6	
MPGM5/D6	Groundwater	Quarterly	6	
D10	Groundwater	Quarterly	7	
D15	Groundwater	Quarterly	6	
D16A	Groundwater	Quarterly	6	
D17	Groundwater	Quarterly	4	Reported to be blocked during the September and December 2025 monitoring rounds.
D18	Groundwater	Quarterly	8	
D19	Groundwater	Quarterly	6	
D20	Groundwater	Quarterly	2	Reported as blocked in March 2025). Not required by the WMP or EPL, data provided for reference only.
D102	Groundwater	Quarterly	6	
D103	Groundwater	Quarterly	6	
D104	Groundwater	Quarterly	6	
D105	Groundwater	Quarterly	6	
D106	Groundwater	Quarterly	6	
D107	Groundwater	Quarterly	6	
D110	Groundwater	Quarterly	6	
D113	Groundwater	Quarterly	6	
D117	Groundwater	Quarterly	6	
D119	Groundwater	Quarterly	6	
MPGM/24	Groundwater	Quarterly	0	Dry
MPGM/25	Groundwater	Quarterly	0	Dry
MPGM/26	Groundwater	Quarterly	0	Dry
MPGM/27	Groundwater	Quarterly	0	Dry

Note:

This list of monitoring locations meets and exceeds the requirements of EPL 13007

Location	Location Type	Monitored Feature	Frequency	Number of Samples in 2024/25	Notes
LDP12	Surface Water	Coal Settling Pond (CSP) Discharge	As required by EPL 13007 during discharge	18	
LMP01	Surface Water	Wangcol Creek	Monthly	18	
NC01	Surface Water	Wangcol Creek	Monthly	8	NC01 was unable to be sampled on a monthly basis due to insufficient water as a result of dry conditions between December 2024 and July 2025 and between September and December 2025.
SW_C	Surface Water	Wangcol Creek	Monthly	18	
SW_E	Surface Water	Wangcol Creek	Monthly	18	
WX22 / SW_F	Surface Water	Wangcol Creek	Monthly	18	
SW_G	Surface Water	Wangcol Creek	Monthly	18	

Note:

Sampling of the CSP is conducted routinely at times when discharge is not occurring. These samples are differentiated as CSP (not discharging) and LDP12 (when discharge is occurring). The data from LDP12 and CSP is not representative of instream conditions. Data from LDP12 is regulated by EPL 13007, and is not regulated by the Environmental Goals or ANZG guidelines.

This list of monitoring locations meets the requirements of EPL 13007.

Suite	Parameter	Groundwater	Surface Water
Metals*	Aluminium	X	X
	Antimony	X	X
	Arsenic	X	X
	Arsenic III	X**	X**
	Arsenic V	X**	X**
	Barium	X	X
	Beryllium	X	X
	Boron	X	X
	Cadmium	X	X
	Chromium	X	X
	Chromium III	X**	X**
	Chromium VI	X**	X**
	Cobalt	X	X
	Copper	X	X
	Iron	X	X
	Lead	X	X
	Manganese	X	X
	Mercury	X	X
	Molybdenum	X	X
	Nickel	X	X
Selenium	X	X	
Silver	X	X	
Vanadium	X	X	
Zinc	X	X	
Major ions / physical properties	Fluoride	X	X
	Chloride	X	X
	Chloride (dissolved) ***	X	X
	Calcium	X	X
	Magnesium	X	X
	Sulfate	X	X
	Sulfate (dissolved) ***	X	X
	Carbonate alkalinity	X	X
	Bicarbonate alkalinity	X	X
	Hydroxide alkalinity	X	X
	Total alkalinity	X	X
	Hardness (as CaCO ₃)	X	X
	Dissolved Organic Carbon	X	X
	Potassium	X	X
	Sodium	X	X
	Cyanide (total)	X	X
	Turbidity (NTU)	-	X
Total suspended solids (TSS)	-	X	
Total dissolved solids (TDS)	X	X	
Nutrients	Total phosphorus	X	X
	Nitrogen (as N)	X	X
	Total Kjeldahl Nitrogen (TKN)	X	X
	Nitrate	X	X
	Nitrite	X	-
	Nitrate and nitrite (as N)	X	X
	Ammonia (as N)	X	X
Field measurements	Filterable reactive phosphorus	X	X
	pH	X	X
	Dissolved oxygen (mg/L)	X	X
	Oxidation reduction potential (millivolts)	X	X
	Depth to water (m AHD / m bTOC)	X	-
	Total bore depth (m AHD / m bTOC)	X	-
	Recharge during sampling	X	-
Electrical conductivity (µS/cm)	X	X	
<p>* Groundwater and surface water samples will be analysed for dissolved metals only (field filtered at 0.45 µm), with the exception of iron which will include total (unfiltered) and dissolved (field filtered) analysis for surface water samples. ** Speciated Chromium and Speciated Arsenic will be analysed on a biannual basis for groundwater and surface water. *** Groundwater and surface water samples will be analysed for total (unfiltered) and dissolved (field filtered at 0.45 µm) analysis of sulfate and chloride.</p> <p>This analytical schedule meets and exceeds the requirements of EPL 13007.</p> <p>m AHD = metres Australia Height Datum, m bTOC = metres below top of casing, µS/cm = microSiemens per centimetre, mg/L = milligrams per litre</p>			



APPENDIX H

NALCO

Ecolab | Nalco Water - Global Analytical & Microbiology

Quality assurance/quality control program (2024)

The laboratory's Quality assurance/quality control program ensures that sampling activities and analytical data is accurate, reliable and acceptable.

The Quality assurance/quality control program consists of both internal and external measures.

Internal

- Laboratory instrumentation and field equipment are calibrated at the correct intervals, as prescribed in the relevant NATA 'General equipment table'.
- Regular preventative maintenance is carried out on all key laboratory instrumentation and field equipment.
- Trip blanks (where appropriate) are supplied to monitor contamination.
- Certified reference materials are analysed routinely.
- Duplicate analysis is conducted to check precision.
- Laboratory blanks are analysed to monitor contamination.
- Quality control checks on media are performed.
- All records and subsequent reports are systematically checked.
- Quality control charts are used to statistically monitor trends in data.
- The laboratory is regularly internally audited.

External

- Ecolab Global Analytical & Microbiology laboratory participates in regular chemical and microbiological external proficiency testing programs as well as NATA audits as per their surveillance program.

Sampling and Data Collection

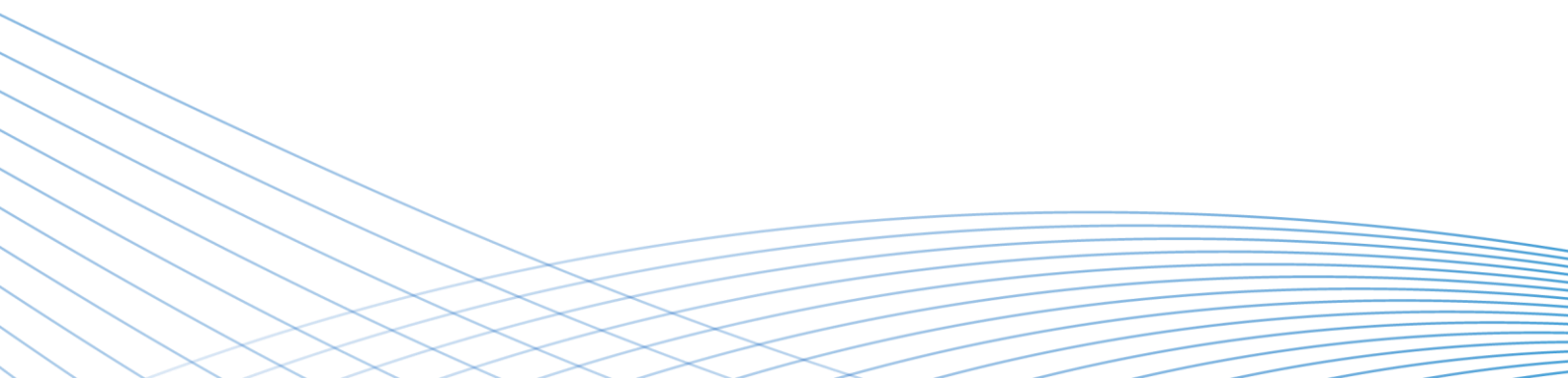
- All sampling is performed by trained personnel in accordance with procedure A-2.18 and relevant parts of Australian Standard 5667, for which NATA accreditation is held.
- Site measurements (Dissolved Oxygen, pH, Turbidity, Temperature and Conductivity) and sampling observations (water depth) are recorded and reported in accordance with procedure CA12125.

Sample Bottles

- Pre-labeled sample containers are used for routine sampling and testing.
- The sample bottles are prepared so that samples are preserved in accordance with Australian Standard 5667.1:1998 and Standard Methods for the Examination of Water and Wastewater, 22nd Edition (APHA).

Delivery of Samples

- Eskies and freezer packs are used to maintain the integrity of the samples during transport from the sampling sites to our Global Analytical & Microbiology laboratory (Sydney).



Ecolab | Nalco Water - Global Analytical & Microbiology

Quality assurance/quality control program (2025)

The laboratory's Quality assurance/quality control program ensures that sampling activities and analytical data is accurate, reliable and acceptable.

The Quality assurance/quality control program consists of both internal and external measures.

Internal

- Laboratory instrumentation and field equipment are calibrated at the correct intervals, as prescribed in the relevant NATA 'General equipment table'.
- Regular preventative maintenance is carried out on all key laboratory instrumentation and field equipment.
- Trip blanks (where appropriate) are supplied to monitor contamination.
- Certified reference materials are analysed routinely.
- Duplicate analysis is conducted to check precision.
- Laboratory blanks are analysed to monitor contamination.
- Quality control checks on media are performed.
- All records and subsequent reports are systematically checked.
- Quality control charts are used to statistically monitor trends in data.
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- Ecolab Global Analytical & Microbiology laboratory participates in regular chemical and microbiological external proficiency testing programs as well as NATA audits as per their surveillance program.

Sampling and Data Collection

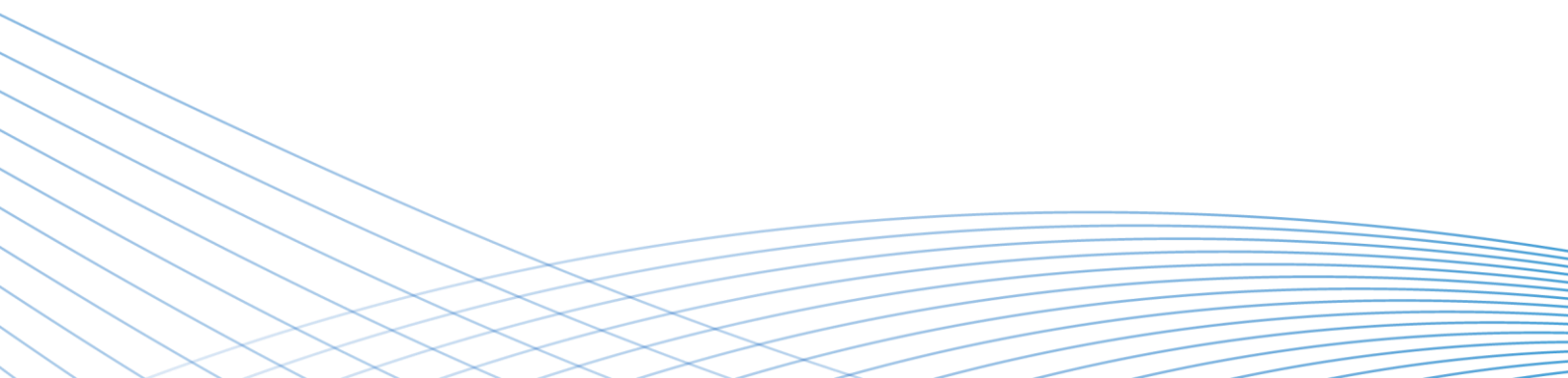
- All sampling is performed by trained personnel in accordance with procedure A-2.18 and relevant parts of Australian Standard 5667, for which NATA accreditation is held.
- Site measurements (Dissolved Oxygen, pH, Turbidity, Temperature and Conductivity) and sampling observations (water depth) are recorded and reported in accordance with procedure CA12125.

Sample Bottles

- Pre-labeled sample containers are used for routine sampling and testing.
- The sample bottles are prepared so that samples are preserved in accordance with Australian Standard 5667.1:1998 and Standard Methods for the Examination of Water and Wastewater, 22nd Edition (APHA).

Delivery of Samples

- Eskies and freezer packs are used to maintain the integrity of the samples during transport from the sampling sites to our Global Analytical & Microbiology laboratory (Sydney).





APPENDIX I

SCREENING CRITERIA COMPARISON

			Adopted Guideline Values	Source of Criteria
FIELD	Dissolved Oxygen (Field)	% Saturation	-	
	Electrical Conductivity (Field)	µS/cm	2600	Environmental Goals
	pH (Field)	pH Units	6.5 - 8.0	Environmental Goals
	Oxidation reduction potential / Redox (Field)	mV	-	
MAJOR IONS / PHYSICAL PROPERTIES	Total Alkalinity	mg/L	-	
	Hydroxide Alkalinity (as CaCO ₃)	mg/L	-	
	Bicarbonate Alkalinity (as CaCO ₃)	mg/L	-	
	Carbonate Alkalinity (as CaCO ₃)	mg/L	-	
	Calcium	mg/L	1000	ANZECC (2000) Livestock Drinking Water
	Calcium Carbonate (Hardness)	mg/L	200	NHMRC (2011) ADWG Drinking Water
	Cyanide	µg/L	7	ANZG (2018)
	Chloride	mg/L	350	Environmental Goals
	Fluoride	mg/L	1.5	Environmental Goals
	Magnesium	mg/L	-	
	Potassium	mg/L	-	
	Sodium	mg/L	180	NHMRC (2011) ADWG Aesthetic Criteria
	Sulfate (as SO ₄)	mg/L	1000	Environmental Goals
	Total Dissolved Solids (TDS) (Filtered)	mg/L	2000	Environmental Goals
NUTRIENTS	Total Phosphorus	µg/L	20	ANZECC 2000 Physical and Chemical Stressors - Upland River
	Filterable Reactive Phosphorus	µg/L	15	ANZECC 2000 Physical and Chemical Stressors - Upland River
	Dissolved Organic Carbon	mg/L	-	
	Ammonia	µg/L	720	ANZG (2018)
	Nitrogen	µg/L	250	ANZECC 2000 Physical and Chemical Stressors - Upland River
	Nitrate	µg/L	2600 ¹	ANZG (2018)
	Nitrite (as NO ₂ -)	µg/L	10000	ANZG (2023) Livestock Drinking Water (DRAFT Guideline Values)
	Nitrite + Nitrate (as N) / Oxides of Nitrogen (NO _x)	µg/L	15	ANZECC 2000 Physical and Chemical Stressors - Upland River
METALS	Aluminium	µg/L	0.8 55 ²	ANZG (2018)
	Antimony	µg/L	9	ANZG (2018)
	Arsenic	µg/L	24	Environmental Goals
	Arsenic III	µg/L	24	ANZG (2018)
	Arsenic V	µg/L	13	ANZG (2018)
	Barium	µg/L	700	Environmental Goals
	Beryllium	µg/L	100	Environmental Goals
	Boron	µg/L	370	Environmental Goals
	Cadmium	µg/L	2	Environmental Goals
	Chromium (VI + III)	µg/L	5	Environmental Goals
	Chromium (VI)	µg/L	1	ANZG (2018)
	Chromium (III)	µg/L	3.3	Environmental Goals
	Cobalt	µg/L	1.4	ANZG (2018)
	Copper	µg/L	5	Environmental Goals
	Iron	µg/L	664	Environmental Goals
	Lead	µg/L	5	Environmental Goals
	Manganese	µg/L	5704	Environmental Goals
	Mercury	µg/L	0.06	Environmental Goals
	Molybdenum	µg/L	10	Environmental Goals
	Nickel	µg/L	550.9	Environmental Goals
	Selenium	µg/L	5	Environmental Goals
	Silver	µg/L	0.05	Environmental Goals
	Vanadium	µg/L	6	ANZG (2018)
Zinc	µg/L	908	Environmental Goals	

Note:

1. For nitrate, ANZG (2018) Guideline applies 1100 µg/L if the CaCO₃ is < 30 mg/L, 2600 µg/L if the CaCO₃ is 30 - 150 mg/L, and 29000 µg/L if the CaCO₃ is > 150 mg/L. Based on site-specific hardness values calculated for monitoring location SW_C within Wangcol Creek, a guideline value of 2600 µg/L has been adopted.

2. For aluminium, ANZG (2018) Guideline applies 0.8 µg/L if the pH is < 6.5 and 55 µg/L if the pH is > 6.5

			Adopted Guideline Values	Source of Criteria
FIELD	Dissolved Oxygen (Field)	% Saturation	-	
	Electrical Conductivity (Field)	µS/cm	2200	Environmental Goals
	pH (Field)	pH Units	6.5 - 8.0	Environmental Goals
	Oxidation reduction potential / Redox (Field)	mV	-	
MAJOR IONS	Calcium	mg/L	1000	ANZECC (2000) Livestock Drinking Water
	Calcium Carbonate (Hardness)	mg/L	200	NHMRC (2011) ADWG Drinking Water
	Total Alkalinity	mg/L	-	
	Hydroxide Alkalinity (as CaCO ₃)	mg/L	-	
	Bicarbonate Alkalinity (as CaCO ₃)	mg/L	-	
	Carbonate Alkalinity (as CaCO ₃)	mg/L	-	
	Cyanide	µg/L	7	ANZG (2018)
	Chloride	mg/L	350	Environmental Goals
	Fluoride	mg/L	1.5	Environmental Goals
	Magnesium	mg/L	-	
	Potassium	mg/L	-	
	Sodium	mg/L	180	NHMRC (2011) ADWG Aesthetic Criteria
	Sulfate (as SO ₄)	mg/L	1000	Environmental Goals
NUTRIENTS	Total Phosphorus	µg/L	20	ANZECC 2000 Physical and Chemical Stressors - Upland River
	Filterable Reactive Phosphorus	µg/L	15	ANZECC 2000 Physical and Chemical Stressors - Upland River
	Dissolved Organic Carbon	mg/L	-	
	Ammonia	µg/L	720	ANZG (2026)
	Nitrogen	µg/L	250	ANZECC 2000 Physical and Chemical Stressors - Upland River
	Nitrate	µg/L	2600 ¹	ANZG (2025)
	Nitrite (as NO ₂ -)	µg/L	10000	ANZG (2023) Livestock Drinking Water (DRAFT Guideline Values)
	Total Kjeldahl Nitrogen (TKN)	mg/L	-	
Nitrite + Nitrate (as N) / Oxides of Nitrogen (NO _x)	µg/L	15	ANZECC 2000 Physical and Chemical Stressors - Upland River	
PHYSICAL	Total Dissolved Solids (TDS) (Filtered)	mg/L	1500	Environmental Goals
	Total Suspended Solids (TSS)	mg/L	-	
	Turbidity (NTU)	NTU	2-25	ANZECC 2000 Physical and Chemical Stressors - Upland River
METALS	Aluminium	µg/L	0.8 55 ²	ANZG (2018)
	Antimony	µg/L	9	ANZG (2018)
	Arsenic	µg/L	24	Environmental Goals
	Arsenic III	µg/L	24	ANZG (2018)
	Arsenic V	µg/L	13	ANZG (2018)
	Barium	µg/L	700	Environmental Goals
	Beryllium	µg/L	100	Environmental Goals
	Boron	µg/L	370	Environmental Goals
	Cadmium	µg/L	0.85	Environmental Goals
	Chromium (VI + III)	µg/L	2	Environmental Goals
	Chromium (VI)	µg/L	1	ANZG (2018)
	Chromium (III)	µg/L	3.3	Environmental Goals
	Cobalt	µg/L	1.4	ANZG (2018)
	Copper	µg/L	3.5	Environmental Goals
	Iron	µg/L	300	Environmental Goals
	Lead	µg/L	5	Environmental Goals
	Manganese	µg/L	1900	Environmental Goals
	Mercury	µg/L	0.06	Environmental Goals
	Molybdenum	µg/L	10	Environmental Goals
	Nickel	µg/L	17	Environmental Goals
	Selenium	µg/L	5	Environmental Goals
	Silver	µg/L	0.05	Environmental Goals
	Vanadium	µg/L	6	ANZG (2018)
Zinc	µg/L	116	Environmental Goals	

Note:

1. For nitrate, ANZG (2025) Guideline applies 1100 µg/L if the CaCO₃ is < 30 mg/L, 2600 µg/L if the CaCO₃ is 30 - 150 mg/L, and 29000 µg/L if the CaCO₃ is < 150 mg/L. Based on site-specific hardness values calculated for monitoring location SW_C within Wangcol Creek, a screening criteria of 2600 µg/L has been applied.

2. For aluminium, ANZG (2018) Guideline applies 0.8 µg/L if the pH is < 6.5 and 55 µg/L if the pH is > 6.5



APPENDIX J

HYDROGRAPHS

INPUTS										
Time Period	Groundwater Wells	Transect (m)	Gological Unit	K (m/day)			Porosity	Groundwater Elevation D110 (mAHD)	Groundwater Elevation D103 (mAHD)	Comment
				Upper	Lower	K (m/day)				
Oct - Nov 24	D110-D103	550	Fill (mine spoil)	-	-	40	0.2	907.62	905.164	The most likely K value and porosity value obtained from the calibrated groundwater flow model (ERM, 2023).
May - June 25								907.62	904.864	
Oct - Nov 25								908.12	905.364	

October - November 2024				
Parameter	Unit	Upper	Lower	Model based
Hydraulic Conductivity (K)				
Calibrated Model Value	m/day	-	-	40
Effective Porosity (n_e)				
Calibrated Model Value	(0-1)	0.2		
Hydraulic Gradient (dh/dl)				
Calculated along inferred groundwater flow line from groundwater elevation data	m/m	-	-	0.0045
Seepage Velocity (v)				
Derived from $v=K(dh/dl)/n_{e,d}$	Unit	Seepage Velocity		
Upper				
Lower	m/year			
Estimated seepage velocity		326		

May - June 2025				
Parameter	Unit	Upper	Lower	Model based
Hydraulic Conductivity (K)				
Calibrated Model Value	m/day	-	-	40
Effective Porosity (n_e)				
Calibrated Model Value	(0-1)	0.2		
Hydraulic Gradient (dh/dl)				
Calculated along inferred groundwater flow line from groundwater elevation data	m/m	-	-	0.0050
Seepage Velocity (v)				
Derived from $v=K(dh/dl)/n_{e,d}$	Unit	Seepage Velocity		
Upper				
Lower	m/year			
Estimated seepage velocity		366		

October - November 2025				
Parameter	Unit	Upper	Lower	Model based
Hydraulic Conductivity (K)				
Calibrated Model Values	m/day	-	-	40
Effective Porosity (n_e)				
Calibrated Model Values	(0-1)	0.2		
Hydraulic Gradient (dh/dl)				
Calculated along inferred groundwater flow line from groundwater elevation data	m/m	-	-	0.0050
Seepage Velocity (v)				
Derived from $v=K(dh/dl)/n_{e,d}$	Unit	Seepage Velocity		
Upper				
Lower	m/year			
Estimated seepage velocity		366		

INPUTS										
Time Period	Groundwater Wells	Transect (m)	Geological Unit	K (m/day)			Porosity	Groundwater Elevation D110 (mAHD)	Groundwater Elevation D105 (mAHD)	Comment
				Upper	Lower	K (m/day)				
Oct - Nov 24	D110-D105	240	Bunnyong Sandstone / Overburden	-	-	4	0.15	907.62	906.83	K and porosity values obtained from the calibrated groundwater flow model (ERM, 2023).
May - June 25								907.62	906.73	
Oct - Nov 25								908.12	907.13	

October - November 2024				
Parameter	Unit	Upper	Lower	Model based
Hydraulic Conductivity (K)				
Calibrated Model Value	m/day	-	-	4
Effective Porosity (n_{eff})				
Calibrated Model Value	(0-1)	0.15		
Hydraulic Gradient (dh/dl)				
Calculated along inferred groundwater flow line from groundwater elevation data	m/m	-	-	0.0033
Seepage Velocity (v)				
Derived from $v=K(dh/dl)/n_{eff}$	Unit	Seepage Velocity		
Upper	m/year	-		
Lower		-		
Estimated seepage velocity		32		

May - June 2025				
Parameter	Unit	Upper	Lower	Model based
Hydraulic Conductivity (K)				
Calibrated Model Value	m/day	-	-	4
Effective Porosity (n_{eff})				
Calibrated Model Value	(0-1)	0.15		
Hydraulic Gradient (dh/dl)				
Calculated along inferred groundwater flow line from groundwater elevation data	m/m	-	-	0.0037
Seepage Velocity (v)				
Derived from $v=K(dh/dl)/n_{eff}$	Unit	Seepage Velocity		
Upper	m/year	-		
Lower		-		
Estimated seepage velocity		36		

October - November 2025				
Parameter	Unit	Upper	Lower	Model based
Hydraulic Conductivity (K)				
Calibrated Model Value	m/day	-	-	4
Effective Porosity (n_{eff})				
Calibrated Model Value	(0-1)	0.15		
Hydraulic Gradient (dh/dl)				
Calculated along inferred groundwater flow line from groundwater elevation data	m/m	-	-	0.0041
Seepage Velocity (v)				
Derived from $v=K(dh/dl)/n_{eff}$	Unit	Seepage Velocity		
Upper	m/year	-		
Lower		-		
Estimated seepage velocity		40		



Figure J-1. Water Levels Over Time - Upgradient / Background Wells
Mt Piper Power Station - Annual Monitoring Report 2024/25
0810778

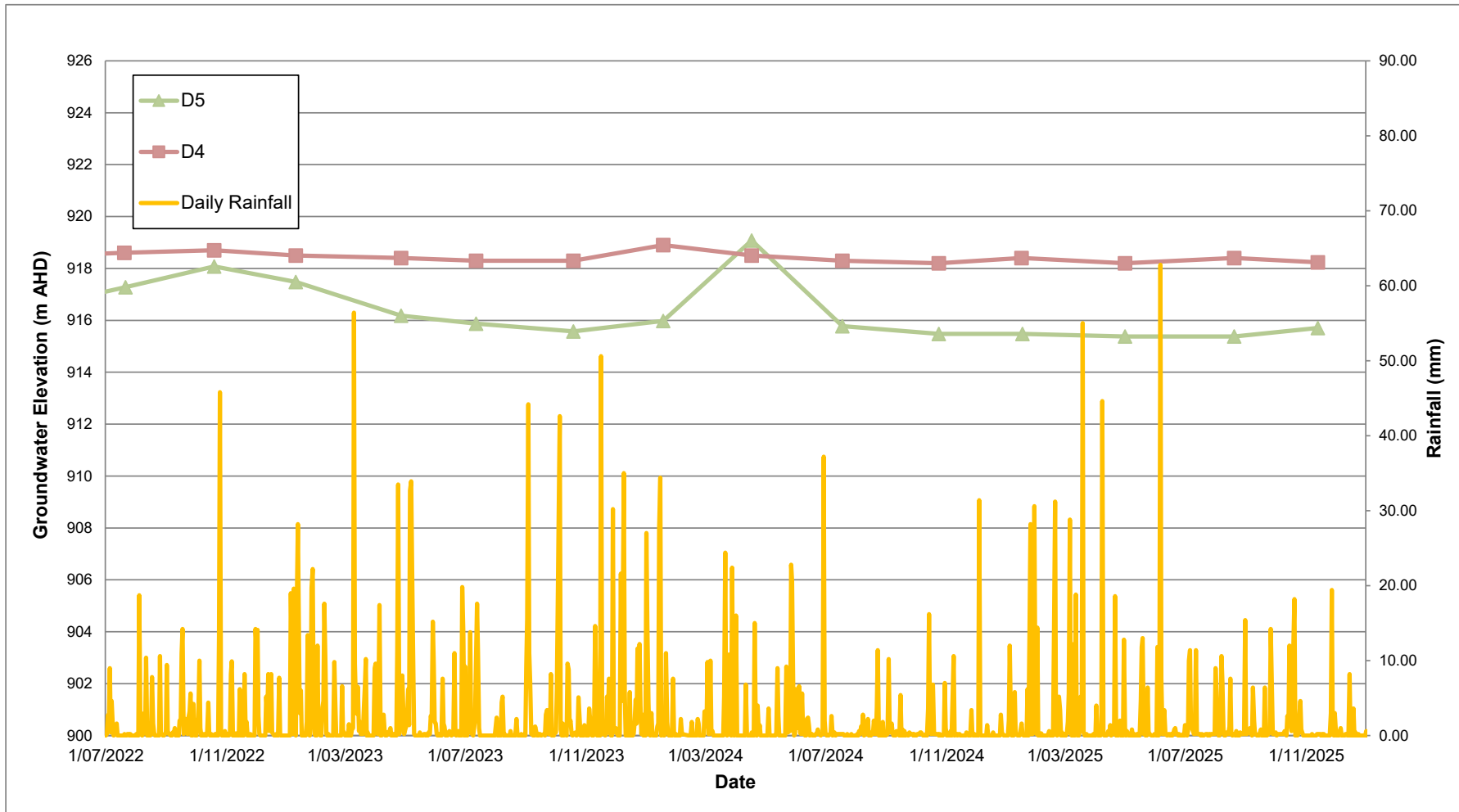


Figure J-2. Water Levels Over Time - Cross-gradient MPAR / Adjacent MPAR North and Adjacent Wangcol Creek
Mt Piper Power Station - Annual Monitoring Report 2024/25
0810778

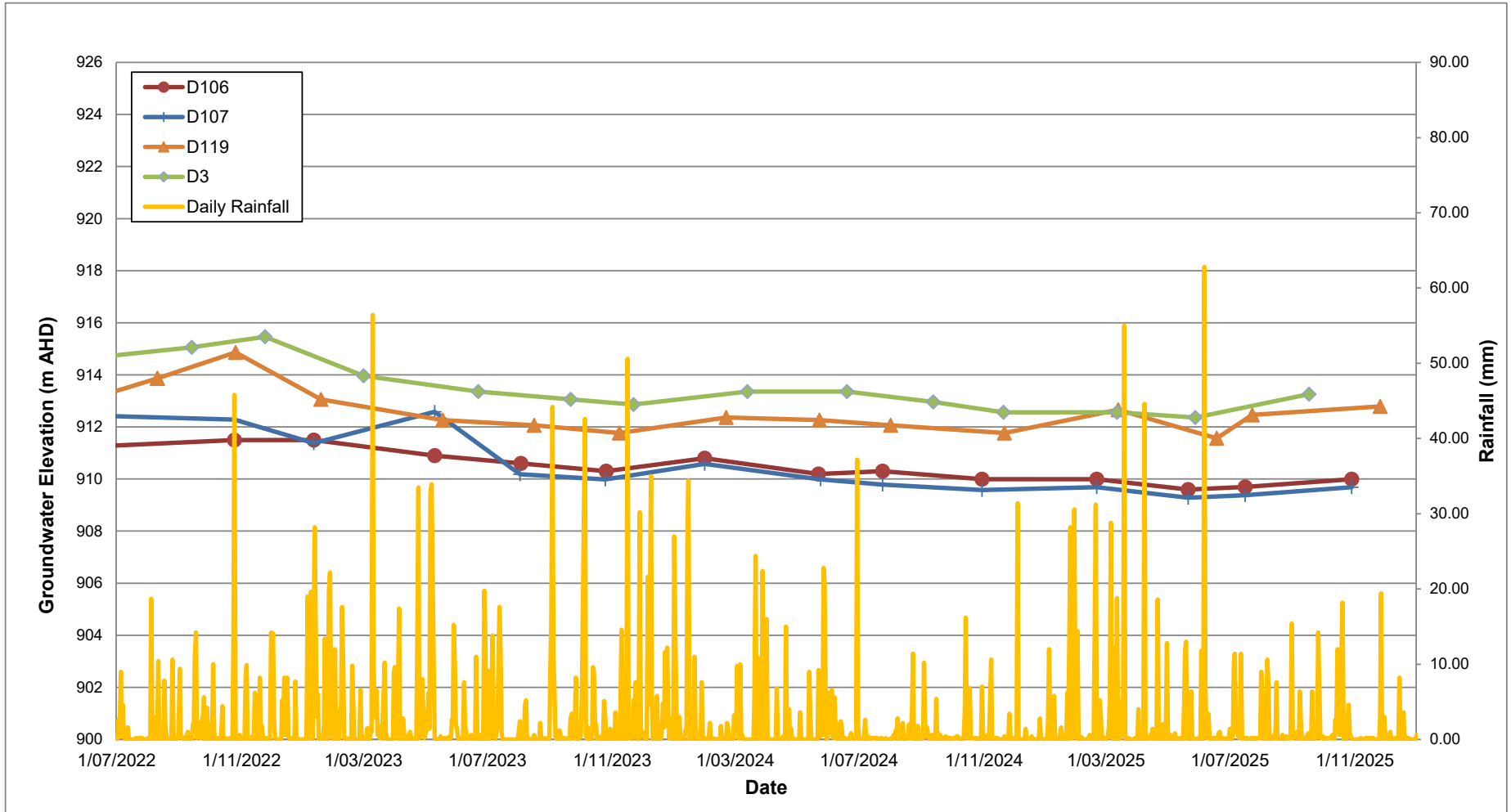




Figure J-3. Water Levels Over Time - Downgradient MPAR, areas Adjacent to Wangcol Creek
Mt Piper Power Station - Annual Monitoring Report 2024/25
0810778

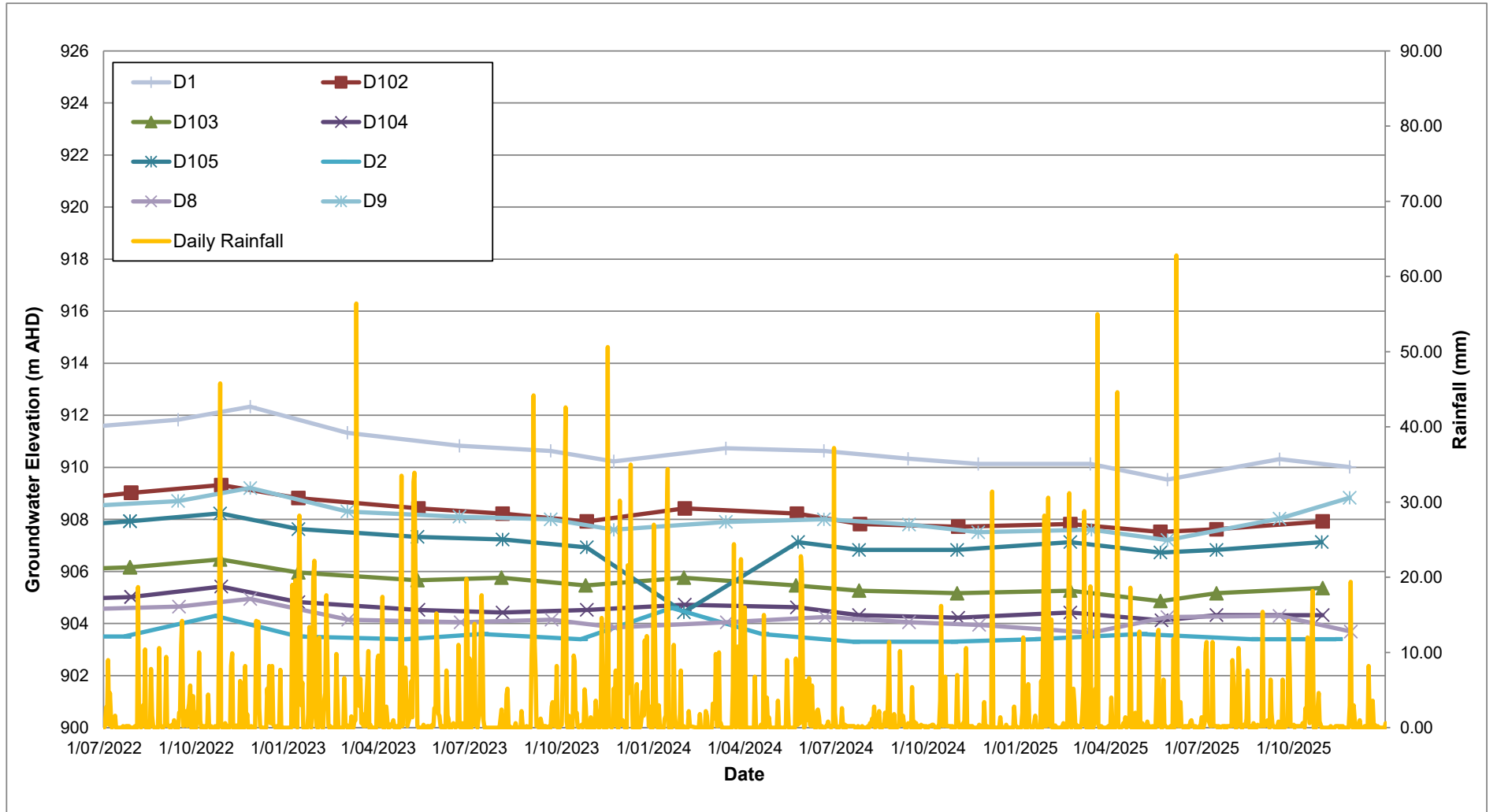




Figure J-4. Water Levels Over Time - Downgradient MPAR, LNAR (North) and Historical Mining Disturbance (East)
Mt Piper Power Station - Annual Monitoring Report 2024/25
0810778

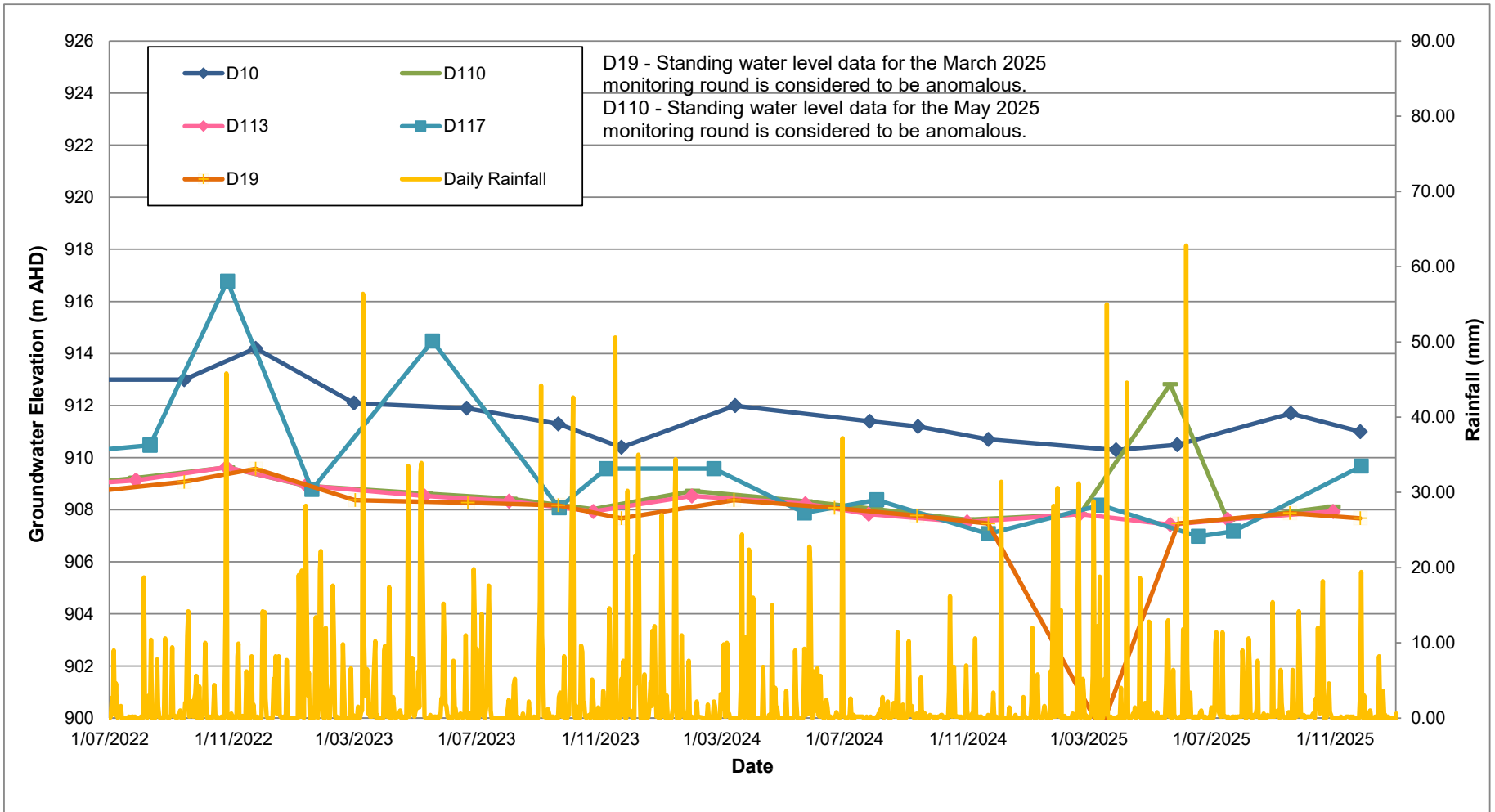


Figure J-5. Water Levels Over Time - Cross-gradient MPAR to the South, LNAR (South) and Historical Mining Disturbance
 Mt Piper Power Station - Annual Monitoring Report 2024/25
 0810778

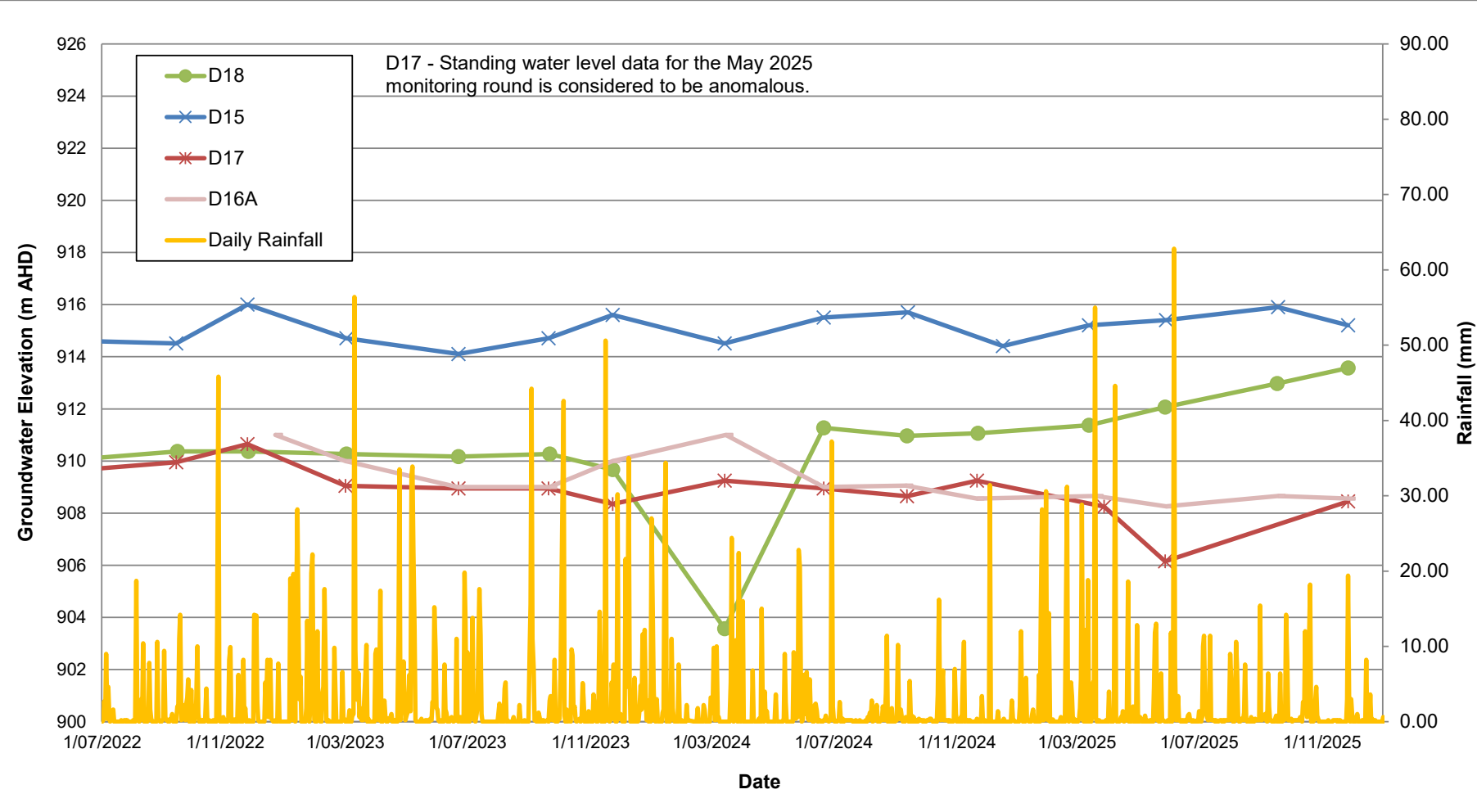
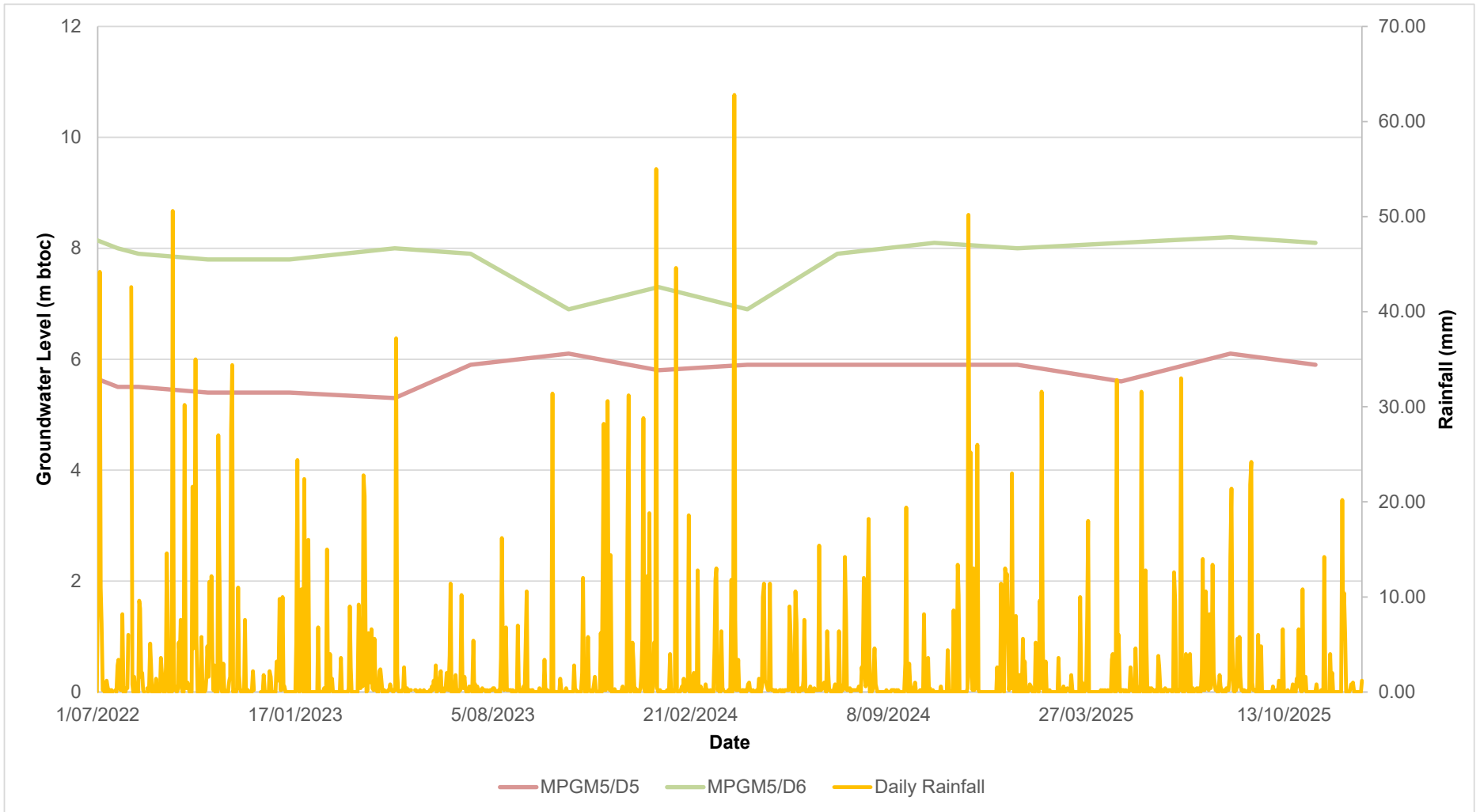




Figure J-6. Water Levels Over Time - Brine Waste Pond Leak Detection Bores
Mt Piper Power Station - Annual Monitoring Report 2024/25
0810778





APPENDIX K

TABULATED GROUNDWATER DATA

Water Quality PZ-Laboratory Parameter				ANZ-Alkalinity						ANZ-Cations and Anions																					
Redox - Field	Dissolved Oxygen - Field	pH - Lab	Electrical Conductivity Field (non-compensated)	Alkalinity - P	Alkalinity - Total as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Calcium	Magnesium	Sodium	Potassium	Sulphate as SO4 2-	Chloride	Fluoride	Total Dissolved Solids	Aluminium - Dissolved	Arsenic - Dissolved	Boron - Dissolved	Copper - Dissolved	Iron - Dissolved	Manganese - Dissolved	Nickel - Dissolved	Zinc - Dissolved							
0	0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0							
Units	mV	mg/L	pH units	µS/cm	mg/L	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	µg/L	µg/L							
Action Levels				6.5 - 8	2600				1000	180	1000	350	1.5	2000	0.8155	24	370	5	664	5704	550.9	6	908								
MOUNT-PIPER-ANZECC/LOCAL SSSL-WG'				Sample ID	Sample Type																										
Date Sampled	Sample ID	Sample Type																													
11/09/2024	D1 20240911	N	50.8	1.6	5.94	9860	<1	192	192	<1	<1	423	422	1530	126	4370	824	<0.500	8240	<10	2	140	<1	22800	16700	1570	<10	117			
20/11/2024	D1 20241120	N	29.7	1.6	5.94	10378	<1	157	157	<1	<1	390	378	1380	112	5060	939	<0.500	8080	<10	5	3560	<1	26600	17500	1680	<10	128			
12/03/2025	D1 20250312	N	12	2.1	6.1	8809	<1	163	163	<1	<1	382	366	1420	114	4490	778	<0.050	9440	<10	2	3350	<1	13700	16100	1660	<10	114			
28/05/2025	D1 20250528	N	151.1	5.6	6.06	6923	<1	100	100	<1	<1	320	302	1000	79.6	3550	738	<1.000	5710	<10	<1	2180	<1	6970	6890	975	<10	73			
17/09/2025	D1 20250917	N	172	6.6	6.38	7726	<1	138	138	<1	<1	394	353	1320	93.3	3720	682	<1.000	6390	90	<1	2260	1	60	10800	1260	<10	102			
28/11/2025	D1 20251128	N	209.6	2.4	5.89	9965	<1	176	176	<1	<1	403	384	1380	119	4210	853	<0.172	7900	10	5	2710	2	41400	19100	1500	<10	123			
28/07/2024	D10 20240728	N	114.1	1	5.78	9333	<1	144	144	<1	<1	291	314	1720	185	4250	635	<1.000	8910	70	2	3550	<1	7870	8720	921	<10	816			
12/09/2024	D10 20240912	N	96.6	1.7	5.87	9562	<1	148	148	<1	<1	283	303	1640	190	4480	675	0.564	7850	40	1	3140	2	7760	7540	950	<10	846			
21/11/2024	D10 20241121	N	86.6	1	5.84	11405	<1	157	157	<1	<1	308	329	1780	201	4570	673	1.23	8960	60	2	4410	1	5680	8670	1090	<10	849			
28/03/2025	D10 20250328	N	-142.8	2.2	6.47	5253	<1	246	246	<1	<1	147	140	799	105	2150	320	0.518	4000	40	4	1730	1	8180	3760	459	<10	54			
28/05/2025	D10 20250528	N	66.4	2.2	6.04	7302	<1	154	154	<1	<1	215	219	1260	140	3110	471	<1.000	5870	90	2	2760	<1	11600	5940	805	<10	158			
18/09/2025	D10 20250918	N	-61.7	2.8	6.29	4771	<1	174	174	<1	<1	130	127	889	101	2030	293	0.427	3700	40	<1	1450	1	9070	3250	418	<10	15			
26/11/2025	D10 20251126	N	148.9	2.8	5.83	7925	<1	128	128	<1	<1	236	227	1250	145	3230	446	0.501	6010	70	4	2730	<1	12100	5680	755	<10	339			
25/07/2024	D102 20240725	N	26.1	2.9	6.11	9018	<1	79	79	<1	<1	561	483	1200	71.3	3930	1030	<1.000	7960	<10	<1	1480	1	38400	12900	1450	<10	60			
31/10/2024	D102 20241031	N	19.8	2	6.05	8965	<1	117	117	<1	<1	526	464	1160	67.1	4090	1130	<1.000	7880	<10	1	1420	<1	51200	13000	1520	<10	68			
20/02/2025	D102 20250220	N	-57.1	3.3	6.2	8959	<1	81	81	<1	<1	514	493	1220	71.7	5580	1530	0.169	9510	<10	<1	1470	<1	29700	13600	1440	<10	34			
21/09/2025	D102 20250921	N	49.2	3	6.14	8985	<1	93	93	<1	<1	484	429	1080	60	4140	1110	<1.000	7880	<10	<1	1290	<1	53900	13500	1540	<10	43			
18/07/2025	D102 20250718	N	7.6	1.9	6.19	8985	<1	129	129	<1	<1	495	436	1110	60	5040	1360	0.158	7810	<10	<1	1330	<1	68800	14200	1430	<10	90			
30/10/2025	D102 20251030	N	36	2.5	6.12	8852	<1	85	85	<1	<1	508	439	1170	67	5070	1260	0.068	7810	20	1	1400	<1	32100	13400	1580	<10	34			
24/07/2024	D103 20240724	N	35.9	1.4	6.1	3860	<1	214	214	<1	<1	175	176	488	33.5	1660	216	<0.500	3020	<10	2	1110	1	8410	8850	683	<10	87			
30/10/2024	D103 20241030	N	14.6	1.8	6.07	4103	<1	207	207	<1	<1	191	184	521	33.2	1840	251	<0.500	3290	<10	2	2040	<1	11000	9740	786	<10	110			
20/02/2025	D103 20250220	N	-47.8	2.4	6.19	4321	<1	183	183	<1	<1	190	197	545	34.2	2150	302	0.11	3820	<10	3	2090	<1	12600	10800	817	<10	99			
21/05/2025	D103 20250521	N	66.5	3.8	6.22	4256	<1	179	179	<1	<1	194	181	524	31.9	2010	274	<0.500	3440	<10	3	1960	<1	18300	11000	889	<10	142			
16/07/2025	D103 20250716	N	26.5	2.5	6.2	4431	<1	200	200	<1	<1	200	181	526	32.4	2610	355	0.121	3540	<10	4	1800	<1	19900	11700	848	<10	126			
30/10/2025	D103 20251030	N	72.3	2.5	6.08	4412	<1	166	166	<1	<1	216	197	572	35.8	2150	279	0.069	3210	10	2	2020	2	9160	11400	954	<10	109			
24/07/2024	D104 20240724	N	98.5	2.4	5.91	992	<1	71	71	<1	<1	65.4	45.7	72.4	8.29	377	84.4	<0.100	684	<10	2	50	2	3180	2120	48	<10	42			
31/10/2024	D104 20241031	N	90.6	2.5	5.85	1094	<1	71	71	<1	<1	67.6	46.5	86.8	8.71	350	83.2	<0.100	739	<10	<1	150	1	50	2190	62	<10	65			
20/02/2025	D104 20250220	N	11.3	3.8	5.78	1886	<1	33	33	<1	<1	124	82.8	104	10.8	745	122	<0.100	1330	<10	<1	120	<1	8530	3470	51	<10	118			
22/03/2025	D104 20250322	N	112.4	1.9	6.08	1035	<1	69	69	<1	<1	69.3	41.5	65.2	7.2	345	85.2	<0.200	706	<10	3	540	<1	5440	2970	54	<10	87			
16/07/2025	D104 20250716	N	51.1	2.6	6.09	1068	<1	85	85	<1	<1	65	42.3	73.8	7.43	342	82.1	0.072	721	<10	10	60	<1	10600	2100	50	<10	38			
30/10/2025	D104 20251030	N	230.8	3.8	5.93	1166	<1	70	70	<1	<1	76.1	52.5	91.7	9.82	415	87.8	0.042	814	<10	1	140	<1	1510	2570	68	<10	82			
24/07/2024	D105 20240724	N	51.3	1.3	5.96	2862	<1	135	135	<1	<1	150	152	283	20.6	1230	192	<0.500	2200	<10	<1	340	2	16800	8180	468	<10	43			
30/10/2024	D105 20241030	N	21.1	1.5	5.93	3020	<1	166	166	<1	<1	161	156	306	21.5	1240	219	<0.500	2380	<10	<1	570	<1	14300	8850	508	<10	59			
20/02/2025	D105 20250220	N	-70.5	3.4	6.3	2996	<1	146	146	<1	<1	151	153	296	20.3	1370	245	<0.100	2650	<10	<1	560	1	6660	9120	481	<10	27			
21/05/2025	D105 20250521	N	63.6	4.2	6.06	3455	<1	118	118	<1	<1	179	156	321	21.7	1500	273	<0.500	2760	<10	<1	820	<1	24800	11300	611	<10	91			
16/07/2025	D105 20250716	N	46.6	3	6.05	3566	<1	144	144	<1	<1	206	168	344	23.3	1760	319	0.102	2820	<10	<1	900	<1	24900	12400	595	<10	98			
29/10/2025	D105 20251029	N	59.6	4.3	6.06	2790	<1	168	168	<1	<1	146	140	263	18.4	1140	184	0.099	1950	<10	<1	400	1	18800	8480	503	<10	43			
24/07/2024	D106 20240724	N	73.7	1.7	5.95	11469	<1	176	176	<1	<1	464	542	1990	119	5610	1130	<2.000	10400	<10	<1	2670	1	18900	14800	1840	<10	155			
17/10/2024	D106 20241030	N	39.9	2.2	5.95																										

			Water Quality Parameters		ANZ-Metals																ANZ-Nutrients												
LOR	Units	Action Levels	Redox - Field	Disolved Oxygen - Field	Aluminium - Total	Antimony - Total	Arsenic - Total	Barium - Total	Beryllium - Total	Boron - Total	Cadmium - Total	Chromium - Total	Chromium (III) - Total	Chromium (VI) - Total	Cobalt - Total	Copper - Total	Iron - Total	Lead - Total	Manganese - Total	Mercury - Total	Molybdenum - Total	Nickel - Total	Selenium - Total	Silver - Total	Strontium - Total	Tandium - Total	Zinc - Total	Ammonia as N	Nitrate as N	Nitrite as N	Nitrite + Nitrate as N	Sulfur	
			mV	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MOUNT-PIPER-ANZECC/LOCAL SSTL-WG			0.1	0.8	155	9	24	700	100	370	2	5	3.3	1	1.4	5	664	5	5704	0.06	10	550.9	5	0.05		6	908	720	2600	10000	0.015		
D1	11/09/2024	D1 20240911	N	50.8	1.6	9	<1	10	23	<1	2970	<0.1	<1	<1	<1	316	5	43900	<1	17800	0.04	<1	2040	0.3	<0.1	2.98	1.2	167	440	<10	<10	<0.01	1590
	20/11/2024	D1 20241120	N	29.7	1.6	10	<1	6	21	<1	3330	<0.1	<1	<10	287	2	30600	<1	17600	<0.04	<1	1720	0.4	<0.1	2.56	1.1	137	580	<10	<10	<0.01	1560	
	12/03/2025	D1 20250312	N	12	2.1	7	<1	2	23	<1	3570	<0.1	<1	<1	284	1	20400	<1	16800	<0.04	<1	1700	0.3	<0.1	2.31	1	102	550	<10	<10	<0.01	1470	
	28/05/2025	D1 20250528	N	151.1	5.6	34	<1	4	15	<1	2440	<0.1	<1	<1	87	4	9900	<1	6250	<0.04	<1	1010	0.3	<0.1	1.89	0.2	93	140	460	<10	<10	0.46	1090
D10	17/09/2025	D1 20250917	N	172	6.6	50	3	18	<1	2370	<0.1	<1	<1	<1	90	2	4500	5	10600	<0.04	<1	1110	0.3	<0.1	1.78	0.3	105	90	260	<10	<10	0.26	1210
	26/11/2025	D1 20251126	N	209.6	2.4	24	<1	7	21	<1	3120	<0.1	<1	<1	282	4	41200	<1	18000	<0.04	<1	1650	0.2	<0.1	2.35	1.2	153	440	<100	<100	<0.10	1770	
	26/07/2024	D10 20240726	N	114.1	1	79	<1	3	16	<1	3530	0.9	<1	<1	250	1	6990	11	6950	<0.04	8	1020	1.1	<0.1	3.56	0.4	590	420	<10	<10	<0.01	1450	
	12/09/2024	D10 20240912	N	96.6	1.7	91	<1	2	17	<1	2950	1	<1	<1	253	7	7680	11	7180	<0.04	8	1020	1.2	<0.1	4.24	0.4	780	400	<10	<10	<0.01	1560	
	21/11/2024	D10 20241121	N	66.6	1	70	<1	3	16	<1	4450	1.7	3	<1	276	2	6710	29	8680	<0.04	9	1130	2.2	<0.1	4.32	0.5	896	410	<10	<10	<0.01	1900	
	28/03/2025	D10 20250328	N	-142.8	2.2	715	2	7	31	<1	1720	0.2	2	<1	2	120	11	10500	14	3390	<0.04	34	465	3.9	0.1	1.56	3.2	203	30300	20	<10	0.02	725
	28/05/2025	D10 20250528	N	66.4	2.2	342	<1	5	22	<1	3040	1.2	1	<1	4	213	12	12200	22	5980	<0.04	17	831	2.2	<0.1	2.89	1.7	510	4730	<10	<10	<0.01	1170
	18/09/2025	D10 20250918	N	-61.7	2.8	117	1	2	23	<1	1560	<0.1	<1	<1	90	3	10900	9	3280	<0.04	5	398	0.5	<0.1	1.28	1.1	132	9620	<10	220	0.22	709	
D102	26/11/2025	D10 20251126	N	148.9	2.8	73	<1	5	15	<1	2290	0.8	<1	<1	205	2	11000	10	6760	<0.04	7	794	0.4	<0.1	2.77	0.6	550	1040	<10	20	0.02	1410	
	25/07/2024	D102 20240725	N	26.1	2.9	114	<1	1	26	<1	1250	<0.1	<1	<1	208	6	53800	1	13700	<0.04	<1	1620	0.5	<0.1	3.14	1.4	90	270	<10	<10	<0.01	1350	
	31/10/2024	D102 20241031	N	19.8	2	63	<1	1	22	<1	1200	<0.1	<1	<1	200	2	69800	2	16000	<0.04	<1	1570	0.4	<0.1	3.21	1	77	380	<10	<10	<0.01	1350	
	20/02/2025	D102 20250220	N	-57.1	3.3	268	<1	2	28	<1	1320	<0.1	2	<1	197	4	62500	4	13700	<0.04	2	1550	0.5	<0.1	3.17	2.2	116	350	<10	<10	0.01	1420	
D103	21/05/2025	D102 20250521	N	49.2	3	53	<1	2	20	<1	1260	<0.1	<1	<1	199	<1	71900	<1	13200	<0.04	<1	1660	0.3	<0.1	2.85	0.4	63	280	<10	<10	<0.01	1300	
	16/07/2025	D102 20250716	N	7.6	1.9	54	<1	1	20	<1	1210	<0.1	<1	<1	172	<1	69100	<1	13100	<0.04	1	1380	0.3	0.4	2.95	0.6	66	350	<100	<100	<0.10	1350	
	30/10/2025	D102 20251030	N	36	2.5	128	<1	2	23	<1	1290	<0.1	<1	<1	186	5	70200	2	14400	<0.04	<1	1500	0.2	<0.1	3.1	1.3	66	360	<100	<100	<0.10	1620	
	24/07/2024	D103 20240724	N	35.9	1.4	49	<1	5	17	<1	1660	<0.1	<1	<1	192	3	14700	<1	9440	<0.04	<1	762	<0.2	<0.1	0.866	<0.2	112	170	<10	<10	<0.01	555	
	30/10/2024	D103 20241030	N	14.6	1.8	93	<1	5	18	<1	1710	<0.1	<1	<1	205	2	21700	<1	12200	<0.04	<1	816	<0.2	<0.1	0.976	<0.2	130	200	<10	<10	<0.01	608	
	20/02/2025	D103 20250220	N	-47.8	2.4	32	<1	5	18	<1	2010	<0.1	<1	<1	217	<1	18500	<1	10900	<0.04	<1	872	<0.2	<0.1	1.05	<0.2	116	210	<10	<10	<0.01	709	
	21/05/2025	D103 20250521	N	66.5	3.8	58	<1	10	18	<1	1930	<0.1	<1	<1	224	2	24200	<1	10700	<0.04	2	915	0.3	<0.1	0.982	0.3	163	260	20	<10	0.02	628	
	16/07/2025	D103 20250716	N	26.5	2.5	85	<1	8	20	<1	1920	<0.1	<1	<1	213	<1	21900	1	11700	<0.04	3	875	0.4	<0.1	1.05	0.4	137	240	20	<10	0.02	608	
D104	30/10/2025	D103 20251030	N	72.3	2.5	121	<1	4	21	<1	1930	<0.1	<1	<1	220	5	22200	<1	12700	<0.04	<1	917	<0.2	<0.1	1.14	0.3	134	230	<10	<10	<0.01	800	
	24/07/2024	D104 20240724	N	98.5	2.4	197	<1	5	94	<1	120	<0.1	<1	<1	16	7	4590	<1	2300	<0.04	<1	55	<0.2	<0.1	0.279	0.5	56	90	40	<10	0.04	113	
	31/10/2024	D104 20241031	N	90.6	2.5	119	<1	2	69	<1	60	<0.1	<1	<1	14	2	1110	<1	2290	<0.04	<1	67	<0.2	<0.1	0.301	0.2	74	10	60	<10	0.06	118	
	20/02/2025	D104 20250220	N	11.3	3.8	31	<1	2	74	<1	240	<0.1	<1	<1	10	3	12600	1	3550	<0.04	<1	56	<0.2	<0.1	0.544	<0.2	150	120	40	<10	0.04	245	
D105	22/05/2025	D104 20250522	N	112.4	2.9	266	<1	5	96	<1	120	<0.1	<1	<1	12	4	7810	2	2025	<0.04	<1	59	<0.2	<0.1	0.26	0.4	197	410	20	<10	0.02	482	
	16/07/2025	D104 20250716	N	51.1	2.6	210	<1	12	16	<1	110	<0.1	<1	<1	10	<1	11000	<1	1940	<0.04	1	48	<0.2	0.2	0.261	0.4	44	100	10	<10	0.01	105	
	30/10/2025	D104 20251030	N	230.8	3.8	2520	<1	38	179	<1	80	<0.1	5	<1	14	30	34800	16	2550	<0.04	3	71	0.3	0.2	0.318	4.7	102	210	10	<10	0.01	154	
	24/07/2024	D105 20240724	N	51.3	1.3	24	<1	1	16	<1	490	<0.1	<1	<1	130	1	18400	<1	8950	<0.04	<1	529	<0.2	<0.1	0.553	<0.2	51	100	20	<10	0.02	386	
D106	30/10/2024	D105 20241030	N	21.1	1.5	37	<1	2	17	<1	490	<0.1	<1	<1	136	2	25700	<1	11100	<0.04	<1	546	<0.2	<0.1	0.642	<0.2	68	120	<10	<10	<0.01	417	
	20/02/2025	D105 20250220	N	-70.5	3.4	<5	<1	1	15	<1	550	<0.1	<1	<1	136	4	23100	<1	9560	<0.04	<1	534	<0.2	<0.1	0.66	<0.2	54	120	<10	<10	<0.01	438	
	21/05/2025	D105 20250521	N	63.6	4.2	136	1	40	18	1	840	<0.1	1	<1	168	7	57500	15	11100	<0.04	2	645	1	<0.1	0.807	2	142	500	10	<10	0.01	453	
	16/07/2025	D105 20250716	N																														

Water Quality PZ-Laboratory Param				ANZ-Alkalinity							ANZ-Cations and Anions																		
LOR	Units	Redox - Field	Dissolved Oxygen - Field	pH - Lab	Electrical Conductivity Field (non-compensated)	Alkalinity - P	Alkalinity - Total as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Calcium	Magnesium	Sodium	Potassium	Sulphate as SO4 2-	Chloride	Fluoride	Total Dissolved Solids	Aluminium - Dissolved	Arsenic - Dissolved	Boron - Dissolved	Copper - Dissolved	Iron - Dissolved	Manganese - Dissolved	Nickel - Dissolved	Vanadium - Dissolved	Zinc - Dissolved		
		mV	mg/L	pH units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
			6.5 - 8		2600						1000		180		1000	350	1.5	2000	0.8155	24	370	5	664	5704	550.9	6	908		
D19	11/09/2024	D19 20240911	N	37.3	1.6	6.07	5238	<1	158	158	<1	<1	206	176	775	83.6	2340	314	<0.500	4020	<10	<1	1410	<1	11400	6950	587	<10	200
	21/11/2024	D19 20241121	N	37.8	1.8	6.06	5814	<1	156	156	<1	<1	191	168	733	75.2	1990	198	0.186	4270	<10	<1	1840	<1	15000	7640	651	<10	234
	13/03/2025	D19 20250313	N	52	3.5	6.19	4680	<1	152	152	<1	<1	147	132	681	65.4	1880	253	0.339	3820	<10	<1	1790	<1	12300	6420	665	<10	220
	29/05/2025	D19 20250529	N	120.9	2.4	6.06	3327	<1	130	130	<1	<1	106	91.2	443	50.8	1280	181	<0.500	2520	<10	<1	1590	<1	6880	5350	484	<10	155
	17/09/2025	D19 20250917	N	-12.1	3.4	6.16	4693	<1	162	162	<1	<1	163	148	845	79.3	2060	276	0.299	3610	<10	<1	1590	<1	14100	5240	610	<10	244
	28/11/2025	D19 20251128	N	126.7	3.3	6.23	4729	<1	154	154	<1	<1	151	131	667	73.1	2090	277	0.303	3400	<10	<1	1670	<1	17500	5100	543	<10	196
D2	18/07/2024	D2 20240718	N	82.7	3.9	6.23	2229	<1	40	40	<1	<1	90.2	74.8	226	19.1	771	107	0.136	1390	380	<1	710	6	4600	2920	173	<10	96
	24/10/2024	D2 20241024	N	-19.9	2	6.23	2342	<1	54	54	<1	<1	103	82.6	270	19.4	977	136	<0.200	1810	630	<1	800	10	8920	3610	218	<10	81
	16/01/2025	D2 20250116	N	-48.1	3.7	6.82	1078	<1	25	25	<1	<1	44.6	34.7	105	10.7	444	61	0.084	750	1130	1	380	6	4420	1630	100	<10	81
	1/05/2025	D2 20250501	N	114.3	3.2	6.11	2820	<1	59	59	<1	<1	144	107	346	25.1	1310	182	0.106	2240	60	1	1070	1	1430	5290	255	<10	70
	20/08/2025	D2 20250820	N	191.8	3.2	6.46	1104	<1	19	19	<1	<1	44.4	34.6	107	8.47	377	56.8	0.062	730	620	<1	360	4	1590	1070	85	<10	145
	12/11/2025	D2 20251112	N	-48.5	2.1	6.06	2194	<1	19	19	<1	<1	106	84.6	238	20	916	127	0.072	1690	450	<1	590	3	21000	4060	206	<10	264
	12/09/2024	D3 20240912	N	94.6	5.8	6.32	527	<1	89	89	<1	<1	25.5	20.3	44.4	3.96	52.2	72.1	0.062	266	<10	<1	<50	<1	150	34	4	<10	5
	20/11/2024	D3 20241120	N	13.6	1.5	6.17	1081	<1	162	162	<1	<1	75.9	44.9	47.4	9.67	262	65.5	0.144	706	<10	<1	<50	<1	6060	663	6	<10	8
	12/03/2025	D3 20250312	N	178.4	5.6	6.78	1213	<1	323	323	<1	<1	60.9	52.7	90.8	7.91	57.8	184	0.128	742	<10	<1	<50	2	<50	26	7	<10	7
	28/05/2025	D3 20250528	N	116.2	3.3	6.57	971	<1	245	245	<1	<1	92.1	42.9	77.4	5.92	49	170	0.144	522	<10	<1	50	2	<50	130	18	<10	24
	17/09/2025	D3 20250917	N	150.1	6.4	6.76	258	<1	30	30	<1	<1	10.2	6.63	25.6	2.76	48.1	29.9	0.029	168	30	<1	140	<1	<50	15	5	<10	8
	27/11/2025	D3 20251127	N	214.3	2.4	6.06	954	<1	120	120	<1	<1	79.6	44.4	42.3	10	263	37.7	0.056	860	<10	<1	160	<1	4150	1380	23	<10	19
	18/07/2024	D4 20240718	N	353.2	1.5	3.49	751	<1	<1	<1	<1	<1	13	7.74	20	8.43	245	16.1	<0.100	524	6640	26	<50	4	51800	580	11	<10	96
	24/10/2024	D4 20241024	N	302.2	0.8	3.46	655	<1	<1	<1	<1	<1	12.4	7.27	17.9	8.08	259	19	<0.050	540	7310	23	60	2	66100	620	11	<10	107
	16/01/2025	D4 20250116	N	252.1	7.4	3.57	667	<1	<1	<1	<1	<1	11.1	6.47	17.3	8.06	241	20.5	<0.050	524	6540	30	<50	2	49900	543	11	<10	102
	1/05/2025	D4 20250501	N	379.1	4	3.01	754	<1	<1	<1	<1	<1	13	6.71	18	9.59	181	16.6	0.029	374	6170	<1	110	25	3940	619	13	<10	220
	20/08/2025	D4 20250820	N	549.7	6.6	2.97	842	<1	<1	<1	<1	<1	11.6	6.93	19.1	7.54	200	17	0.028	405	6800	<1	<50	6	7560	596	14	<10	195
	13/11/2025	D4 20251113	N	351.4	2.8	3.5	631	<1	<1	<1	<1	<1	12.9	7.21	19	8.95	256	20.4	0.038	492	6560	24	<50	<1	66200	556	11	<10	114
	18/07/2024	D5 20240718	N	14.9	1.3	5.95	1344	<1	74	74	<1	<1	98.4	67	34.5	10.1	473	23.1	<0.100	846	20	1	70	<1	30200	6820	51	<10	8
	24/10/2024	D5 20241024	N	-24.2	1.5	5.95	1202	<1	76	76	<1	<1	101	67.5	33.1	10	518	26.5	0.158	834	60	<1	80	<1	29400	8590	55	<10	21
	17/01/2025	D5 20250117	N	-2	1.6	5.96	1209	<1	77	77	<1	<1	88.5	58.3	30.5	10.1	523	28.7	0.082	793	50	<1	80	<1	17800	8050	48	<10	12
	1/05/2025	D5 20250501	N	225	4.8	5.96	1028	<1	39	39	<1	<1	93.8	57.7	30.8	9.72	449	29.3	0.156	808	<10	<1	100	7	<50	7030	49	<10	45
	20/08/2025	D5 20250820	N	318.3	4.2	5.79	994	<1	39	39	<1	<1	73.5	49.8	32.2	6.3	375	20	0.08	672	40	<1	<50	<1	<50	5200	81	<10	34
	13/11/2025	D5 20251113	N	35.5	2.5	5.93	1144	<1	66	66	<1	<1	99.2	65.4	37.6	10.5	475	25.7	0.151	784	30	1	60	<1	37800	7660	48	<10	20
	12/09/2024	D8 20240912	N	208.8	8	5.46	607	<1	11	11	<1	<1	41.6	31.6	24.6	3.44	224	30.5	<0.050	394	<10	<1	<50	2	<50	356	82	<10	93
	21/11/2024	D8 20241121	N	24.4	7.9	6.65	549	<1	12	12	<1	<1	33	25.6	19.1	2.92	198	29.3	0.034	404	200	<1	<50	<1	90	314	94	<10	112
	13/03/2025	D8 20250313	N	212.8	3.1	6.64	293	<1	12	12	<1	<1	18.2	12.3	9.08	4.01	95.3	19.7	<0.050	254	200	<1	<50	9	220	1220	99	<10	96
	28/05/2025	D8 20250528	N	263	4.2	5.42	331	<1	13	13	<1	<1	21.4	15.2	12.7	2.9	125	19.2	<0.050	168	270	<1	<50	8	140	797	105	<10	114
	17/09/2025	D8 20250917	N	239.9	5.2	6.72	410	<1	16	16	<1	<1	26.8	20.7	23.8	4.08	138	22.2	0.027	291	250	<1	<50	5	100	14	18	<10	34
	27/11/2025	D8 20251127	N	390.2	7.8	5.36	910	<1	11	11	<1	<1	53.7	41.5	52.4	5.32	290	49.8	0.023	495	10	<1	<50	4	240	970	122	<10	150
	12/09/2024	D9 20240912	N	37.3	3.6	6.15	10363	<1	131	131	<1	<1	524	474	1520	104	4630	1010	<0.500	8950	<10	<1	520	<1	36700	15600	1680	<10	80
	20/11/2024	D9 20241120	N	38.1	2.2	6.08	11520	<1	119	119	<1	<1	539	446	1450	94.8	4820	1040	<0.010	9280	<10	2	2540	4	29900	15600	1730	<10	70
	13/03/2025	D9 20250313	N	73	1.8	6.21	9973	<1	124	124	<1	<1	510	422	1510	87	4580	921	<0.500	10500	<10	<1	2510	<1	22300	14200			

				Water Quality P1		ANZ-Metals																					ANZ-Nutrients							
				Redox - Field	Dissolved Oxygen - Field	Aluminium - Total	Antimony - Total	Arsenic - Total	Barium - Total	Beryllium - Total	Boron - Total	Cadmium - Total	Chromium - Total	Chromium (III) - Total	Chromium (VI) - Total	Cobalt - Total	Copper - Total	Iron - Total	Lead - Total	Manganese - Total	Mercury - Total	Molybdenum - Total	Nickel - Total	Selenium - Total	Silver - Total	Strontium - Total	Titanium - Total	Zinc - Total	Ammonia as N	Nitrate as N	Nitrite as N	Nitrite + Nitrate as N	Sulfur	
				Units	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
				0	0.1	5	1	1	1	1	50	0.1	1	1	1	1	1	10	1	10	0.04	1	1	0.1	0.1	0.001	0.1	10	10	10	0.01	1		
Action Levels																																		
MOUNT-PIPER-ANZECC/LOCAL SSTL-WG1					0.8 55	9	24	700	100			2	5	3.3	1	1.4	5	664	5	5704	0.06	10	550.9	5	0.05		6	908	720	2600	10000	0.015		
	11/09/2024	D19 20240911	N	37.3	1.6	528	<1	10	25	<1	1410	<0.1	2	<1	<1	173	4	23000	17	6770	<0.04	1	660	0.3	<0.1	1.98	1.8	294	210	<10	<10	<0.01	821	
	21/11/2024	D19 20241121	N	37.8	1.8	303	<1	4	18	<1	1770	0.3	24	<1	<1	170	4	20800	6	7500	<0.04	6	677	0.7	<0.1	1.78	1.1	277	260	<10	<10	0.02	678	
	13/03/2025	D19 20250313	N	52	3.5	312	<1	3	21	<1	1930	0.2	<1	<1	<1	167	1	20200	8	6530	<0.04	7	686	1.5	<0.1	1.46	1.4	265	250	<10	<10	<0.01	638	
	29/05/2025	D19 20250529	N	120.9	2.4	18500	<1	228	686	<1	1620	0.4	70	<1	<1	243	195	231000	802	5800	0.14	17	858	12.3	2.2	0.994	92.5	1950	520	<10	<10	0.05	419	
	17/09/2025	D19 20250917	N	-12.1	3.4	8790	2	172	268	11	1560	0.2	<1	<1	41	209	70	222000	491	5965	<0.04	23	754	6.2	0.7	1.24	49.8	1250	700	<10	<10	<0.01	718	
	28/11/2025	D19 20251128	N	126.7	3.3	411	<1	4	15	<1	1470	0.1	<1	<1	<1	142	3	19400	10	6025	0.05	1	589	<0.2	<0.1	1.25	1.4	228	230	<10	<10	<0.01	756	
	18/07/2024	D2 20240718	N	82.7	3.3	691	<1	<1	47	<1	800	<0.1	<1	<10	<10	56	8	6990	4	3150	<0.04	<1	178	0.4	<0.1	0.435	2.4	113	130	<10	<10	<0.01	260	
	24/10/2024	D2 20241024	N	-19.9	2	902	<1	<1	38	<1	880	<0.1	<1	<10	<10	64	12	8320	6	3870	<0.04	<1	217	0.6	<0.1	0.477	1.8	81	130	<10	<10	<0.01	310	
	16/01/2025	D2 20250116	N	-48.1	3.7	1330	<1	2	27	<1	390	<0.1	2	<1	7	44	10	6080	8	2000	0.04	2	114	0.6	<0.1	0.234	1.5	106	70	<10	<10	<0.01	129	
	1/05/2025	D2 20250501	N	114.3	3.2	1680	<1	2	84	<1	1010	<0.1	1	<1	<1	63	6	3610	3	4820	<0.04	1	262	0.3	<0.1	0.664	3.3	106	180	<10	<10	<0.01	457	
	20/08/2025	D2 20250820	N	191.8	3.2	876	<1	<1	26	<1	380	<0.1	<1	<10	11	20	5	2600	4	1130	<0.04	1	95	0.6	<0.1	0.216	2	159	<10	<10	<0.01	130		
	12/11/2025	D2 20251112	N	-48.5	2.1	676	<1	1	53	<1	680	<0.1	<1	<1	2	72	5	21600	5	3420	0.07	2	215	0.3	<0.1	0.48	1.4	281	120	<10	<10	<0.01	310	
	12/09/2024	D3 20240912	N	94.6	5.8	8	<1	<1	71	<1	210	<0.1	<1	<1	<1	<1	1	300	<1	46	<0.04	<1	6	<0.2	<0.1	0.156	<0.2	15	<10	40	<10	0.04	17	
	20/11/2024	D3 20241120	N	13.6	1.5	13	<1	<1	53	<1	220	<0.1	<1	<1	<1	<1	<1	<1	7160	<1	678	<0.04	<1	6	<0.2	<0.1	0.382	<0.2	12	70	<10	<10	0.01	86
	12/03/2025	D3 20250312	N	178.4	5.6	11	<1	<1	199	<1	<50	<0.1	<1	<1	<1	<1	<1	2	70	<1	26	<0.04	<1	11	0.2	<0.1	0.457	<0.2	8	10	80	<10	0.08	14
	28/05/2025	D3 20250528	N	116.2	3.3	22	<1	<1	135	<1	80	<0.1	<1	<1	<1	<1	5	710	1	203	<0.04	<1	6	<0.2	<0.1	0.358	<0.2	46	90	140	20	0.16	15	
	17/09/2025	D3 20250917	N	150.1	6.4	125	<1	<1	2	58	<1	160	<0.1	<1	<1	<1	<1	350	1	44	<0.04	<1	5	<0.2	<0.1	0.072	<0.2	19	10	<10	<10	<0.01	16	
	27/11/2025	D3 20251127	N	214.3	2.4	57	<1	<1	85	<1	90	<0.1	<1	<1	<1	1	<1	5570	<1	1390	<0.04	<1	25	<0.2	<0.1	0.339	<0.2	27	80	<10	<10	0.01	103	
	18/07/2024	D4 20240718	N	353.2	1.5	7560	<1	26	16	2	<50	0.2	1	<1	<1	4	5	66700	18	882	<0.04	<1	12	<0.2	<0.1	0.075	4.4	116	350	<10	<10	<0.01	89	
	24/10/2024	D4 20241024	N	302.2	0.8	8070	<1	23	14	5	<50	0.5	2	<1	<1	4	4	68000	17	640	<0.04	<1	12	<0.2	<0.1	0.069	4.4	109	220	<10	<10	<0.01	80	
	16/01/2025	D4 20250116	N	252.1	7.4	7250	<1	33	14	2	<50	0.2	<1	<1	31	4	3	55600	15	569	<0.04	<1	12	<0.2	<0.1	0.063	3.4	107	330	<10	<10	0.01	71	
	1/05/2025	D4 20250501	N	379.1	4	5680	<1	<1	23	2	70	0.2	<1	<10	<10	4	30	4330	16	626	<0.04	<1	13	0.2	<0.1	0.07	1	225	130	690	<10	0.69	64	
	20/08/2025	D4 20250820	N	549.7	6.6	7120	<1	<1	18	2	60	0.3	<1	<1	14	4	8	8010	24	643	<0.04	<1	14	0.4	0.3	0.07	0.2	198	540	120	<10	0.12	60	
	13/11/2025	D4 20251113	N	351.4	2.8	6880	<1	25	18	2	<50	0.2	1	<1	4	3	3	88600	17	576	<0.04	<1	12	<0.2	<0.1	0.07	3.9	123	240	<10	<10	<0.01	77	
	18/07/2024	D5 20240718	N	14.9	1.3	68	<1	2	20	3	60	<0.1	<1	<1	<1	25	2	40700	<1	7700	<0.04	<1	54	0.4	<0.1	0.419	<0.2	18	200	<10	<10	<0.01	155	
	24/10/2024	D5 20241024	N	-24.2	1.5	44	<1	<1	16	2	80	<0.1	<1	<1	<1	24	<1	36200	<1	7780	<0.04	<1	52	0.5	<0.1	0.406	<0.2	22	240	<10	<10	<0.01	166	
	17/01/2025	D5 20250117	N	-2	1.6	5	<1	1	19	2	60	<0.1	<1	<1	<1	24	1	31000	<1	9070	<0.04	<1	54	<0.2	<0.1	0.424	<0.2	15	170	<10	<10	<0.01	153	
	1/05/2025	D5 20250501	N	225	4.8	95	<1	<1	23	1	60	<0.1	<1	<1	<1	16	23	3660	2	5660	<0.04	<1	50	0.3	<0.1	0.397	0.2	52	20	180	<10	0.18	161	
	20/08/2025	D5 20250820	N	318.3	4.2	50	<1	<1	14	<1	80	0.2	<1	<1	<1	13	1	1140	<1	5220	<0.04	2	37	0.4	<0.1	0.319	<0.2	78	20	180	<10	0.19	135	
	13/11/2025	D5 20251113	N	35.5	2.5	35	<1	2	17	2	80	<0.1	<1	<1	<1	20	1	33100	<1	6450	<0.04	<1	49	<0.2	<0.1	0.386	<0.2	22	110	30	<10	0.03	165	
	12/09/2024	D6 20240912	N	208.8	8	62	<1	<1	49	<1	60	<0.1	<1	<1	<1	3	4	340	<1	352	<0.04	<1	83	<0.2	<0.1	0.202	<0.2	105	50	20	<10	0.02	71	
	21/11/2024	D6 20241121	N	24.4	7.9	43	<1	2	46	1	<50	0.3	<1	<1	<1	3	2	210	<1	320	<0.04	<1	96	<0.2	<0.1	0.194	<0.2	115	<10	30	<10	0.03	64	
	13/03/2025	D6 20250313	N	212.8	3.1	749	<1	<1	44	<1	<50	0.1	<1	<1	<1	12	13	730	2	1280	<0.04	<1	102	0.3	<0.1	0.1	0.8	104	50	<10	<10	0.01	28	
	28/05/2025	D6 20250528	N	263	4.2	890	<1	<1	42	<1	<50	<0.1	<1	<1	<1	6	12	780	1	864	<0.04	<1	110	<0.2	<0.1	0.12	0.8	123	30	60	<10	0.06	39	
	17/09/2025	D6 20250917	N	239.9	5.2	796	<1	<1	28	<1	<50	<0.1	<1	<1	<1	<1	7	960	4	72	<0.04	<1	19	<0.2	<0.1	0.118	0.9	49	20	90	<10	0.09	52	
	27/11/2025	D6 20251127	N	390.2	7.8	129	<1	<1	52	<1	<50	<0.1	<1	<1	<1	10	6	610	<1	997	<0.04	<1	126	<0.2	<0.1	0.272	<0.2	158	40	20	10	0.03	113	
	12/09/2024	D9 20240912	N	37.3	3.6	53	<1	1	28	<1	1840	<0.1	<1	<1	<1	252	2	46300	<1	14900	<0.04	<1	2040	0.3	<0.1	3.57	3	107	320	<10	<10	<0.01	1710	
	20/11/2024	D9 20241120	N	38.1	2.2	93	<1	4	28	&																								



APPENDIX L

TABULATED SURFACE WATER DATA

Water Quality P		ANZ-Laboratory Parameters				ANZ-Alkalinity					ANZ-Cations and Anions																						
Redox - Field	Dissolved Oxygen - Field	Turbidity	pH - Lab	Electrical Conductivity Field (non-compensated)	Alkalinity - P	Alkalinity - Total as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Sulphate as SO4 2-	Chloride	Fluoride	Total Dissolved Solids	Total suspended solids	Calcium - Total	Magnesium - Total	Sodium - Total	Potassium - Total	Aluminium - Dissolved	Arsenic - Dissolved	Boron - Dissolved	Copper - Dissolved	Iron - Dissolved	Manganese - Dissolved	Nickel - Dissolved	Vanadium - Dissolved	Zinc - Dissolved	Aluminium - Total					
LQR Units	0 0.1 mg/L	0.01 NTU	0.001 pH units	uS/cm	1 mg/L	1 mg/L	1 mg/L	1 mg/L	1 mg/L	1 mg/L	0.1 mg/L	0.001 mg/L	1 mg/L	1 mg/L	0.1 mg/L	0.01 mg/L	1 mg/L	0.01 mg/L	5 ug/L	1 ug/L	50 ug/L	1 ug/L	50 ug/L	1 ug/L	1 ug/L	0.1 ug/L	5 ug/L	5 ug/L					
Action Levels		2 - 25	6.5 - 8	2200						1000	350	1.5	1500		1000		180		0.8 55	24	370	3.5	300	1900	17	6	116	0.8 55					
Sample Location	Date Sampled	Sample ID	Sample Type																														
C	24/07/2024	C 20240724	N	83.1	12.1	4	7.14	394	<1	82	<1	<1	98.1	13.2	0.117	246	<5	22.4	13.8	38	5.72	20	<1	<50	<1	110	111	2	<10	6	134		
	28/08/2024	C 20240828	N	65.7	9.7	8.4	6.4	328	<1	65	<1	<1	68	11.8	0.195	201	<5	18	10.8	28.6	4.96	60	<1	<50	<1	90	91	1	<10	<5	296		
	18/09/2024	C 20240918	N	88.9	12.4	4.4	7.7	488	<1	98	<1	<1	126	14.3	0.491	275	<5	30.2	17.5	44.4	6.88	<10	<1	<50	<1	120	3	80	135	4	<10	10	28
	30/10/2024	C 20241030	N	91.2	6.4	15	7.03	261	<1	72	<1	<1	45.5	11.3	0.116	159	<5	14.1	8.1	24.6	4.66	140	<1	<50	<1	180	192	2	<10	<5	703		
	26/11/2024	C 20241126	N	211.9	5.8	13.5	6.95	227	<1	63	<1	<1	27.1	9.34	0.094	116	<5	12.1	6.32	16.7	3.82	80	<1	<50	<1	220	242	2	<10	6	362		
	18/12/2024	C 20241218	N	108.4	5.2	8.1	7.57	364	<1	81	<1	<1	72.3	8.6	0.067	238	<5	20.2	9.04	41.5	4.52	<10	<1	<50	<1	70	160	3	<10	<5	160		
	30/01/2025	C 20250130	N	83.2	3.8	5.8	7.47	390	<1	120	<1	<1	61.8	6.36	0.171	254	<5	26.1	13.4	38.5	4.54	10	<1	<50	<1	90	499	3	<10	<5	82		
	20/02/2025	C 20250220	N	71.4	4.2	6.8	7.2	363	<1	81	<1	<1	52.6	12.4	0.157	229	<5	22	10.1	39.4	4.85	20	<1	<50	<1	120	324	2	<10	<5	41		
	26/03/2025	C 20250326	N	150.2	2.6	2.1	7.19	588	<1	118	<1	<1	118	17.3	0.144	375	<5	34.5	18	61.8	8.68	10	<1	<50	<1	60	2	330	954	6	<10	10	93
	3/04/2025	C 20250403	N	91.8	5.2	4.8	7.28	424	<1	98	<1	<1	109	16.1	0.198	265	<5	29.1	14.3	42.5	6.82	10	<1	<50	<1	160	401	4	<10	<5	27		
	21/05/2025	C 20250521	N	181.7	6.9	3.1	7.19	380	<1	78	<1	<1	92	17.7	0.134	253	<5	22.8	11.2	33.4	4.79	<10	<1	<50	<1	110	247	3	<10	<5	108		
	19/06/2025	C 20250619	N	108.4	13.2	2.6	8.17	350	<1	78	<1	<1	87.9	15.2	0.13	222	<5	19.6	9.48	34.4	4.62	<10	<1	<50	<1	110	181	2	<10	<5	35		
	16/07/2025	C 20250716	N	180	12	3	7.46	299	<1	75	<1	<1	71.6	17.6	0.109	190	<5	15.7	29.8	4.05	20	<1	<50	<1	80	107	2	<10	<5	124			
	13/08/2025	C 20250813	N	269.3	10.9	5.3	7.64	351	<1	71	<1	<1	81.9	16.1	0.124	210	<5	18.6	10.3	36.6	4.41	40	<1	<50	<1	90	92	2	<10	7	183		
	11/09/2025	C 20250911	N	265.2	27.7	74.4	7.64	150	<1	37	<1	<1	33	6.73	0.114	138	<5	11.6	5.2	11.3	3.58	780	<1	<50	4	400	34	8	<10	12	1550		
	22/10/2025	C 20251022	N	166.1	5.8	5.6	7.72	515	<1	128	<1	<1	101	11	0.174	320	<5	32.9	21.6	41.7	6.34	<10	<1	<50	<1	110	270	3	<10	<5	197		
	12/11/2025	C 20251112	N	204.1	2.8	6	7.51	462	<1	120	<1	<1	99.6	10.8	0.207	276	<5	30.3	19	36.7	6.07	10	<1	<50	<1	100	287	3	<10	<5	128		
	10/12/2025	C 20251210	N	207.7	4.6	14.6	7.67	468	<1	121	<1	<1	115	7.68	0.212	296	<5	30.3	18.2	38.6	5.97	20	<1	<50	<1	100	<1	<100	382	3	<10	<5	441
	24/07/2024	E 20240724	N	33.8	13.5	16.1	6.91	1303	<1	78	<1	<1	461	86	<0.2	819	<5	44.7	42.8	139	12.8	<10	<1	<120	<1	1300	1200	100	<10	11	19		
28/08/2024	E 20240828	N	-113.1	11	7.7	7.94	1082	<1	77	<1	<1	323	60.9	0.121	654	<5	36.5	33.7	111	11.1	<10	<1	<200	<1	800	813	67	<10	<5	18			
18/09/2024	E 20240918	N	-94.4	11.4	16.9	7.41	1825	<1	90	<1	<1	675	119	0.63	1170	<5	58.2	56.5	200	18.1	<10	<1	<340	<1	1640	1570	167	<10	9	<5			
30/10/2024	E 20241030	N	17.6	7.6	24.8	6.66	2798	<1	139	<1	<1	1170	248	<0.2	2150	<5	89	92.4	356	31.7	<10	<1	<600	<1	1170	2810	270	<10	16	22			
26/11/2024	E 20241126	N	52.7	6.9	15.4	6.78	2987	<1	142	<1	<1	1200	226	<0.5	2100	<5	92.2	94.1	350	32.6	<10	<1	<760	<1	800	3490	384	<10	18	25			
18/12/2024	E 20241218	N	103.6	8.9	4.3	7.57	717	<1	123	<1	<1	168	30.8	0.065	422	<5	33.4	23	82.7	8.95	<10	<1	<110	<1	500	918	38	<10	7	26			
30/01/2025	E 20250130	N	-95.8	5.6	36.2	6.94	3784	<1	187	<1	<1	1400	273	0.261	2780	<5	128	136	900	63.5	<10	<1	<800	<1	970	4050	396	<10	18	15			
20/02/2025	E 20250220	N	57.6	7.2	9.3	7.1	2270	<1	136	<1	<1	756	156	0.149	1630	<5	88.5	80	291	27.5	<10	<1	<490	<1	670	2500	202	<10	15	<5			
26/03/2025	E 20250326	N	-15.4	5.1	41	6.54	3325	<1	163	<1	<1	1220	231	0.117	2690	<5	137	137	530	42.8	<10	<1	<860	<1	2060	4700	376	<10	17	12			
3/04/2025	E 20250403	N	24.8	9	24.4	7.13	1874	<1	123	<1	<1	761	136	0.165	1330	<5	80.6	68.6	231	21.5	<10	<1	<370	<1	1650	3340	162	<10	13	<5			
21/05/2025	E 20250521	N	65.6	6.4	45.6	6.36	5334	<1	104	<1	<1	1690	292	<0.5	2630	<5	136	132	488	36.7	<10	<1	<900	<1	5000	5780	413	<10	18	22			
19/06/2025	E 20250619	N	-28.2	13.4	18.4	7.96	1611	<1	76	<1	<1	643	115	0.107	1050	<5	56.7	49	180	17.2	<10	<1	<330	<1	1800	1580	141	<10	13	<5			
16/07/2025	E 20250716	N	15.5	15.9	5.5	7.14	829	<1	58	<1	<1	272	49.9	0.11	521	<5	30.6	23.8	87.3	9.04	<10	<1	<140	<1	730	634	52	<10	<5	49			
13/08/2025	E 20250813	N	146.3	14.1	2.9	7.43	658	<1	64	<1	<1	214	43	0.116	369	<5	26.2	20	68.1	6.93	<10	<1	<80	<1	170	408	35	<10	<5	45			
11/09/2025	E 20250911	N	267	13.3	61.7	7.6	155	<1	43	<1	<1	52.9	10.3	0.124	160	<5	13.2	6.93	19.7	4.02	<10	<1	<360	<1	720	72	8	<10	5	100			
22/10/2025	E 20251022	N	123.7	6.9	6.6	7.46	1562	<1	134	<1	<1	134	12.7	0.147	384	<5	15.2	52.5	168	15.6	<10	<1	<300	<1	1200	141	<10	8	26				
12/11/2025	E 20251112	N	-13.2	2.2	21.5	6.92	3051	<1	141	<1	<1	1290	222	0.181	2210	<5	108	104	396	34.9	<10	<1	<620	<1	1000	3150	330	<10	18	13			
10/12/2025	E 20251210	N	-19.1	4.8	51.9	6.63	6929	<1	162	<1	<1	3470	691	<0.5	5760	<5	254	257	1050	96.2	<10	<1	<1690	<1	2730	6500	948	<10	37	25			
24/07/2024	G 20240724	N	84.5	12.4	1.7	7.36	1179	<1	74	<1																							

Water Q				ANZ-Metals																	ANZ-Nutrients																
Redox - Field	Antimony - Total	Arsenic - Total	Arsenic (V) - Total	Barium - Total	Beryllium - Total	Boron - Total	Cadmium - Total	Chromium - Total	Chromium (III) - Total	Chromium (VI) - Total	Cobalt - Total	Copper - Total	Iron - Total	Lead - Total	Manganese - Total	Mercury - Total	Molybdenum - Total	Nickel - Total	Selenium - Total	Silver - Total	Strontium - Total	Vanadium - Total	Zinc - Total	Arsenic (III)	Ammonia as N	Nitrate as N	Nitrite as N	Nitrite + Nitrate as N	Total Kjeldahl Nitrogen as N	Total Nitrogen	Total Phosphorus	Sulfur					
LOR Units	1	1	1	1	1	50	0.1	1	1	1	1	50	1	1	0.04	1	1	1	0.1	0.1	0.001	0.1	5	1	10	10	1	0.01	0.1	0.1	0.01	0.1	1				
Action Levels																																					
MOUNT-PIPER-ANZECC/LOCAL SSTL-WS																																					
Sample Location	Date Sampled	Sample ID	Sample Type	83.1	<1	<1	<1	26	<1	<50	<0.1	<1	<1	<1	1	420	<1	138	<0.04	9	3	0.2	<0.1	0.067	0.2	10	<1	<10	160	<10	0.16	0.2	0.4	<0.01	36		
C	24/07/2024	C 20240724	N	83.1	<1	<1	<1	26	<1	<50	<0.1	<1	<1	<1	1	420	<1	138	<0.04	9	3	0.2	<0.1	0.067	0.2	10	<1	<10	160	<10	0.16	0.2	0.4	<0.01	36		
	28/08/2024	C 20240828	N	65.7	<1	<1	<1	25	<1	110	<0.1	<1	<1	<1	2	400	<1	99	<0.04	7	2	0.3	<0.1	0.06	0.4	9	<1	20	<10	10	0.01	0.4	0.4	0.02	23		
	18/09/2024	C 20240918	N	88.9	<1	<1	<1	22	<1	100	<0.1	<1	<1	<1	12	350	<1	181	<0.04	9	5	0.4	<0.1	0.086	0.3	27	<1	30	<20	<10	0.02	0.5	0.5	0.04	39		
	30/10/2024	C 20241030	N	91.2	<1	<1	<1	34	<1	<50	<0.1	<1	<1	<1	3	670	<1	279	<0.04	4	3	0.2	<0.1	0.05	0.9	14	<1	20	<10	0.01	0.8	0.8	0.04	14			
	26/11/2024	C 20241126	N	211.9	<1	<1	<1	31	<1	<50	<0.1	<1	<1	<1	2	780	<1	284	<0.04	3	3	0.2	<0.1	0.052	0.5	15	<1	20	<10	0.01	0.4	0.4	0.02	8			
	18/12/2024	C 20241218	N	108.4	<1	<1	<1	19	<1	<50	<0.1	<1	<1	<1	2	390	<1	206	<0.04	6	4	1.3	<0.1	0.055	0.4	15	<1	<10	<10	0.01	0.2	0.2	<0.01	24			
	30/01/2025	C 20250130	N	83.2	<1	<1	<1	25	<1	<50	<0.1	<1	<1	<1	<1	350	<1	600	<0.04	10	3	0.3	<0.1	0.074	0.3	<5	<1	30	<10	<10	0.01	0.2	0.2	<0.01	24		
	20/02/2025	C 20250220	N	71.4	<1	<1	<1	22	<1	<50	<0.1	<1	<1	<1	<1	1	350	<1	328	<0.04	3	3	0.4	<0.1	0.058	0.2	<5	<1	<10	<10	0.01	0.2	0.2	0.02	25		
	26/03/2025	C 20250326	N	150.2	<1	<1	<1	61	<1	130	<0.1	<1	<1	<1	<1	4	730	<1	1090	<0.04	8	7	0.4	<0.1	0.11	0.4	14	<1	20	70	10	0.08	0.6	0.7	0.02	49	
	3/04/2025	C 20250403	N	91.8	<1	<1	<1	32	<1	<50	<0.1	<1	<1	<1	<1	4	540	<1	504	<0.04	5	5	<0.2	<0.1	0.077	<0.2	14	<1	20	<10	<10	0.01	0.4	0.4	<0.01	32	
	21/05/2025	C 20250521	N	181.7	<1	<1	<1	28	<1	80	<0.1	<1	<1	<1	<1	<1	350	<1	300	<0.04	3	9	0.3	<0.1	0.088	0.2	7	<1	<10	<10	0.01	0.2	0.2	0.02	25		
	19/06/2025	C 20250619	N	106.4	<1	<1	<1	20	<1	190	<0.1	<1	<1	<1	<1	1	190	<1	190	<0.04	6	2	0.6	<0.1	0.059	<0.2	7	<1	<10	<10	0.01	0.6	0.6	0.04	25		
	16/07/2025	C 20250716	N	180.1	<1	<1	<1	20	<1	120	<0.1	<1	<1	<1	<1	<1	270	<1	120	<0.04	5	2	0.9	<0.1	0.046	0.2	<5	<1	<10	30	<10	0.03	0.4	0.4	0.02	21	
	13/08/2025	C 20250813	N	269.3	<1	<1	<1	19	<1	<50	<0.1	<1	<1	<1	<1	<1	290	<1	111	<0.04	5	3	0.7	<0.1	0.053	0.3	18	<1	<10	40	<10	0.04	0.5	0.5	0.08	25	
	11/09/2025	C 20250911	N	265.2	<1	<1	1.1	21	<1	<50	<0.1	1	<1	<1	<1	4	1150	2	50	<0.04	2	4	0.3	<0.1	0.033	2.2	23	<1	10	40	<10	0.04	0.7	0.7	0.08	9	
	22/10/2025	C 20251022	N	166.1	<1	<1	<1	32	<1	60	<0.1	<1	<1	<1	<1	3	320	<1	230	<0.04	10	5	0.4	<0.1	0.104	0.7	14	<1	20	10	<10	0.01	0.6	0.6	0.07	37	
	12/11/2025	C 20251112	N	204.1	<1	<1	<1	25	<1	<50	<0.1	<1	<10	<10	<1	2	310	<1	268	<0.04	4	3	0.3	<0.1	0.085	0.4	7	<1	50	10	<10	0.01	0.7	0.7	0.09	30	
	10/12/2025	C 20251210	N	207.7	<1	<1	<1	39	<1	70	<0.1	<1	<1	<1	<1	7	450	<1	528	<0.04	8	5	0.3	<0.1	0.097	0.7	18	<1	10	50	<10	0.05	1.3	1.4	0.04	38	
	E	24/07/2024	E 20240724	N	33.8	<1	<1	<1	24	<1	220	<0.1	<1	<1	<1	12	2	1820	<1	1320	<0.04	<1	109	<0.2	<0.1	0.23	<0.2	19	<1	30	80	<10	0.06	0.4	0.5	<0.01	139
		28/08/2024	E 20240828	N	-113.1	<1	<1	<1	22	<1	200	<0.1	<1	<1	<1	8	<1	1320	<1	935	<0.04	2	76	<0.2	<0.1	0.196	<0.2	7	<1	150	10	<10	0.01	0.4	0.4	0.02	112
18/09/2024		E 20240918	N	-94.4	<1	<1	<1	27	<1	340	<0.1	<1	2	<1	16	2	2290	<1	1660	<0.04	1	163	0.2	<0.1	0.337	0.2	15	<1	40	<10	<10	0.01	0.3	0.3	0.01	205	
30/10/2024		E 20241030	N	17.6	<1	<1	<1	34	<1	810	<0.1	<1	<1	<1	28	<1	3090	<1	3050	<0.04	<1	284	<0.2	<0.1	0.589	0.3	24	<1	50	10	<10	0.01	1.2	1.2	0.02	326	
28/11/2024		E 20241126	N	106.4	<1	<1	<1	40	<1	870	<0.1	<1	<1	<1	27	<1	2120	<1	270	<0.04	<1	320	<0.2	<0.1	0.655	0.2	26	<1	20	<10	<10	0.01	0.4	0.4	0.02	342	
18/12/2024		E 20241218	N	103.6	<1	<1	<1	22	<1	130	<0.1	<1	<1	<1	4	4	1050	<1	1000	<0.04	4	4	0.3	0.1	0.136	<0.2	22	<1	20	30	<10	0.03	0.8	0.8	0.02	56	
30/01/2025		E 20250130	N	-95.8	3	<1	<1	40	<1	970	<0.1	<1	<1	<1	34	1	4510	<1	4380	<0.04	1	416	0.2	<0.1	0.821	0.5	32	<1	60	<10	<10	0.01	0.6	0.6	0.02	627	
20/02/2025		E 20250220	N	57.6	2	<1	<1	38	<1	820	<0.1	<1	<1	<1	20	<1	2200	<1	2790	<0.04	<1	239	<0.2	<0.1	0.517	0.2	<5	<1	50	<10	<10	0.01	0.3	0.3	0.1	315	
26/03/2025		E 20250326	N	-15.4	<1	<1	<1	46	<1	1010	<0.1	<1	<1	<1	44	4	4880	<1	6300	<0.04	5	442	0.2	<0.1	0.941	0.4	28	<1	70	<10	<10	0.01	0.6	0.6	0.04	513	
3/04/2025		E 20250403	N	24.8	<1	<1	<1	44	<1	360	<0.1	<1	<1	<1	14	7	3140	<1	2900	<0.04	<1	148	<0.2	<0.1	0.363	<0.2	23	<1	40	<10	<10	0.01	0.6	0.6	<0.01	234	
21/05/2025		E 20250521	N	65.6	<1	<1	<1	44	<1	890	<0.1	<1	<1	<1	45	<1	7320	<1	5600	<0.04	<1	428	<0.2	<0.1	0.904	0.4	31	<1	50	10	<10	0.01	0.5	0.5	<0.01	503	
19/06/2025		E 20250619	N	-28.2	<1	<1	<1	27	<1	340	<0.1	<1	<1	<1	16	<1	3150	<1	1760	<0.04	4	150	<0.2	<0.1	0.333	<0.2	11	<1	30	<10	<10	0.01	0.4	0.4	<0.01	177	
16/07/2025		E 20250716	N	15.5	<1	<1	<1	22	<1	120	<0.1	<1	<1	<1	5	<1	1230	<1	717	<0.04	2	55	0.3	<0.1	0.149	0.3	25	<1	20	10	<10	0.01	0.3	0.3	0.02	81	
13/08/2025		E 20250813	N	146.3	<1	<1	<1	17	<1	80	<0.1	<1	<1	<1	3	<1	610	<1	412	<0.04	1	35	0.2	<0.1	0.105	<0.2	<5	<1	10	20	<10	0.02	0.2	0.2	0.02	63	
11/09/2025		E 20250911	N	267	<1	<1	<1	16	<1	870	<0.1	<1	<1	<1	<1	4	1090	1	83	<0.04	<1	3	0.2	<0.1	0.943	1.5	15	<1	20	<10	<10	0.01	0.6	0.6	0.04	15	
22/10/2025		E 20251022	N	123.7	<1	<1	<1	36	<1	300	<0.1	<1	<1	<1	11	5	1150	<1	1130	<0.04	4	139	0.2	0.1	0.139	0.2	21	<1	30	40	<10	0.02	0.4	0.4	0.02	167	
12/11/2025		E 20251112	N	-13.2	<1	<1	<1	43	<1	700	<0.1	<1	<1	<1	30	<1	2460	<1	3140	<0.04	<1	316	<0.2	<0.1	0.652	0.4	24	<1	90	<10	<10	0.01	0.4	0.4	<0.01	393	
10/12/2025		E 20251210	N	-19.1	<1	<1	<1	55	<1	1940	<0.1	<1	<1	<1	85	2	10700	<1	7750	<0.04	1	906	0.2	0.8	1.69	0.7	66	<1	80	20	<10	0.02	0.7	0.7	0.03	1200	
G		24/07/2024	G 20240724	N	84.5	<1	<1	<1	22	<1	200	<0.1	<1	<1	<1	1	<1	260	<1	301	<0.04	<1	79	<0.2	<0.1	0.217	<0.2	6	<1								

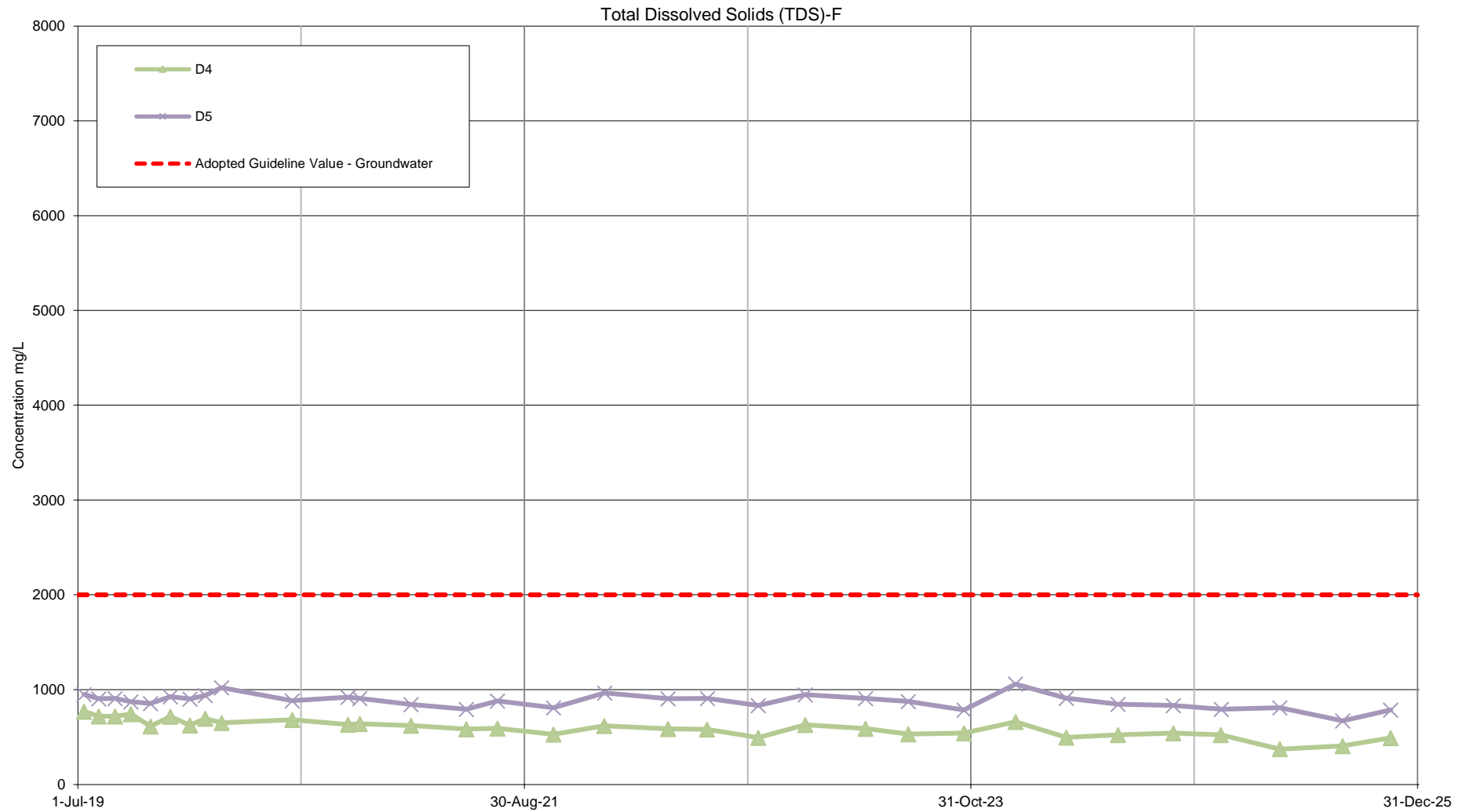
Water Quality Parameters		ANZ-Laboratory Parameters										ANZ-Alkalinity								ANZ-Cations and Anions																			
Parameter	Units	Redox - Field	Dissolved Oxygen - Field	Total suspended solids	Turbidity	pH - Lab	Electrical Conductivity Field (non-compensated)	Alkalinity - P	Alkalinity - Total as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Calcium	Magnesium	Sodium	Potassium	Sulphate as SO4 2-	Chloride	Fluoride	Total Dissolved Solids	Total suspended solids	Calcium - Total	Magnesium - Total	Sodium - Total	Potassium - Total	Aluminium - Dissolved	Arsenic - Dissolved	Boron - Dissolved	Copper - Dissolved	Iron - Dissolved	Manganese - Dissolved	Nickel - Dissolved	Vanadium - Dissolved	Zinc - Dissolved	Aluminium - Total				
LOR	Units	0	0.1	1	0.01	0	1	1	1	1	0.001	0.001	0.1	0.01	1	0.1	1	0.1	0.001	1	1	0.1	0.01	1	0.1	0.1	0.1	0.1	0.04	0.04	1	1	0.04	0.1	5				
Action Levels				50	25	6.5 - 8.5	500													50																			
Sample Location	Date Sampled	Sample ID	Depth Range (m)	Sample Type																																			
LDP12	2/07/2024	LDP12_20240702		N	253.2	8.8	9.3	9.34	7.72	367	< 1	< 1	42	42	< 1	< 1	13	5.99	44.4	4.64	118	13.2	0.097	234	9.33	13	5.99	44.4	4.64	< 10	< 1	< 50	< 1	< 50	286	4	< 10	< 5	1400
	2/08/2024	LDP12_20240802		N	145.8	10.2	1.7	6.1	7.63	358	< 1	< 1	52	52	< 1	< 1	14.2	5.61	50.6	5.36	102	17.5	0.075	236	1.67	14.2	5.61	50.6	5.36	50	< 1	< 50	< 1	< 50	226	4	< 10	< 5	1480
	2/10/2024	LDP12_20241002		N	184.9	5.6	8.3	4.73	7.73	417	< 1	< 1	59	59	< 1	< 1	12.9	5.14	54.7	5.75	96.8	18.4	0.117	196	8.33	12.9	5.14	54.7	5.75	150	< 1	< 50	< 1	< 50	93	3	< 10	< 5	2160
	28/11/2024	LDP12_20241128		N	194.9	7.4	8.3	11.9	7.99	391	< 1	< 1	57	57	< 1	< 1	8	3.05	50	5.87	111	31.8	0.101	256	8.33	8	3.05	50	5.87	10	< 1	< 50	< 1	< 50	28	3	< 10	< 5	239
	11/12/2024	LDP12_20241211		N	5.87	8.4	3.3	8.22	7.66	362	< 1	< 1	27	27	< 1	< 1	5.34	2.82	55.9	4.72	99.6	14.5	0.089	193	3.33	5.34	2.82	55.9	4.72	80	1	< 50	< 1	< 50	82	6	< 10	8	213
	9/01/2025	LDP12_20250109		N	145.6	8.9	3.3	3.17	7.32	414	< 1	< 1	28	28	< 1	< 1	10.8	5.4	56.6	5.7	134	17.5	0.126	248	3.33	10.8	5.4	56.6	5.7	90	< 1	160	< 1	< 50	239	18	< 10	23	645
	14/01/2025	LDP12_20250114		N	111.2	9.9	15.7	19.9	7.5	434	< 1	< 1	29	29	< 1	< 1	12.2	5.9	54	5.22	147	15	0.122	244	15.67	12.2	5.9	54	5.22	30	< 1	< 50	< 1	< 50	259	15	< 10	20	291
	12/02/2025	LDP12_20250212		N	211.2	5.4	5.0	4.58	7.37	366	< 1	< 1	28	28	< 1	< 1	10.4	4.74	51.1	5.34	114	16.6	0.133	220	5.00	10.4	4.74	51.1	5.34	20	< 1	< 50	< 1	< 50	153	8	< 10	11	929
	26/02/2025	LDP12_20250226		N	165.4	6.4	1.3	3.87	7.75	471	< 1	< 1	34	34	< 1	< 1	14.2	6.38	70.6	6.26	125	70.8	0.087	311	1.33	14.2	6.38	70.6	6.26	60	2	< 50	< 1	< 50	240	5	< 10	< 5	137
	29/04/2025	LDP12_20250429		N	155.7	7	18.0	6.02	7.12	433	< 1	< 1	31	31	< 1	< 1	16	6.71	56.3	7.01	120	21.5	0.063	303	16.00	16	6.71	56.3	7.01	160	< 1	< 50	< 1	< 50	296	9	< 10	< 5	4090
	29/05/2025	LDP12_20250529		N	149.1	7.7	13.0	4.16	6.85	317	< 1	< 1	30	30	< 1	< 1	11	4.33	39.7	4.25	77.4	14.1	0.053	235	13.00	11	4.33	39.7	4.25	110	< 1	< 50	< 1	< 50	192	7	< 10	< 5	4150
	1/07/2025	LDP12_20250701		N	329.1	7.1	10.3	3.03	7.45	311	< 0.001	< 0.1	34	34	< 0.001	< 0.1	11.2	4.21	39	3.98	87.7	17.6	0.068	194	10.33	11.2	4.21	39	3.98	160	< 1	< 1000	< 0.04	< 0.1	171	5	< 1	6	2150
	8/07/2025	LDP12_20250708		N	202.2	8.2	18.4	12.9	7.22	257	< 0.01	< 0.01	30	30	< 5	< 0.001	4.2	0.882	35.5	3.23	72.9	14.2	0.083	176	19.40	4.2	0.882	35.5	3.23	20	< 1	< 1	< 10	< 1	52	2	< 0.04	< 0.1	2460
	24/07/2025	LDP12_20250724		N	157.3	7.7	7.4	3.76	7.63	293	< 1	< 1	26	26	< 0.001	< 0.001	7.29	2.55	42.5	4.13	59.5	15.6	0.048	154	7.67	7.29	2.55	42.5	4.13	70	< 5000	< 1	< 0.1	< 0.04	88	3	< 1	8	1590
	5/08/2025	LDP12_20250805		N	275.8	6	16.7	5.32	7.89	310	< 0.05	< 0.05	46	46	< 0.005	< 0.001	8.16	3.31	47.9	3.83	105	17.9	0.37	202	10.67	8.16	3.31	47.9	3.83	40	< 100	70	< 1	< 10	96	4	< 50	< 100	2090
	27/08/2025	LDP12_20250827		N	257.1	7.2	6.3	6.52	7.76	287	< 1	< 1	49	49	< 1	< 1	4.06	1.49	46	3.91	56.6	19.1	0.063	186	6.33	4.06	1.49	46	3.91	30000	< 1	80000	< 1	< 10	39000	2000	< 0.1	< 1	1890000
	3/09/2025	LDP12_20250903		N	283.8	6.2	14.7	19.2	7.9	316	< 0.01	< 0.004	51	51	< 0.004	< 0.01	4.69	1.64	47.2	4.08	61.8	21.2	0.064	192	14.67	4.69	1.64	47.2	4.08	< 1000	< 1	< 10	< 1000	< 1000	38	2	< 1	< 10	530
12/09/2025	LDP12_20250912		N	292	8.4	13.5	6.49	7.49	245	< 1	< 1	40	40	< 5	< 1	4.41	1.48	41.7	3.78	47.7	18.9	0.069	132	13.50	4.41	1.48	41.7	3.78	180	< 1	< 50	< 1	< 10	35	2	< 0.1	< 1	3280	

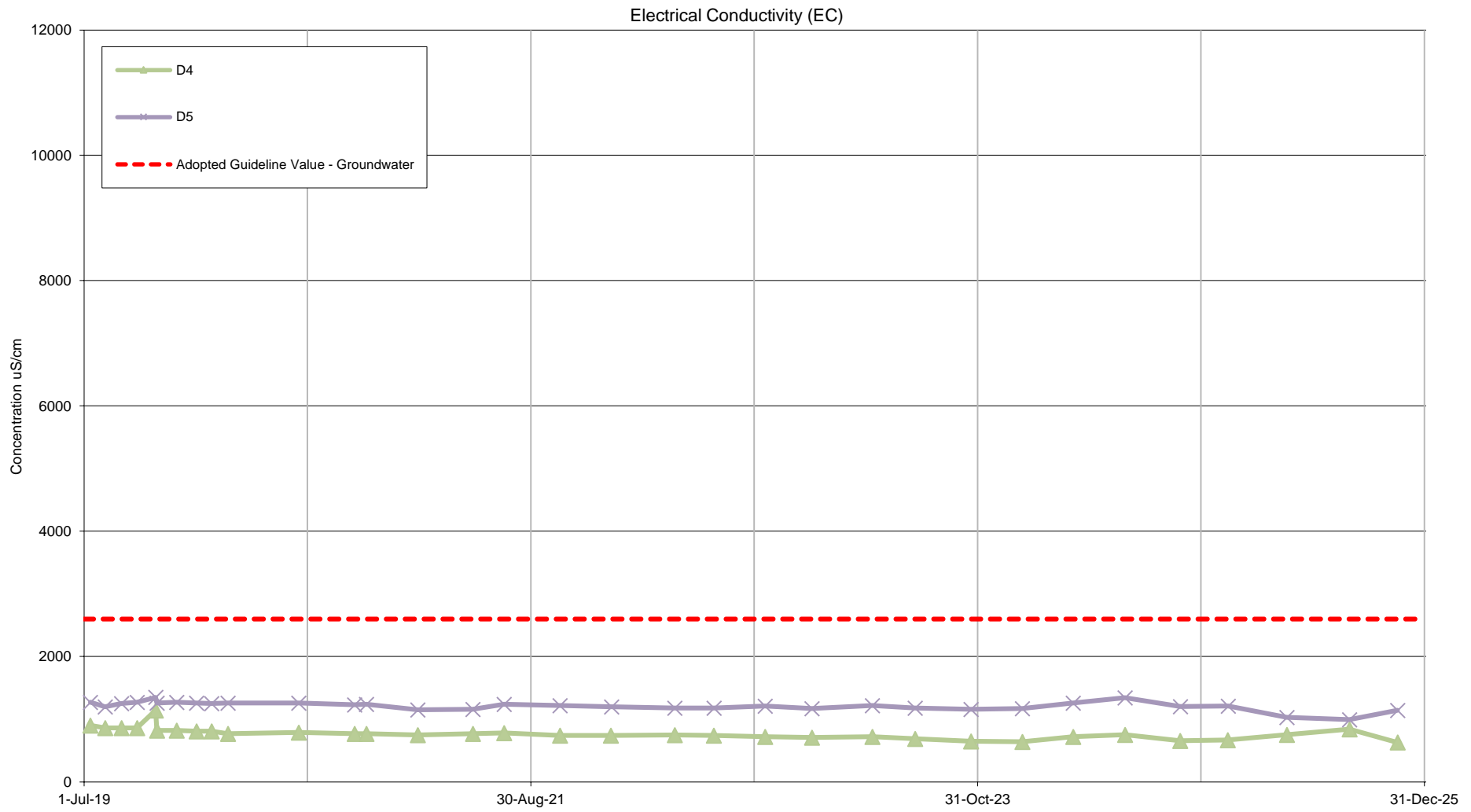
				Water Quality																ANZ-Metals																ANZ-Nutrients															
Sample Location	Date Sampled	Sample ID	Depth Range (m)	Sample Type	Redox - Field	Antimony - Total	Arsenic - Total	Arsenic (V) - Total	Barium - Total	Beryllium - Total	Boron - Total	Cadmium - Total	Chromium - Total	Chromium (III) - Total	Chromium (VI) - Total	Cobalt - Total	Copper - Total	Iron - Total	Lead - Total	Manganese - Total	Mercury - Total	Molybdenum - Total	Nickel - Total	Selenium - Total	Silver - Total	Strontium - Total	Vanadium - Total	Zinc - Total	Arsenic (III) - Total	Ammonia as N	Nitrate as N	Nitrite as N	Nitrite + Nitrate as N	Total Kjeldahl Nitrogen as N	Total Nitrogen	Total Phosphorus	Phosphorus	Phosphate as PO4	Sulfur	Phosphates, Total											
					Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units	Units						
					LOR	0	1	0.1	1	1	0.1	0.04	0.1	1	1	0.04	0.04	1	1	1	0.04	1	1	0.1	0.04	1	0.04	0.1	1	10	10	1	0.01	0.1	0.1	0.0001	0.001	0.001	1	0.001											
Action Levels																																																			
MOUNT-PIPER-EPL-13007-DISCHARGE																																																			
LDP12	2/07/2024	LDP12_20240702		N	253.2	<1	<1	<1	11	<1	<50	<0.1	<1	<1	<1	2	<1	<50	<1	305	<0.04	4	5	1.6	<0.1	32	0.4	<5	<1	470	280	10	0.29	0.6	0.9	0.02	<0.01	<0.1	32	<0.1											
	2/08/2024	LDP12_20240802		N	145.8	<1	<1	<1	10	<1	<50	<0.1	<1	<1	<1	2	<1	<50	<1	320	<0.04	3	5	1.8	<0.1	31	0.3	8	<1	300	260	<10	0.26	0.5	0.8	0.02	0.02	<0.1	36	<0.1											
	2/10/2024	LDP12_20241002		N	184.9	1	<1	<1	10	<1	<50	<0.1	<1	<1	<1	1	<1	<50	<1	97	<0.04	6	4	2	<0.1	31	0.4	<5	<1	100	380	<10	0.38	0.4	0.8	0.01	0.02	<0.1	32	<0.1											
	28/11/2024	LDP12_20241128		N	194.9	1	<1	<1	8	<1	<50	<0.1	<1	<1	<1	<1	<1	<50	<1	30	<0.04	8	3	3.1	<0.1	22	<0.2	6	<1	40	490	10	0.5	0.2	0.7	0.04	0.02	<0.1	25	0.13											
	11/12/2024	LDP12_20241211		N	5.87	<1	<1	<1	6	<1	<50	<0.1	<1	<1	<1	4	<1	<50	<1	84	<0.04	2	6	5.5	<0.1	13	<0.2	19	<1	90	410	<10	0.41	<0.1	0.4	<0.01	0.01	<0.1	33	<0.1											
	9/01/2025	LDP12_20250109		N	145.6	<1	<1	<1	10	<1	<50	0.2	<1	<1	<1	11	<1	<50	<1	237	<0.04	3	17	6.2	<0.1	26	0.2	22	<1	120	580	10	0.59	0.3	0.9	0.02	0.03	<0.1	43	<0.1											
	14/01/2025	LDP12_20250114		N	111.2	<1	<1	<1	14	<1	<50	0.2	<1	<1	<1	13	<1	80	<1	299	<0.04	2	18	5.6	<0.1	35	0.3	29	<1	100	540	<10	0.54	0.3	0.8	0.02	0.05	0.16	44	<0.1											
	12/02/2025	LDP12_20250212		N	211.2	<1	<1	<1	10	<1	<50	<0.1	<1	<1	<1	5	13	<50	<1	152	<0.04	3	10	4.3	<0.1	24	0.3	20	<1	90	380	20	0.4	0.2	0.6	<0.01	<0.01	<0.1	36	<0.1											
	28/02/2025	LDP12_20250228		N	165.4	<1	<1	<1	16	<1	<50	0.1	<1	<1	<1	4	<1	<50	<1	239	<0.04	4	7	4.6	<0.1	34	<0.2	8	<1	60	410	10	0.42	0.2	0.6	0.02	0.02	<0.1	44	<0.1											
	29/04/2025	LDP12_20250429		N	155.7	<1	<1	<1	18	<1	<50	<0.1	<1	<1	<1	5	<1	<50	<1	320	<0.04	2	11	3	<0.1	40	0.7	7	<1	280	280	10	0.29	0.4	0.7	0.02	0.01	<0.1	43	<0.1											
	29/05/2025	LDP12_20250529		N	149.1	<1	<1	<1	8	<1	<50	<0.1	<1	<1	<1	3	<1	80	<1	176	<0.04	6	7	3.4	<0.1	23	0.6	9	<1	100	300	<10	0.3	0.3	0.6	<0.01	<0.01	<0.1	30	<0.1											
	1/07/2025	LDP12_20250701		N	329.1	<1	<1	<1	9	<50	<0.1	<1	<1	<50	<1000	2	<1	<10	<10	175	<1	6	6	3.2	<0.04	27	0.4	<1	<1	100	240	10	0.25	0.3	0.6	0.04	<0.001	<0.001	26	0.12											
	8/07/2025	LDP12_20250708		N	202.2	<1000	<1	<1	4	<1000	<50	<0.04	<1000	<10	<100	1	<100	50	<1	54	<1	4	2	3	<10	10	0.5	<1	<1	90	200	<50	0.2	0.2	0.4	<0.001	0.04	0.12	19	<1											
	24/07/2025	LDP12_20250724		N	157.3	<1	<50	<50	5	<5	<1	<100	<10	<1	<1	2	<50	<1	<10	88	<100	4	4	3.2	<10	16	0.3	13	<10	130	220	<10	0.22	0.4	0.6	<0.001	<0.1	<0.001	22	<0.05											
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	27/08/2025	LDP12_20250827		N	257.1	<1	<1	<1	4000	<1	60000	<0.1	<1	<1	<1	<1	<1	<10	<1	35000	<0.04	4000	2000	4300	<0.1	8	400	<1	<1	110000	280000	<10	0.28	0.2	0.5	0.01	<0.01	<0.1	20	<0.01											
	3/09/2025	LDP12_20250903		N	283.8	<10	<4	<1000	6	<50	<100	<50	<50	<1000	<1	<50	<50	70	<4	43	<50	5	2	2.8	<100	10	0.2	6	<10	120	290	<1	0.29	0.2	0.5	<1	<1	<0.01	19	<0.001											
	12/09/2025	LDP12_20250912		N	292	<10	<1000	<1	4	<10	<1000	<1000	<10	<1	<1	<100	<1000	<10	<1000	36	<1000	2	1	2.7	<50000	9	0.6	<1	<1	90	340	<1000	0.34	0.7	1	0.01	<0.01	<0.1	15	<0.1											

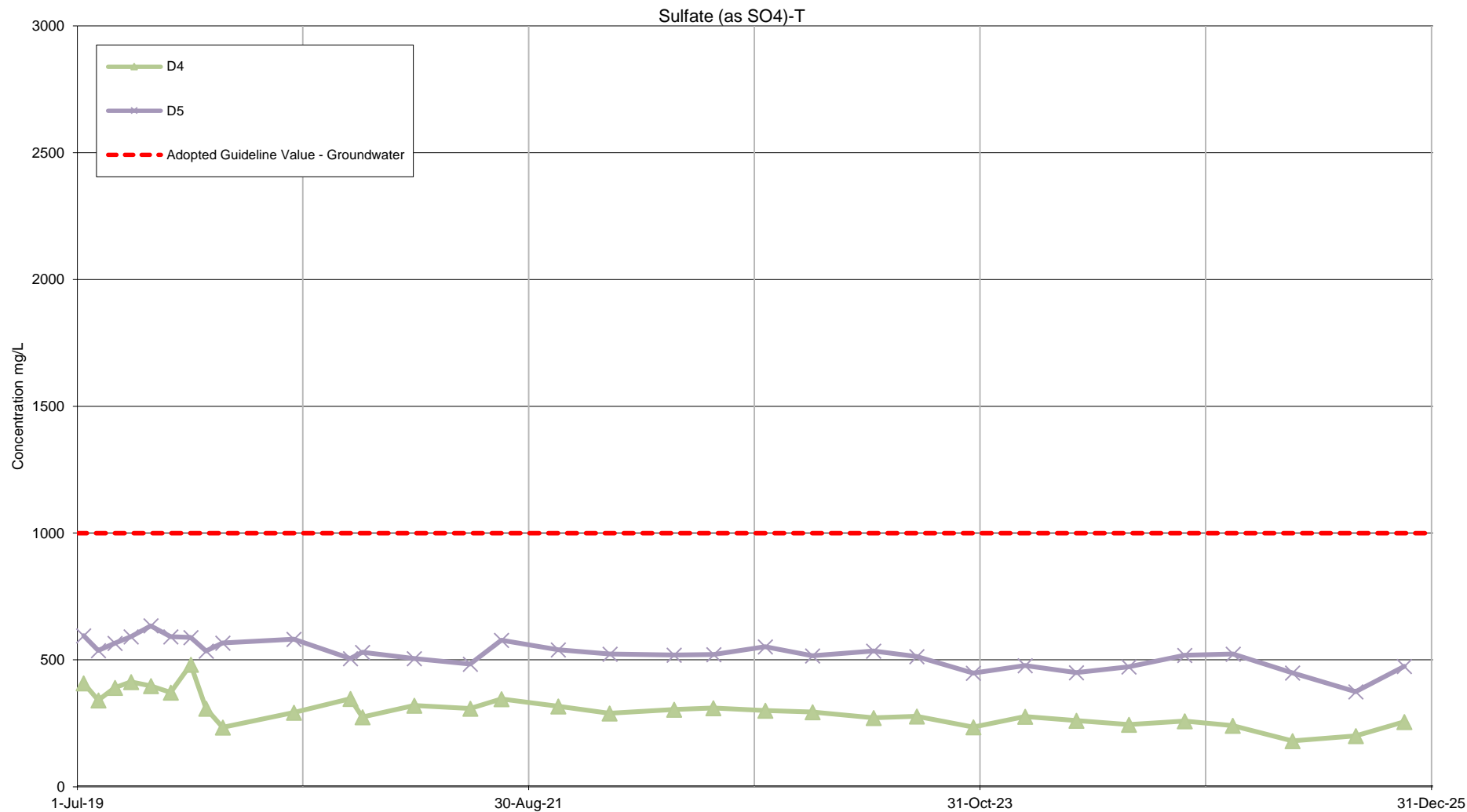


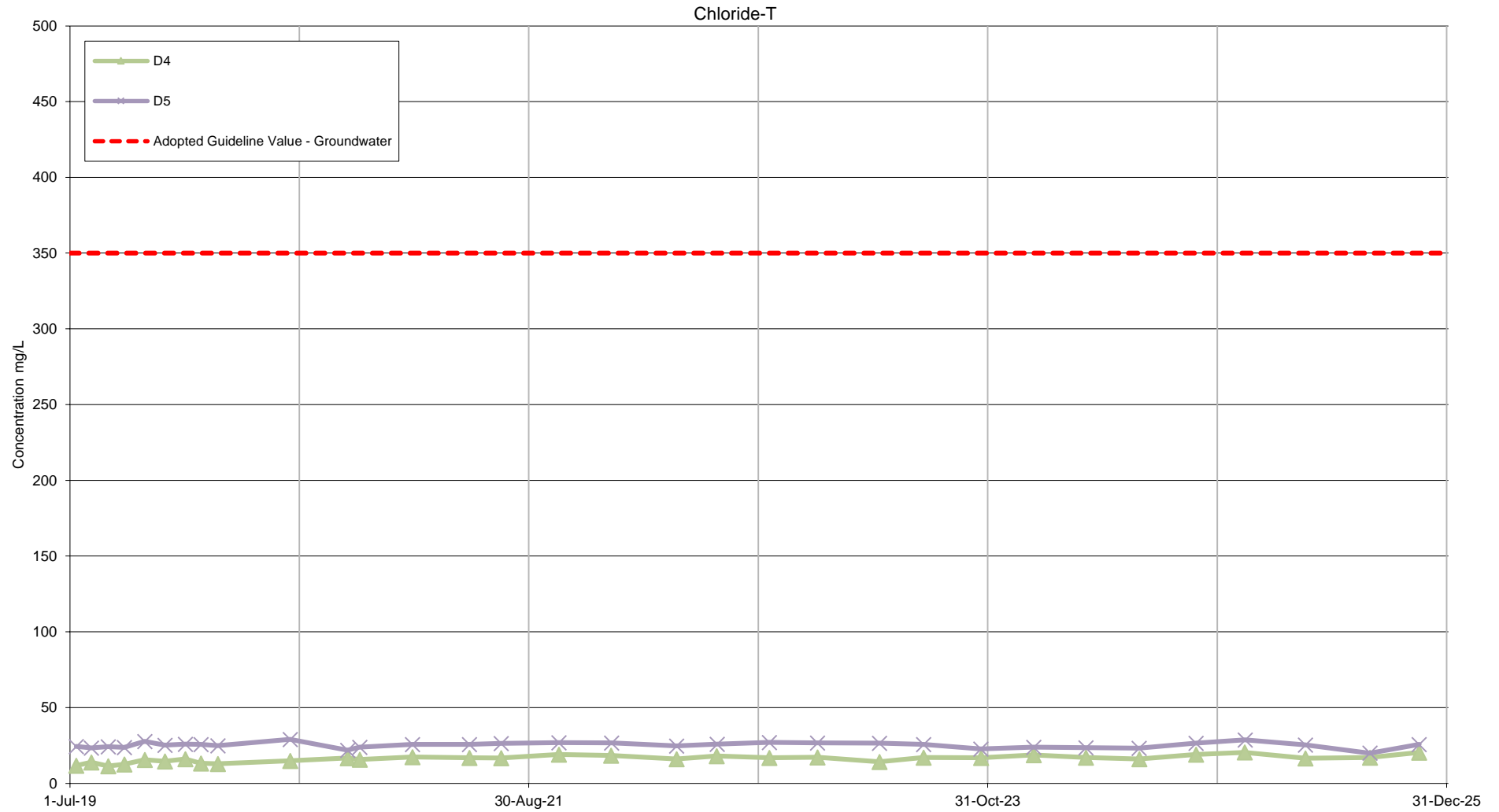
APPENDIX M

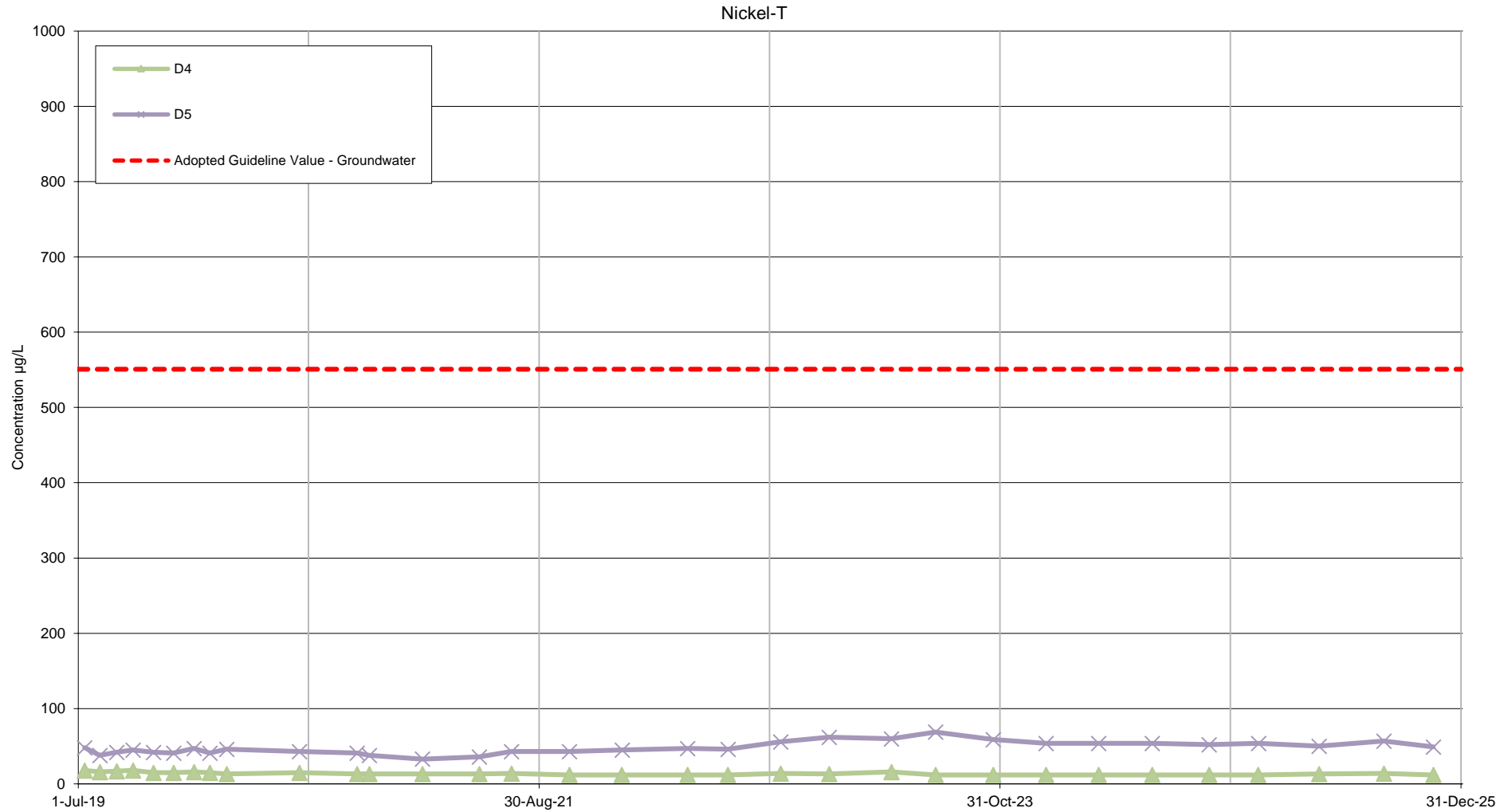
GROUNDWATER TRENDS

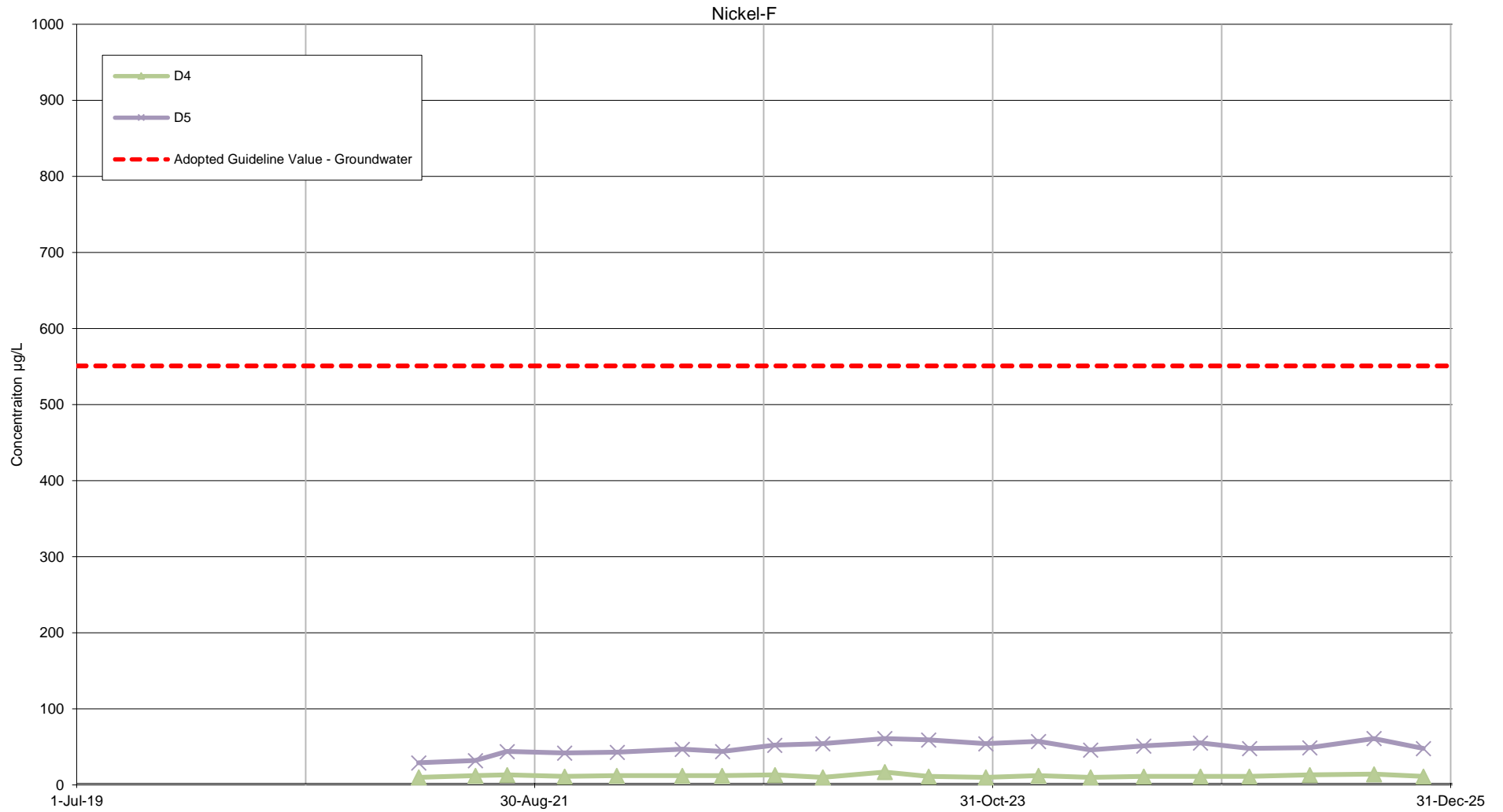


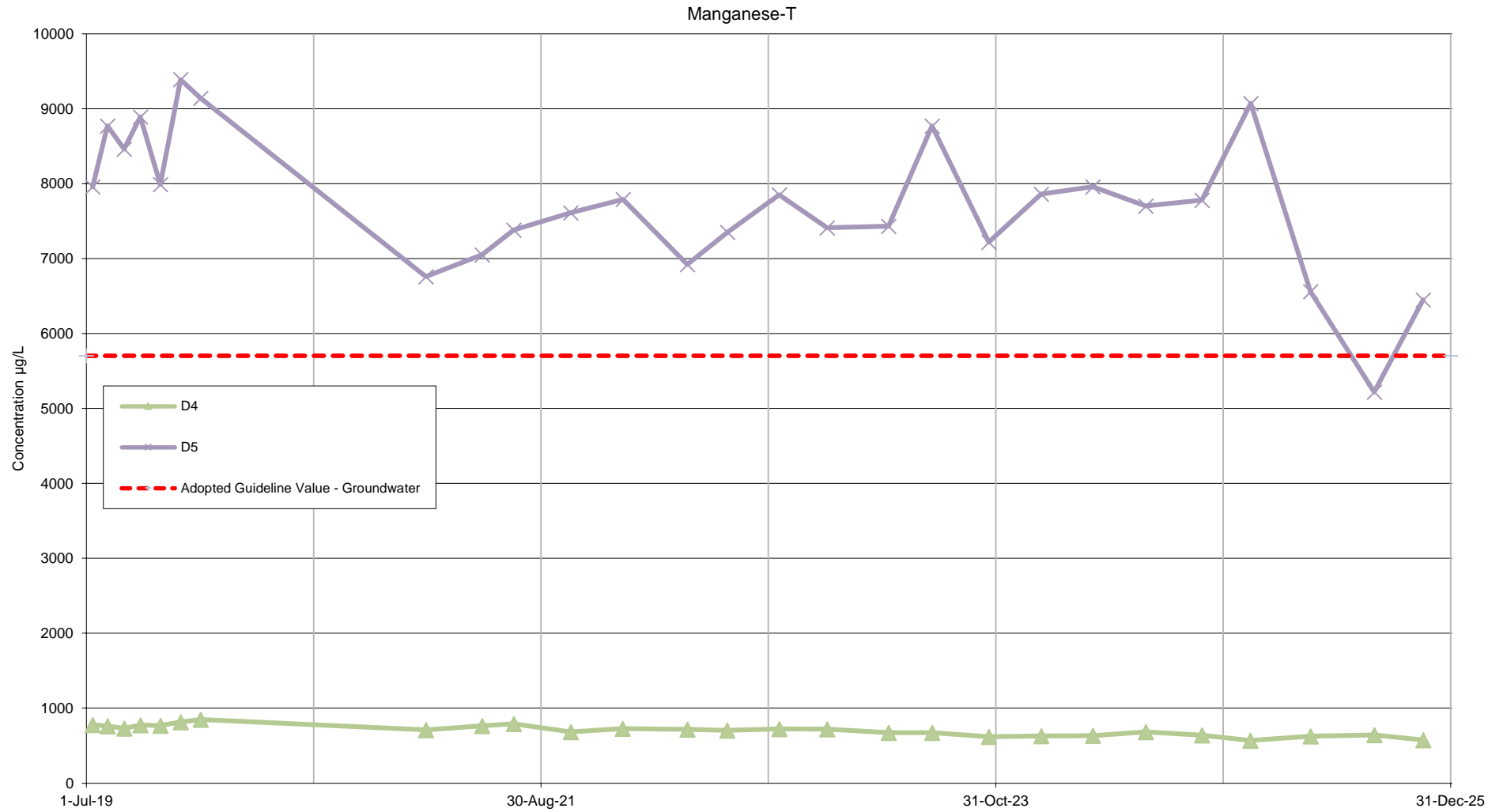


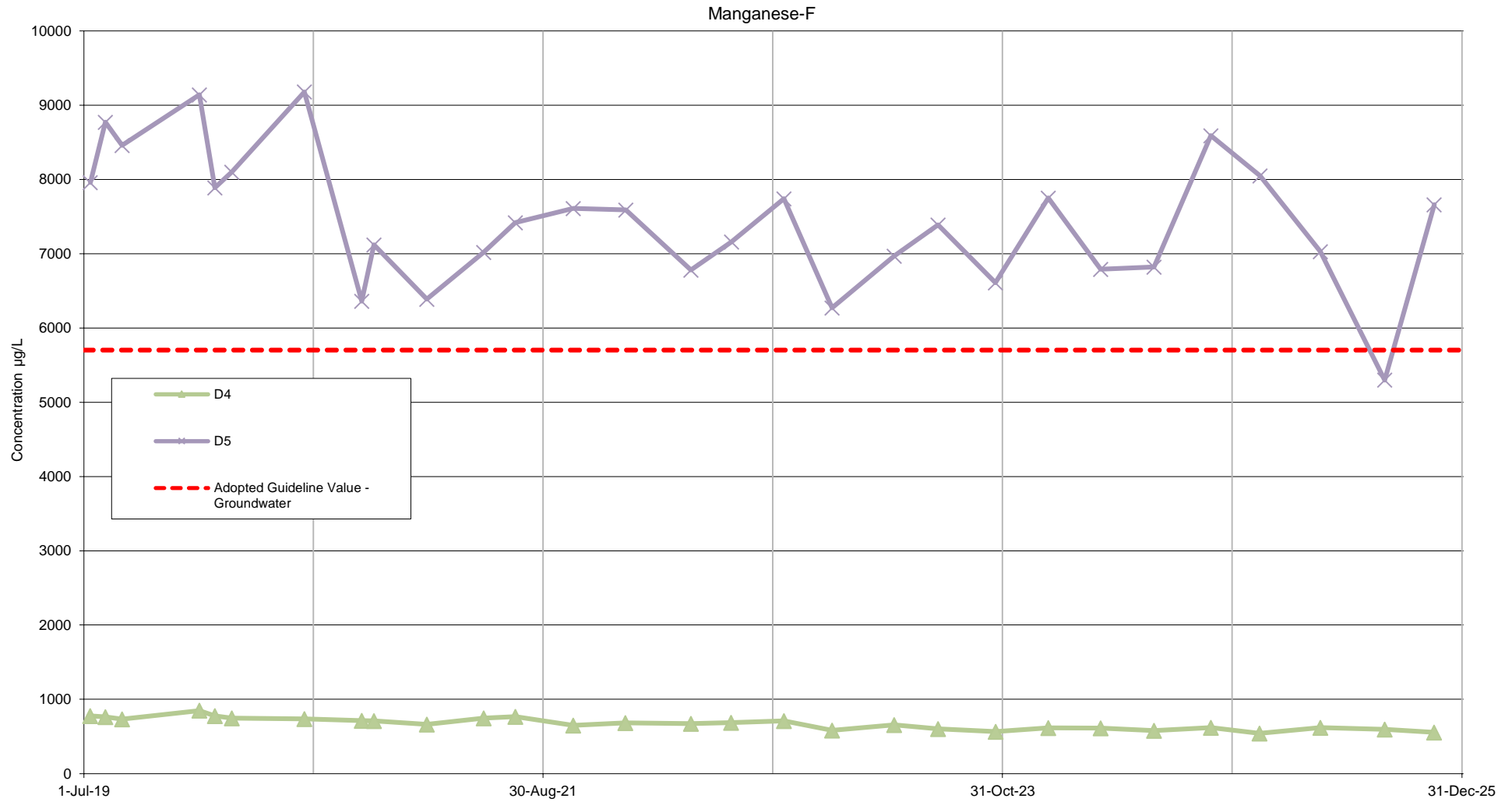


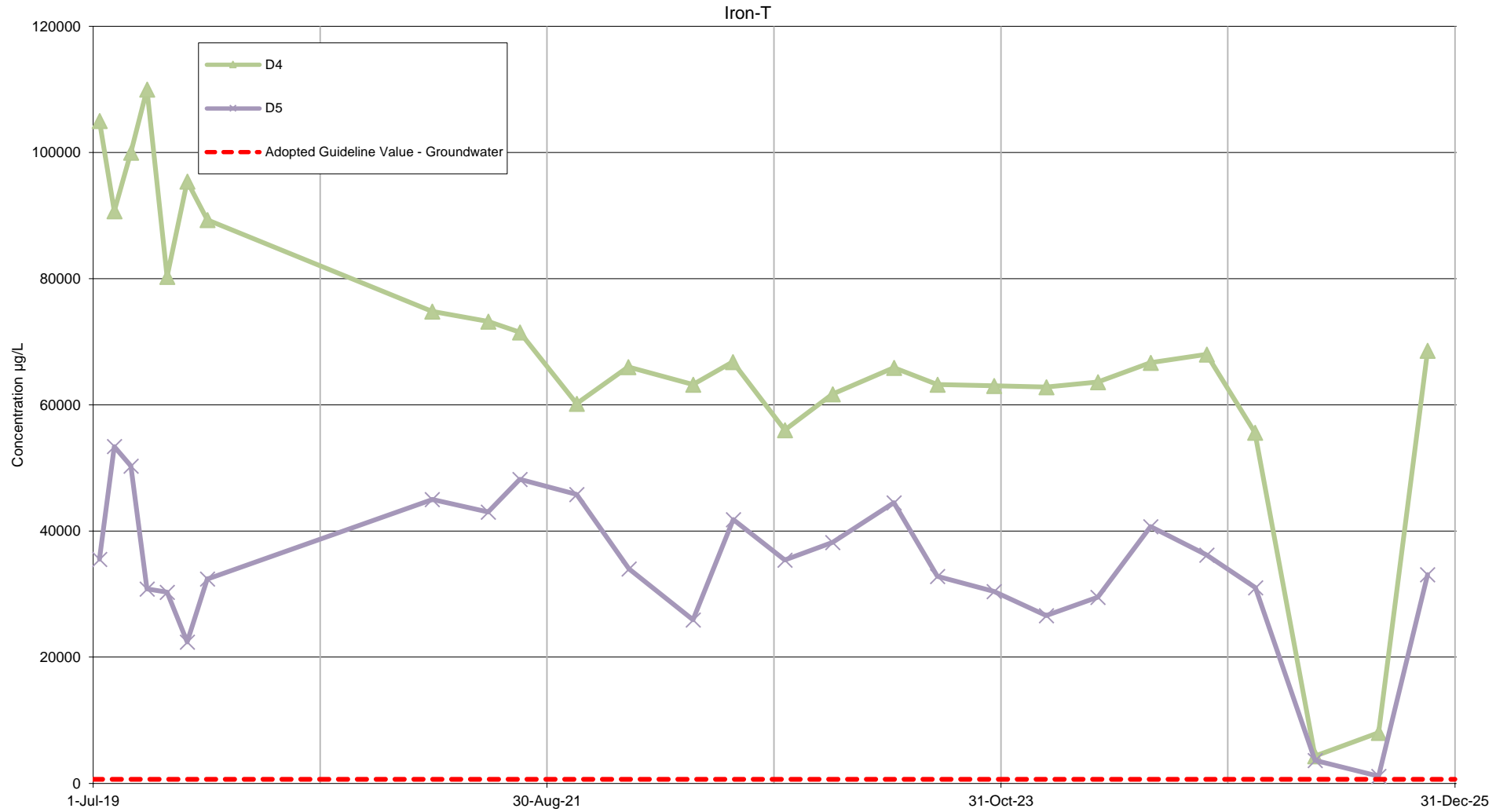


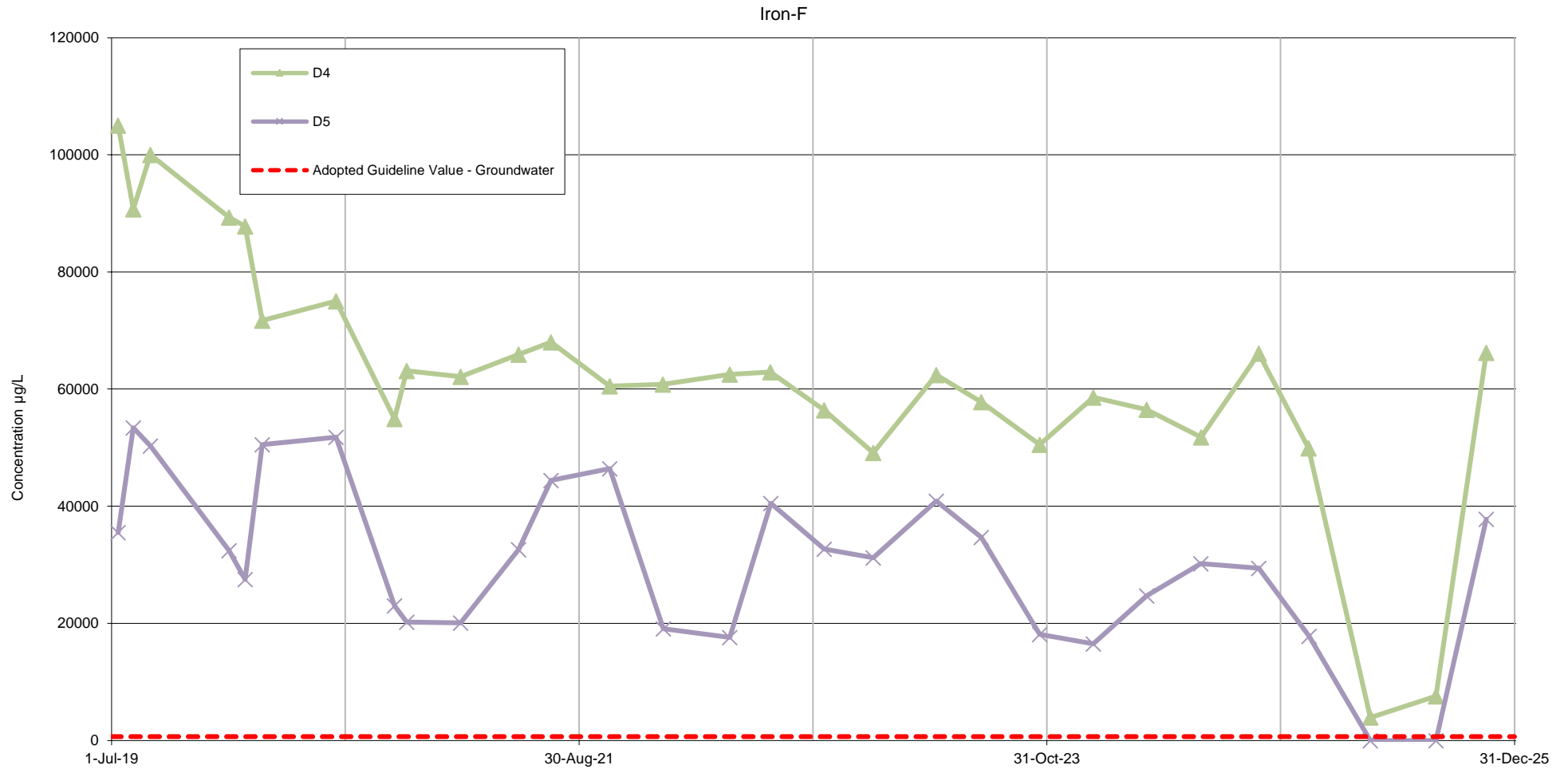


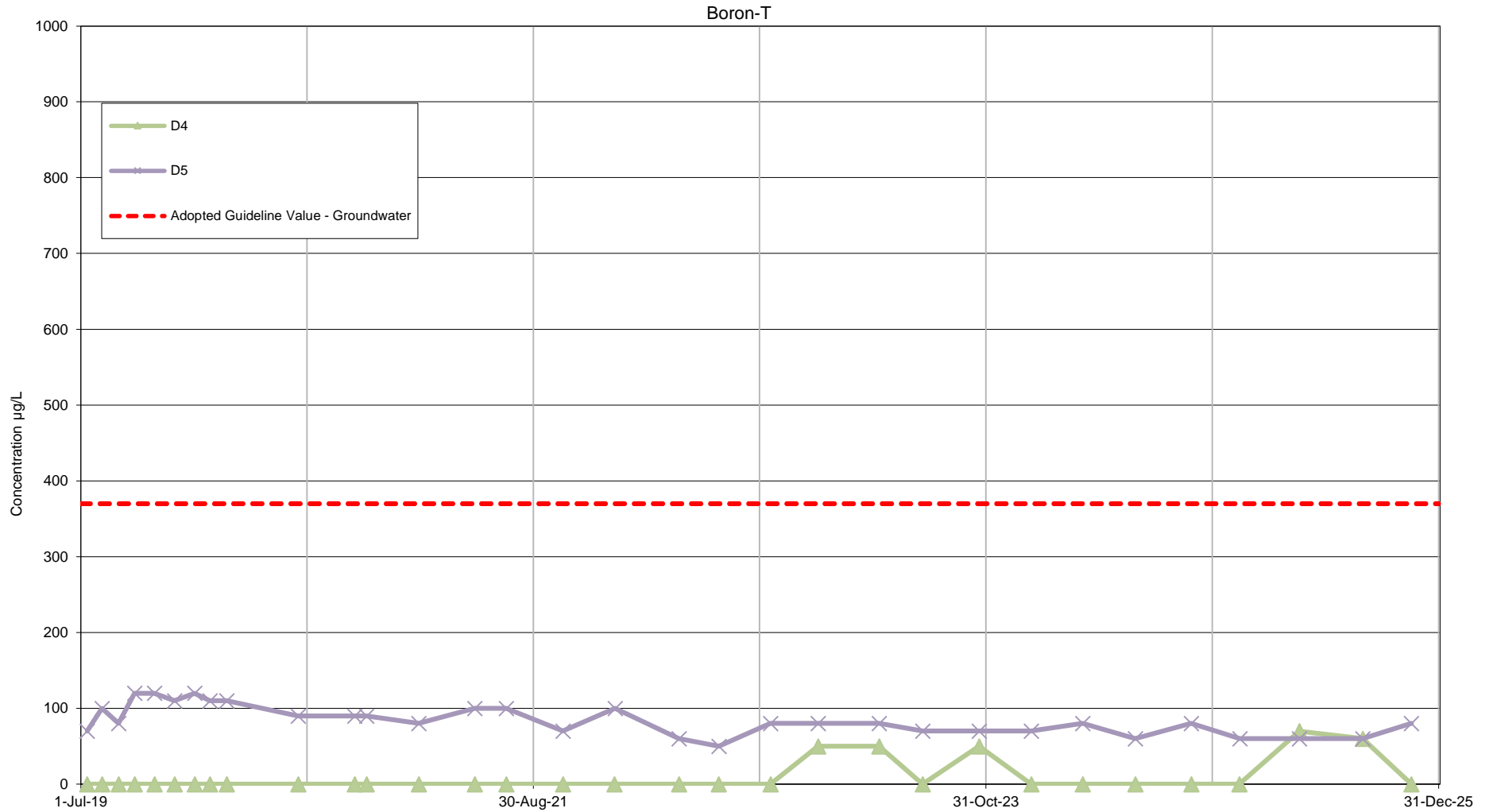


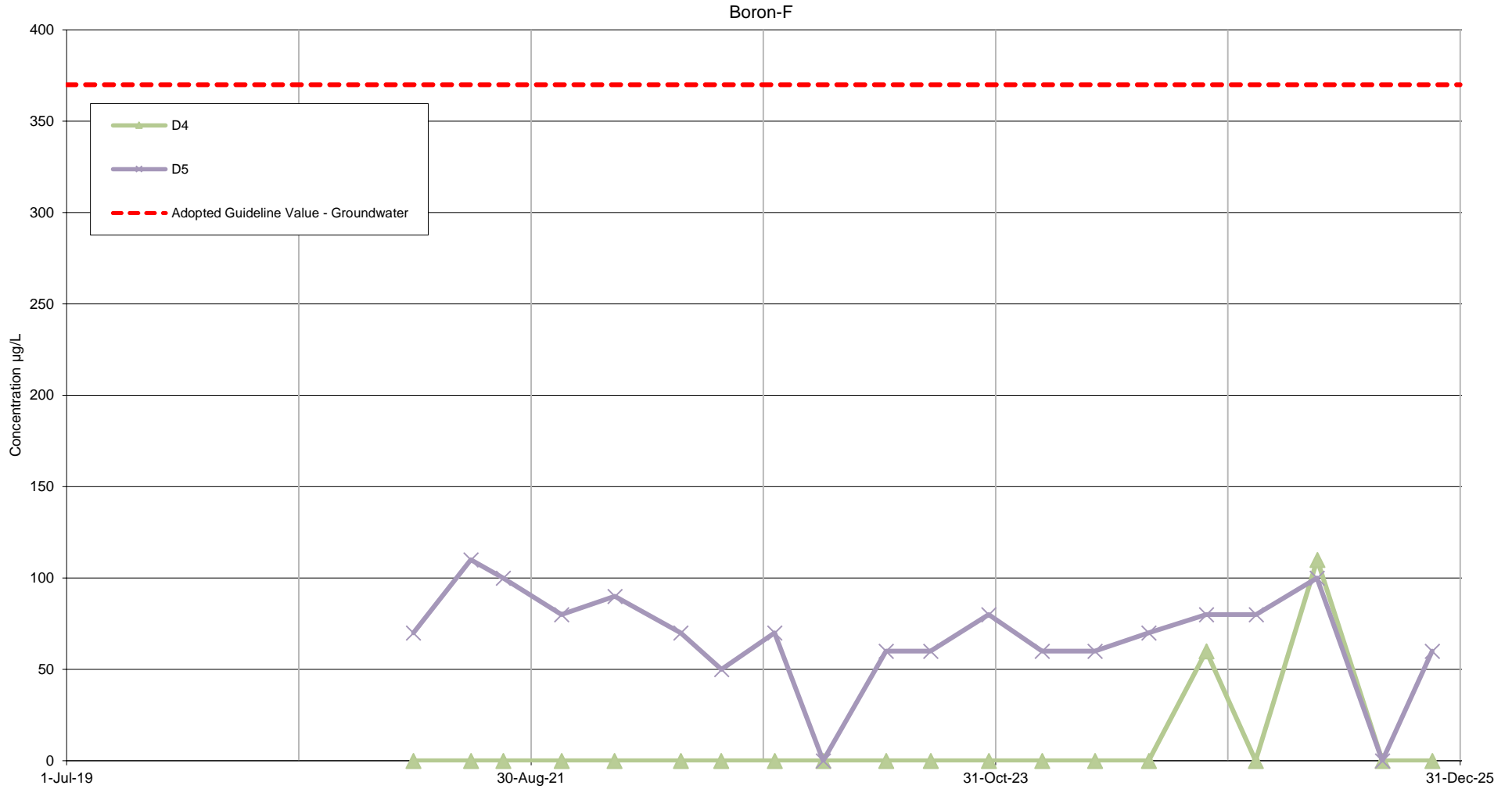


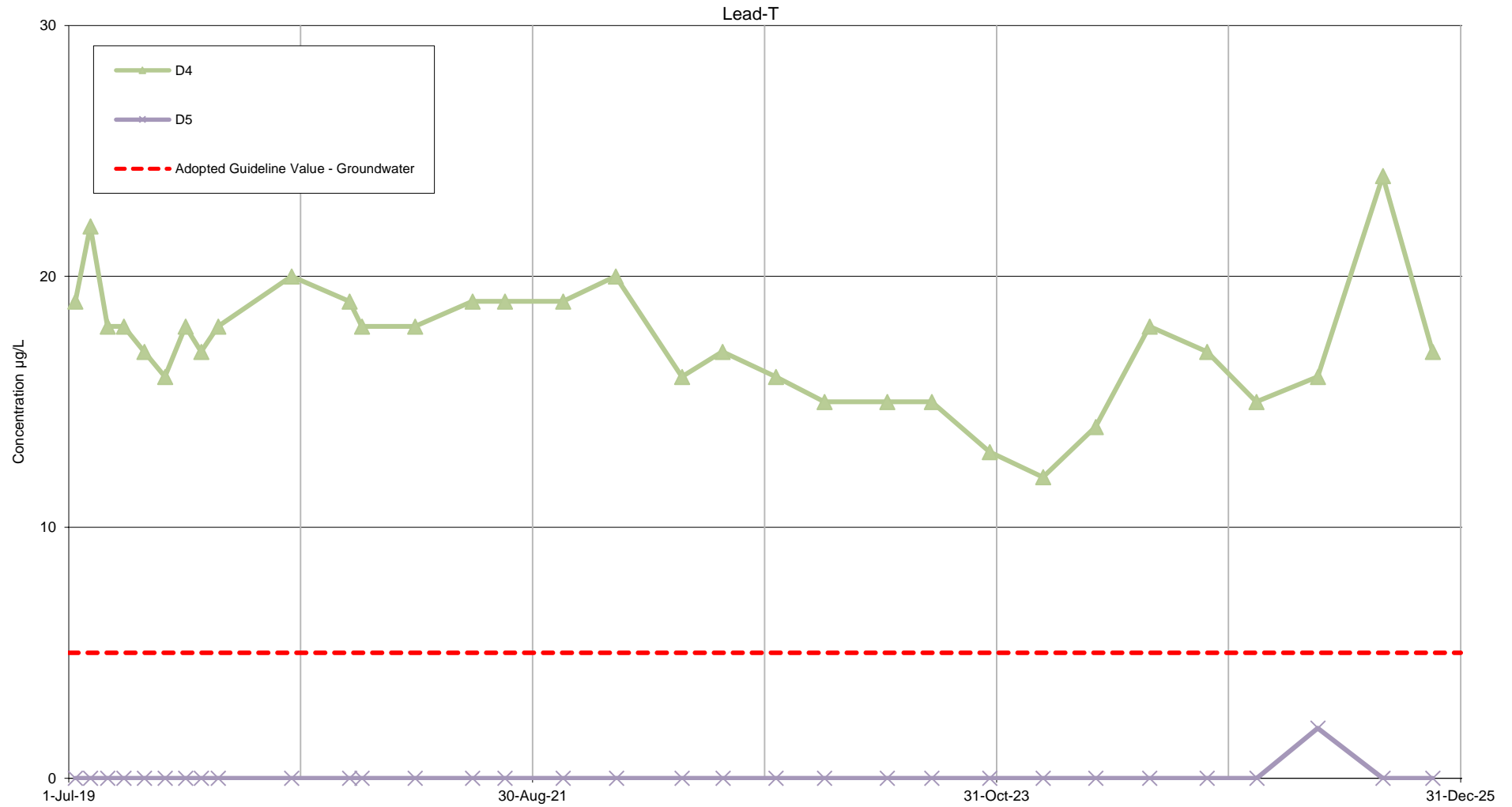


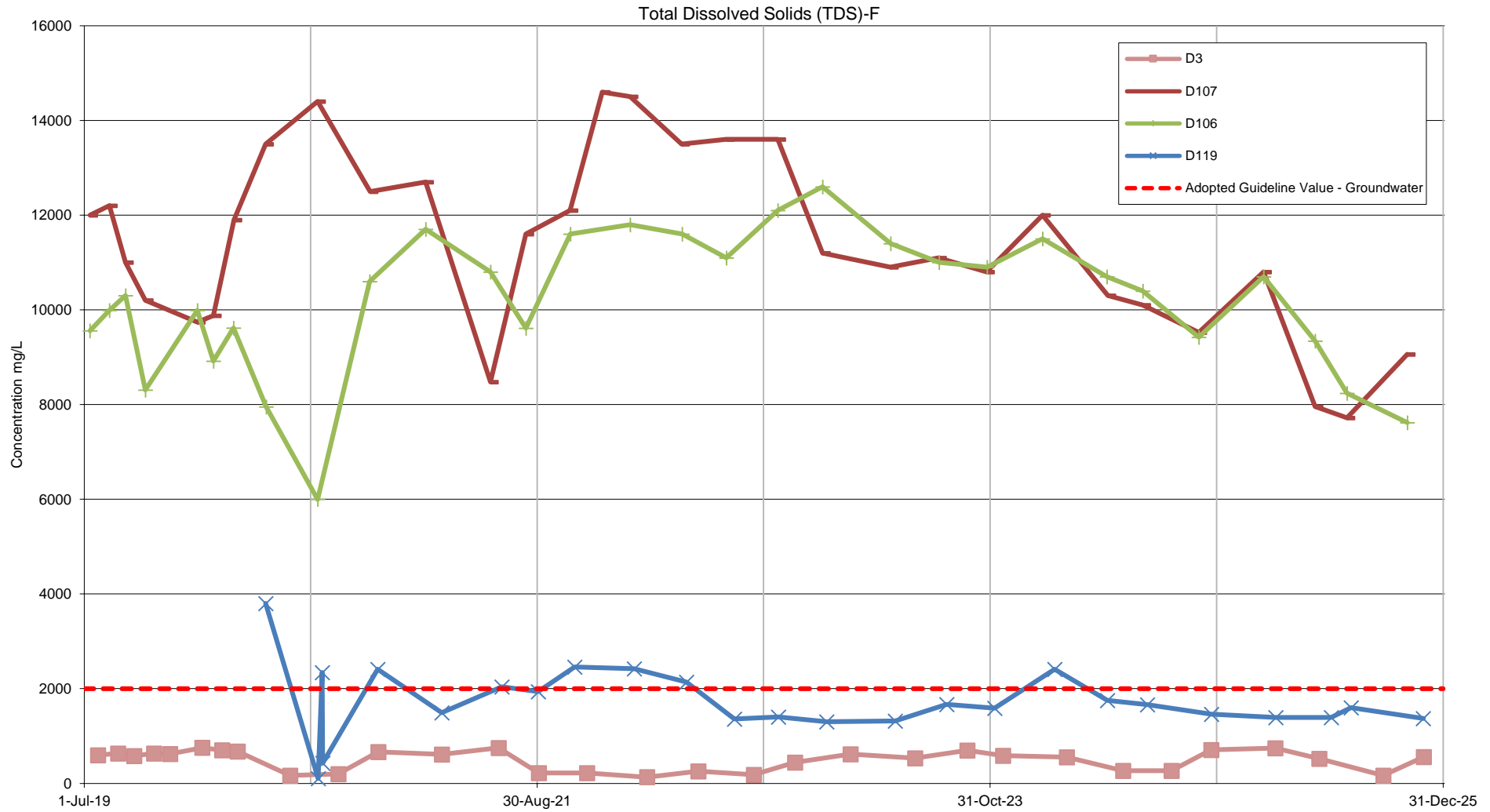


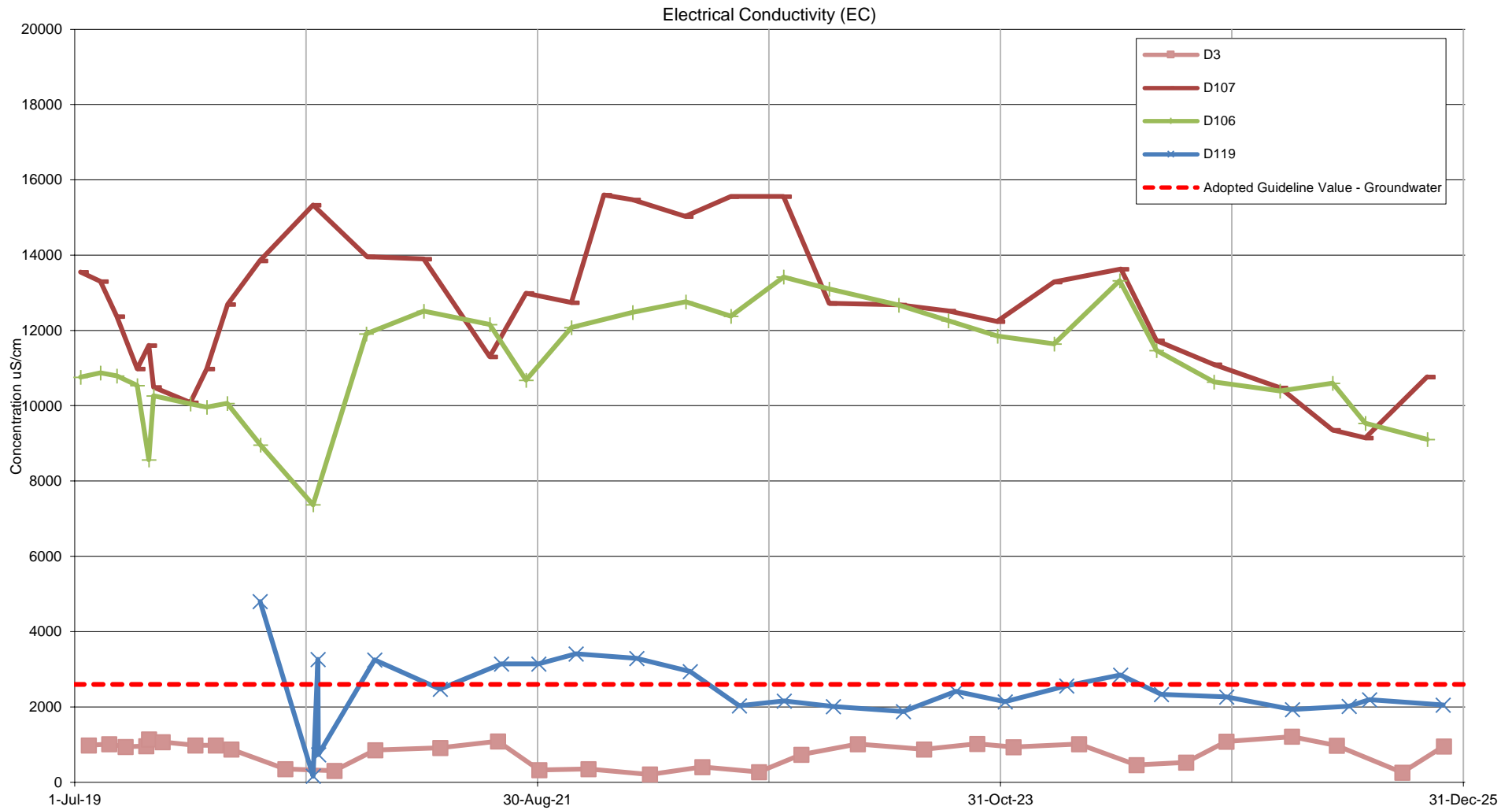


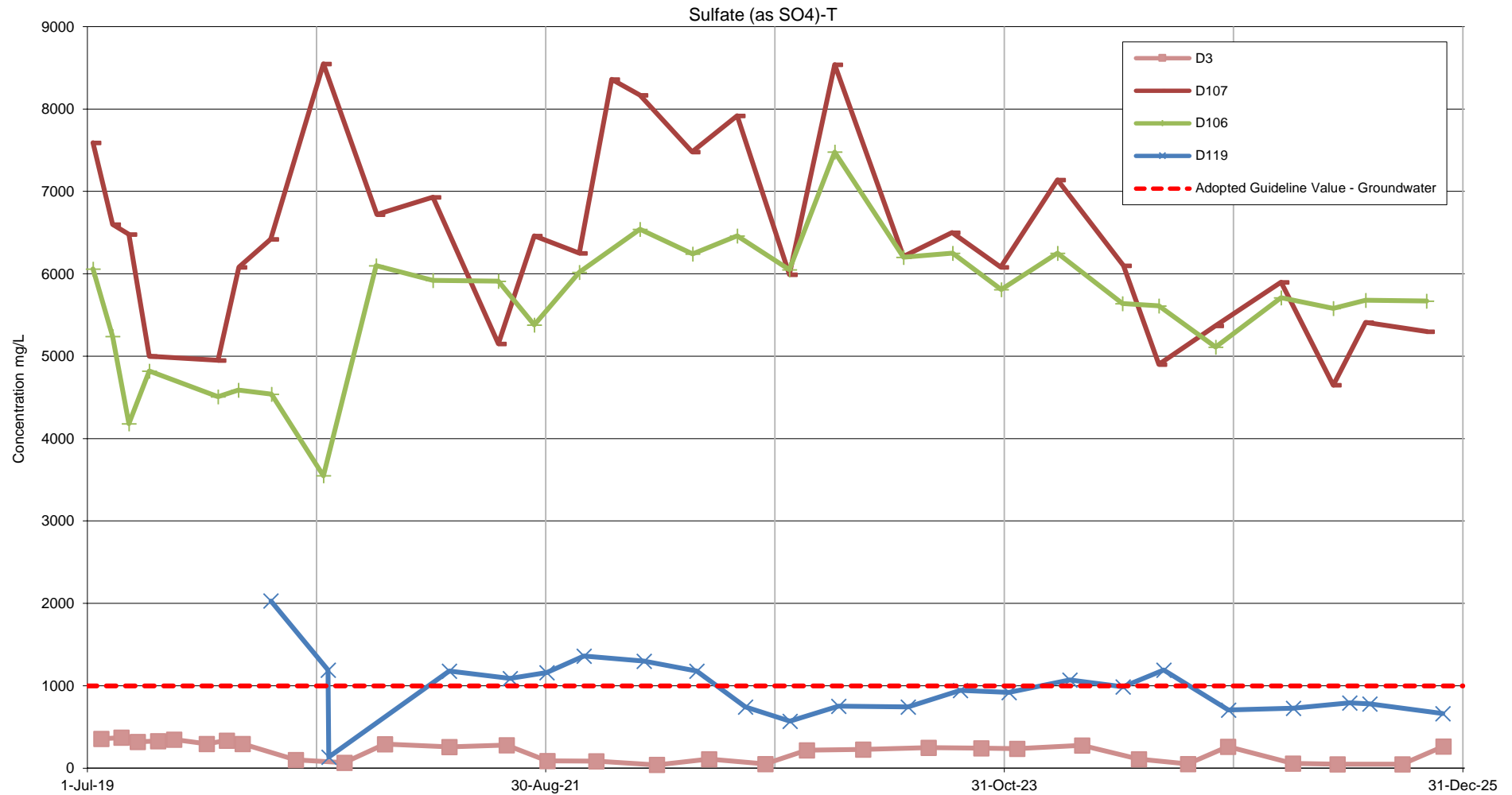


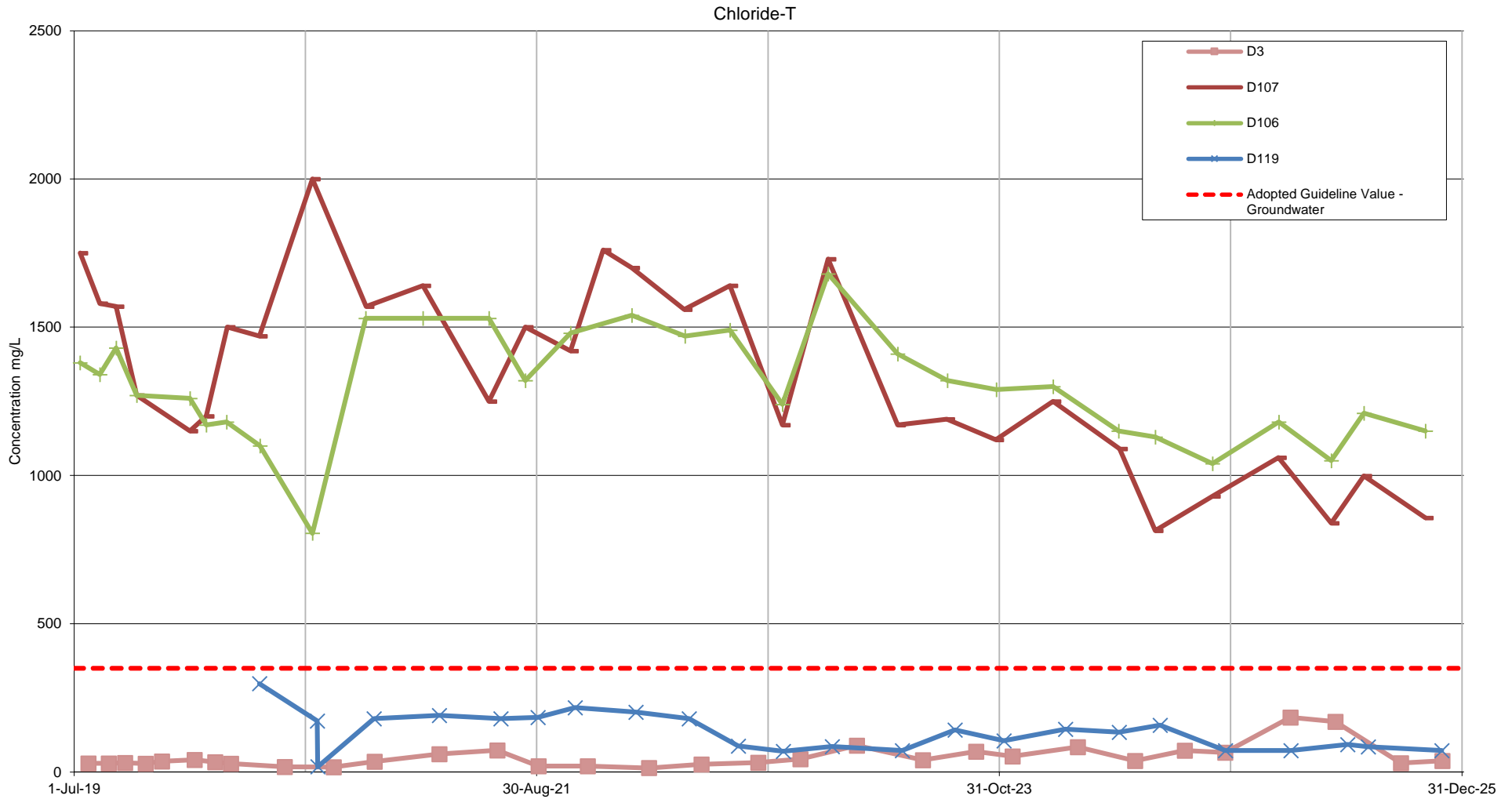


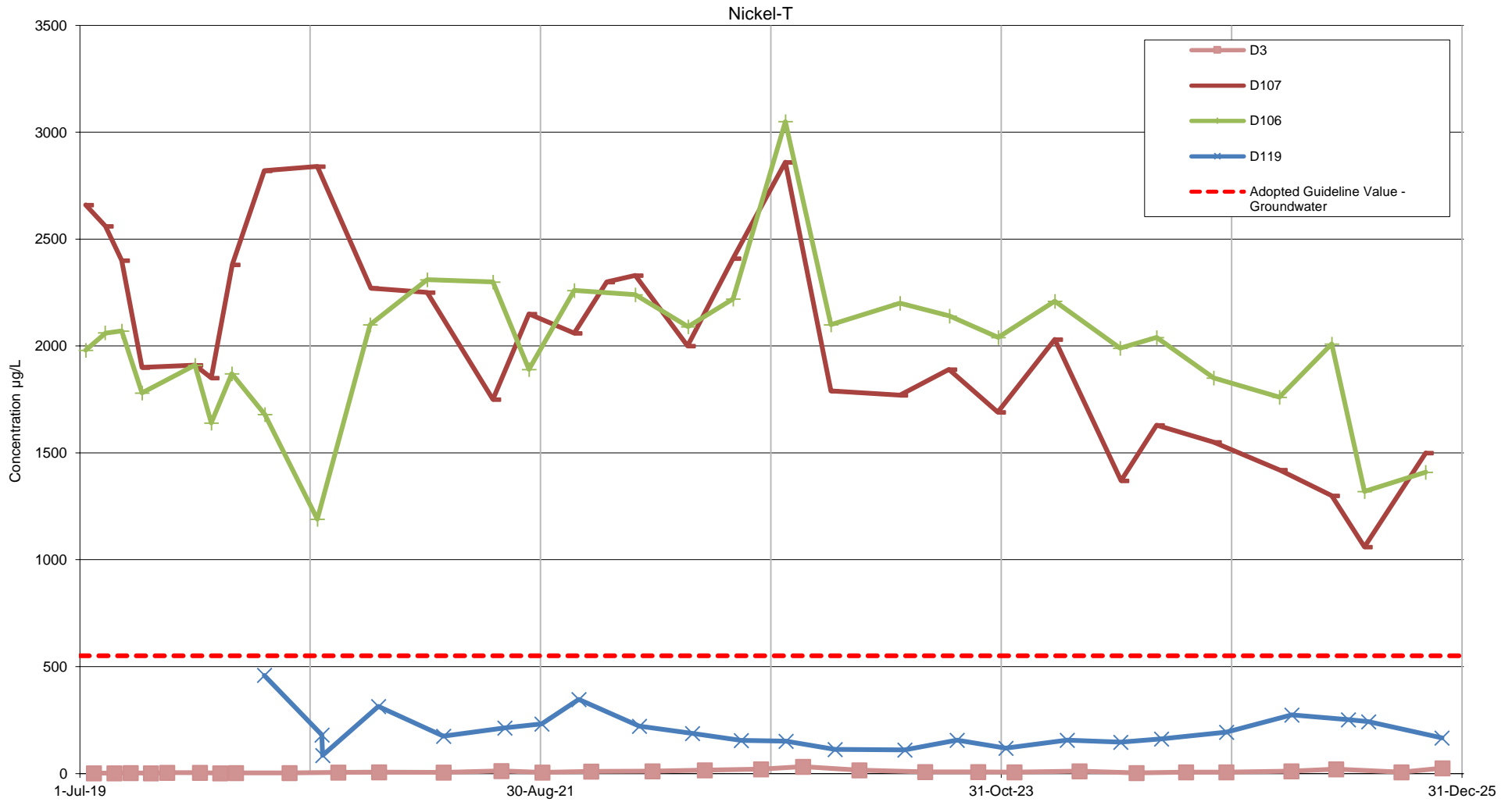


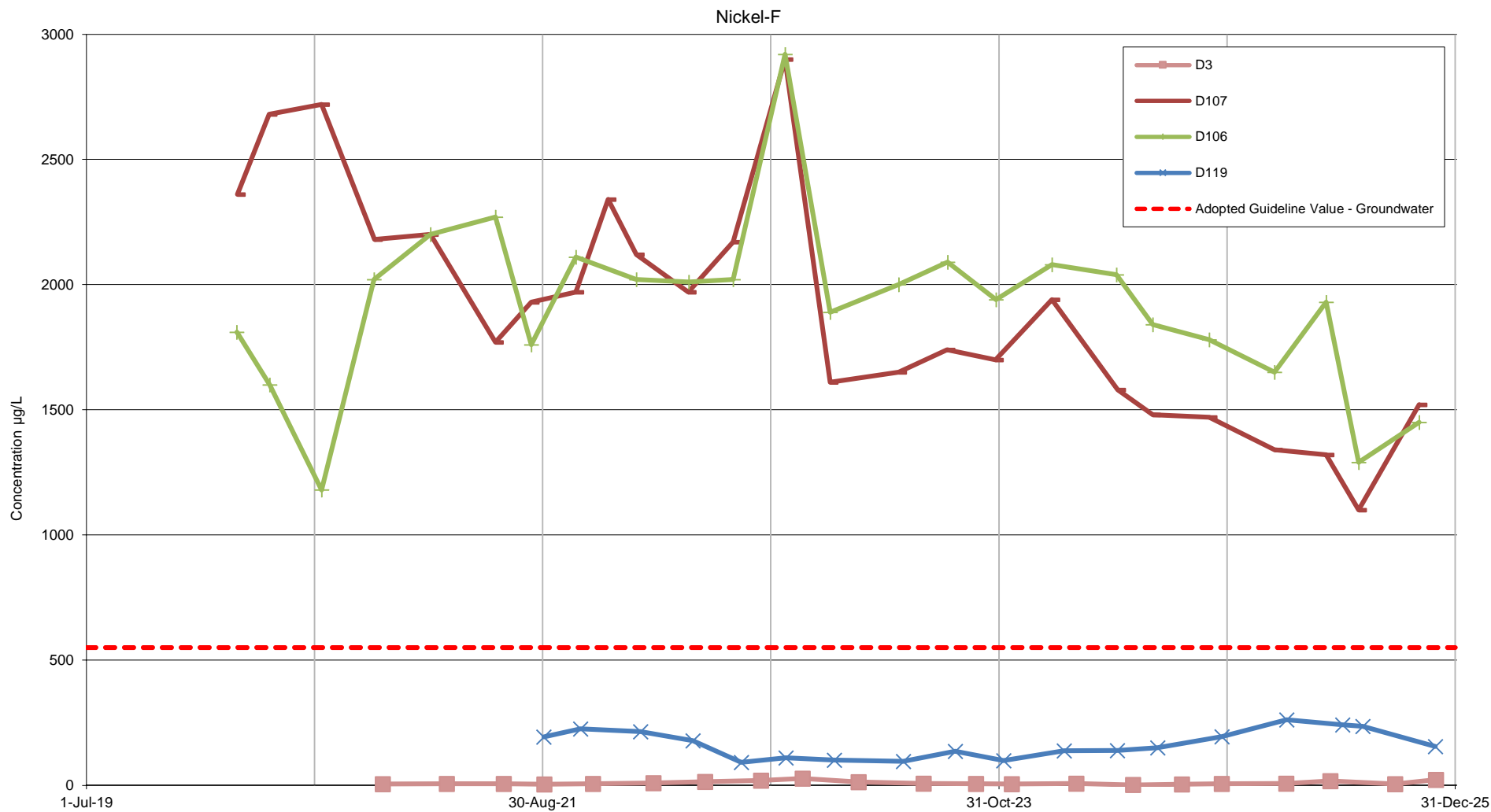


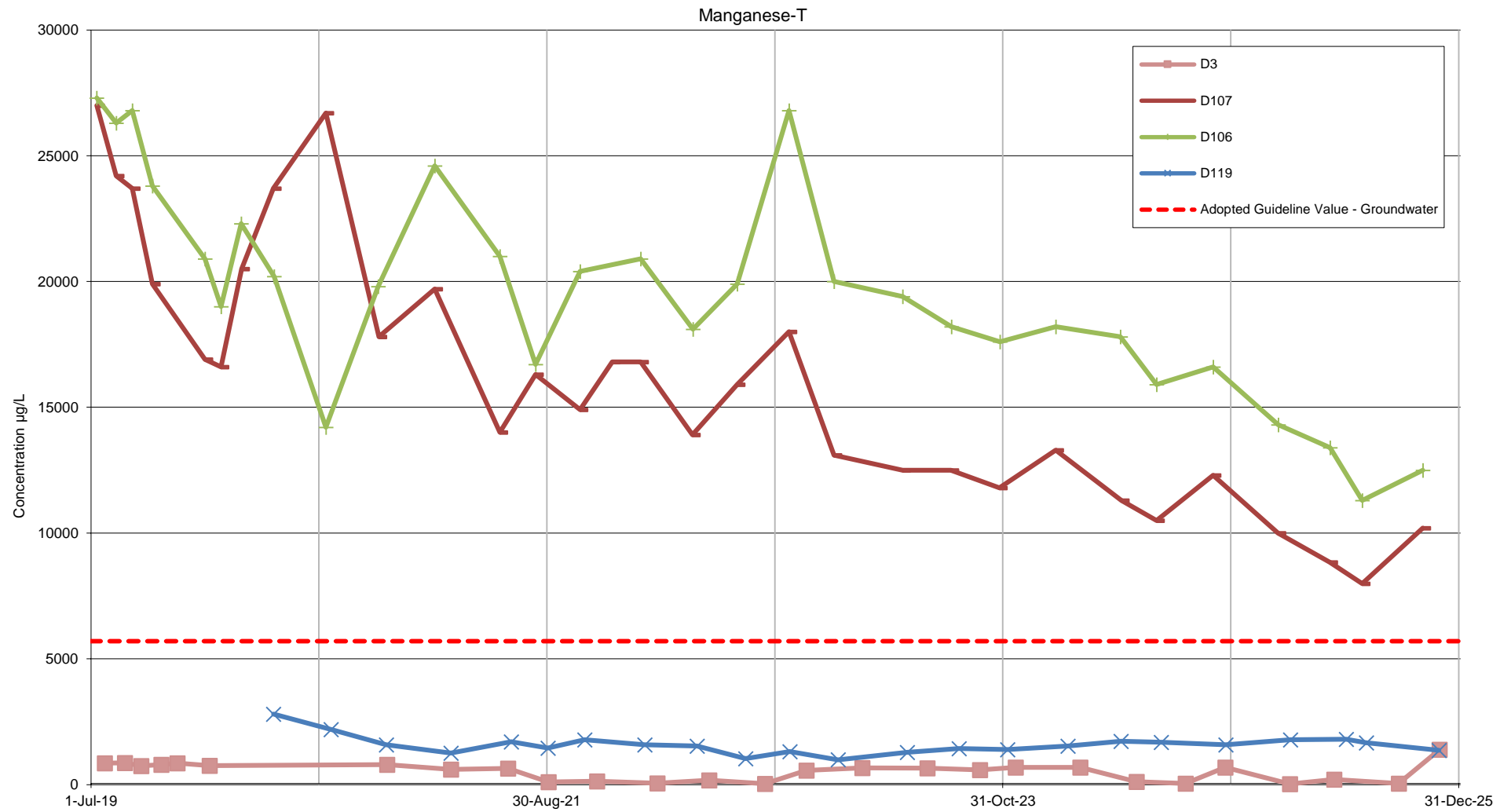


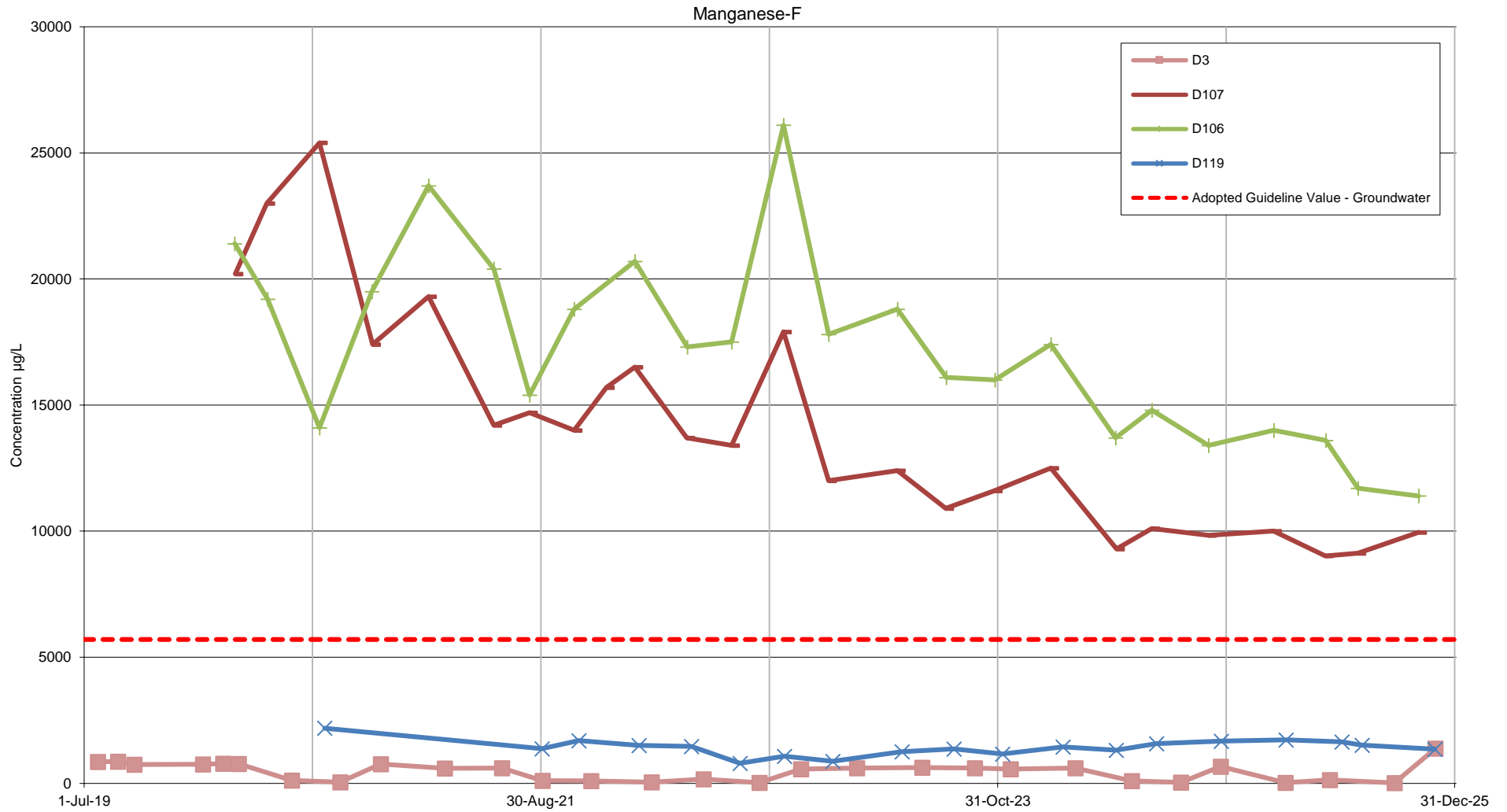




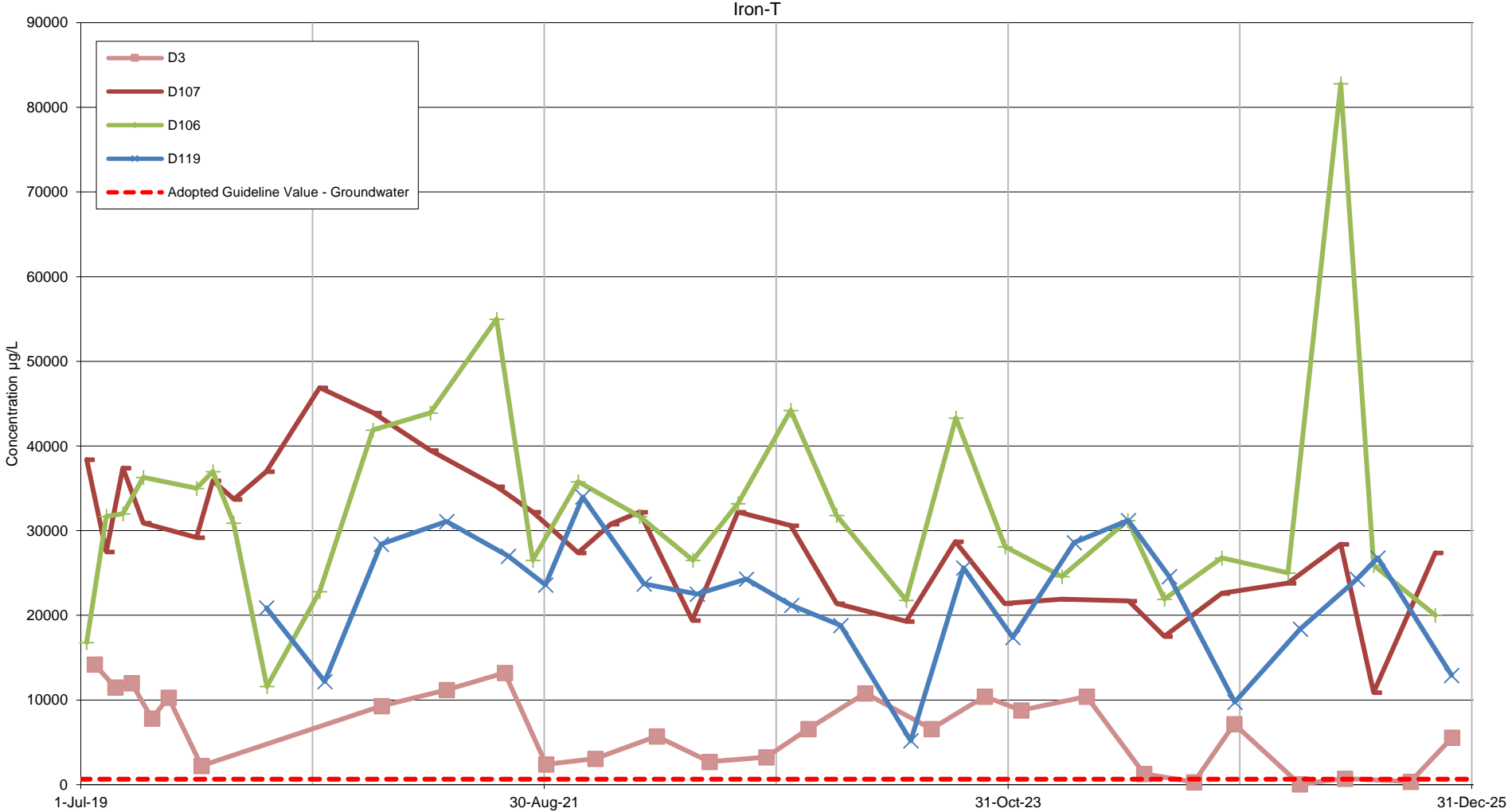




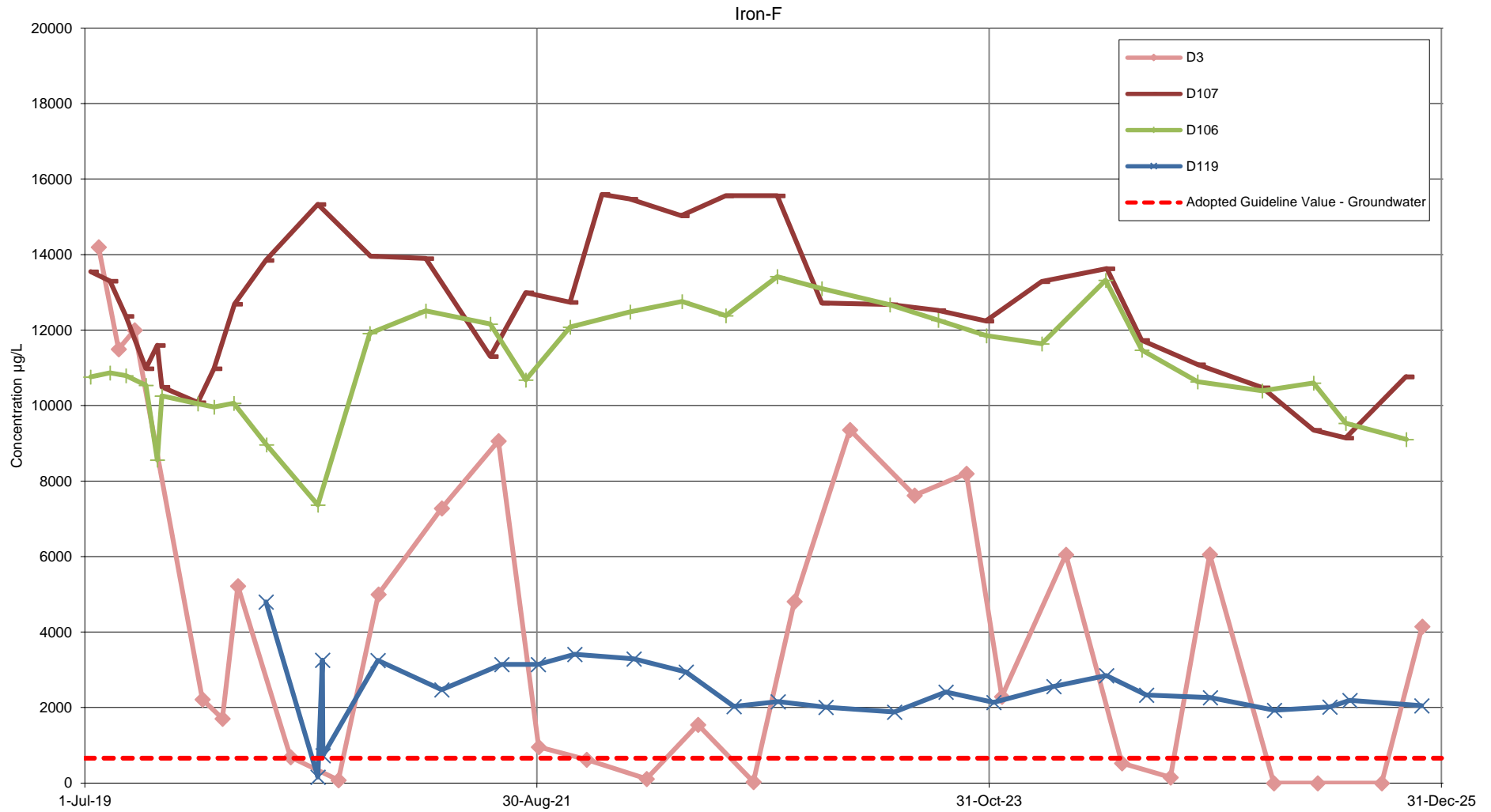


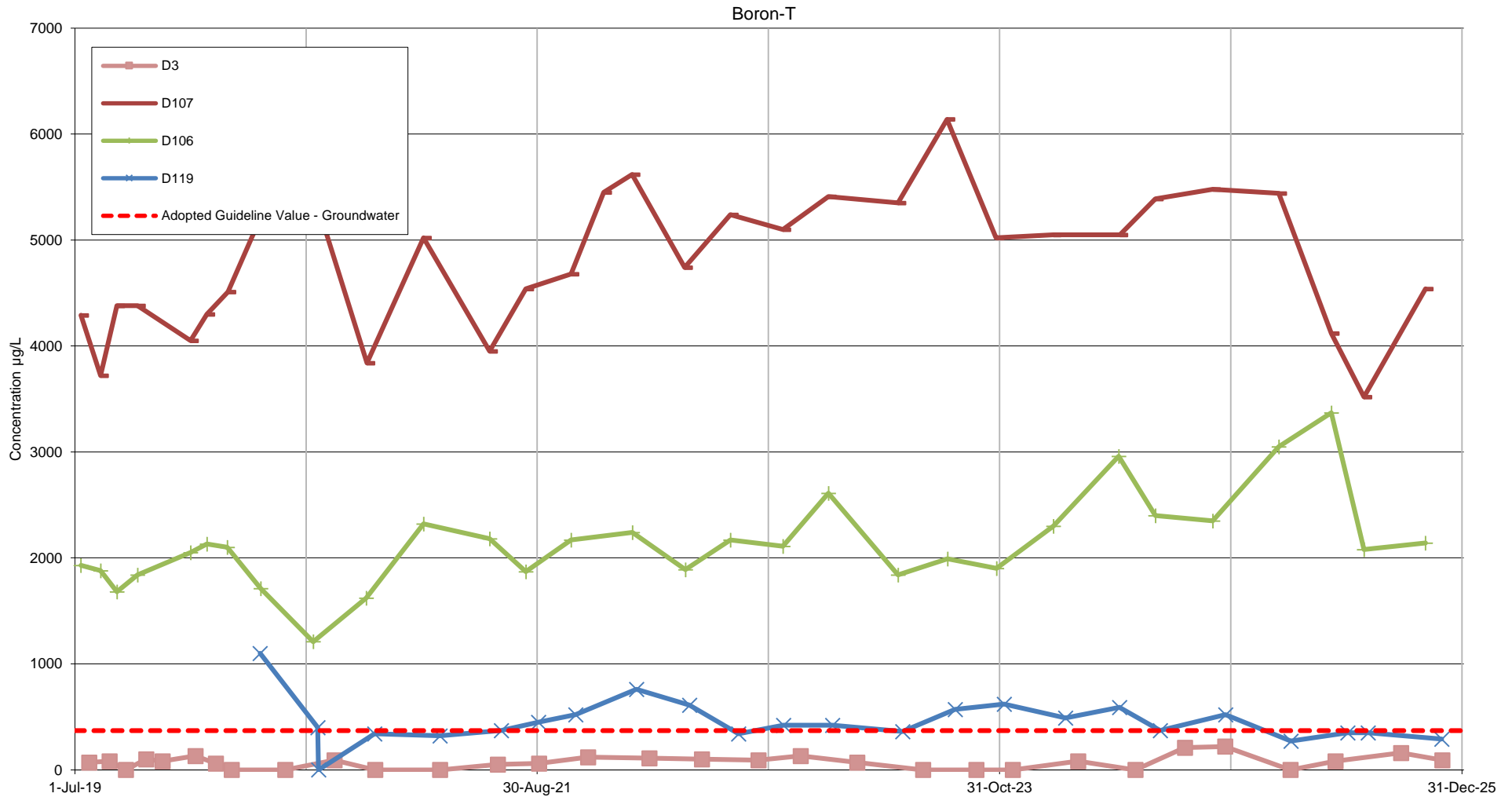


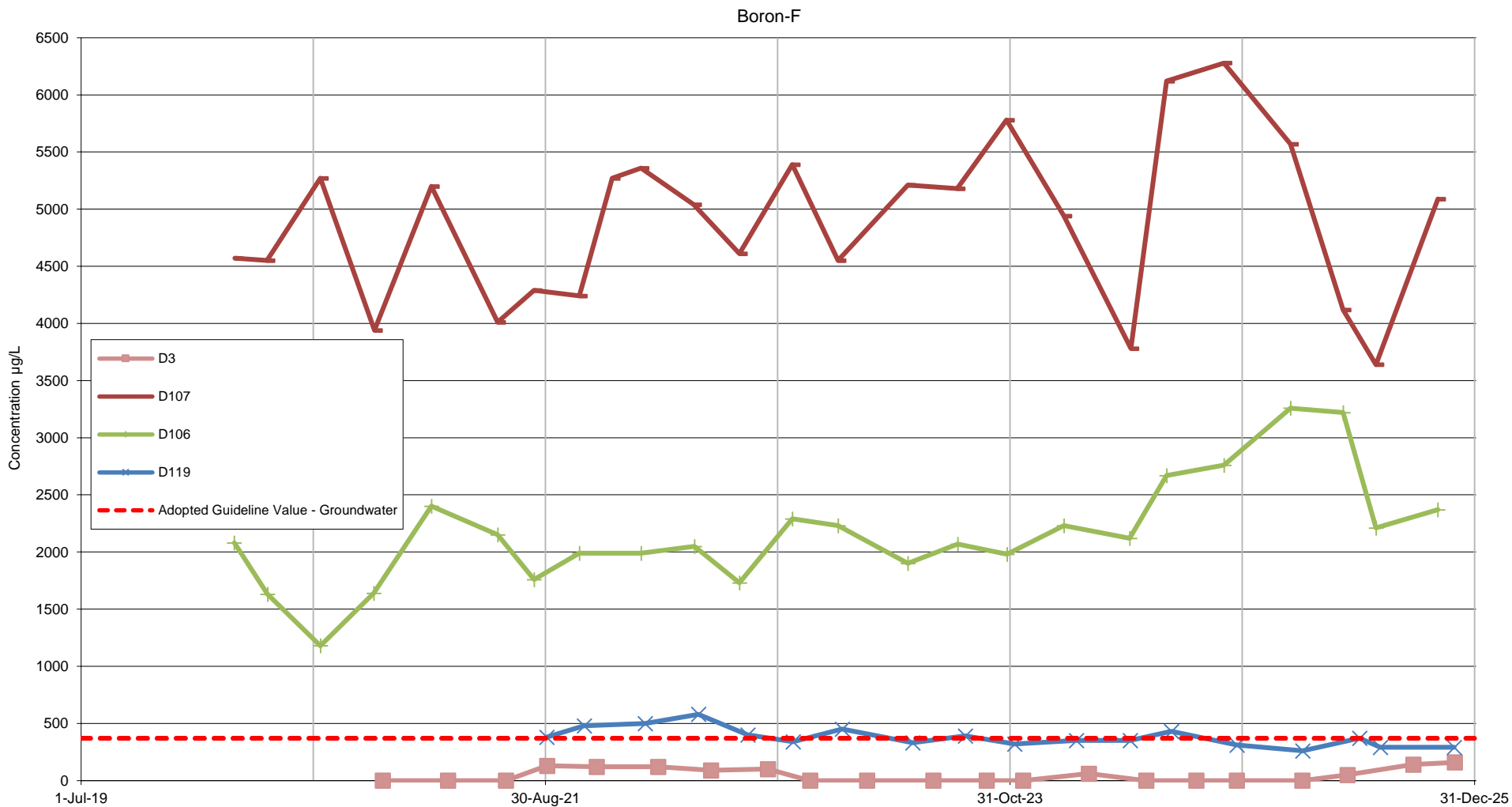
Appendix M. Cross-gradient MPAR / Adjacent MPAR North and Adjacent Wangcol Creek - Iron (Total) Concentrations Over Time
Mt Piper Power Station - Annual Monitoring Report 2024/25
0810778

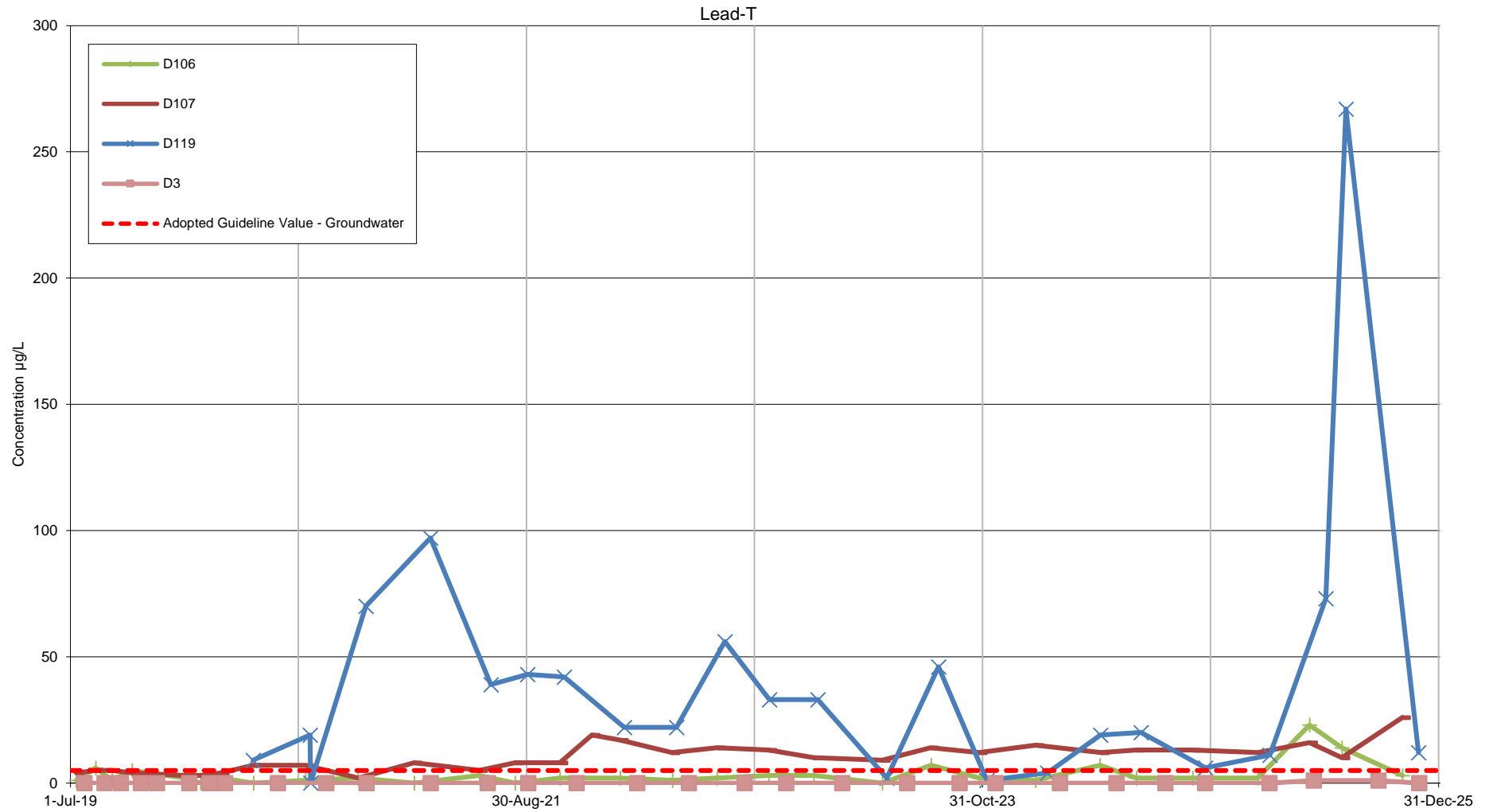


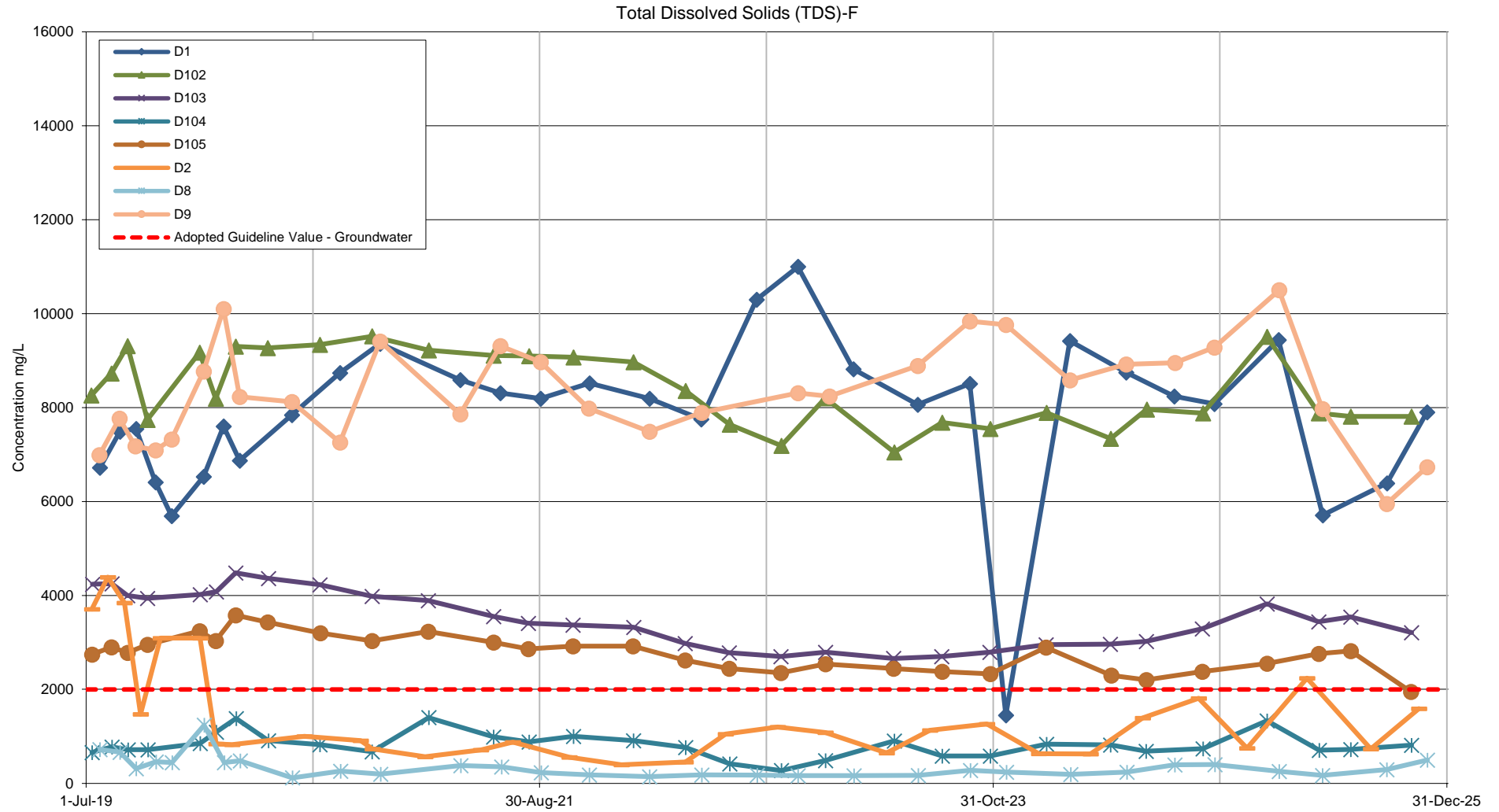
Appendix M. Cross-gradient MPAR / Adjacent MPAR North and Adjacent Wangcol Creek - Iron (Filtered) Concentrations Over Time
 Mt Piper Power Station - Annual Monitoring Report 2024/25
 0810778

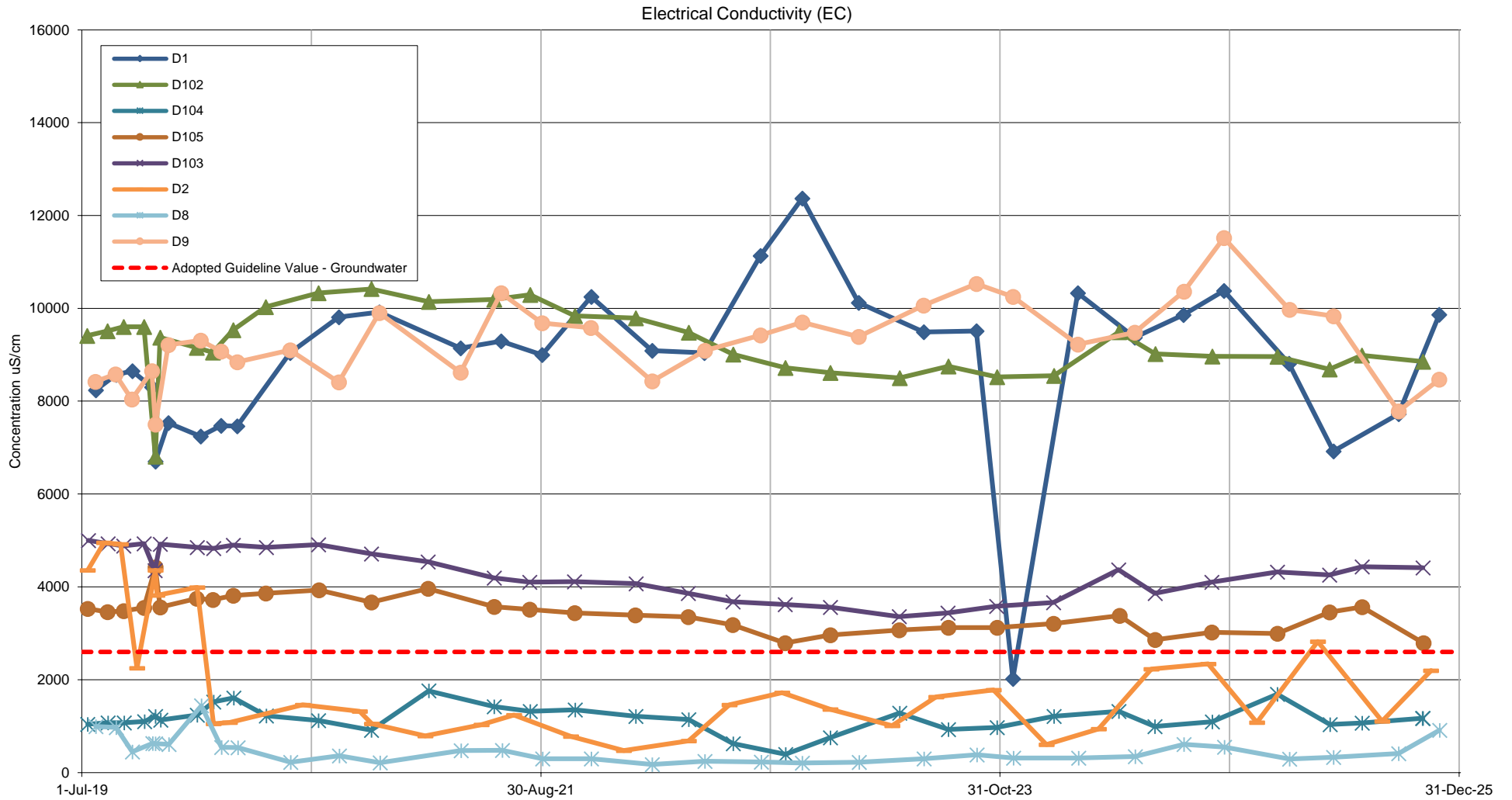


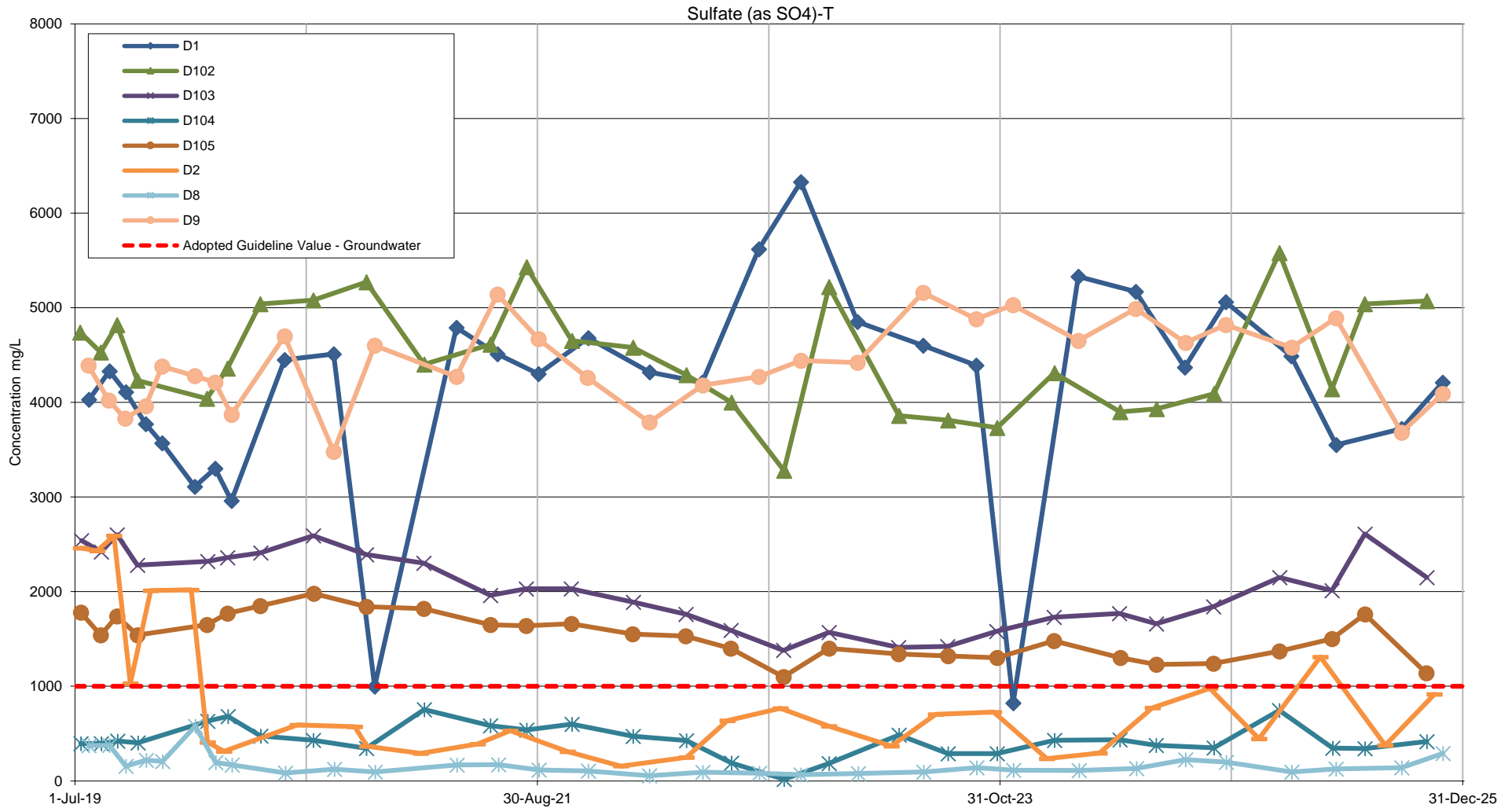


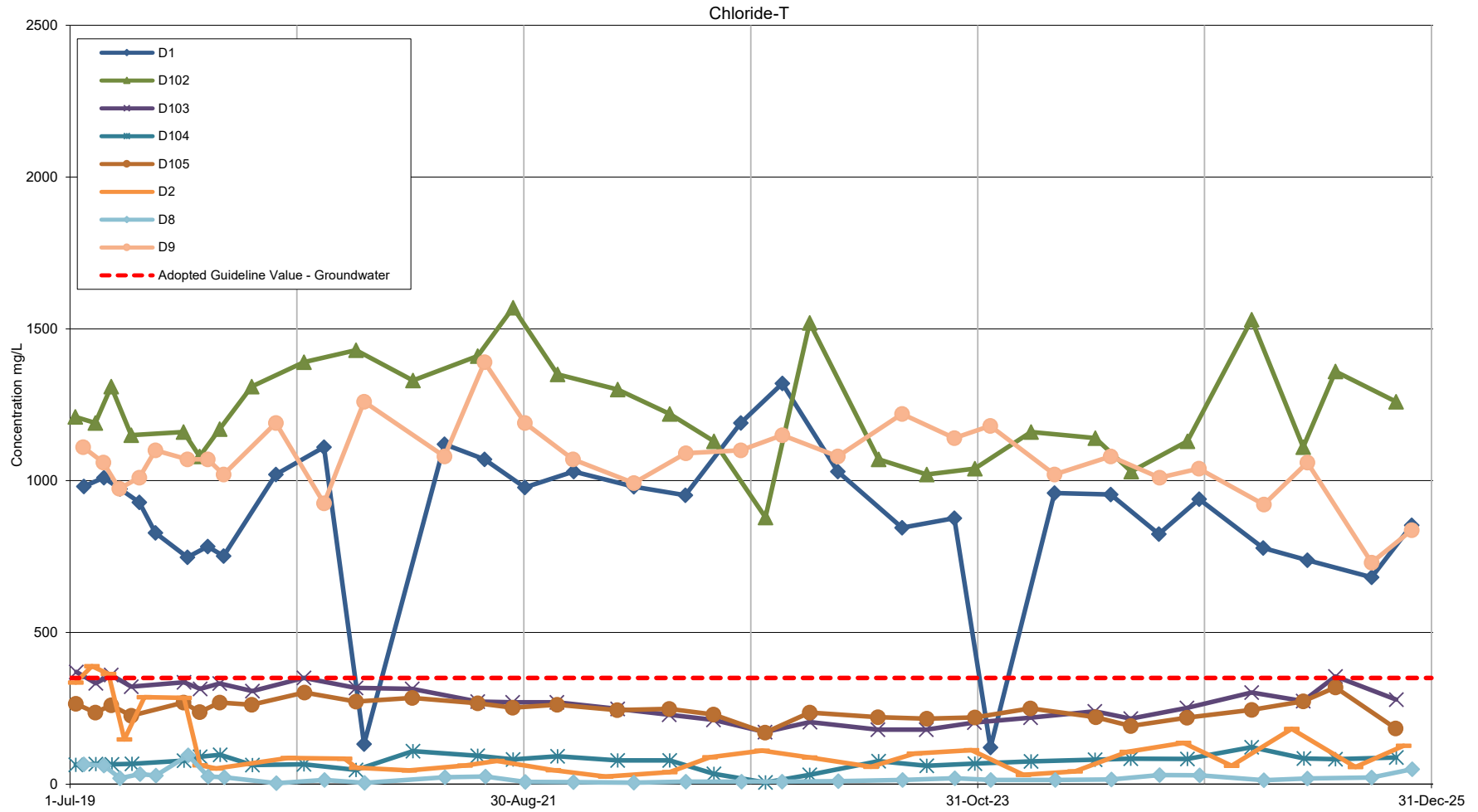


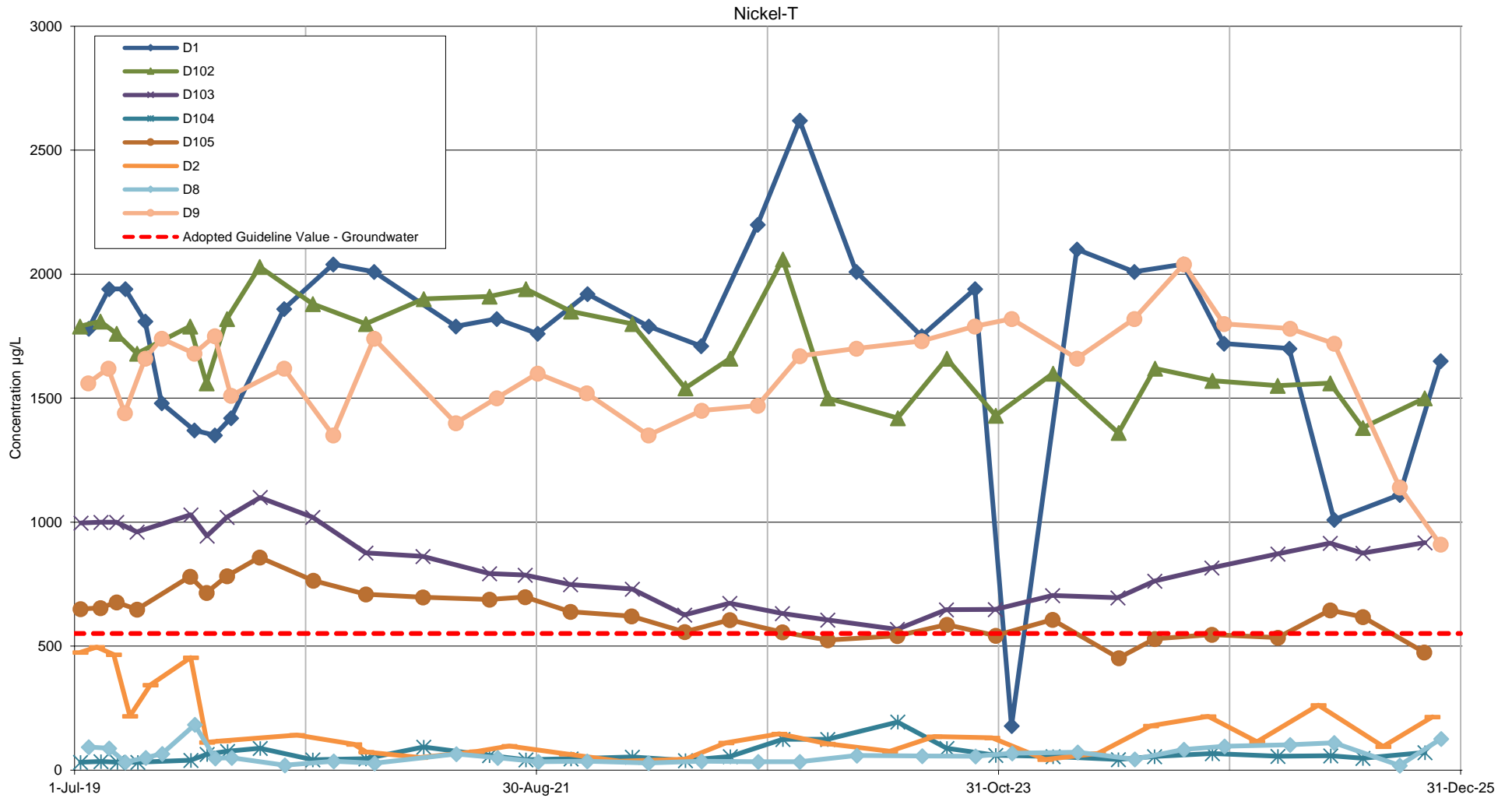


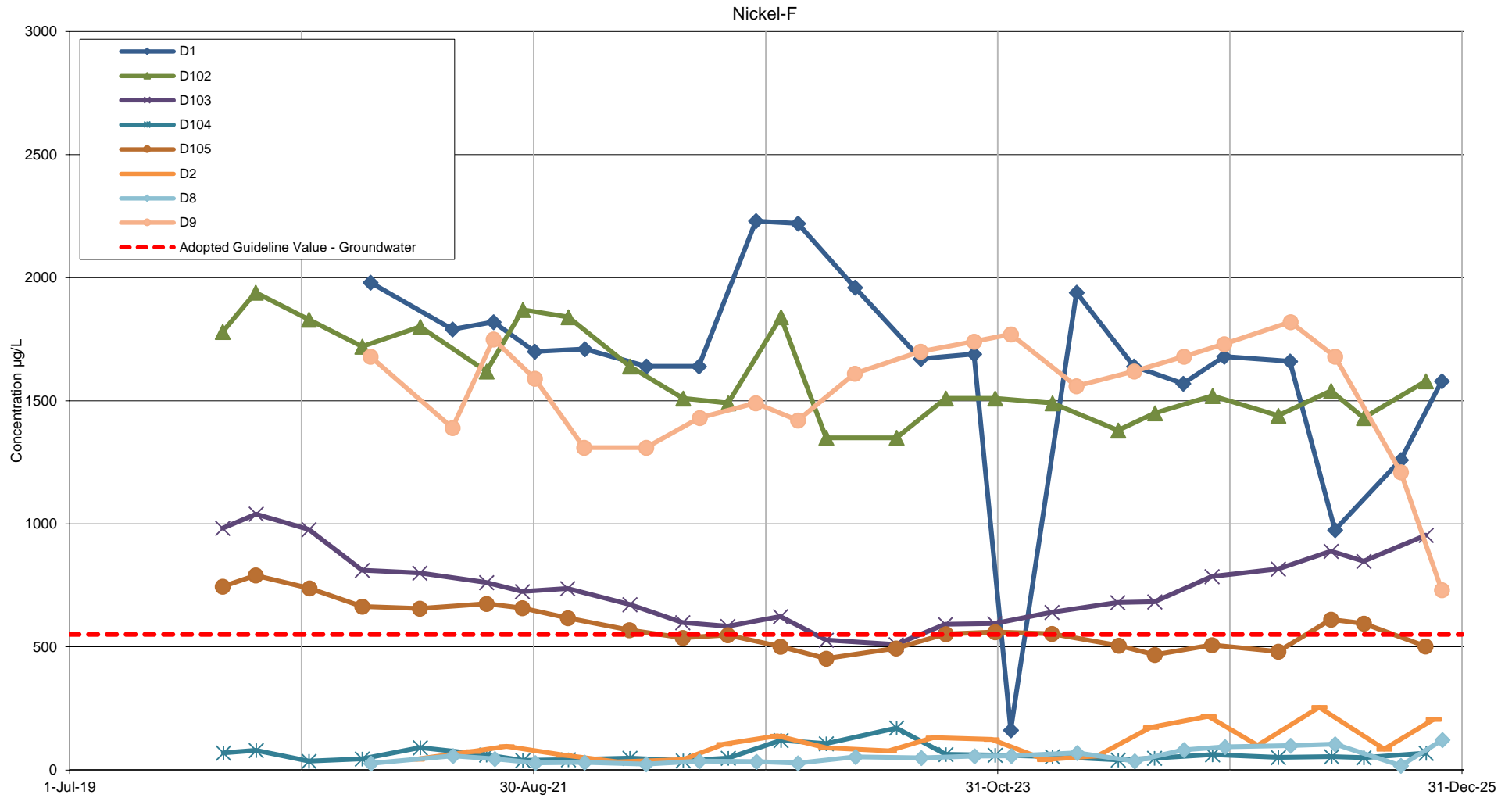






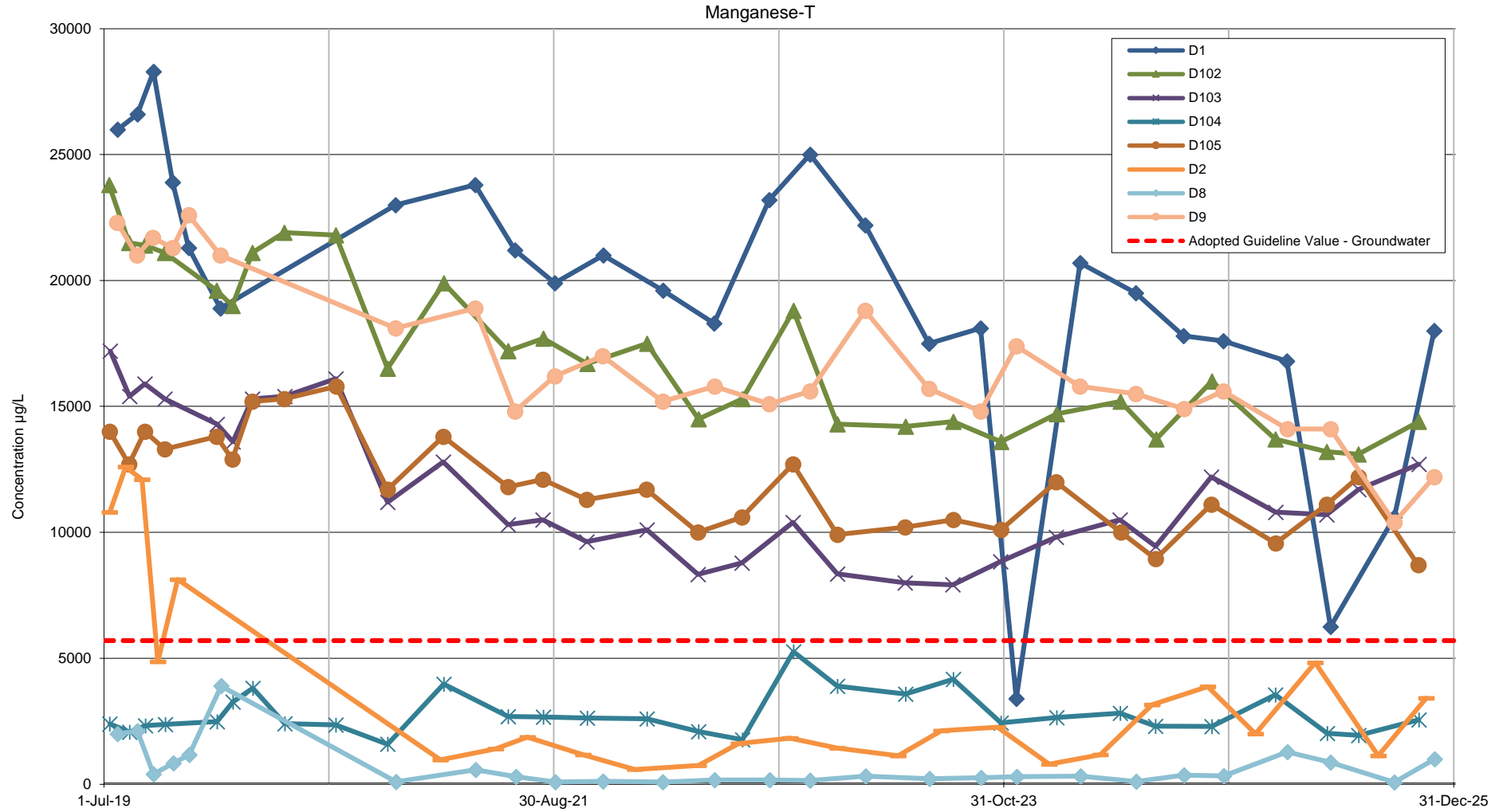


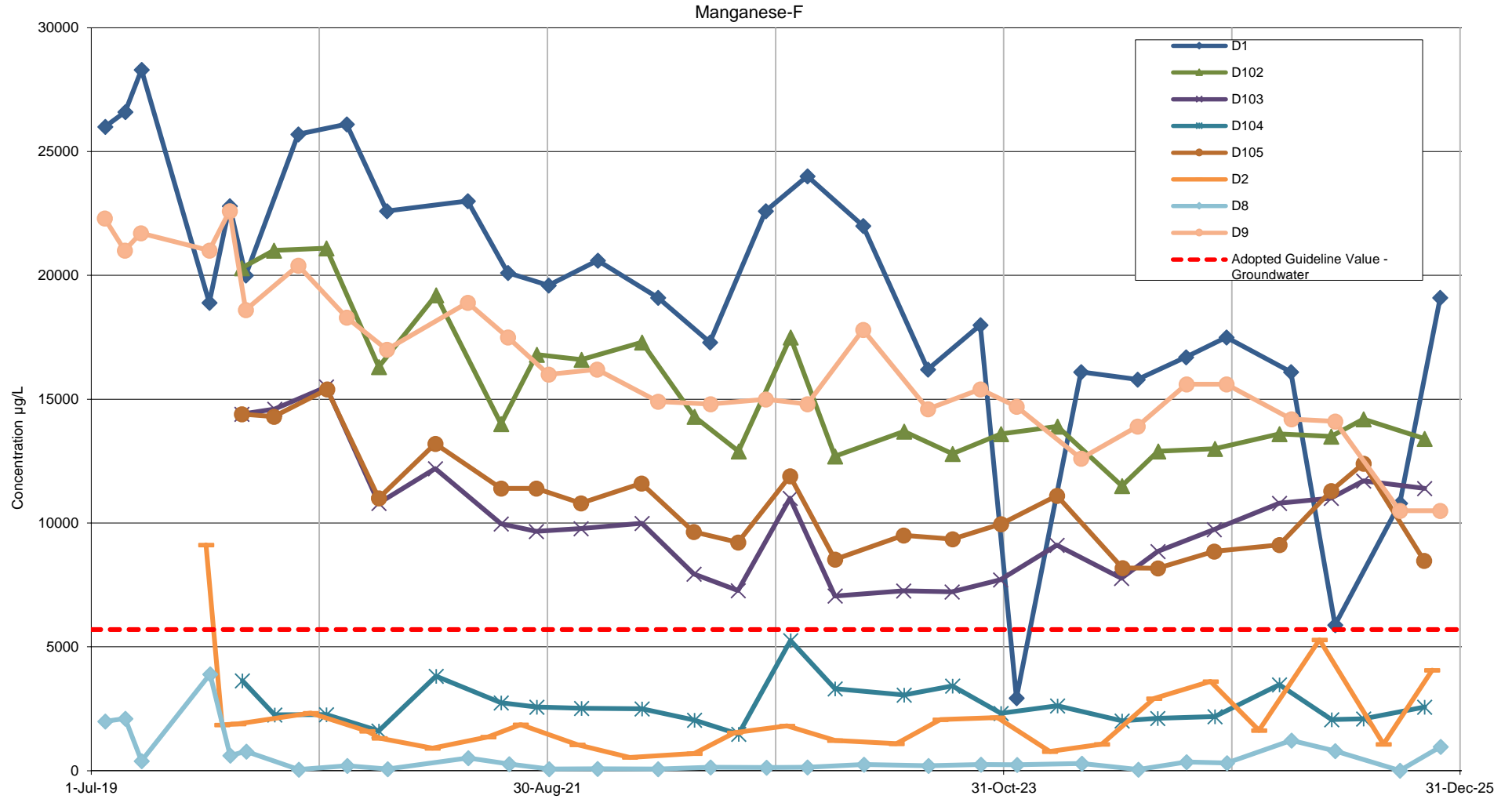


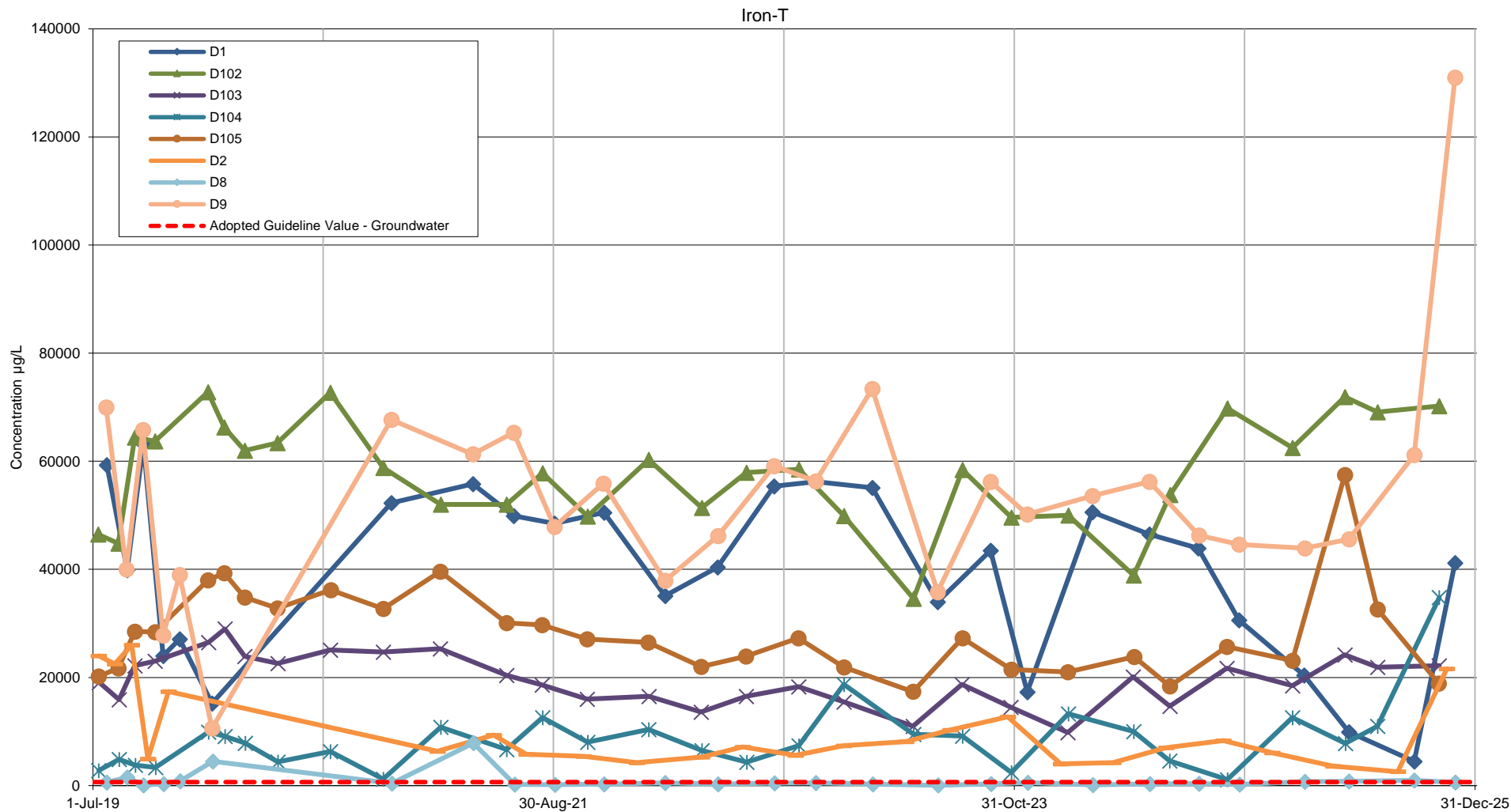




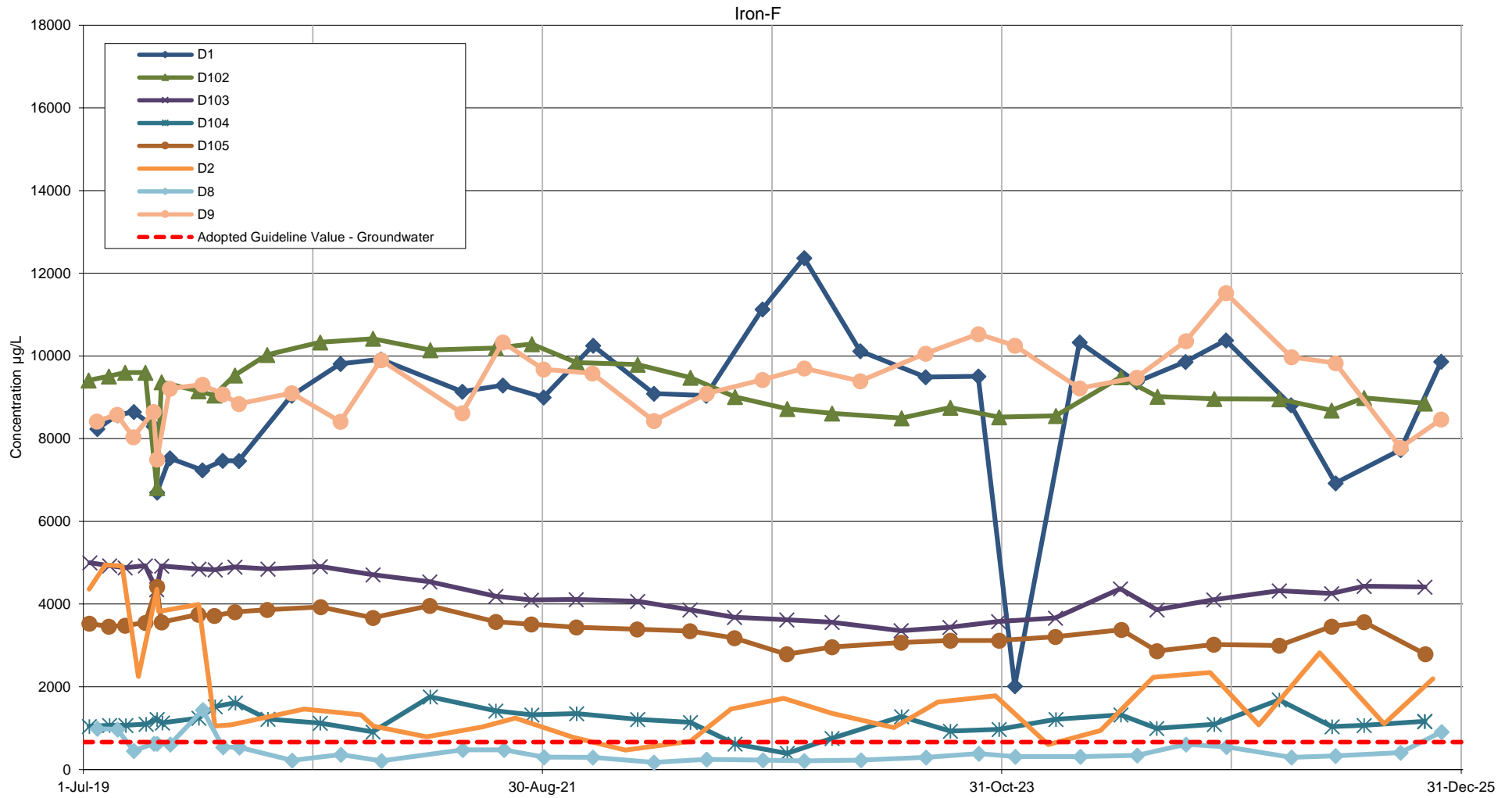
Appendix M. Downgradient MPAR, areas Adjacent to Wangcol Creek - Manganese (Total) Concentrations Over Time
Mt Piper Power Station - Annual Monitoring Report 2024/25
'0810778

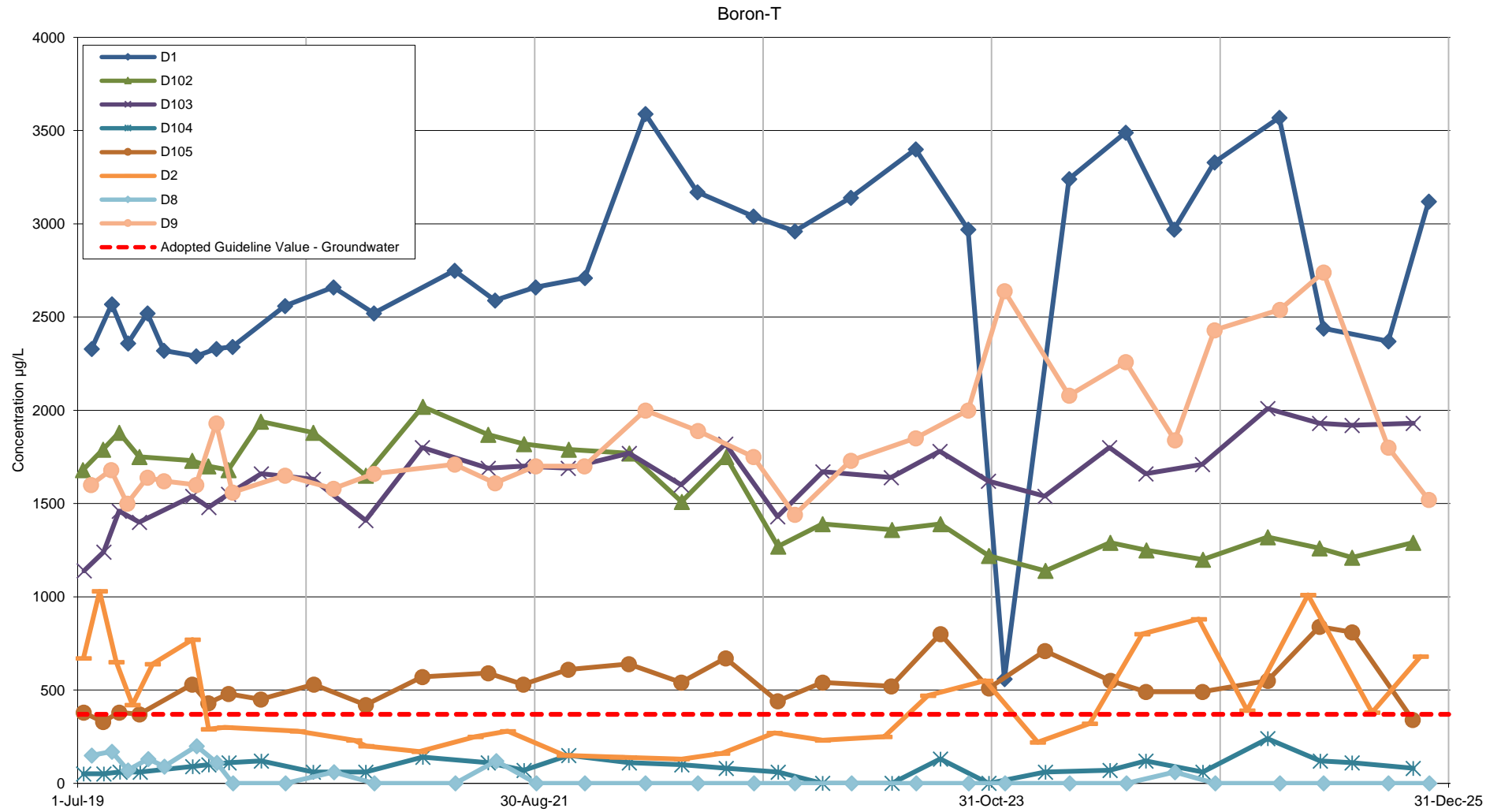


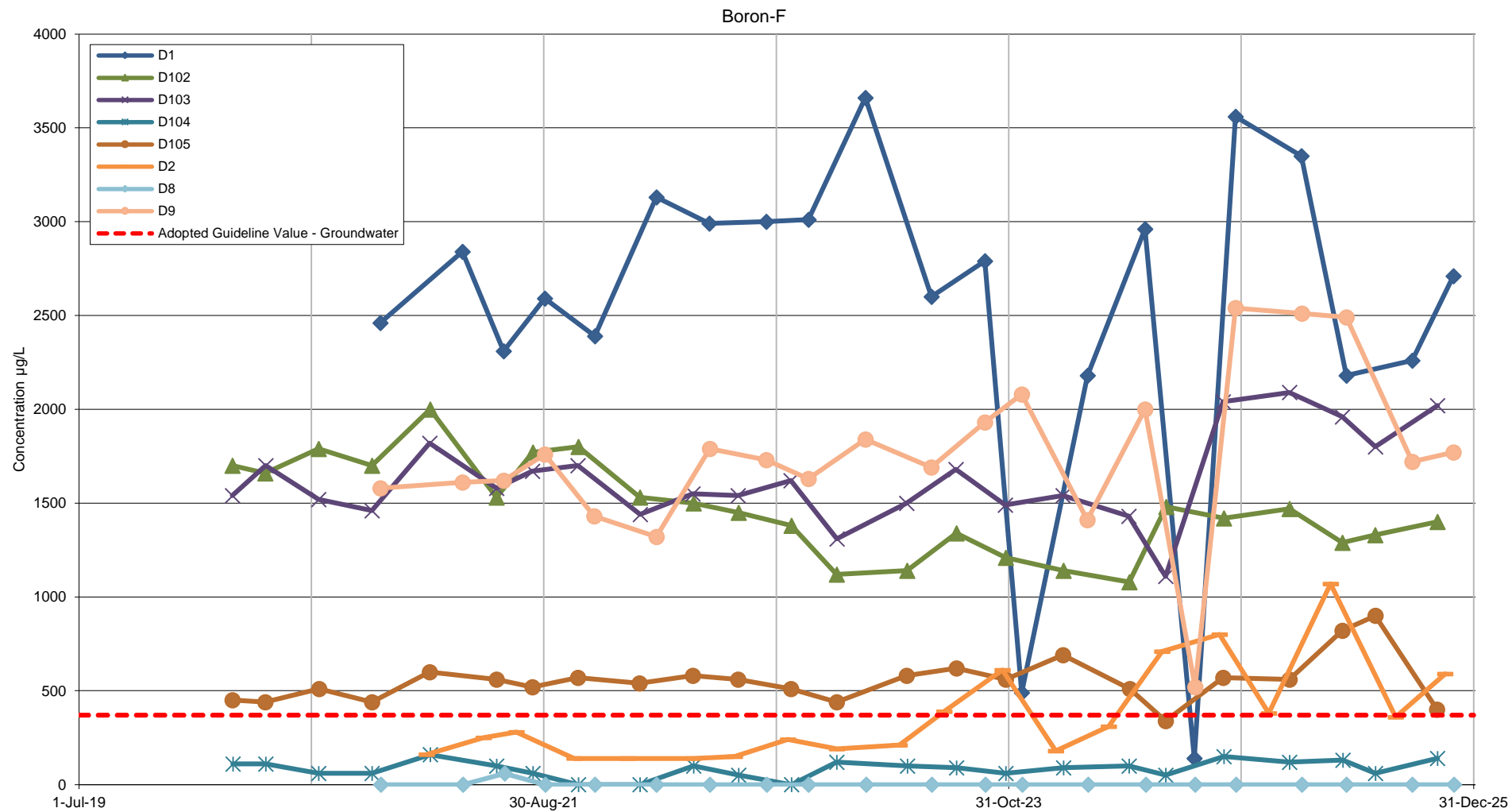


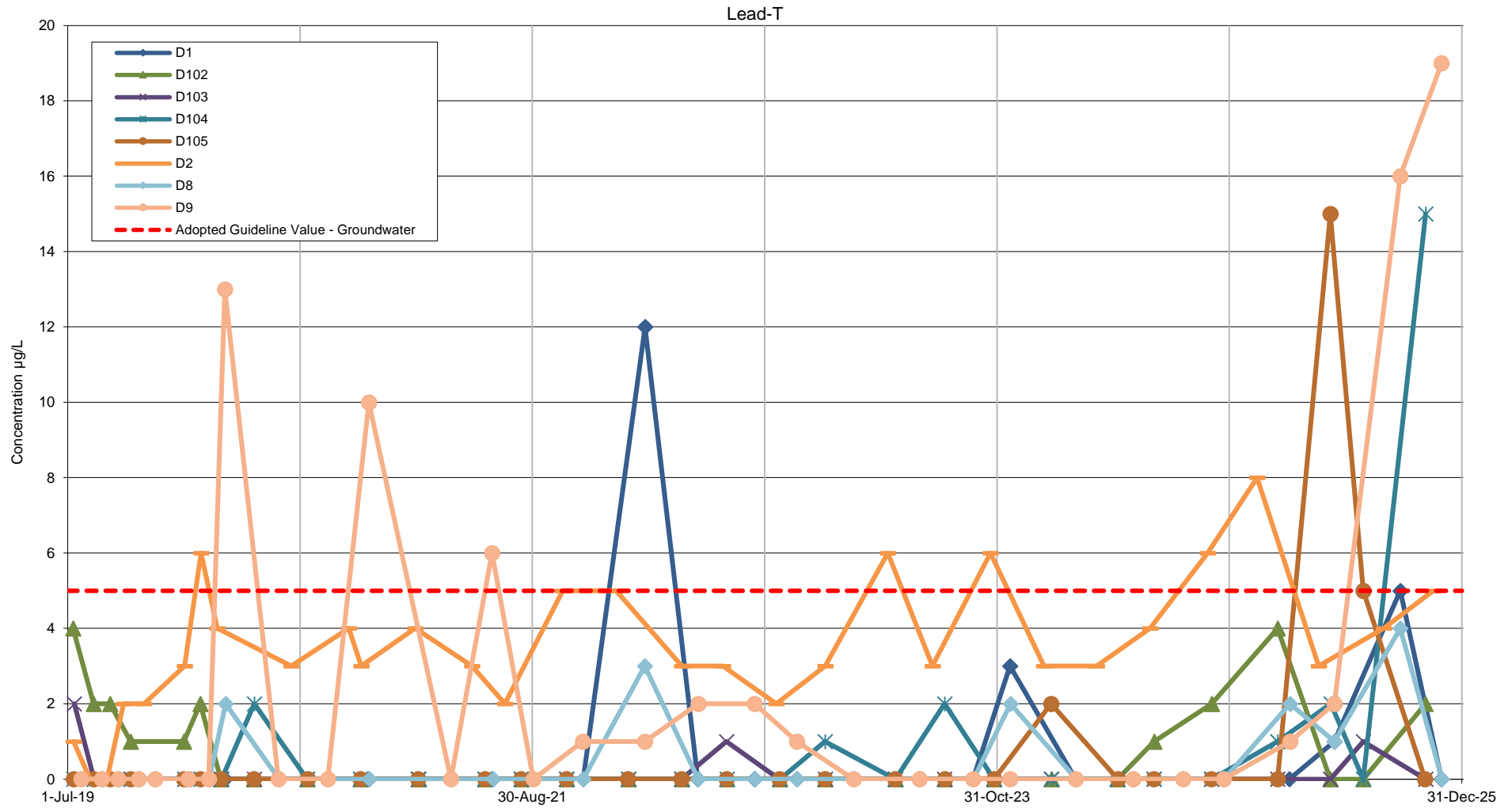


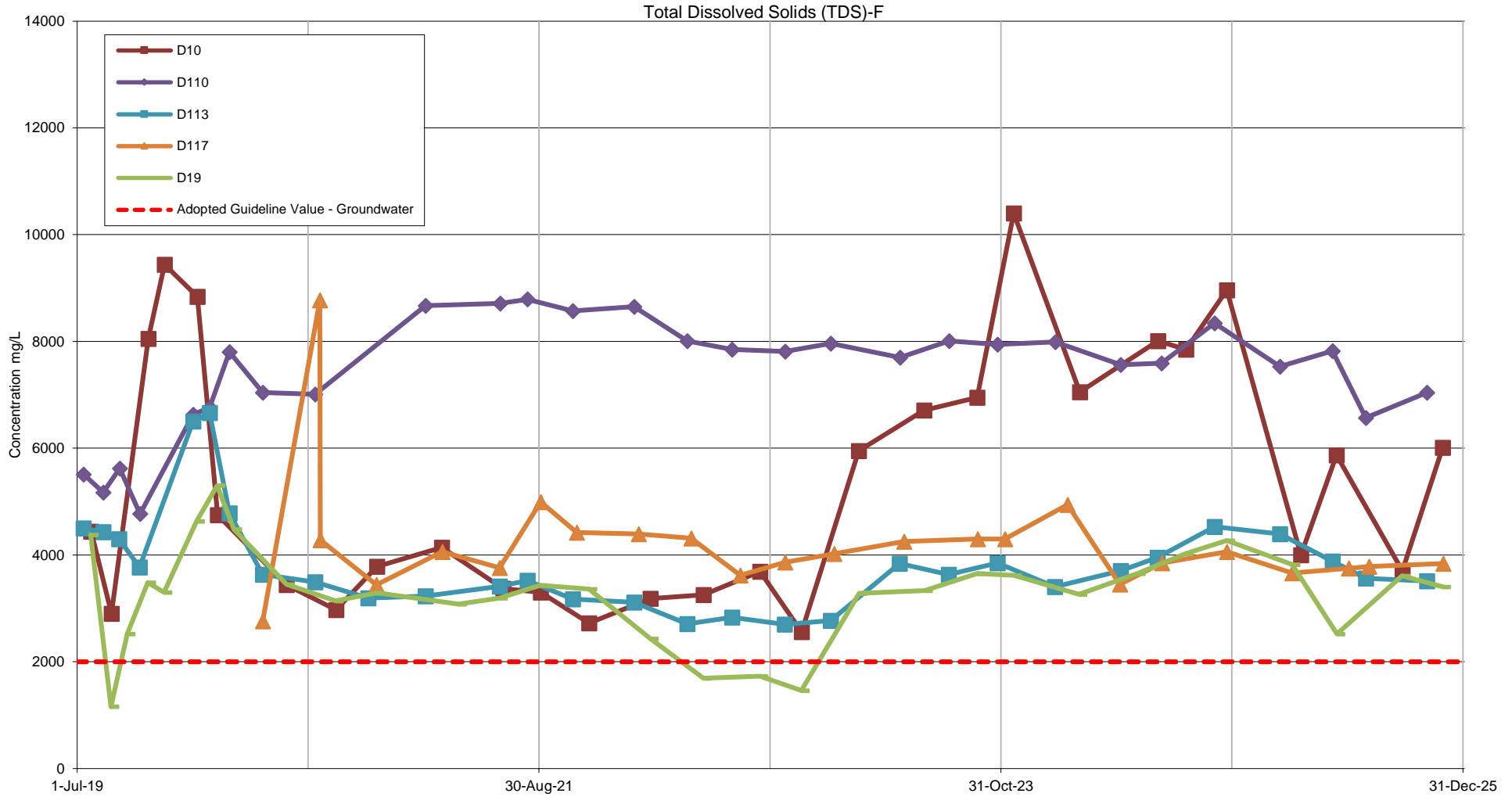
Appendix M. Downgradient MPAR, areas Adjacent to Wangcol Creek - Iron (Filtered) Concentrations Over Time
 Mt Piper Power Station - Annual Monitoring Report 2024/25
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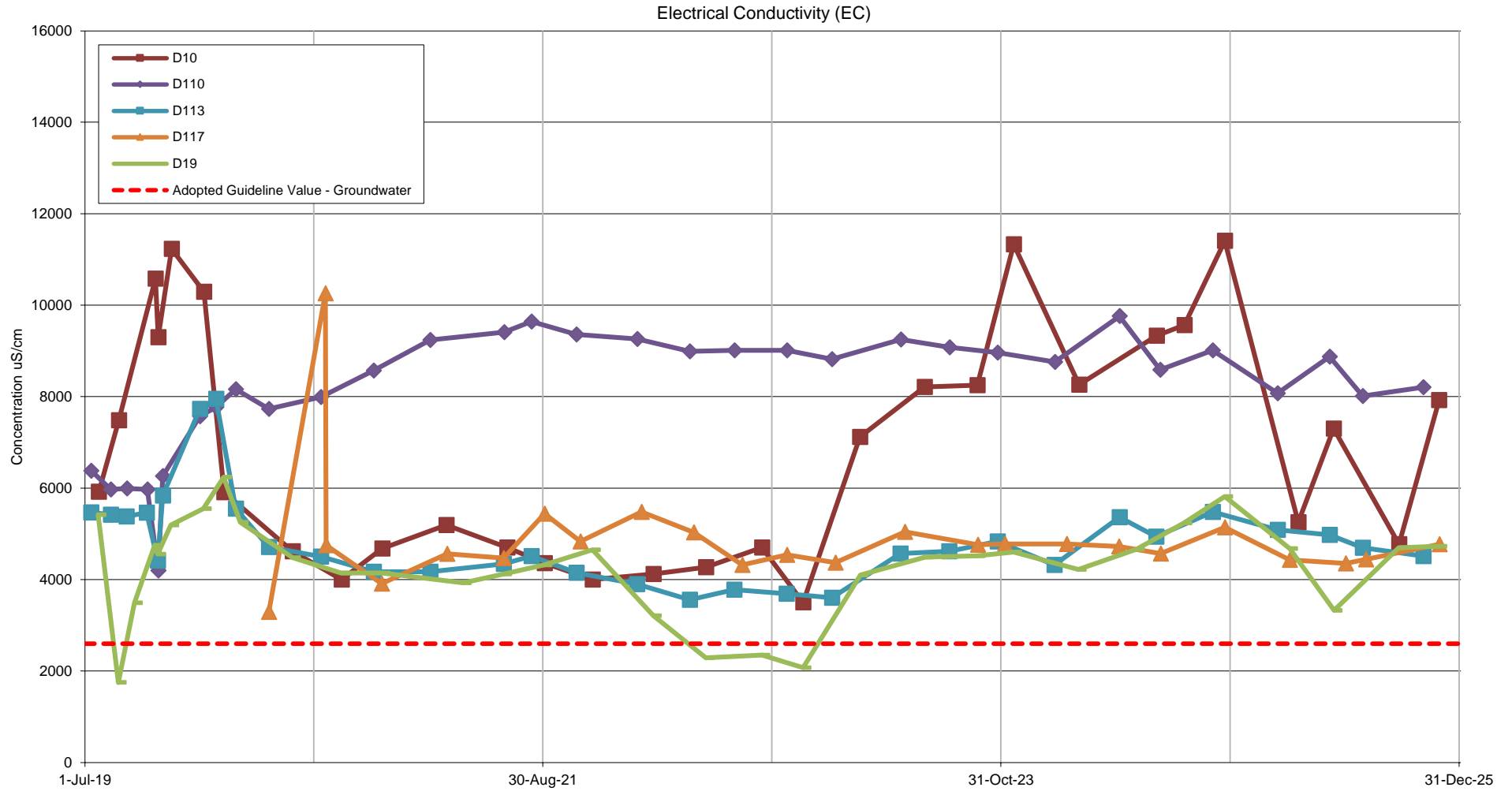


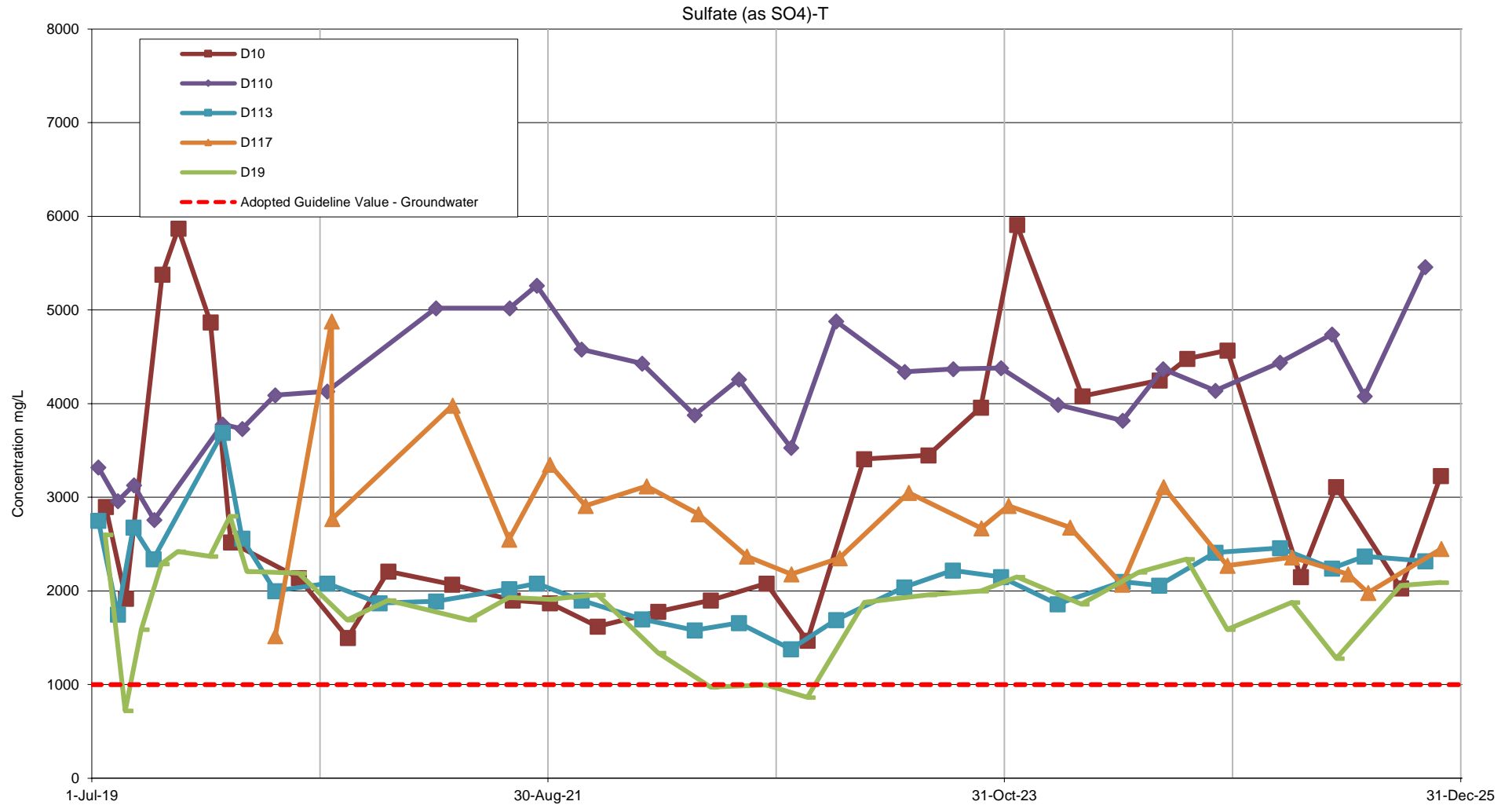


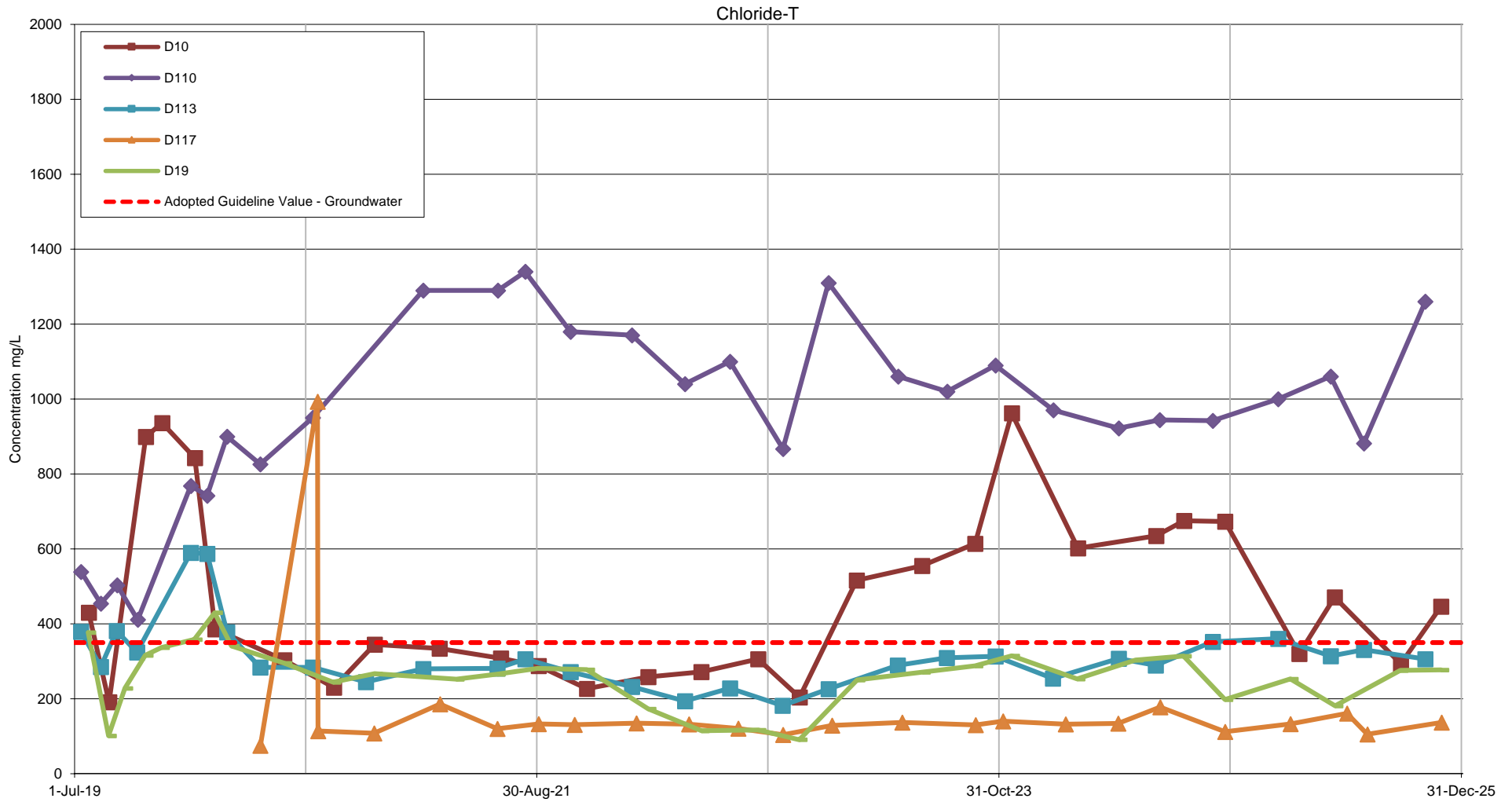


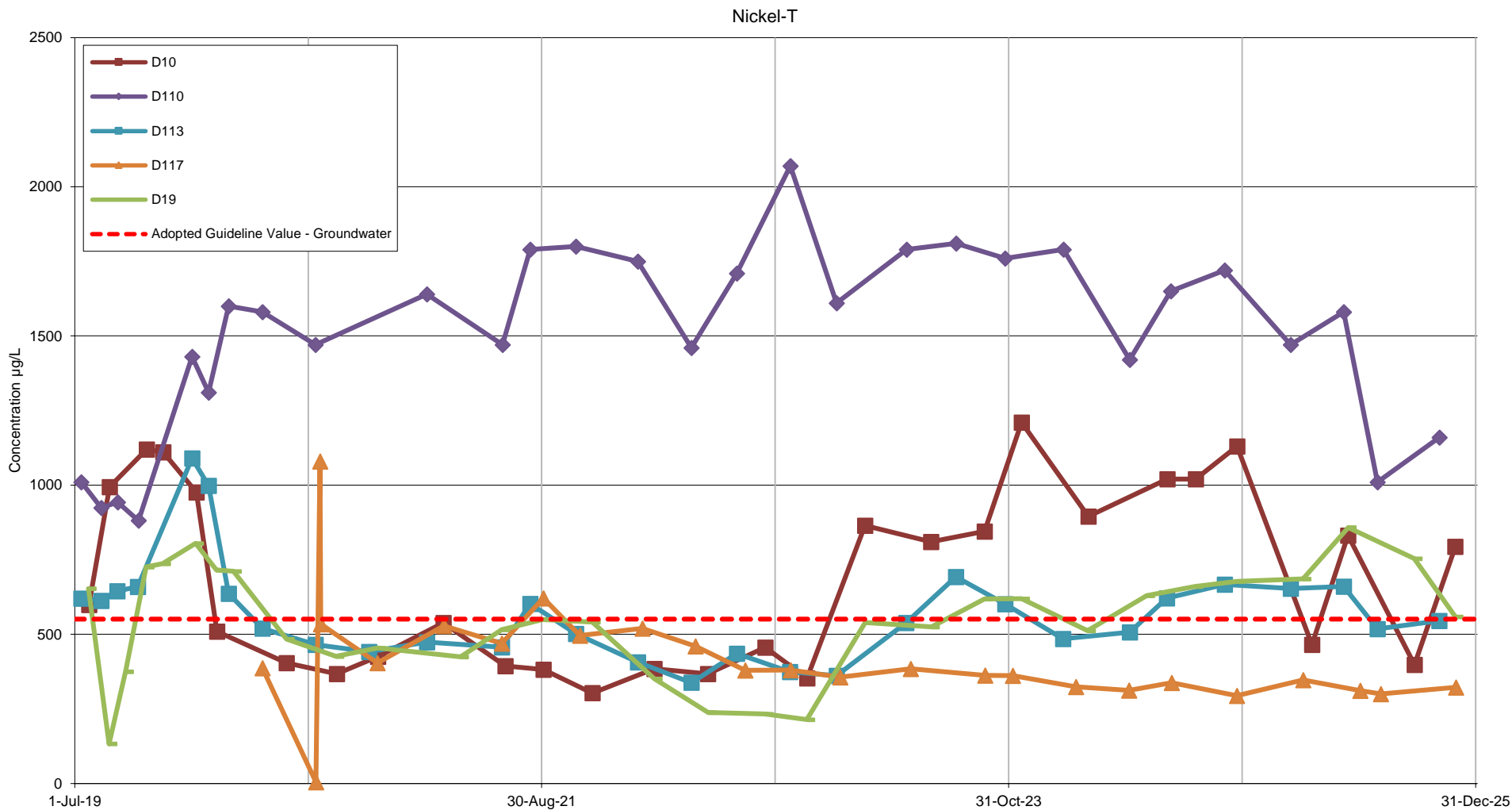


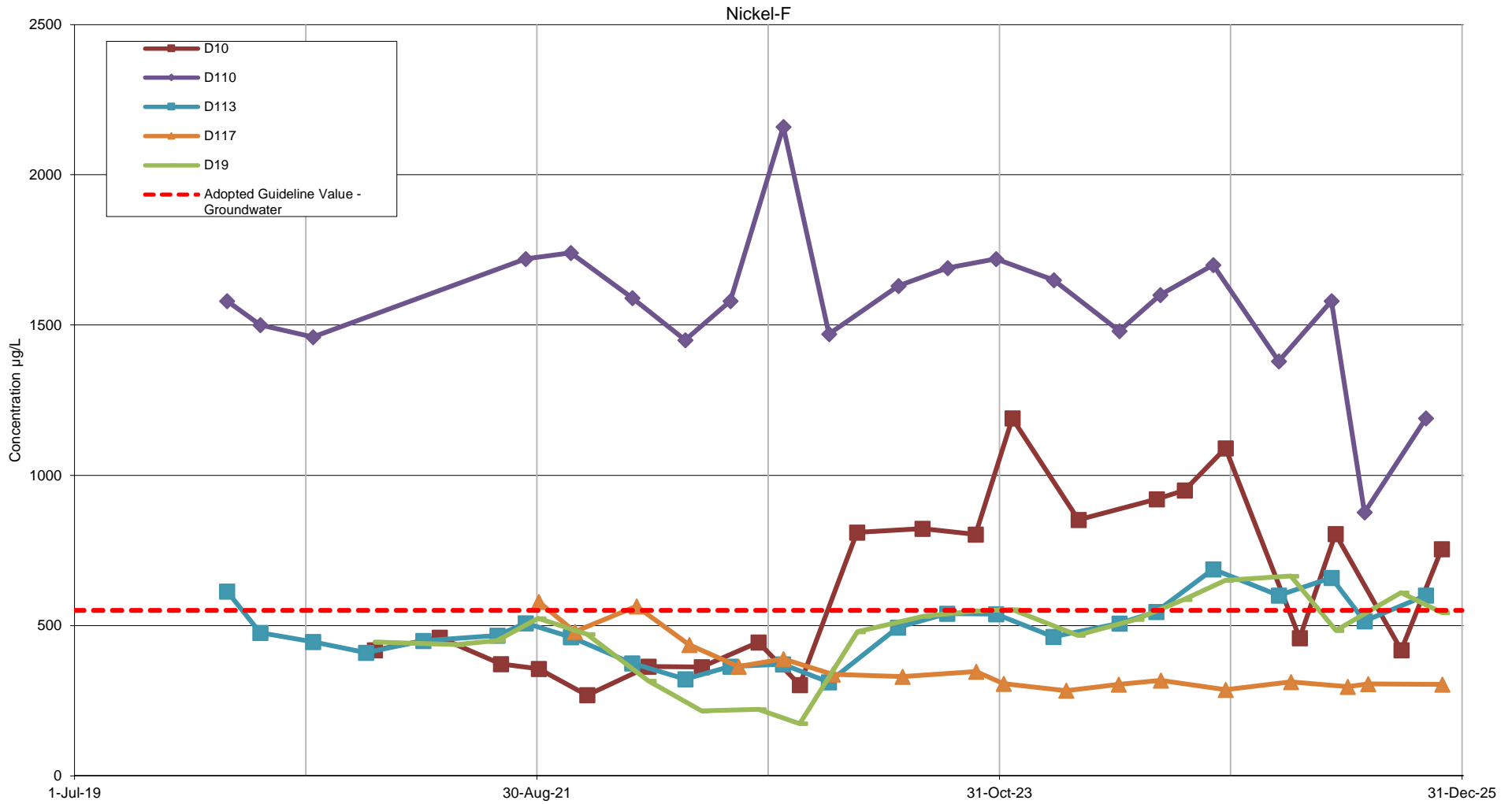






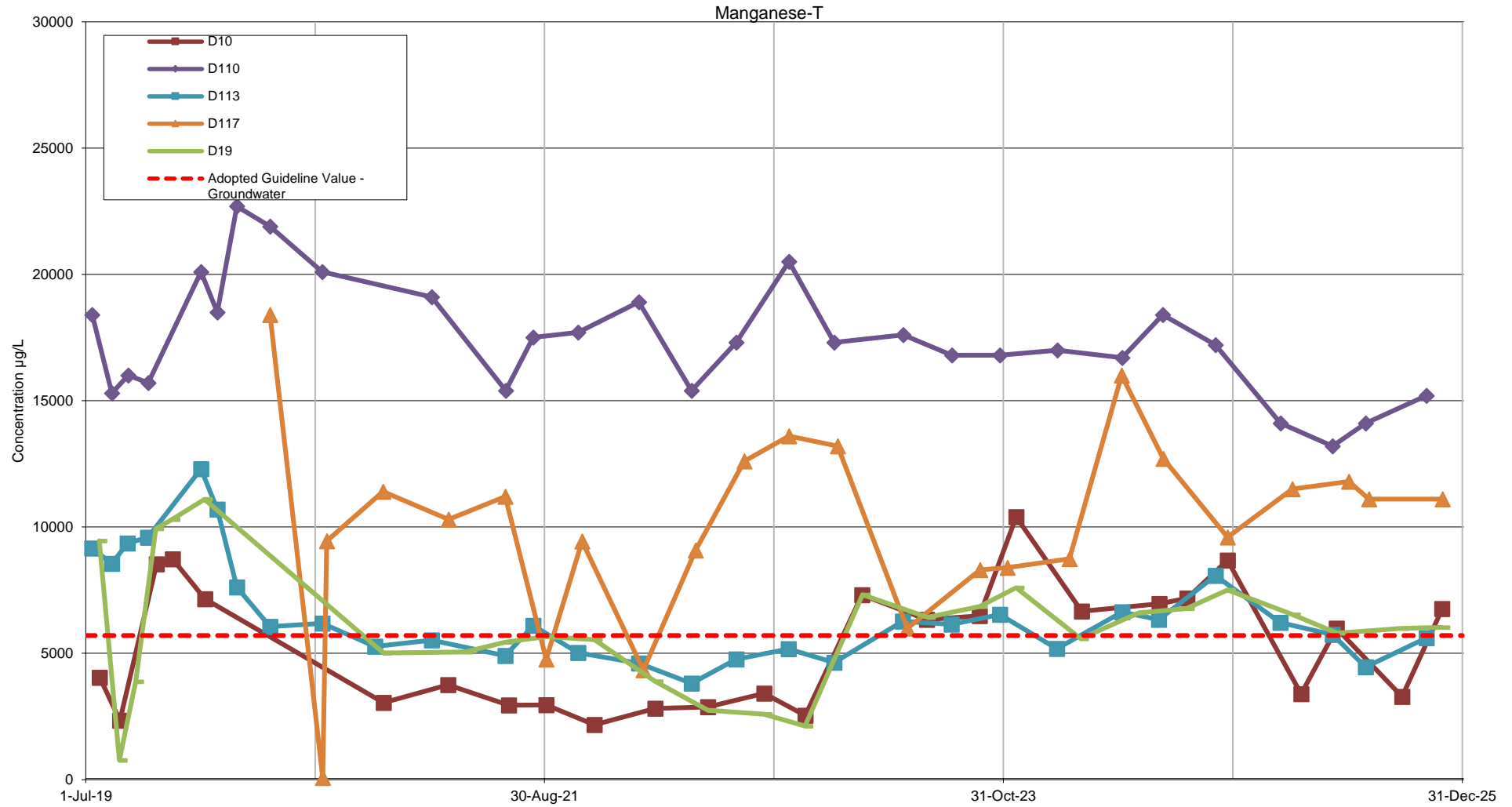


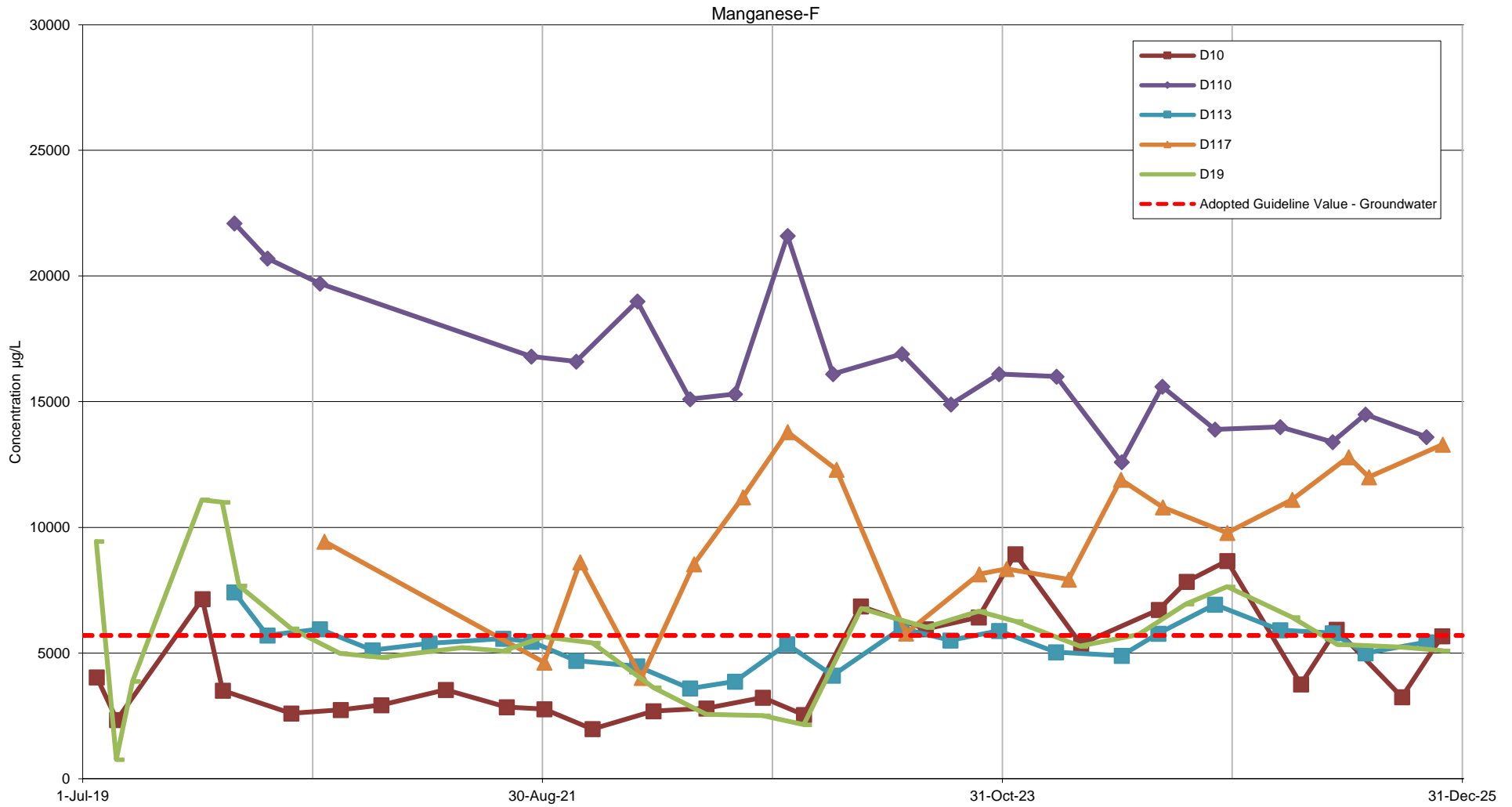


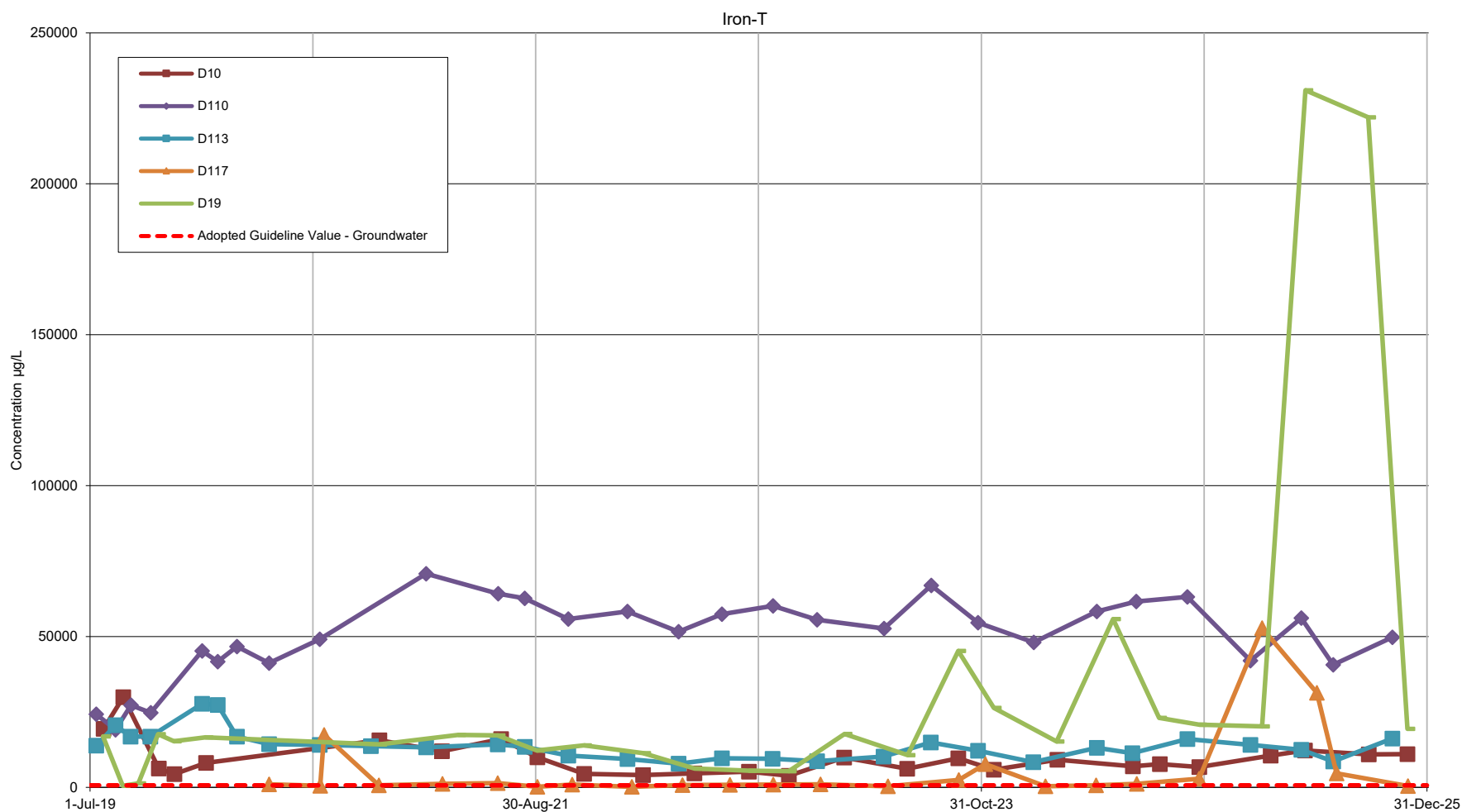


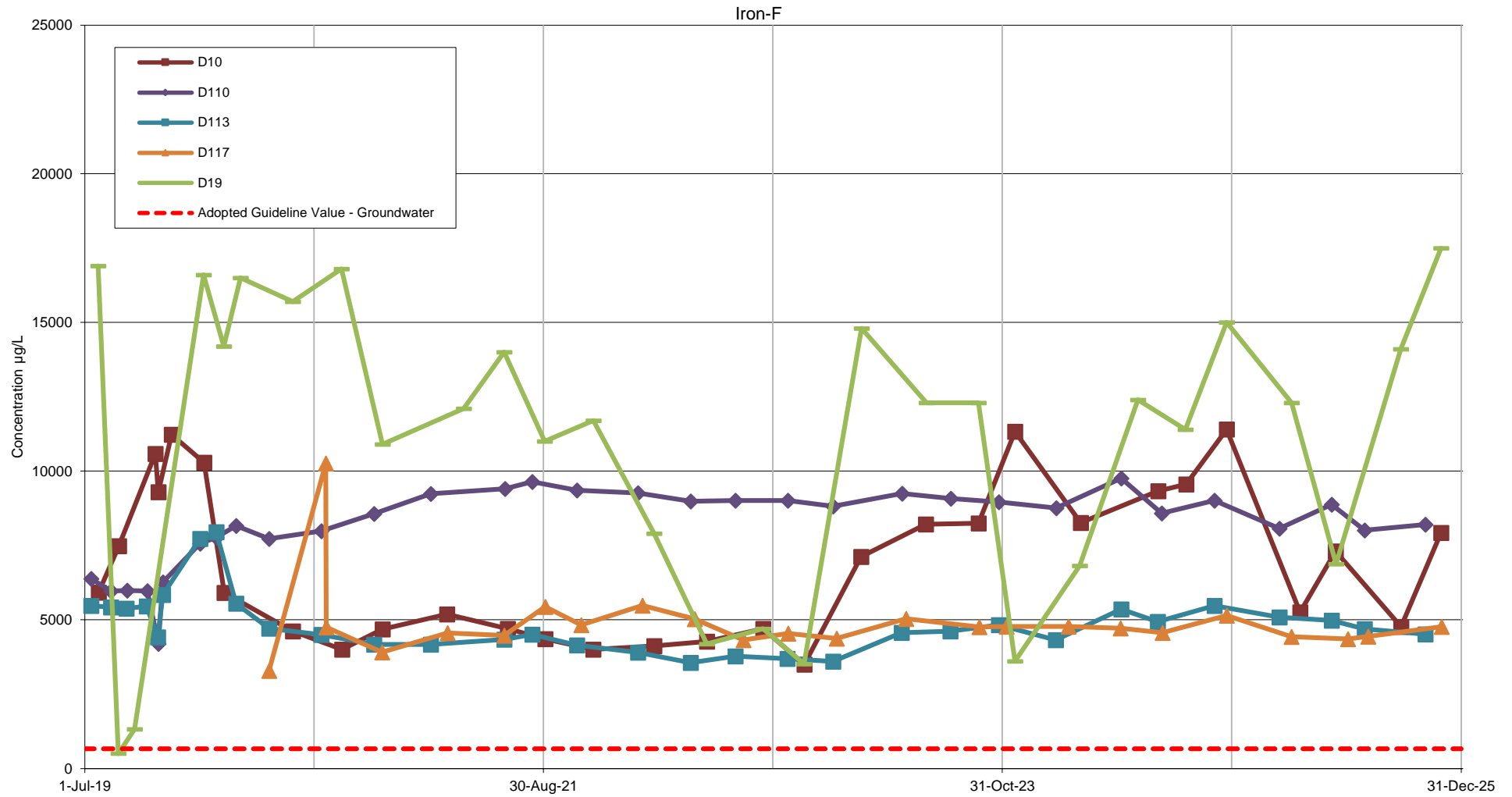
Appendix M. Downgradient MPAR, LNAR (North) and Historical Mining Disturbance (East) - Manganese (Total) Concentrations Over Time
Mt Piper Power Station - Annual Monitoring Report 2024/25

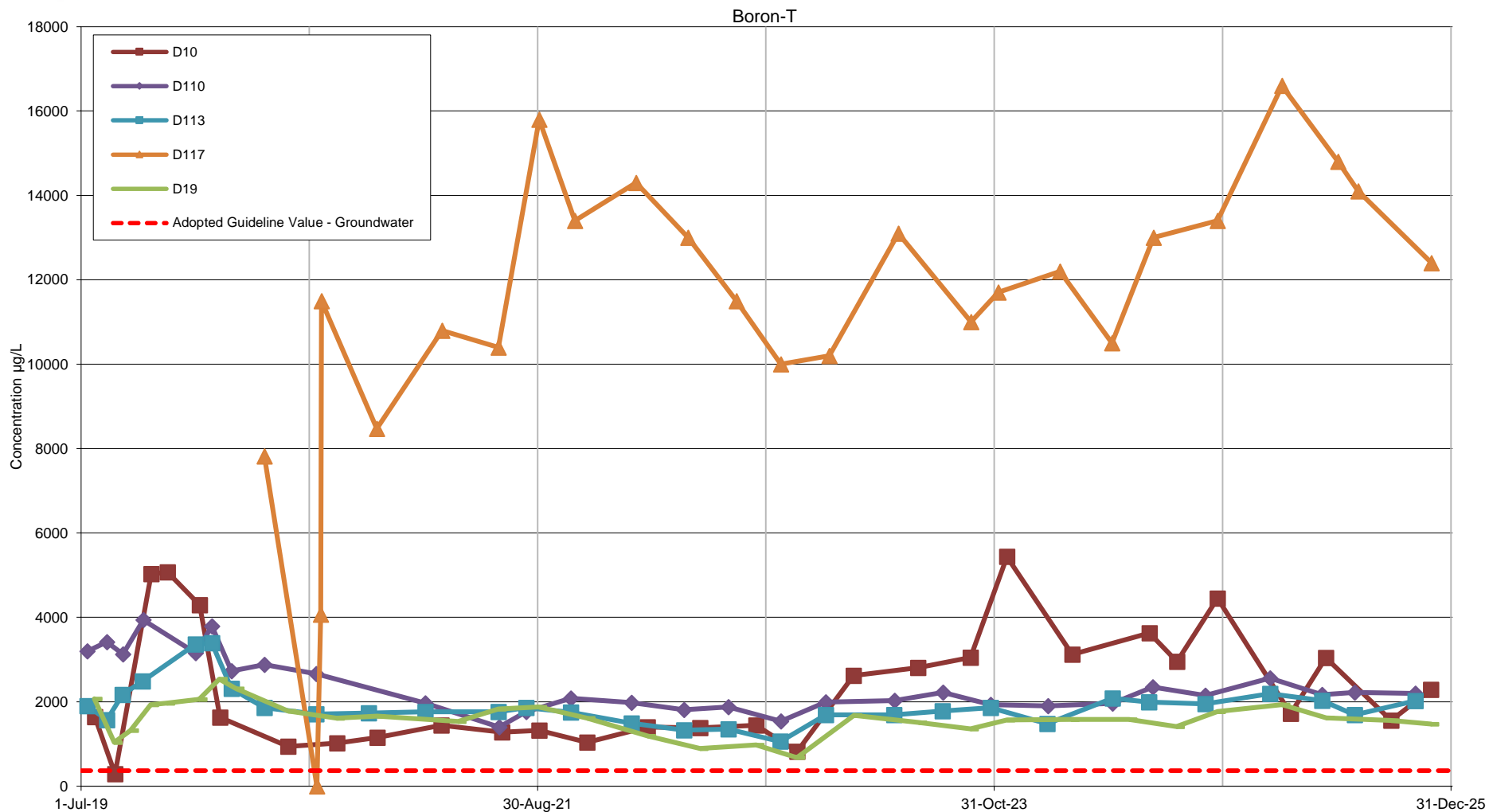
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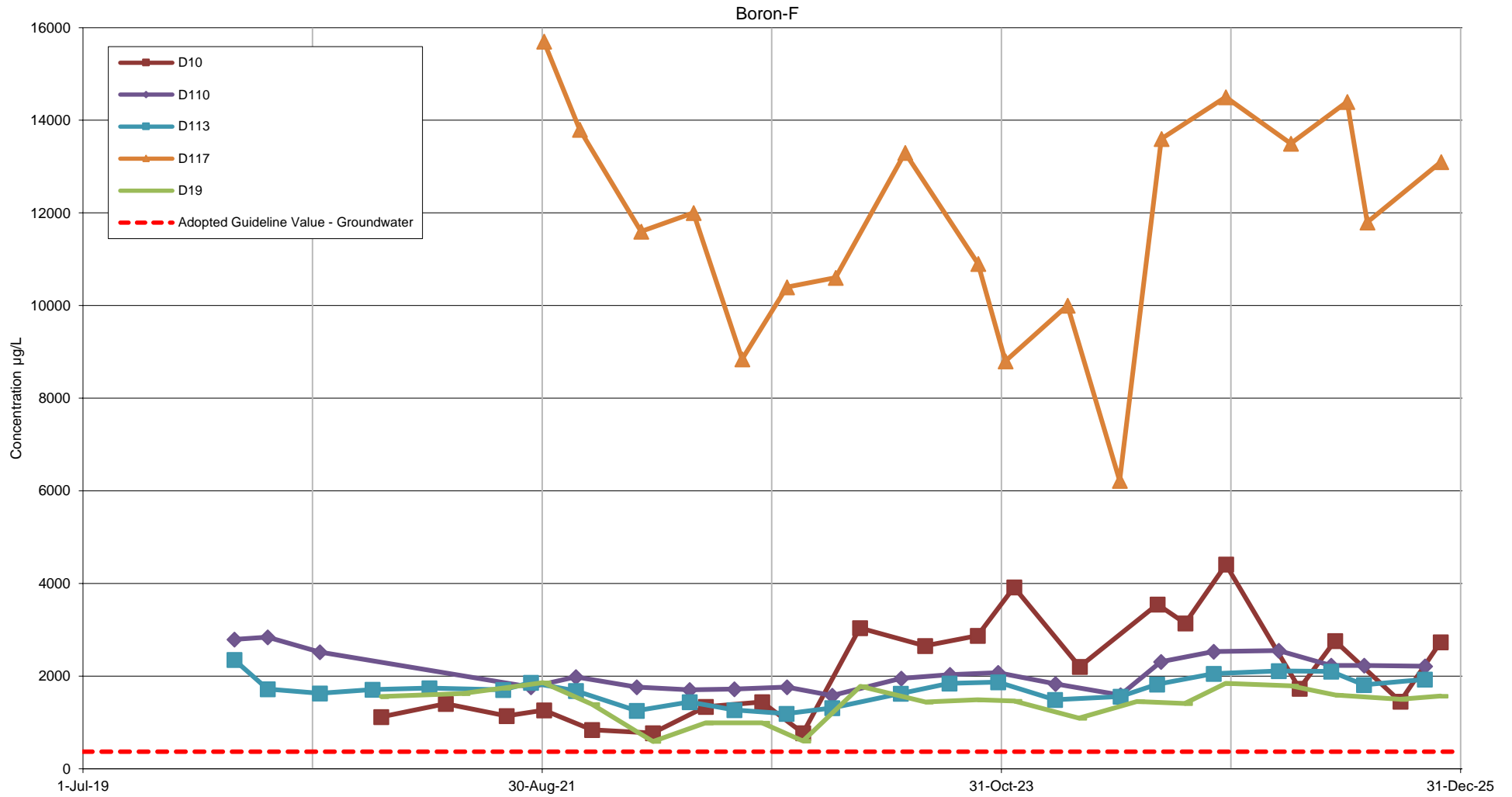


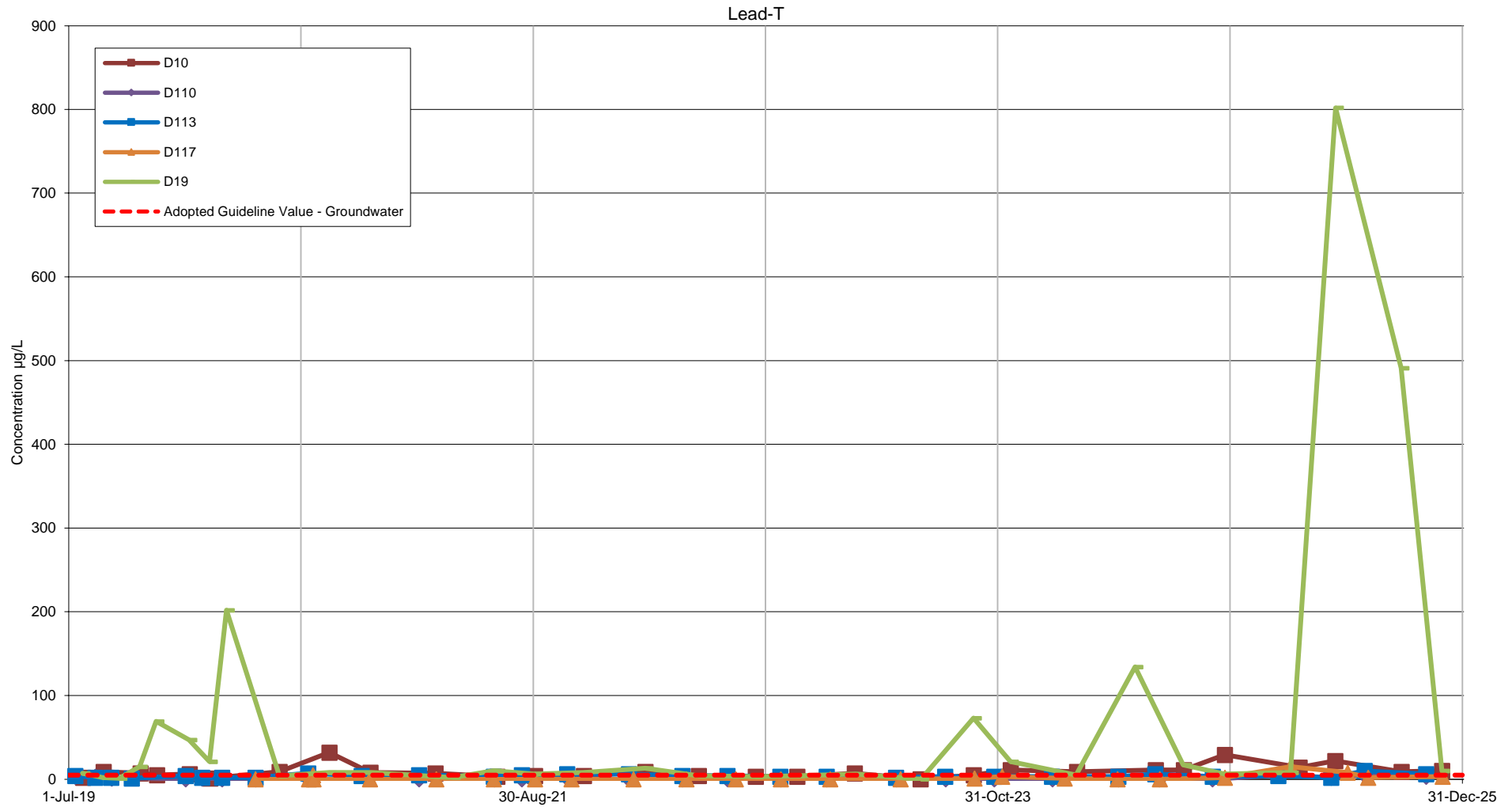


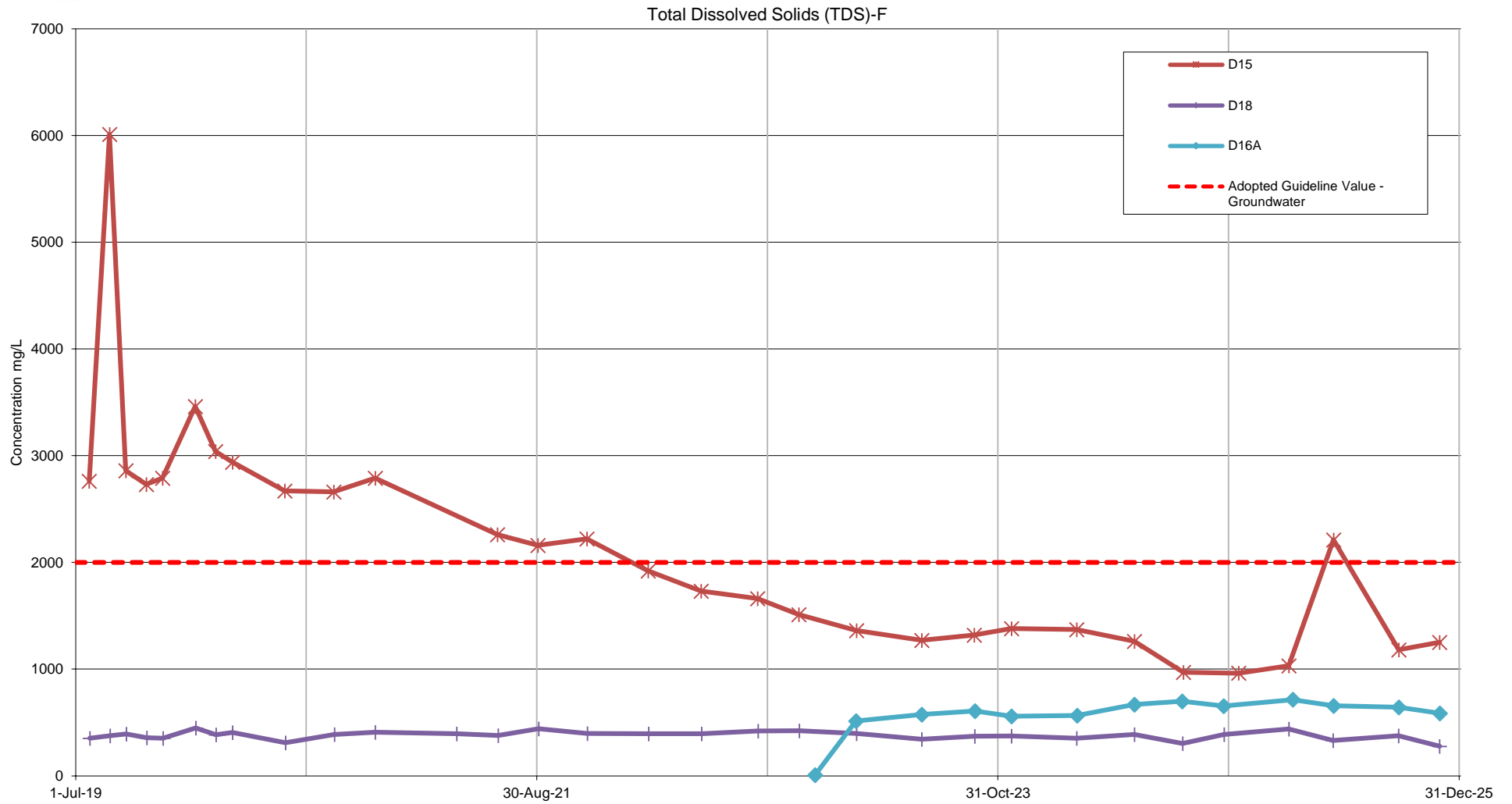


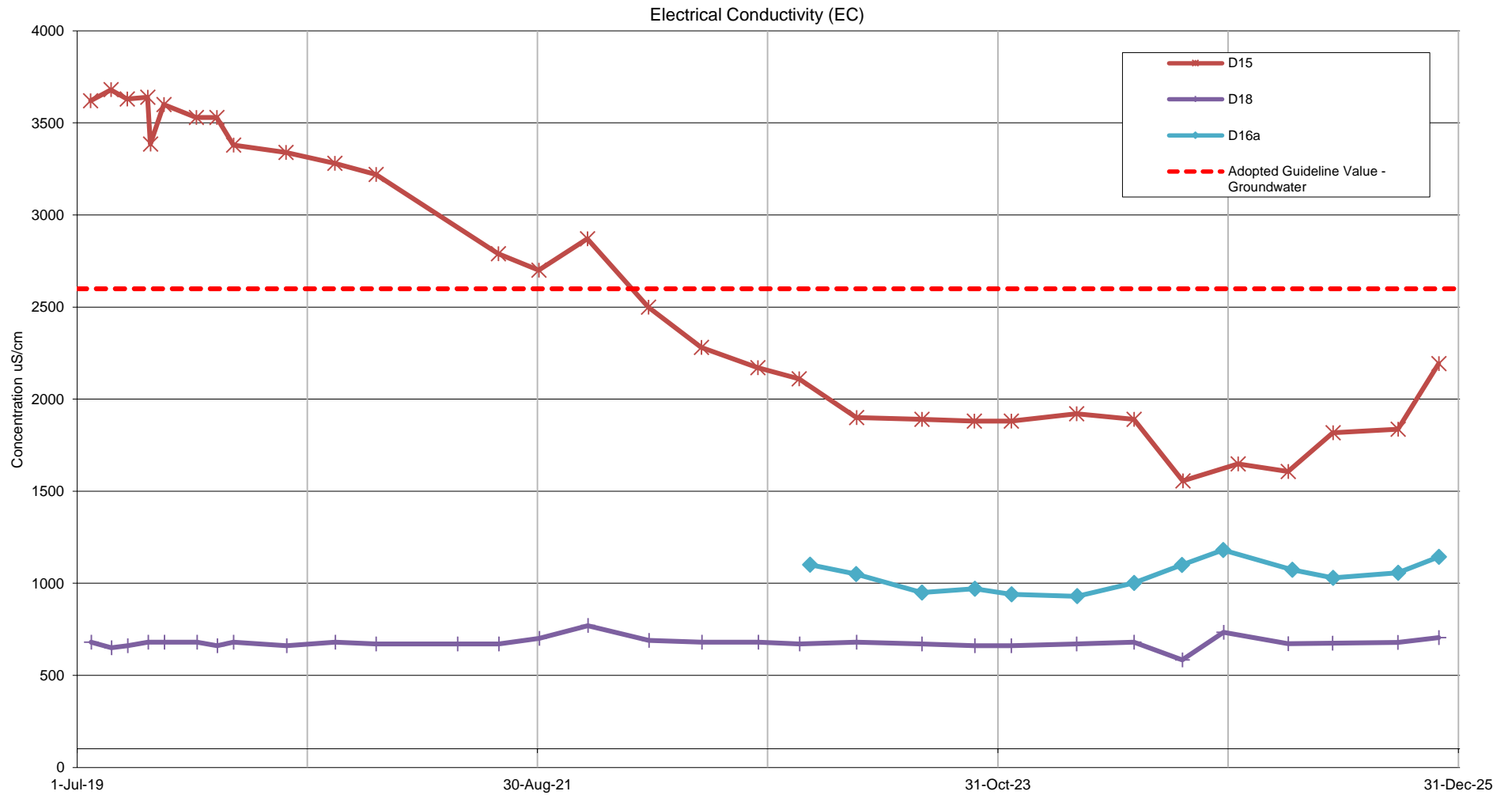


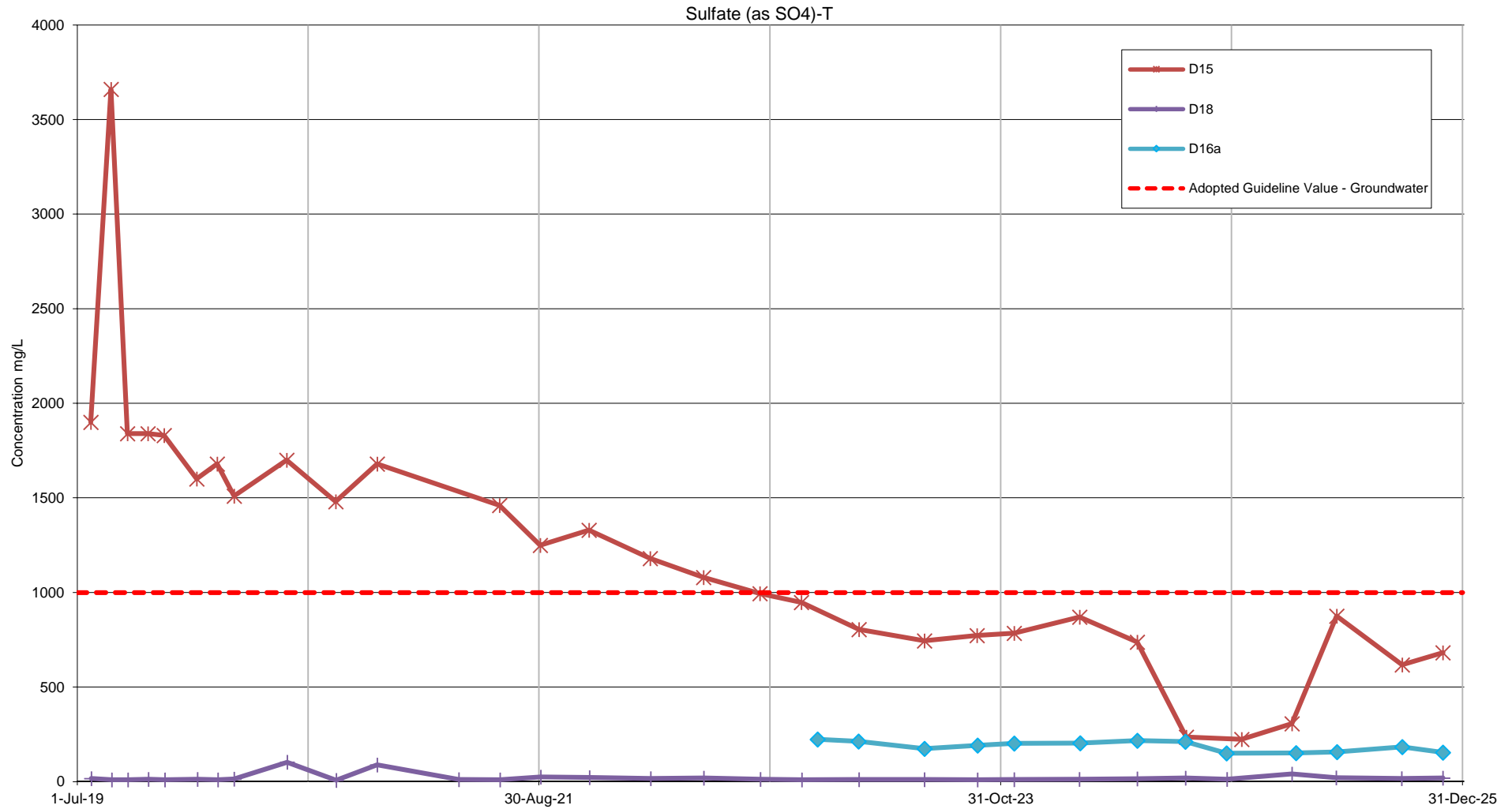


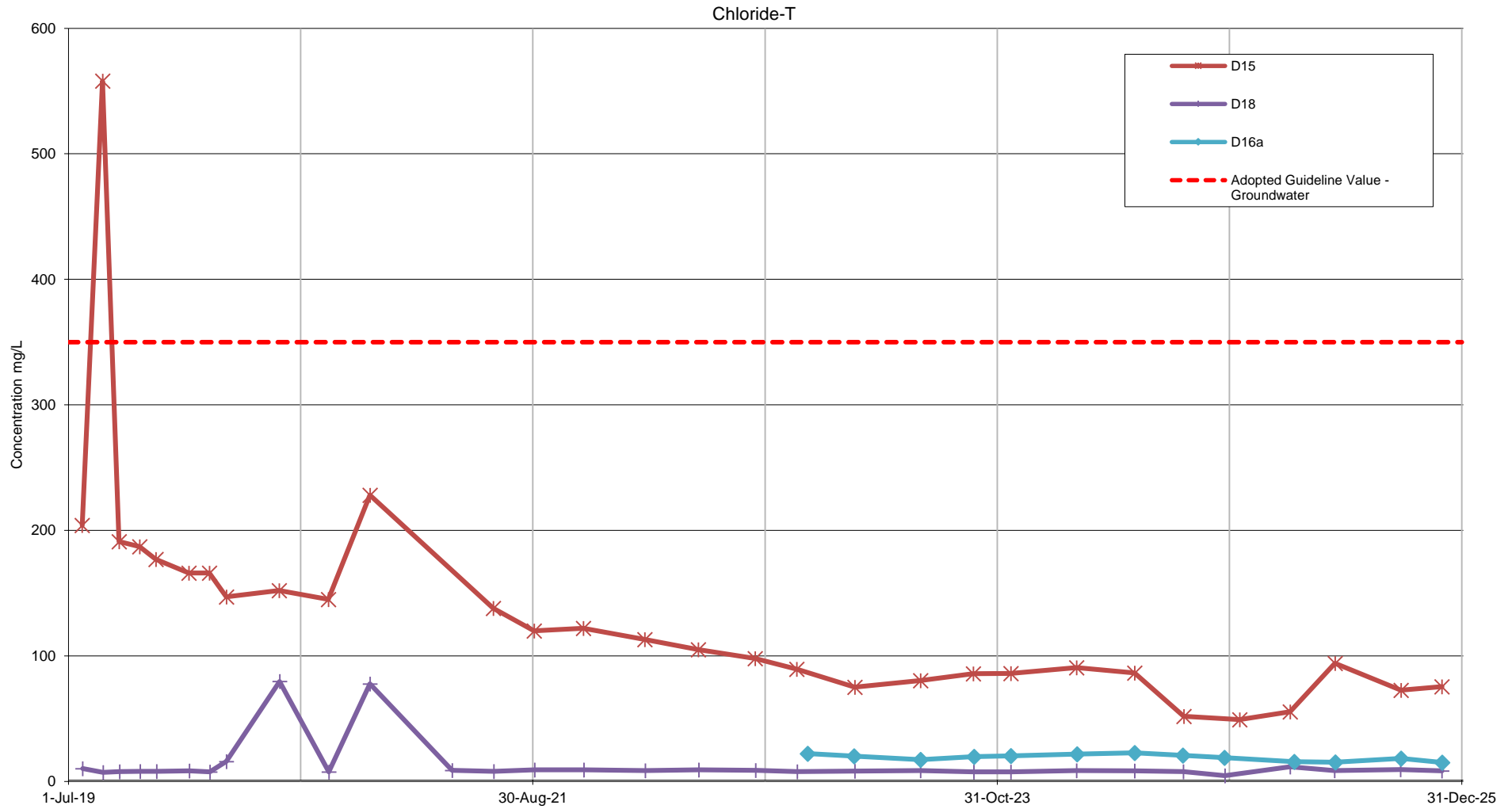


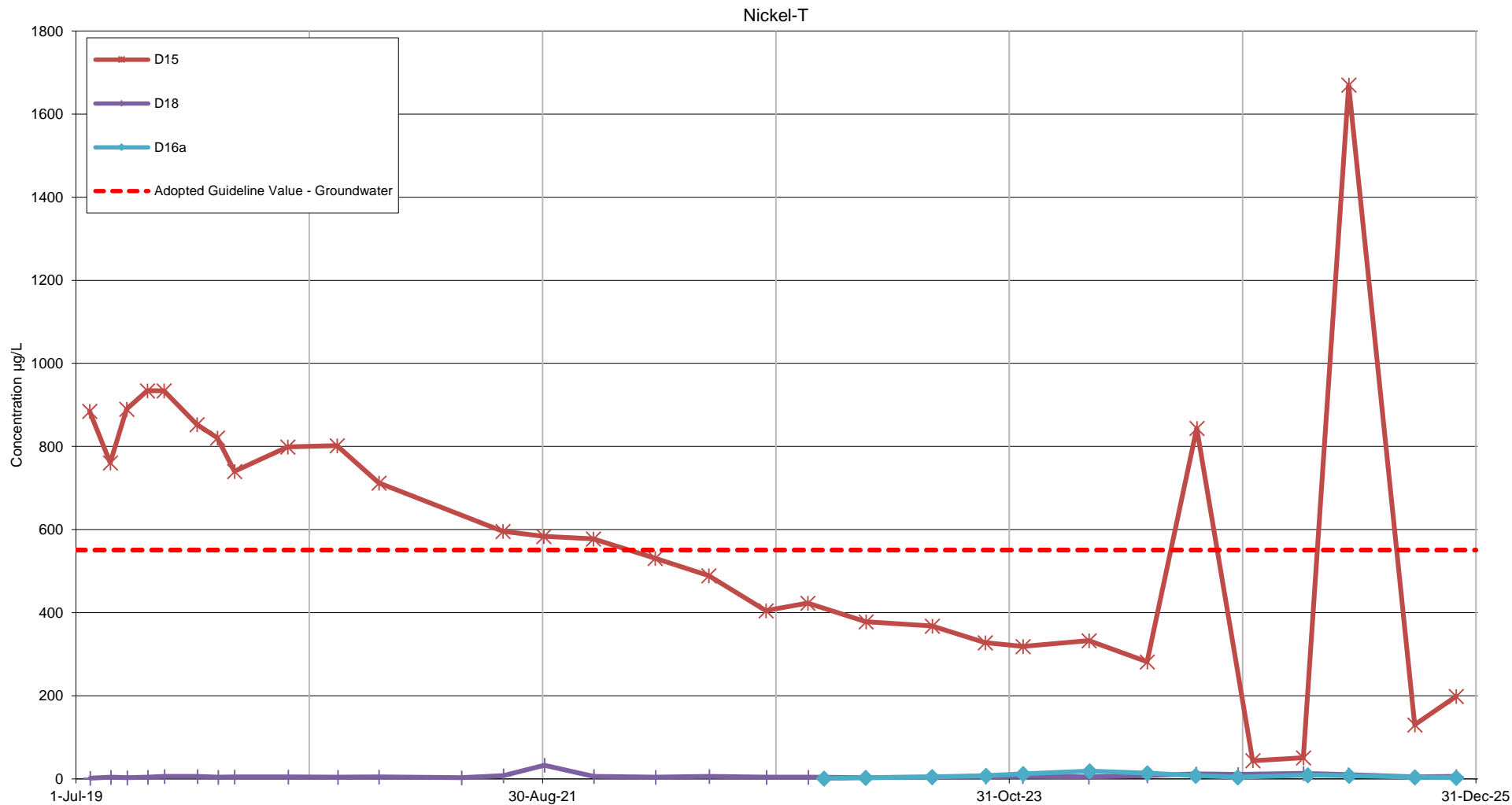


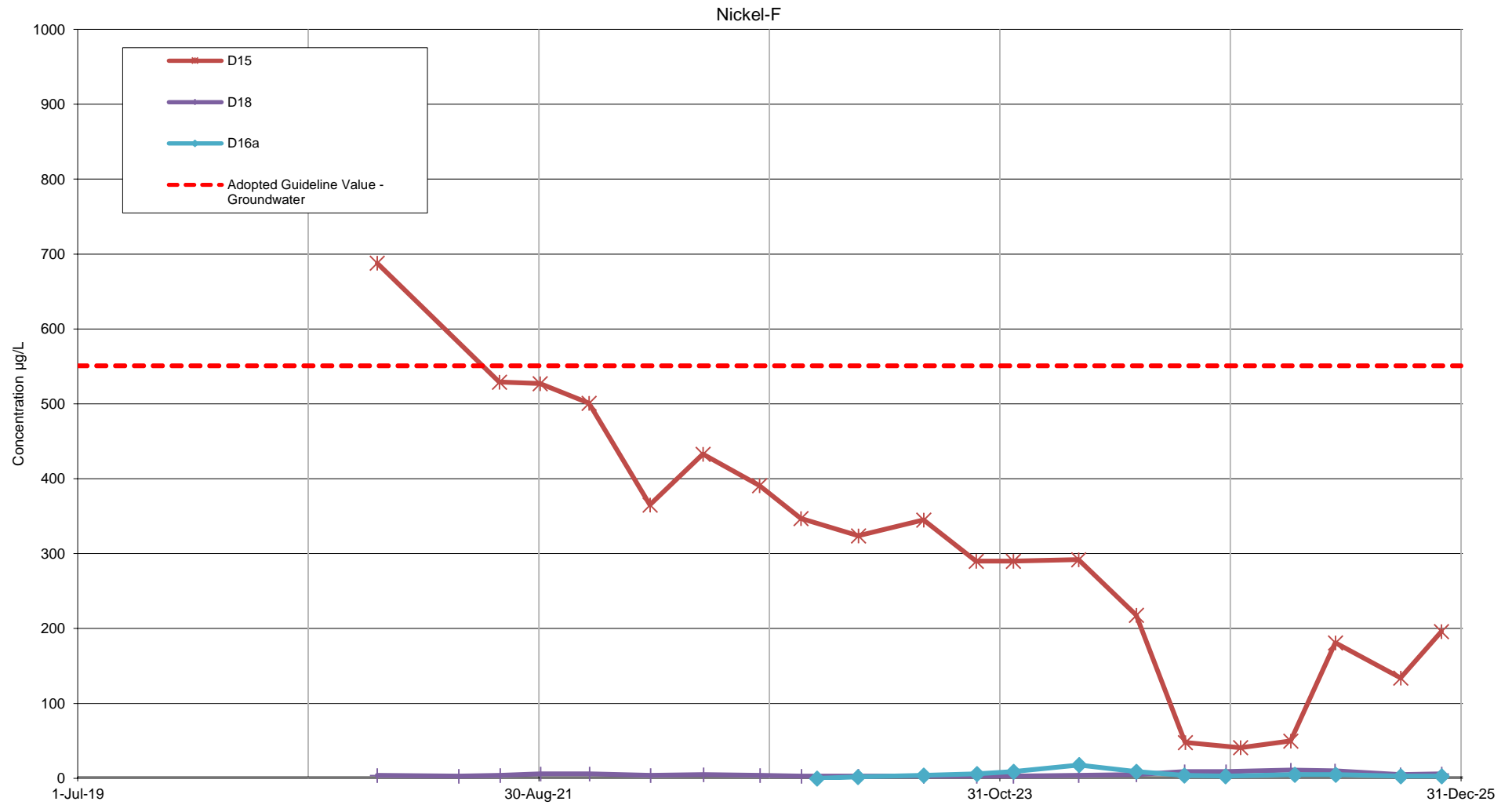


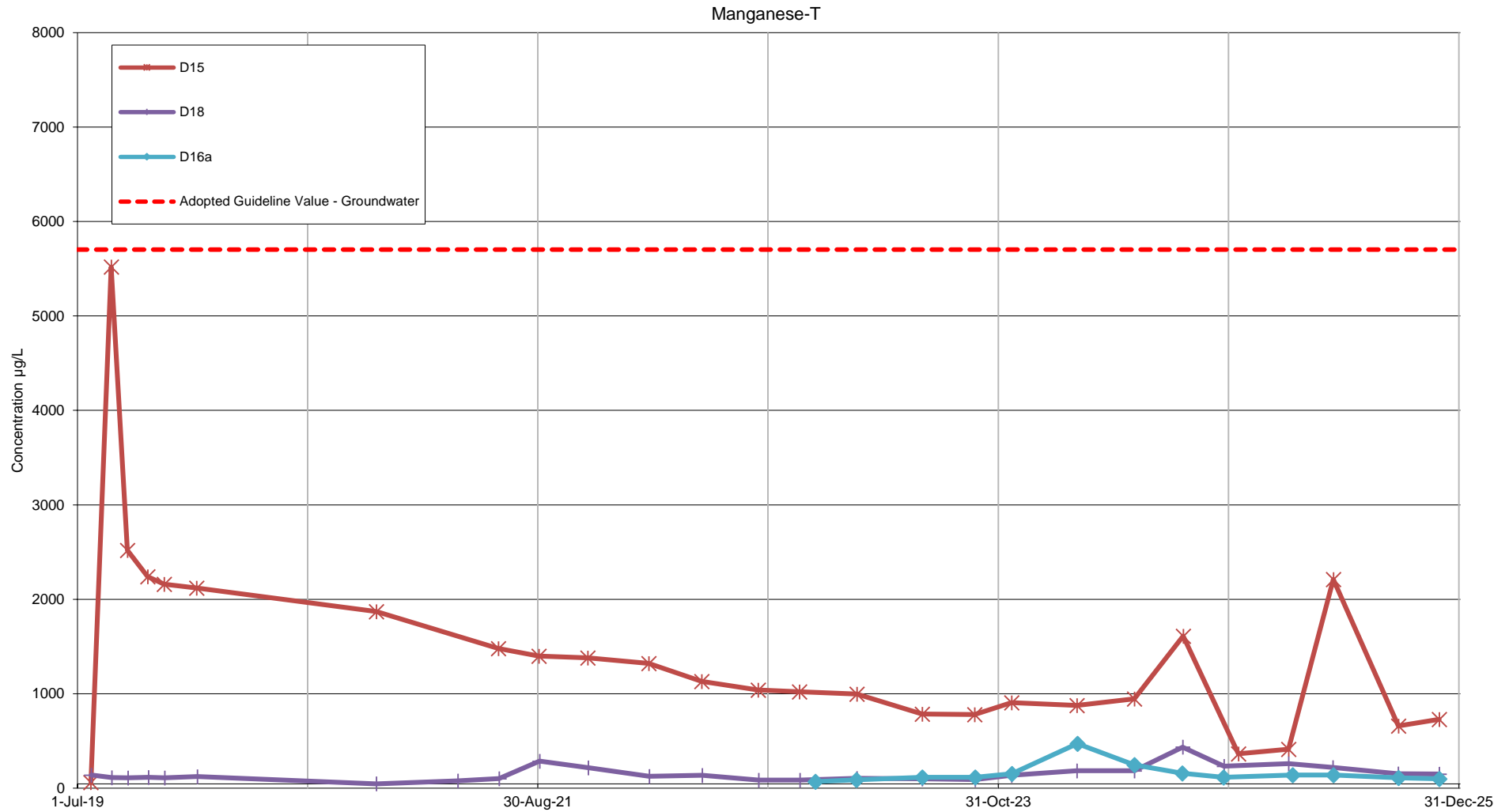


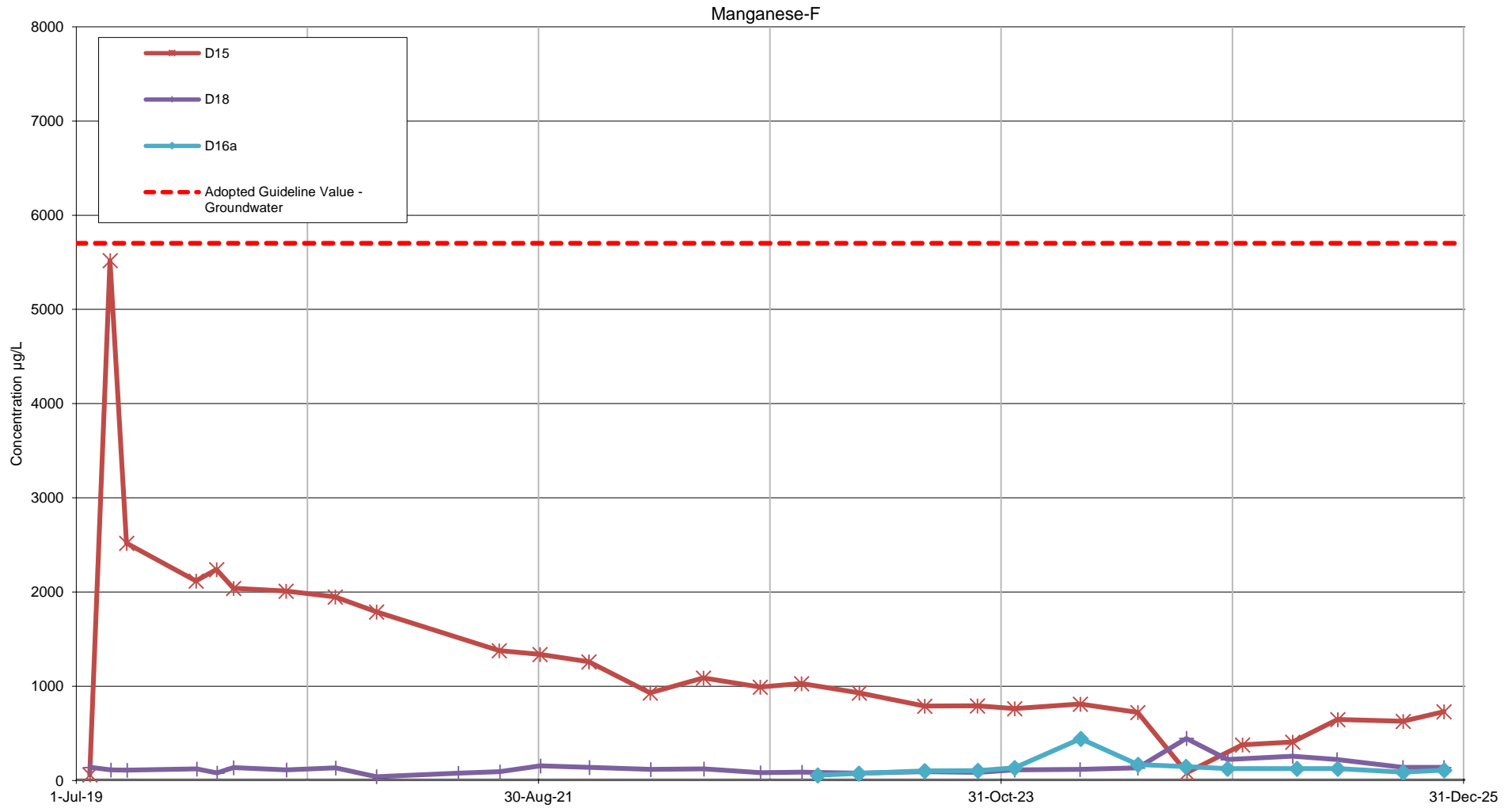


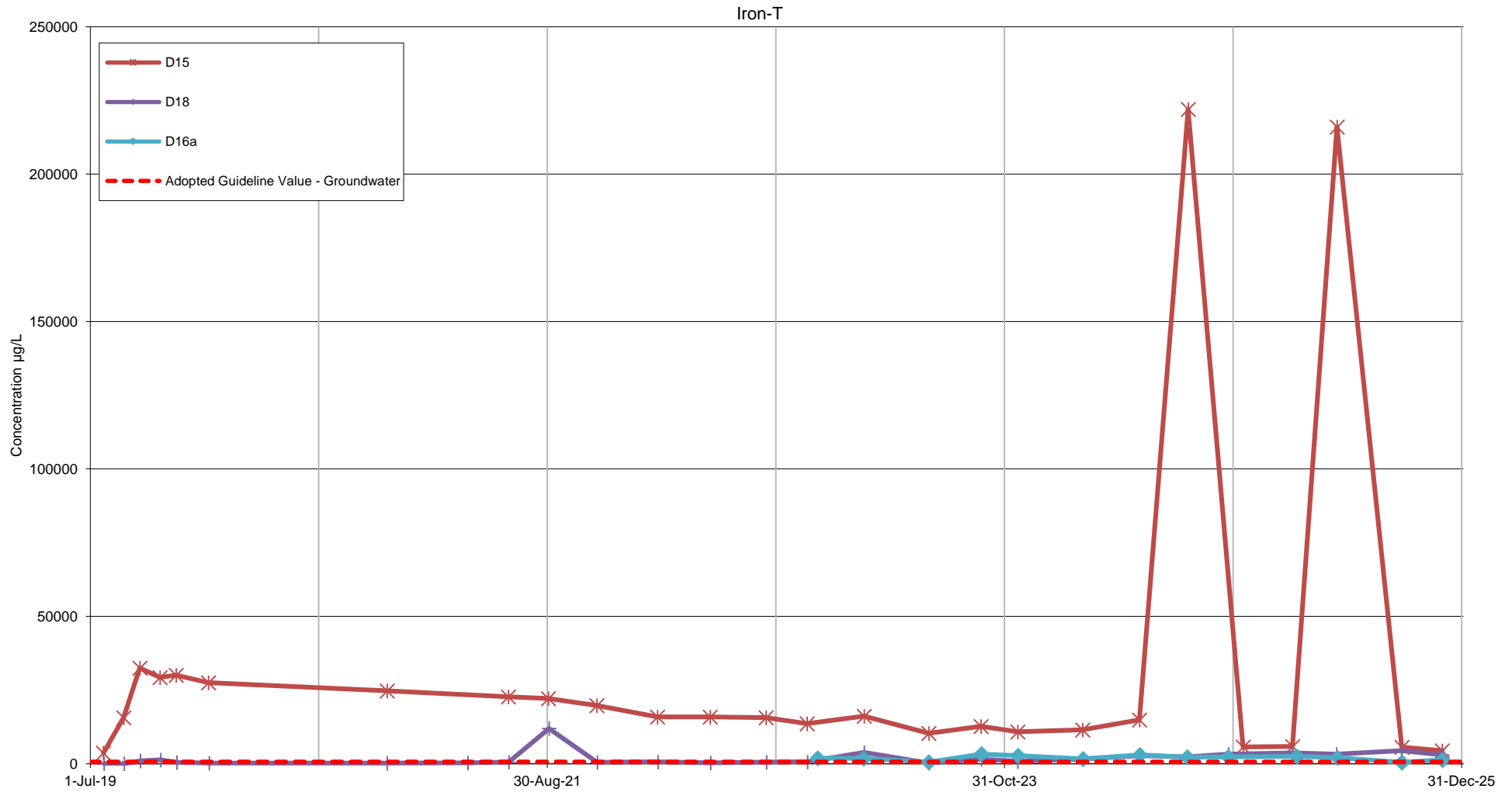






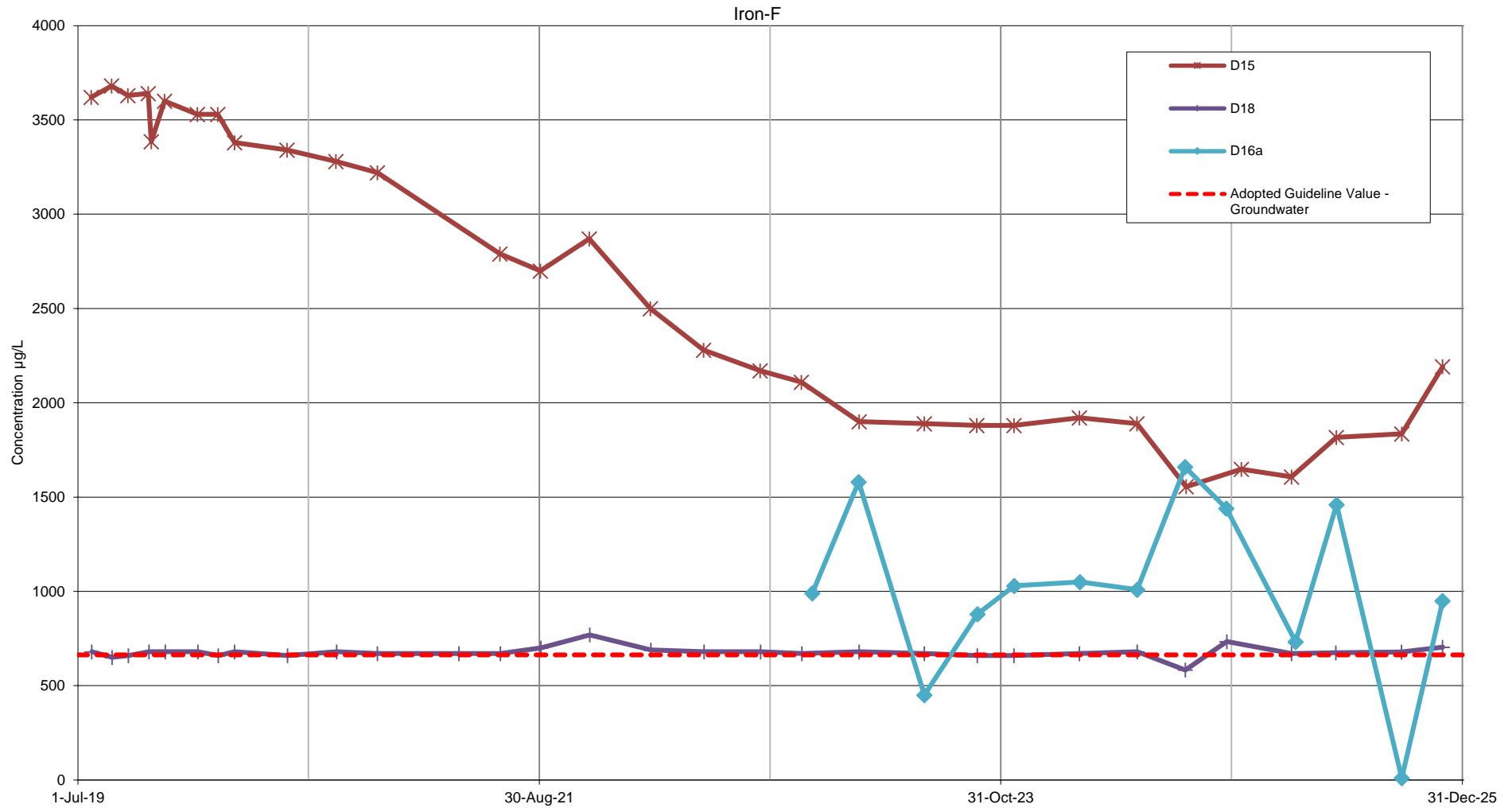


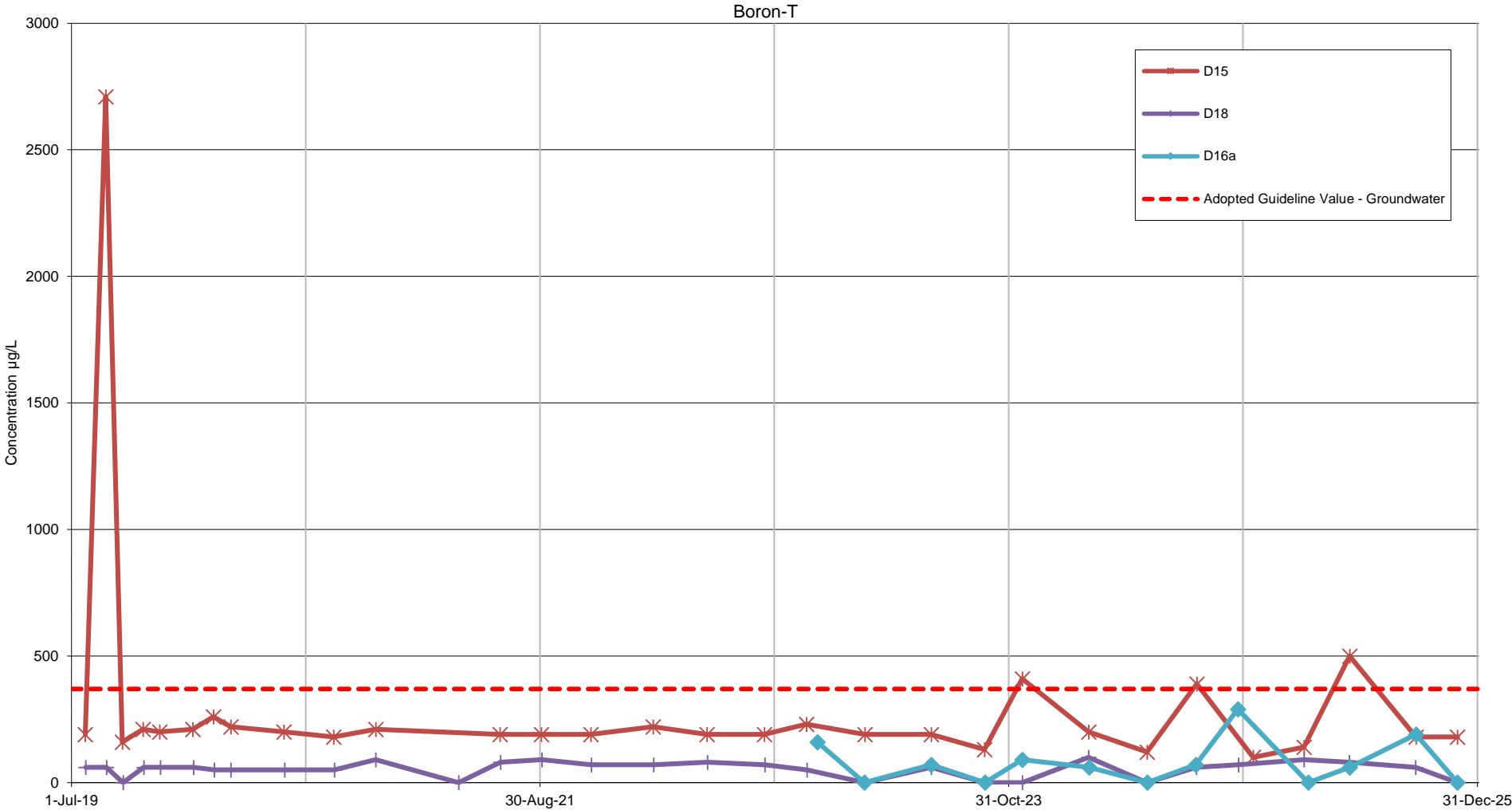


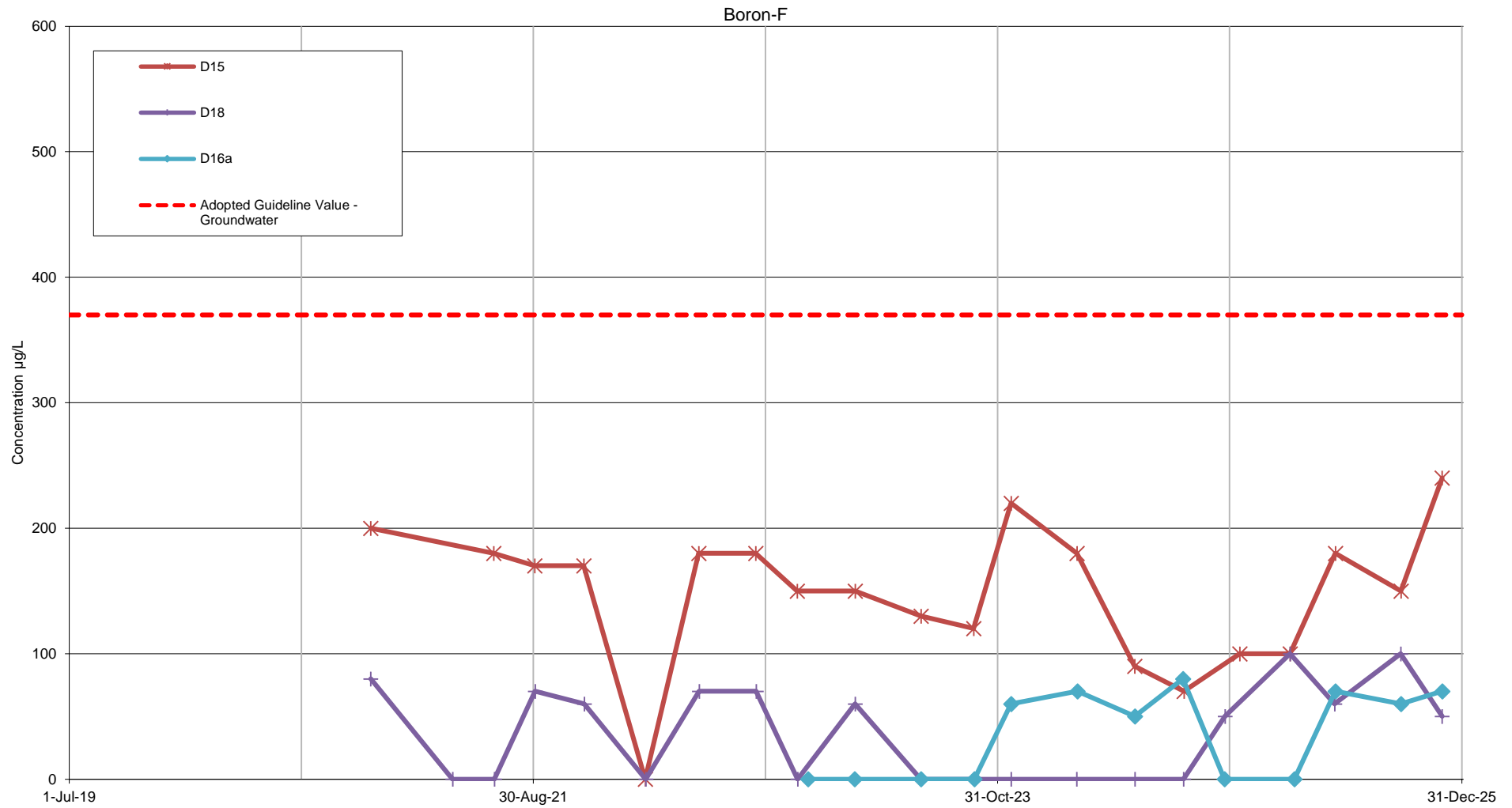


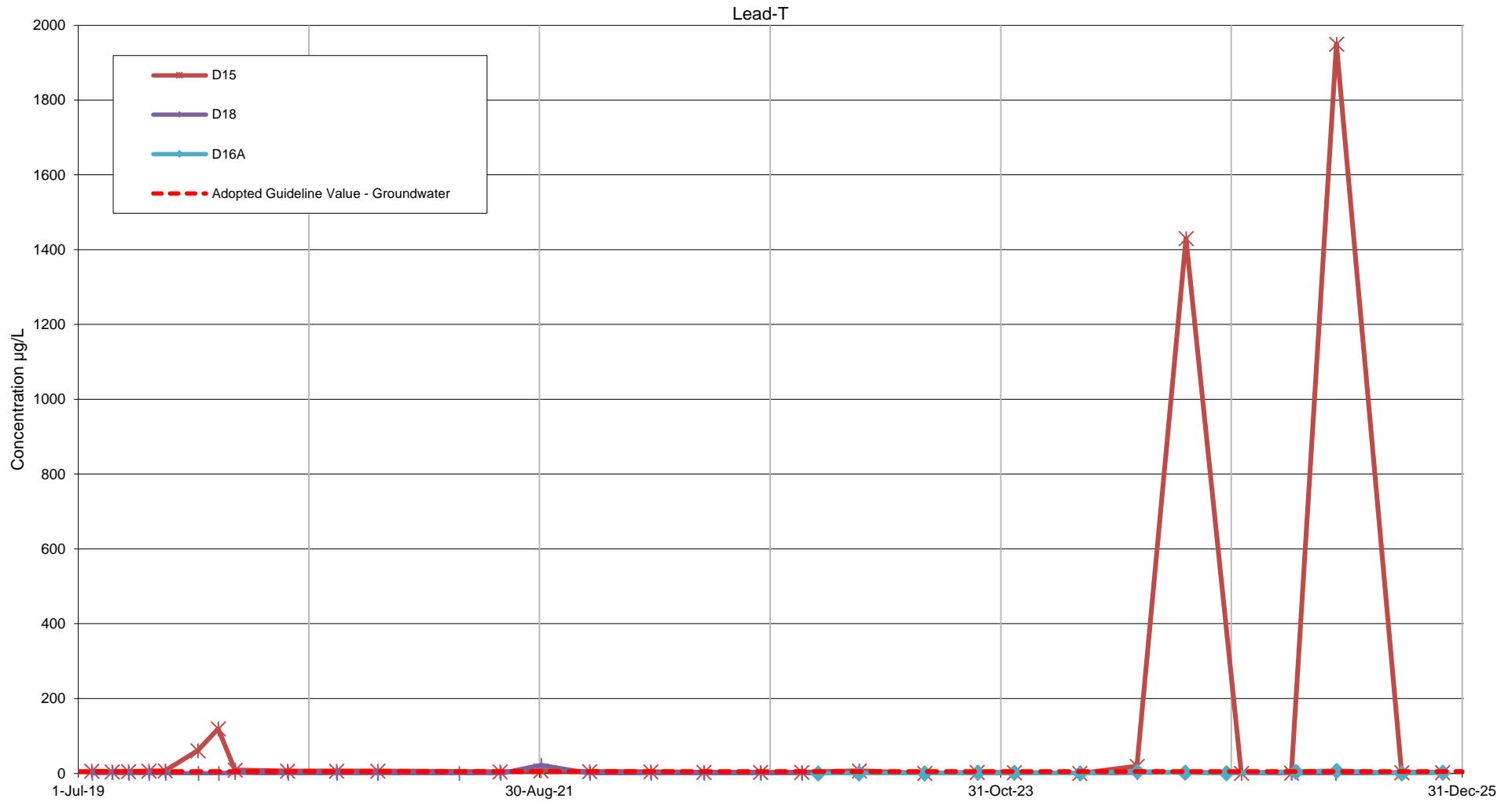
Appendix M. Cross-gradient MPAR to the South, LNAR (South) and Historical Mining Disturbance - Iron (Filtered) Concentrations Over Time
Mt Piper Power Station - Annual Monitoring Report 2024/25

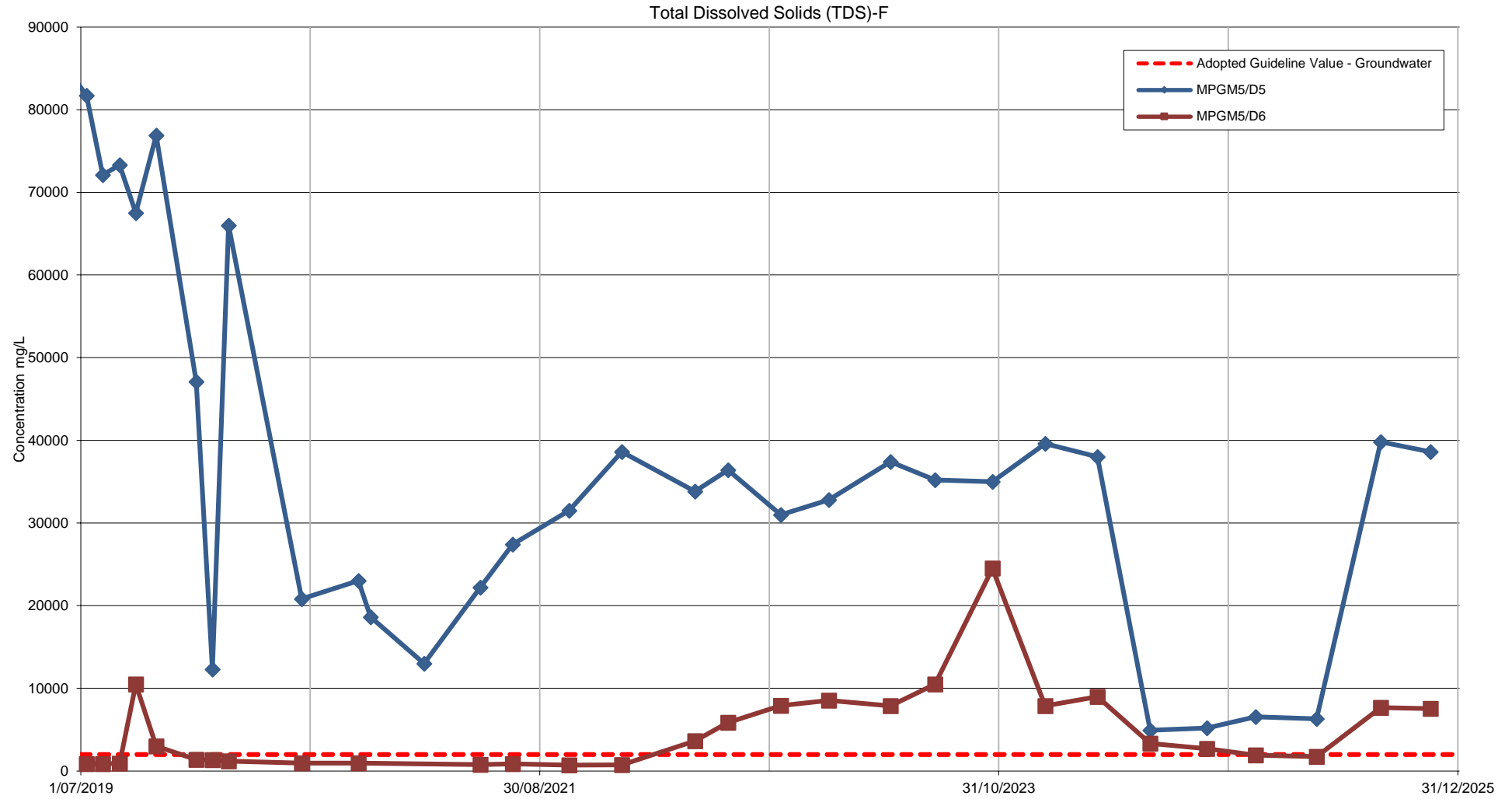
0810778

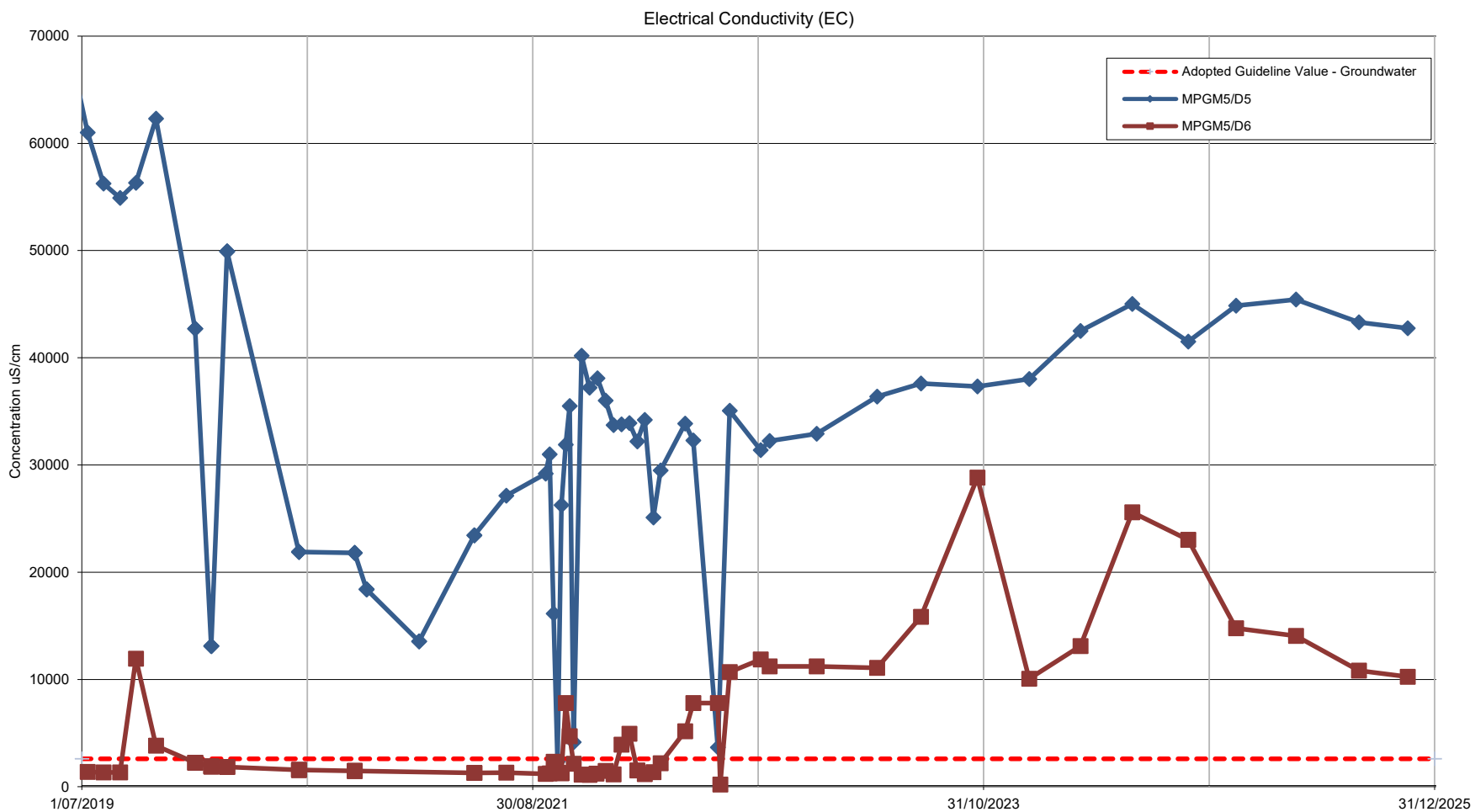


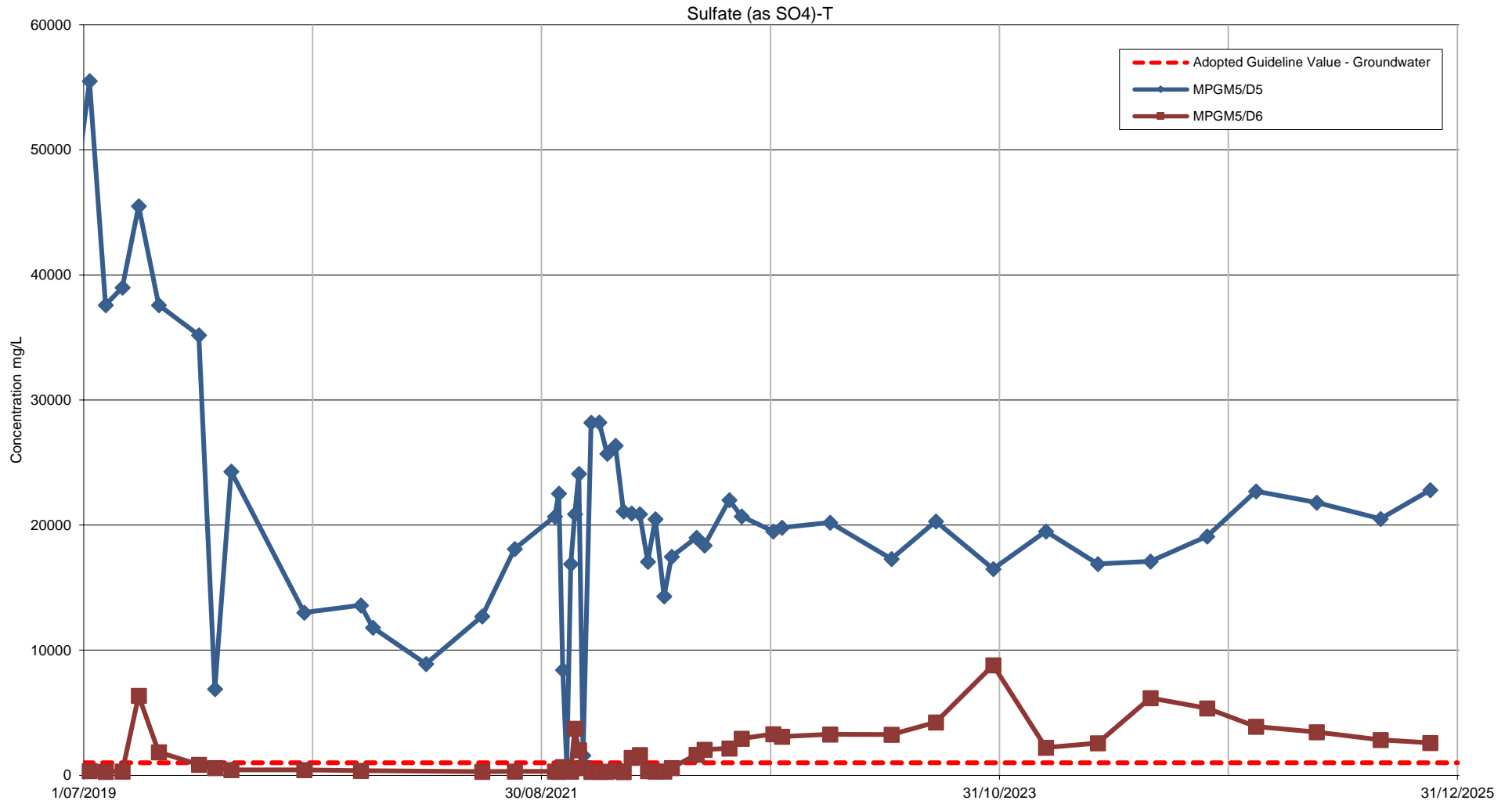


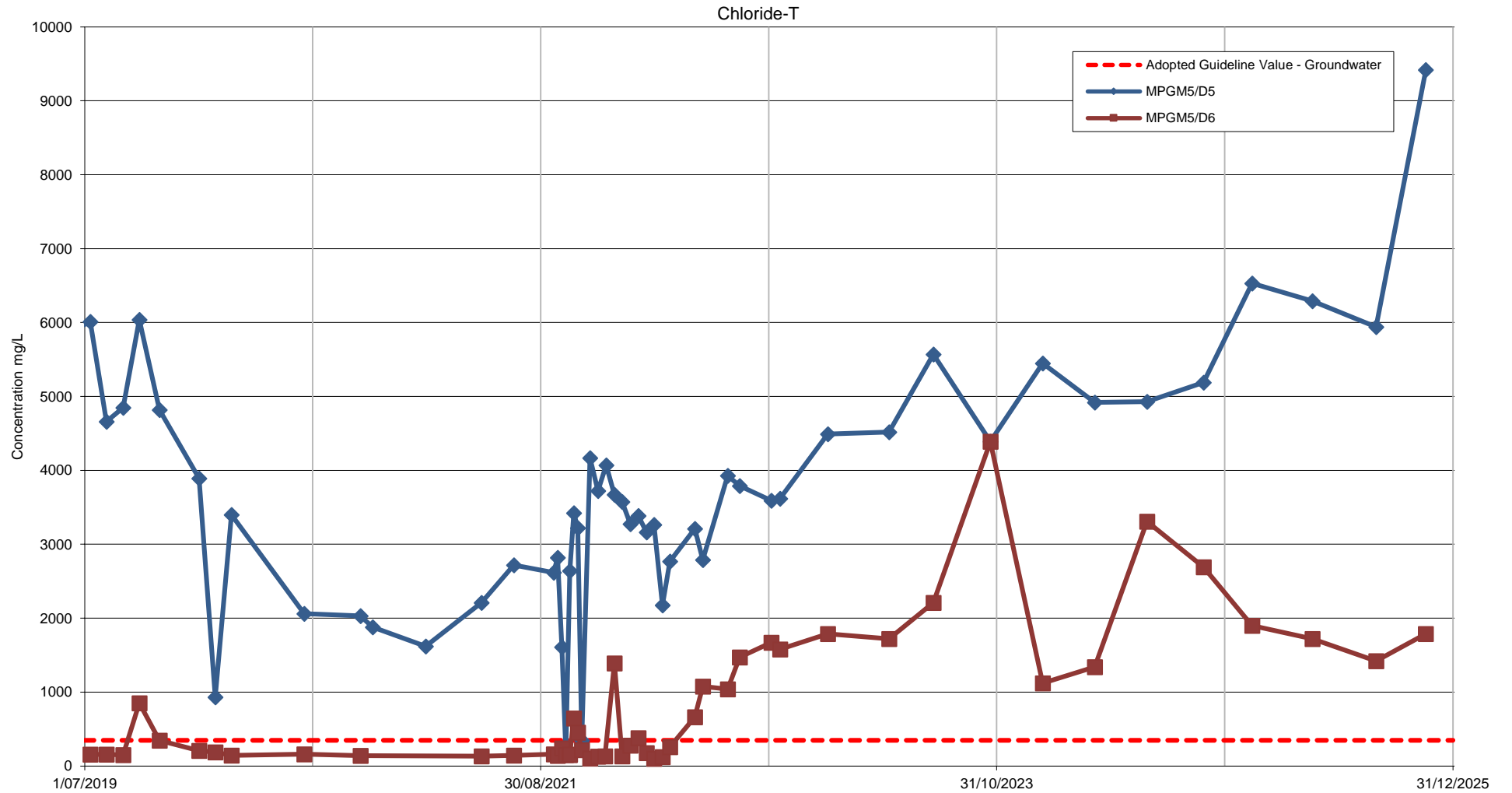


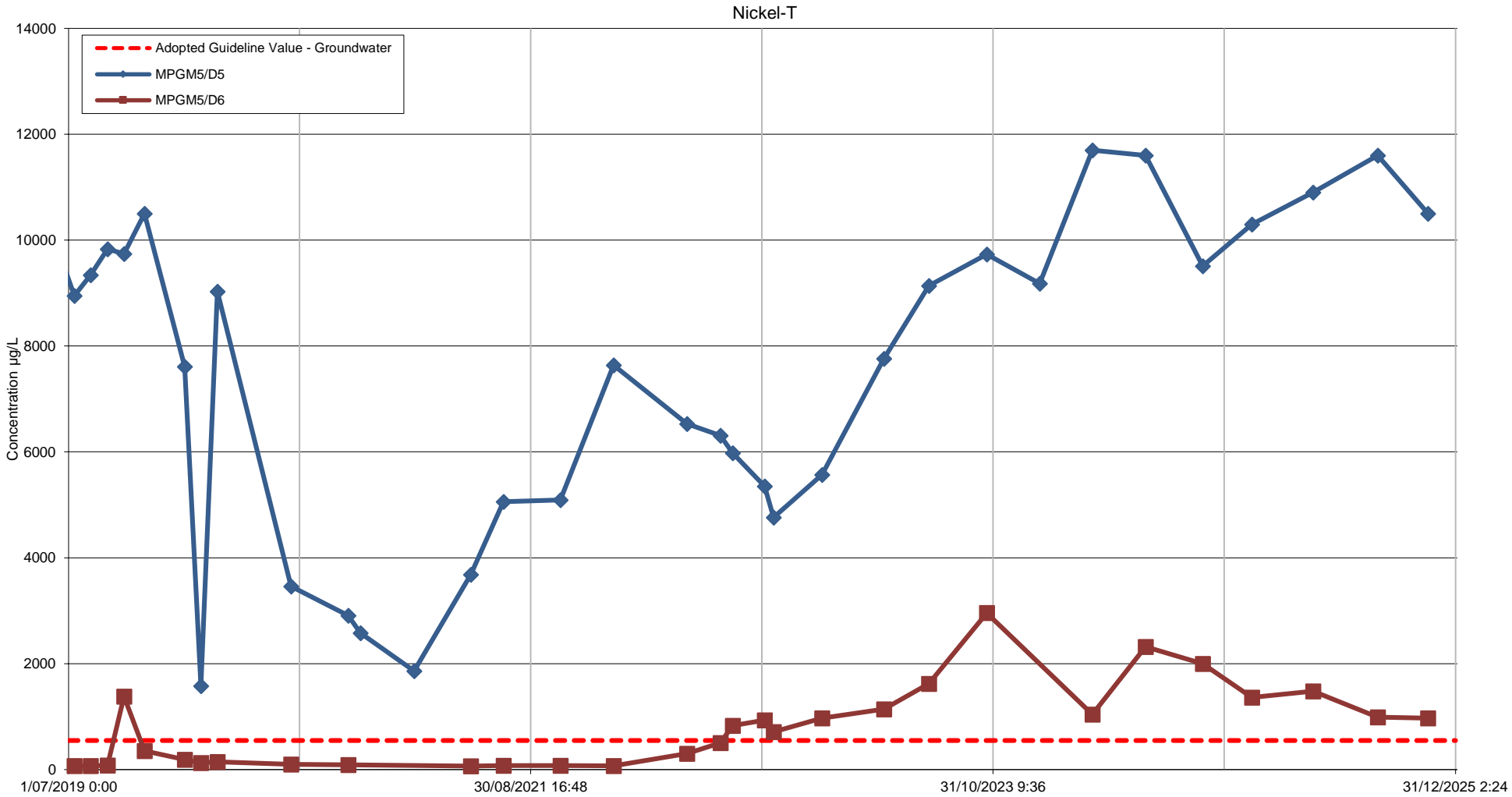


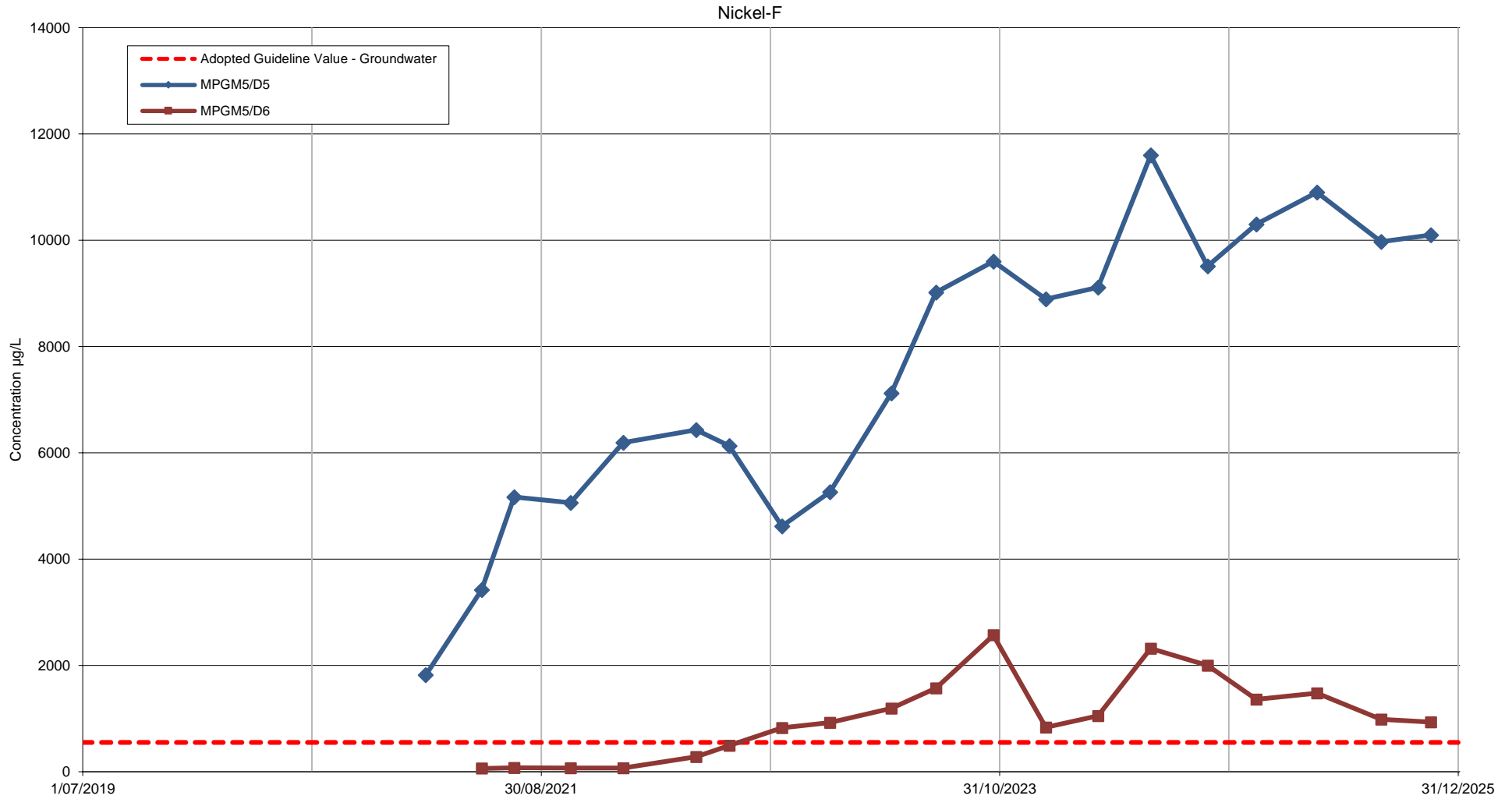


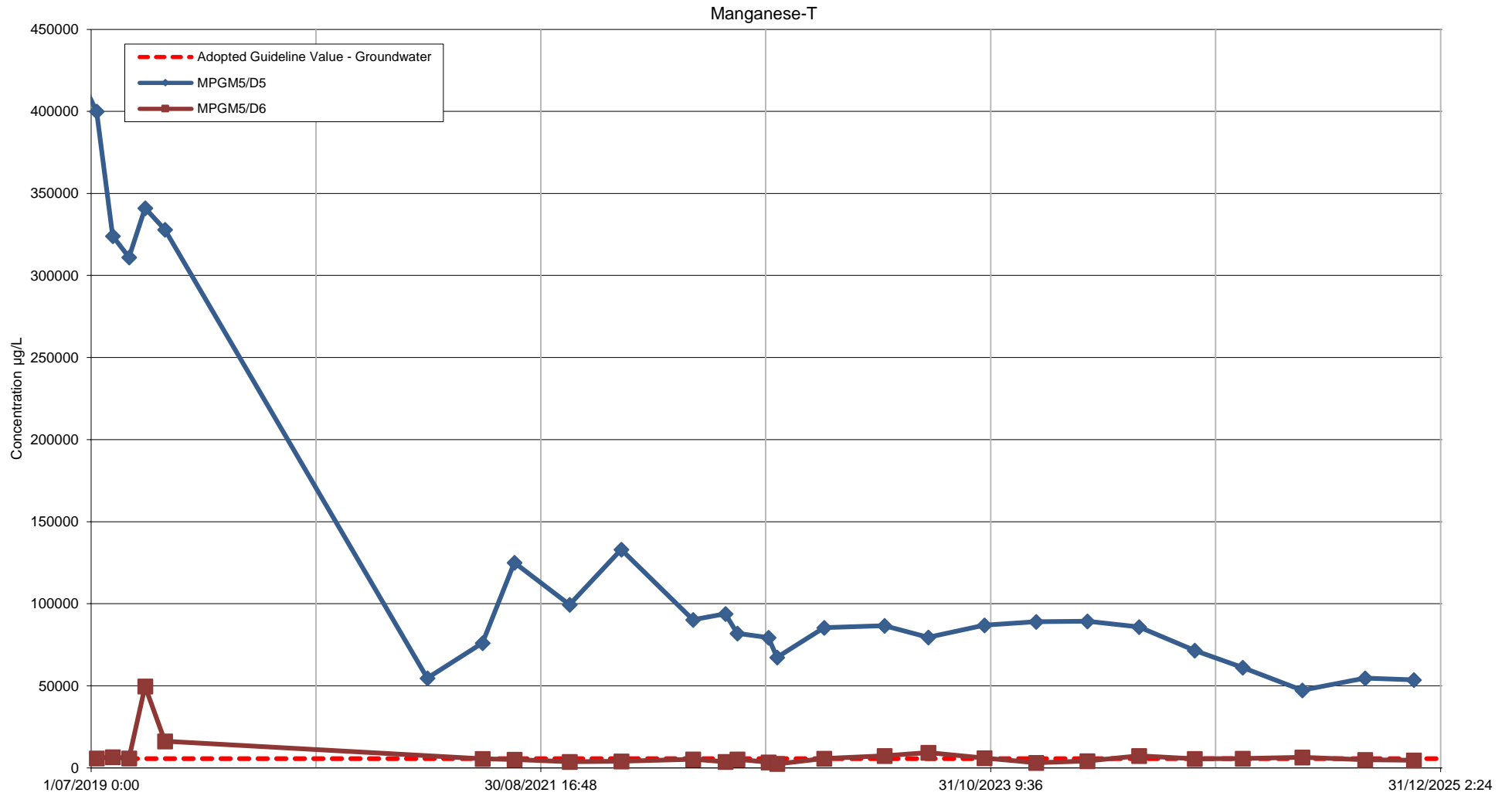


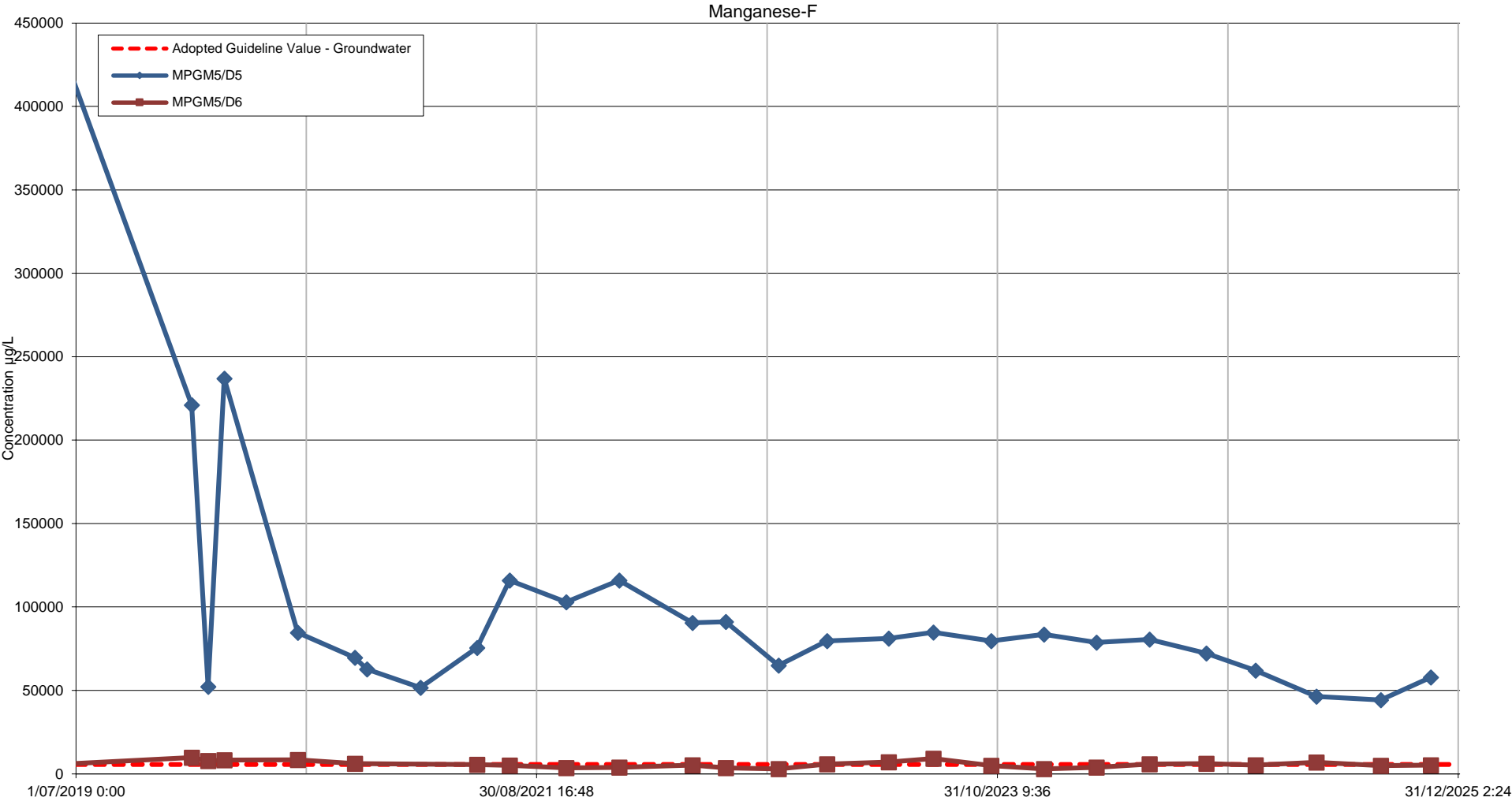


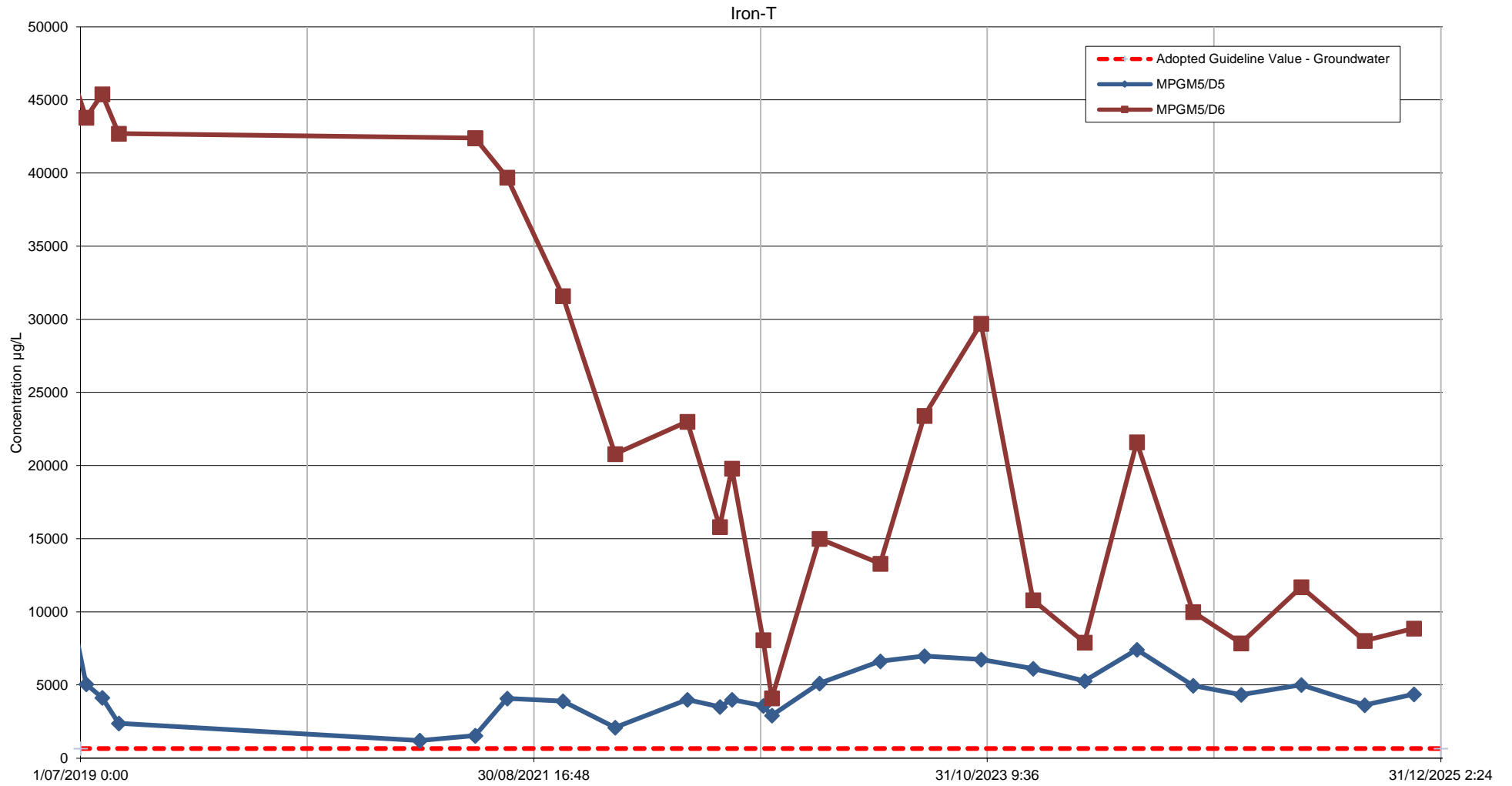


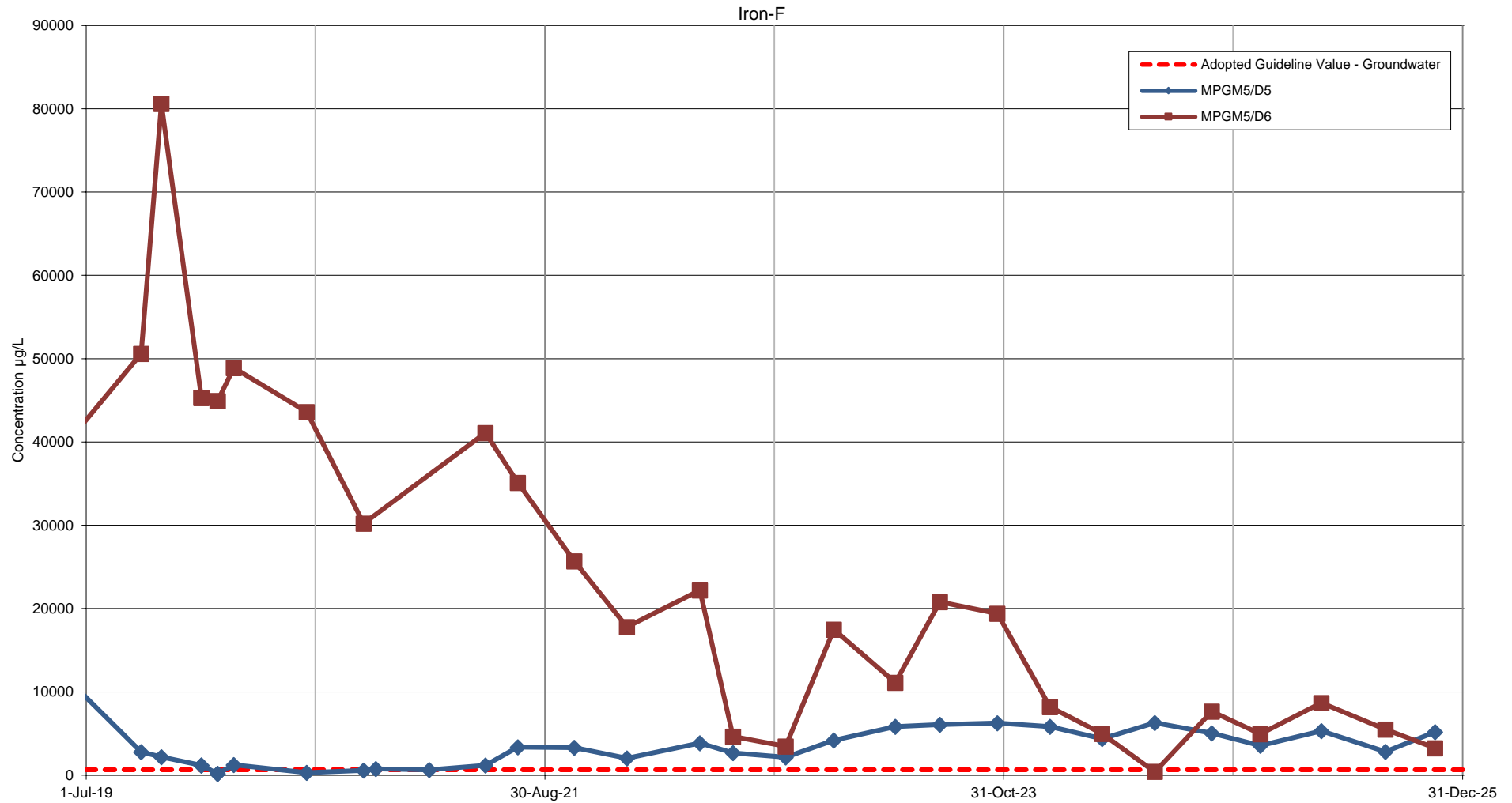


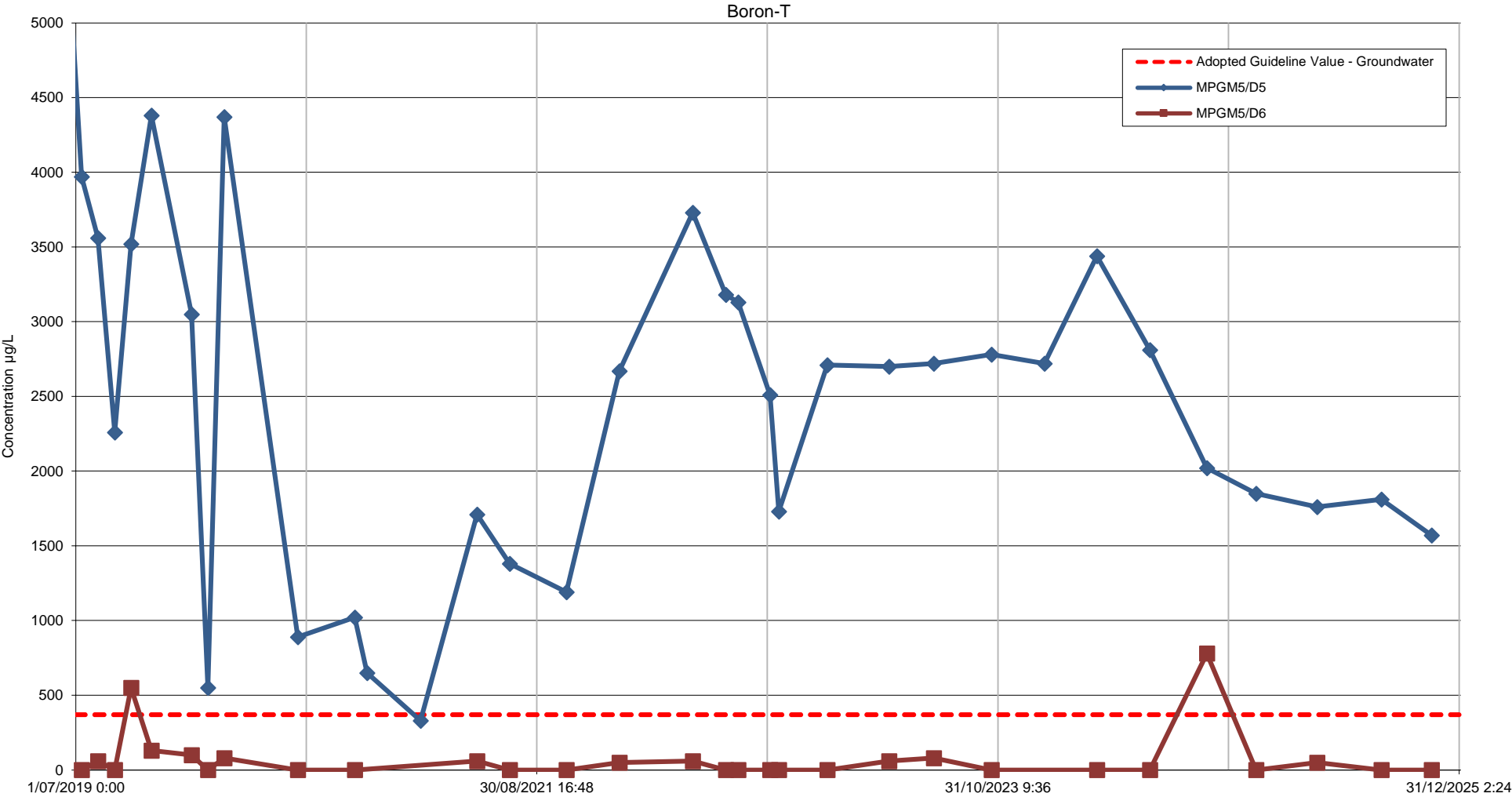


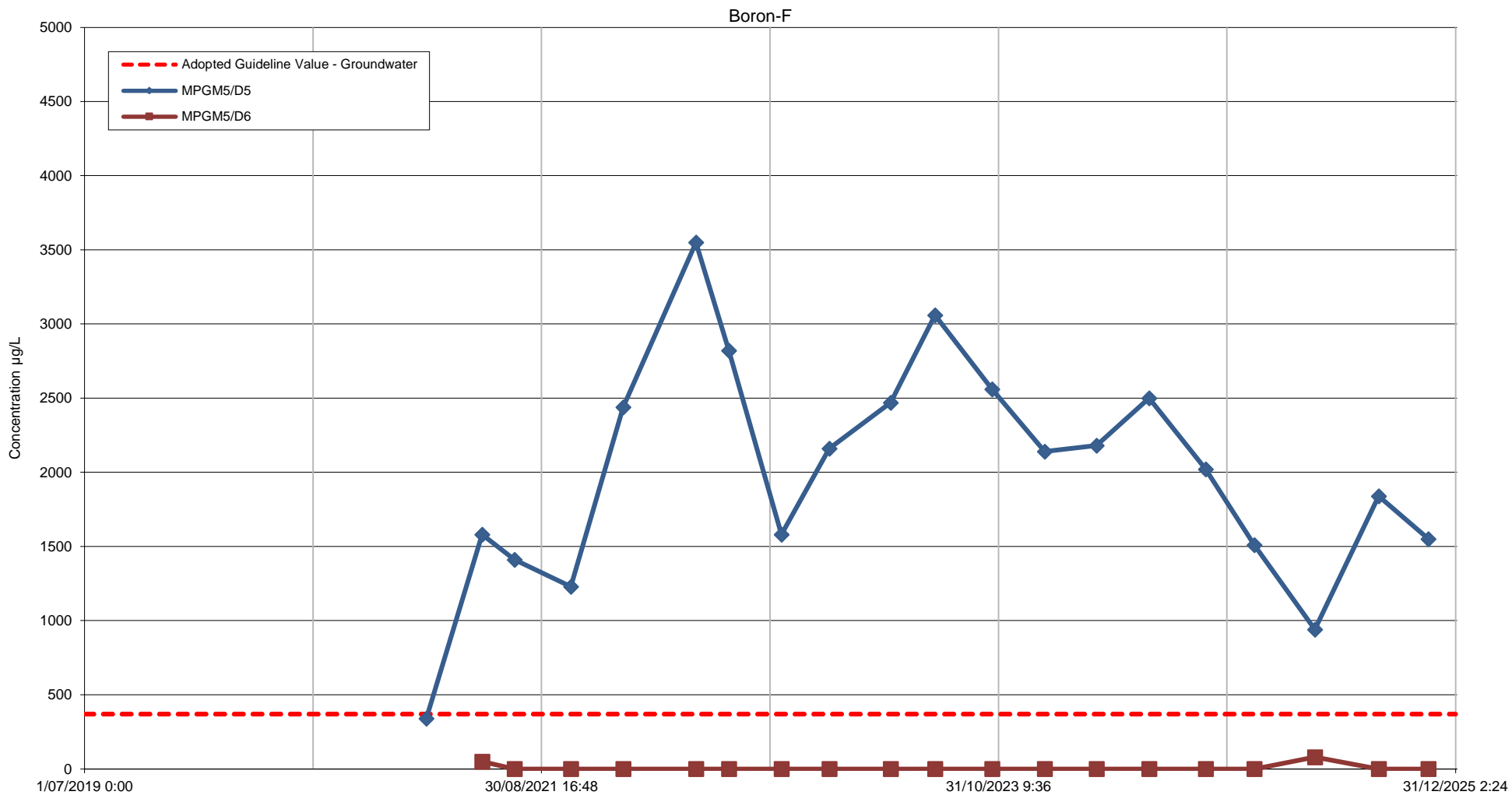


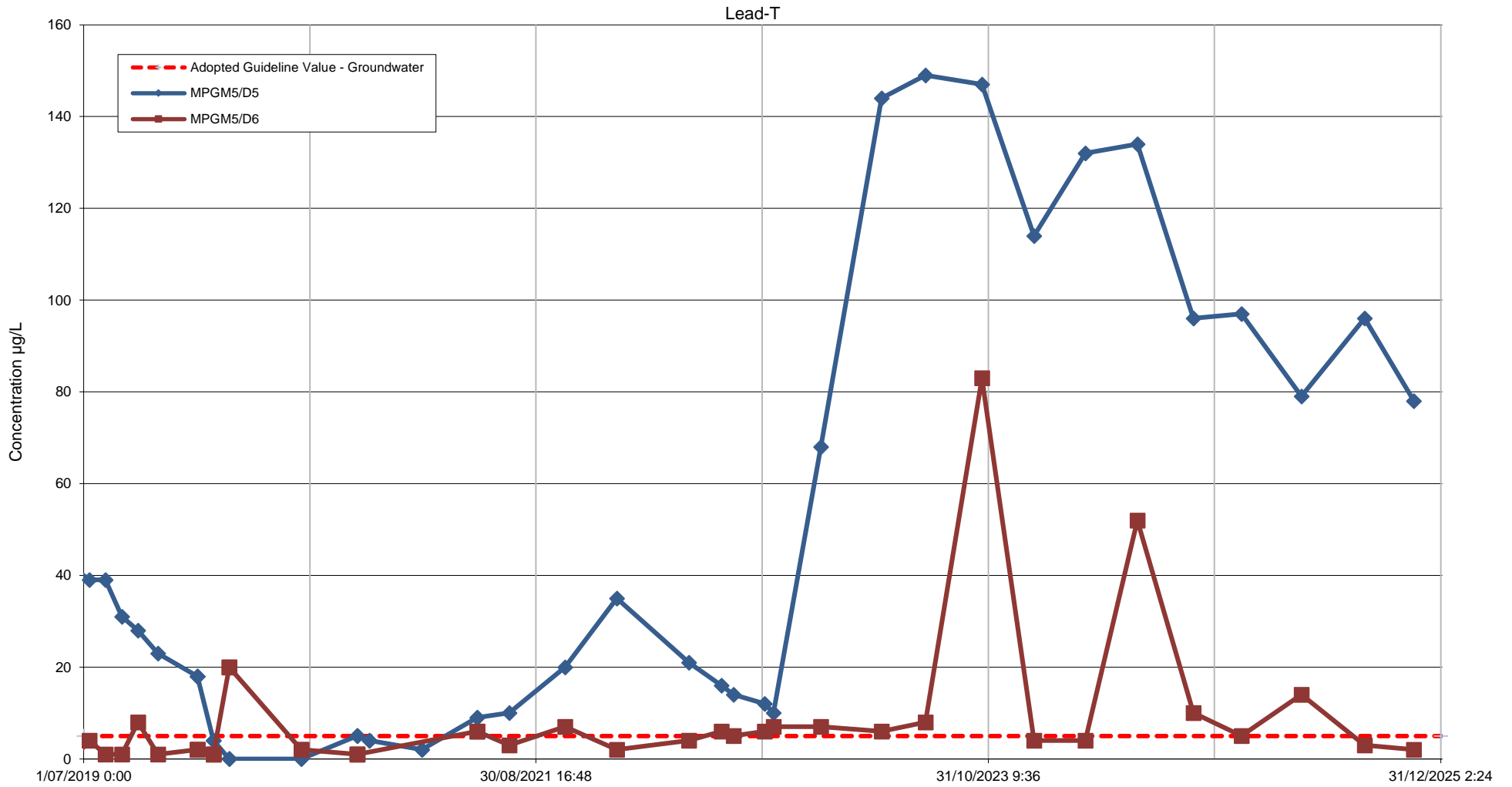








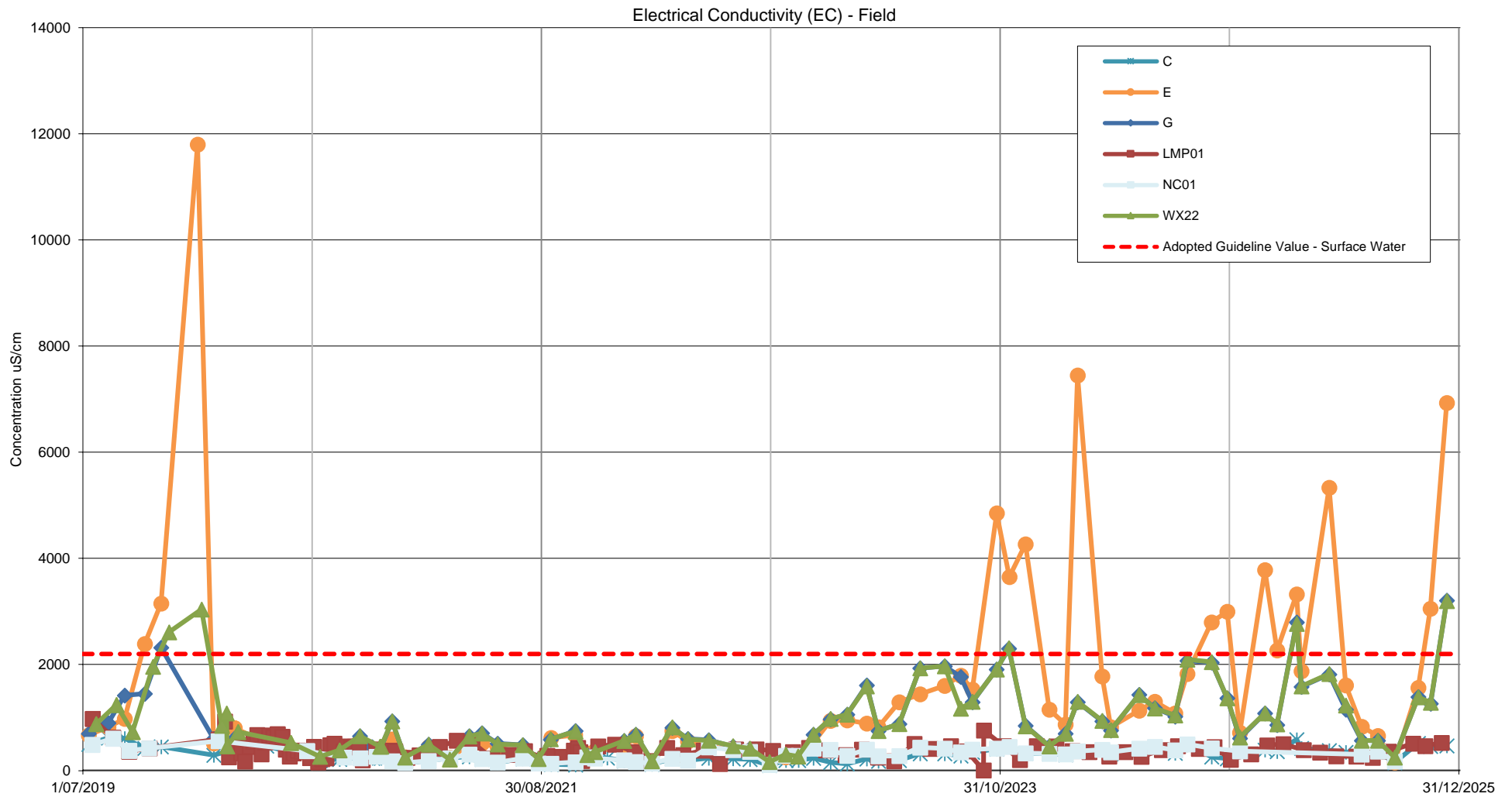


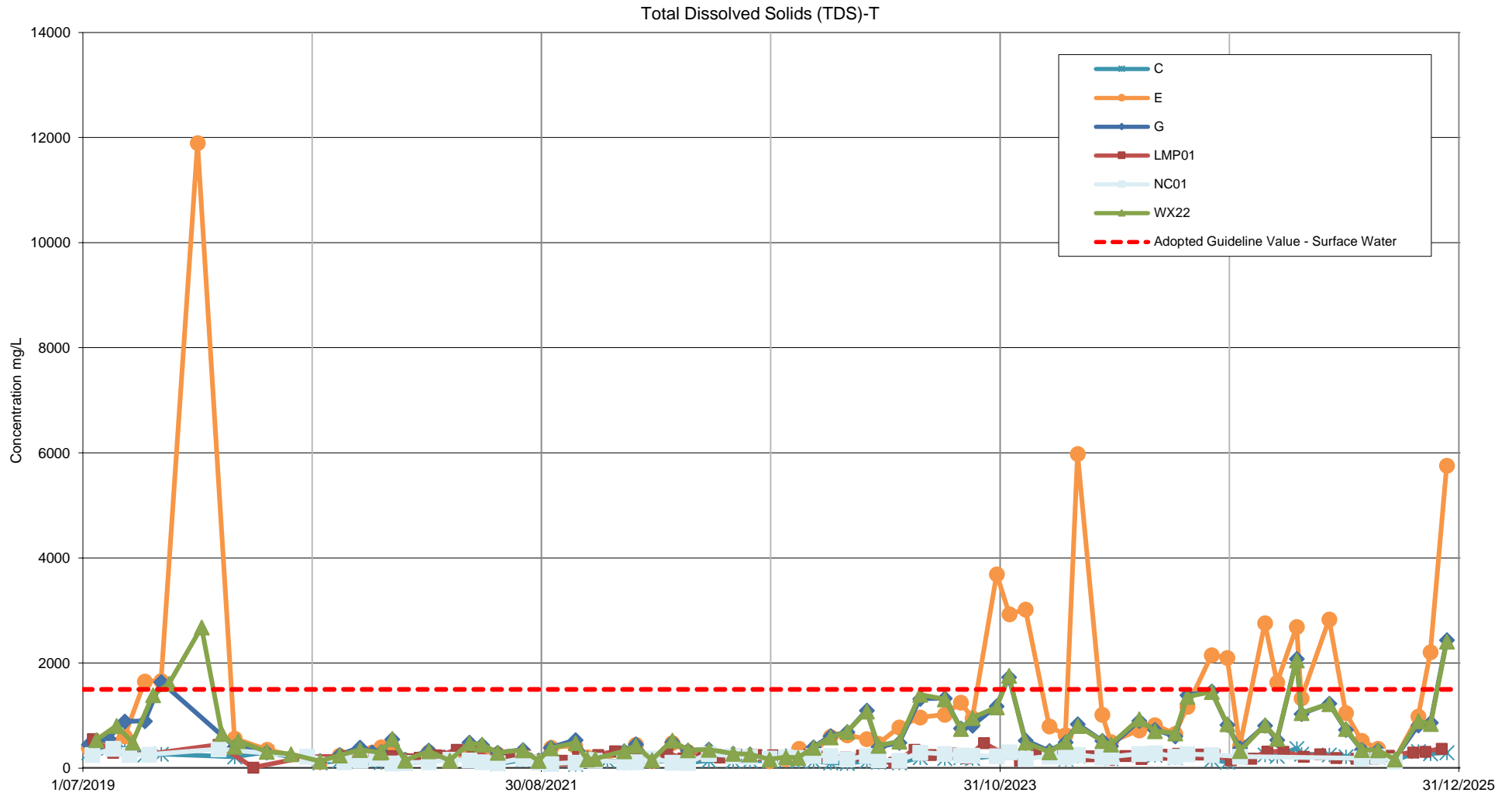


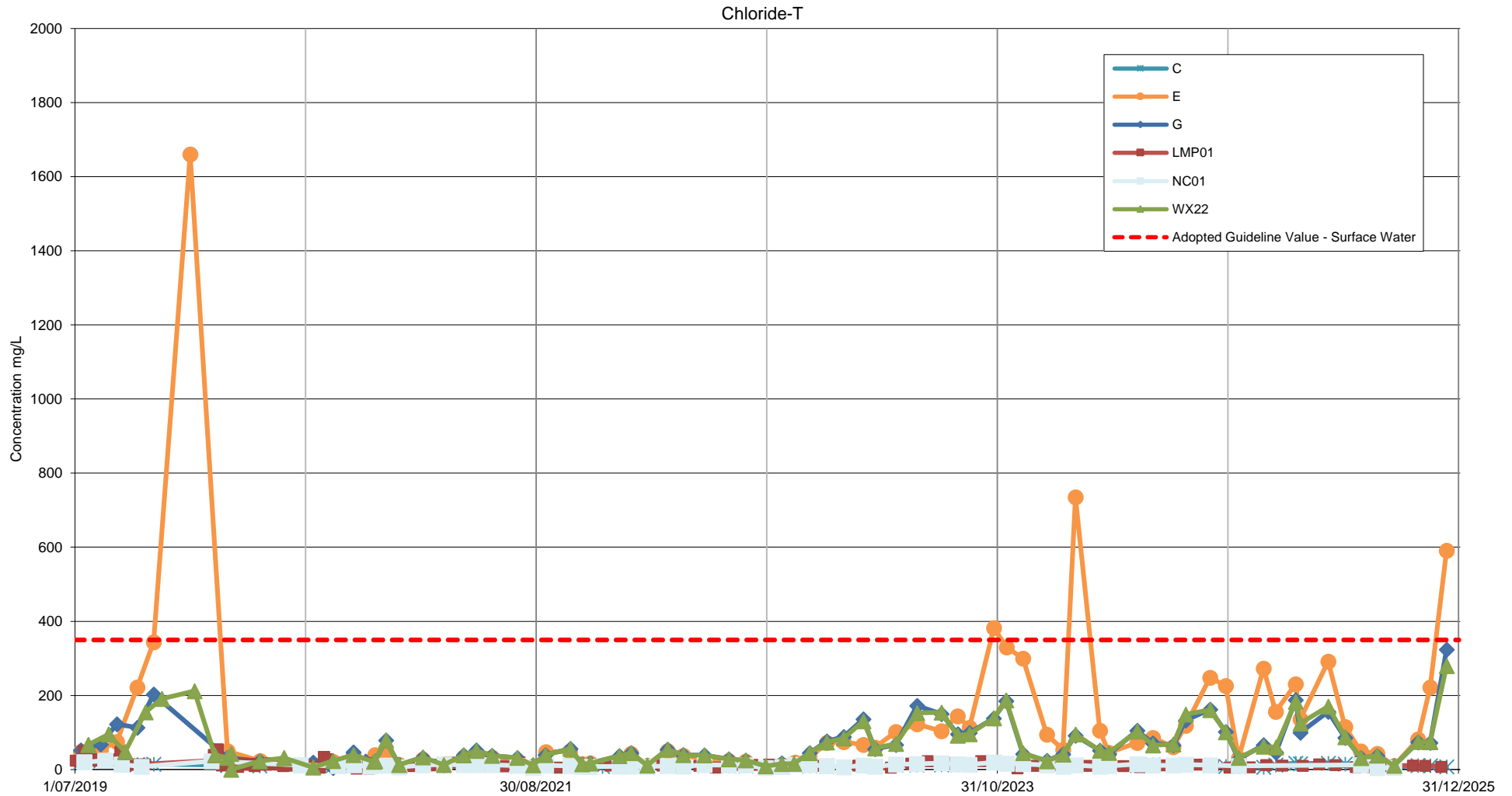


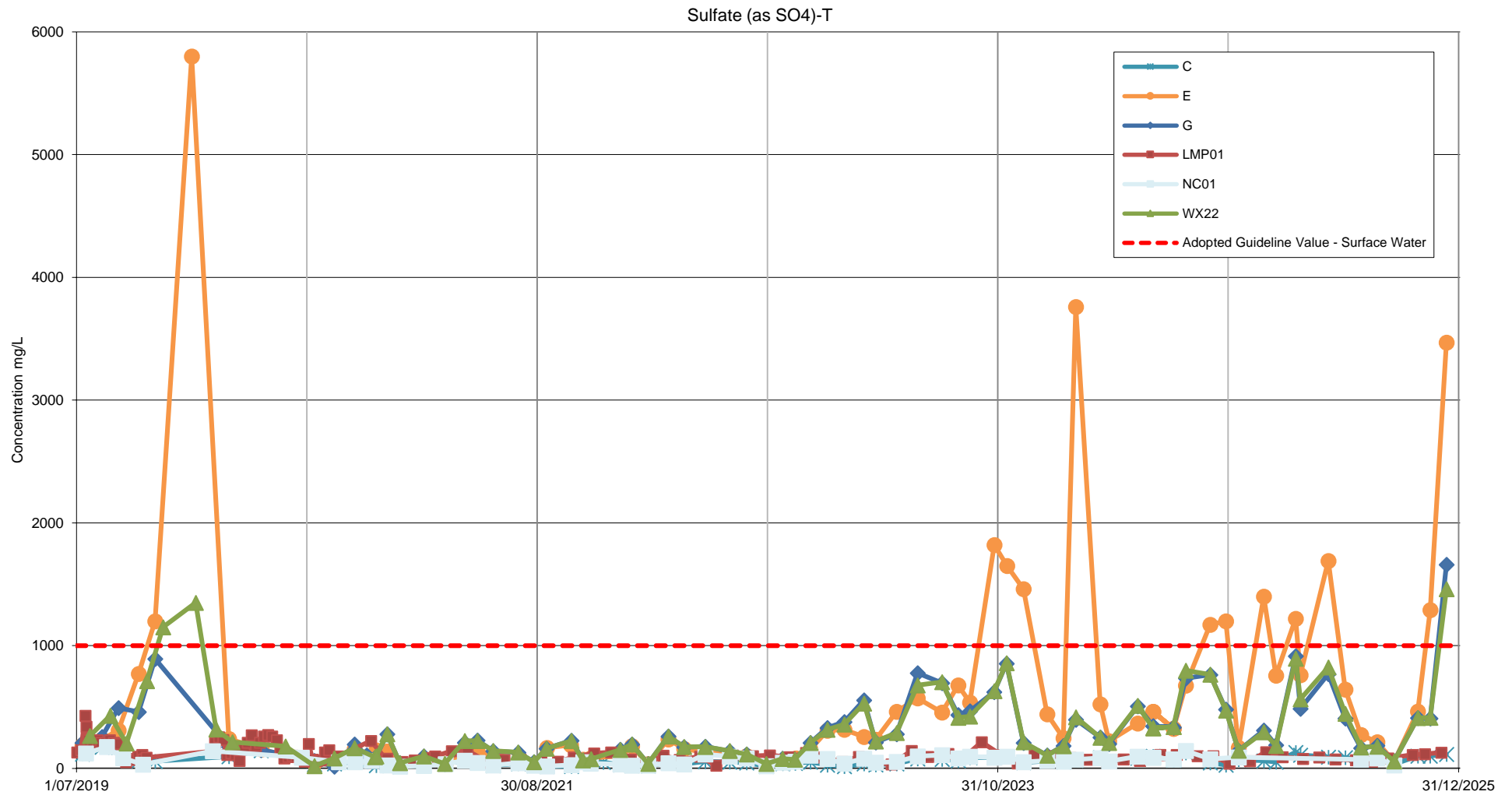
APPENDIX N

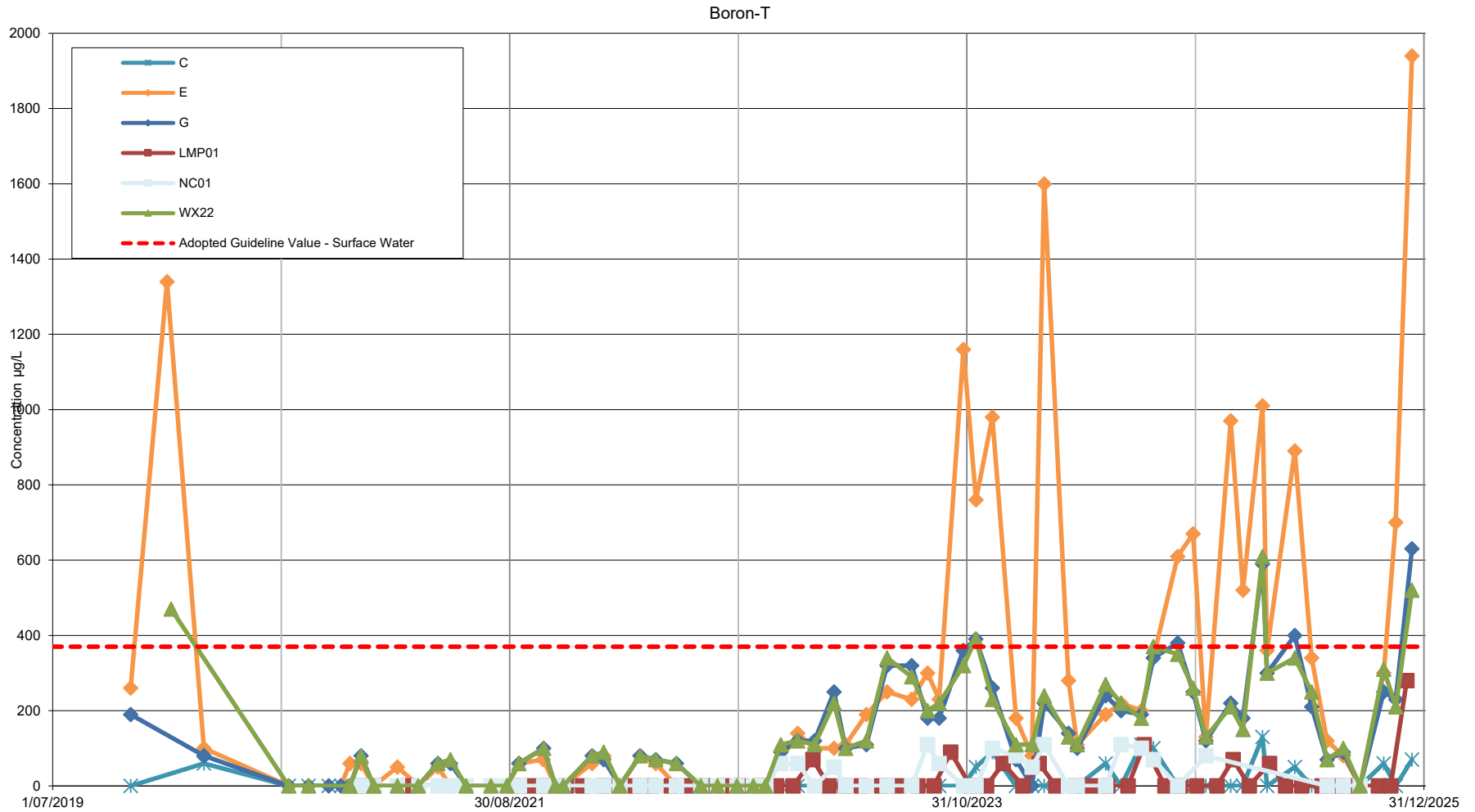
SURFACE WATER TRENDS

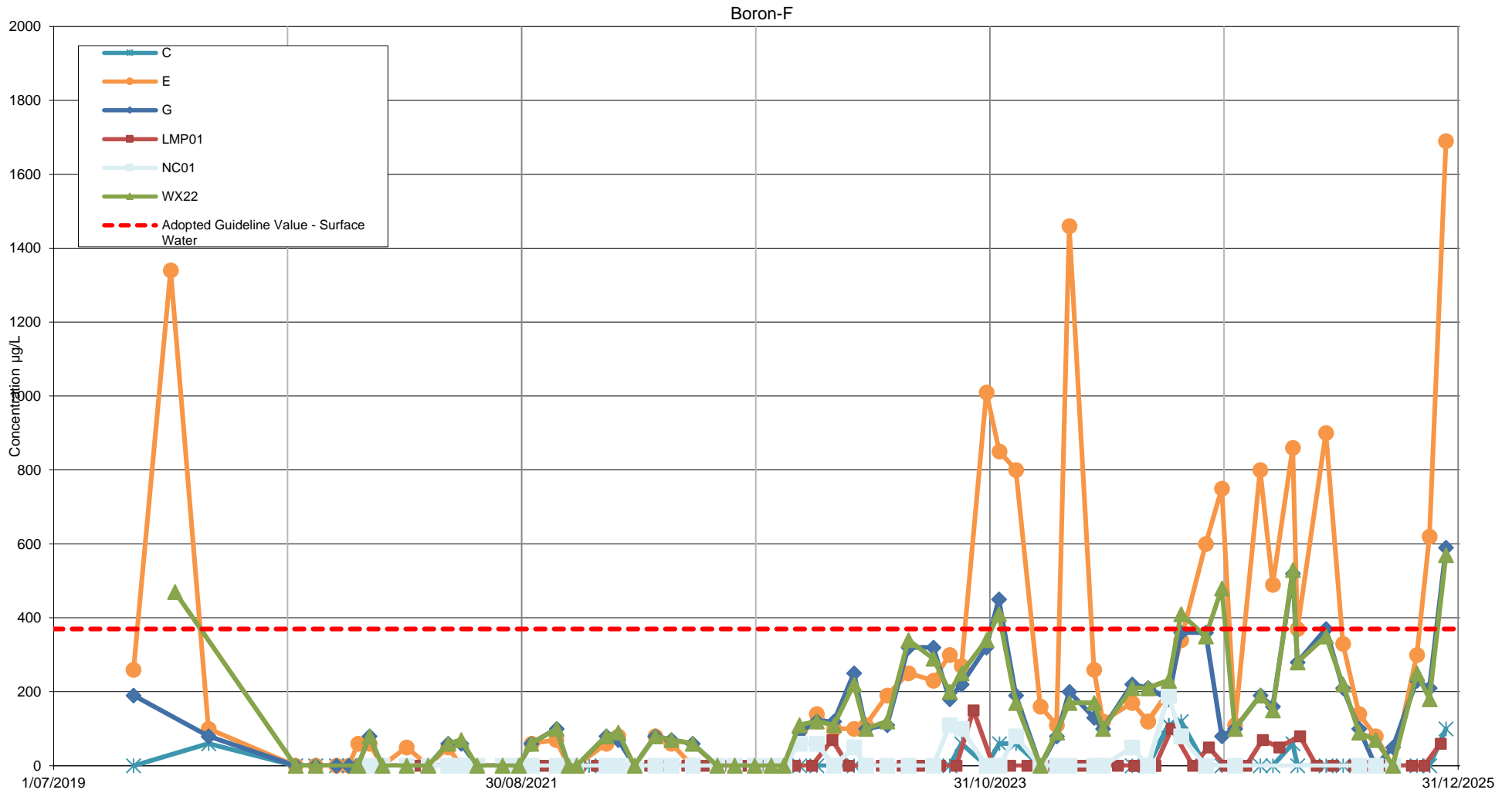


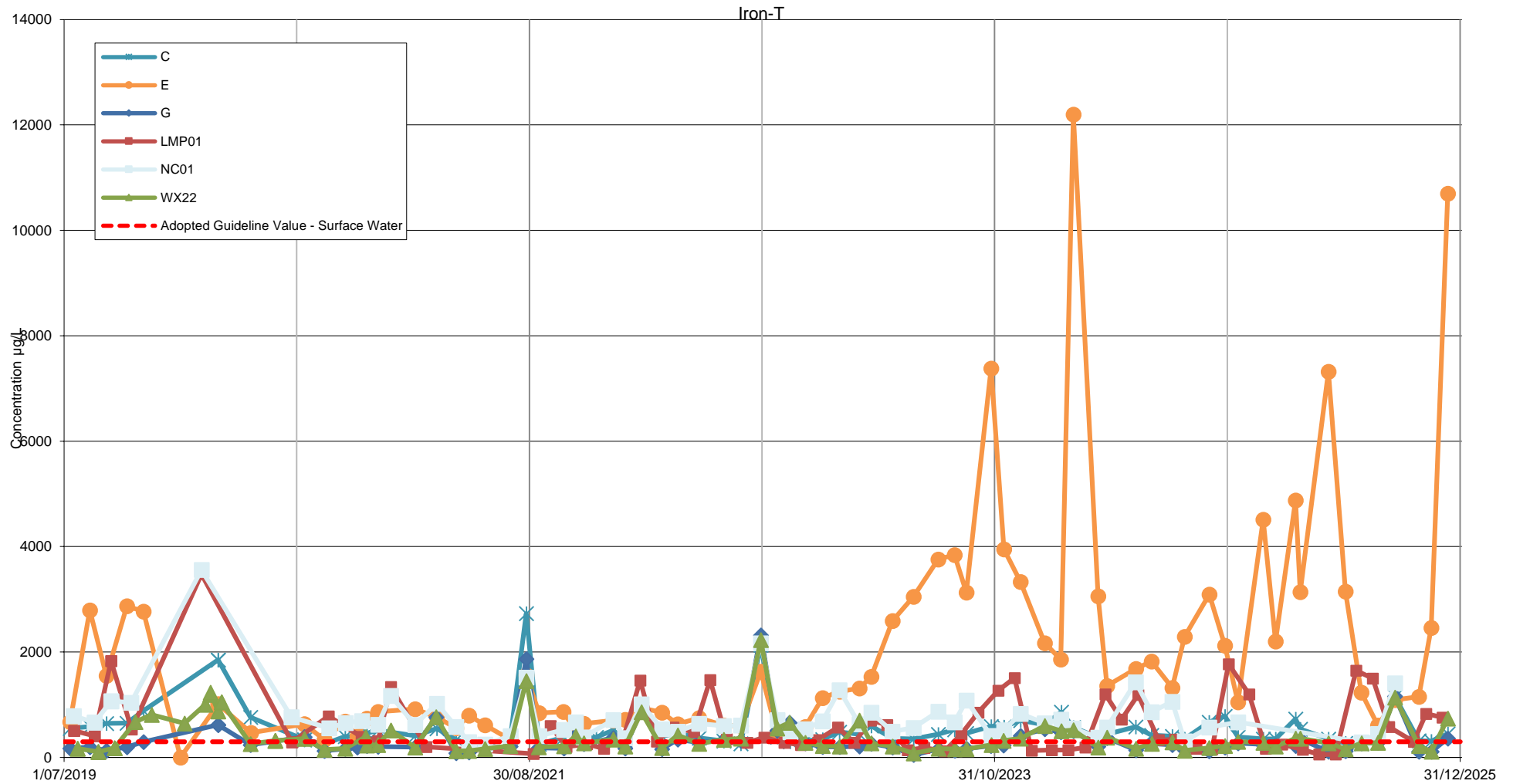


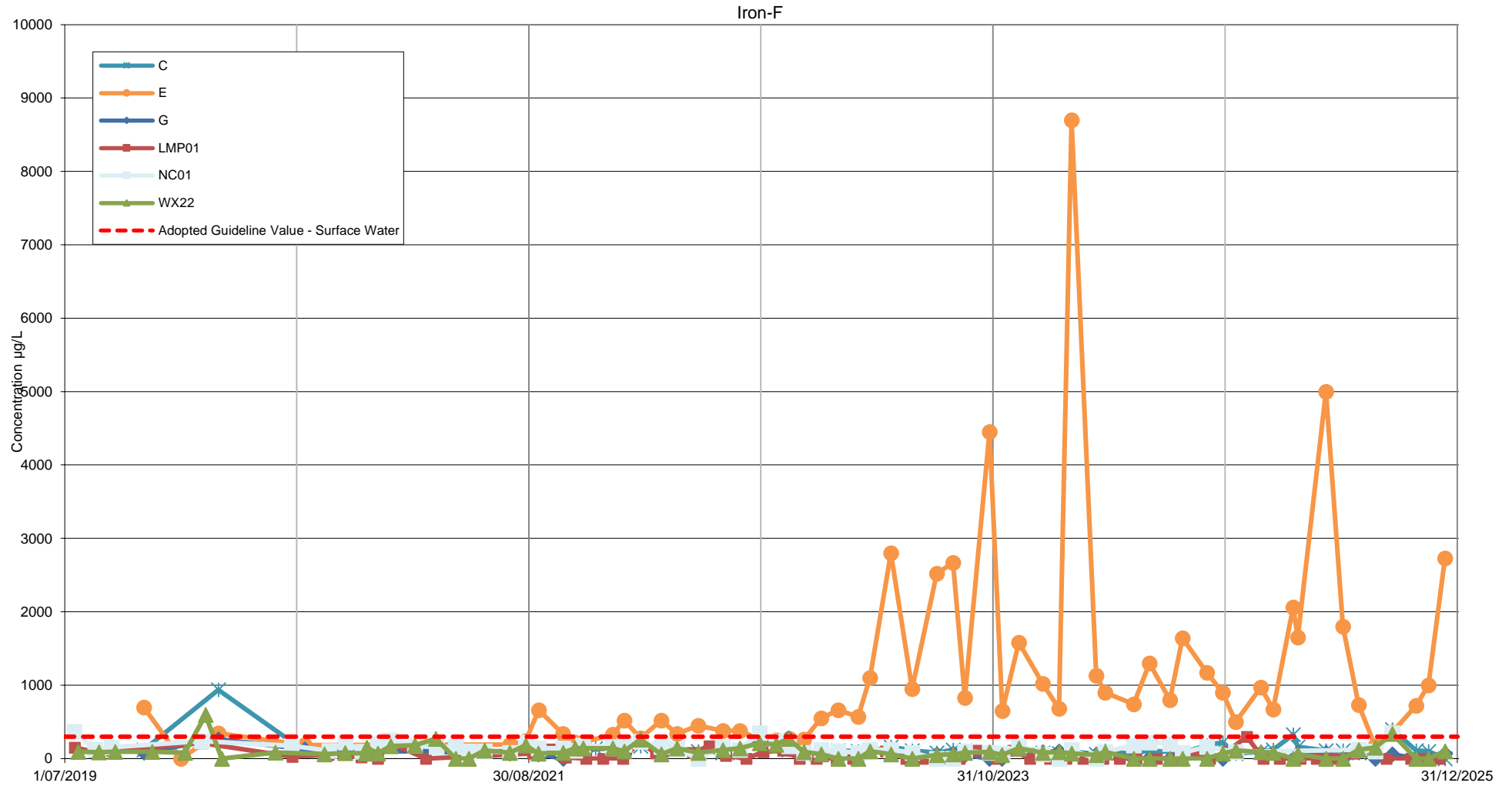


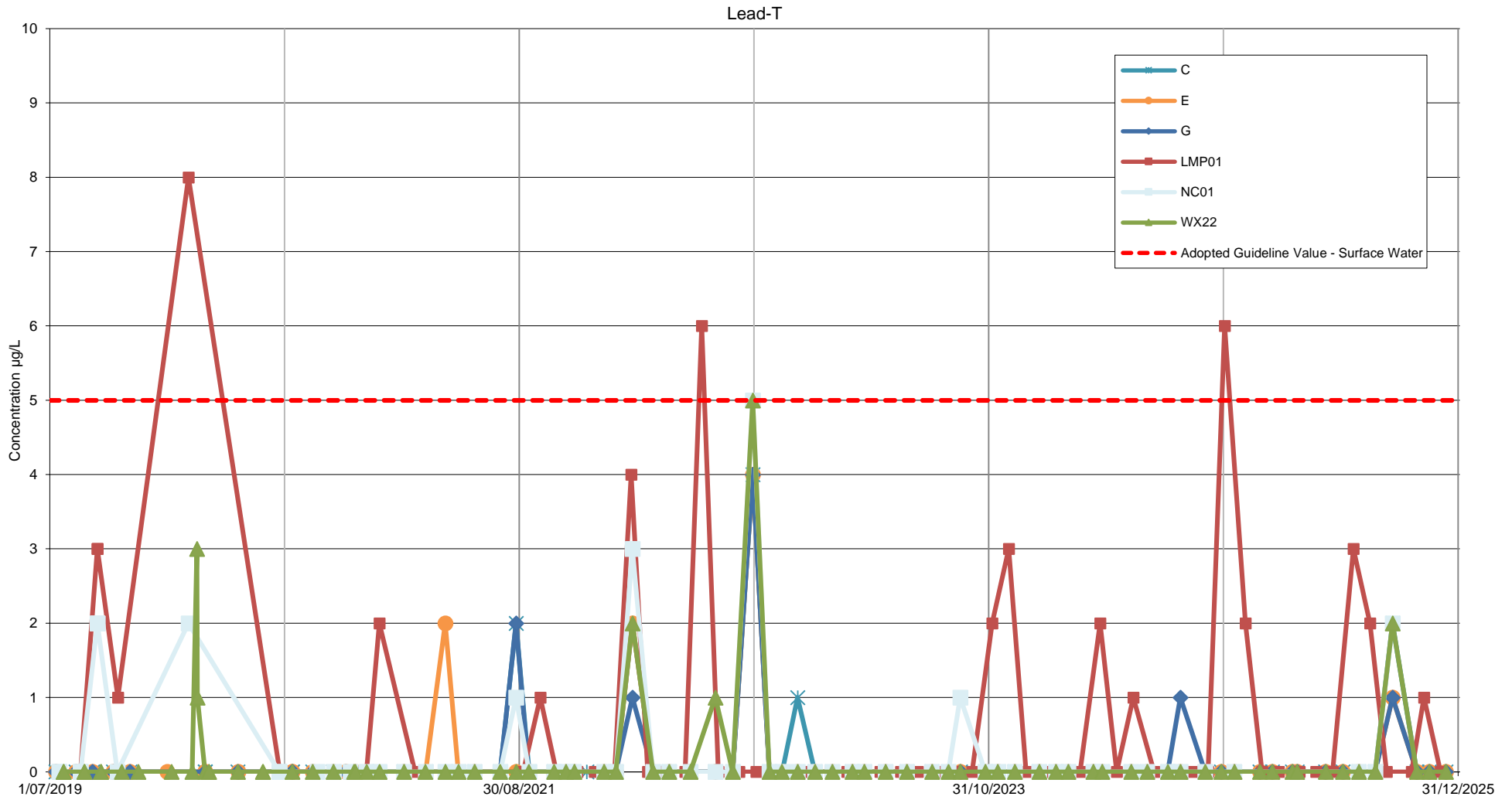


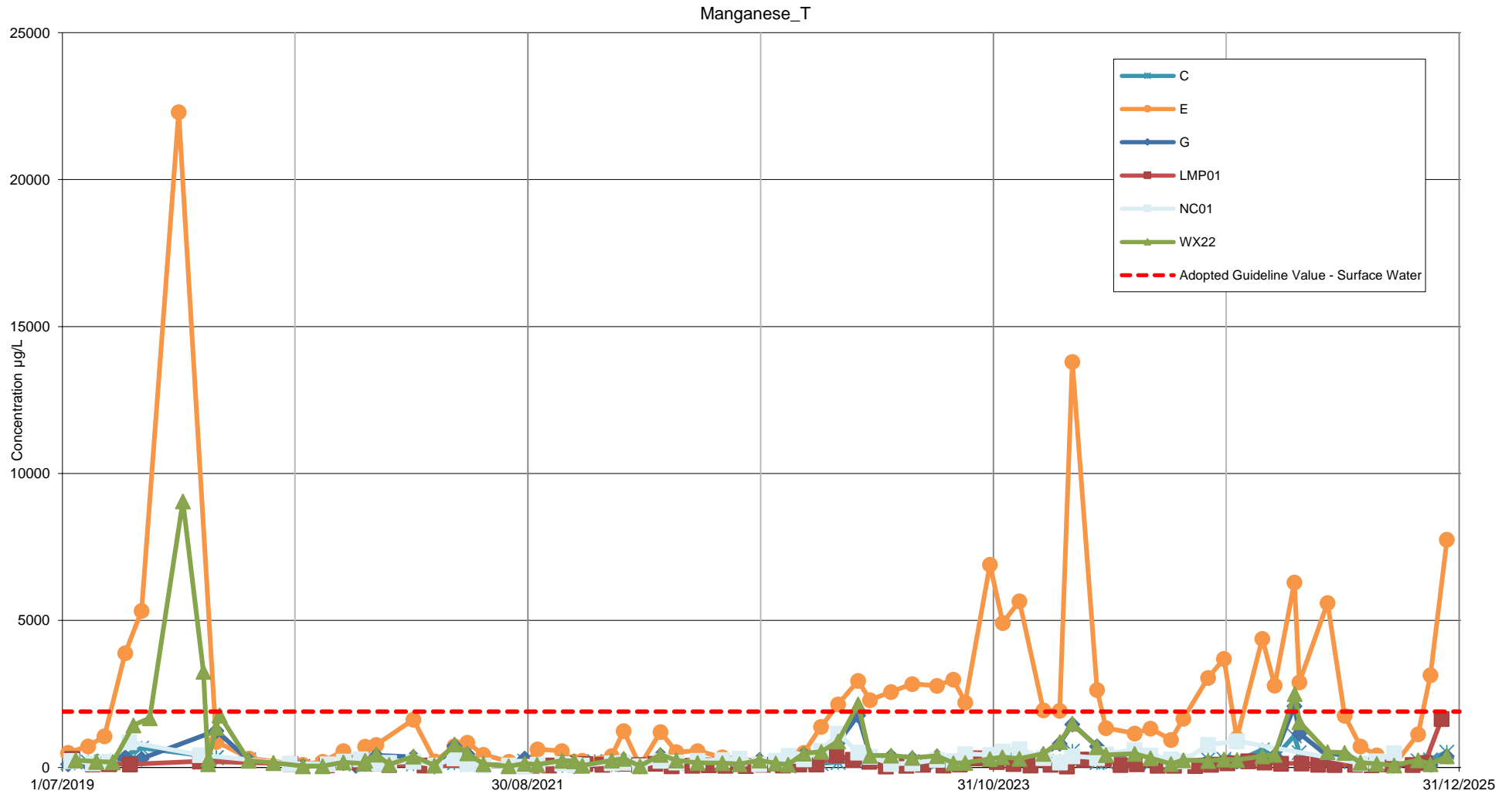


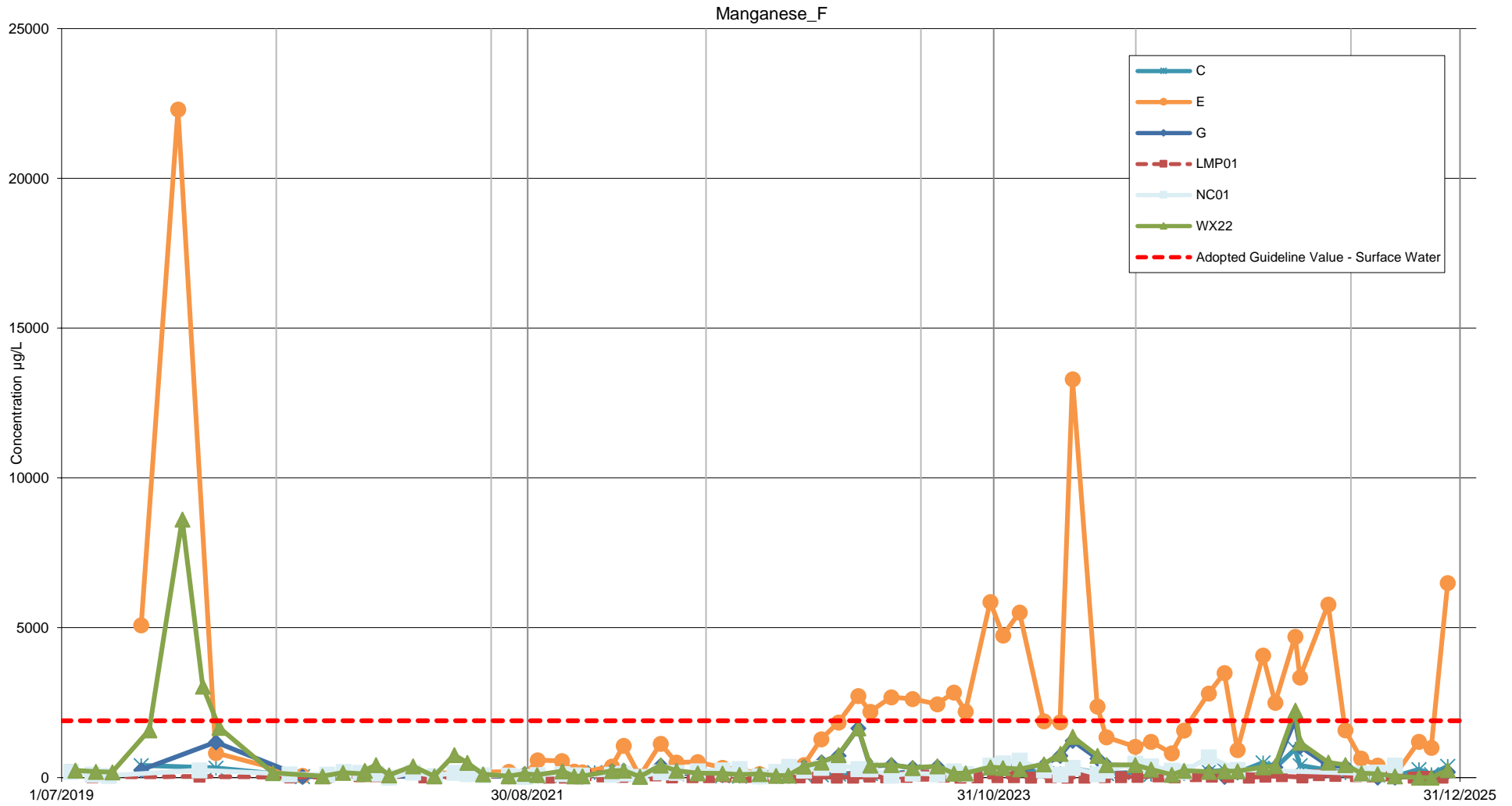


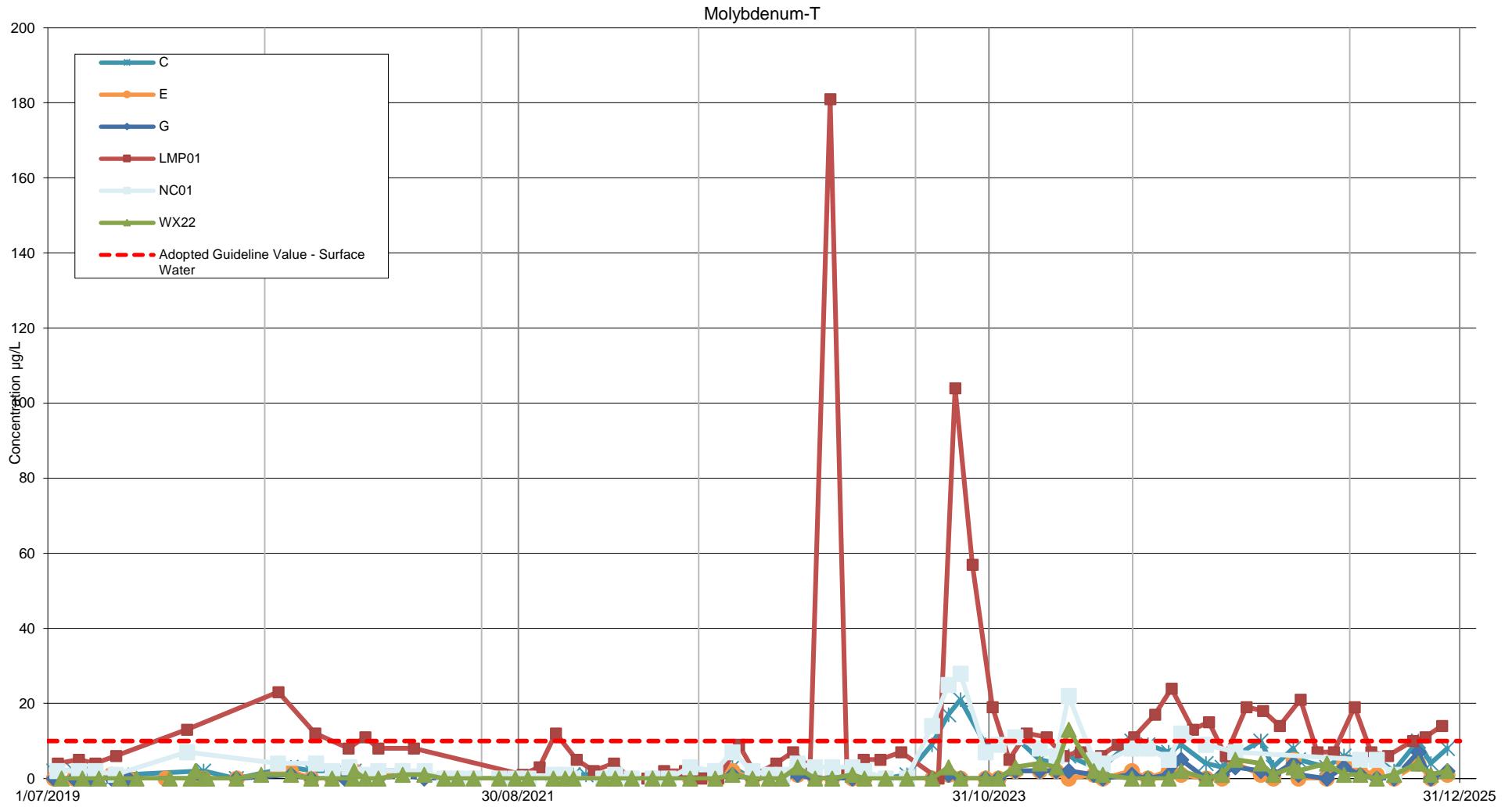


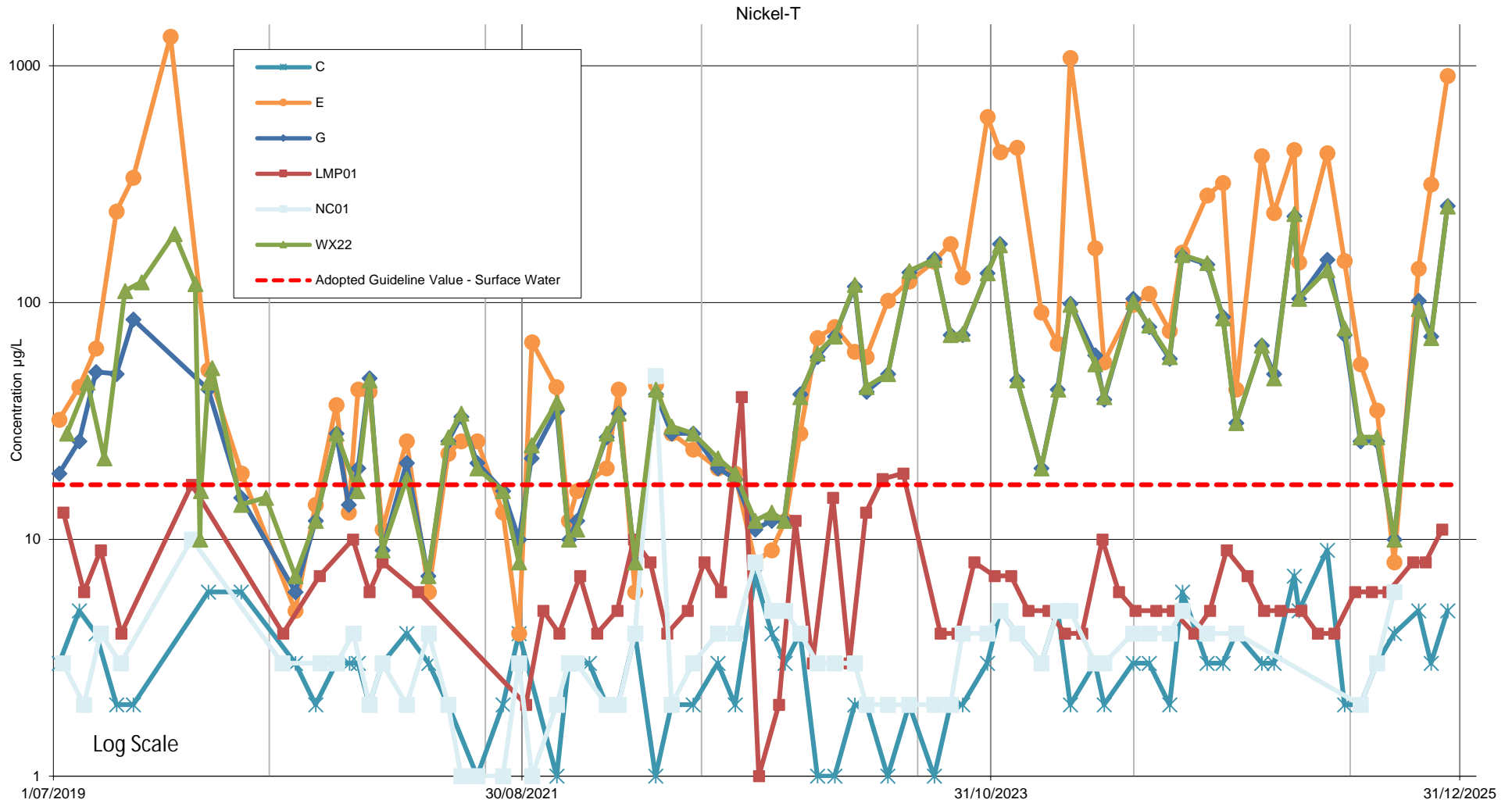


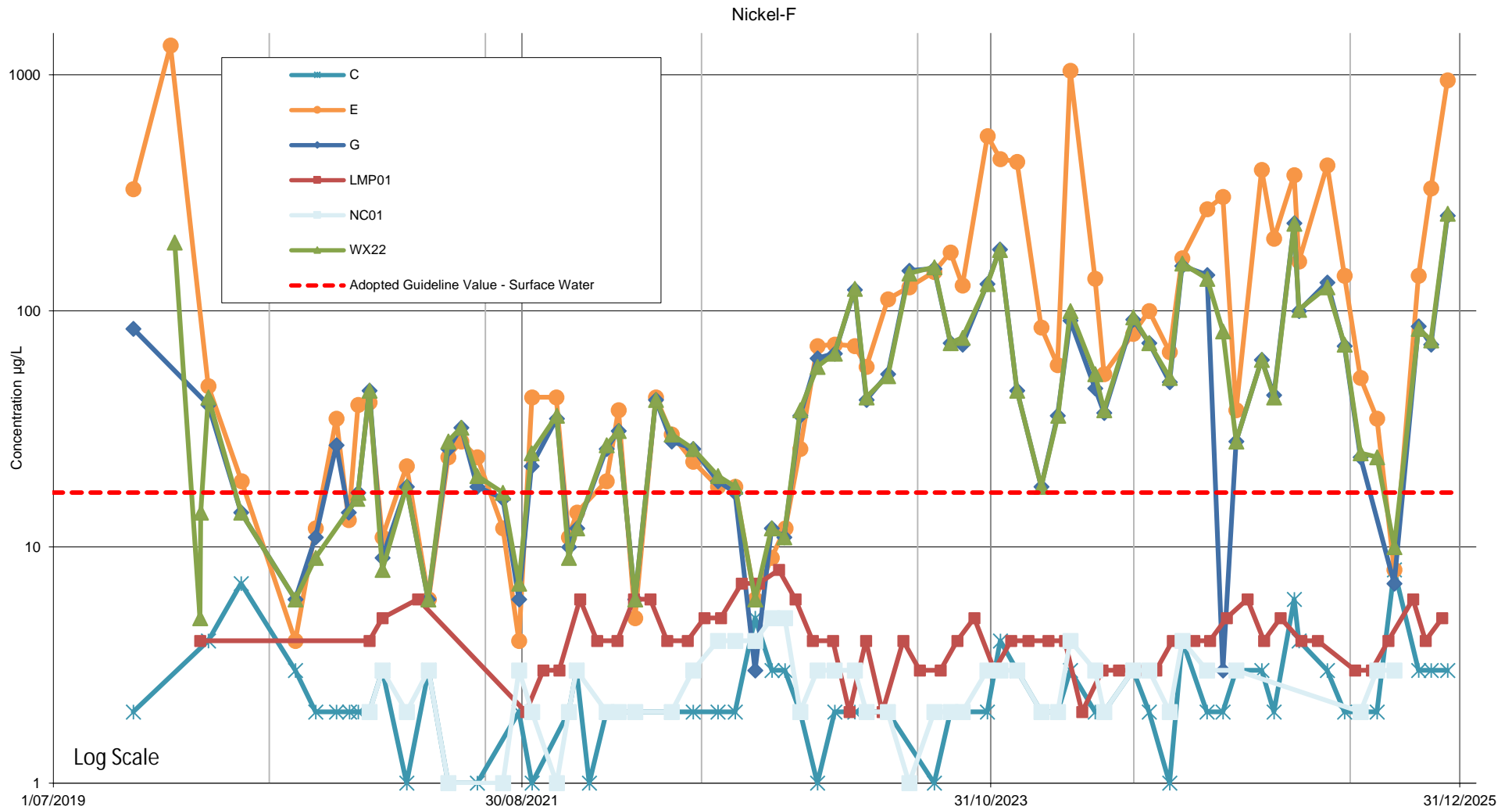














APPENDIX O

MANN-KENDALL METHODOLOGY



Trend Analysis Report

April 22, 2026

1. USER WARNINGS

Trend analysis is a commonly used statistical tool for assessing changes in concentration over time. Like most statistical analyses, trend tests involve some assumptions about the data being analyzed. If these assumptions are not met, the results of the test may be wrong or misleading. The final section of this memo discusses scenarios that will likely require the input of a qualified statistician to ensure that the results of the trend test are appropriate for your data. A careful review of the results tables and figures can help identify any anomalies in the data that merit further assessment.

Selection of an appropriate significance level (α): Statistical convention typically uses an α equal to 0.05 which sets the probability of drawing a false positive conclusion (saying there is a trend when one does not exist) in the statistical analysis at 5 percent. The significance level can be adjusted up or down to meet specific programmatic needs or to meet data quality objectives, but changes in α should be made a priori and should not be changed in an attempt to obtain a more 'favorable' result. Often decreasing α will result in a reduction in the probability of finding a false negative result (saying there is no trend when one actually exists).

2. INTRODUCTION

This report addresses data quality, descriptive statistics, and trend analysis for the Mt Piper project.

- The data file used in this report (4. MK_Input_22042026.xlsx) consists of samples from July 2019 to November 2025;
- The analysis includes 24 unique wells and 9 analytes;
- Descriptive statistics and trend analysis are run for every unique combination of: `sys_loc_code`, `chemical_name` (referred to as *Group* from hereon). There are 216 unique Groups; and
- Trend tests were conducted at 95% confidence with minimum data requirements of at least 4 detected values and 50% detection frequency for each Group.

3. DATA HANDLING

This section describes the data included in this evaluation, the handling of field duplicates, data qualifiers, censored values, and handling of anomalous data points.

3.1 FIELD DUPLICATES

Only one set of primary and field duplicate measurements are generally retained for statistical evaluation. While field duplicates can provide useful information on the sampling methodology, the duplicates are almost always statistically dependent on the parent sample (USEPA 2009, Page 6-27). Although complicated methods can be used to allow the inclusion of both values in statistical tests, simpler strategies involve keeping the maximum value between the two samples, randomly selecting one of the two samples, or removing the duplicates altogether (USEPA 2009, Page 6-28).

Field duplicates were omitted from this analysis. Only the parent samples were retained.

3.2 DATA QUALIFIERS

Data was qualified by a data validator to ensure the quality of the reported results. Consistent with lab conventions, J-flagged values were estimated quantities. Guidance allows for J-flagged values to be used with reported concentrations but cautions against making regulatory decision based on these values (USEPA 2014).

Measurements that have an R-flag had their concentration rejected; the result is rejected due to serious deficiencies in meeting quality control criteria and the analyte may or may not be present in the sample (USEPA 2014). The data quality review found the results to be valid, reliable and usable for decision making purposes with the listed qualifiers. Any records with validator_qualifiers containing "R" or reportable_result = "N" or "No" in the dataset were removed prior to analysis.

3.3 NON-DETECTS

Non-detects (NDs) commonly reported in water monitoring are statistically known as "left censored" measurements because the concentration of any ND can only be estimated. NDs are assumed to fall between zero and the reporting limit (USEPA 2009). USEPA (2015) offers a number of options for handling non-detected values, including Kaplan-Meier estimators, Regression on Order Statistics, and replacement with surrogate values. The appropriate handling of NDs depends on the statistical test being used and will be discussed in the following sections as appropriate.

Consistent with USEPA guidance, in cases where frequency of detection (FOD) was greater than 50 percent, NDs were substituted with a constant that is below the lowest detected value (Helsel and Hirsch 2002). This ensures that all NDs are "tied" in the analysis and that changing reporting limits have limited influence on whether trends are detected (USEPA 2009, Helsel and Hirsch 2002). NDs were substituted with a value of zero for the trend analysis.

4. DESCRIPTIVE STATISTICS

Descriptive statistics were calculated for all Groups and can be found in Table 1. Non-detects were substituted with a value of half the reporting limit for calculations. The descriptive statistics highlight a number of relevant characteristics about the datasets, including:

- There are a total of 216 Groups;
- 201 Groups have detection rates greater than or equal to 50 percent;
- 0 Groups have 100 percent non-detects;
- 186 Groups have 100 percent detects; and
- 76 Groups follow a normal distribution (using Shapiro-Wilks Normality Test) and 47 Groups follow a log-normal distribution. 0 Groups follow a gamma distribution (using Anderson-Darling Normality Test). The remaining 93 Groups have no discernible distribution.

5. TESTING FOR TRENDS

Trend tests are a commonly used tool to assess the effectiveness of remediation efforts. By examining whether concentrations are increasing, decreasing, or not statistically significant, trend tests provide one line of evidence about the directional change in concentrations over time.

5.1 TREND TESTING APPROACH

A Mann-Kendall test was used to detect changes in concentrations over time. The Mann-Kendall test is a non-parametric method that tests the following null hypothesis (USEPA 2009):

- Null Hypothesis (Ho): No monotonic trend exists; and
- Alternative Hypothesis (Ha): A monotonic trend exists.

A monotonic upward (downward) trend means that the variable consistently increases (decreases) through time, but the trend may or may not be linear. The Mann-Kendall test is based on the premise that the lack of monotonic trend should correspond to a time series plot fluctuating randomly about a constant median with no visually apparent upward or downward pattern (Helsel and Hirsch 2002). Significantly increasing or decreasing trends (τ) are identified at a significance level (α) of less than or equal to 0.05. τ^2 can be used like an R^2 value to estimate how much variance in y is explained by x (i.e., what proportion of the variability in concentration is explained by time). USEPA 2009 guidance and/or Helsel and Hirsch (2002) may be consulted for further details about trend analysis. With the specified 95% confidence, significantly increasing or decreasing trends are identified with p-values as follows:

Tau	p-value	Conclusion	Trend
Positive	$p \leq 0.05$	Ho Rejected	Increasing
Negative	$p \leq 0.05$	Ho Rejected	Decreasing
Positive or Negative	$p > 0.05$	Ho Accepted	Not Significant

The Mann-Kendall was run in R v4.5.1 using a two.sided test with the `stats::cor.test()` function, with 95% confidence.

5.2 DATA CONSTRAINTS

Guidance recommends that trend tests be performed with at least eight detected data points to ensure a reasonable amount of confidence in results (USEPA 2009, p. 17-24). However, it is mathematically possible to carry out the test with five detected samples. The consequences of using the minimum sample size is that there is a greater chance of concluding that there is no trend when, in fact there is a trend (USEPA 2009). If a dataset is comprised of more than 50 percent ND values, the loss of information is considered too great to support a reliable analysis of trends, so no trend test was performed.

5.3 RESULTS

Trend tests were calculated with 95% confidence for all Groups that met the minimum data requirements of at least 4 detected values and 50% detection frequency. A full report of the trend test results and time series plots can be found in Table 2. The following summarize the results of the trend analysis:

- There are a total of 216 Groups in the dataset.
- 201 Groups meet the data requirements of the trend test. Of those:
 - 36 Groups had a significant increasing trend,
 - 61 Groups had a significant decreasing trend,
 - 104 Groups had no significant trend.

Time series scatterplots are provided in Figure 1 for each Group. Detection limits for each sample are also plotted for an easy visual assessment of changing detection limits over time. A Theil-Sen regression line is shown on each figure to provide a visual guide for temporal trends.

6. SPECIAL CONSIDERATIONS

Like most statistical analyses, these trend tests involve some assumptions about the data being analyzed including:

- Observations or data obtained over time are independent;
- The observations obtained over time are representative of the true conditions at sampling times;
- The sample collection, handling, and measurement methods provide unbiased and representative observations of the underlying populations over time; and
- There is no requirement that the measurements be normally distributed. The Mann-Kendall test can be computed if there are missing values and varying detection limits, but the performance of the test will be adversely affected by such events. The assumption of independence requires that the time between samples be sufficiently large so that there is no correlation between measurements collected at different times.

The Mann-Kendall test does not assume that the underlying relationship is linear. However, in cases where the data are clearly curvilinear, it may be more appropriate to consult with a

statistician to employ different statistical techniques that more accurately characterize the changes in concentration over time.

Special consideration should be given to dataset with clear seasonality and/or NDs. These are considered in the following sections.

6.1 SEASONALITY

Seasonal changes in precipitation and temperature can cause cyclical fluctuations in groundwater concentrations. These seasonal fluctuations functionally add 'noise' to the data. This type of noise is called serial dependence and can make it difficult to determine trends in the data because of a long-term persistent pattern (like seasonality) or whether it represents a true, underlying change. USEPA Guidance (2009) strongly recommends accounting for seasonality when performing linear trends in hydrologic data. Seasonality has not been explicitly handled in the data described herein.

6.2 NON-DETECTS AND DETECTION LIMITS

Non-detects (NDs) commonly reported in water monitoring are statistically known as "left censored" measurements because the concentration of any non-detect either cannot be estimated or is not reported directly. Rather, it is known or assumed only to fall within a certain range of concentration values (USEPA 2009 p. 15-1). With higher detection limits, that uncertainty is greater because the true value lies somewhere in a larger range of possible values.

USEPA (2006) notes that no general procedures exist for the statistical analyses of censored datasets. If a dataset is comprised of more than 50 percent non-detected (ND) values, guidance cautions the user when interpreting the results of statistical tests, especially for relatively small datasets (USEPA 2009). In the context of the trend tests described herein, there is general agreement that substituting a constant below the lowest detected value is the best solution for handling non-detected values.

When detection rates are below 85 percent, however, this simple substitution method may lead to bias in the trend tests. Visually reviewing the data is a key step in interpreting the appropriateness of the statistical results. The time series plots have been generated using the detection limit for non-detects so that detection rates and multiple detection limits can be visualized. Additional statistical testing may be needed to address datasets with low detection rates or elevated detection limits.

7. REFERENCES

- Helsel and Hirsch. 2002. *Statistical Methods in Water Resources*. Chapter A3. U.S. Department of the Interior, U.S. Geological Survey.
- USEPA. 2006. *Data Quality Assessment: Statistical Methods for Practitioners*. EPA QA/G-9S. Office of Environmental Information. Washington, DC.
- USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities*. Unified Guidance. EPA/530/R/09/007. Office of Resource Conservation and Recovery. Washington, D.C.
- USEPA. 2014. *National Functional Guidelines for Superfund Organic Methods Data Review*. USEPA 540-R-014-002. OSWER 9355.0-132. August.
- USEPA. 2022. *ProUCL Version 5.2.0 Technical Guide*. V.04-08-2022_508



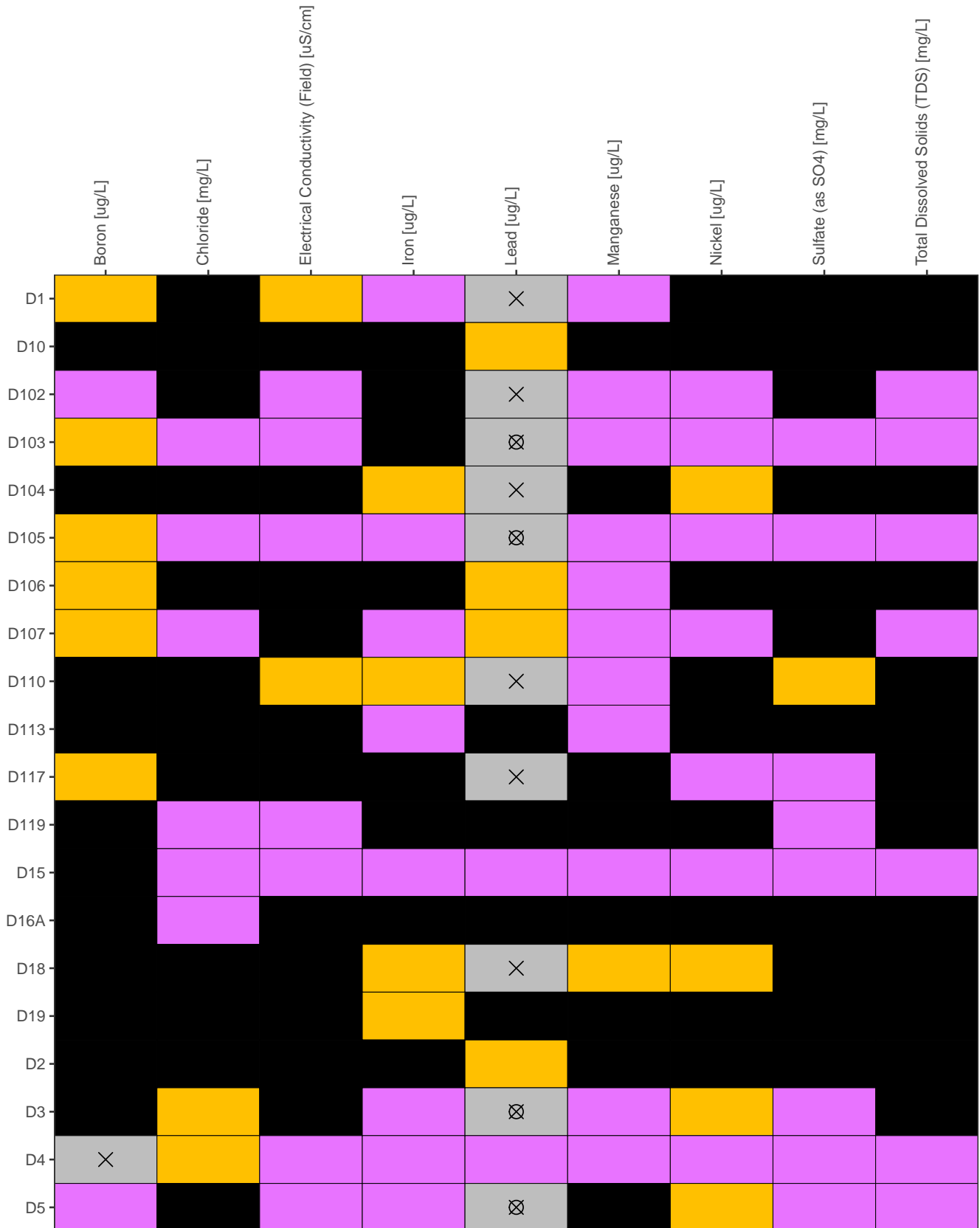
APPENDIX P

MANN-KENDALL OUTPUTS

Trend Analysis Summary

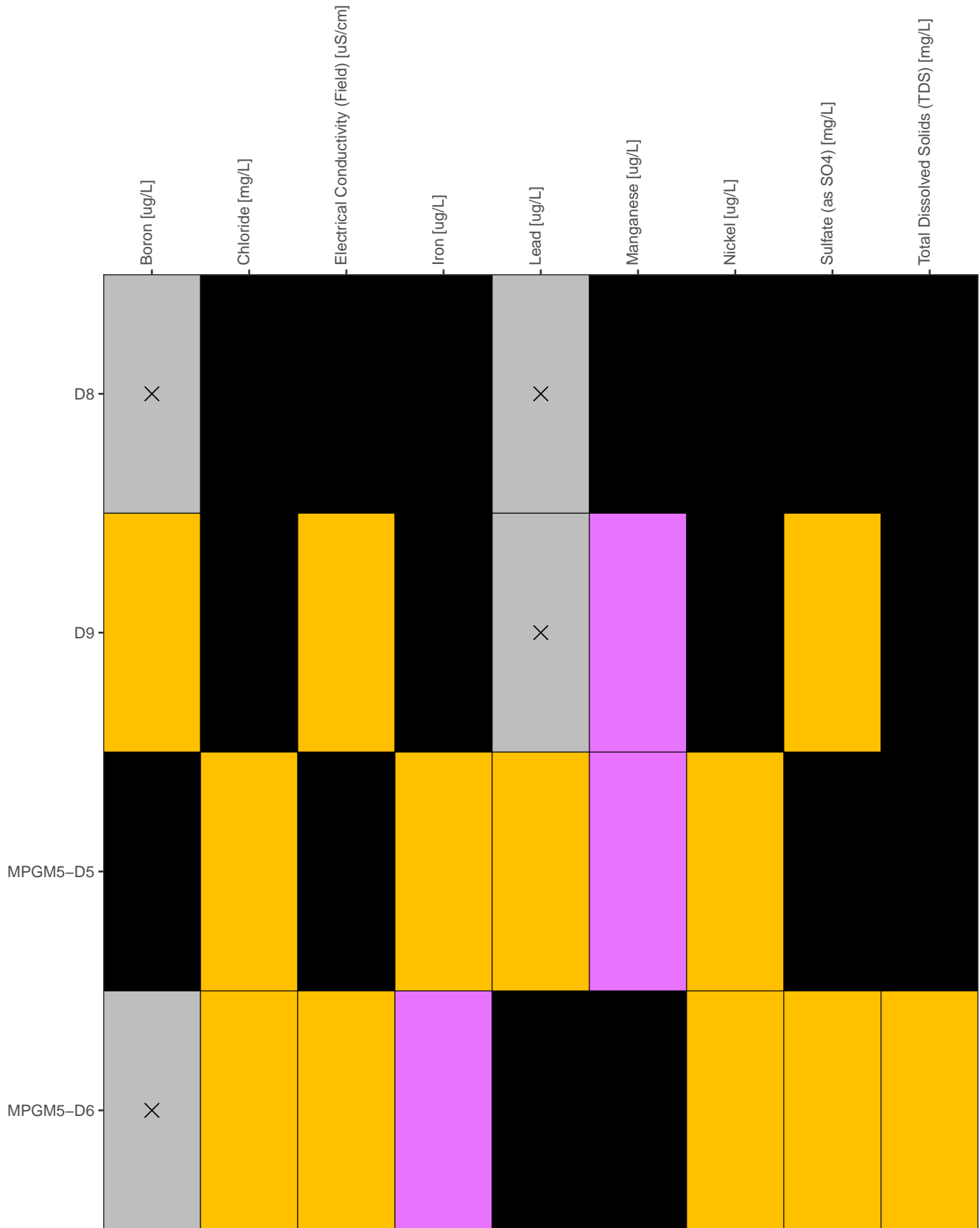
Data Notes ○ < 4 detections ✕ < 50% detections ⊗ < 4 detections AND < 50% detections

Trend Increasing Decreasing Not Significant Insufficient Data No Data



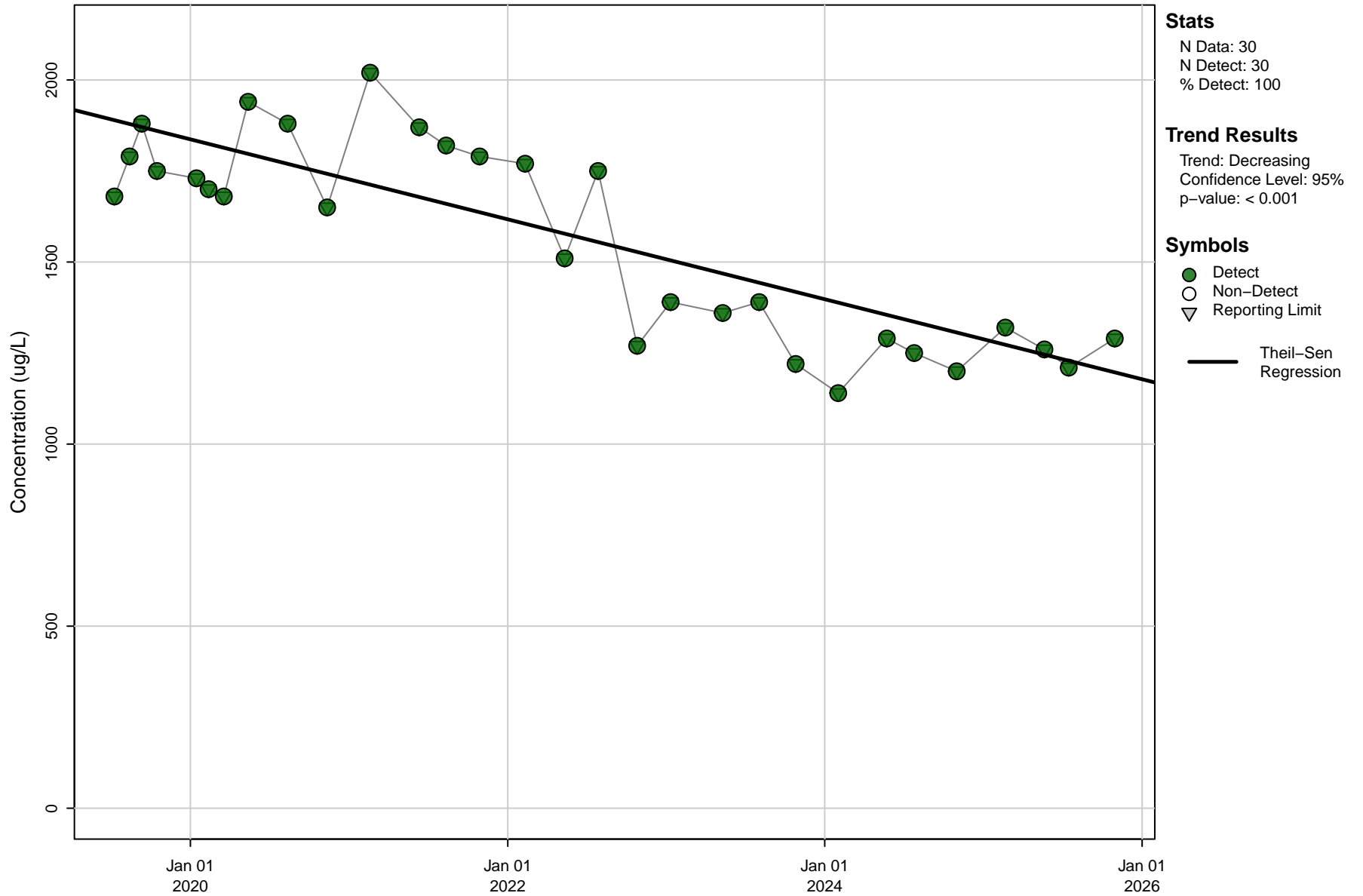
Data Notes ○ < 4 detections ✕ < 50% detections ⊗ < 4 detections AND < 50% detections

Trend Increasing Decreasing Not Significant Insufficient Data No Data

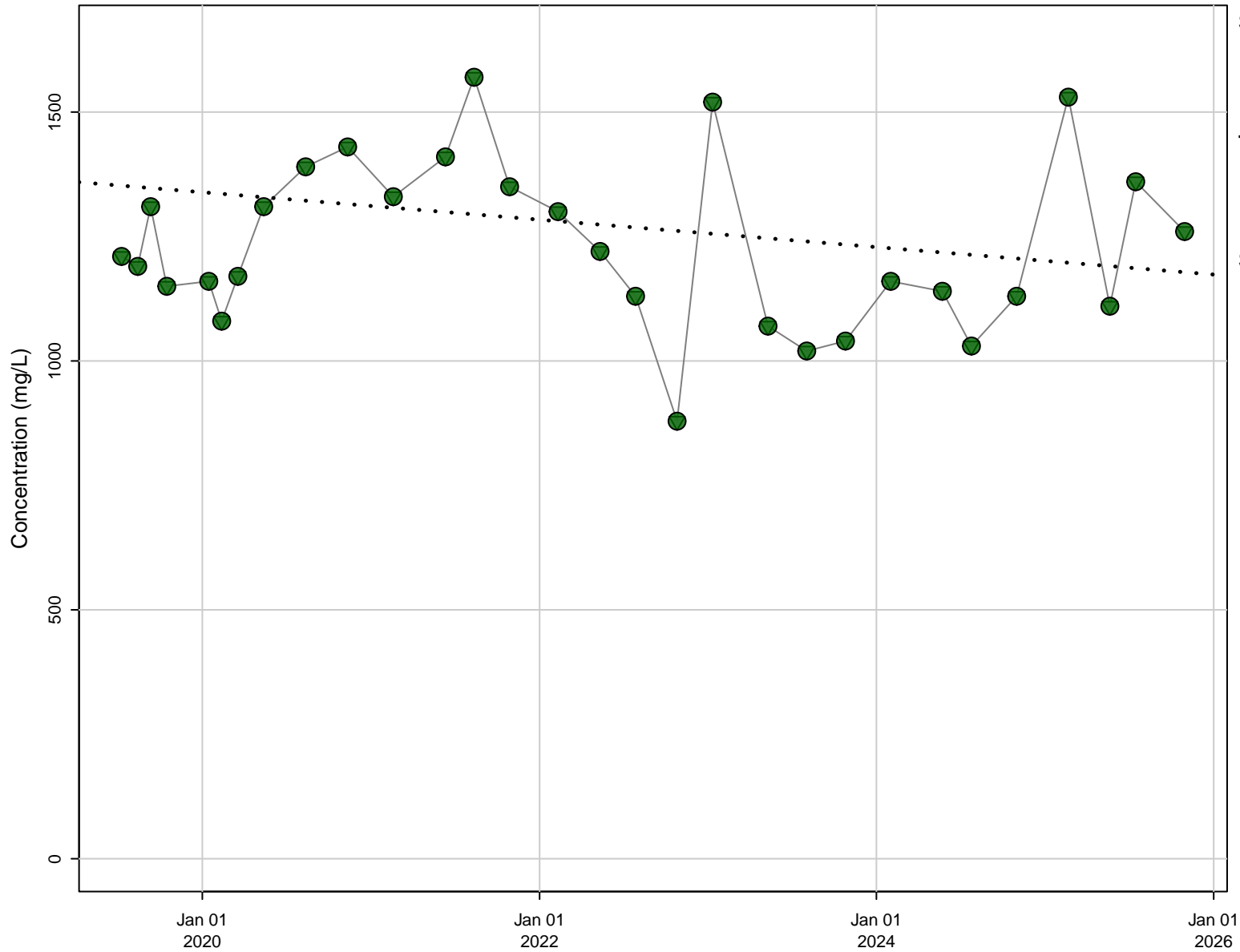


Time Series Figures

D102, Boron [ug/L]



D102, Chloride [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

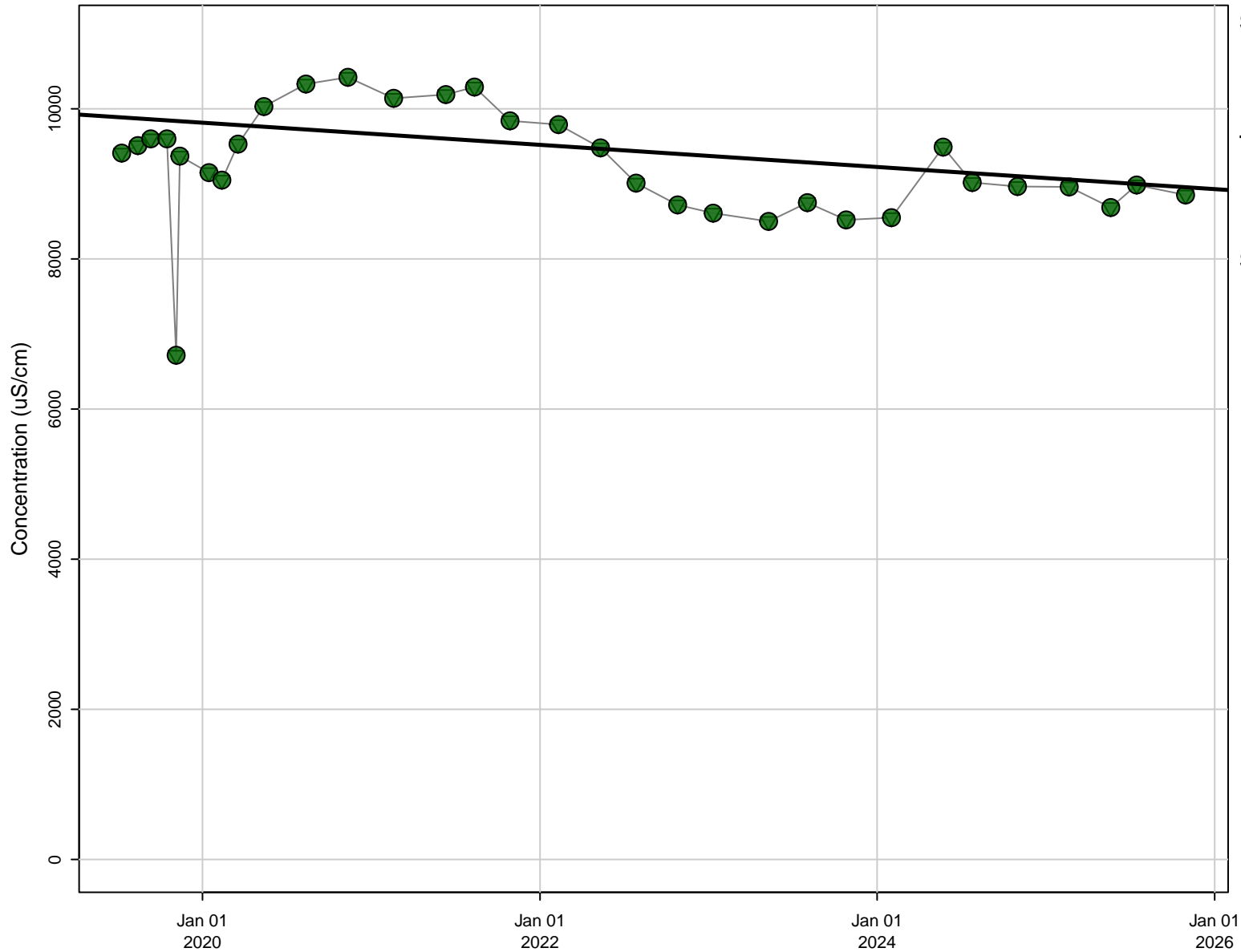
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.412

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D102, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 32
N Detect: 32
% Detect: 100

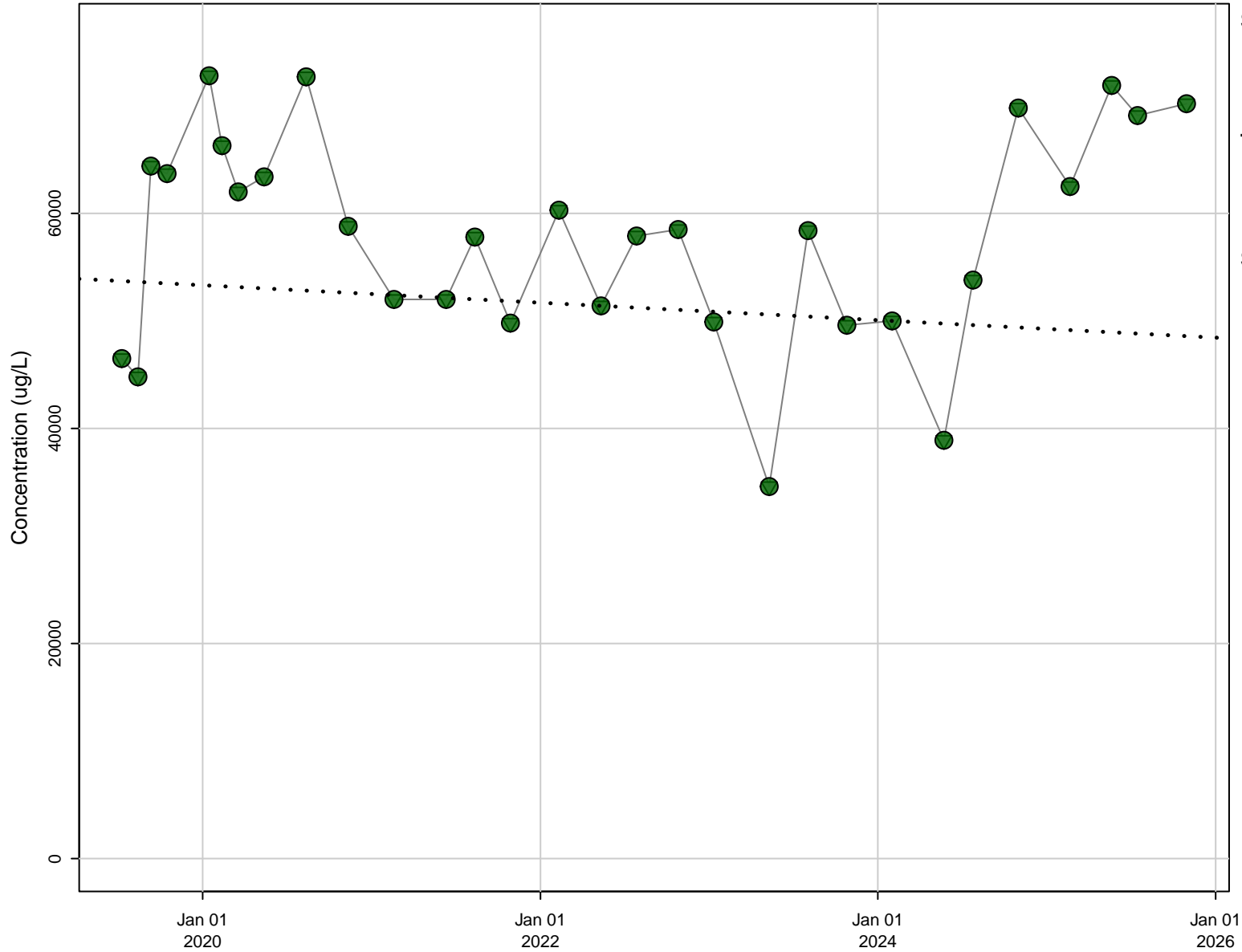
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0131

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D102, Iron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.858

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D102, Lead [ug/L]

Stats

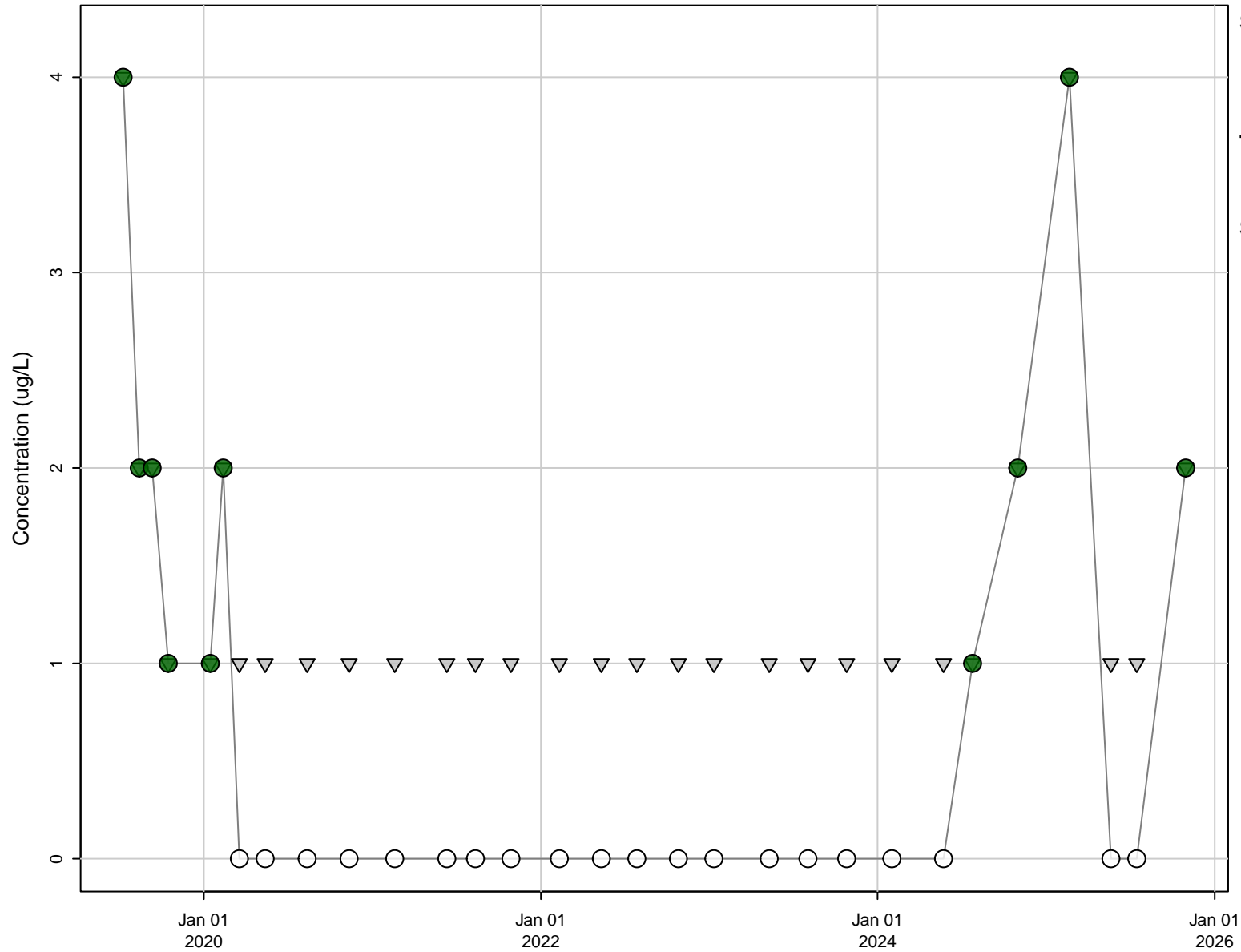
N Data: 30
N Detect: 10
% Detect: 33

Trend Results

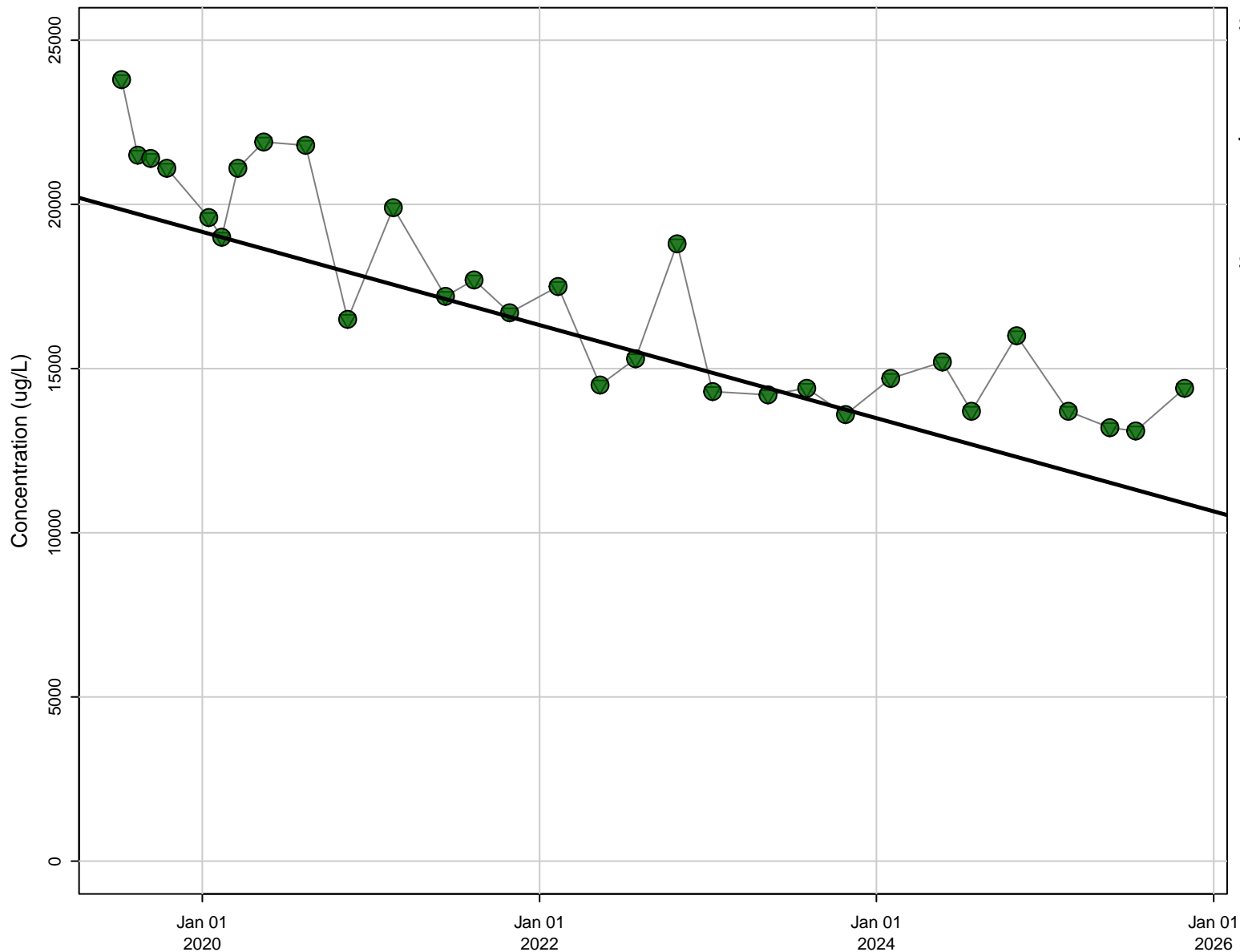
Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit



D102, Manganese [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

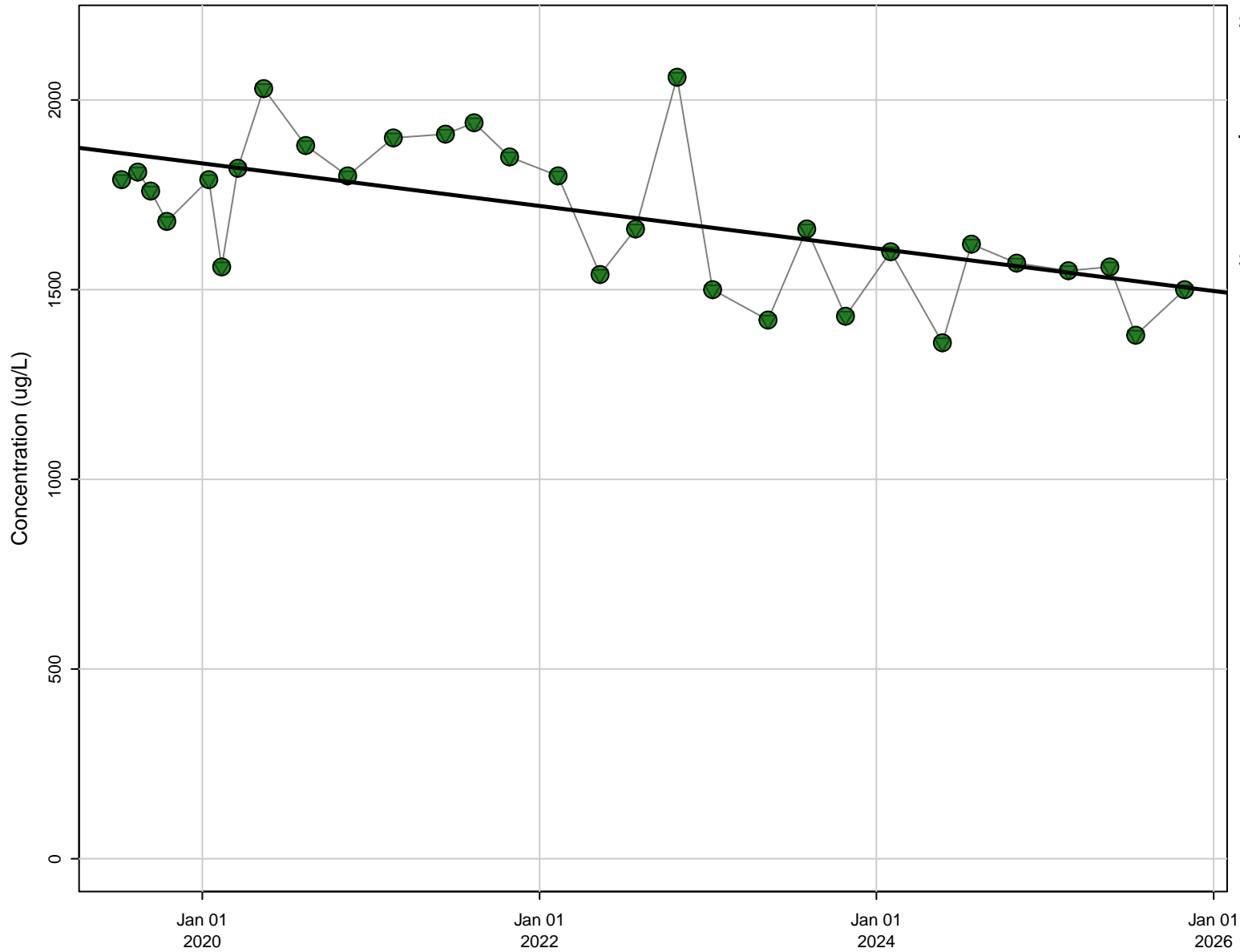
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D102, Nickel [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

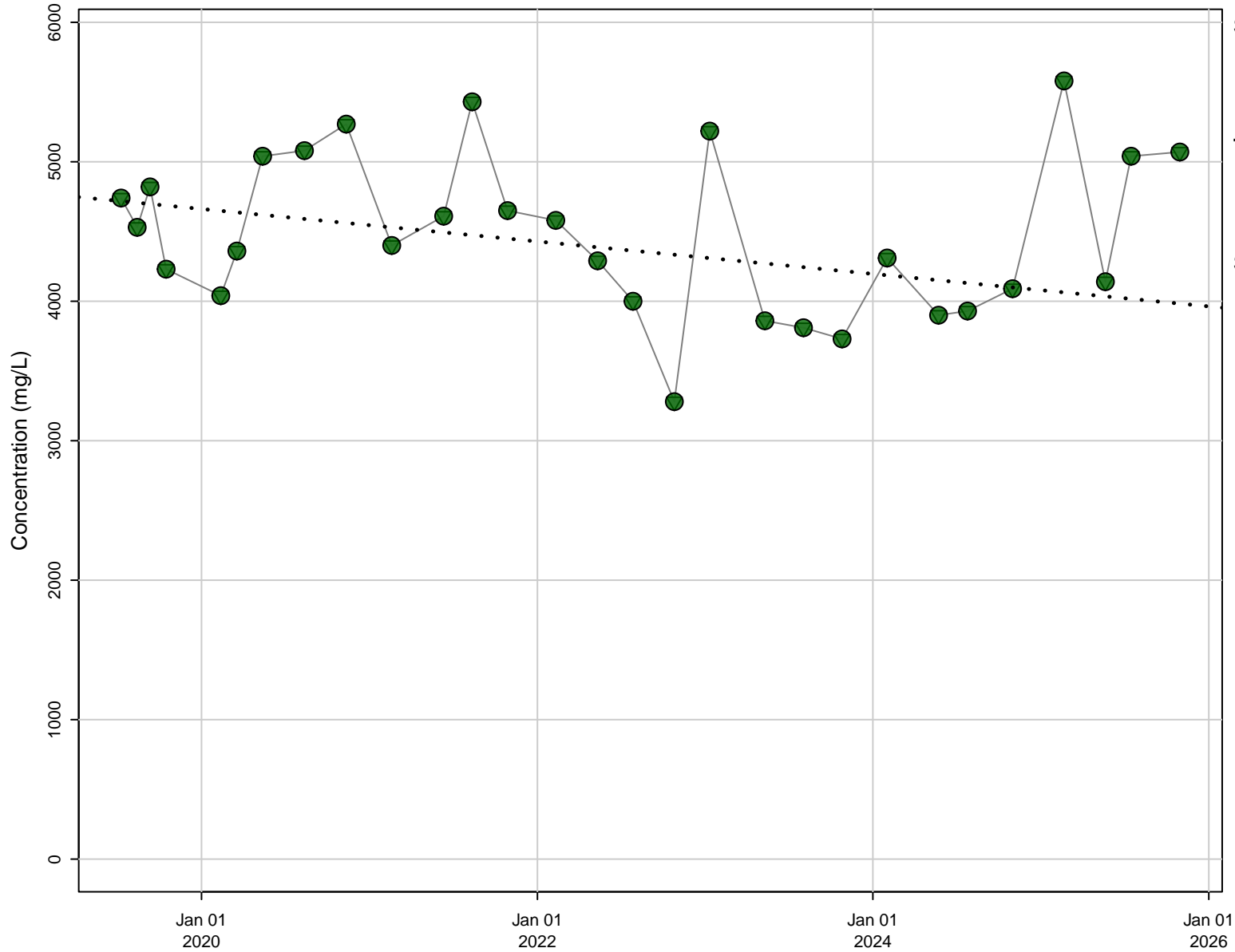
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.00213

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D102, Sulfate (as SO4) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

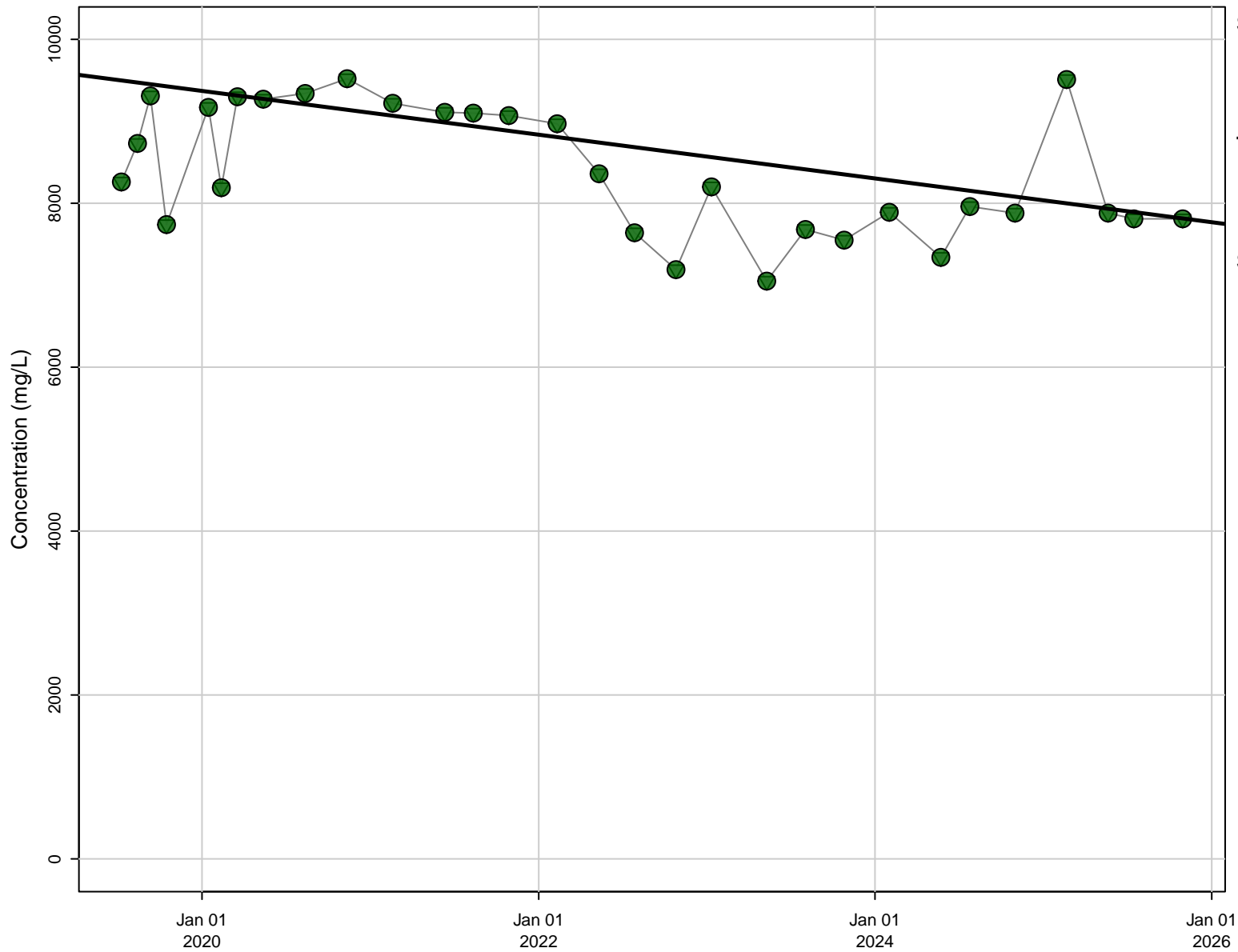
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.358

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D102, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

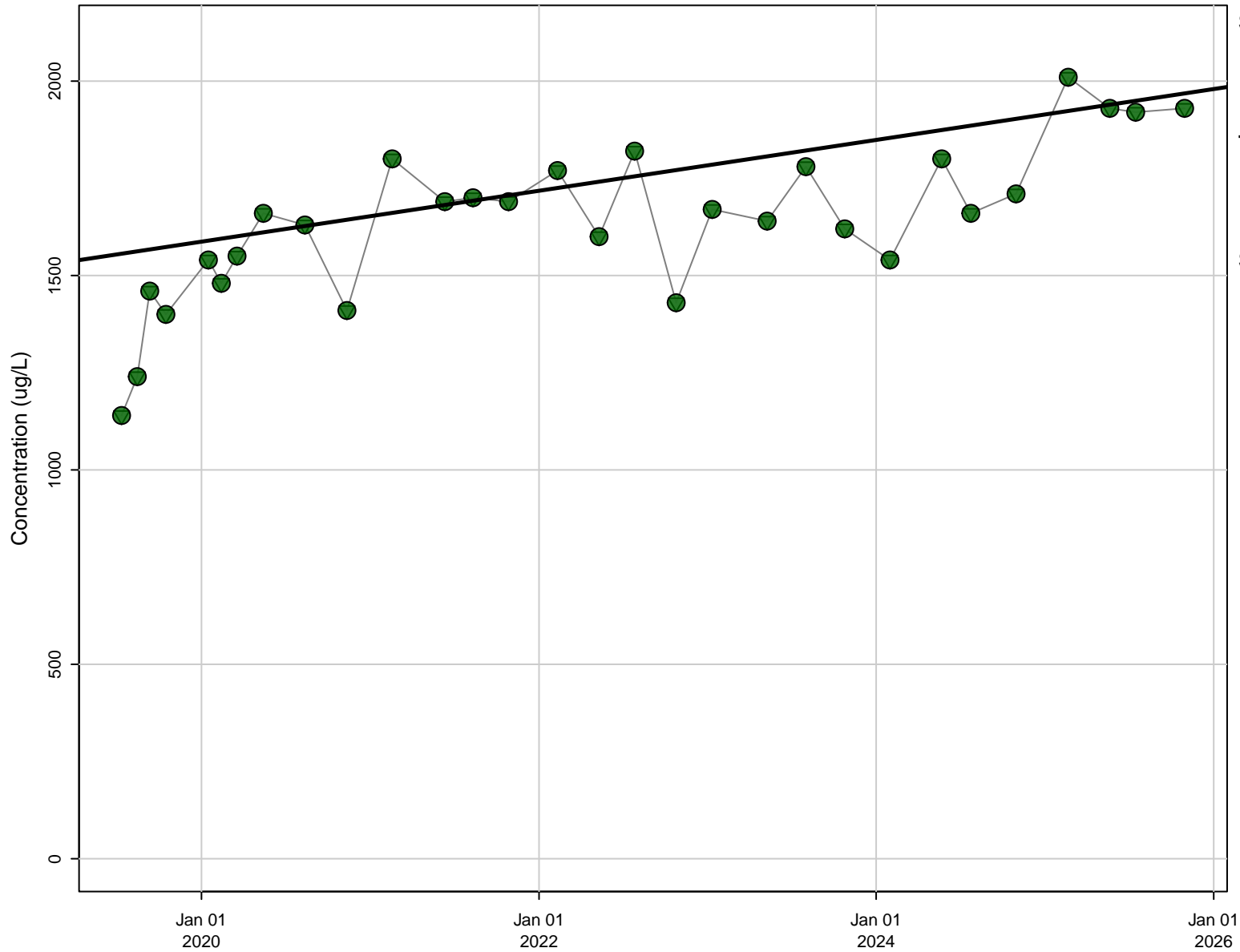
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.00406

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D103, Boron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

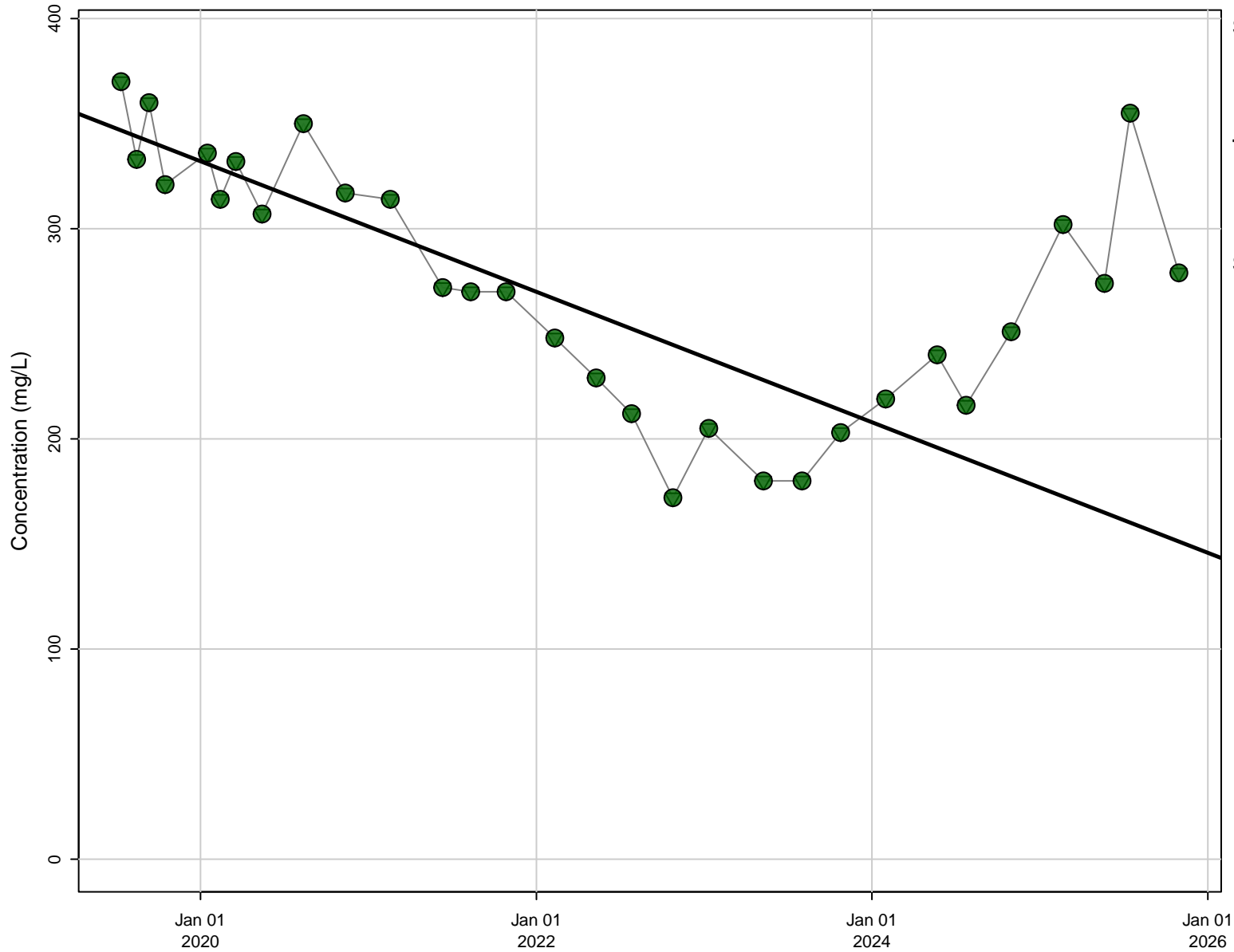
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D103, Chloride [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D103, Electrical Conductivity (Field) [uS/cm]

Stats

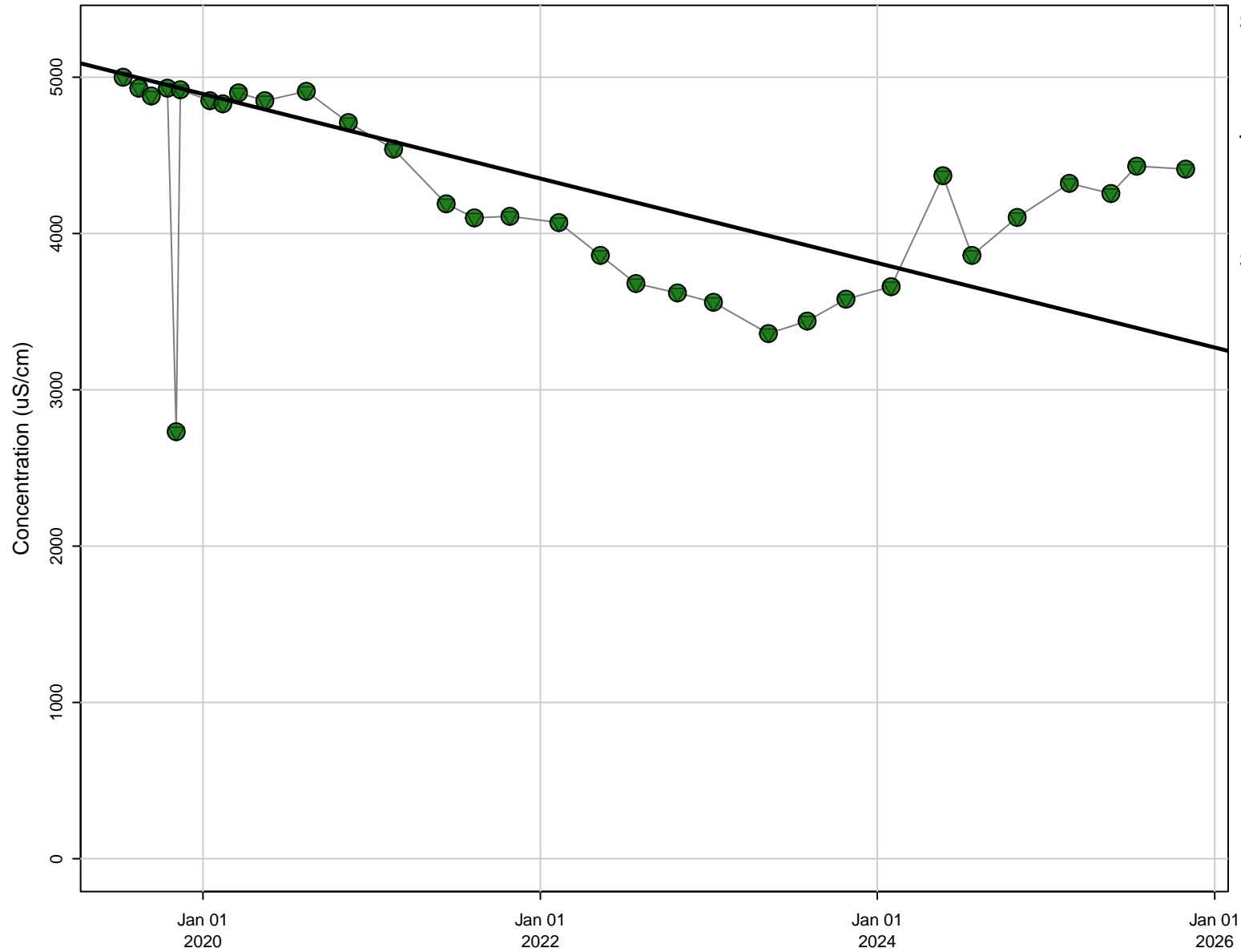
N Data: 32
N Detect: 32
% Detect: 100

Trend Results

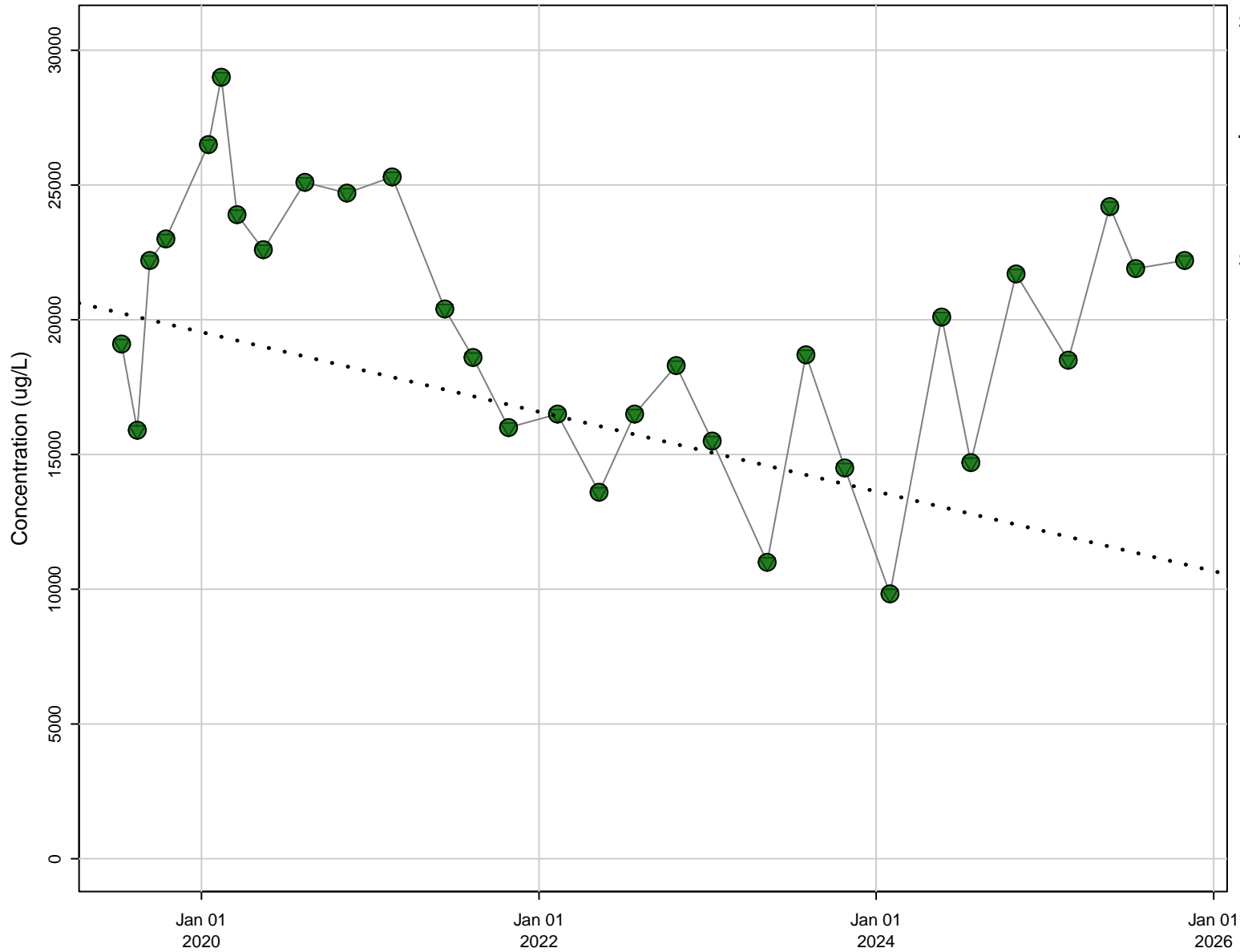
Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D103, Iron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.097

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D103, Lead [ug/L]

Stats

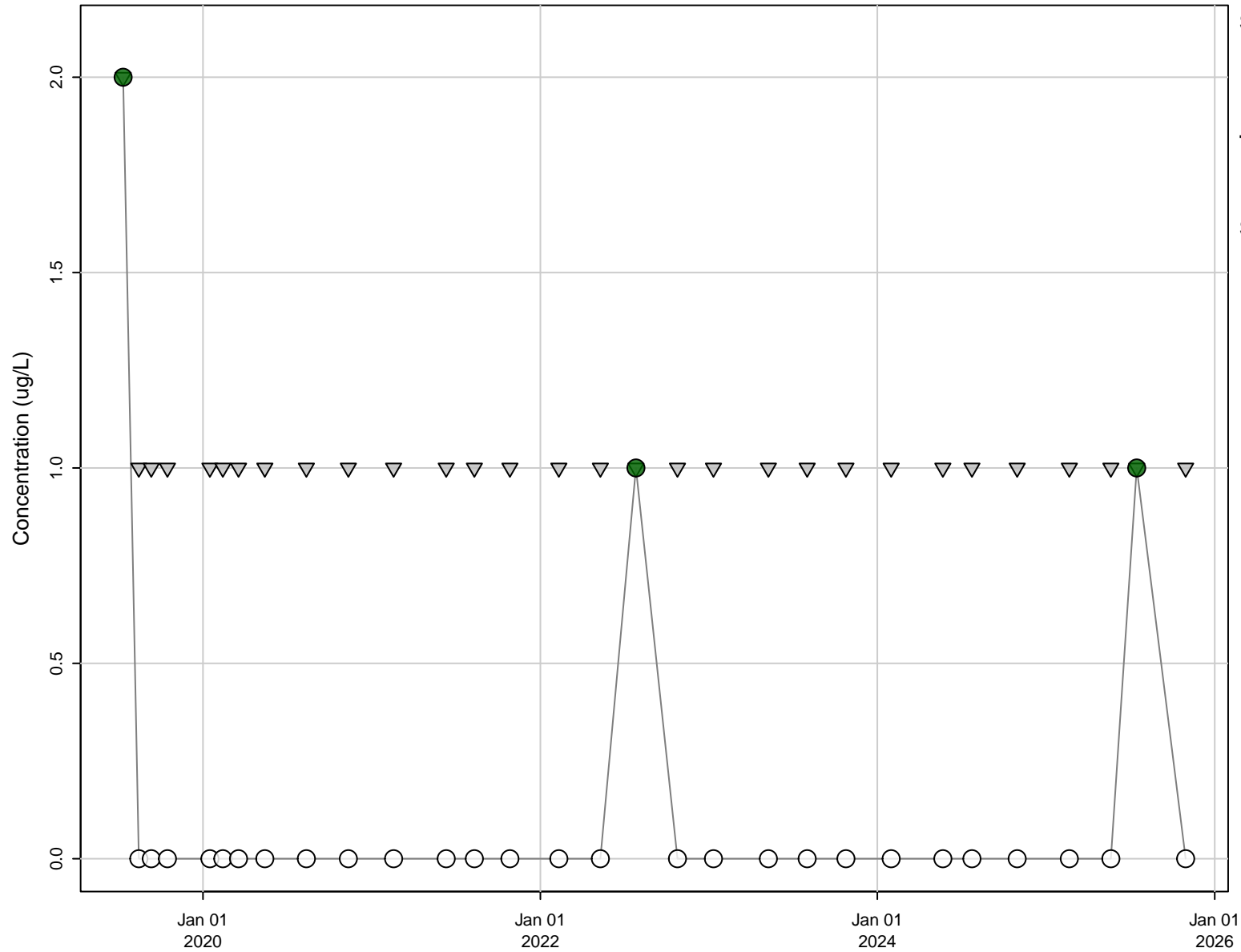
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N Detect: 3
% Detect: 10

Trend Results

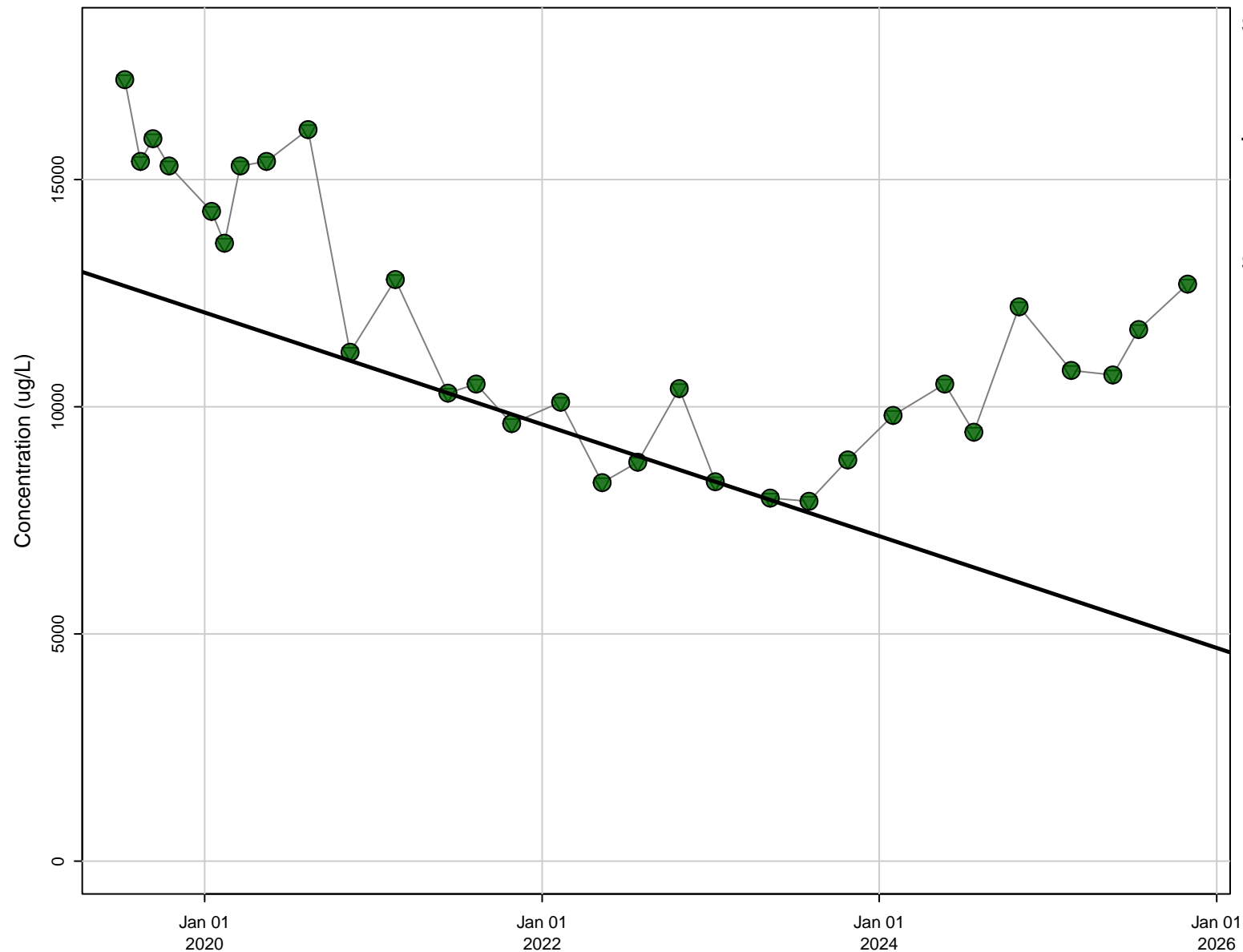
Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▼ Reporting Limit



D103, Manganese [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

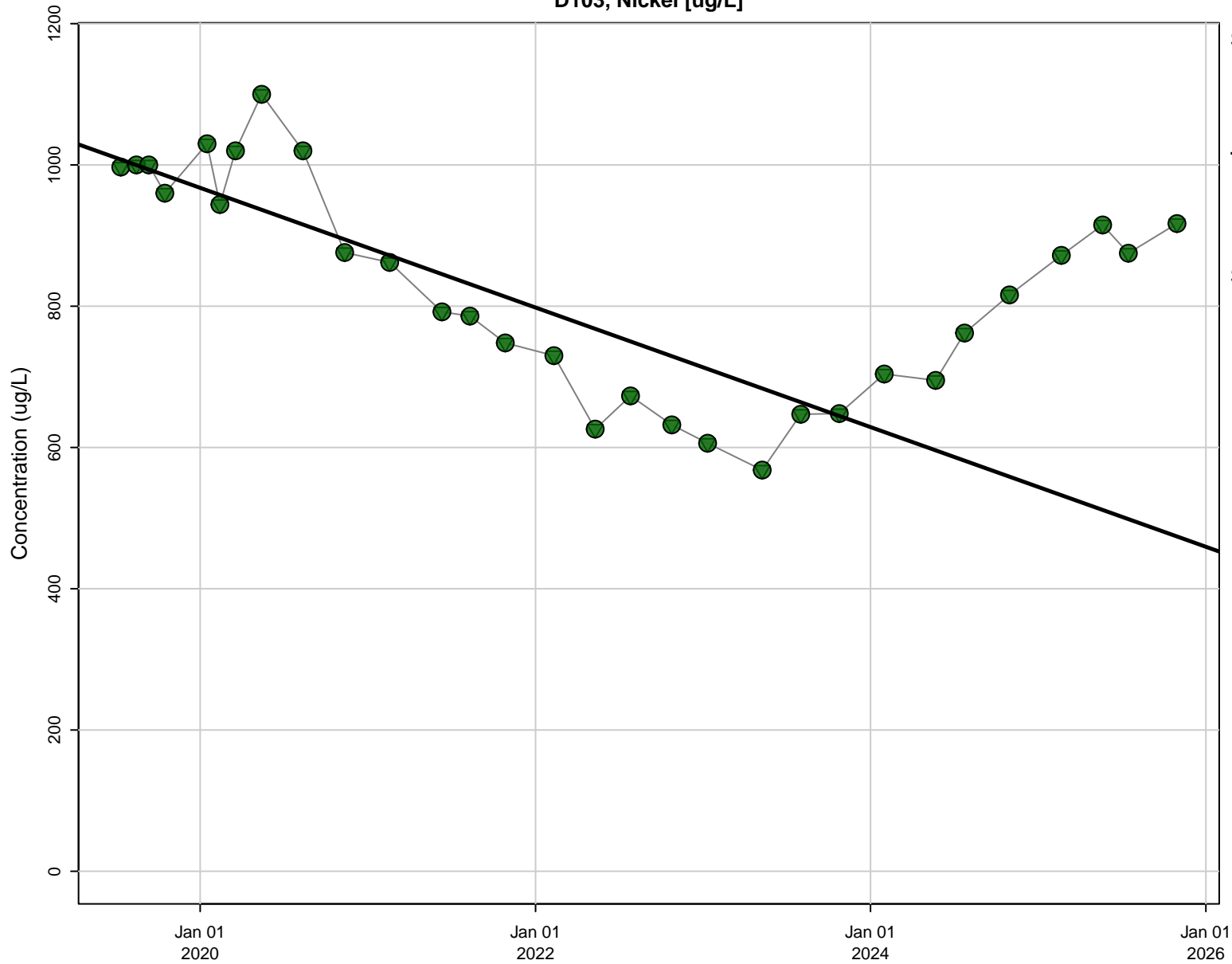
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.00271

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D103, Nickel [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

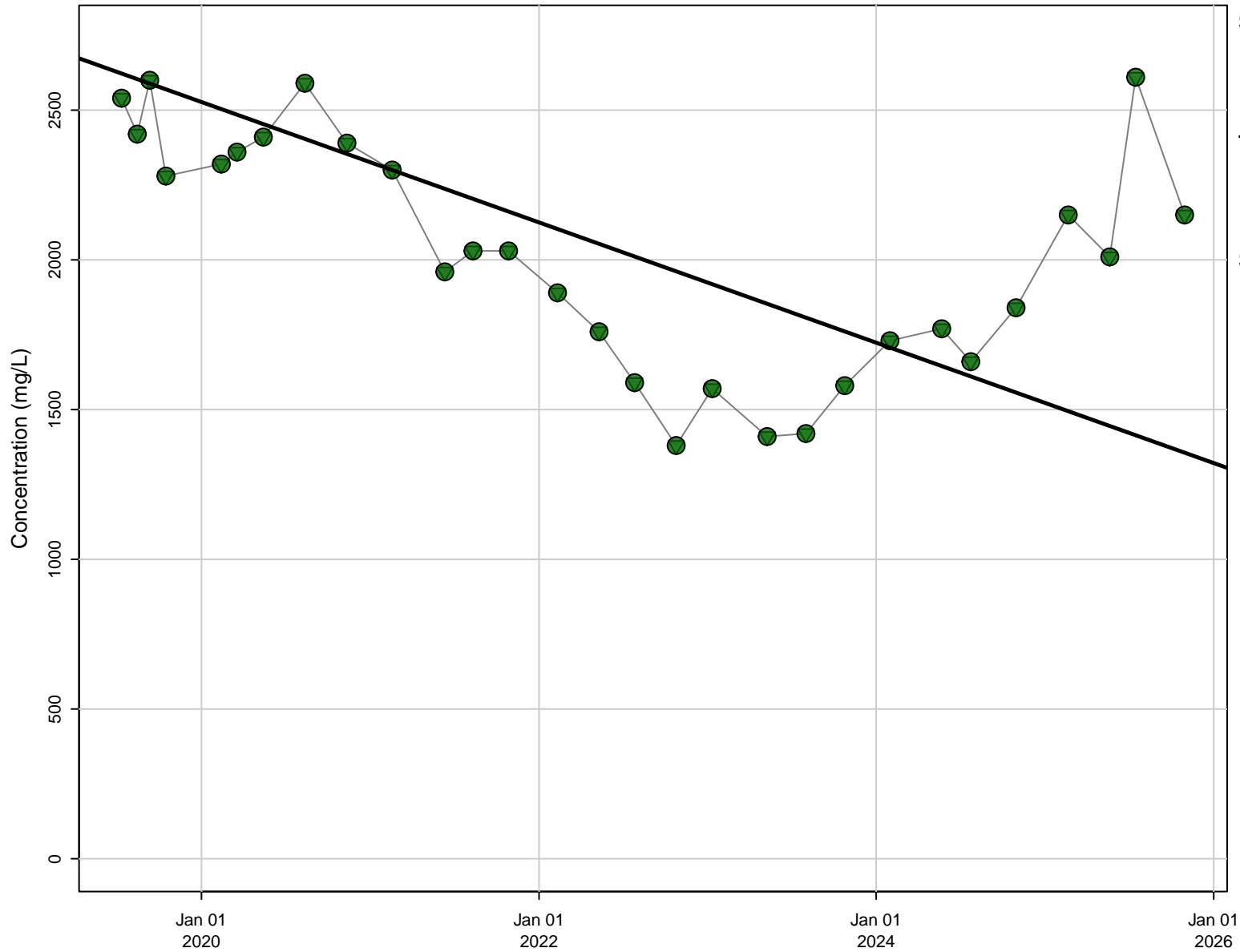
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.00966

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D103, Sulfate (as SO4) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

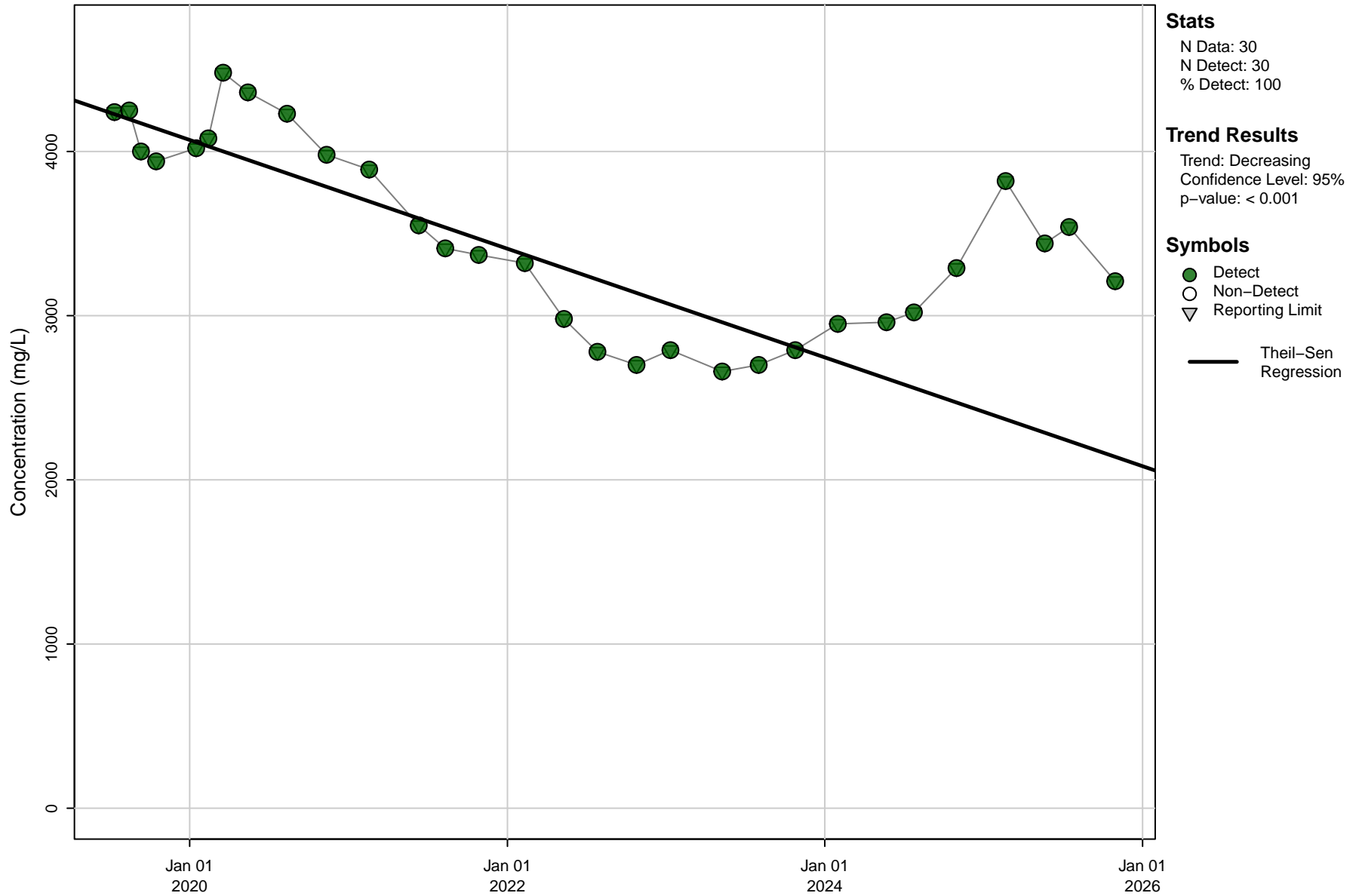
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.00615

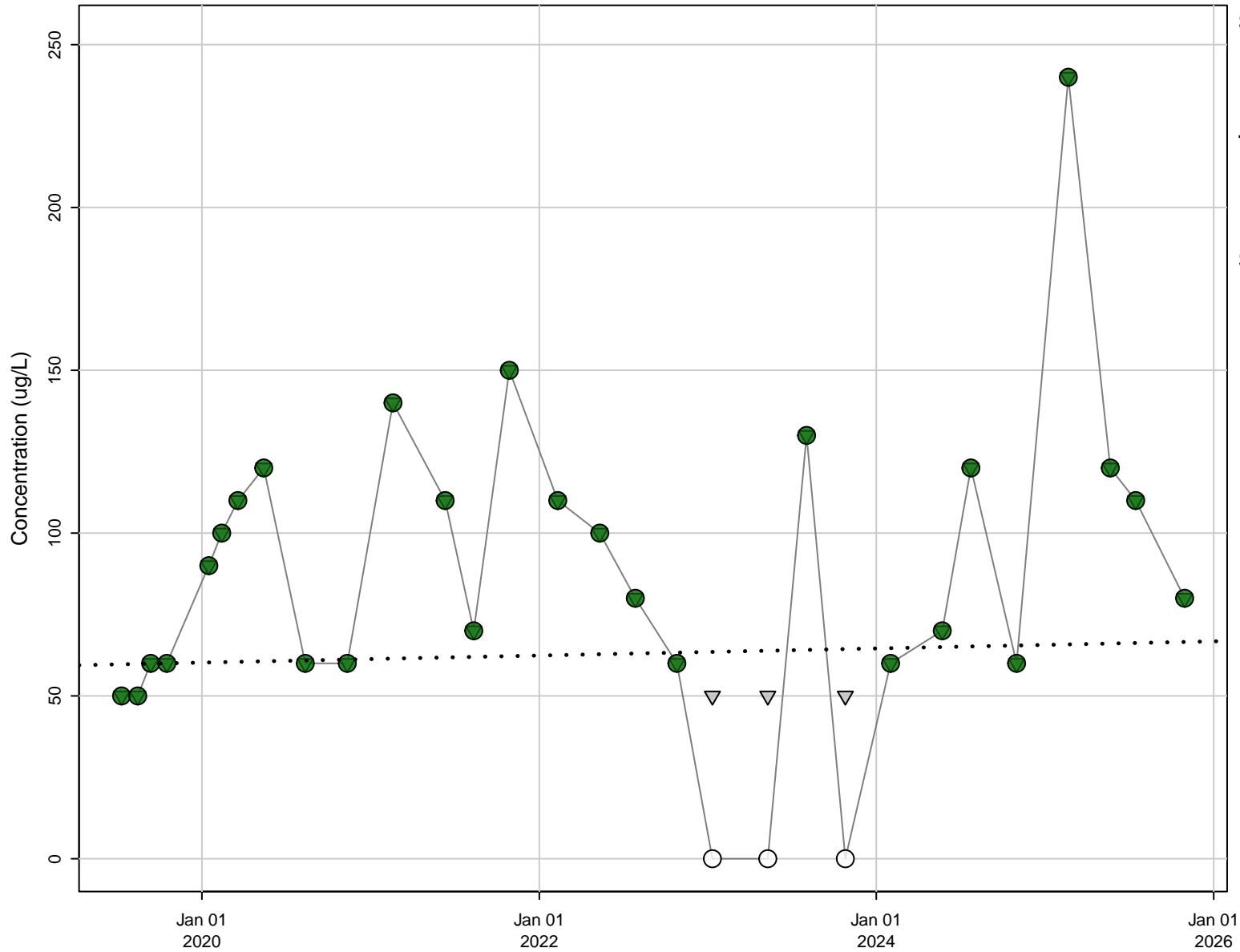
Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D103, Total Dissolved Solids (TDS) [mg/L]



D104, Boron [ug/L]



Stats

N Data: 30
N Detect: 27
% Detect: 90

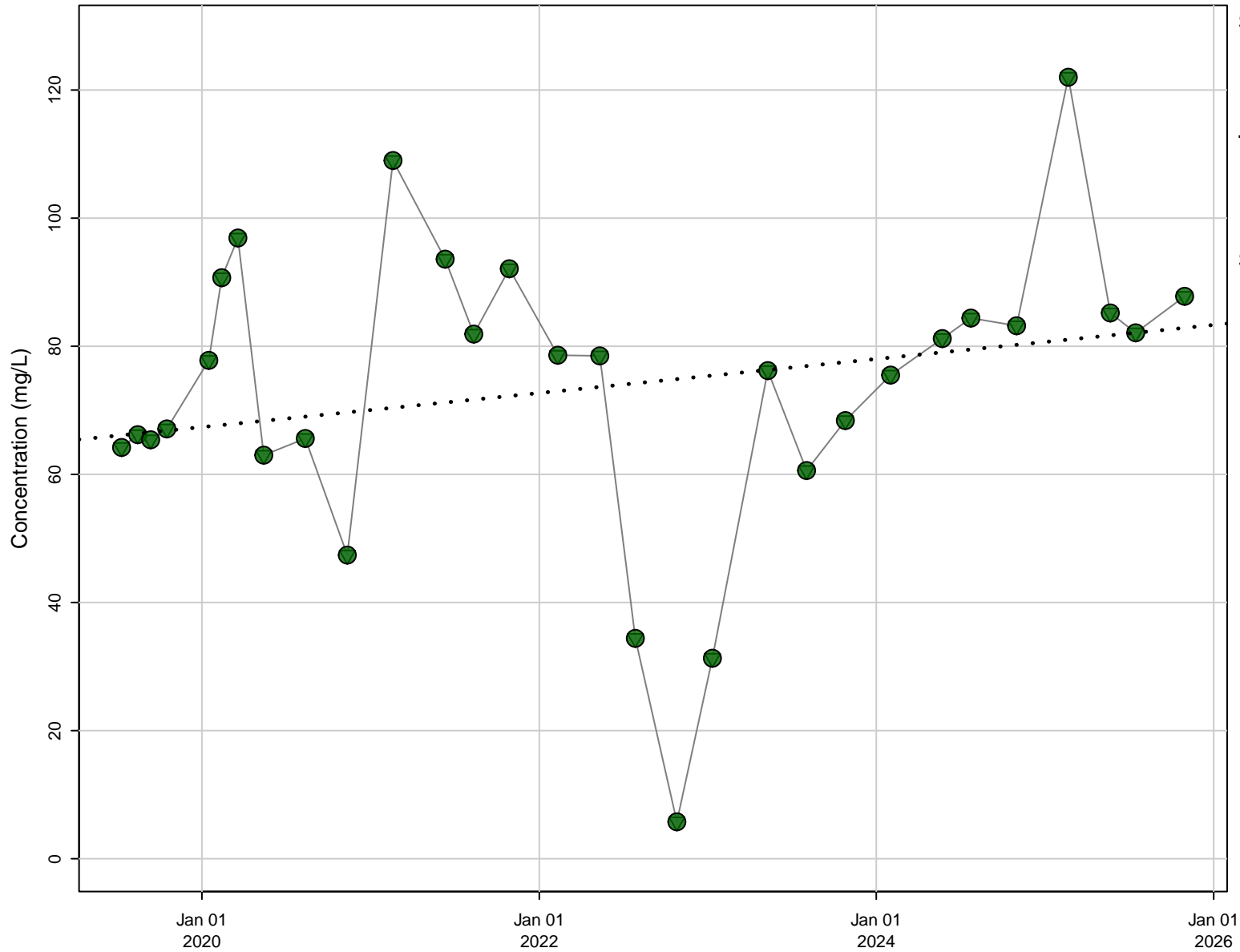
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.249

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D104, Chloride [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

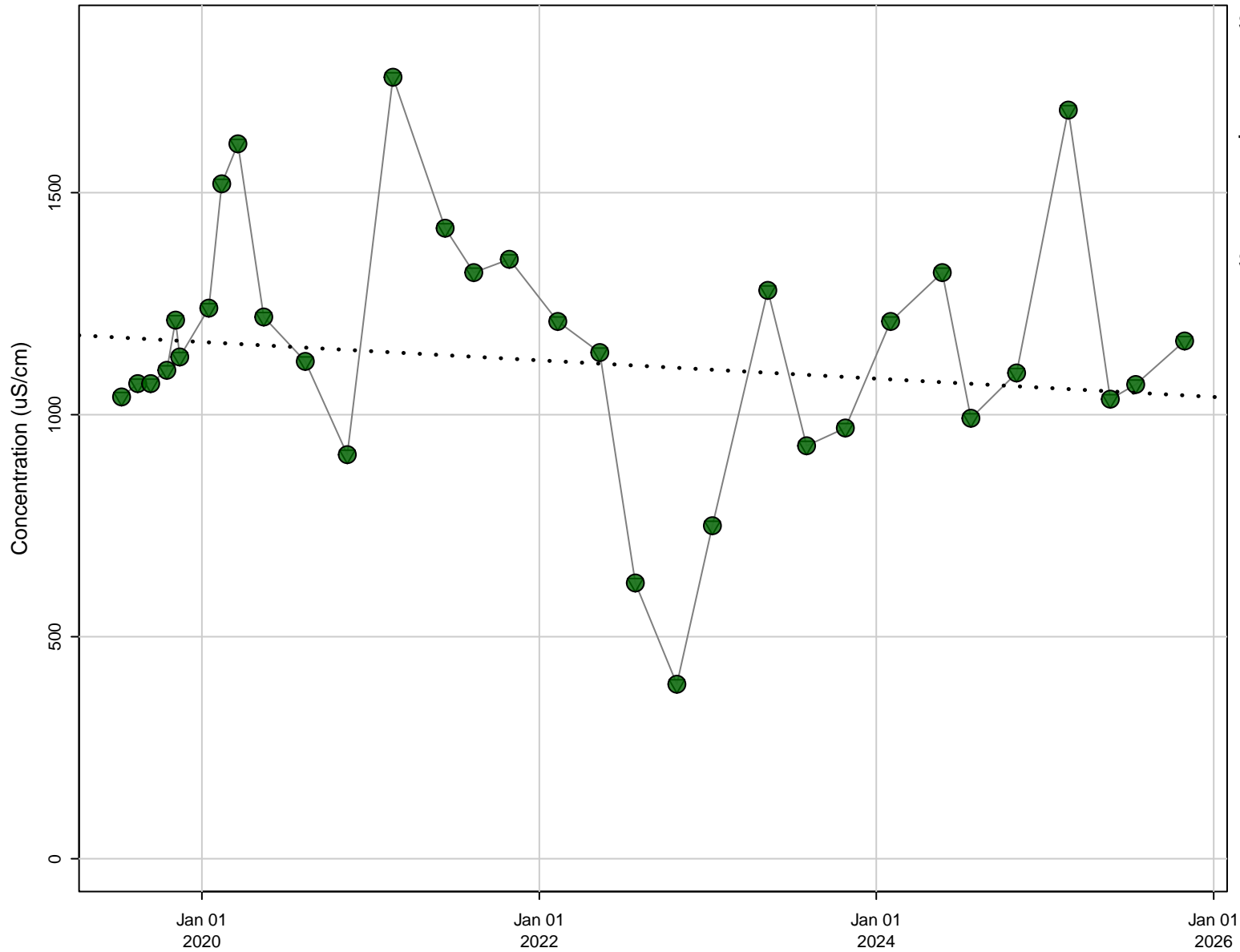
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.155

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D104, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 32
N Detect: 32
% Detect: 100

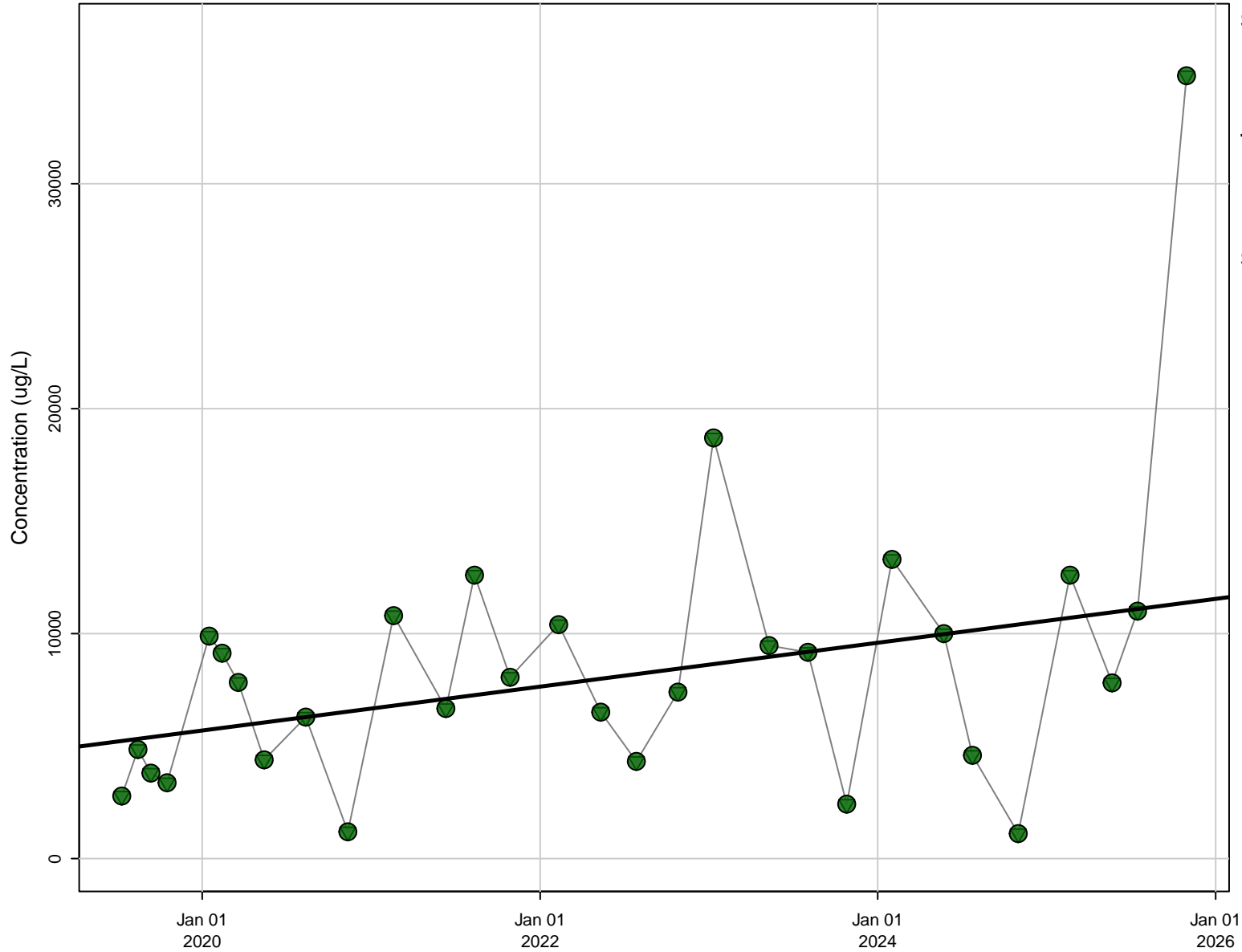
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.709

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D104, Iron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0323

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D104, Lead [ug/L]

Stats

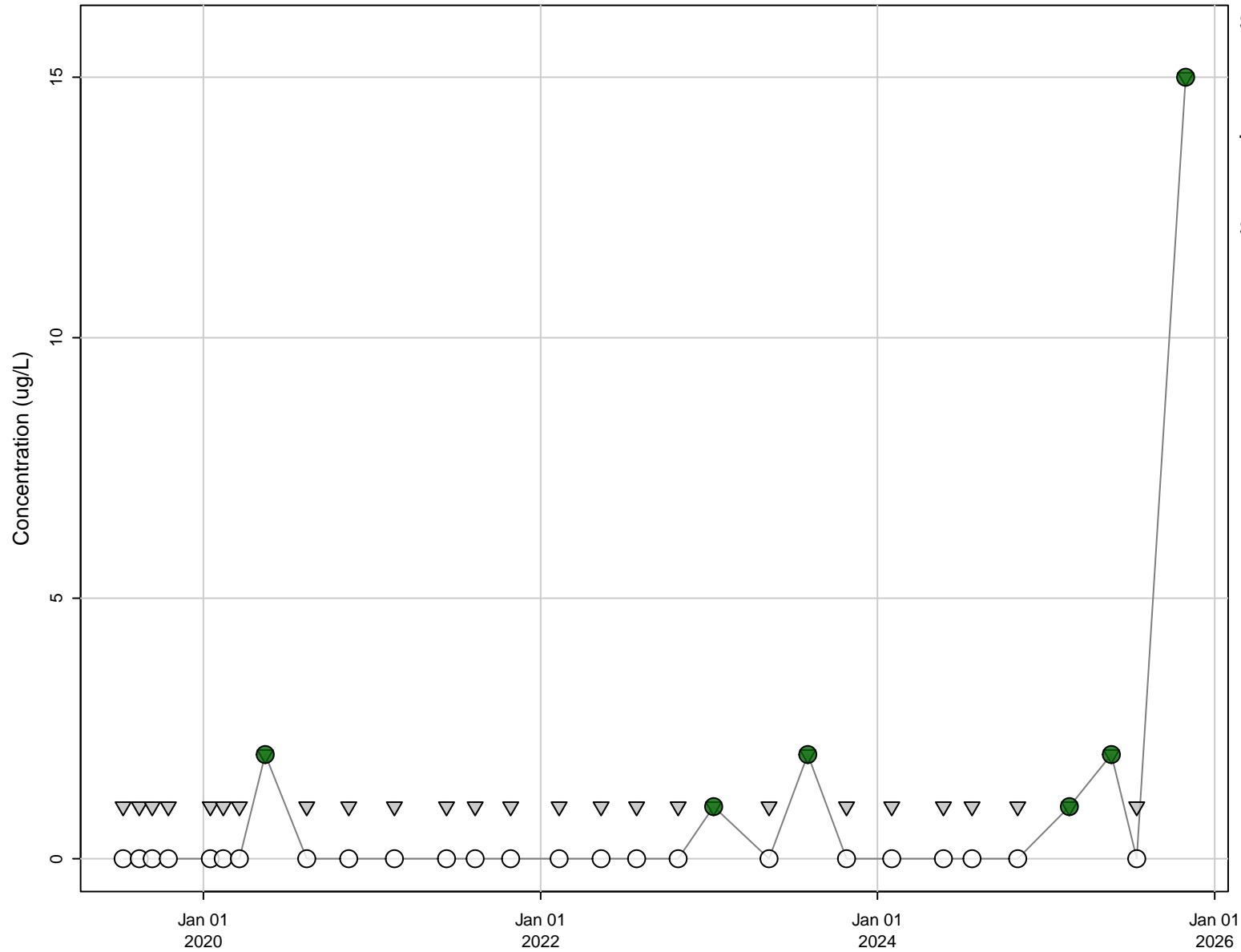
N Data: 30
N Detect: 6
% Detect: 20

Trend Results

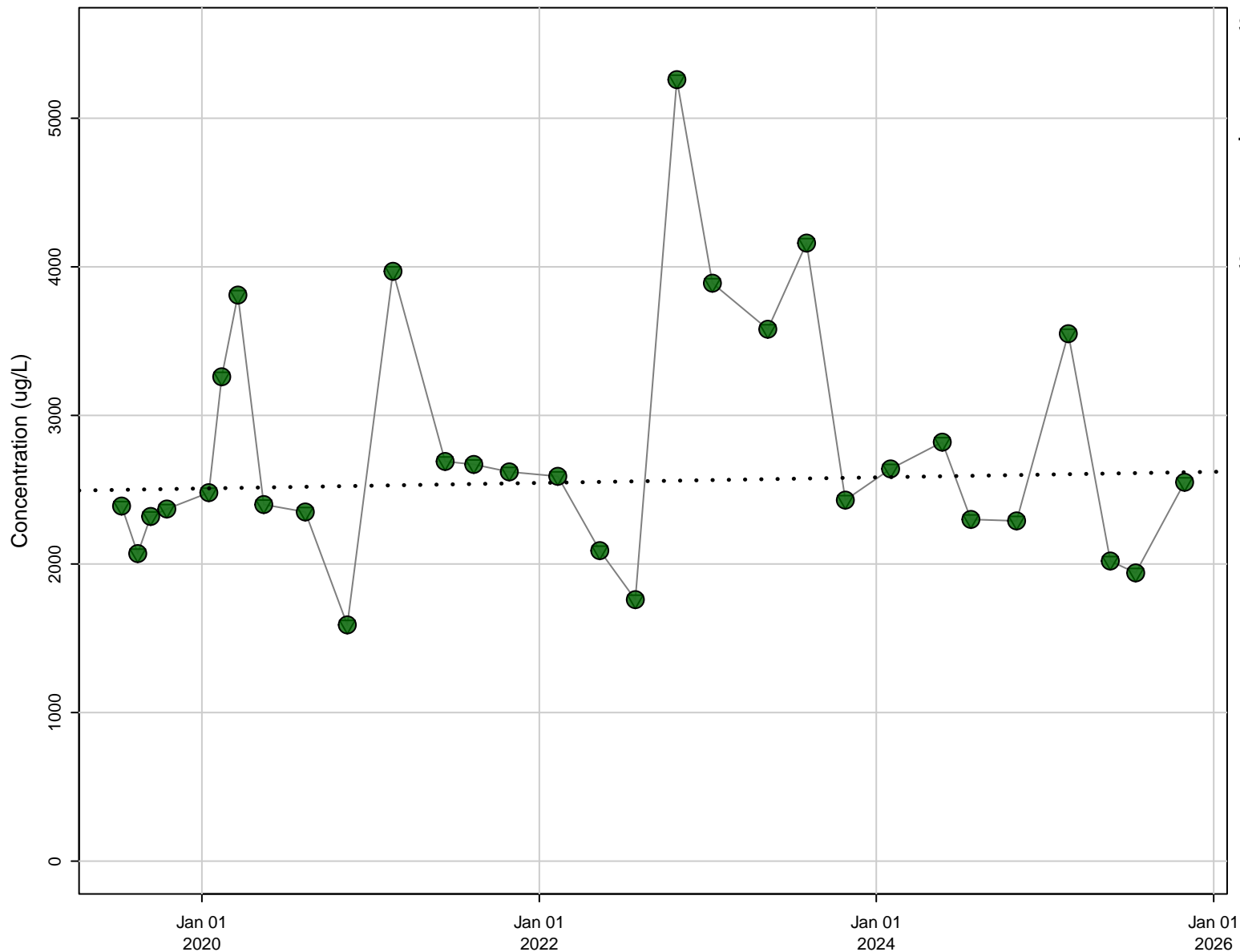
Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit



D104, Manganese [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.916

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D104, Nickel [ug/L]

Stats

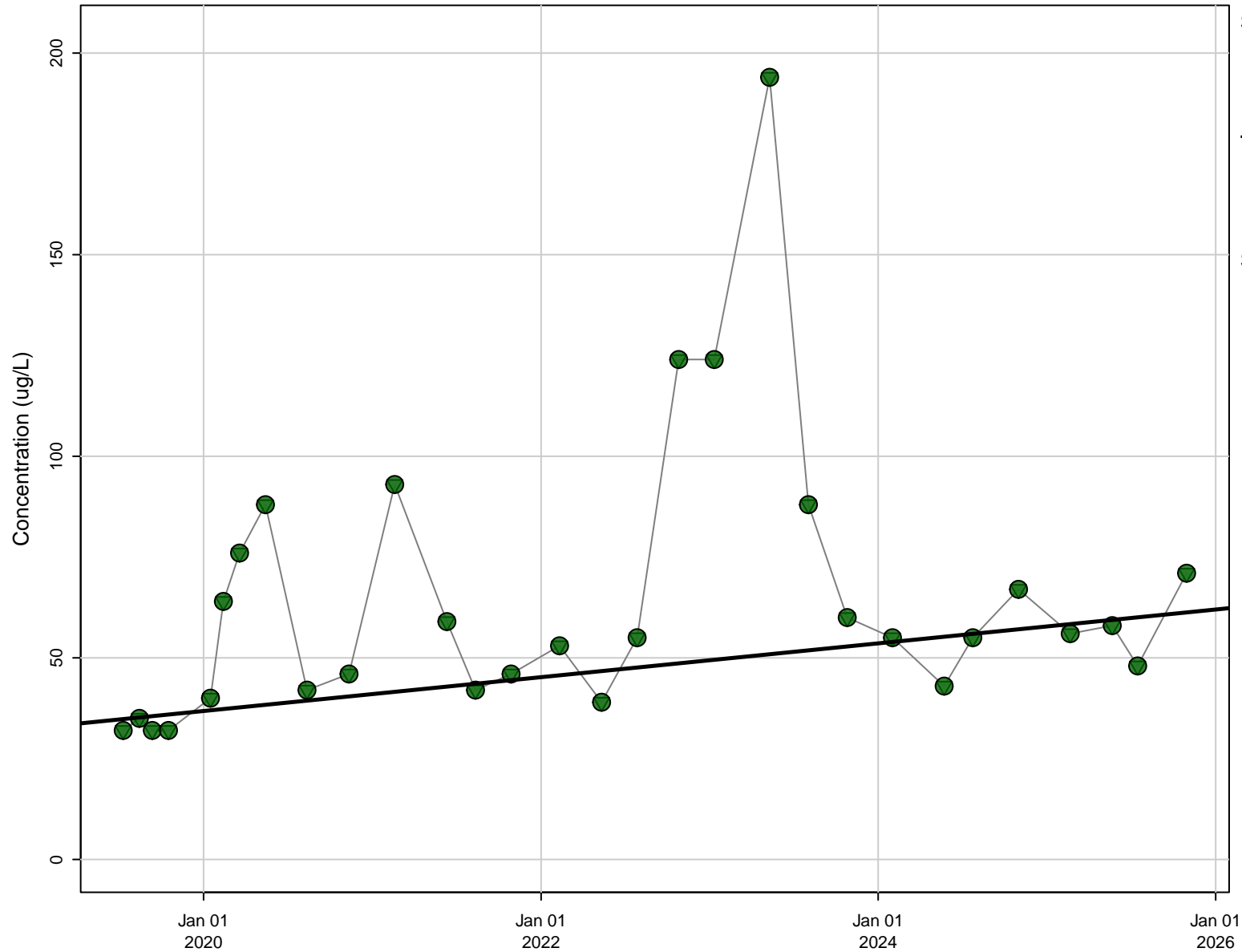
N Data: 30
N Detect: 30
% Detect: 100

Trend Results

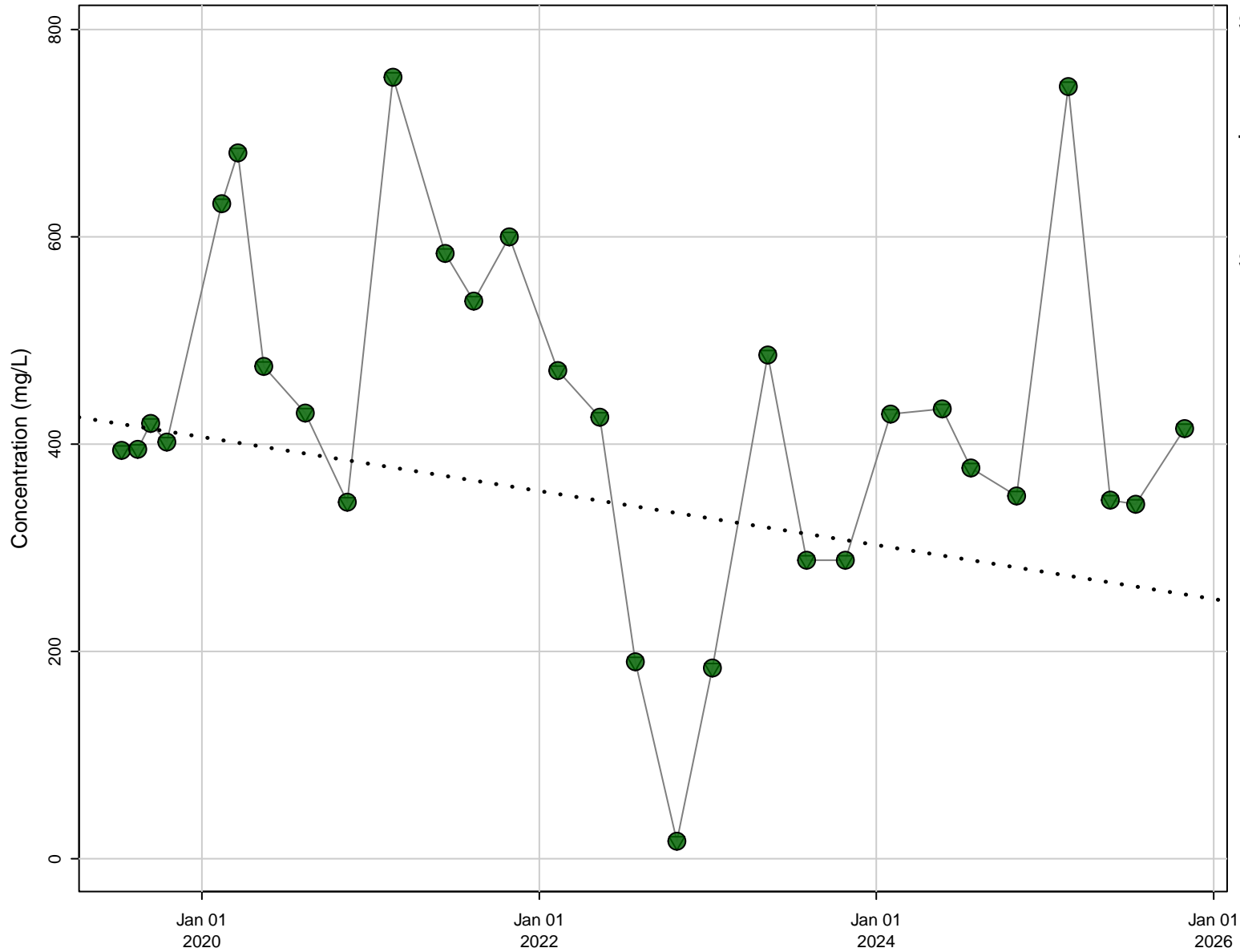
Trend: Increasing
Confidence Level: 95%
p-value: 0.0143

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D104, Sulfate (as SO4) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

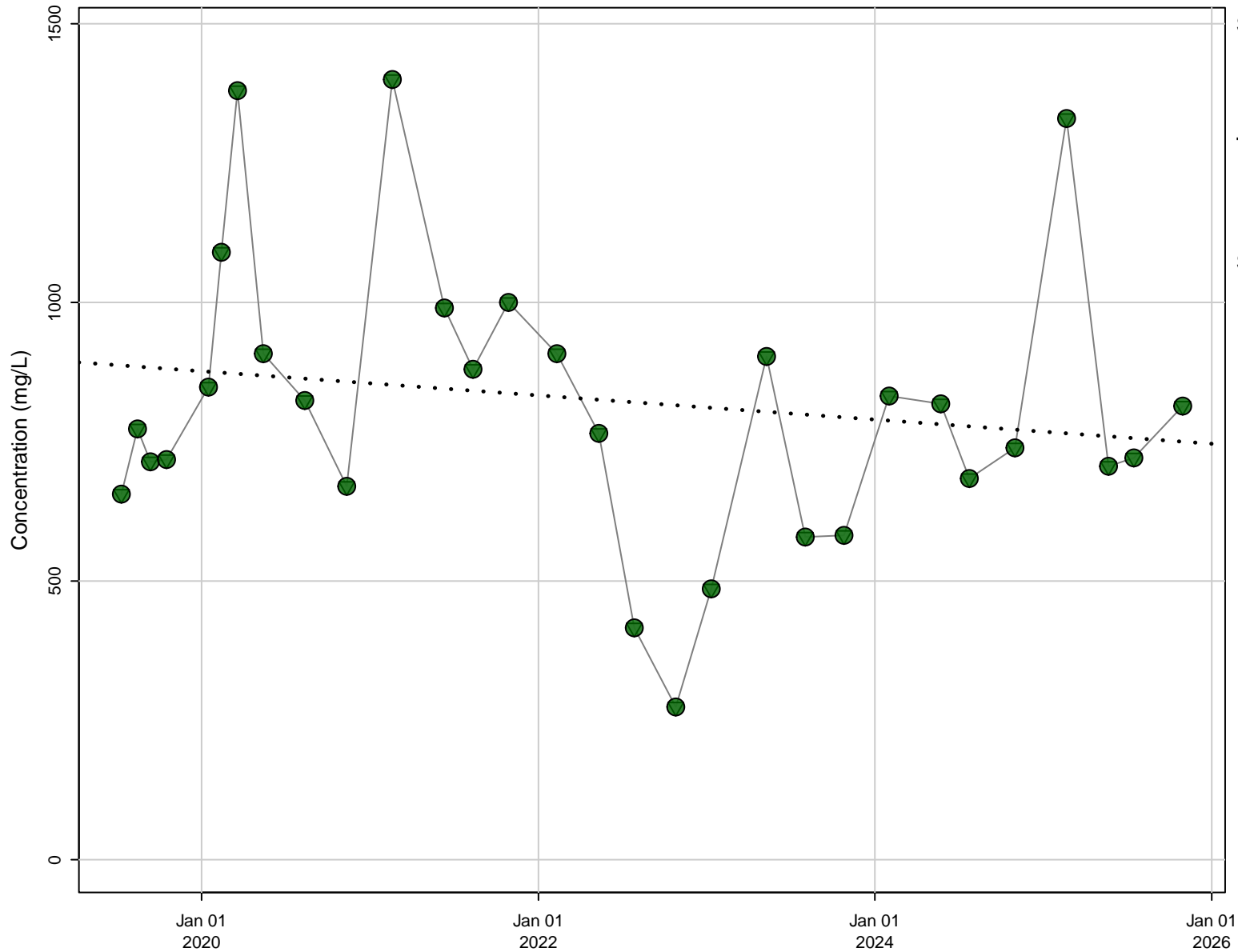
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.195

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D104, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

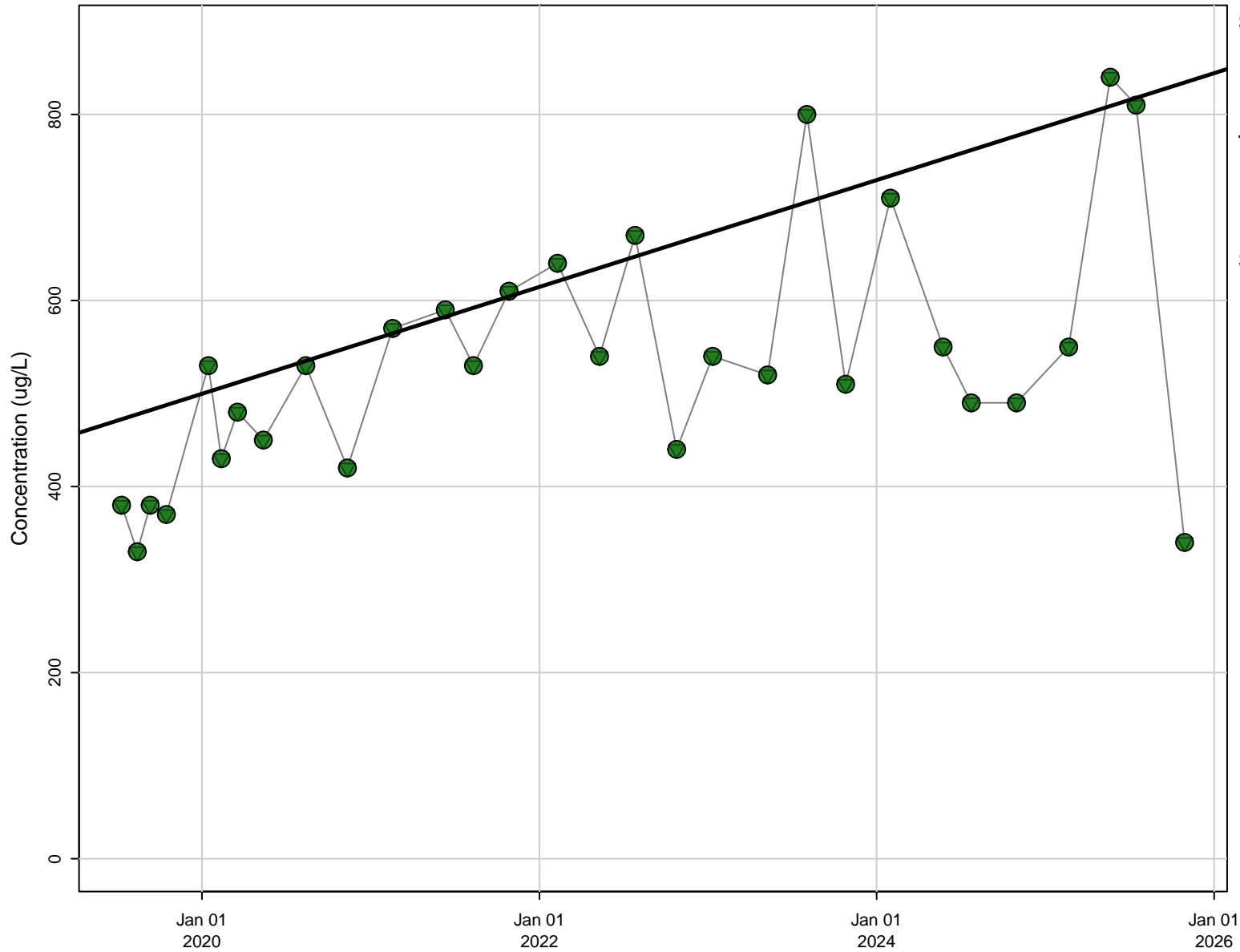
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.432

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D105, Boron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

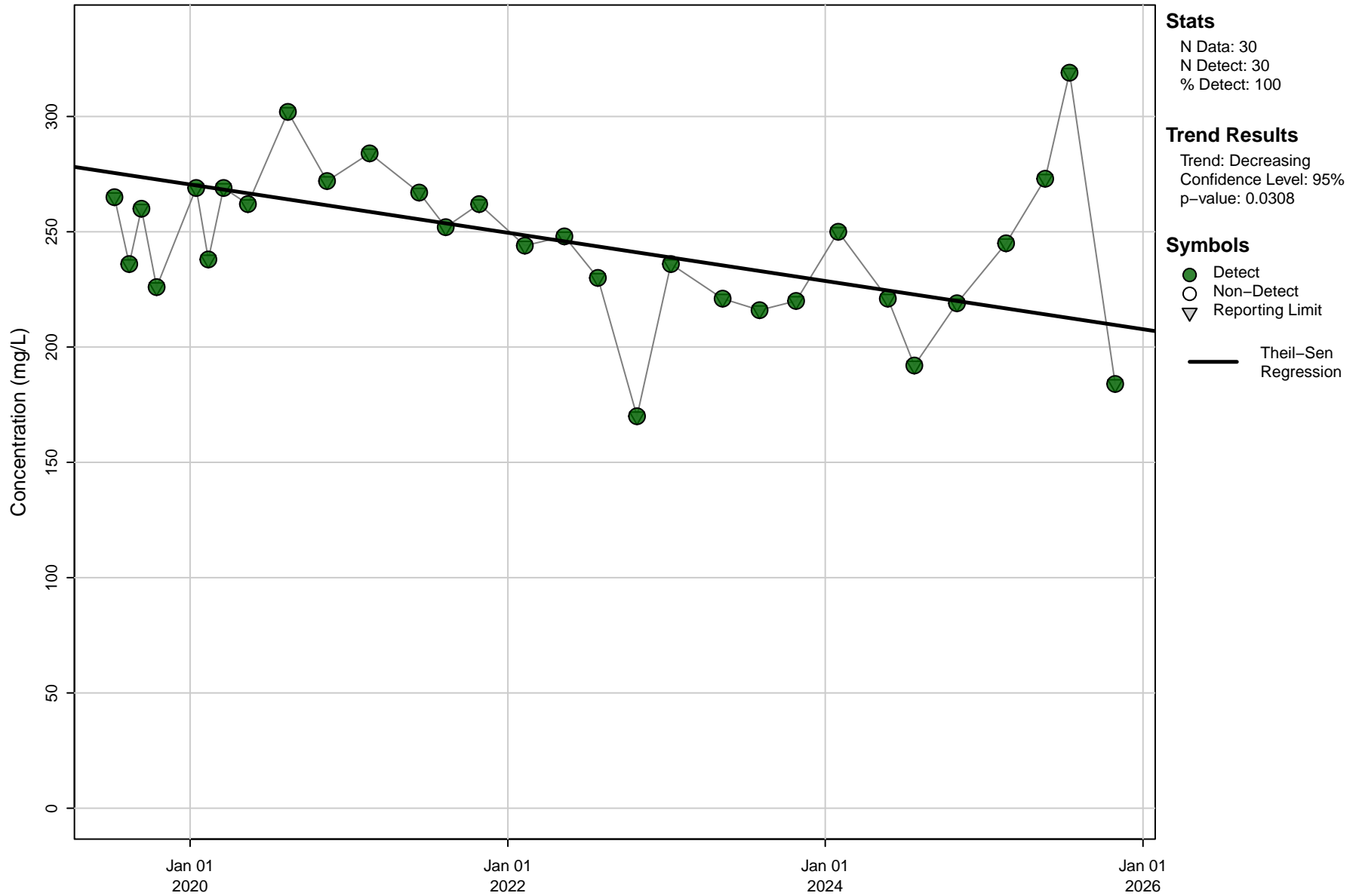
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.00269

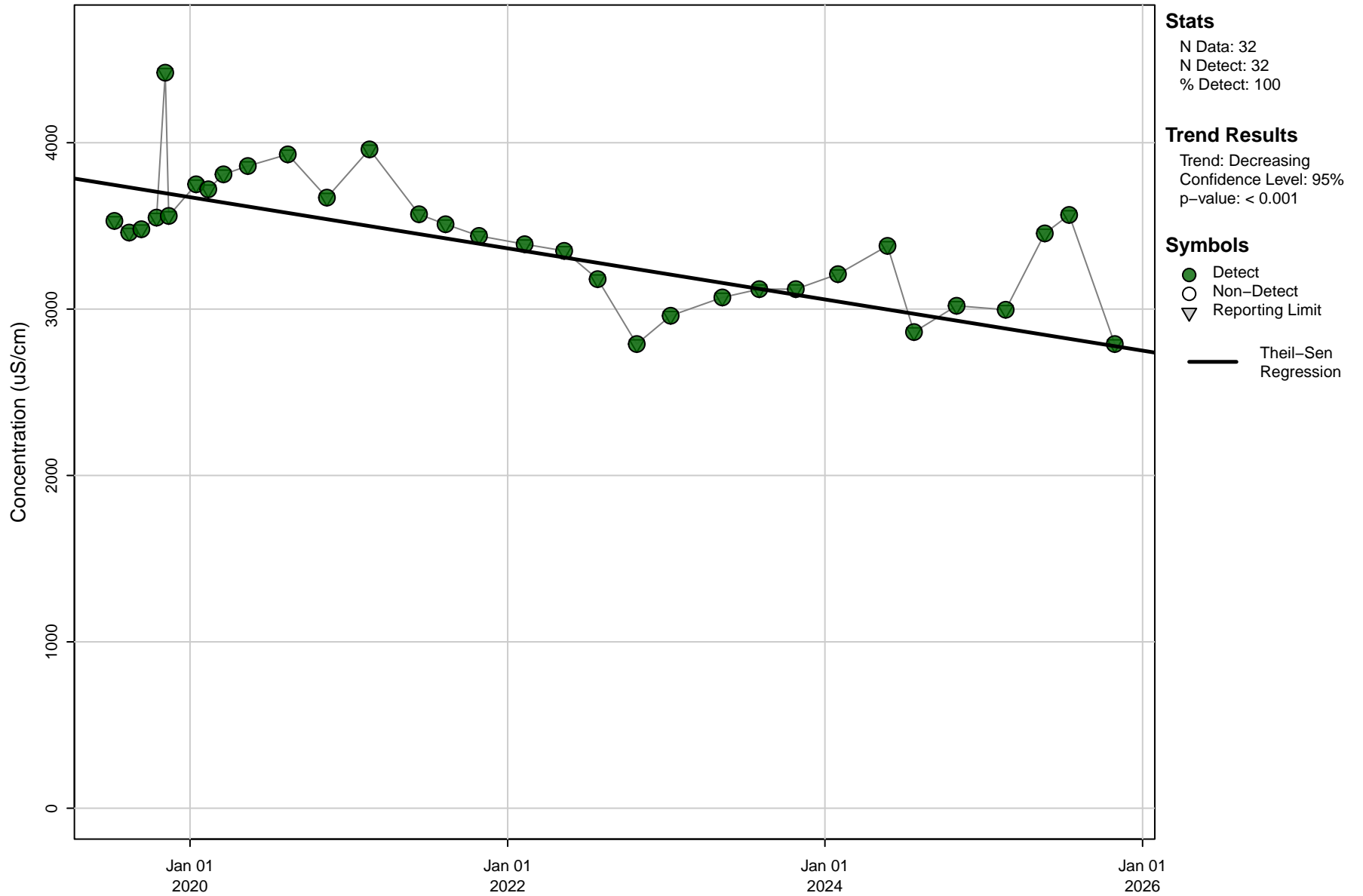
Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

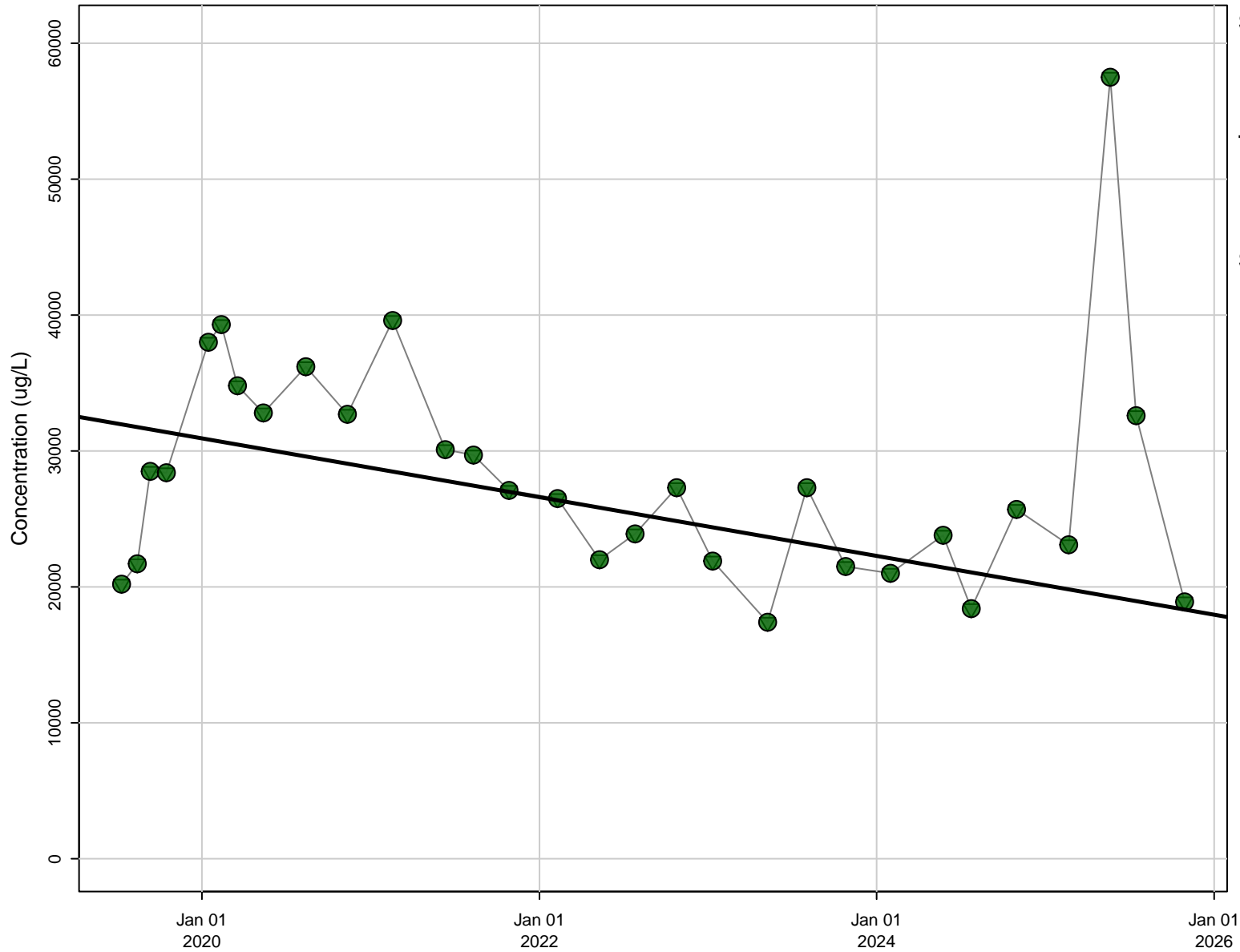
D105, Chloride [mg/L]



D105, Electrical Conductivity (Field) [uS/cm]



D105, Iron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

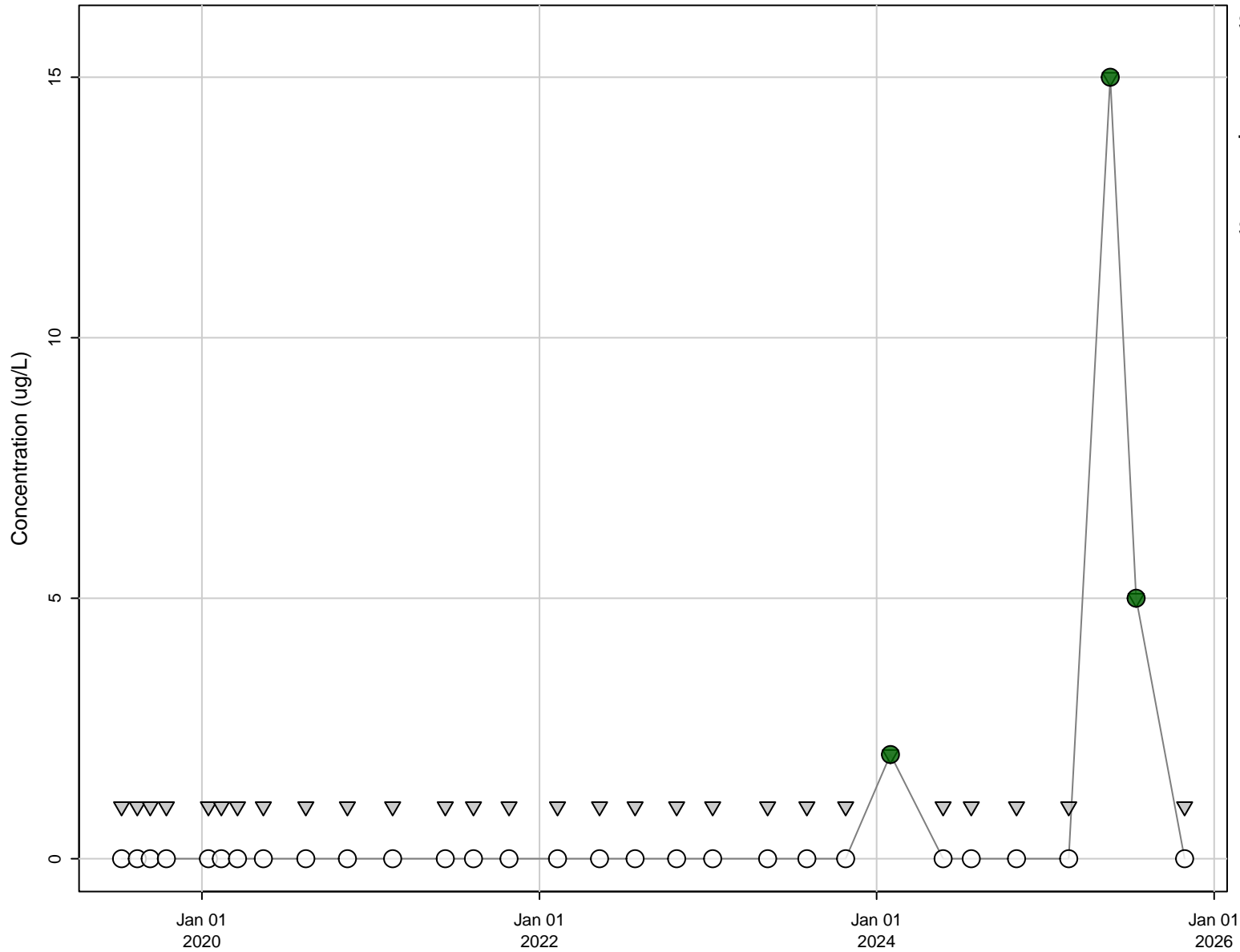
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0246

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D105, Lead [ug/L]



Stats

N Data: 30
N Detect: 3
% Detect: 10

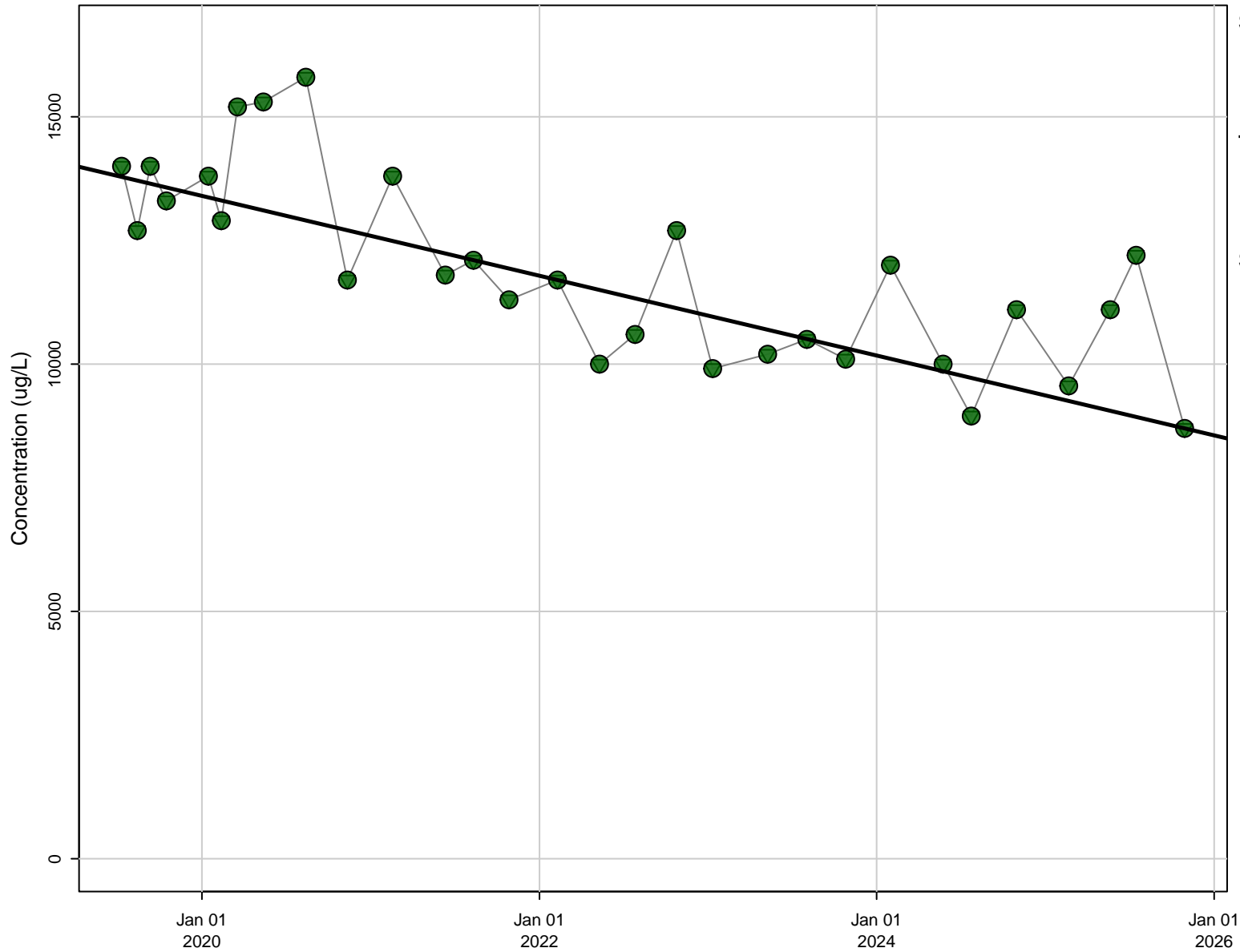
Trend Results

Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit

D105, Manganese [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

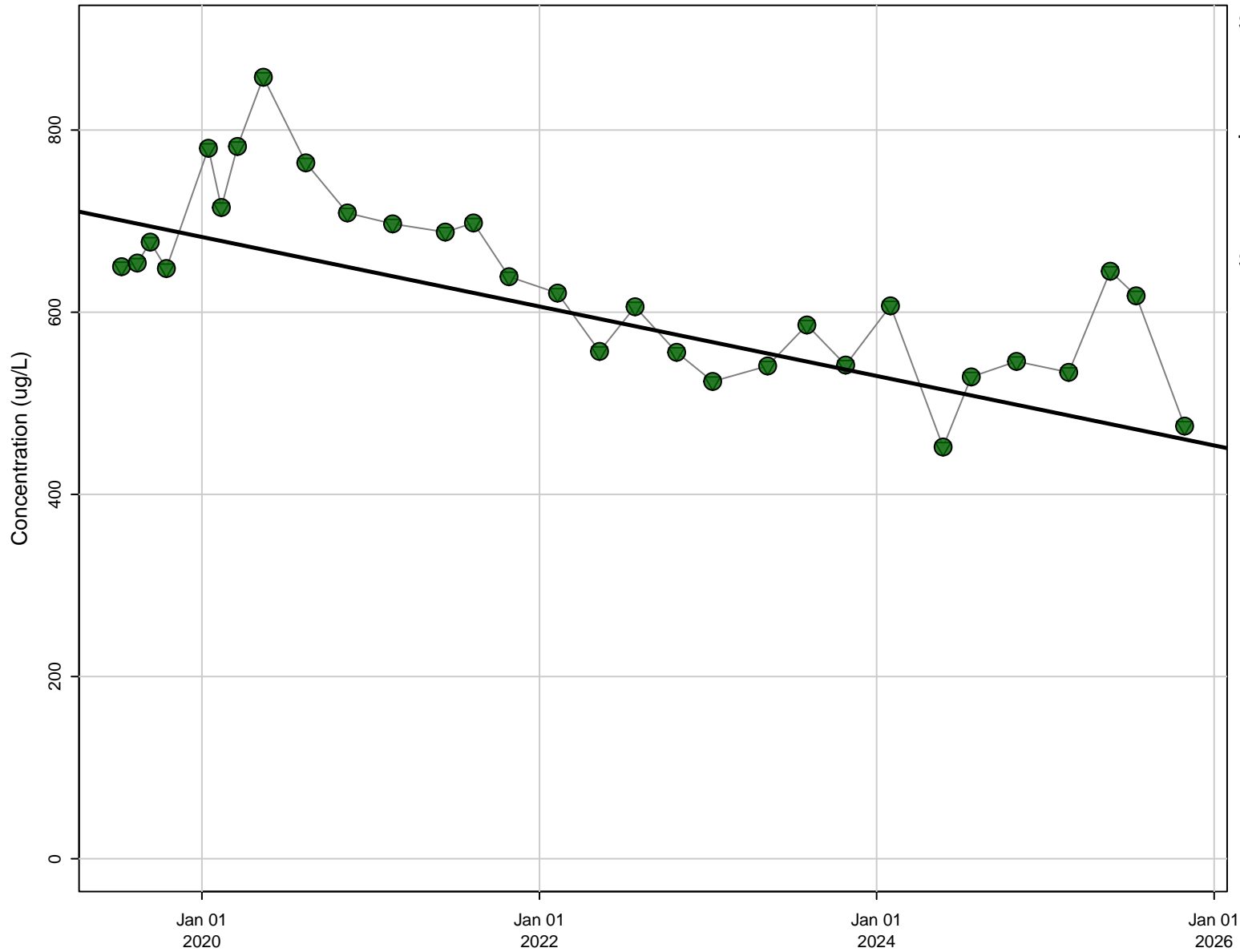
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D105, Nickel [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

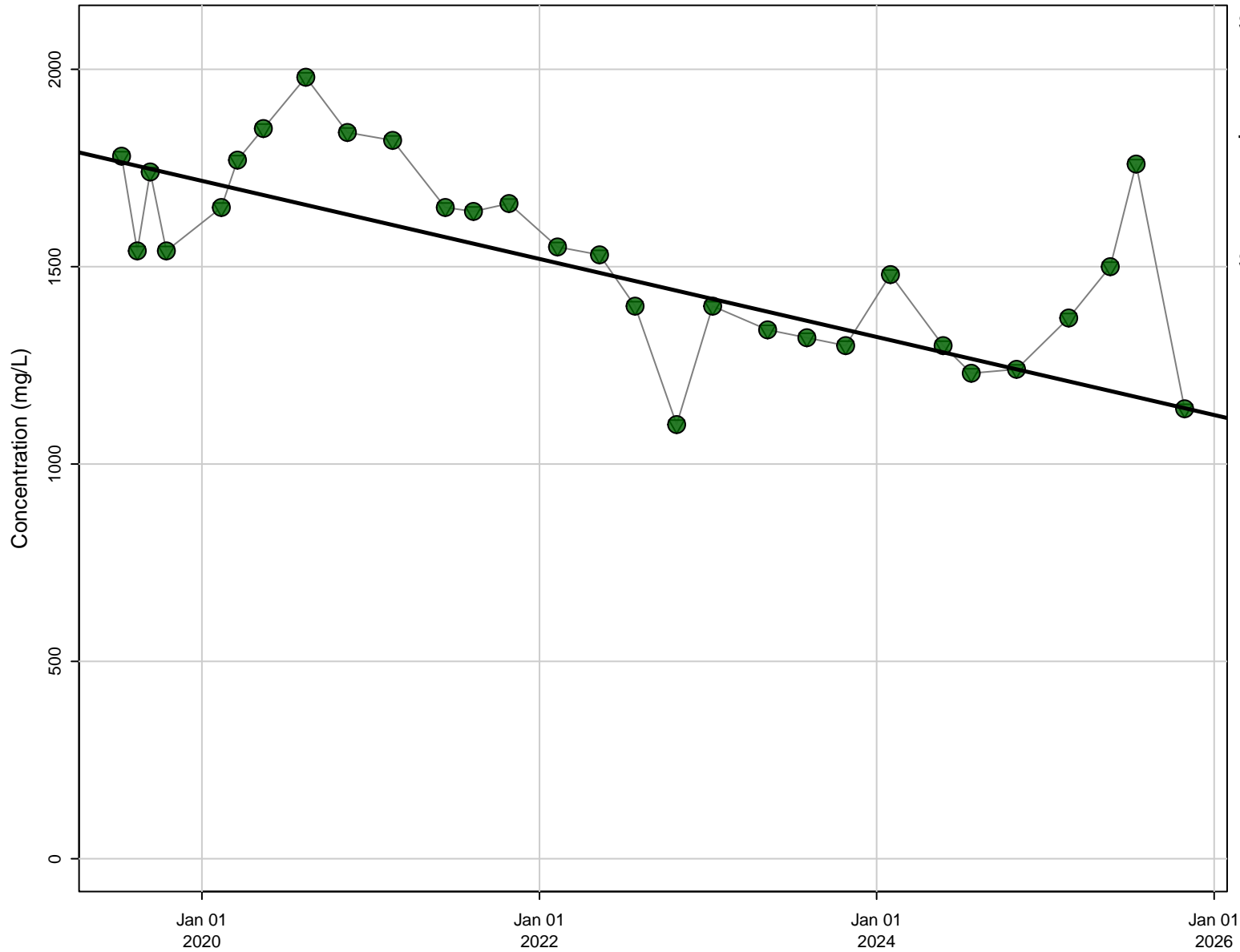
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D105, Sulfate (as SO4) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

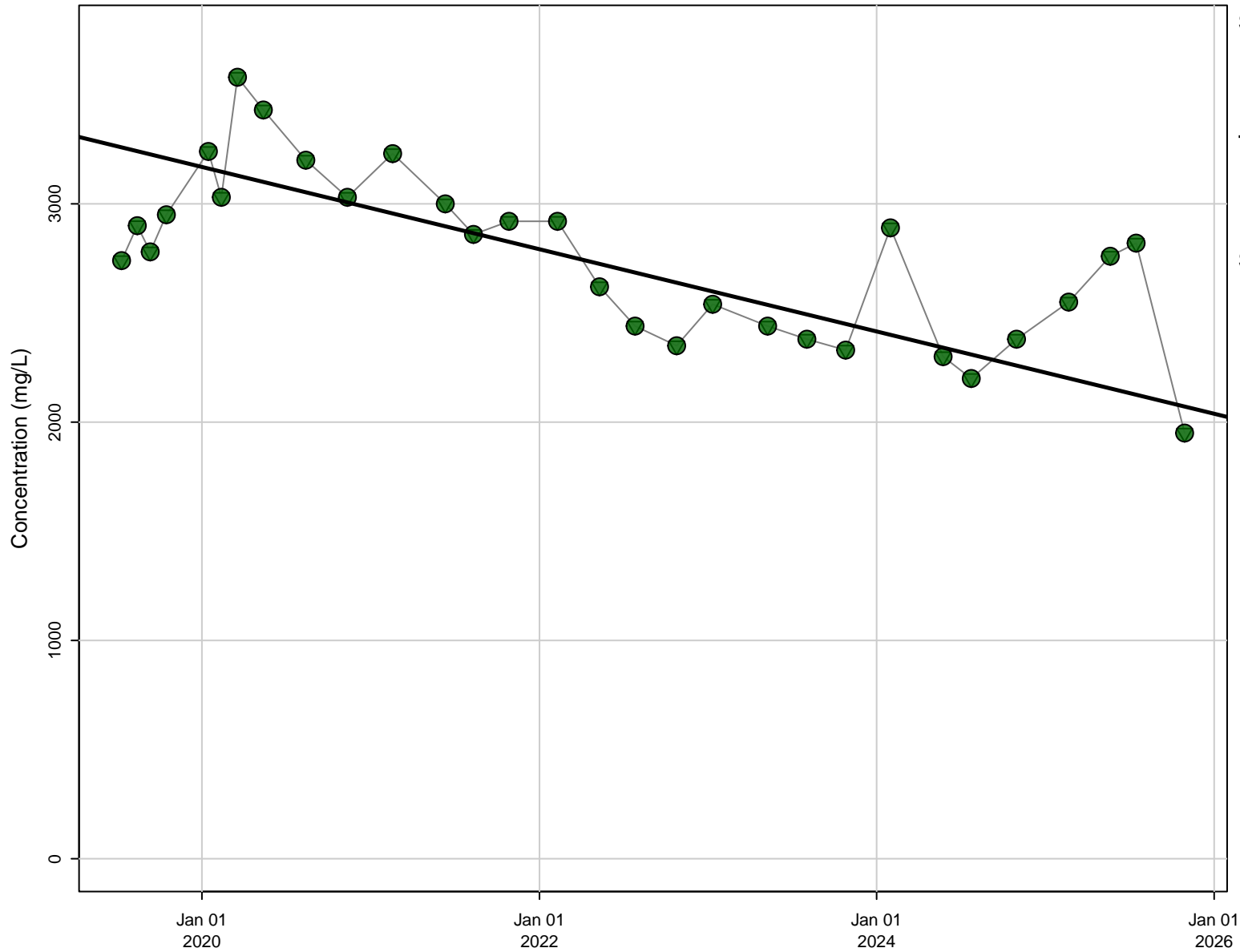
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D105, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

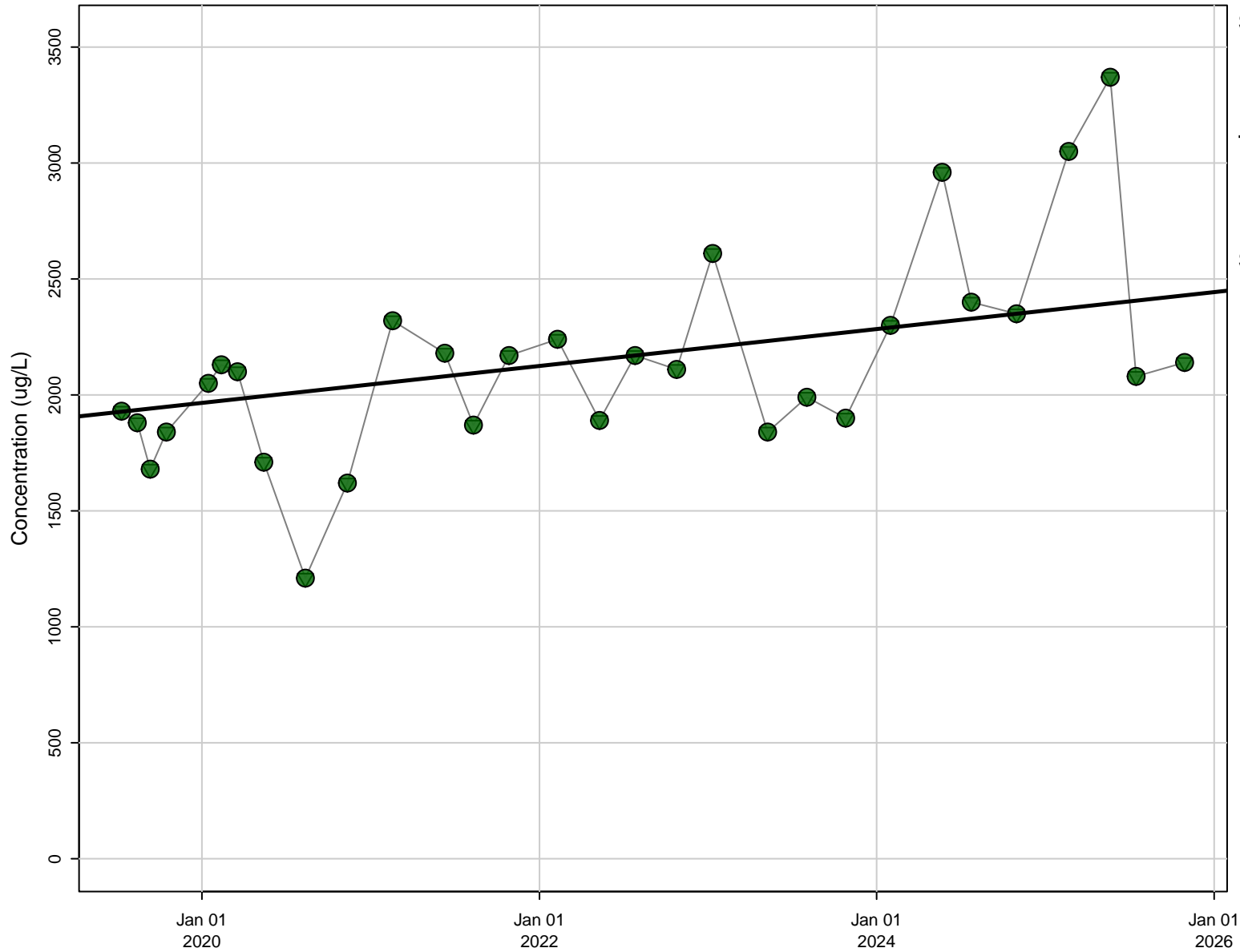
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D106, Boron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

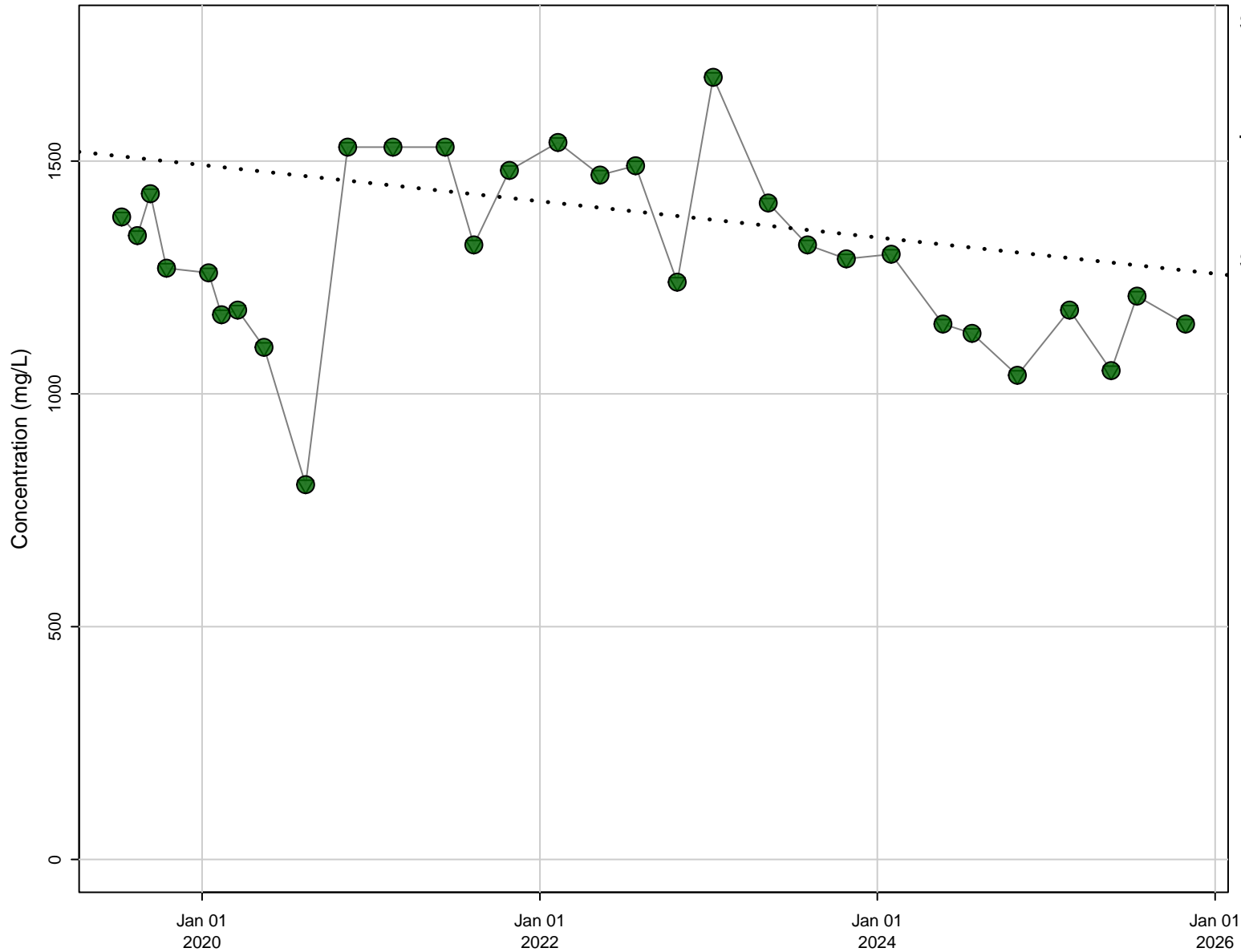
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.00124

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D106, Chloride [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

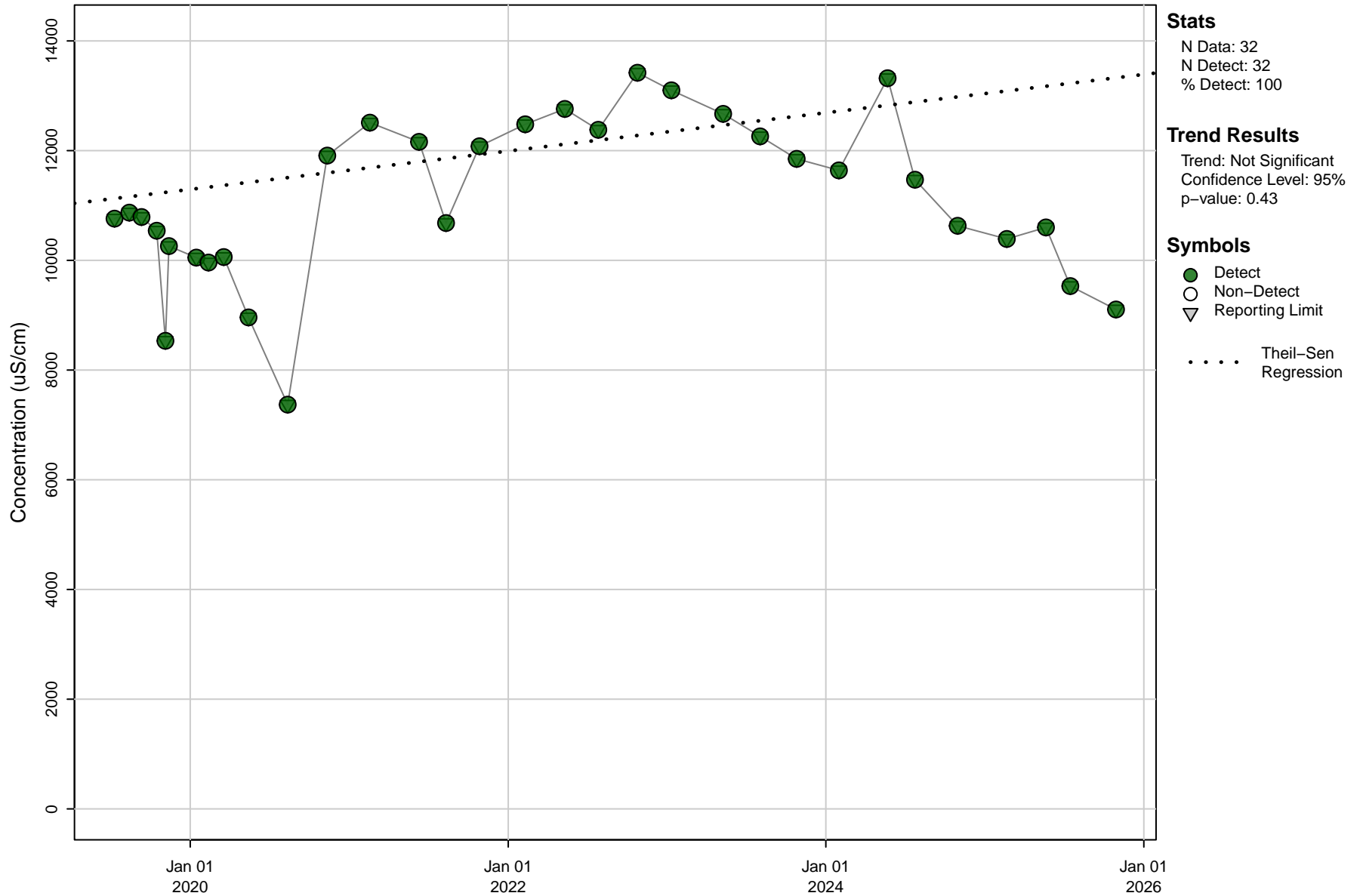
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0658

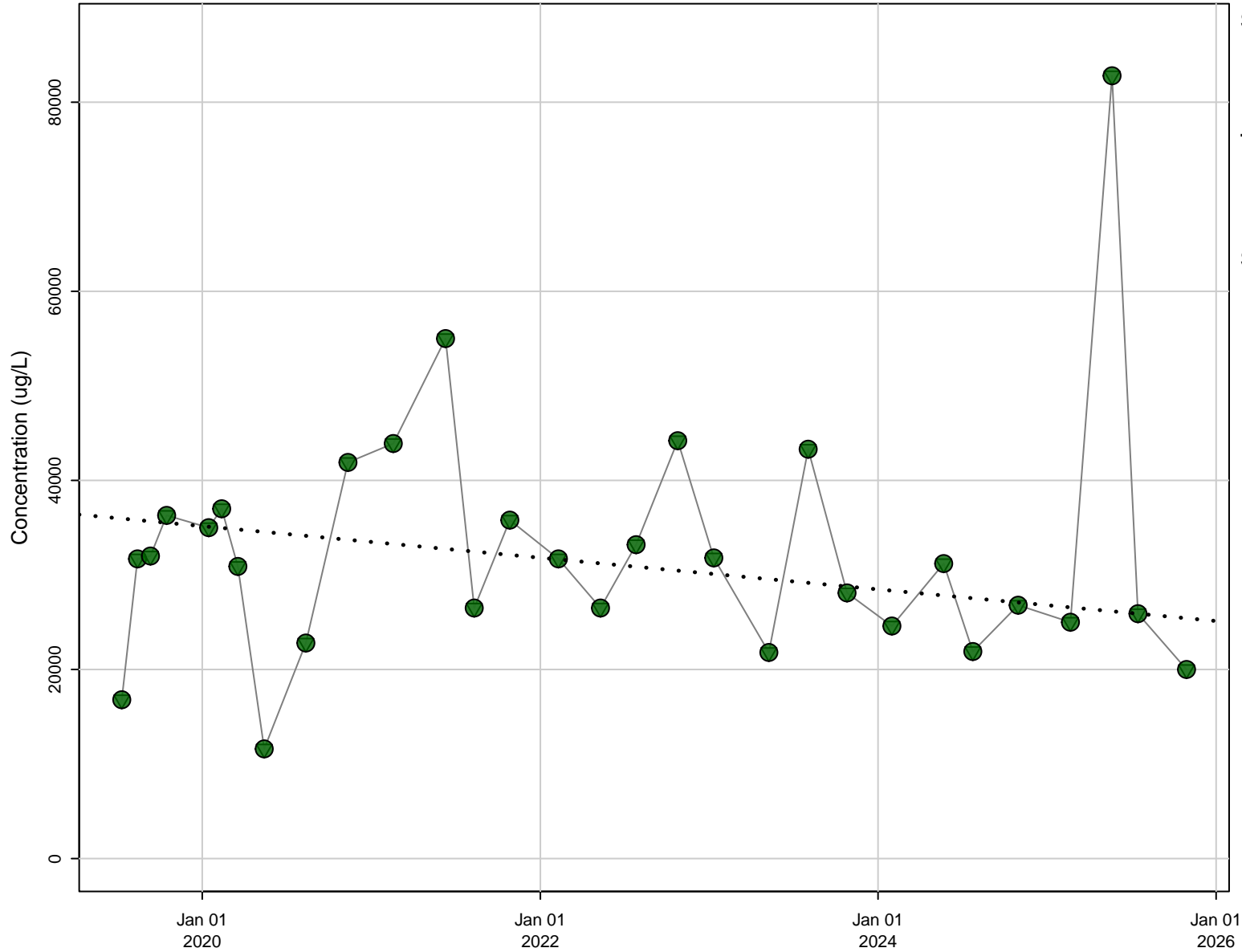
Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D106, Electrical Conductivity (Field) [uS/cm]



D106, Iron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

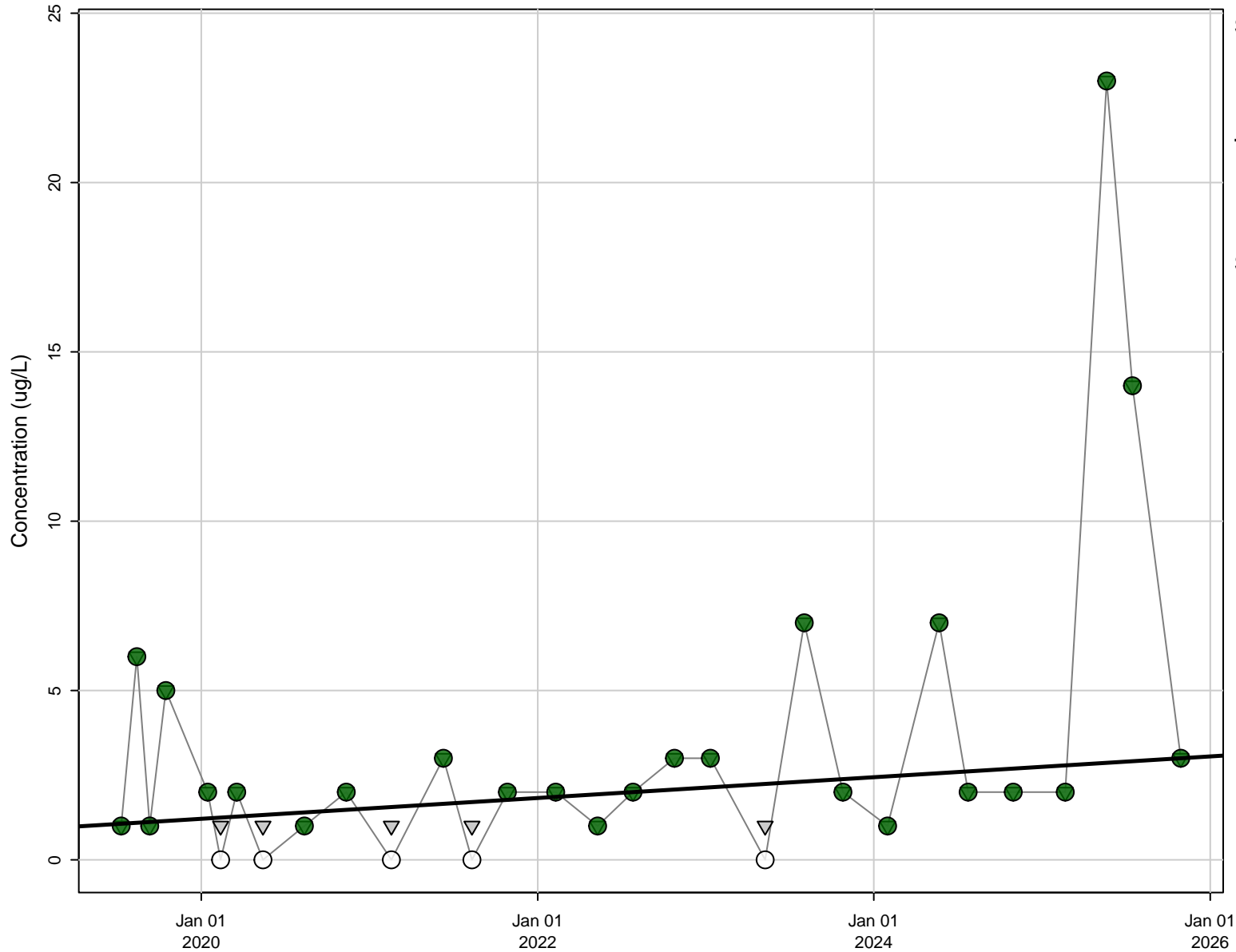
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.344

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D106, Lead [ug/L]



Stats

N Data: 30
N Detect: 25
% Detect: 83

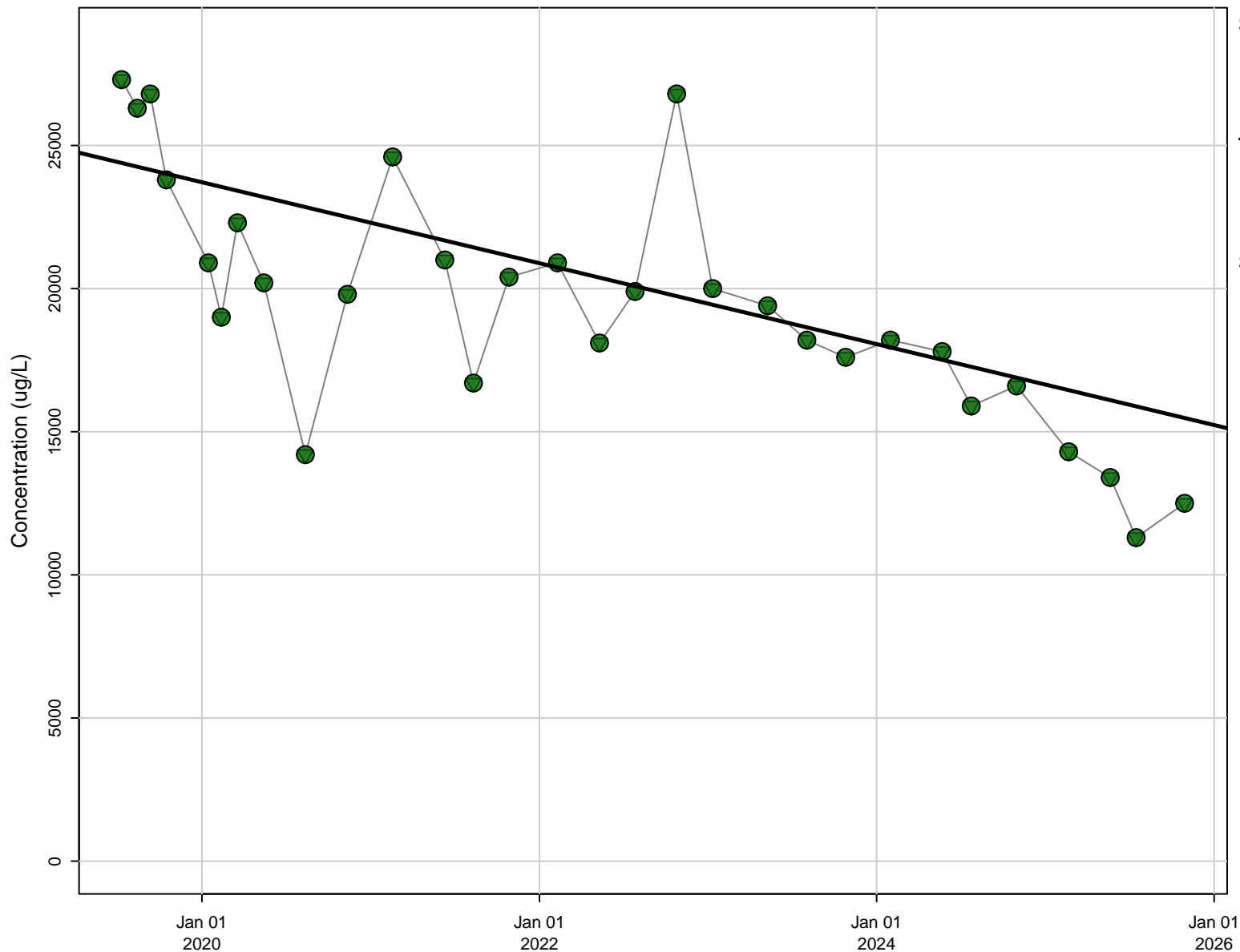
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0382

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D106, Manganese [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

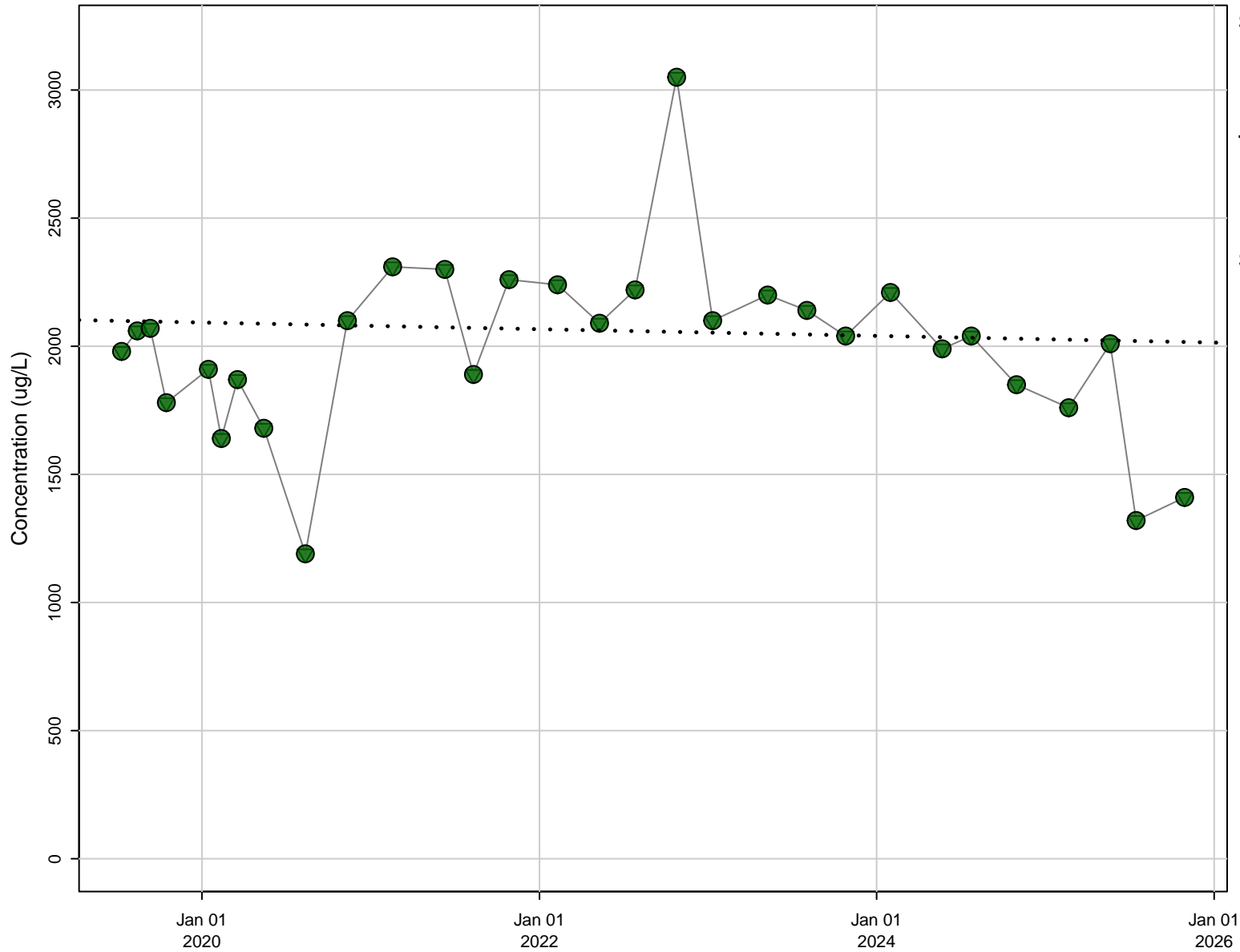
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D106, Nickel [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

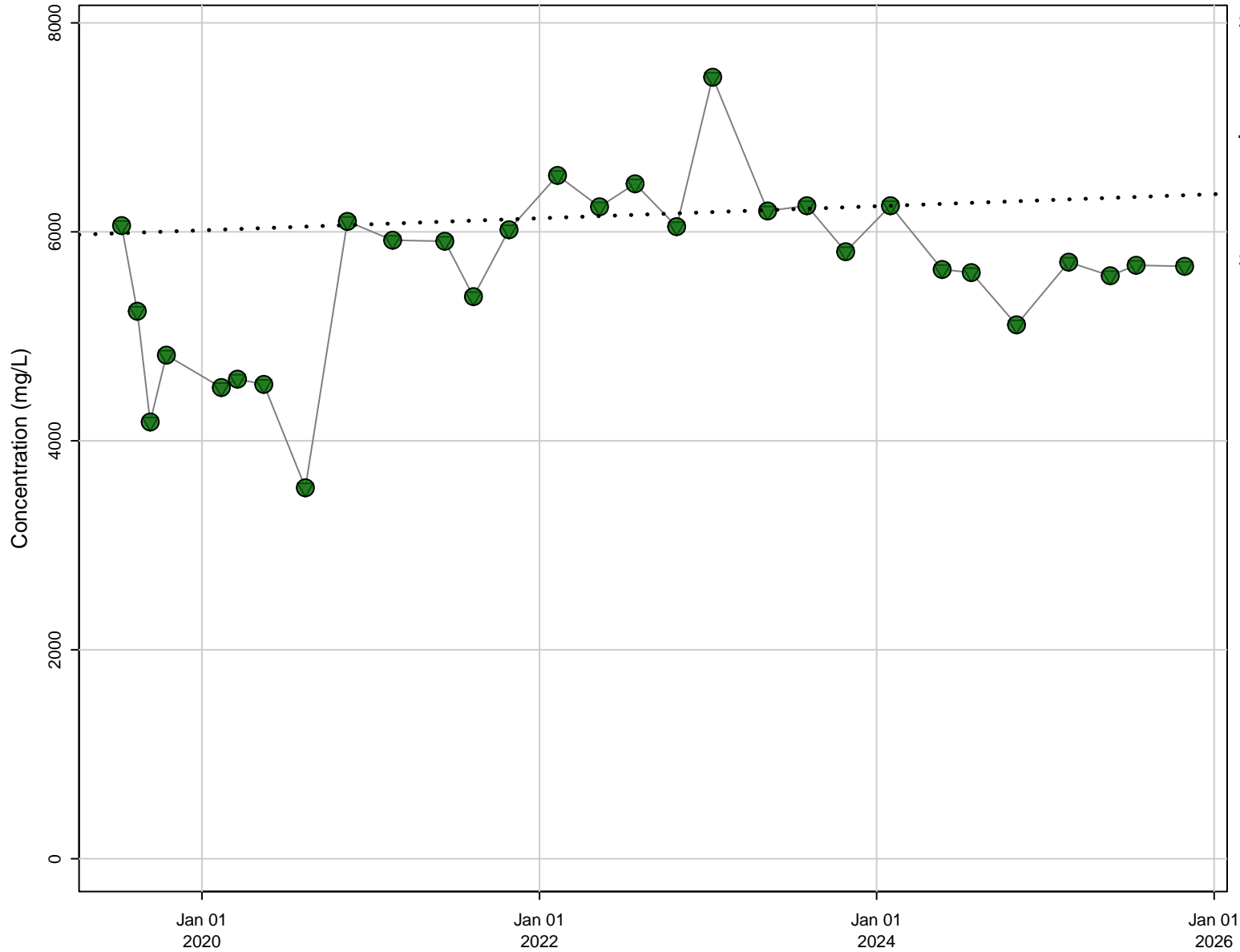
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.58

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D106, Sulfate (as SO4) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

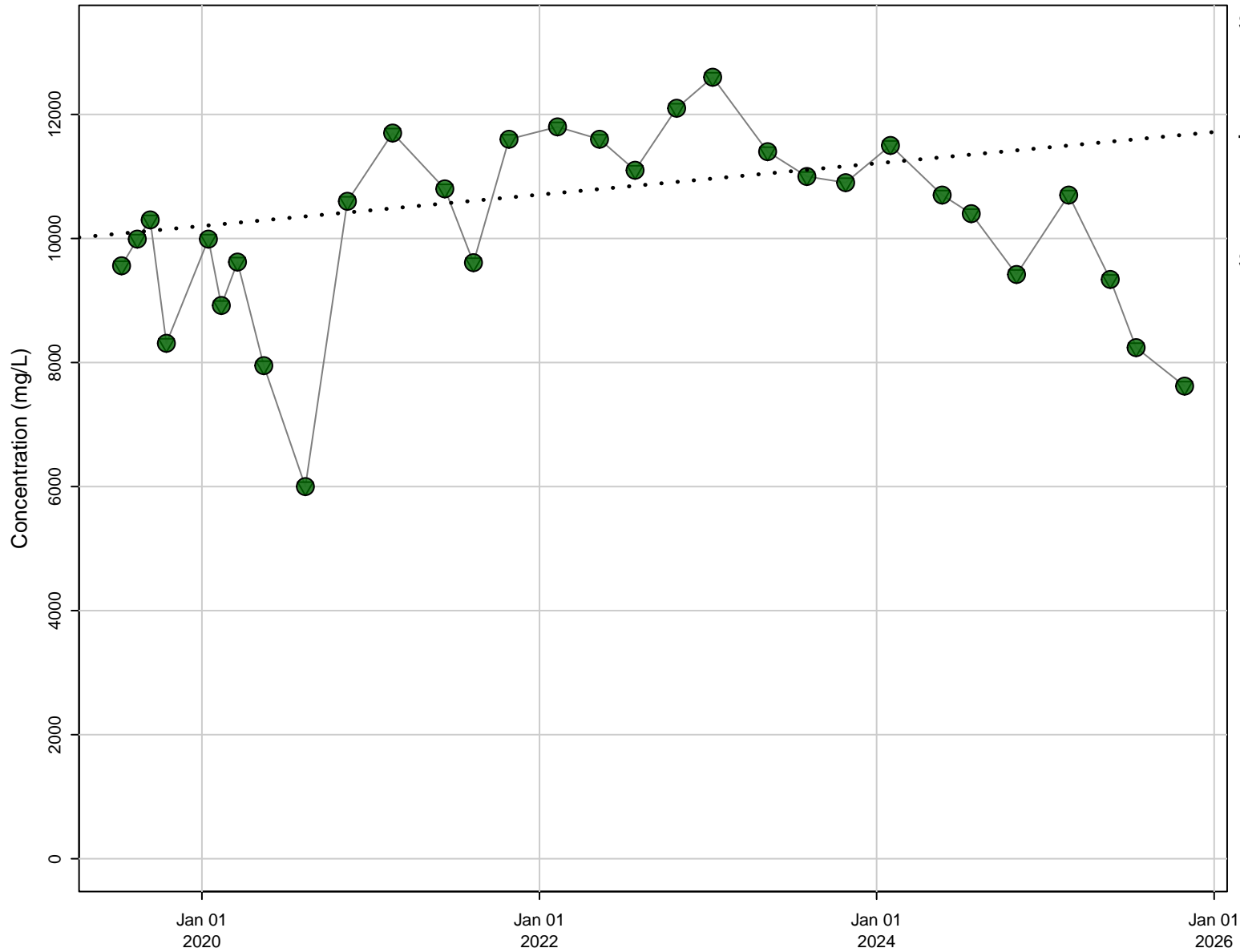
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.237

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D106, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

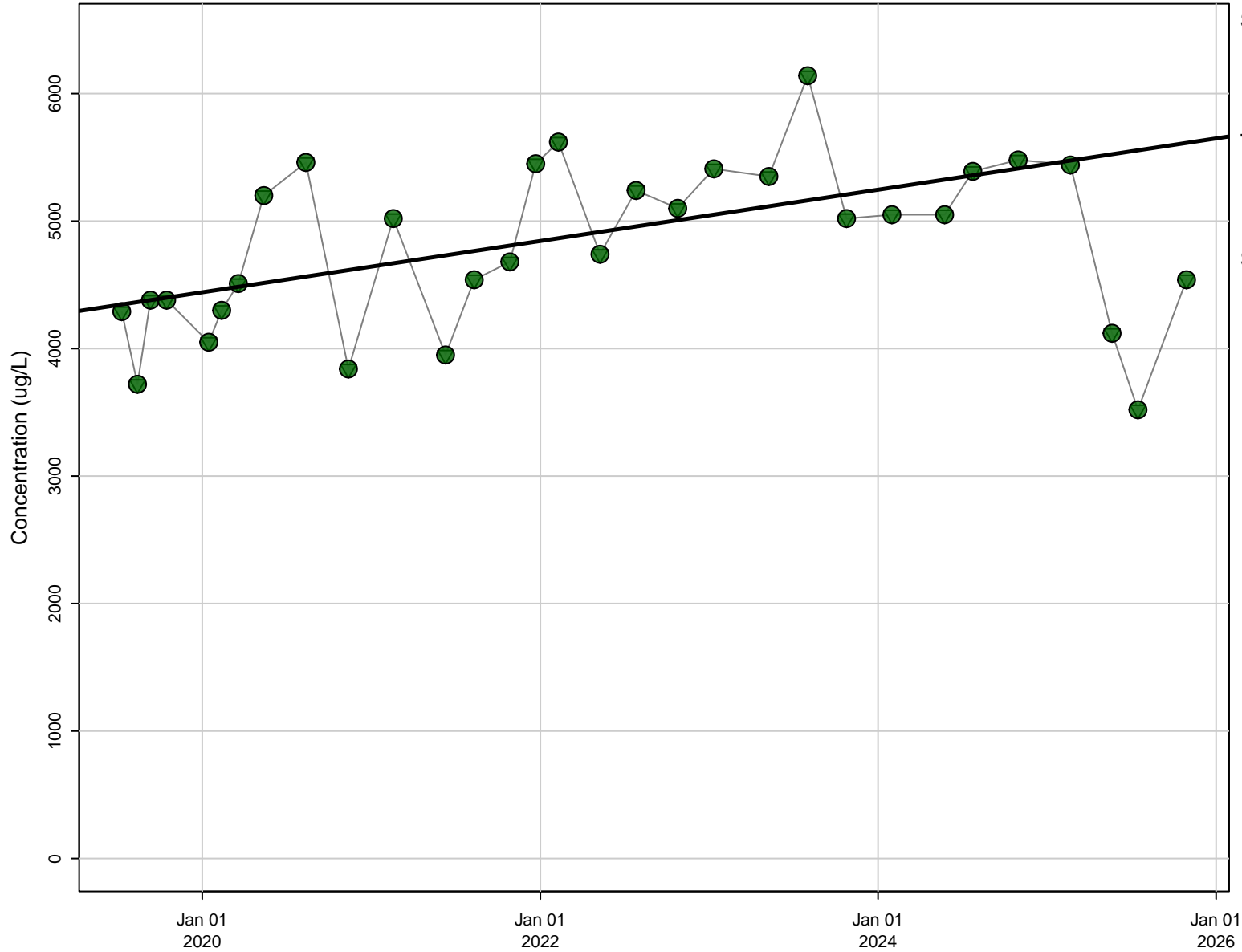
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.721

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D107, Boron [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

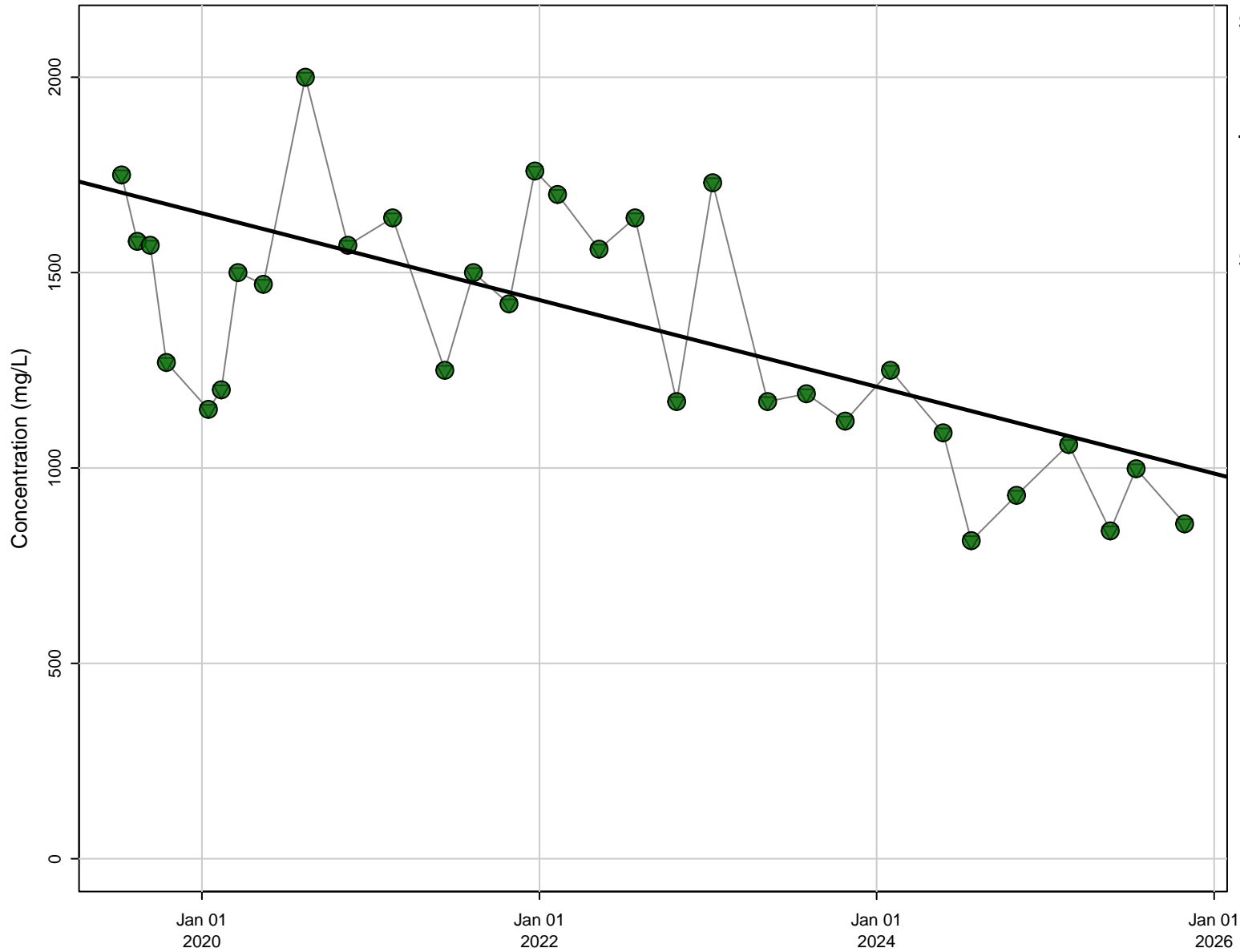
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0198

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D107, Chloride [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

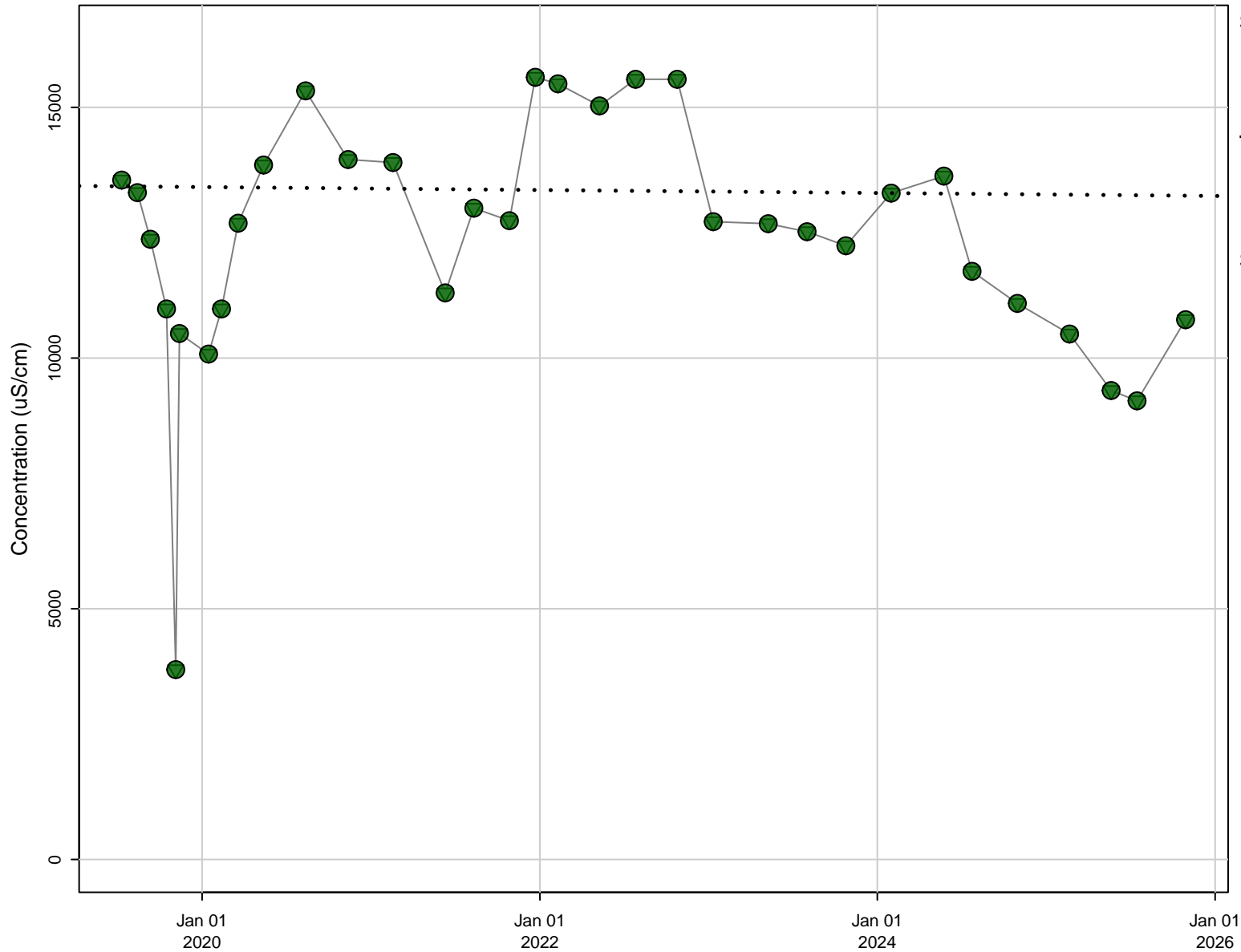
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D107, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 33
N Detect: 33
% Detect: 100

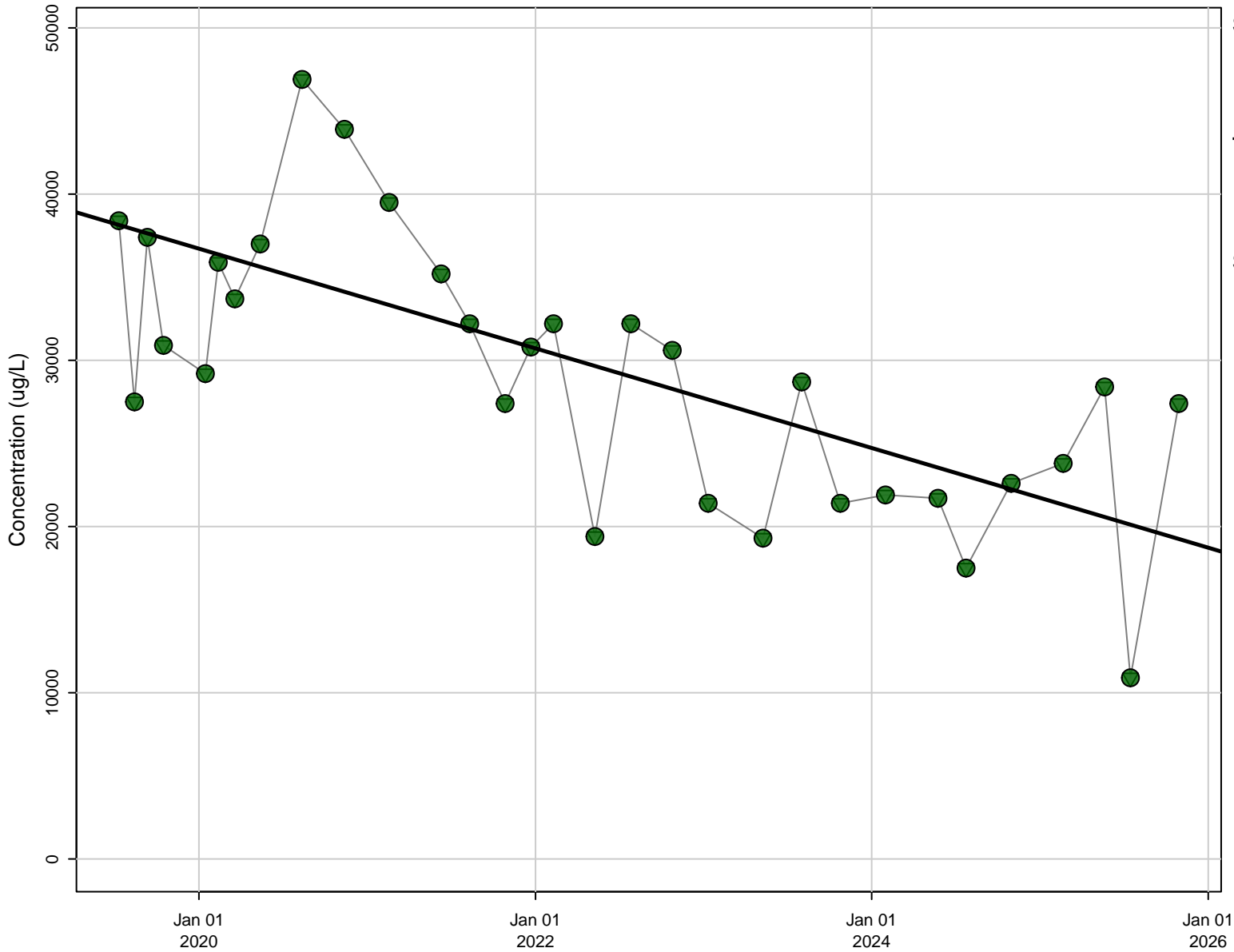
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.369

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D107, Iron [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

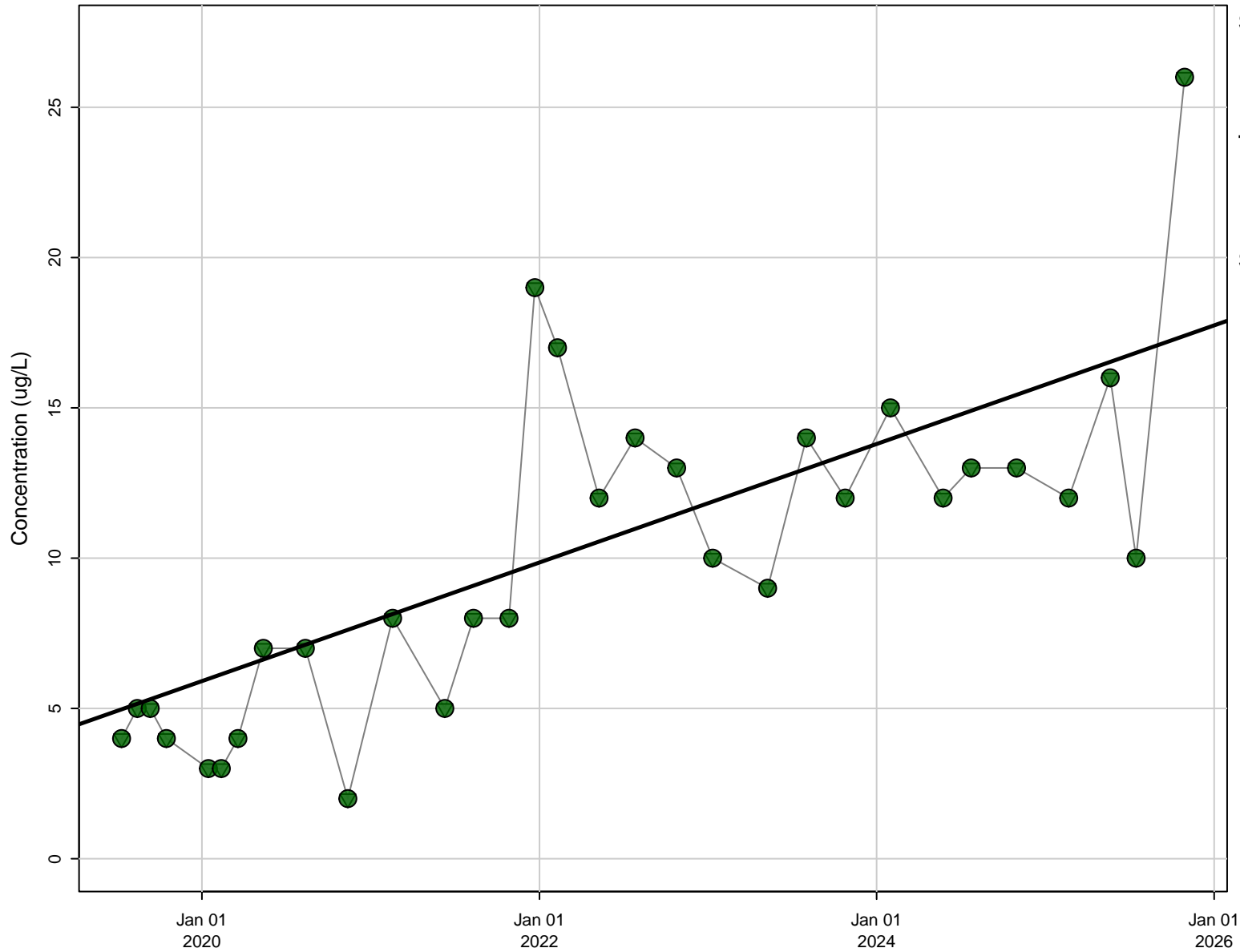
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D107, Lead [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

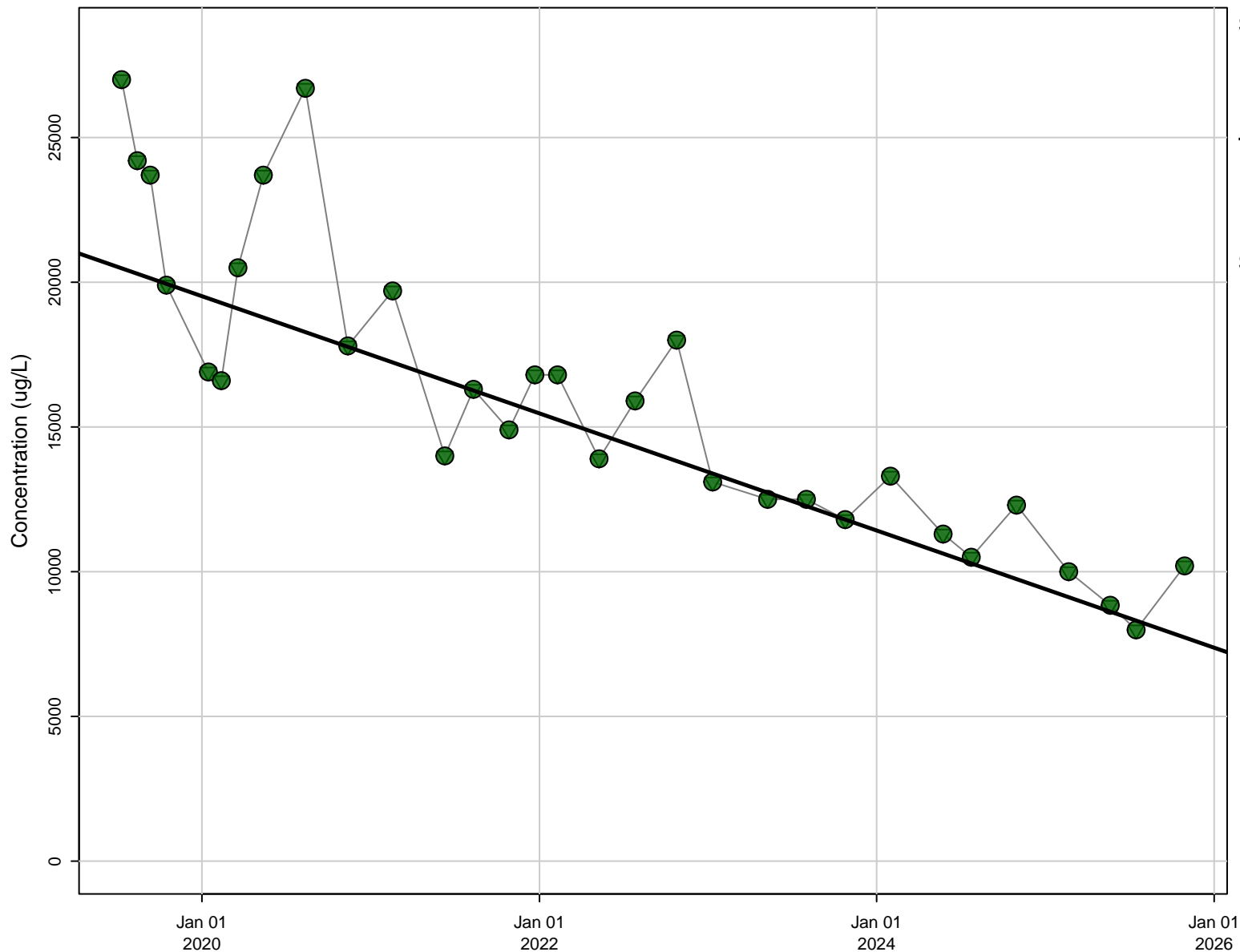
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D107, Manganese [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

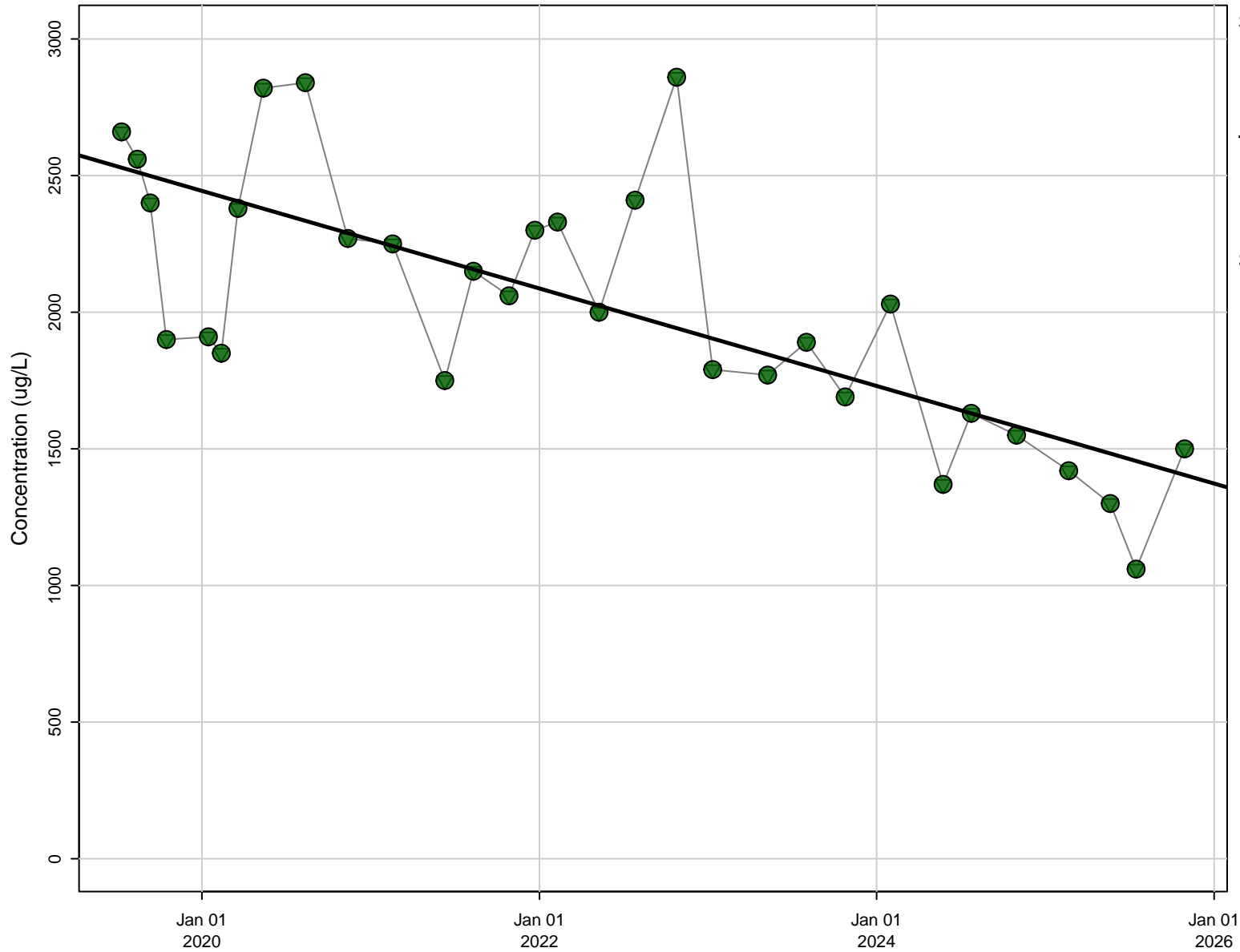
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D107, Nickel [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

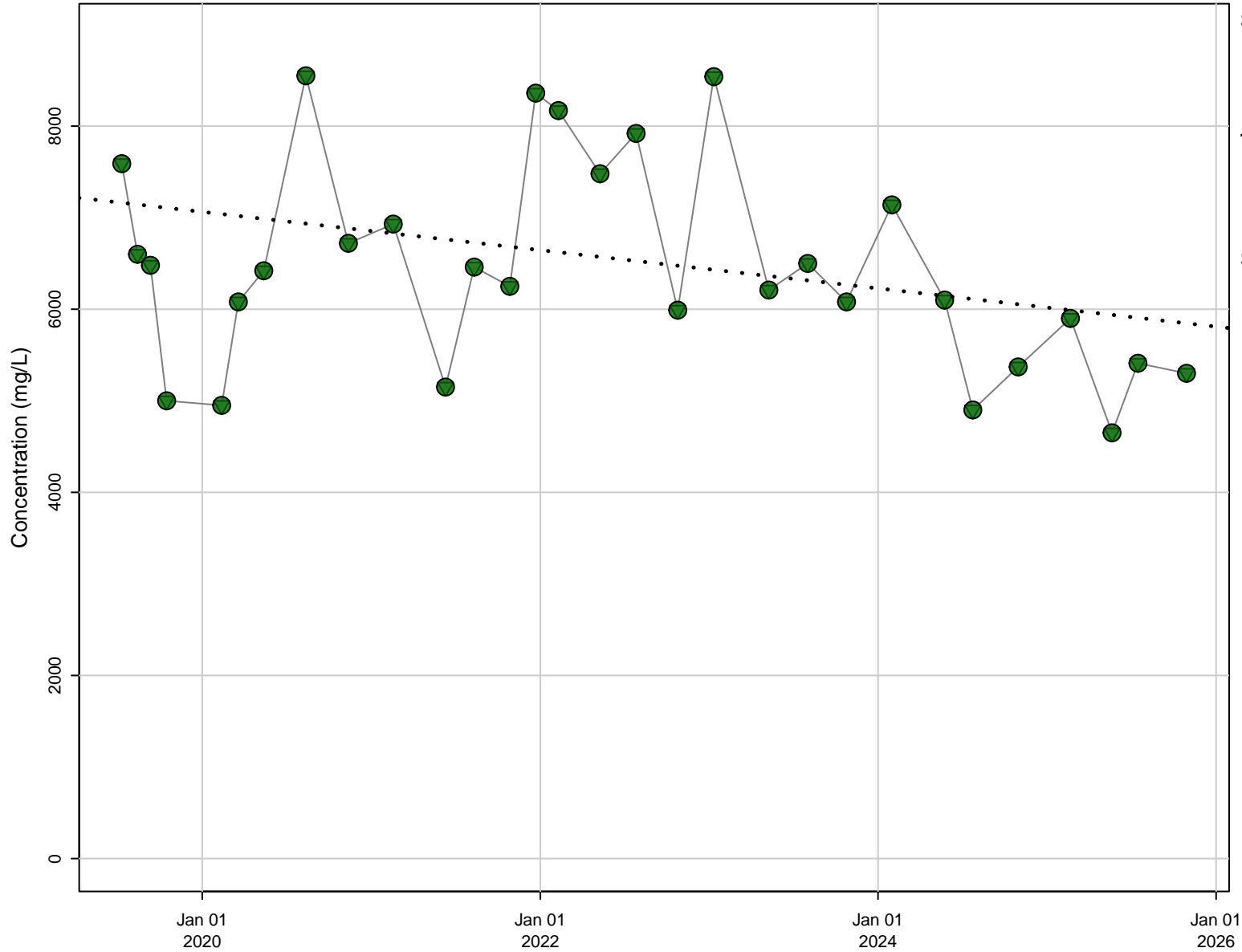
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D107, Sulfate (as SO4) [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

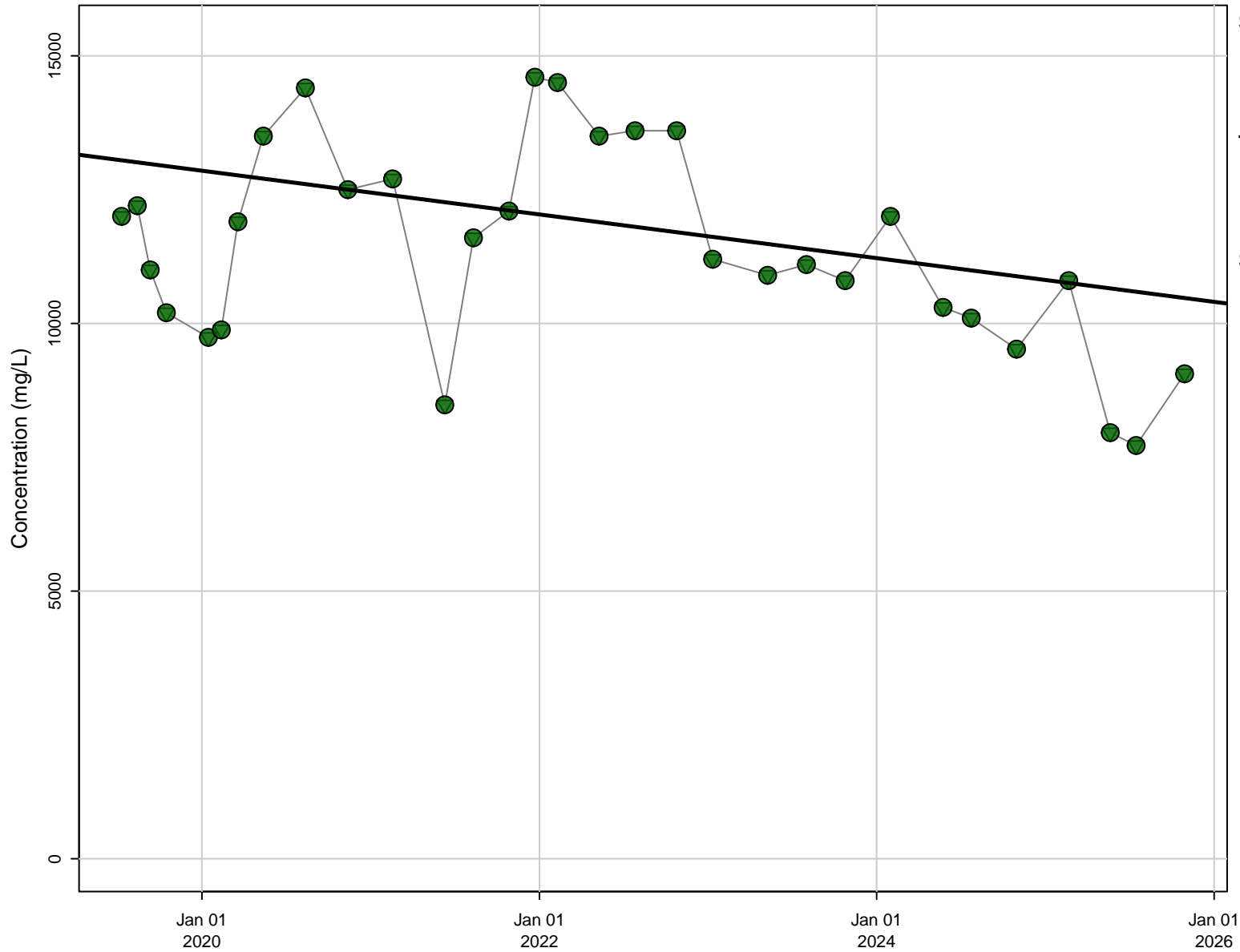
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0586

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D107, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

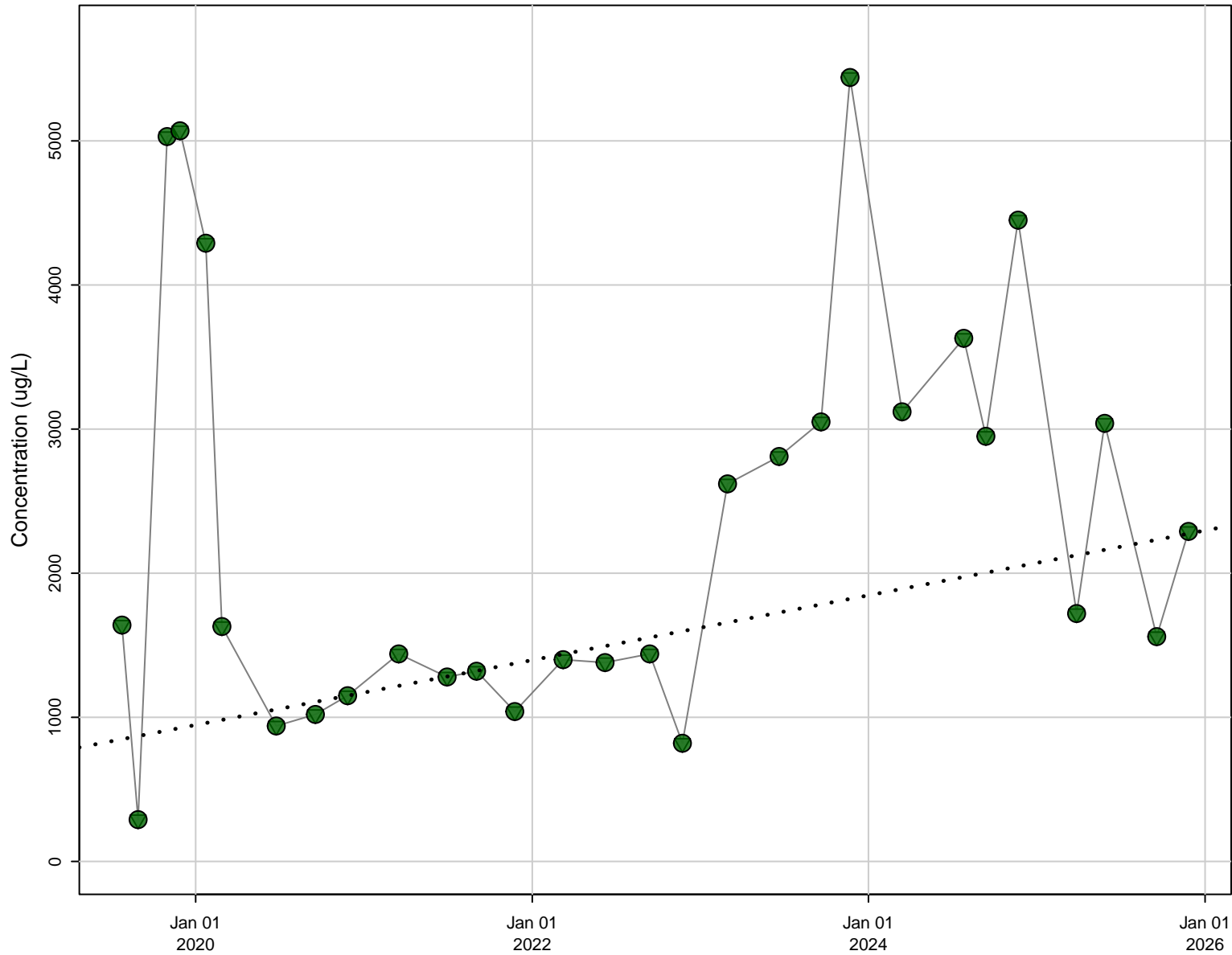
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0259

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D10, Boron [ug/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

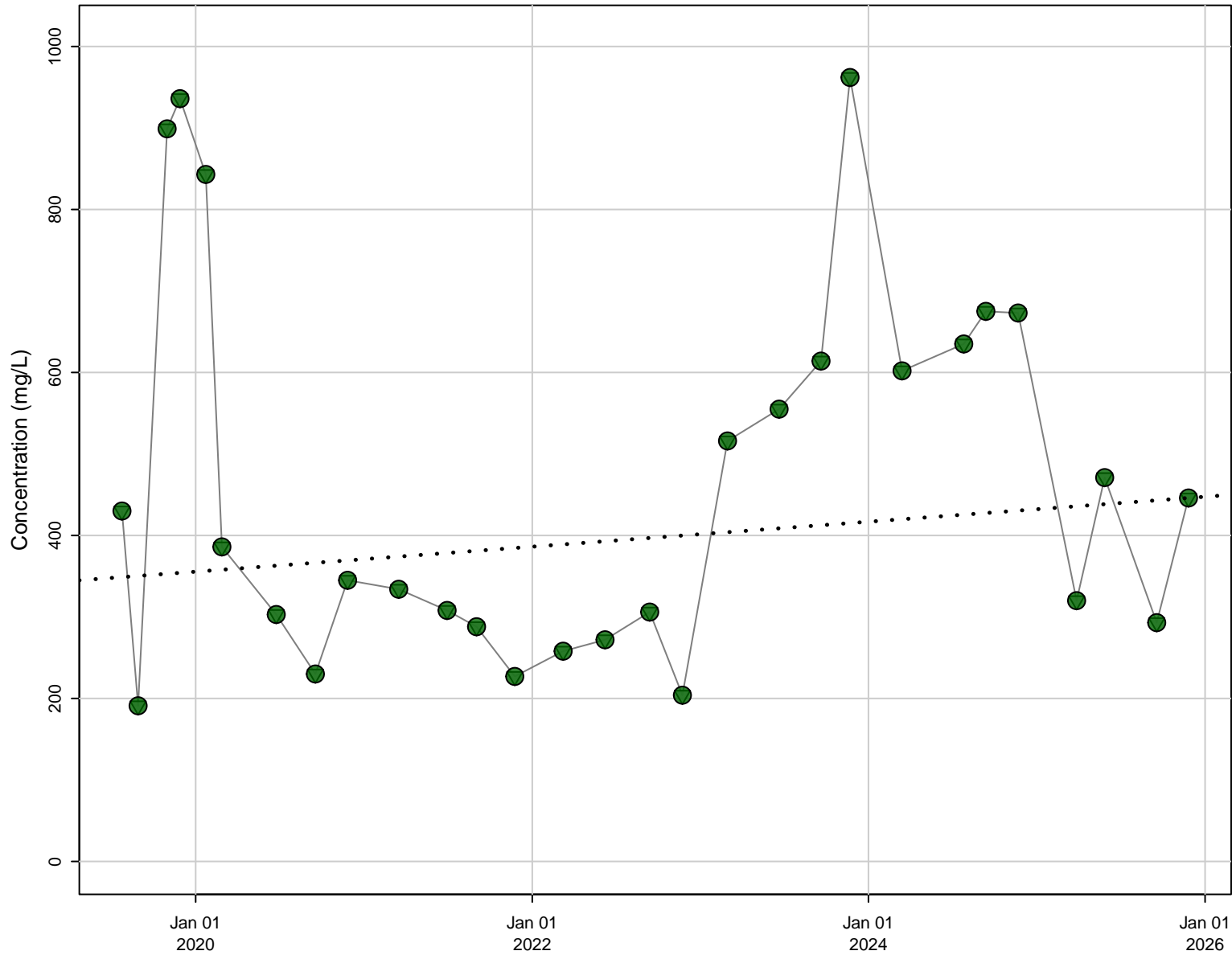
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0688

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D10, Chloride [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

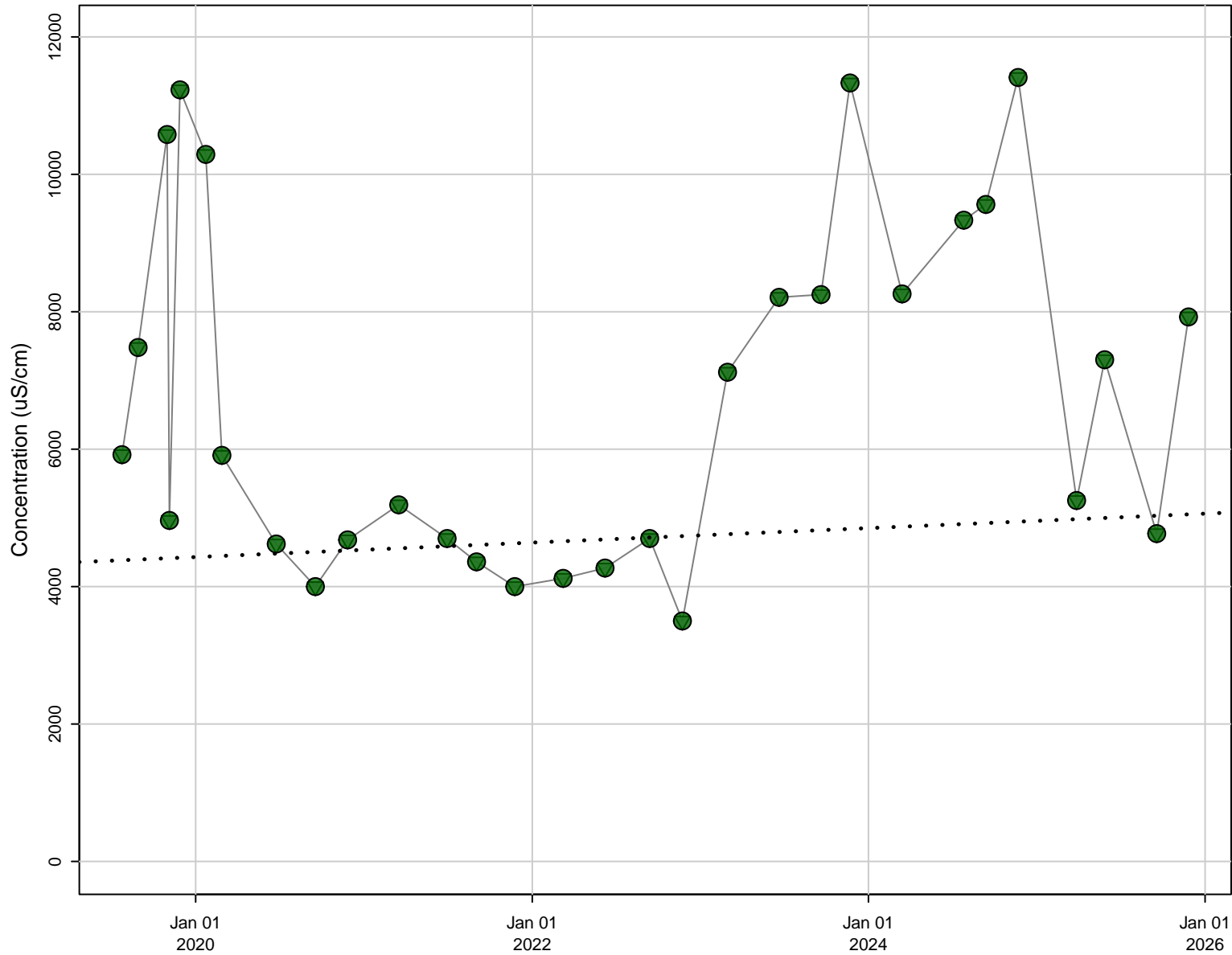
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.491

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D10, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 30
N Detect: 30
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.402

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D10, Iron [ug/L]

Stats

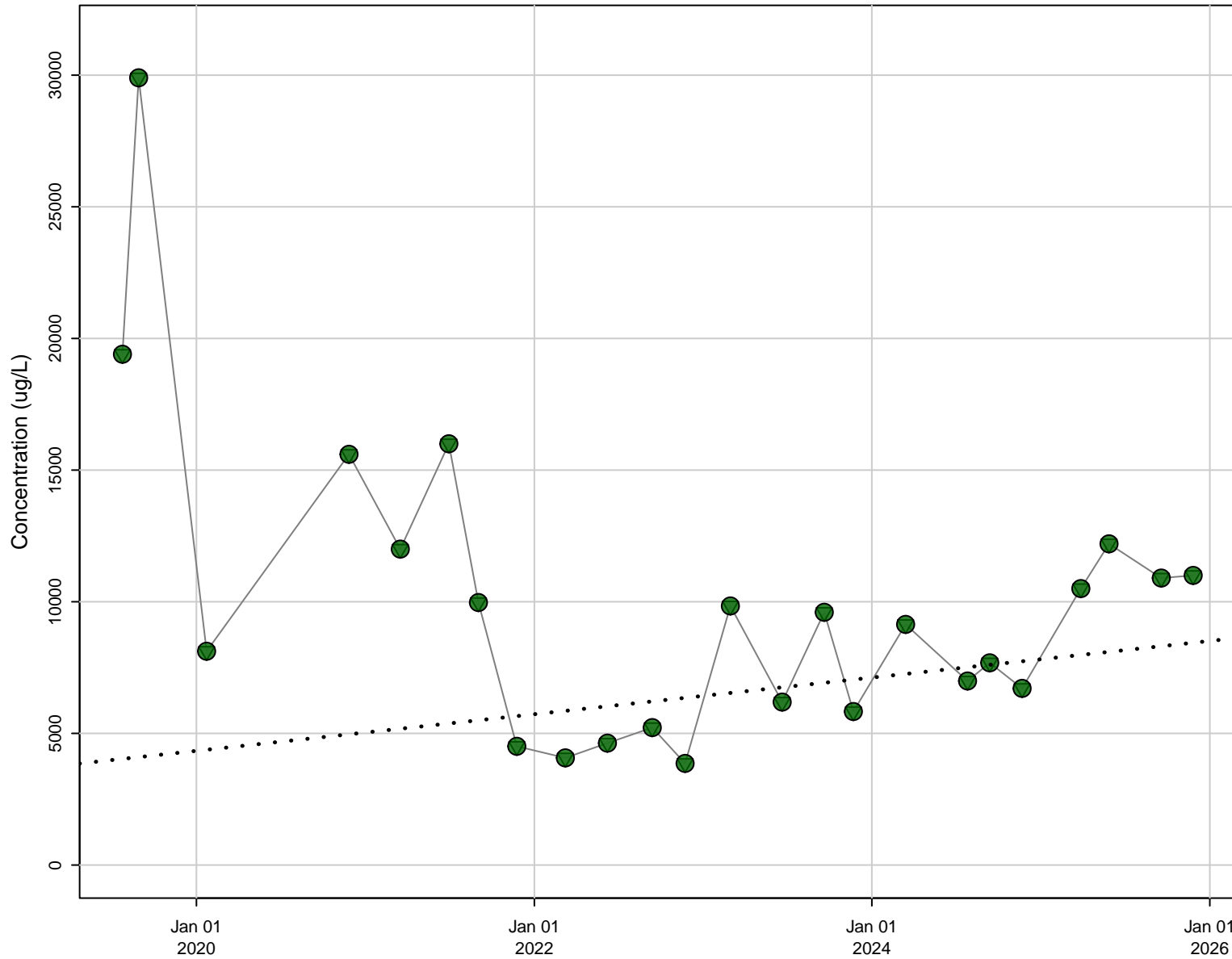
N Data: 24
N Detect: 24
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.713

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D10, Lead [ug/L]

Stats

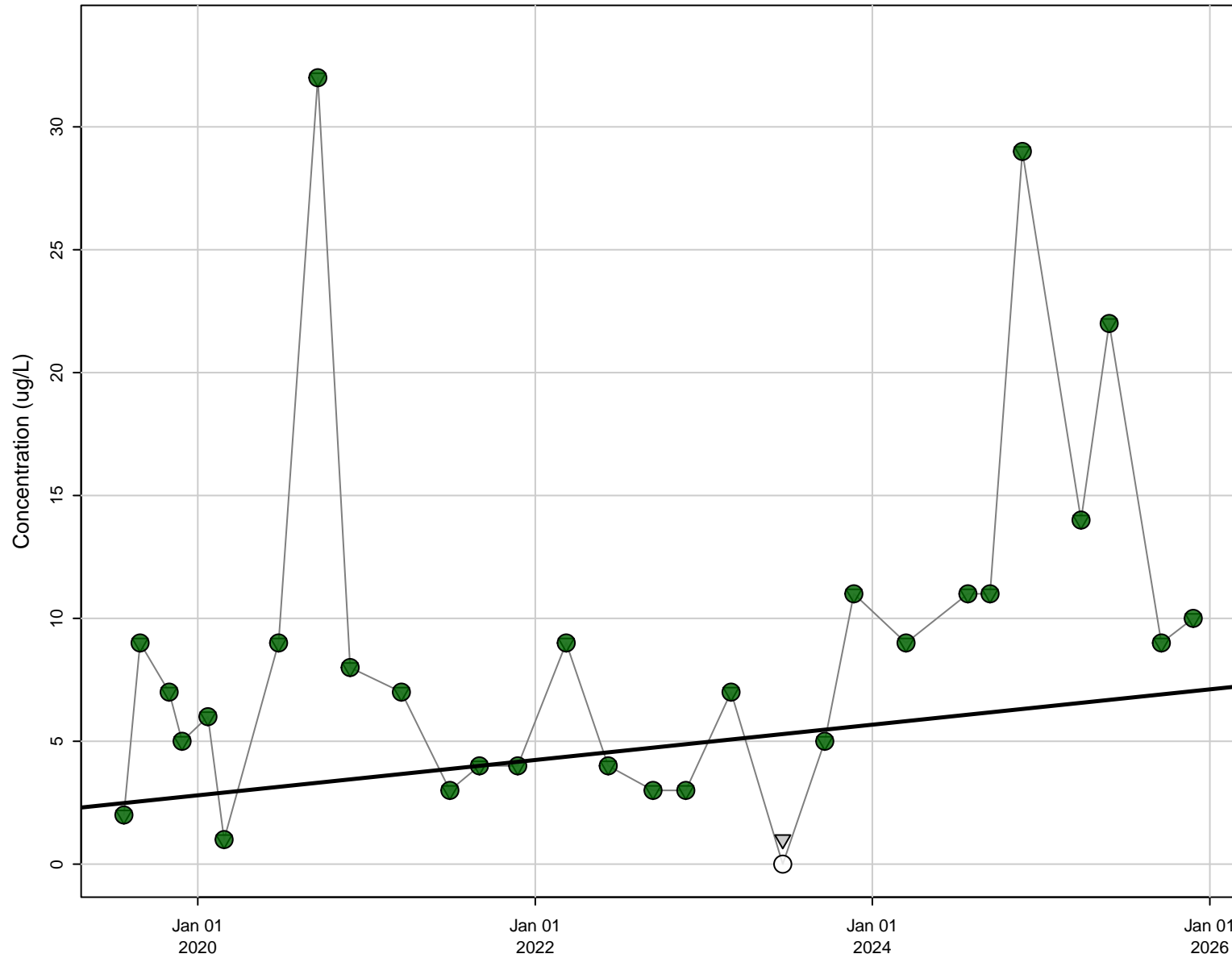
N Data: 29
N Detect: 28
% Detect: 97

Trend Results

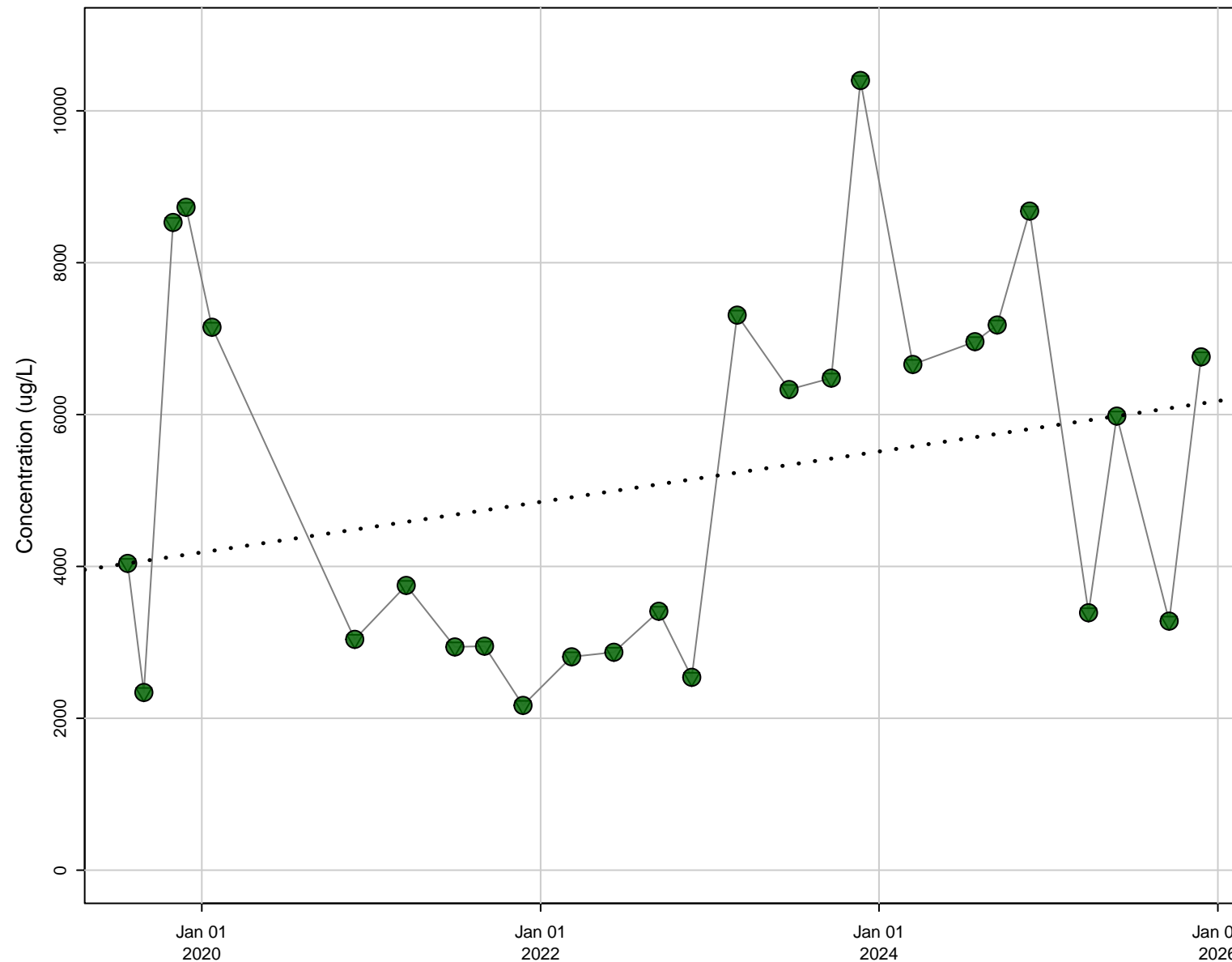
Trend: Increasing
Confidence Level: 95%
p-value: 0.0224

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D10, Manganese [ug/L]



Stats

N Data: 26
N Detect: 26
% Detect: 100

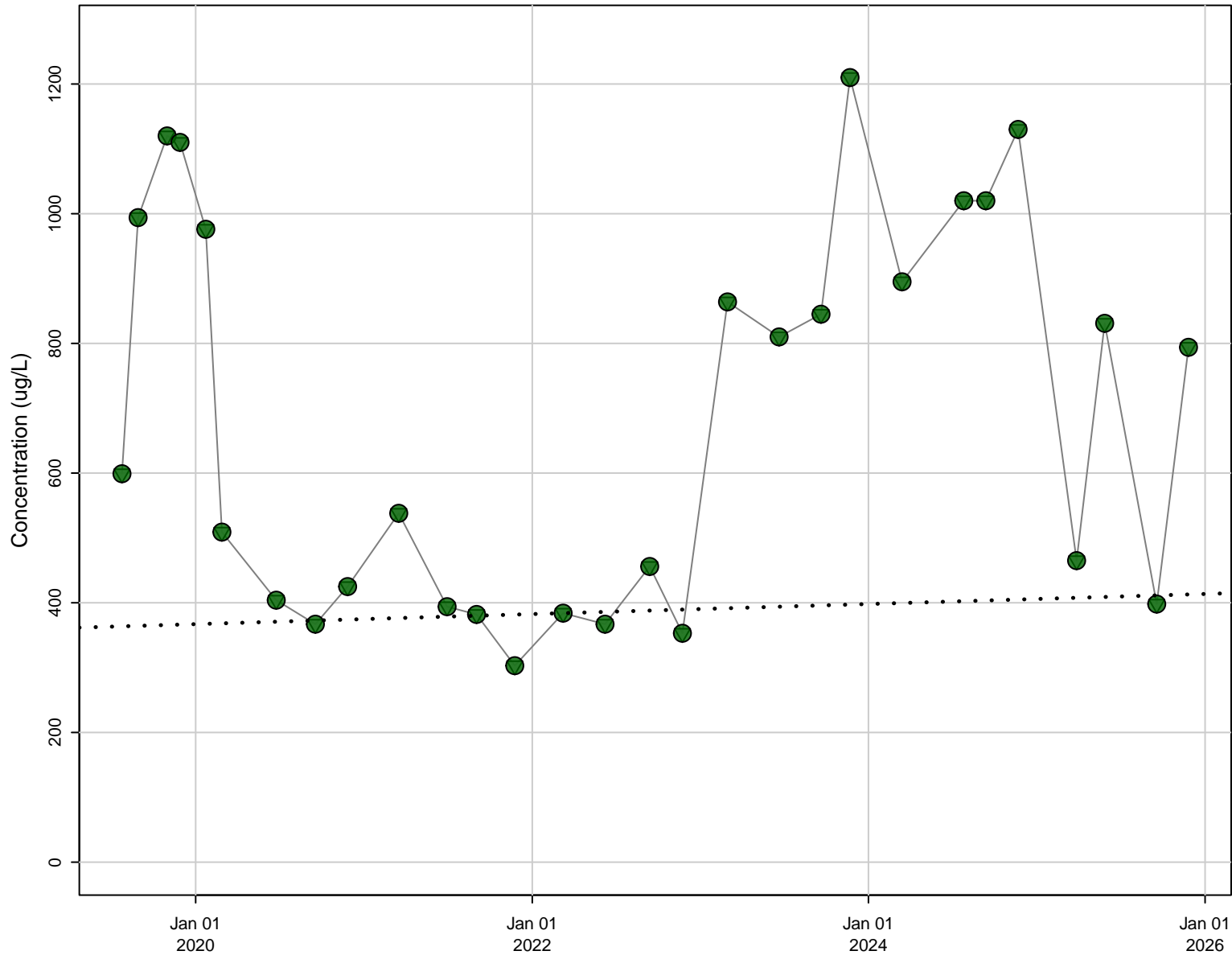
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.314

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D10, Nickel [ug/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

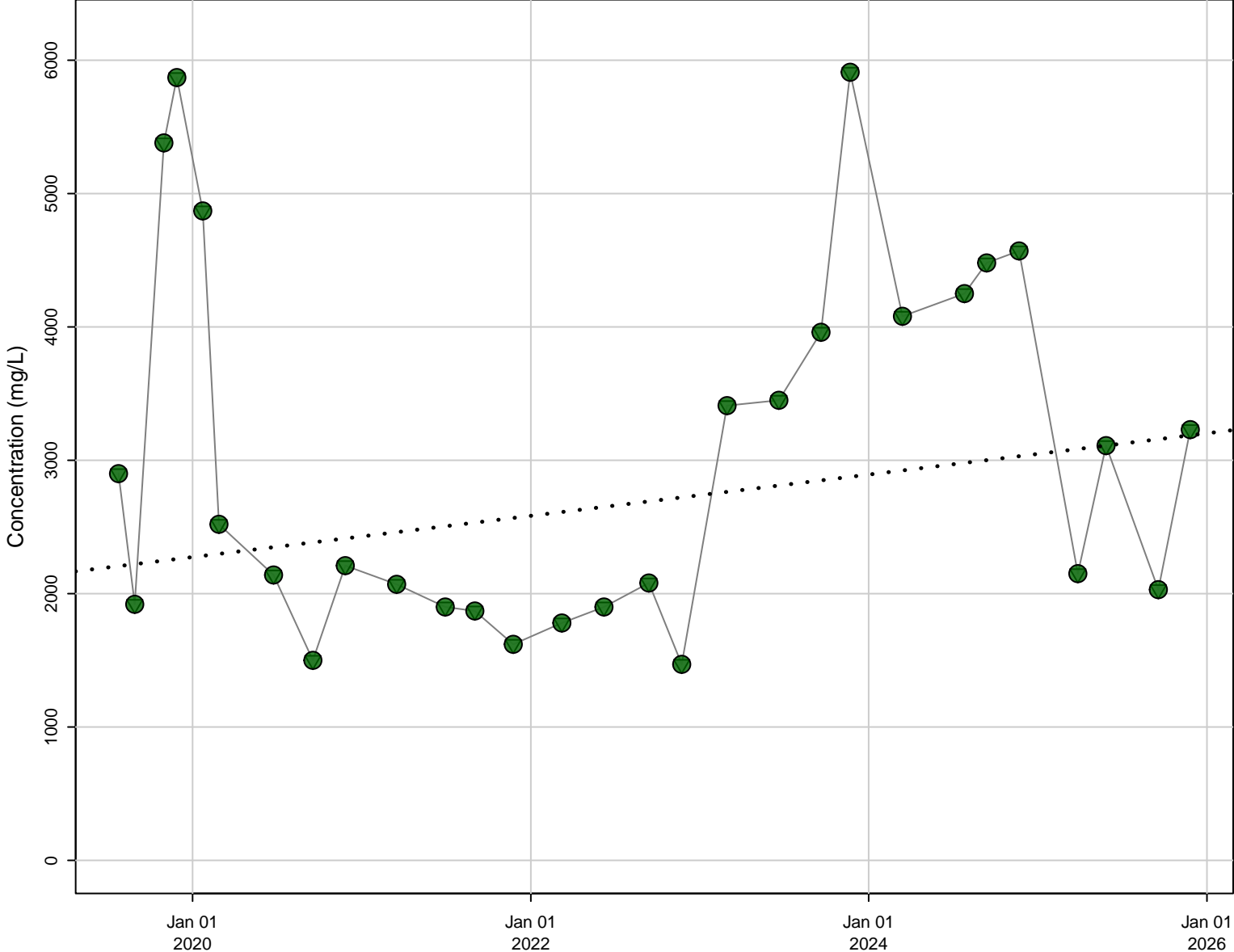
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.736

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D10, Sulfate (as SO4) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

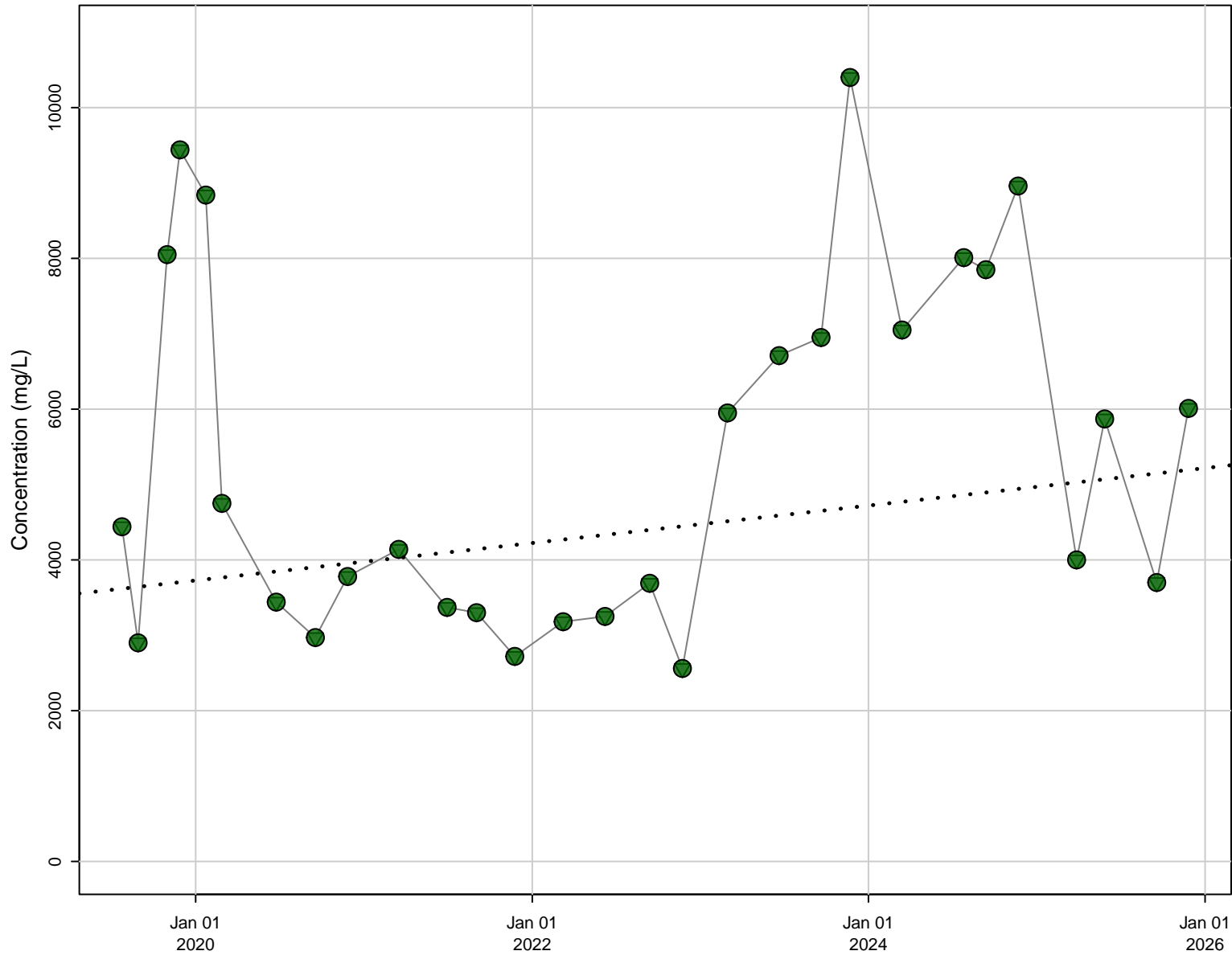
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.488

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D10, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

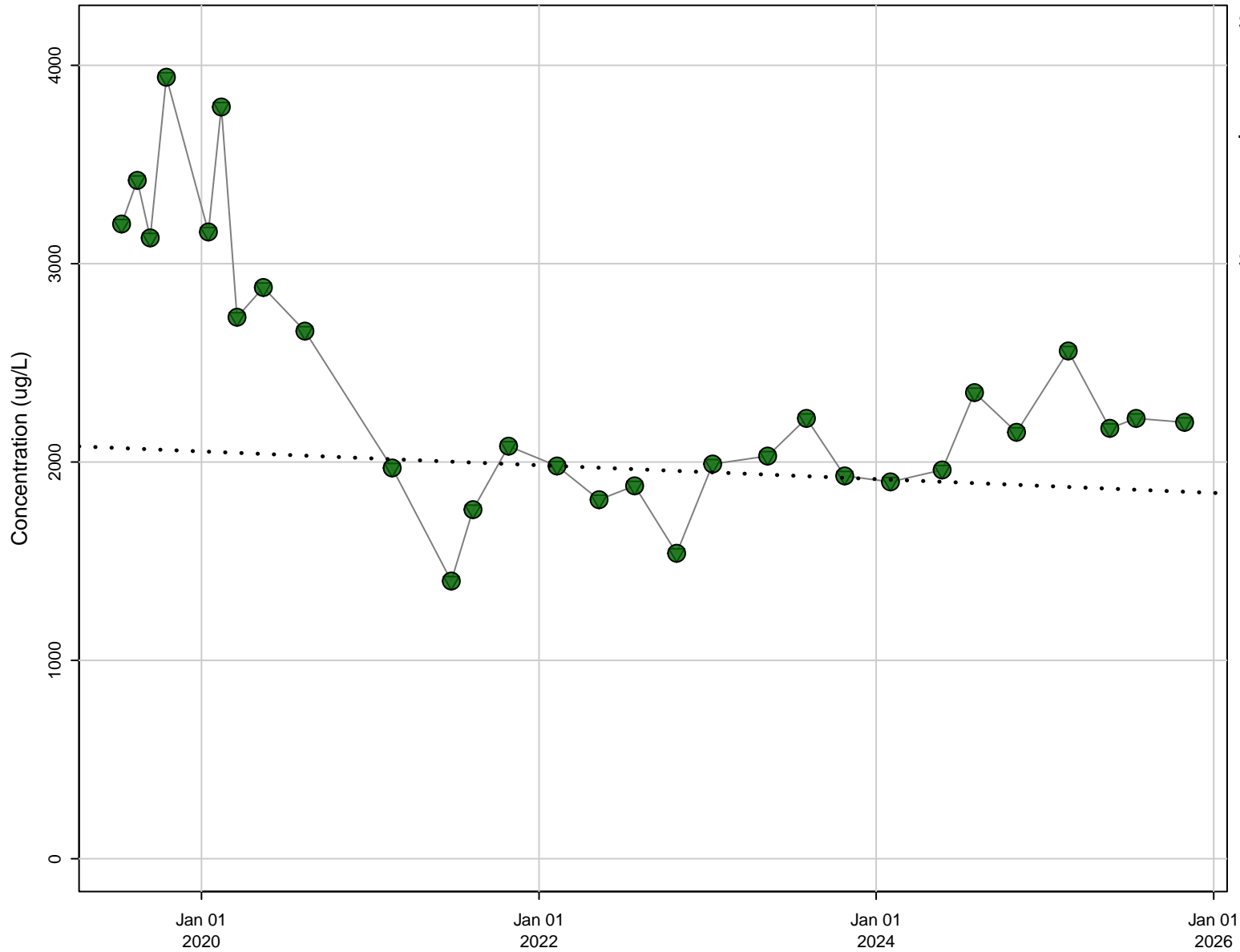
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.288

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D110, Boron [ug/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

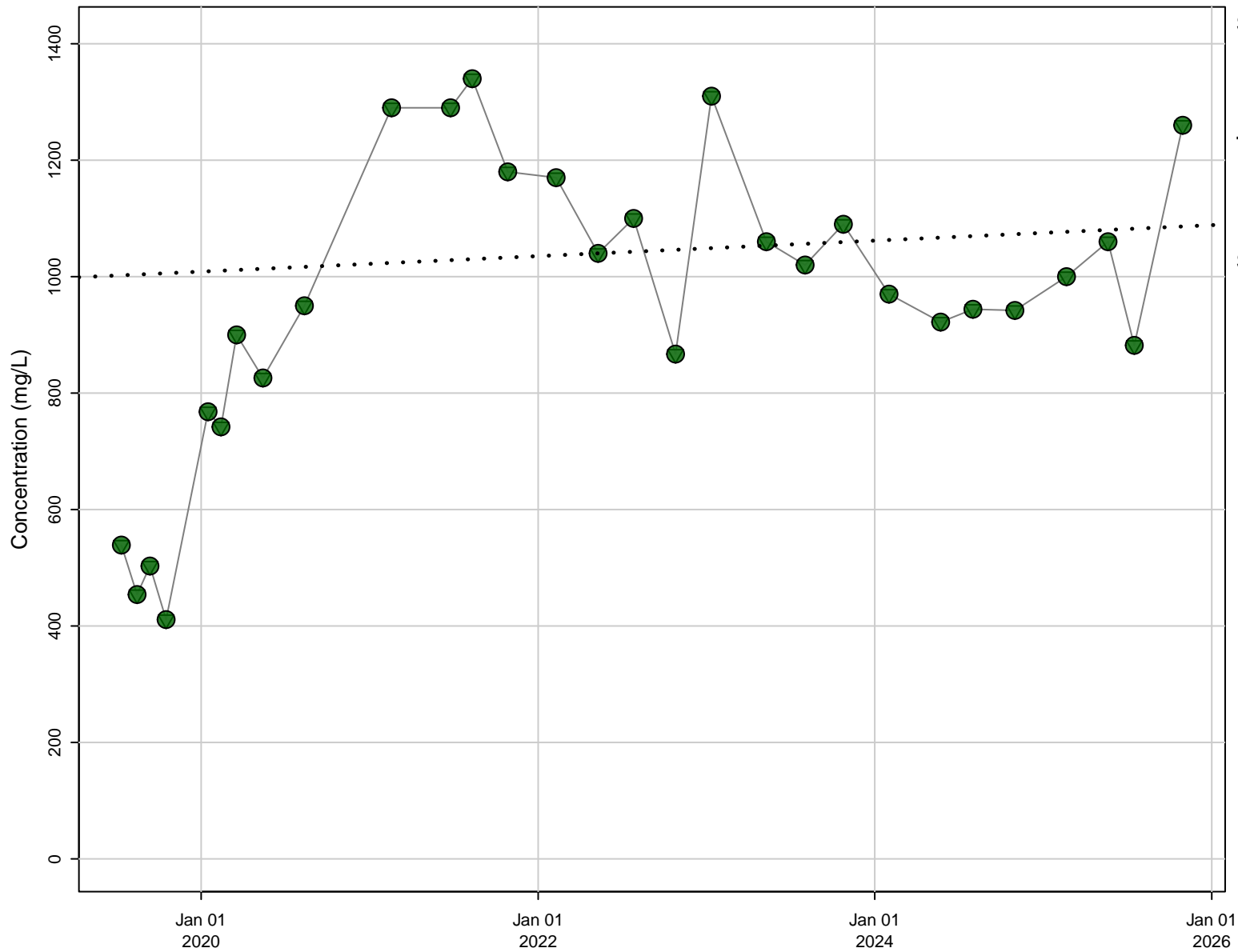
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0581

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D110, Chloride [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

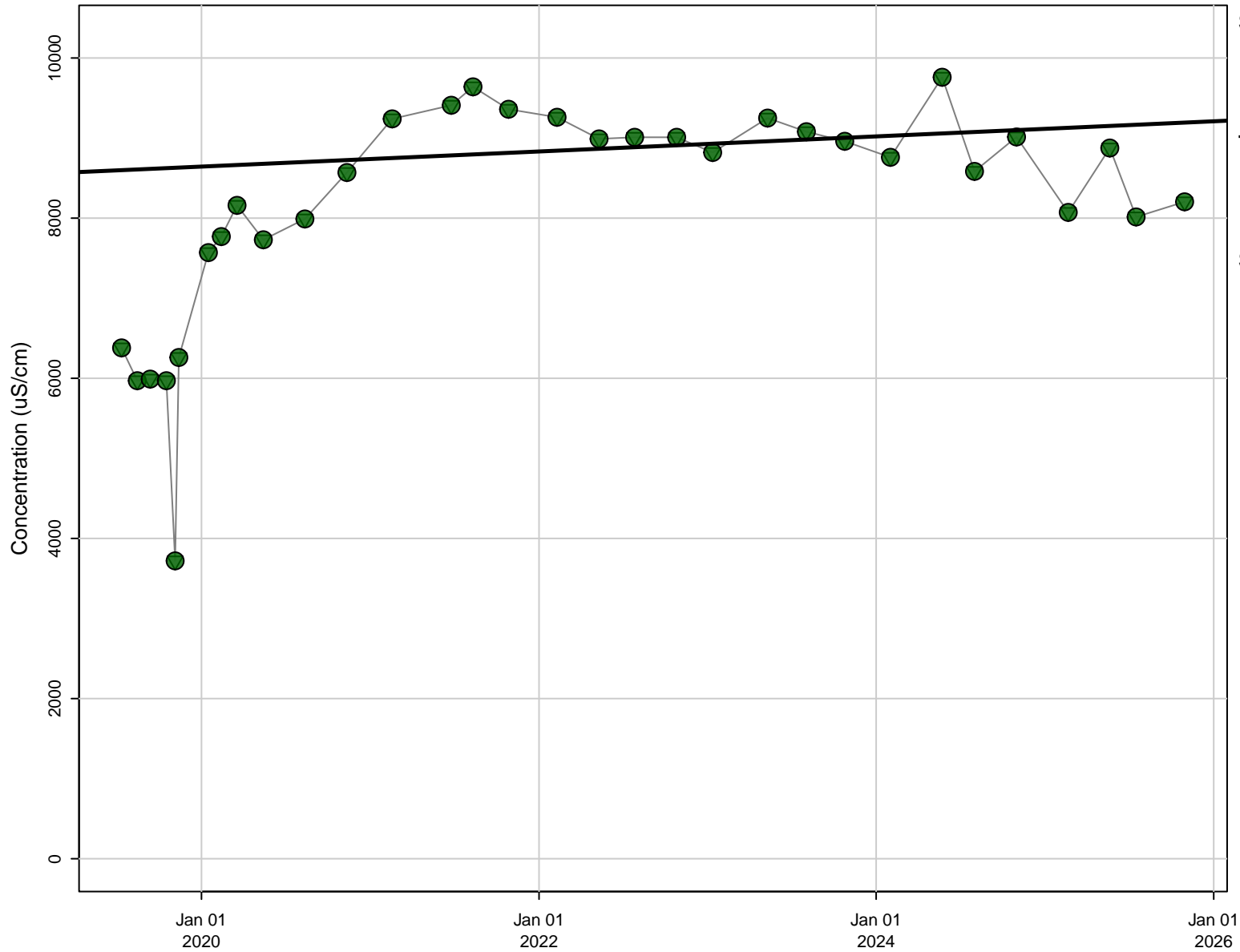
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.051

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D110, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 32
N Detect: 32
% Detect: 100

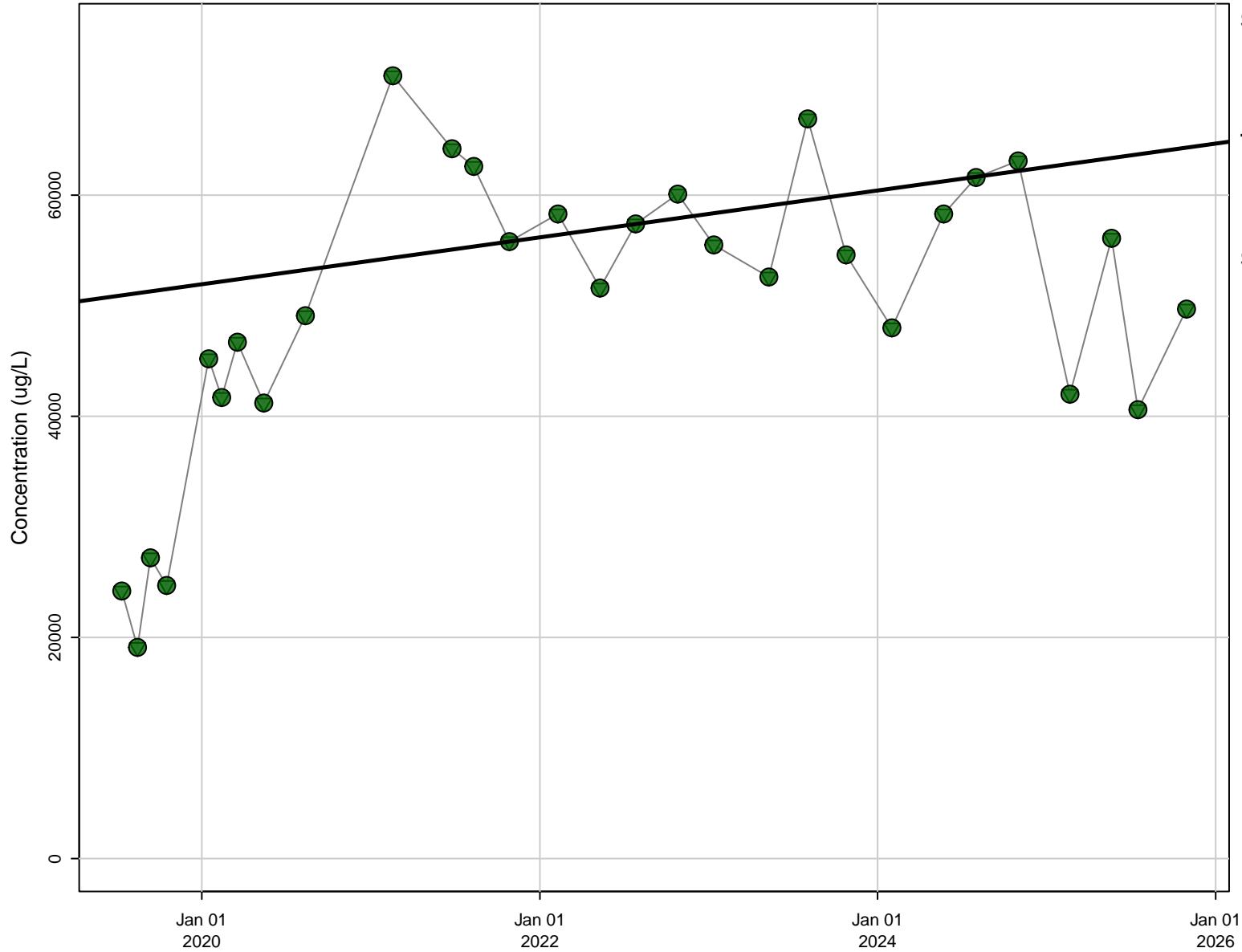
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.00643

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D110, Iron [ug/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

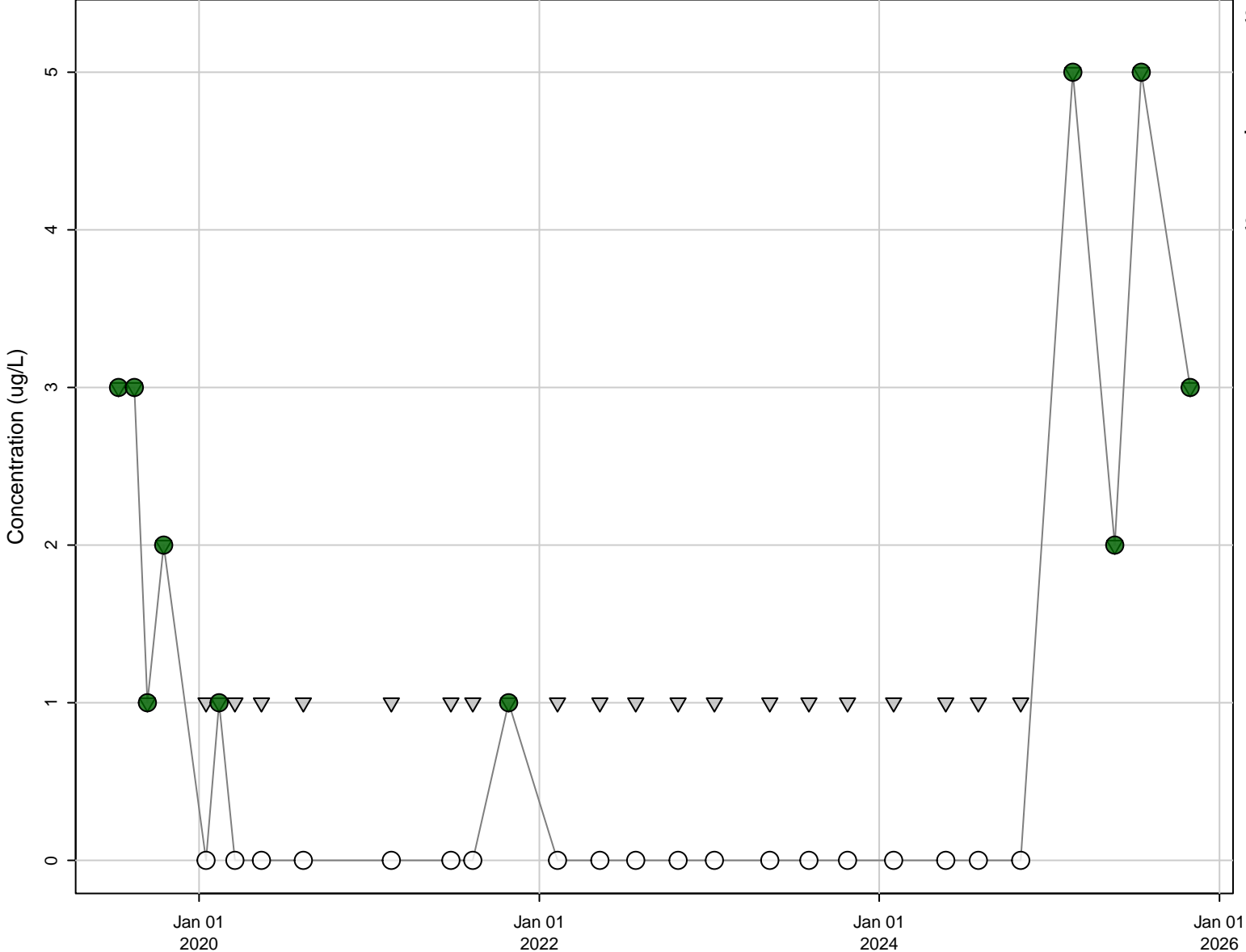
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.031

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D110, Lead [ug/L]



Stats

N Data: 29
N Detect: 10
% Detect: 34

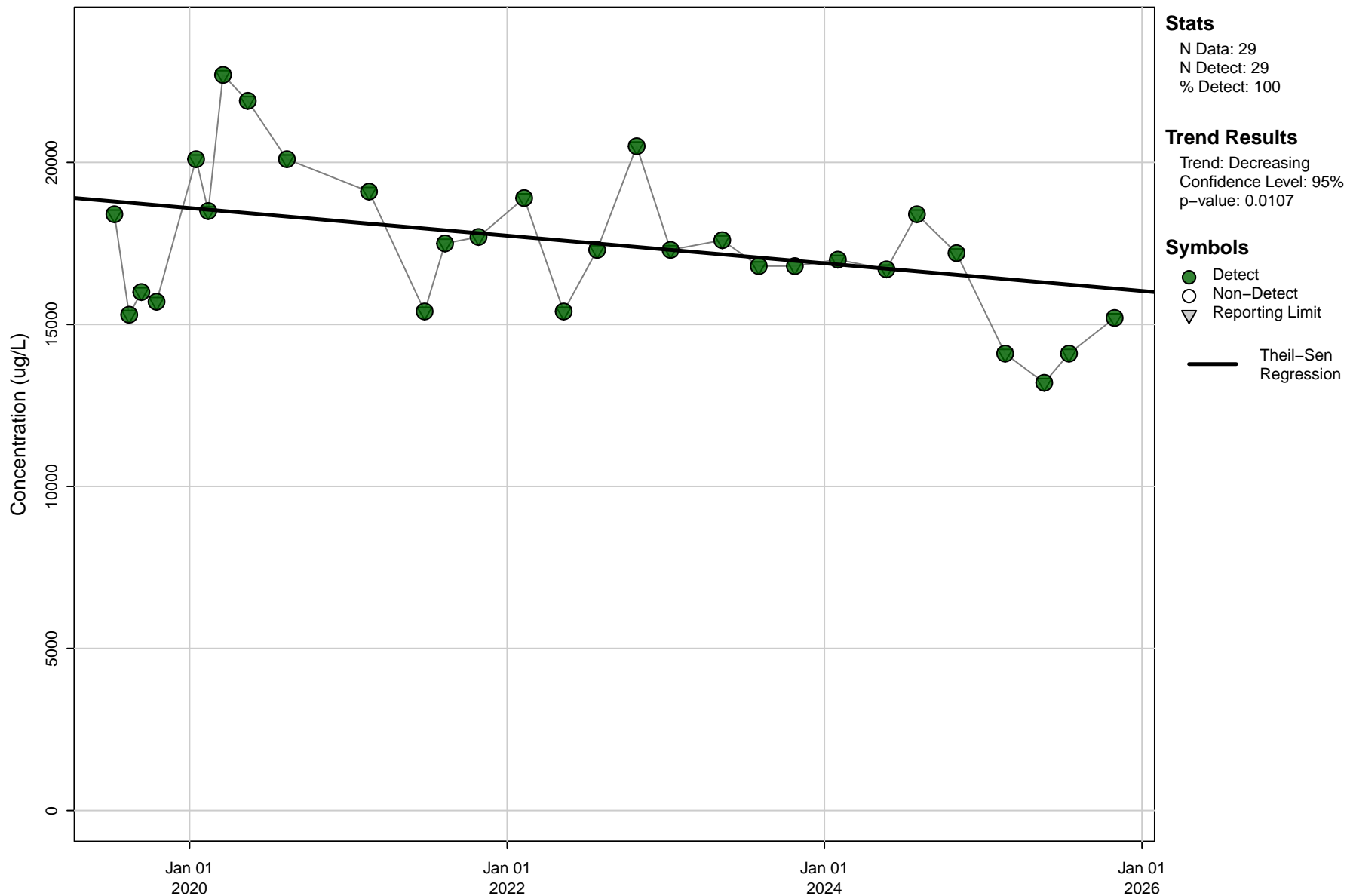
Trend Results

Test Criteria Not Met

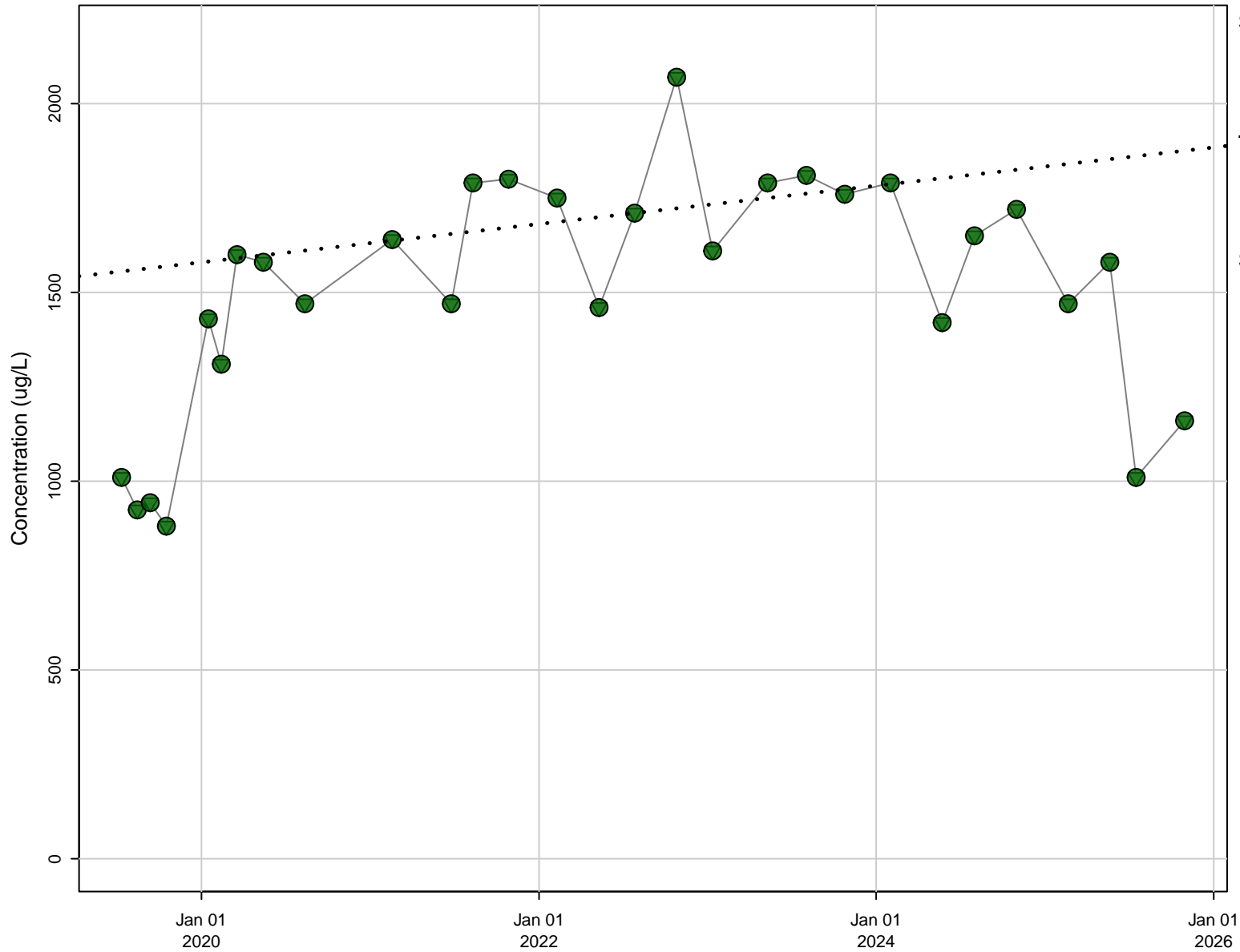
Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit

D110, Manganese [ug/L]



D110, Nickel [ug/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

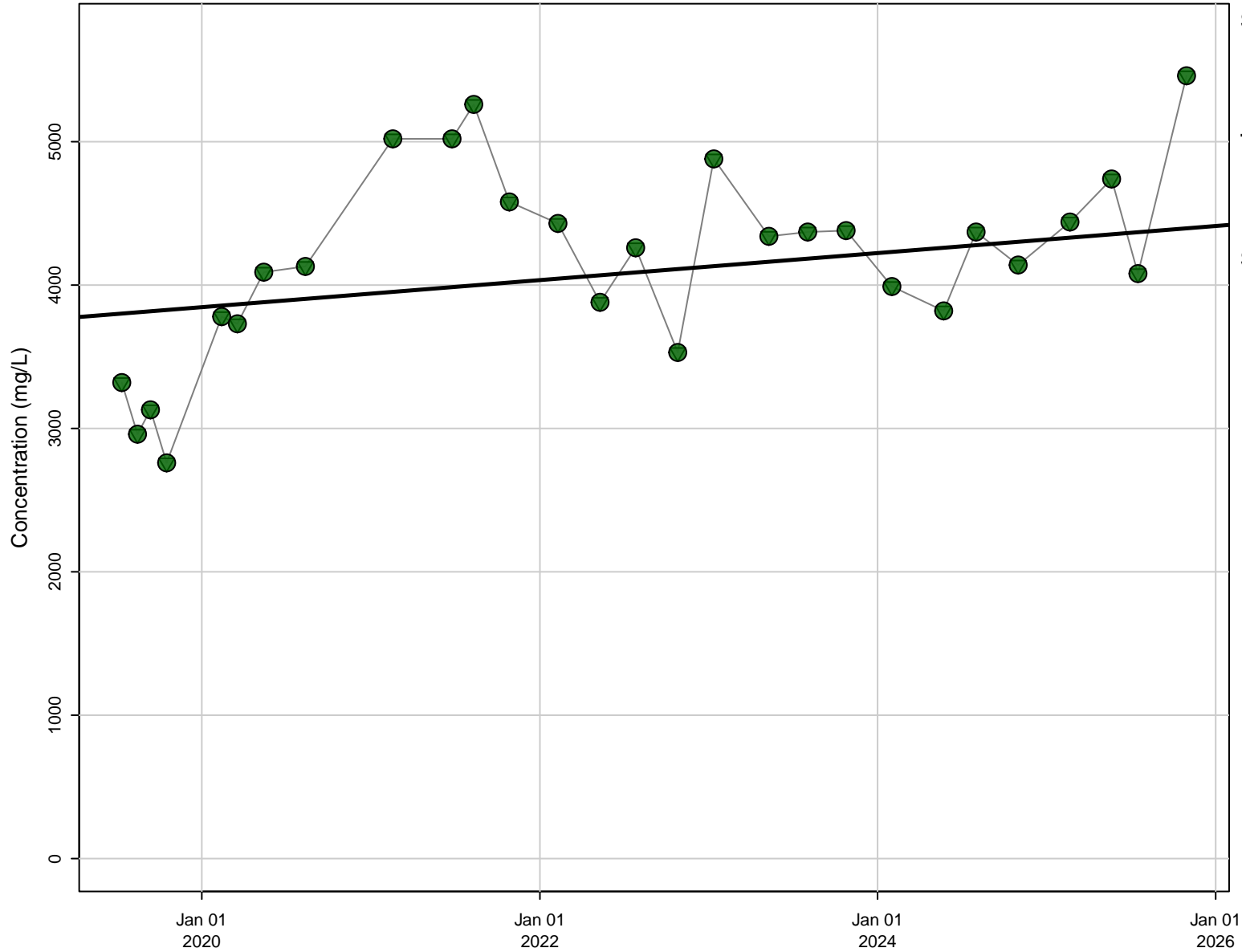
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0713

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D110, Sulfate (as SO4) [mg/L]



Stats

N Data: 28
N Detect: 28
% Detect: 100

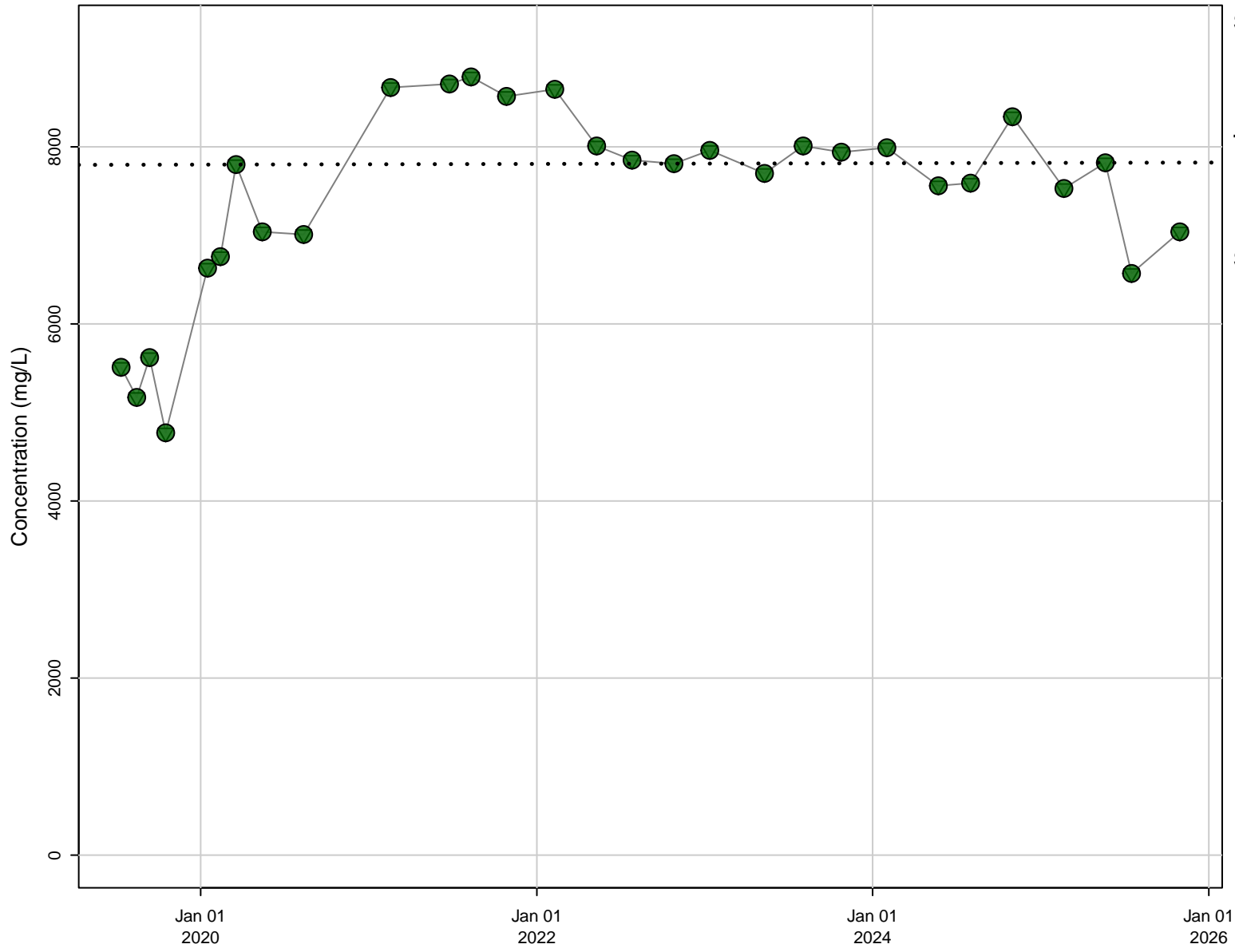
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0143

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D110, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

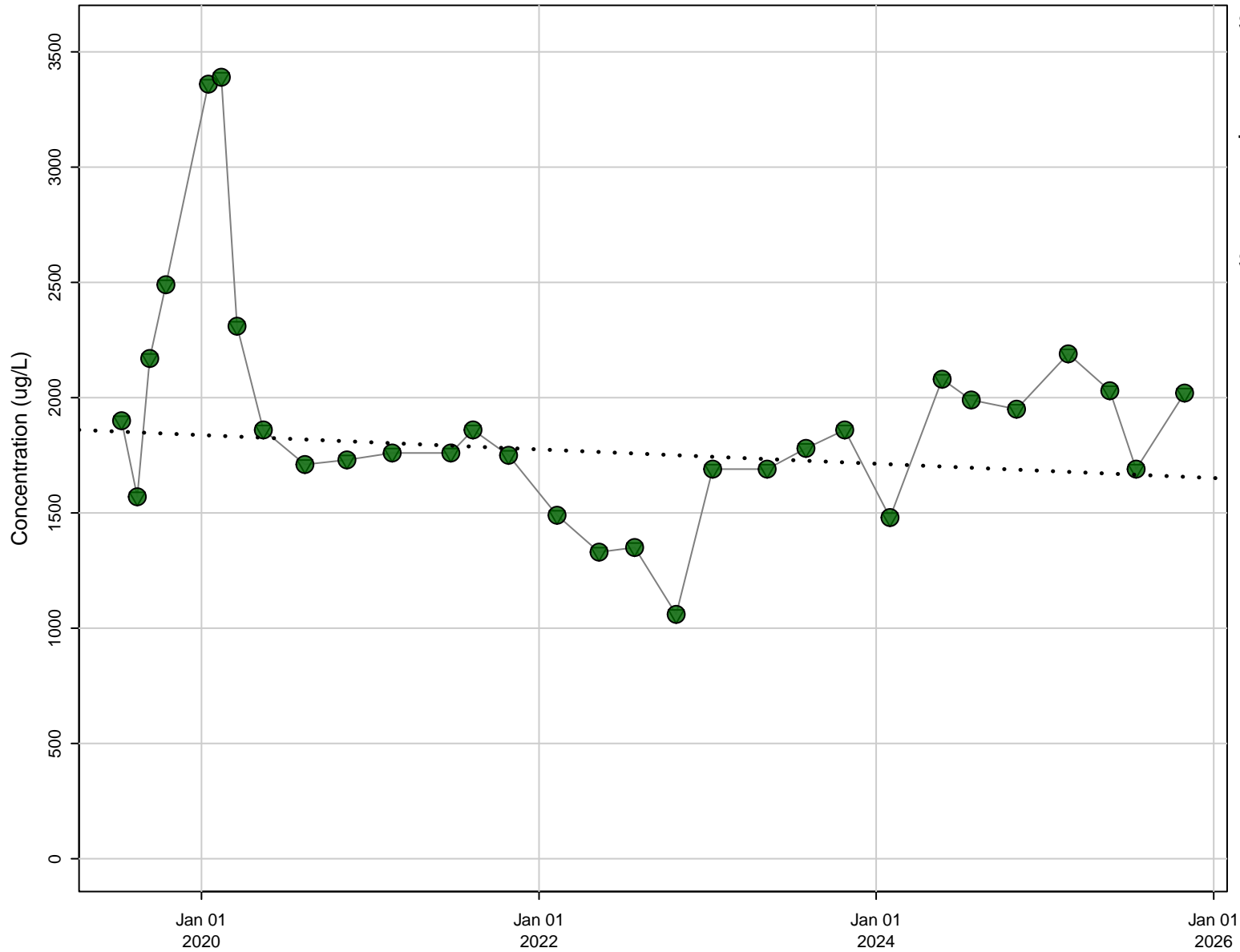
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.245

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D113, Boron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

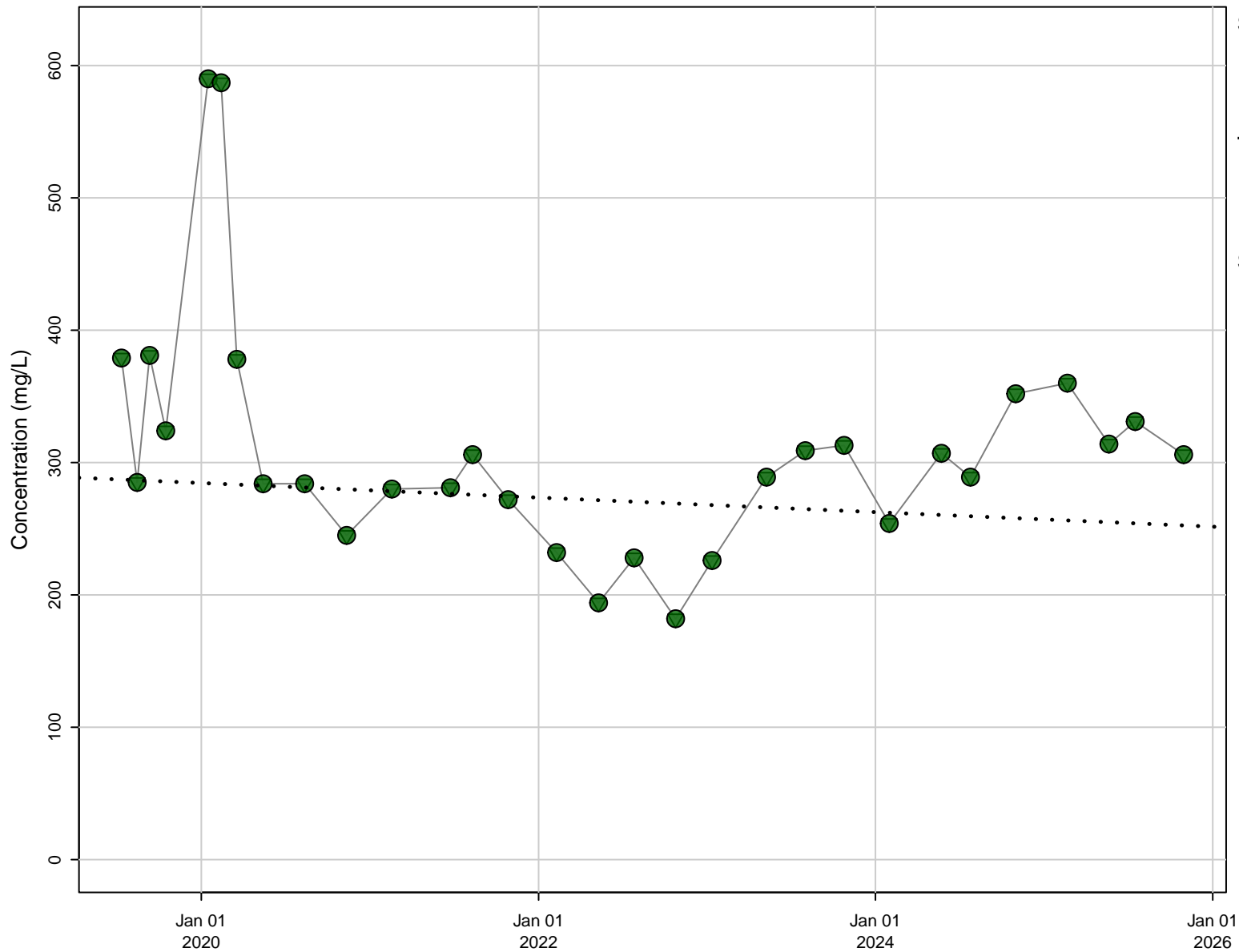
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.544

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D113, Chloride [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

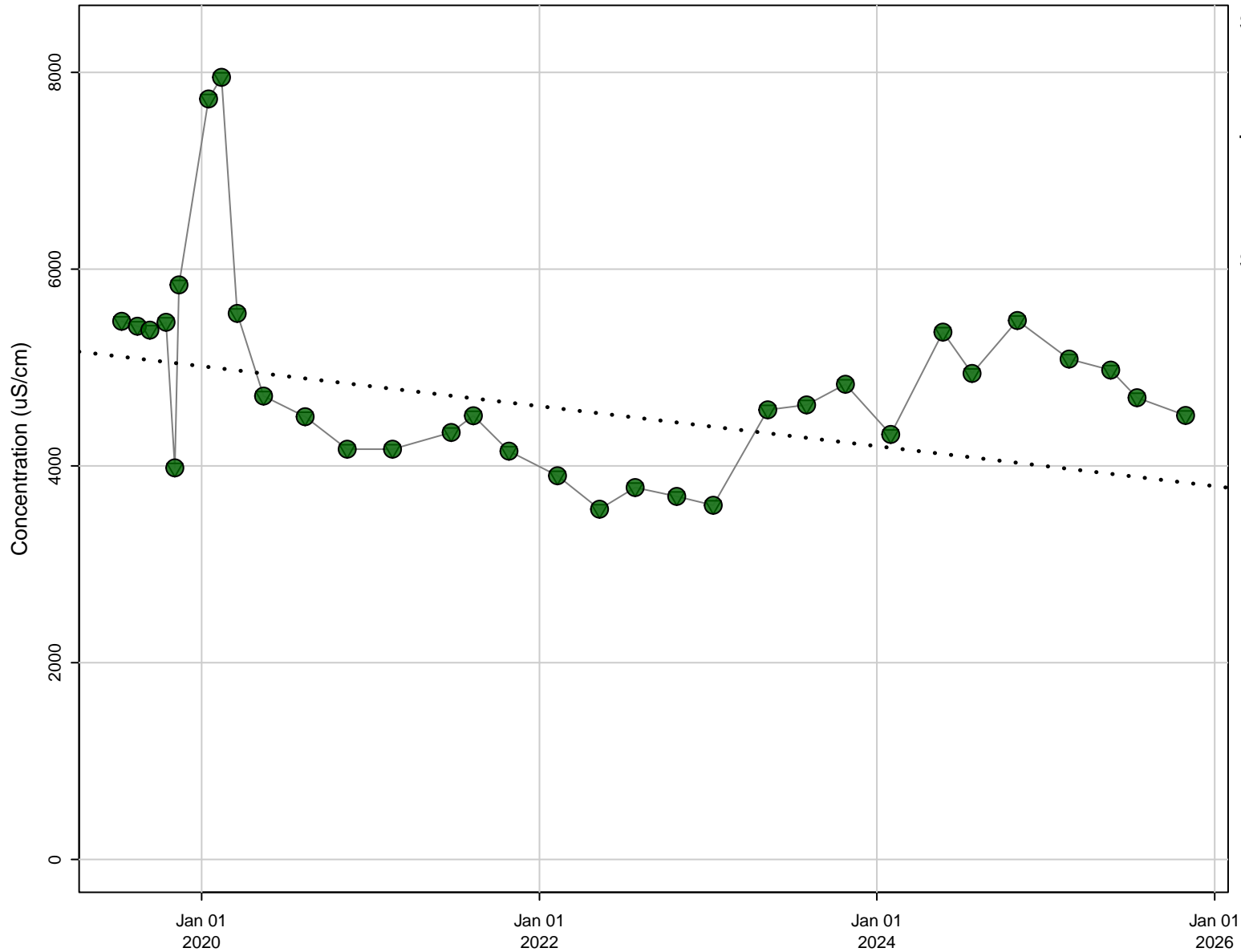
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.498

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D113, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 32
N Detect: 32
% Detect: 100

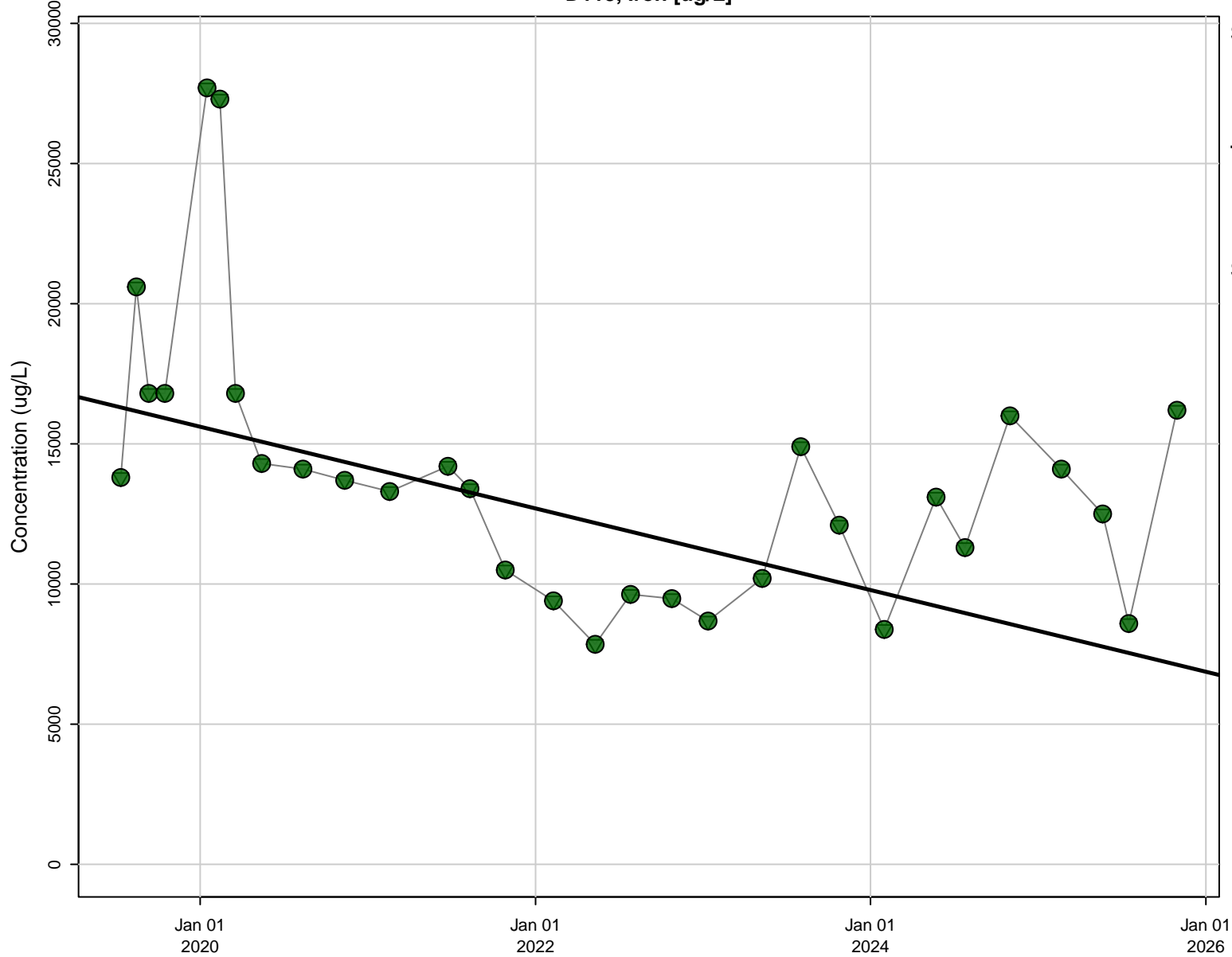
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.236

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D113, Iron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

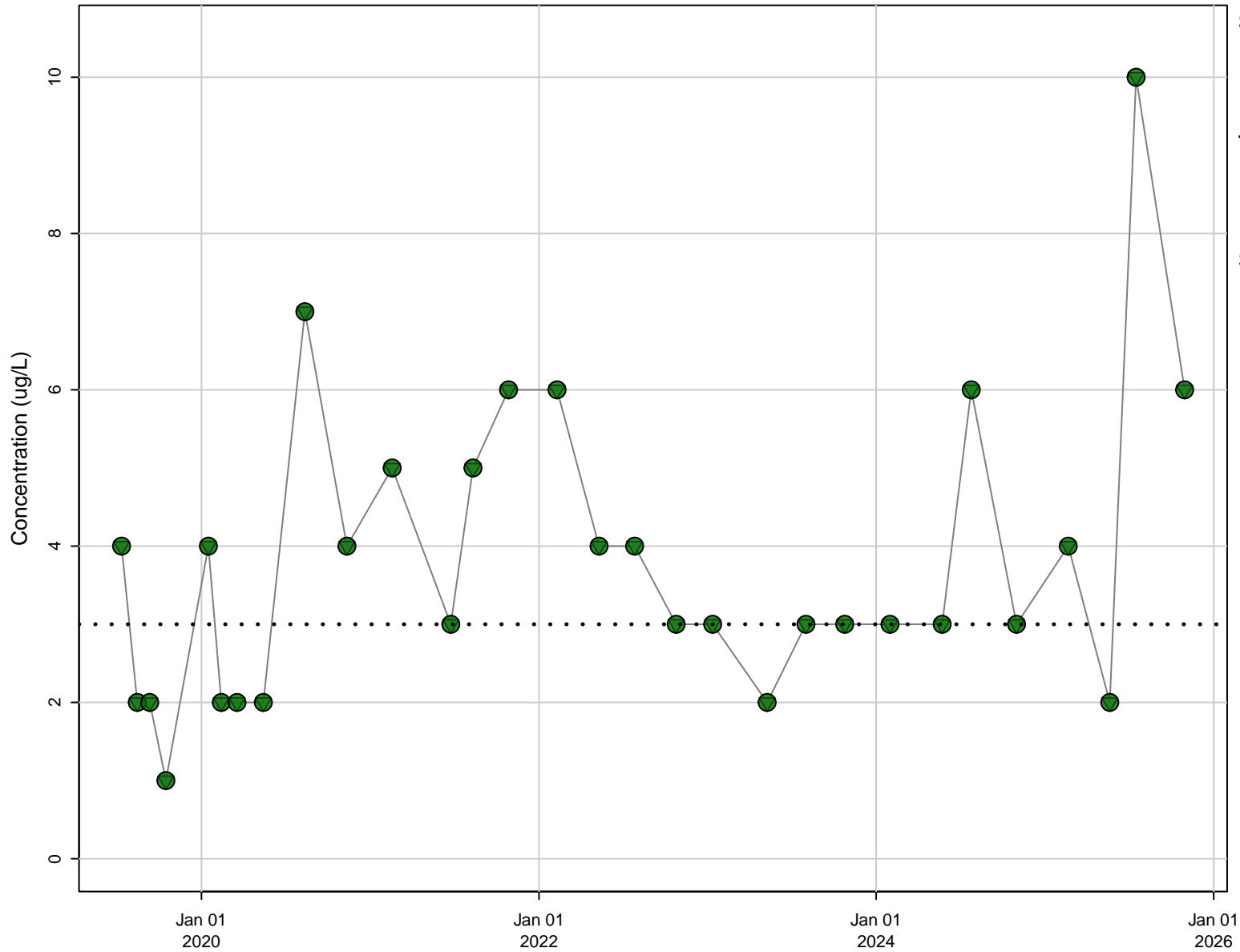
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.00506

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D113, Lead [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

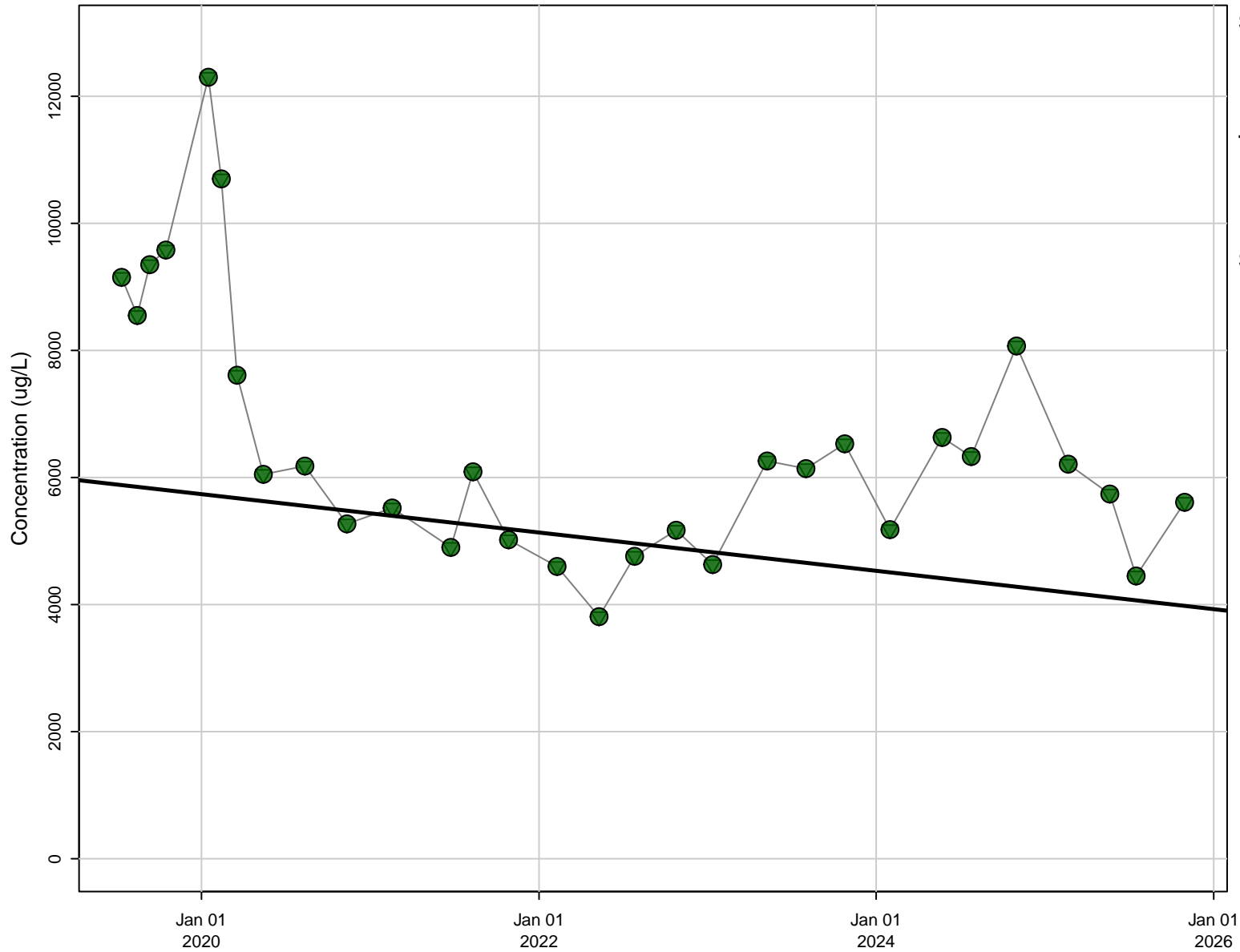
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.165

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D113, Manganese [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

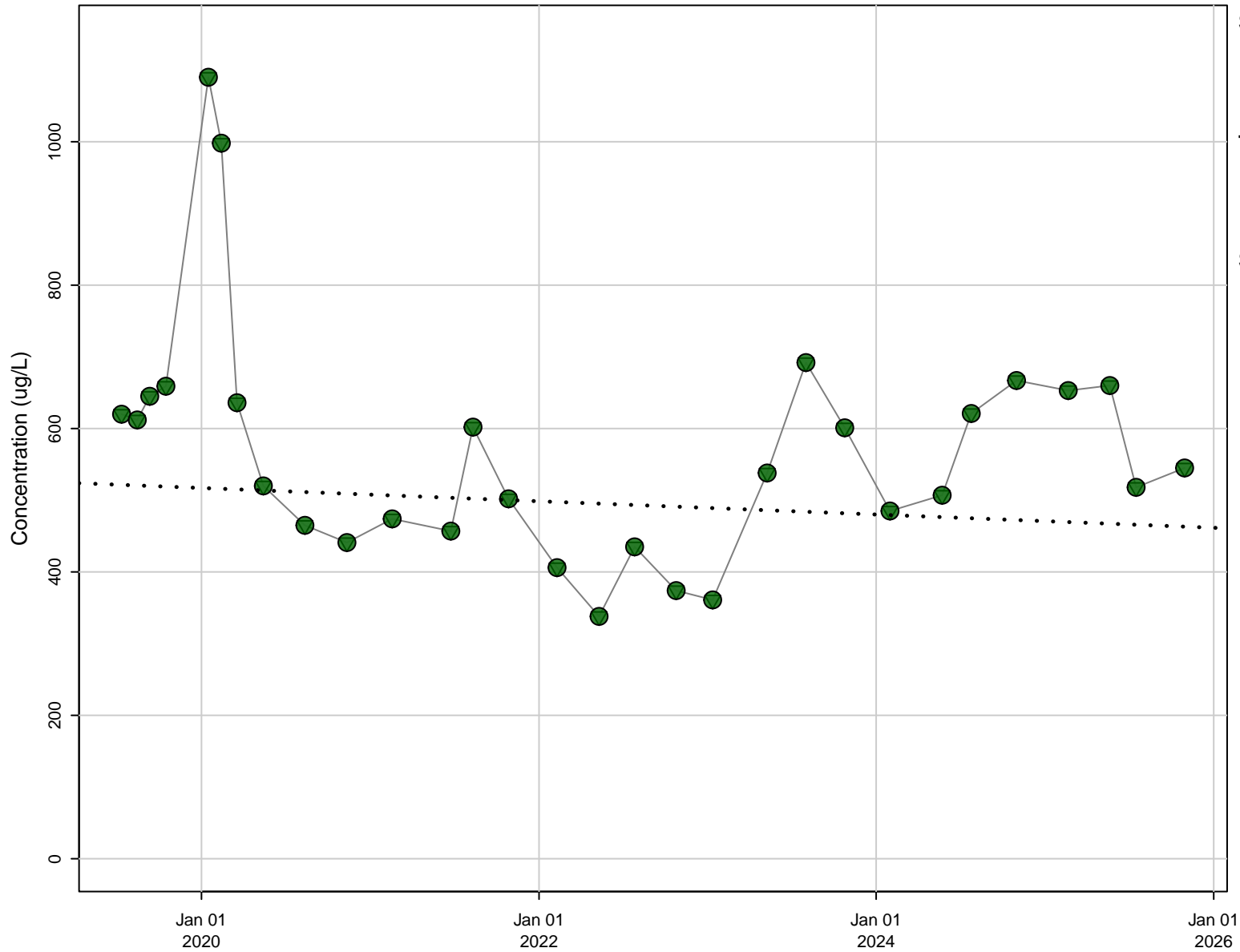
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0377

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D113, Nickel [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

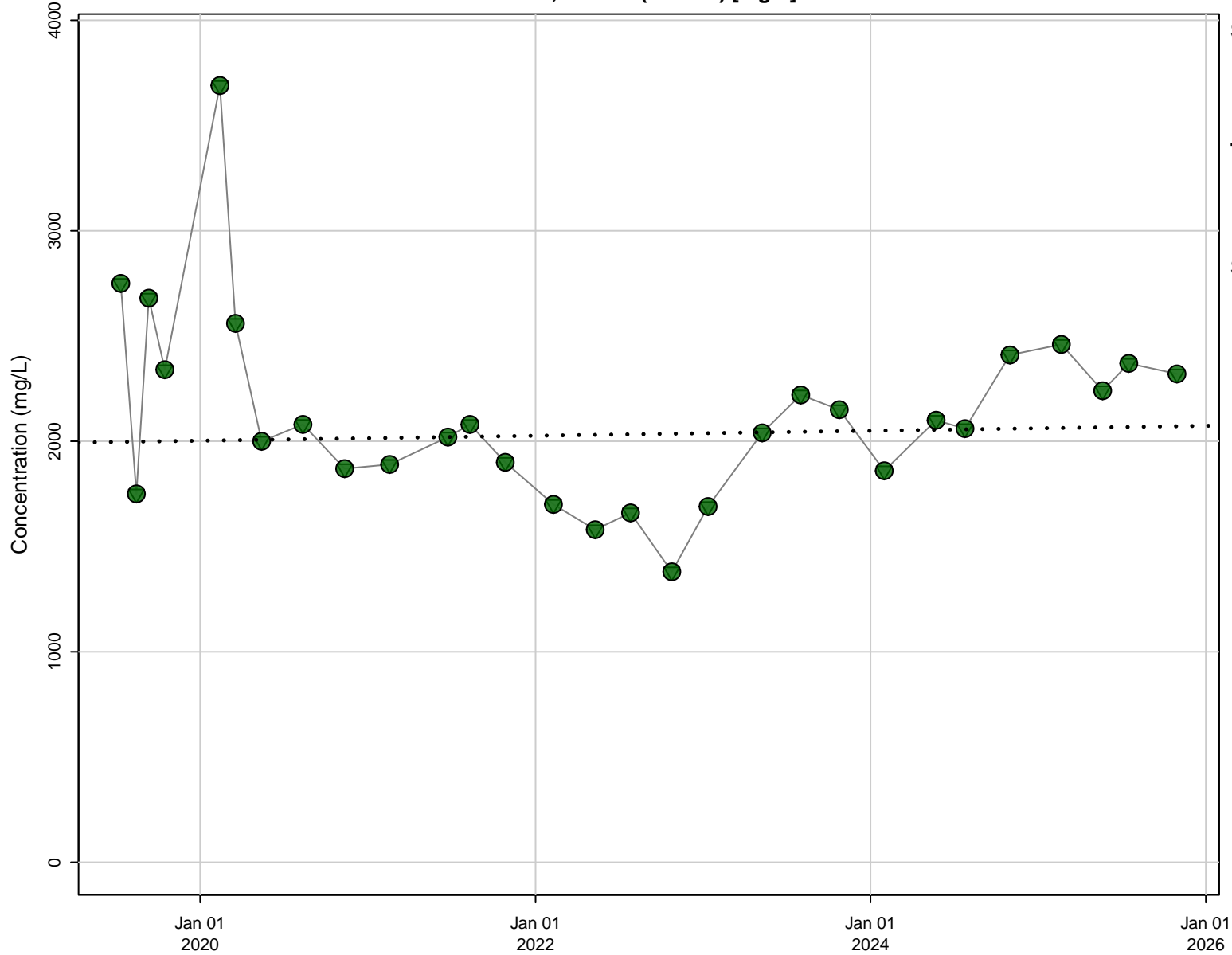
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.62

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D113, Sulfate (as SO4) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

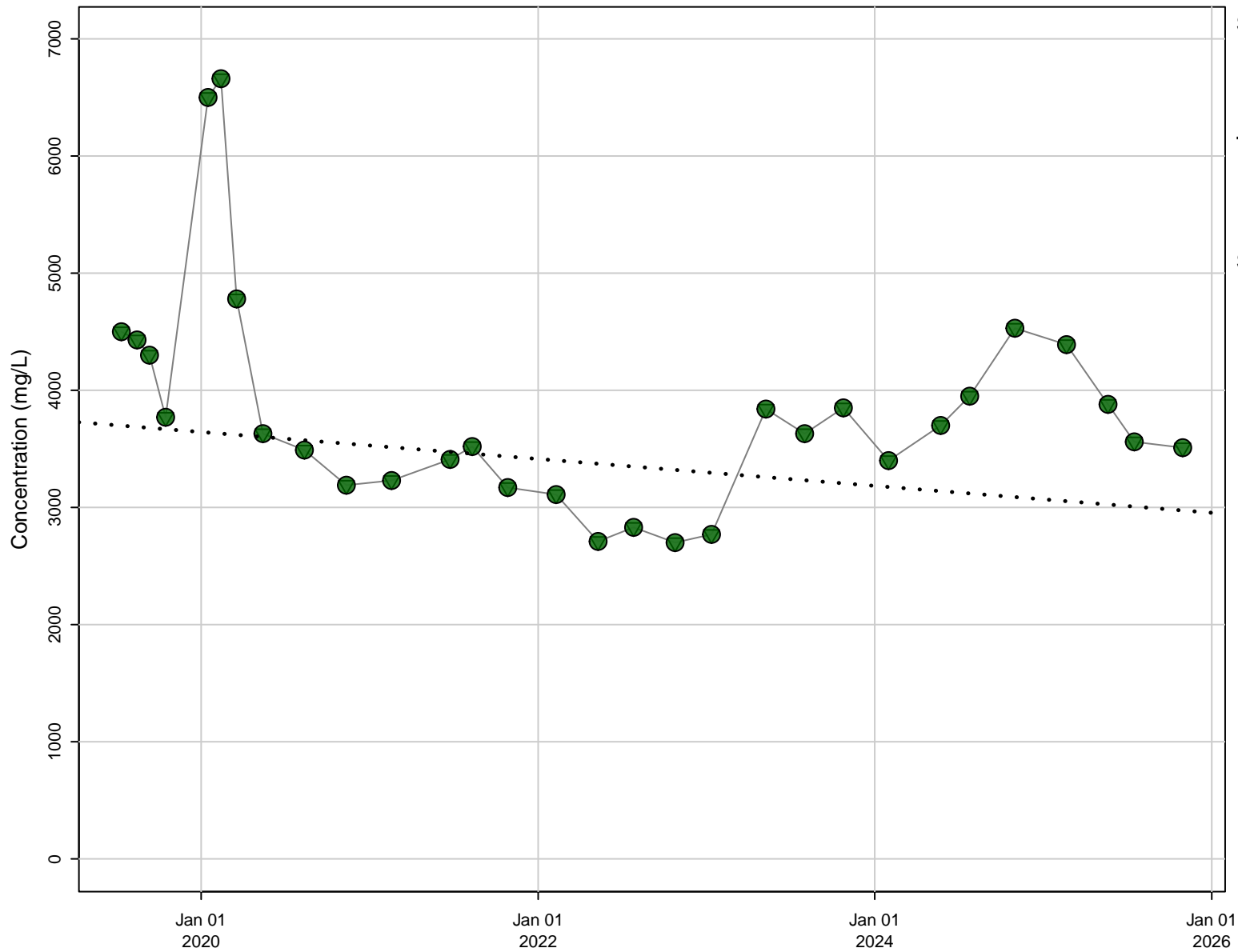
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.955

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D113, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

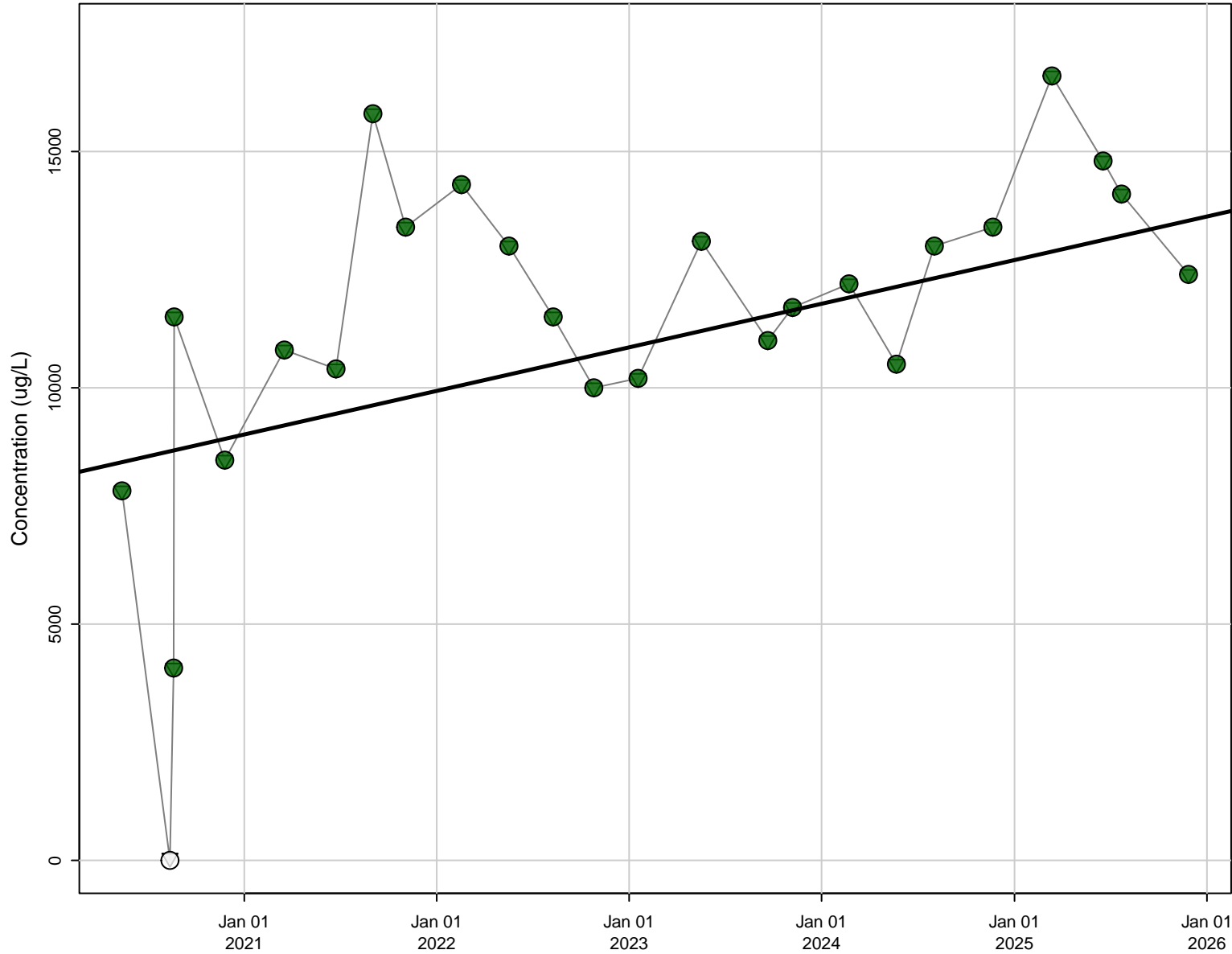
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.253

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D117, Boron [ug/L]



Stats

N Data: 25
N Detect: 24
% Detect: 96

Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.00257

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D117, Chloride [mg/L]

Stats

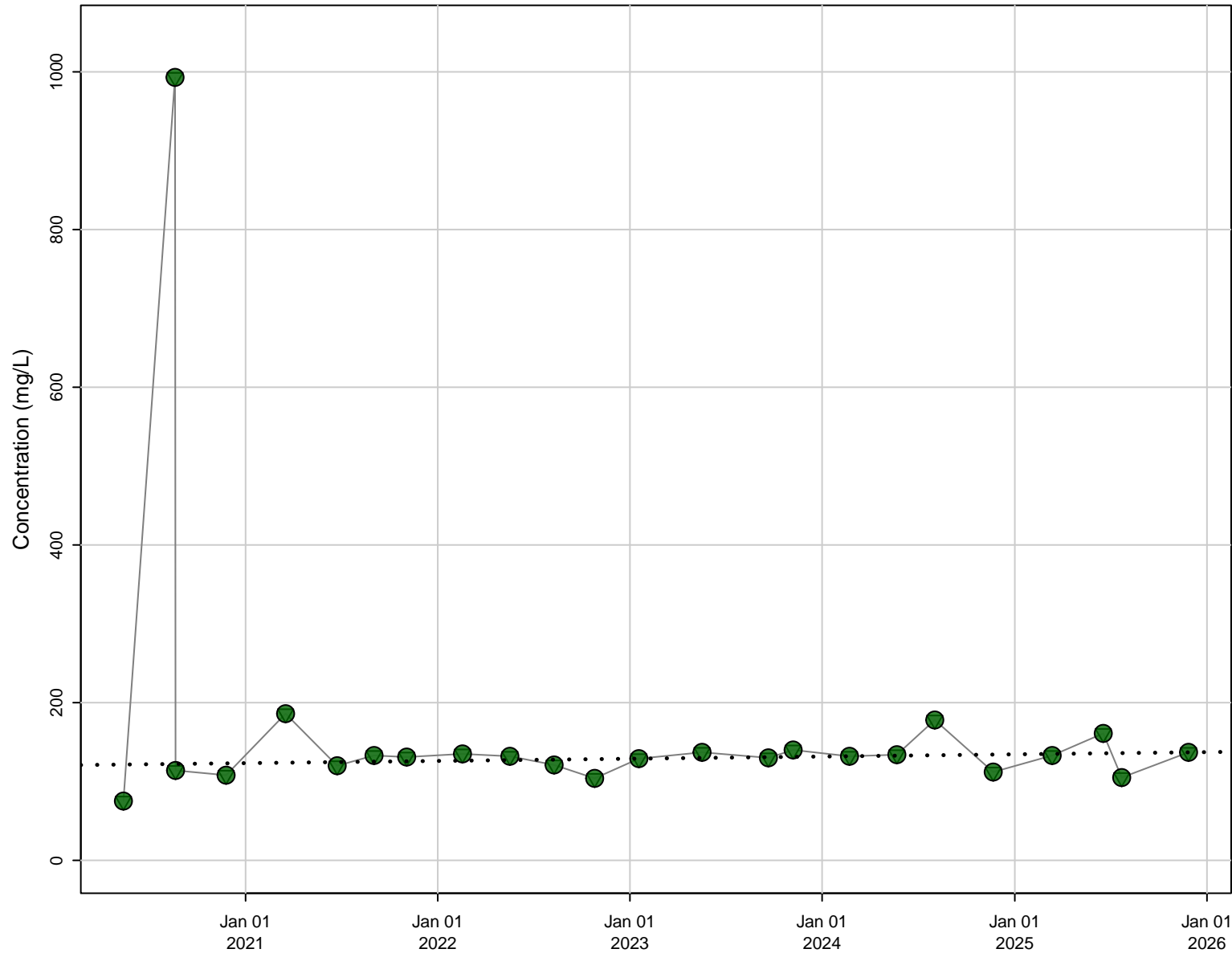
N Data: 24
N Detect: 24
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.264

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D117, Electrical Conductivity (Field) [uS/cm]

Stats

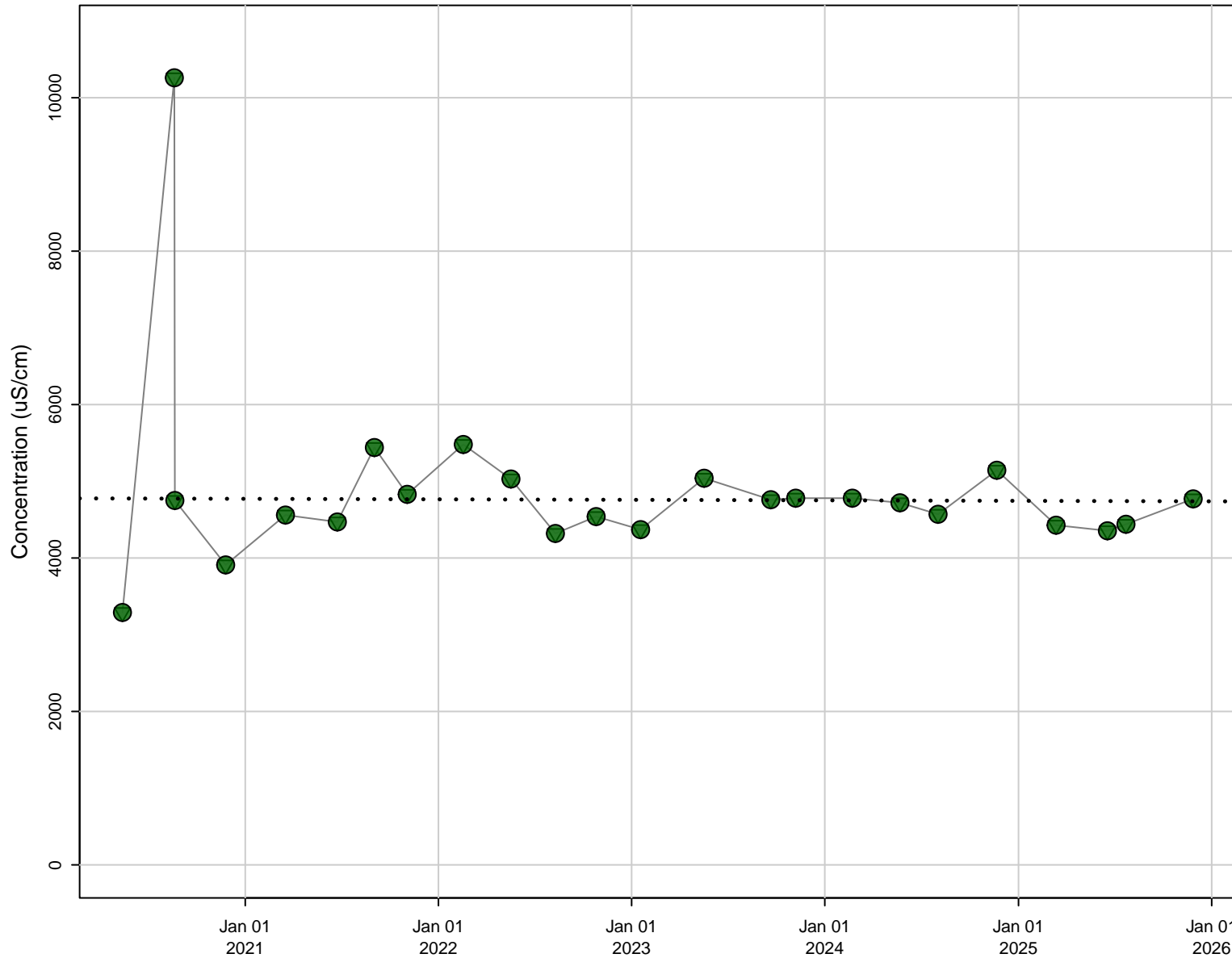
N Data: 24
N Detect: 24
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.785

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D117, Iron [ug/L]

Stats

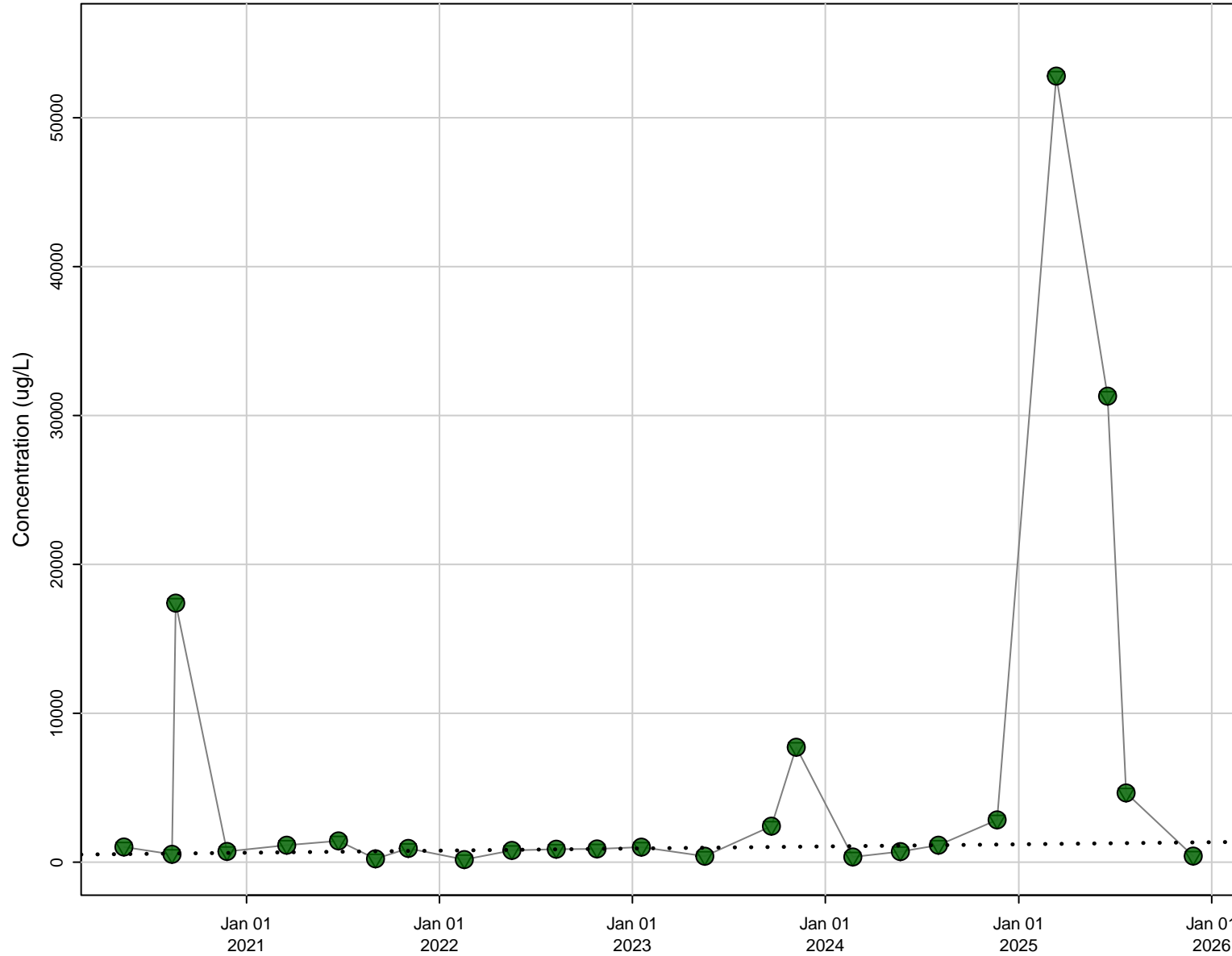
N Data: 24
N Detect: 24
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.188

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D117, Lead [ug/L]

Stats

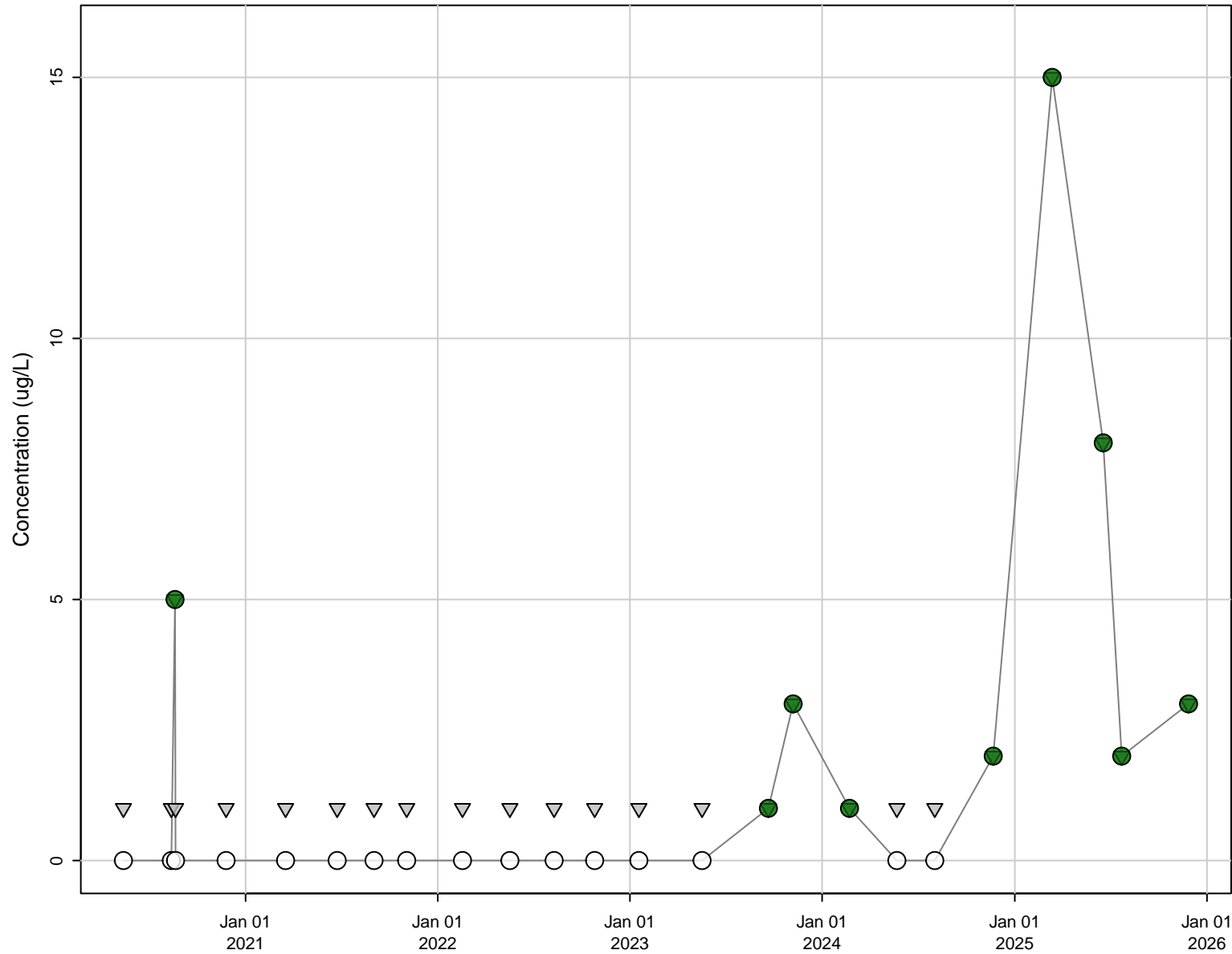
N Data: 25
N Detect: 9
% Detect: 36

Trend Results

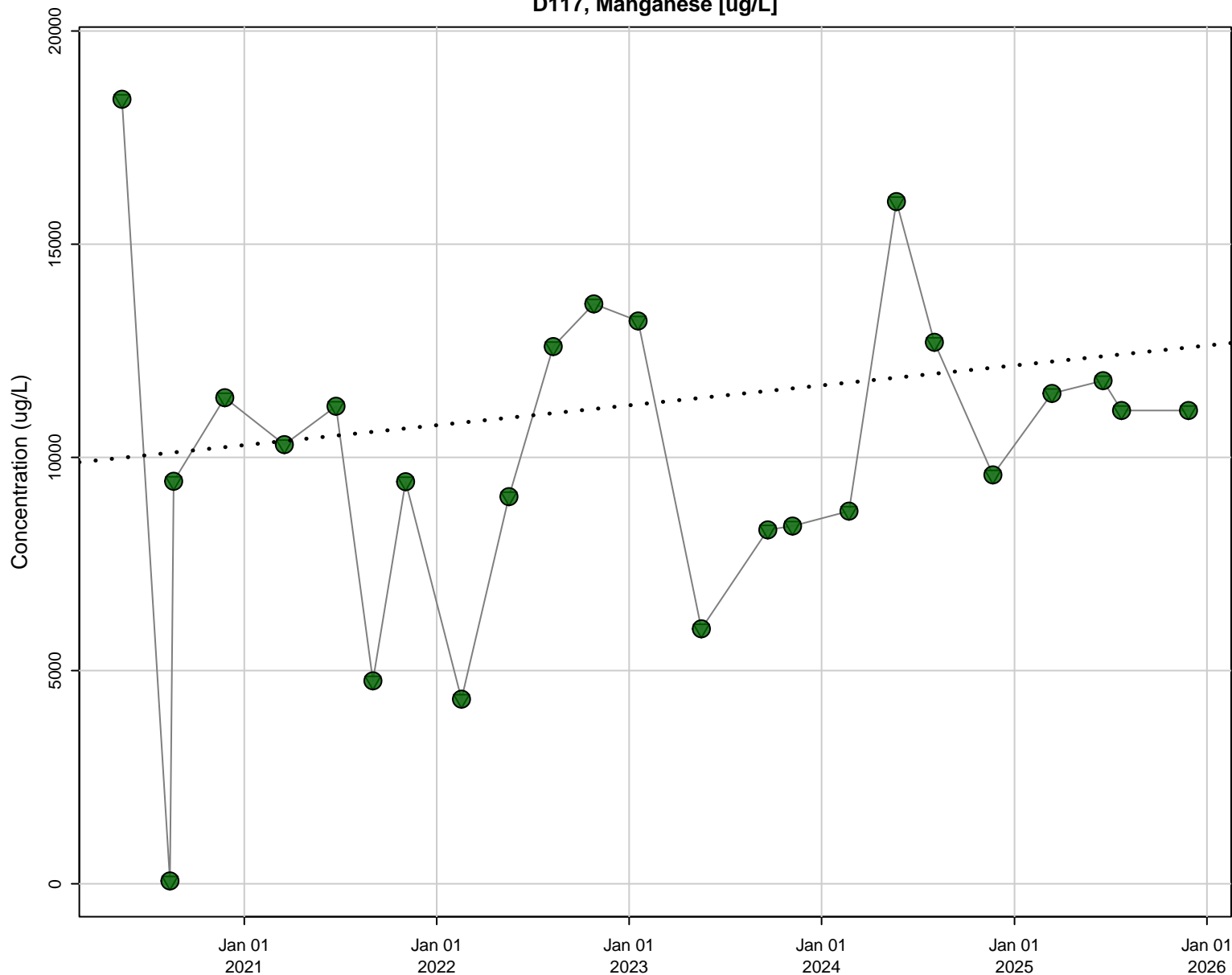
Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit



D117, Manganese [ug/L]



Stats

N Data: 24
N Detect: 24
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.385

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D117, Nickel [ug/L]

Stats

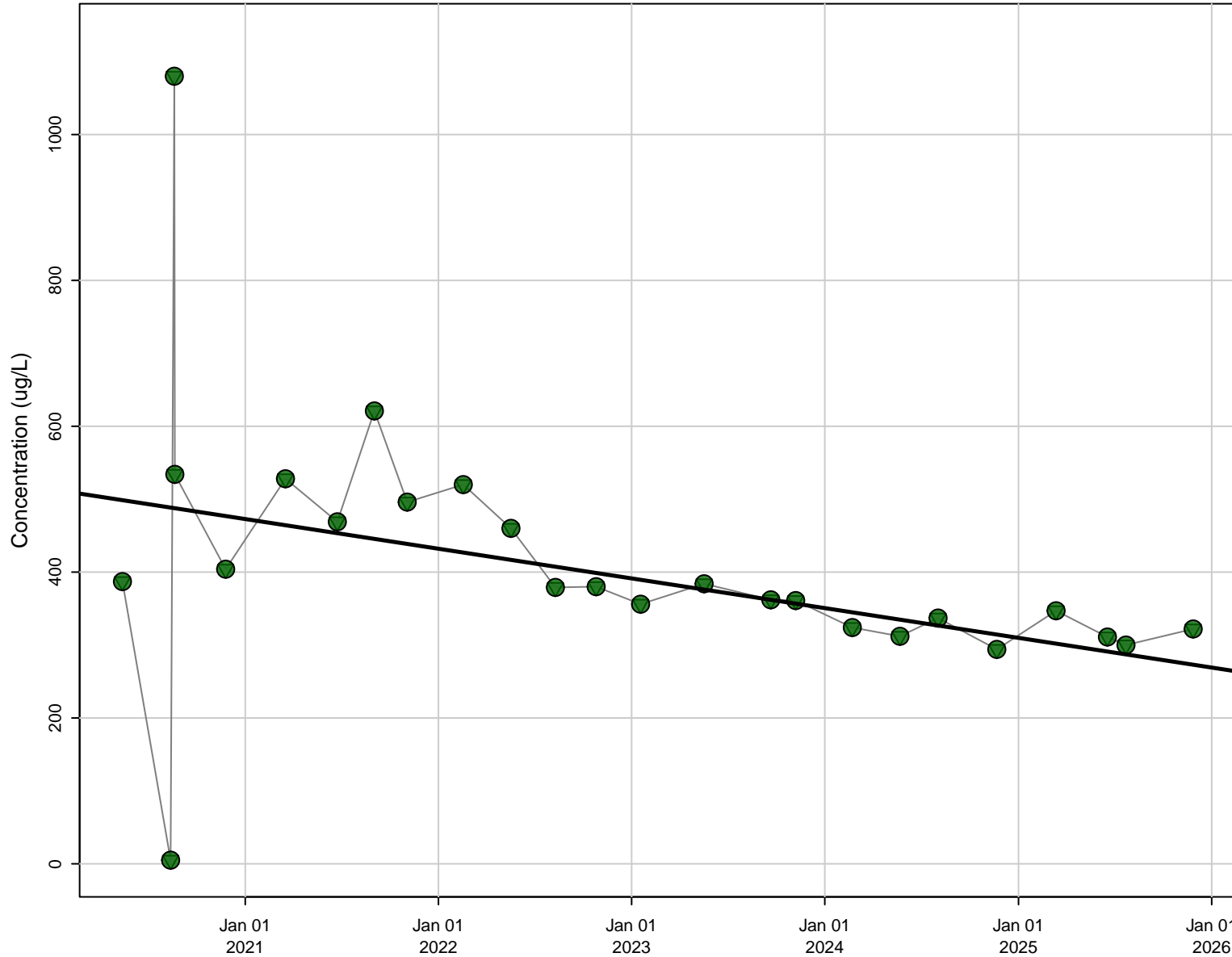
N Data: 25
N Detect: 25
% Detect: 100

Trend Results

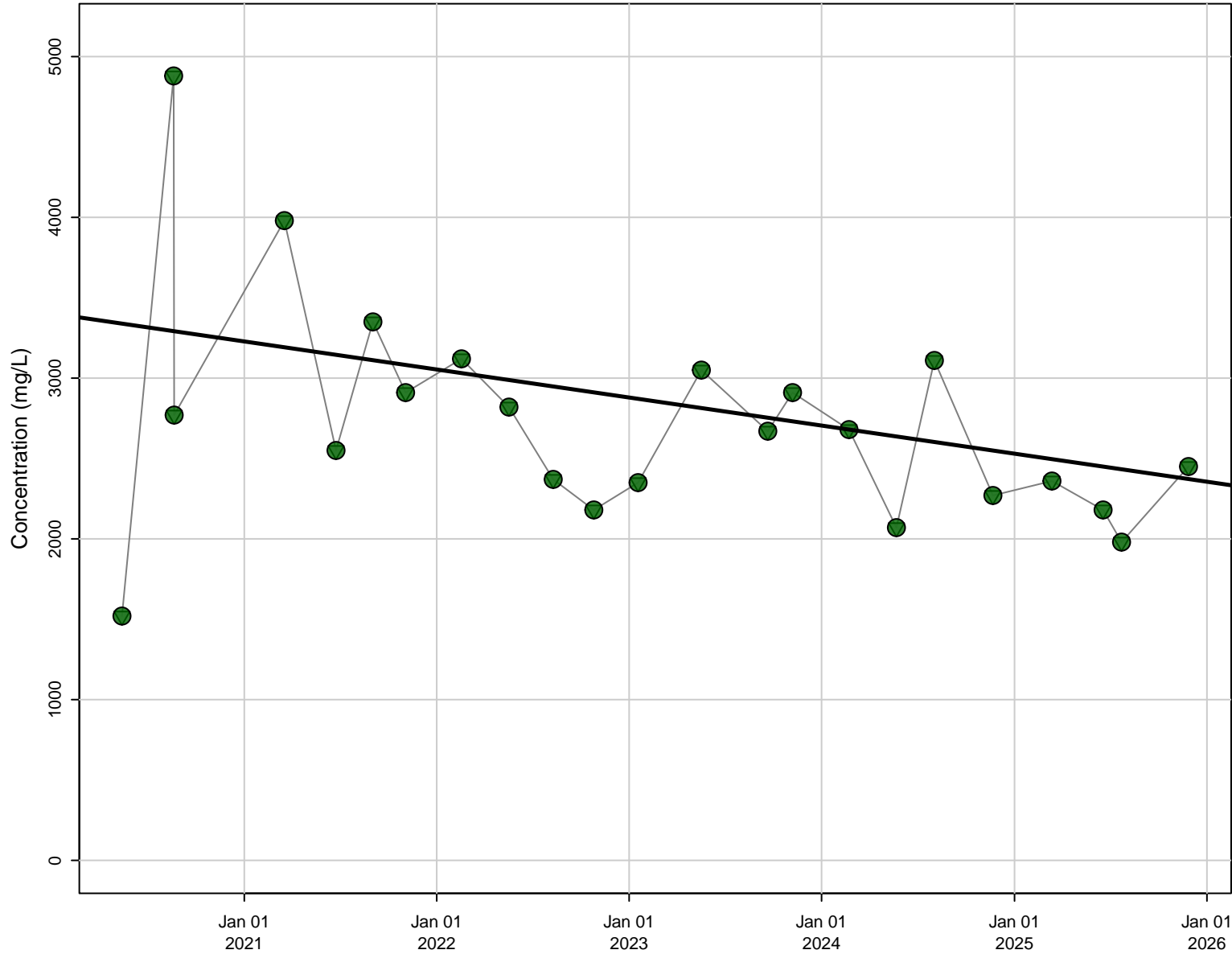
Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D117, Sulfate (as SO4) [mg/L]



Stats

N Data: 23
N Detect: 23
% Detect: 100

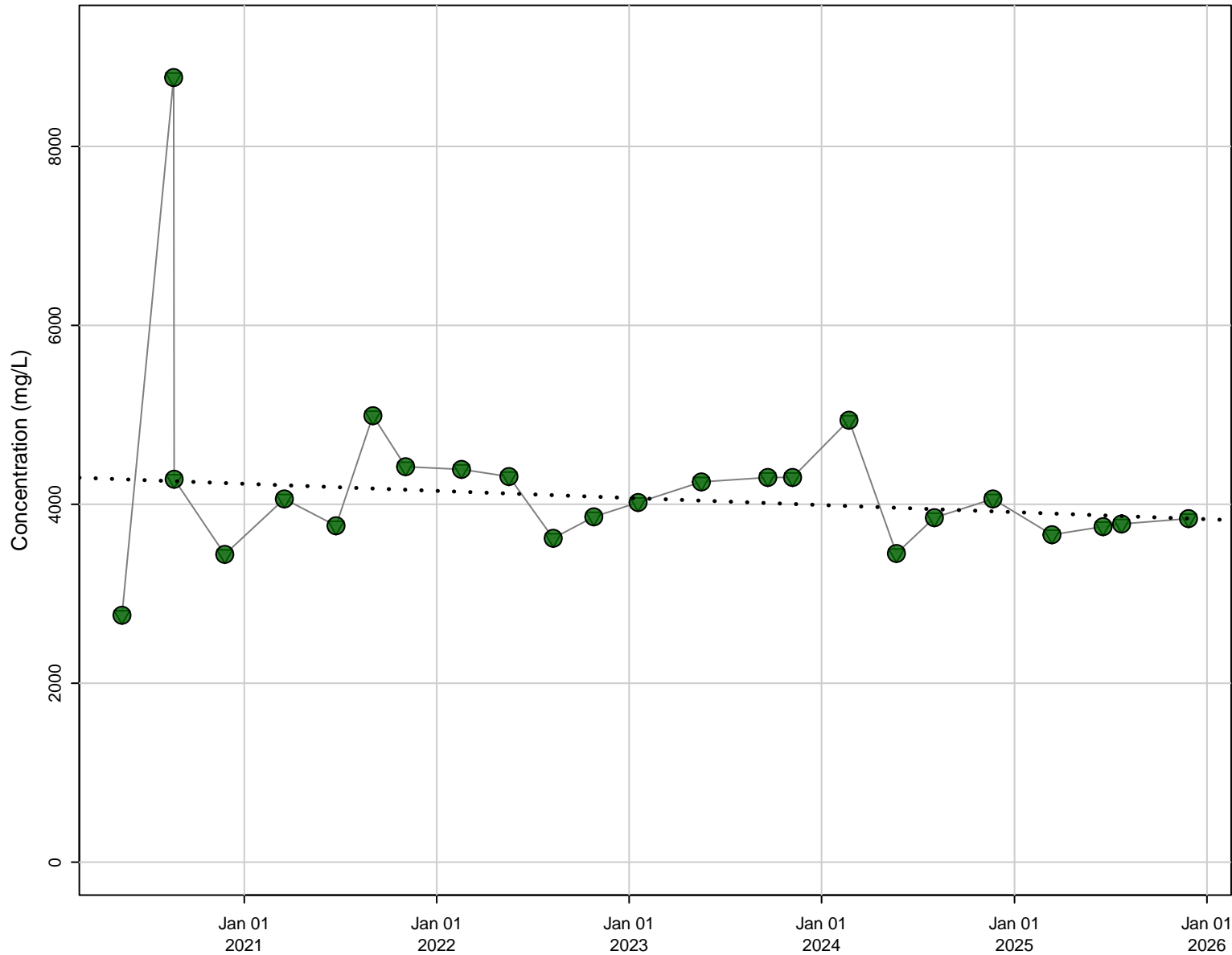
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0247

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D117, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 24
N Detect: 24
% Detect: 100

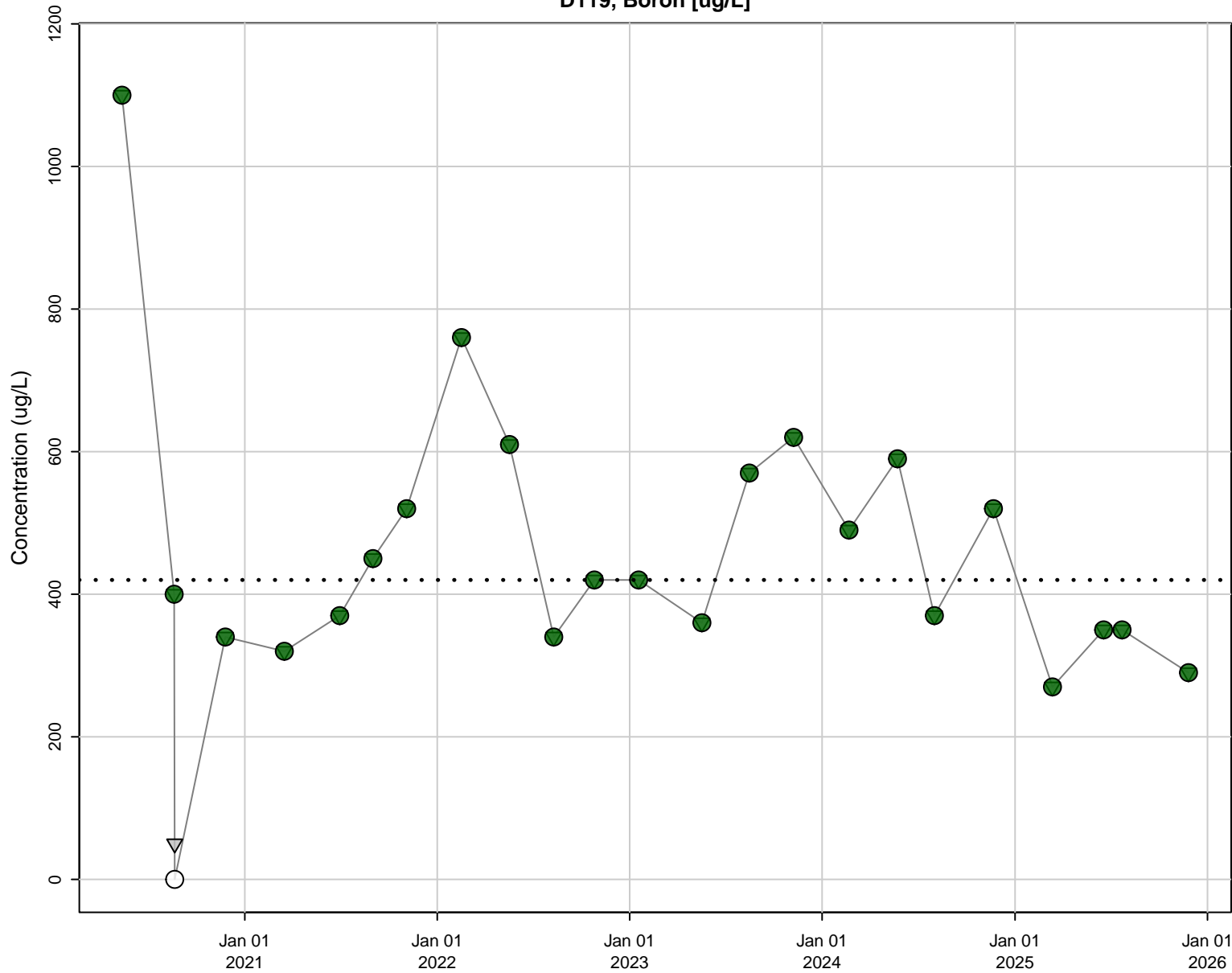
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.297

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D119, Boron [ug/L]



Stats

N Data: 24
N Detect: 23
% Detect: 96

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.602

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D119, Chloride [mg/L]

Stats

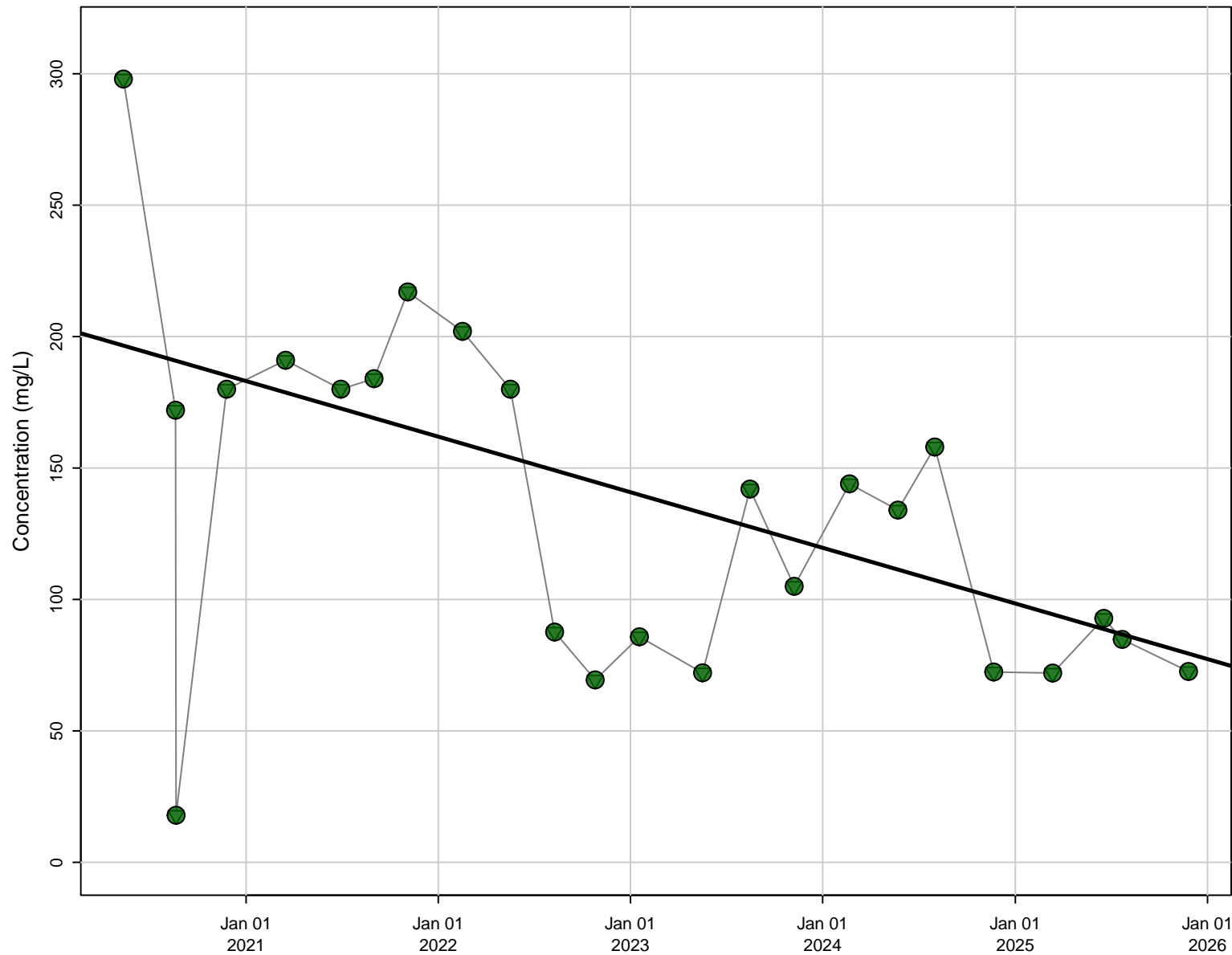
N Data: 24
N Detect: 24
% Detect: 100

Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0105

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D119, Electrical Conductivity (Field) [uS/cm]

Stats

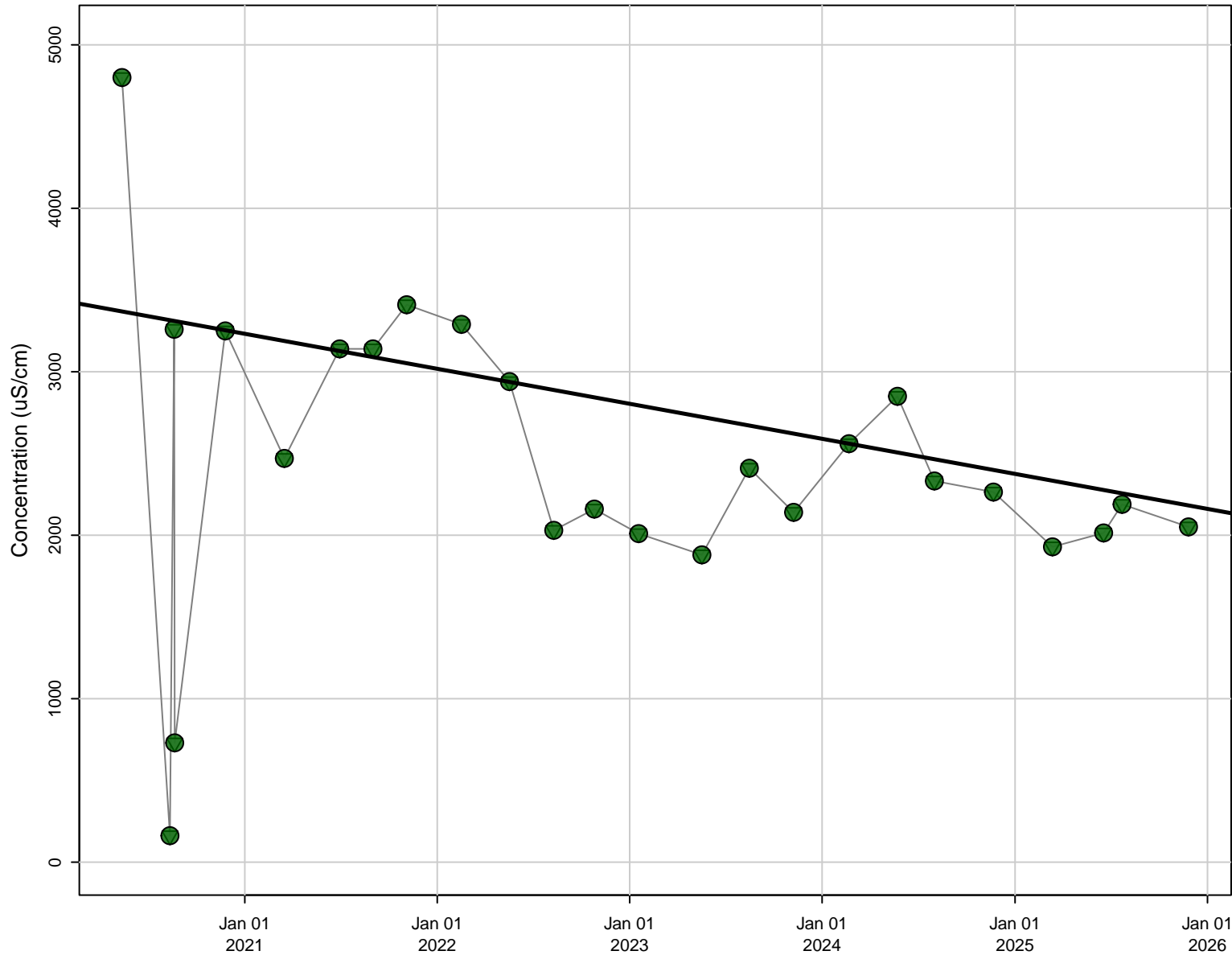
N Data: 25
N Detect: 25
% Detect: 100

Trend Results

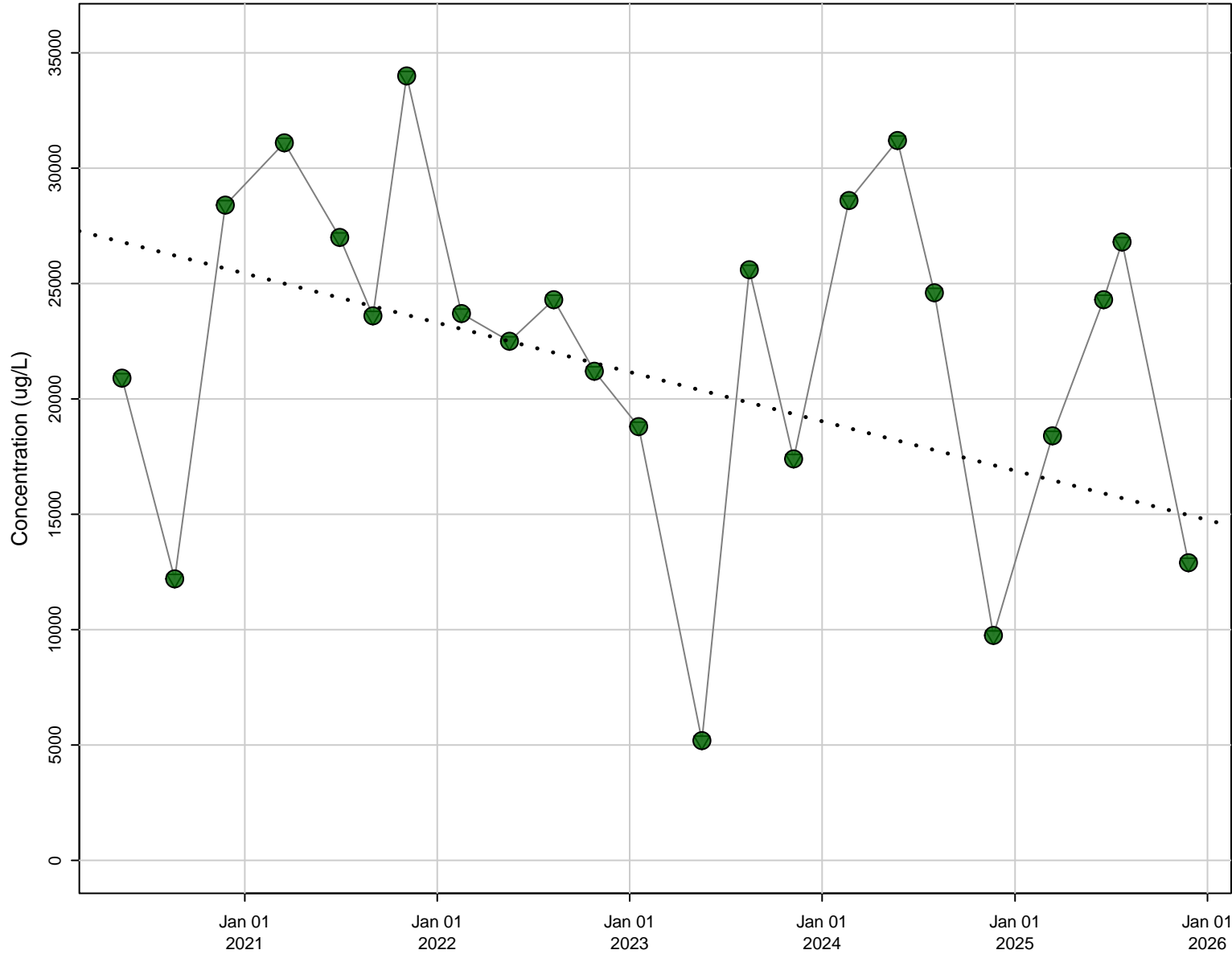
Trend: Decreasing
Confidence Level: 95%
p-value: 0.0421

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D119, Iron [ug/L]



Stats

N Data: 23
N Detect: 23
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.428

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D119, Lead [ug/L]

Stats

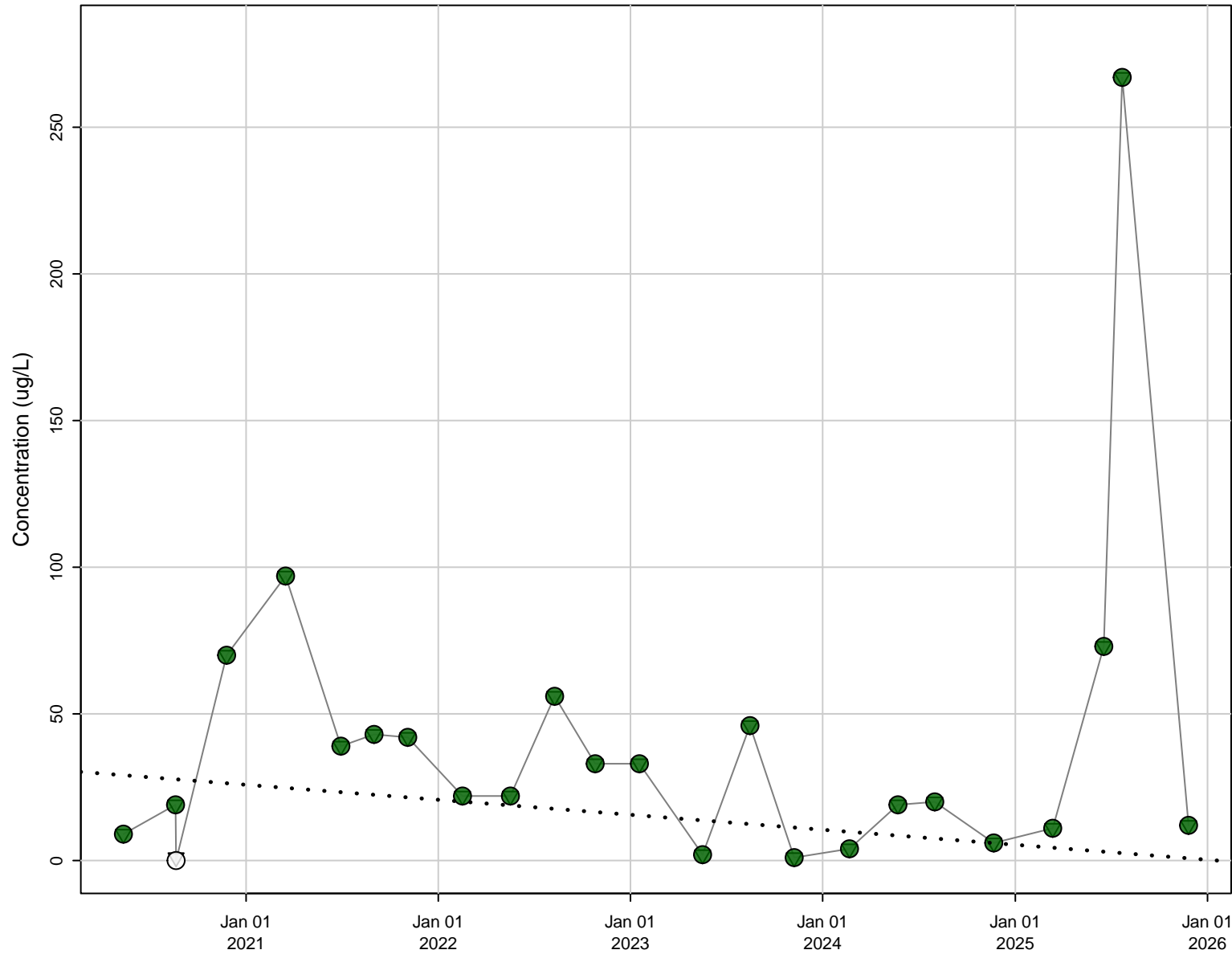
N Data: 24
N Detect: 23
% Detect: 96

Trend Results

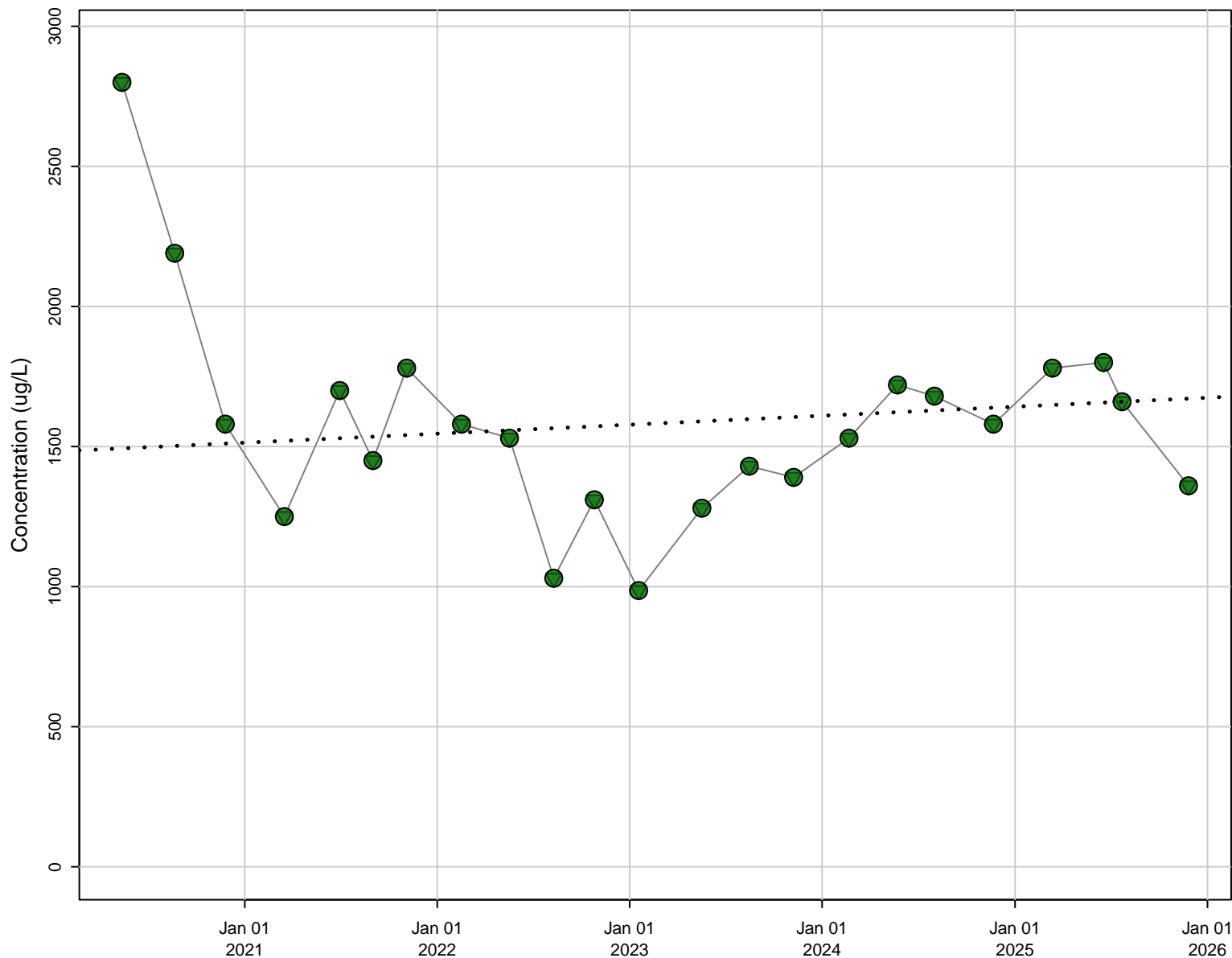
Trend: Not Significant
Confidence Level: 95%
p-value: 0.747

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D119, Manganese [ug/L]



Stats

N Data: 23
N Detect: 23
% Detect: 100

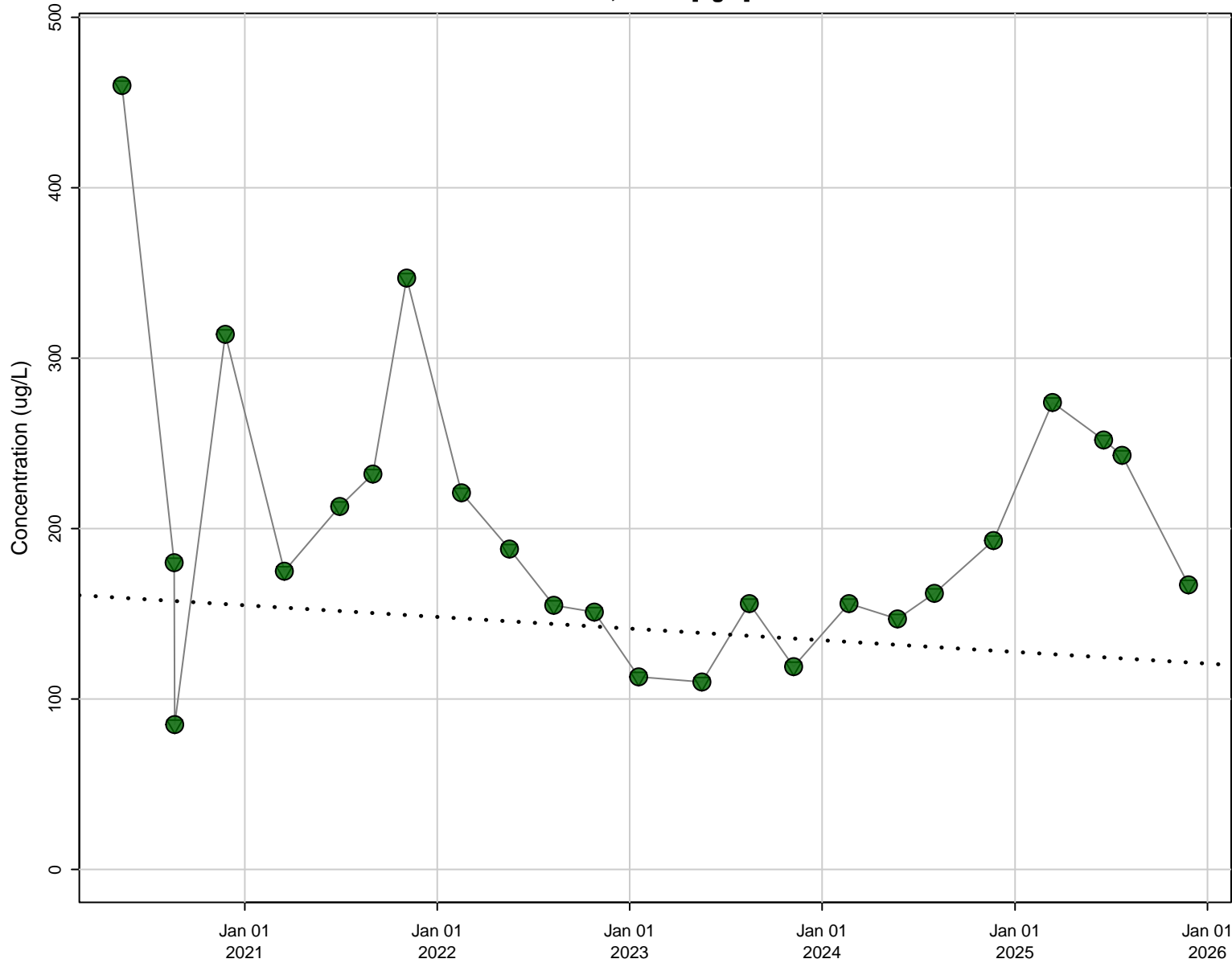
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.874

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D119, Nickel [ug/L]



Stats

N Data: 24
N Detect: 24
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.637

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D119, Sulfate (as SO4) [mg/L]

Stats

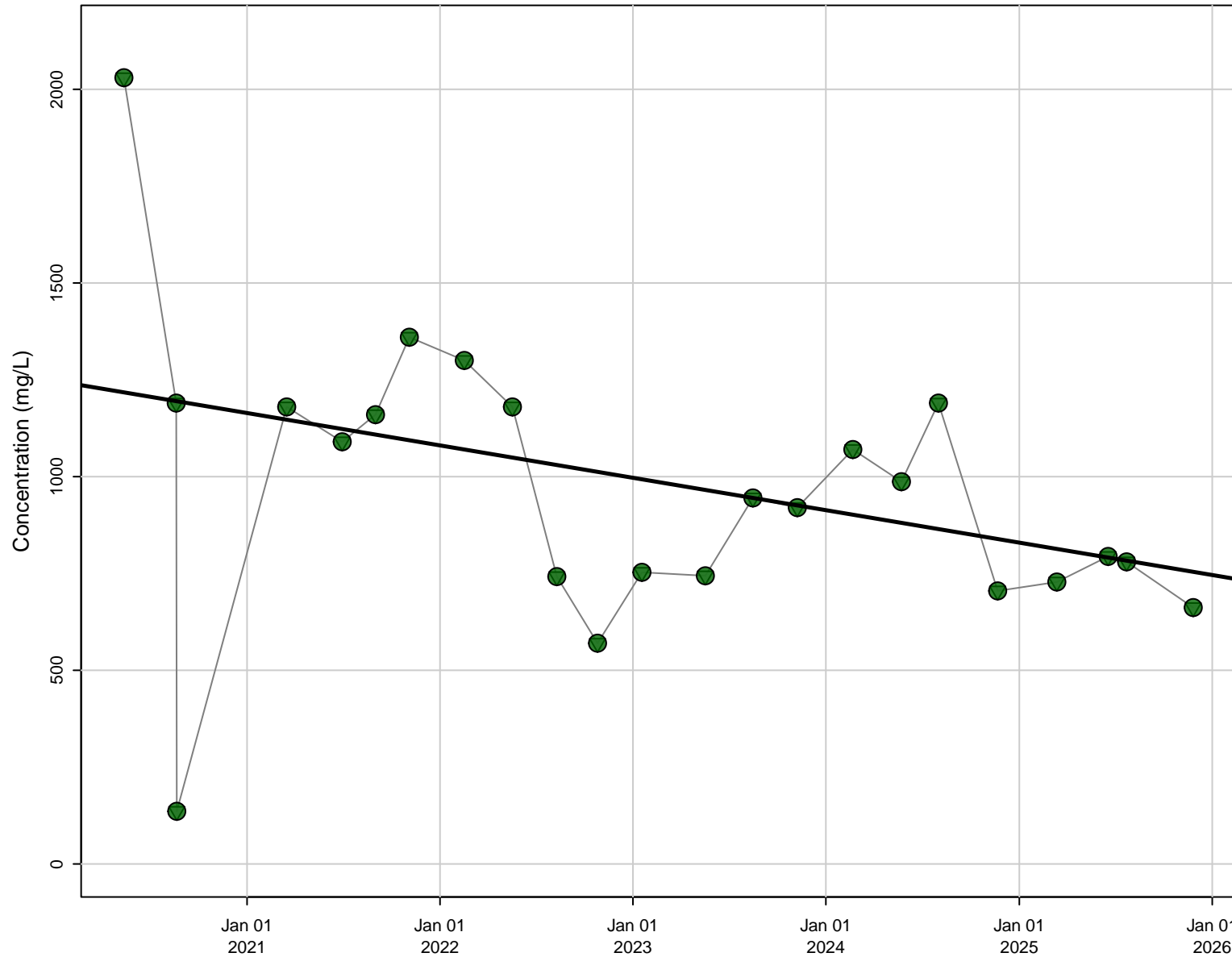
N Data: 23
N Detect: 23
% Detect: 100

Trend Results

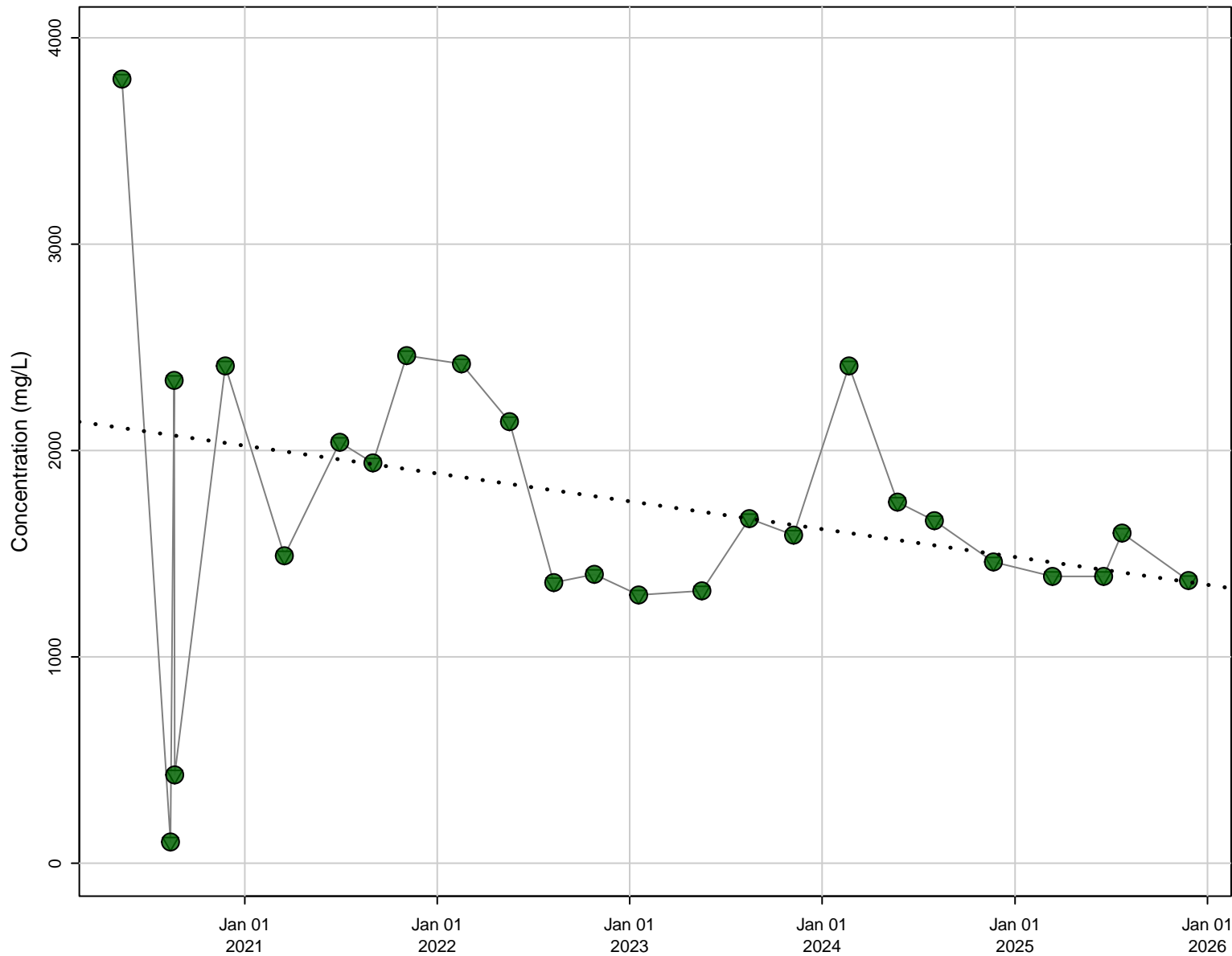
Trend: Decreasing
Confidence Level: 95%
p-value: 0.0247

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D119, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 25
N Detect: 25
% Detect: 100

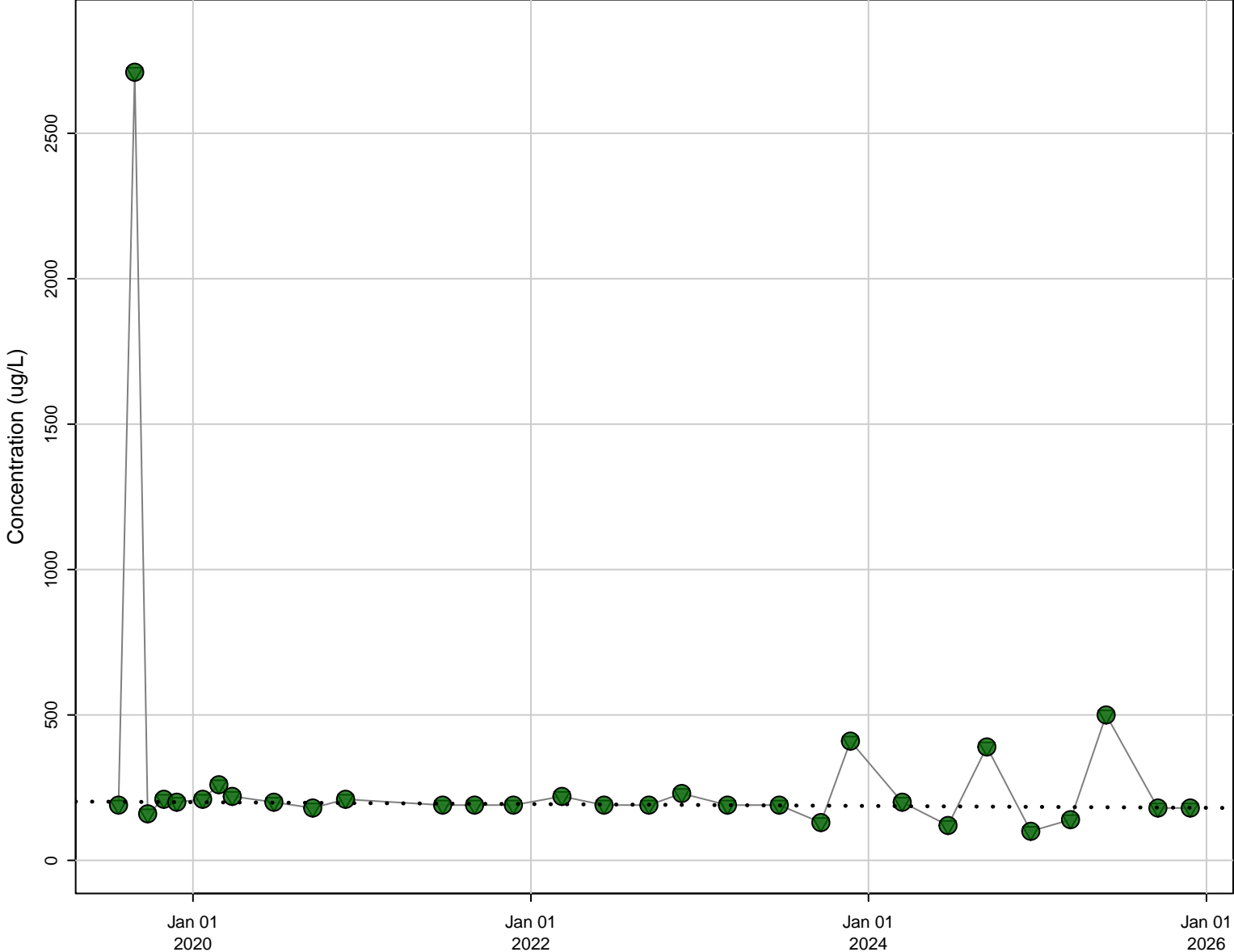
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.147

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D15, Boron [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

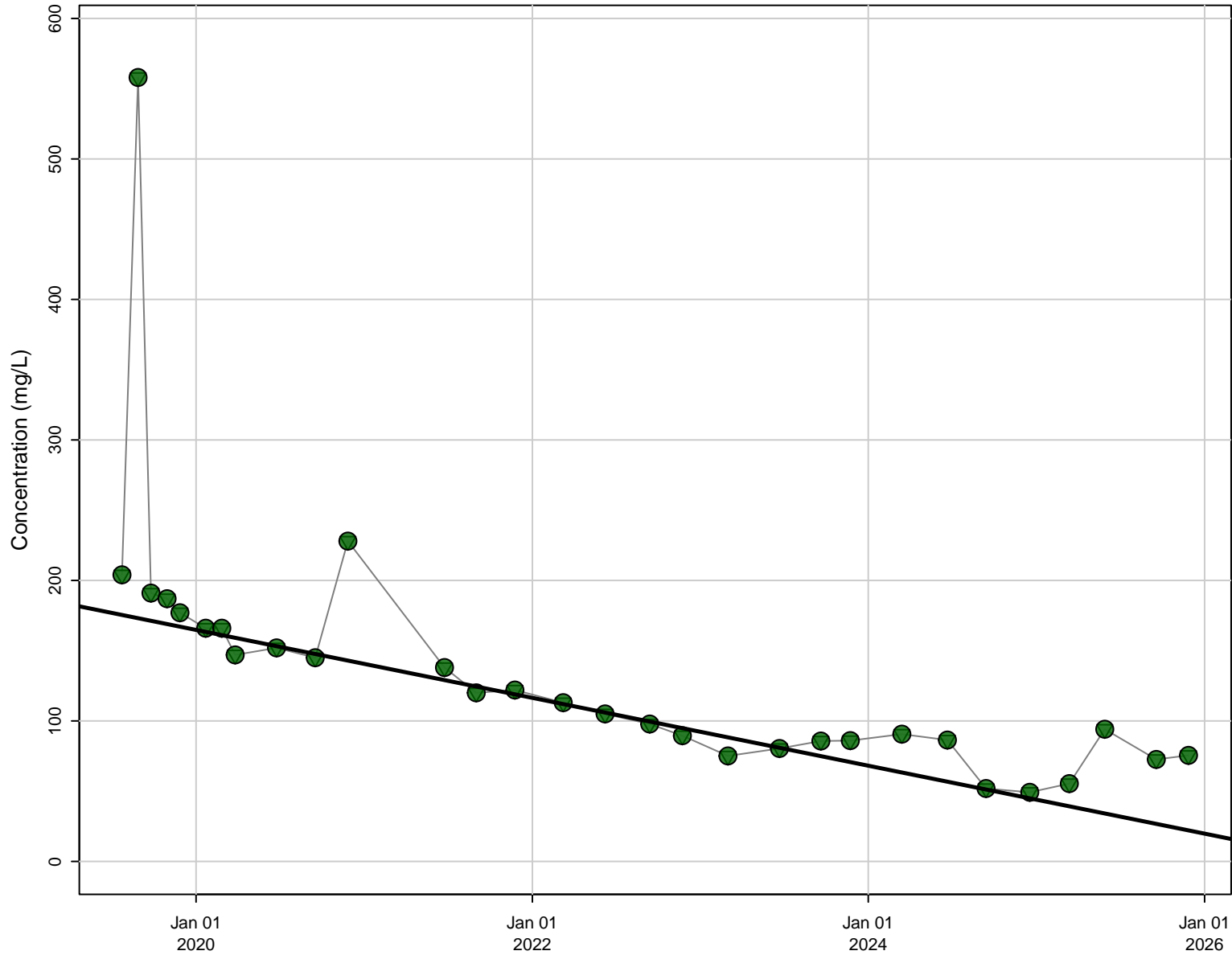
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.143

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D15, Chloride [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

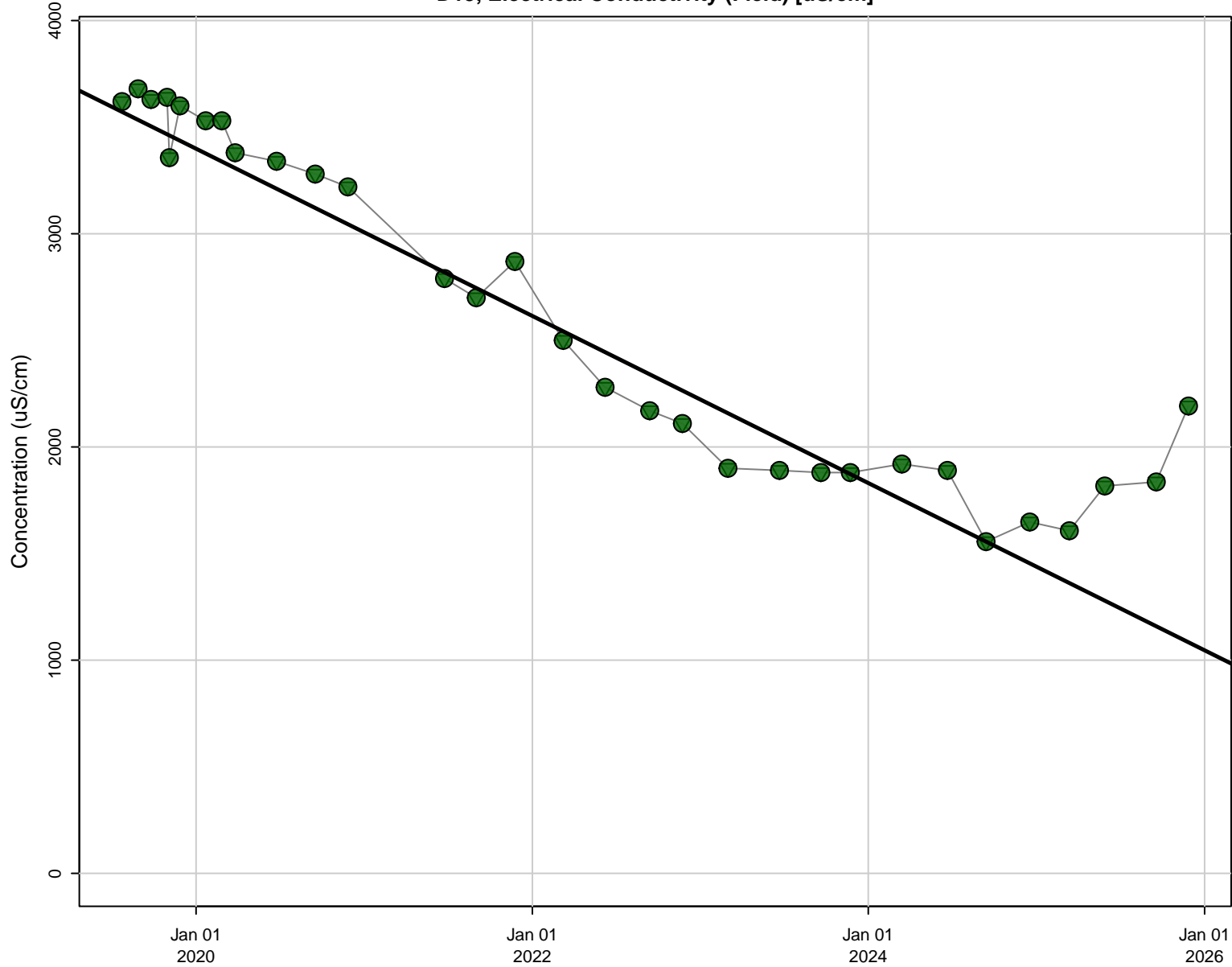
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D15, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 31
N Detect: 31
% Detect: 100

Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D15, Iron [ug/L]

Stats

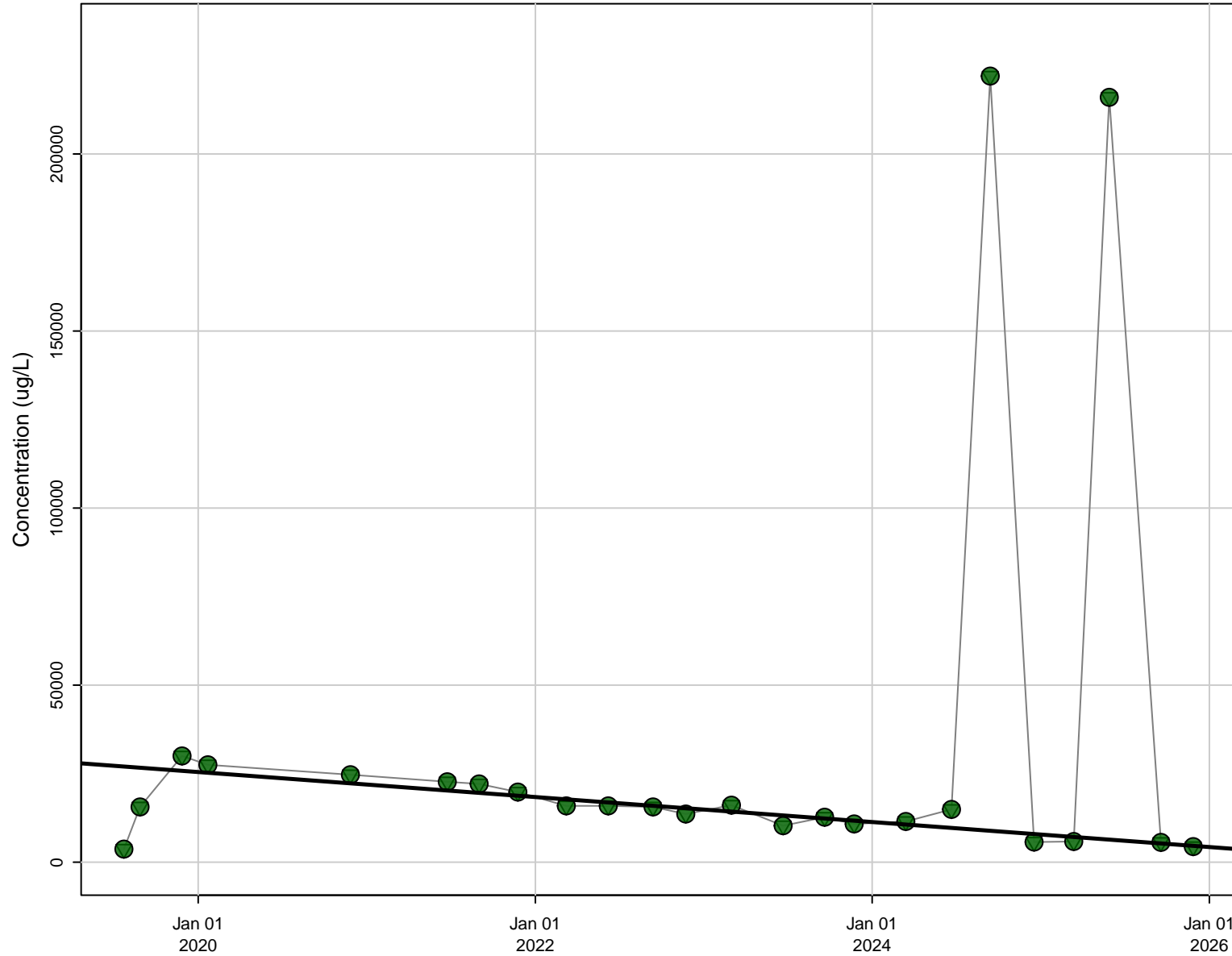
N Data: 24
N Detect: 24
% Detect: 100

Trend Results

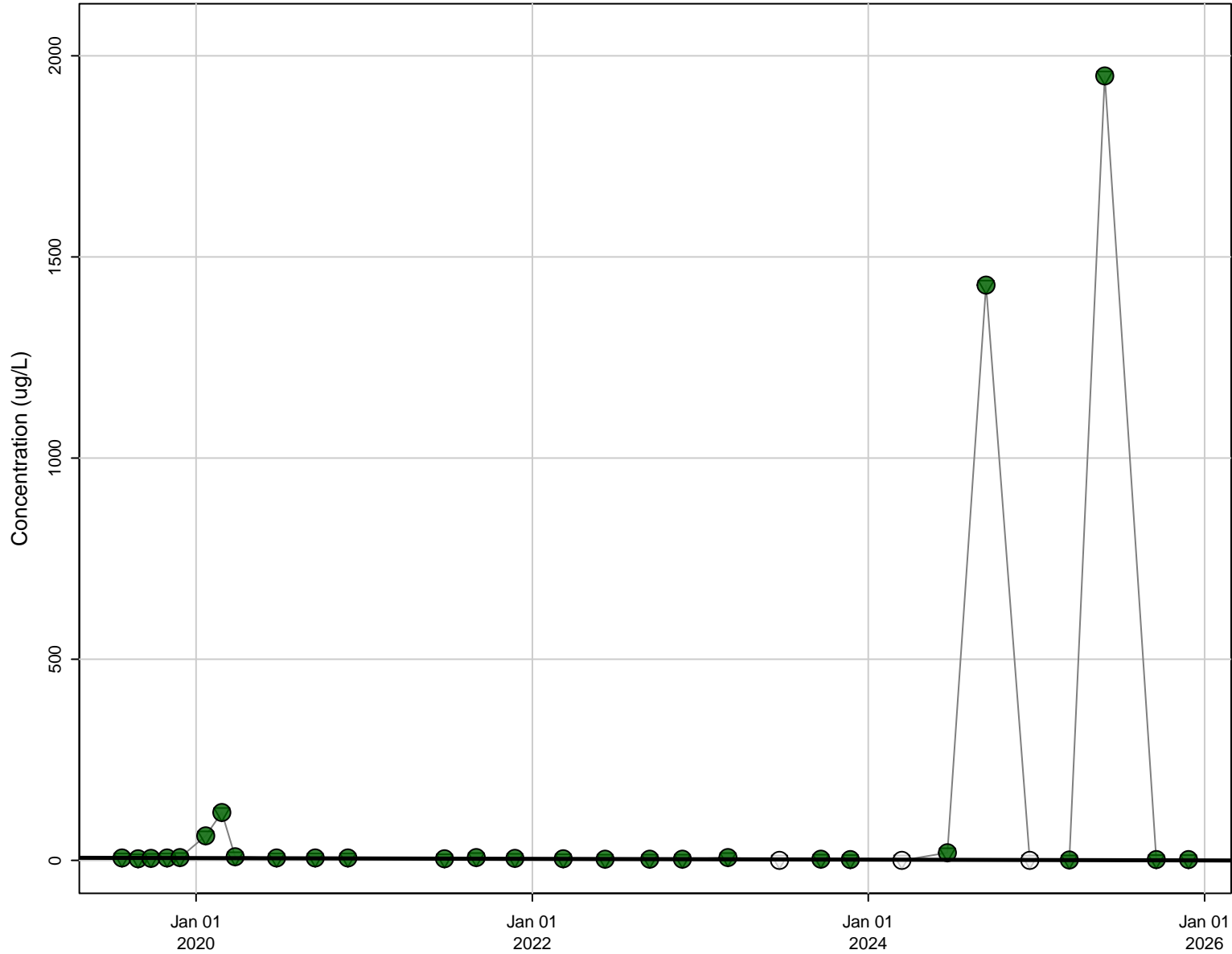
Trend: Decreasing
Confidence Level: 95%
p-value: 0.00633

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D15, Lead [ug/L]



Stats

N Data: 30
N Detect: 27
% Detect: 90

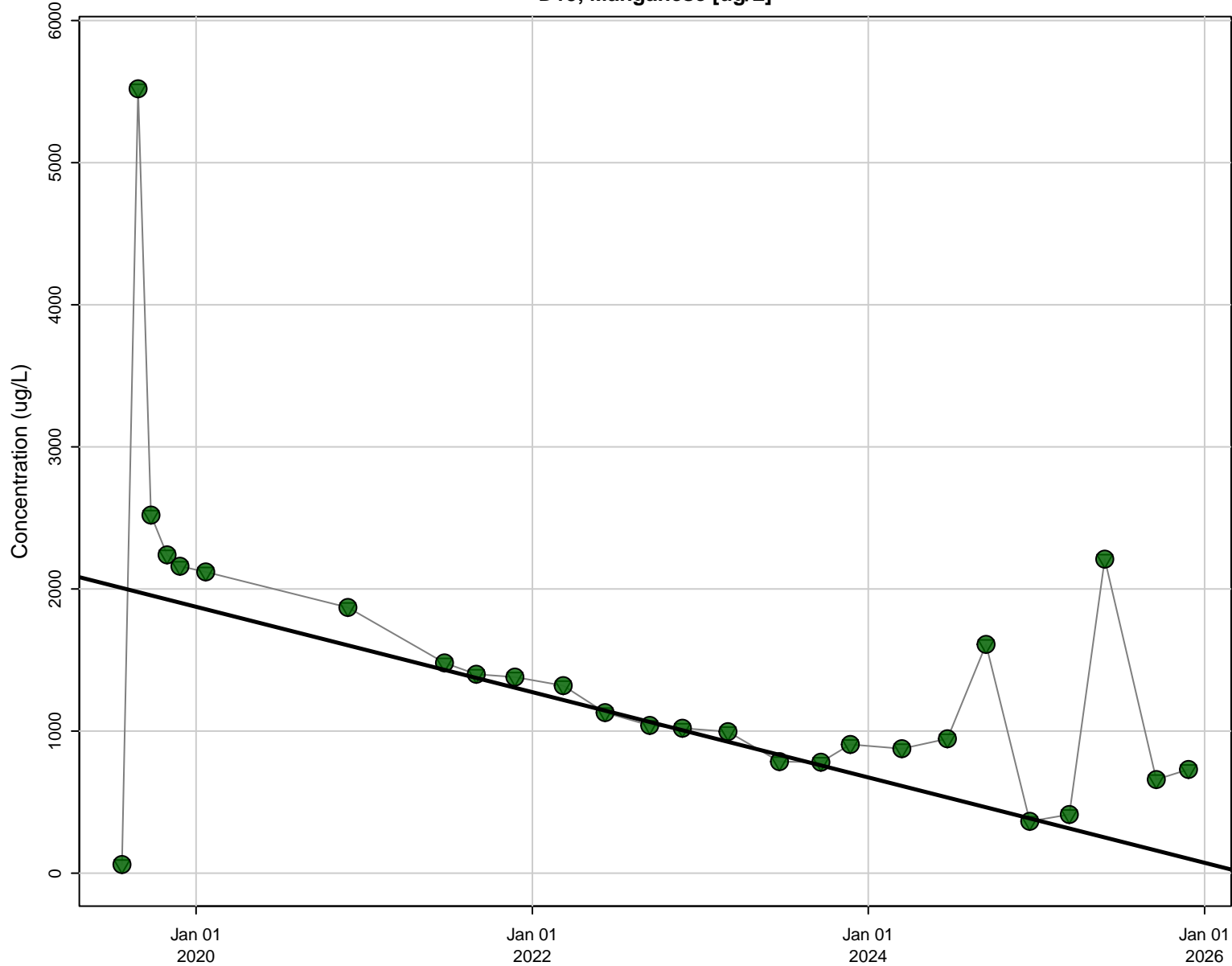
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0178

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D15, Manganese [ug/L]



Stats

N Data: 26
N Detect: 26
% Detect: 100

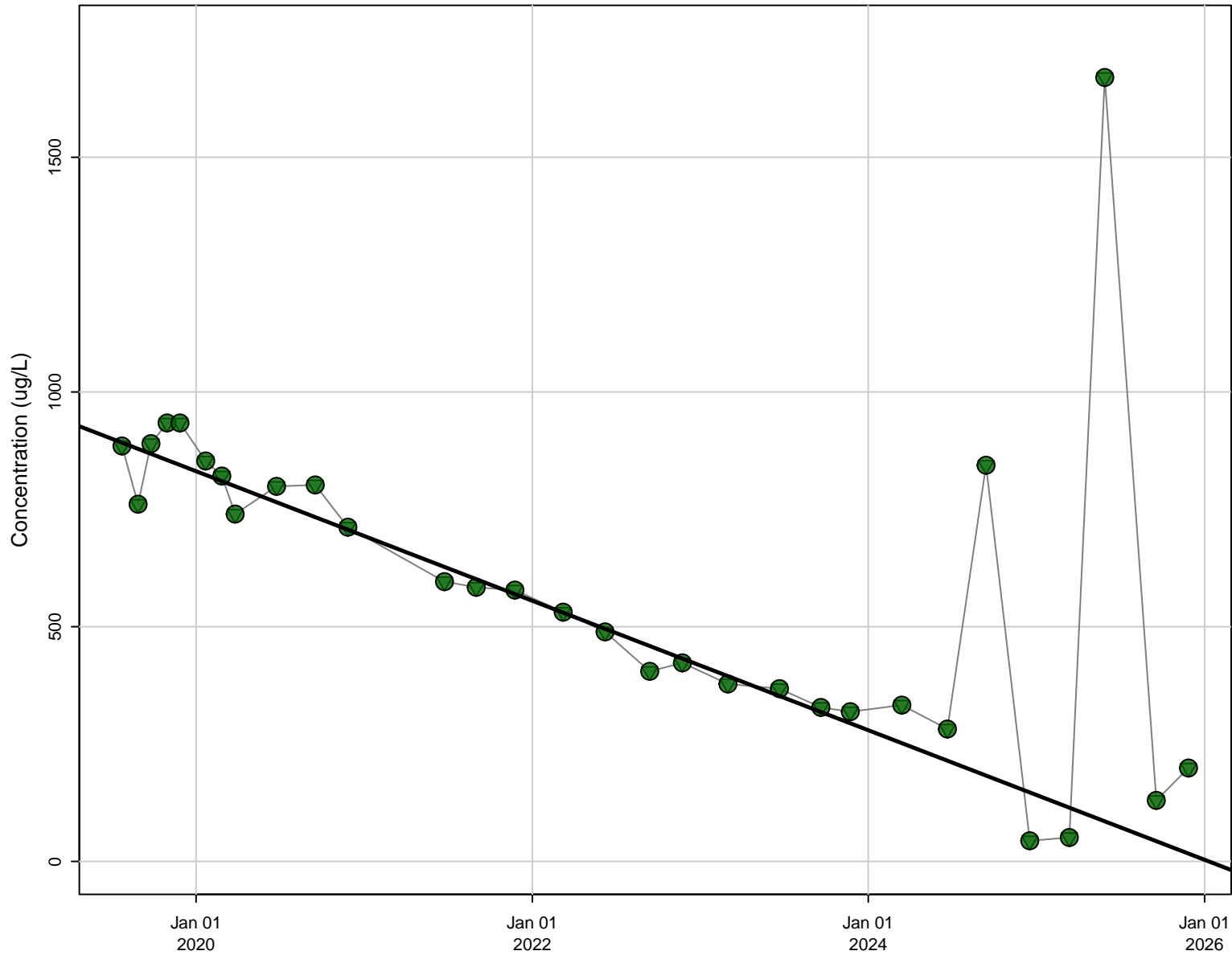
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D15, Nickel [ug/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

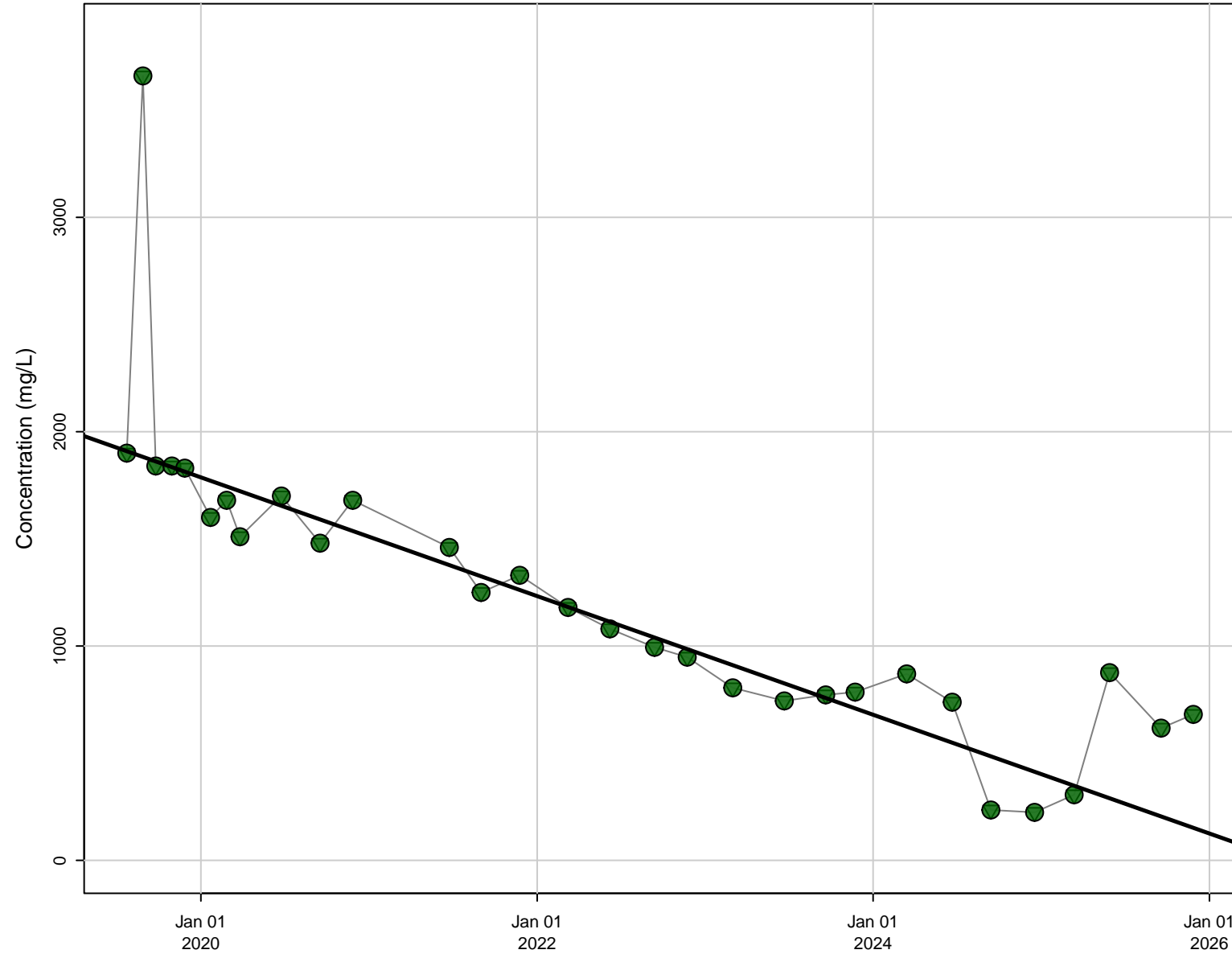
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D15, Sulfate (as SO4) [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

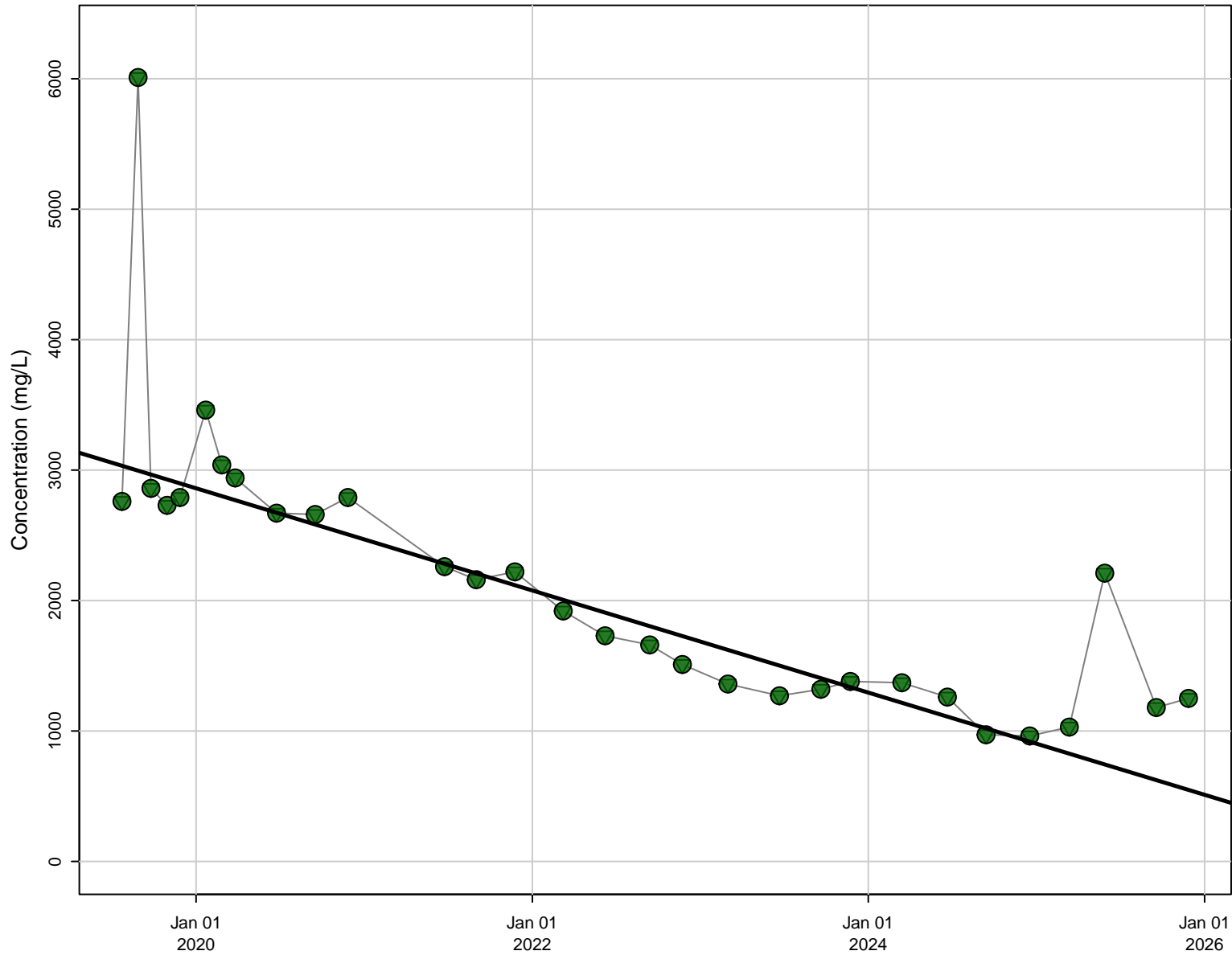
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D15, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 30
N Detect: 30
% Detect: 100

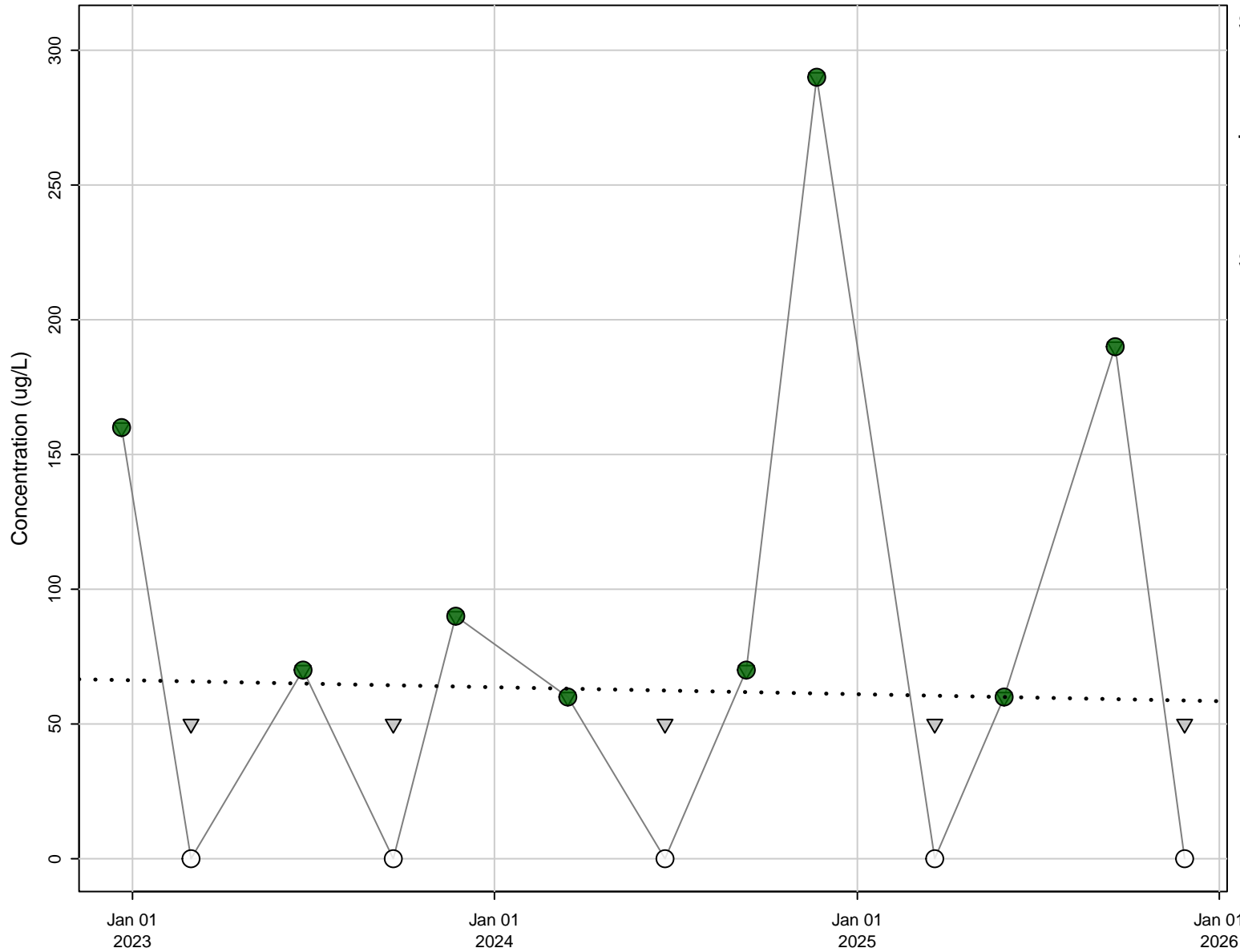
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D16A, Boron [ug/L]



Stats

N Data: 13
N Detect: 8
% Detect: 62

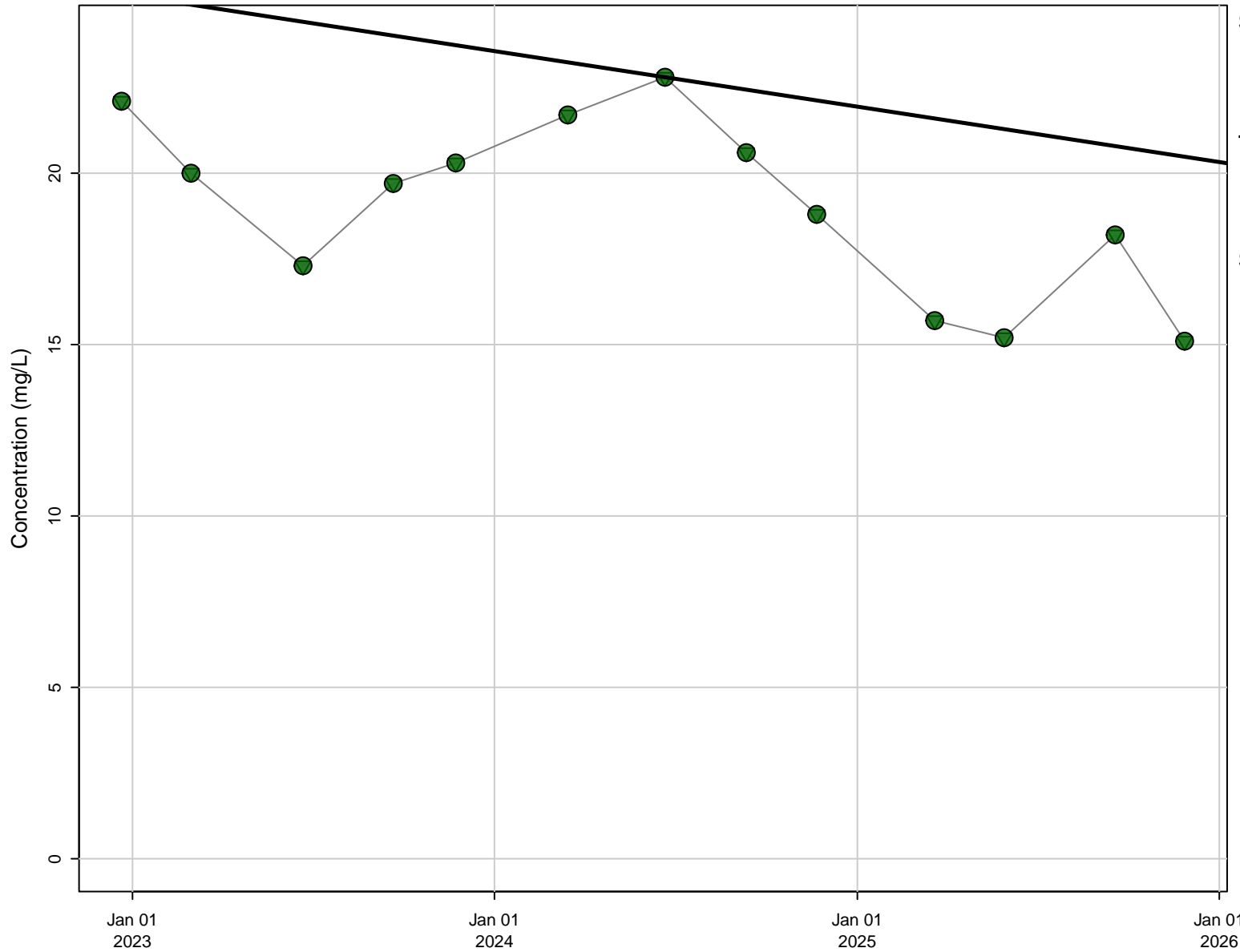
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.899

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D16A, Chloride [mg/L]



Stats

N Data: 13
N Detect: 13
% Detect: 100

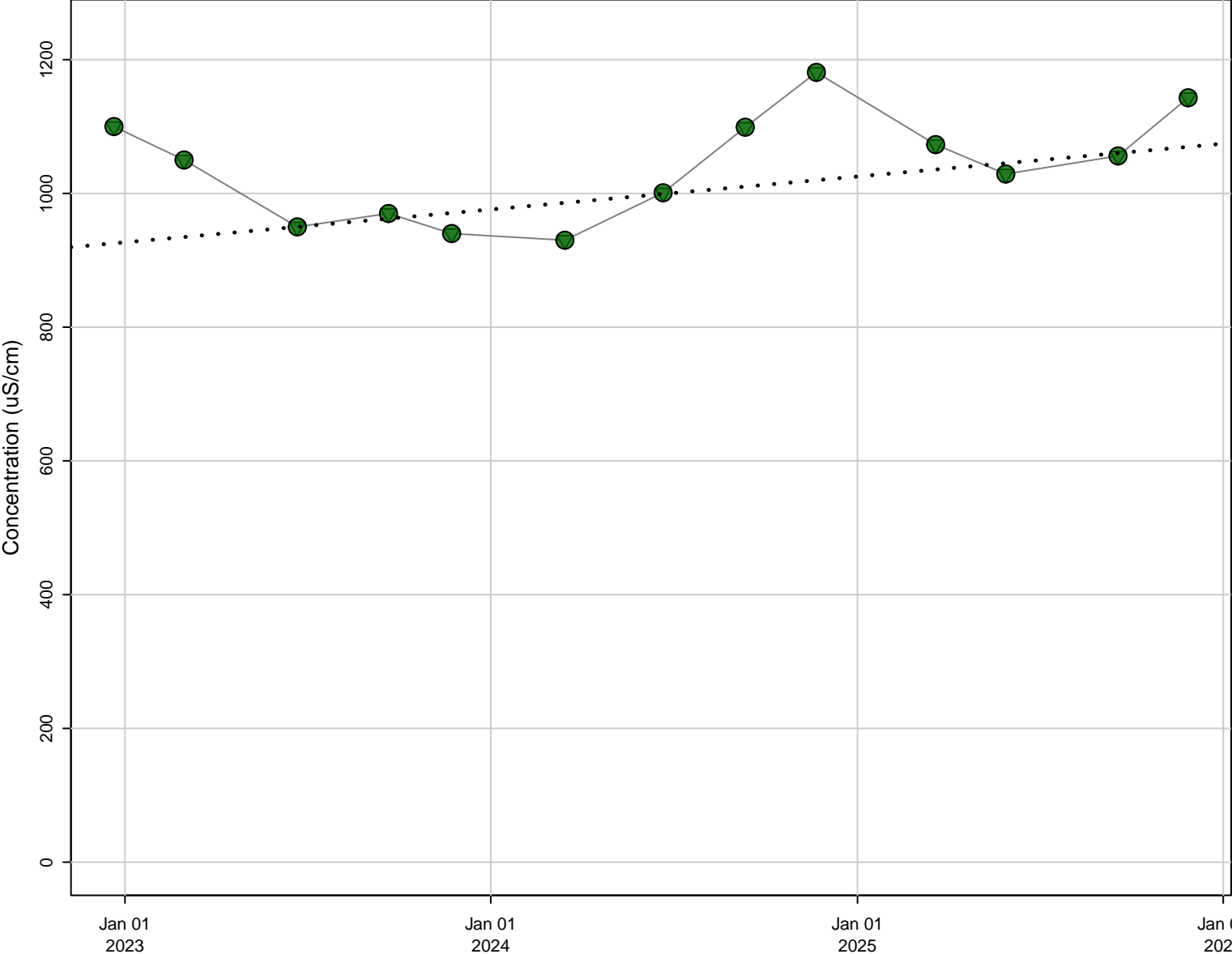
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0422

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D16A, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 13
N Detect: 13
% Detect: 100

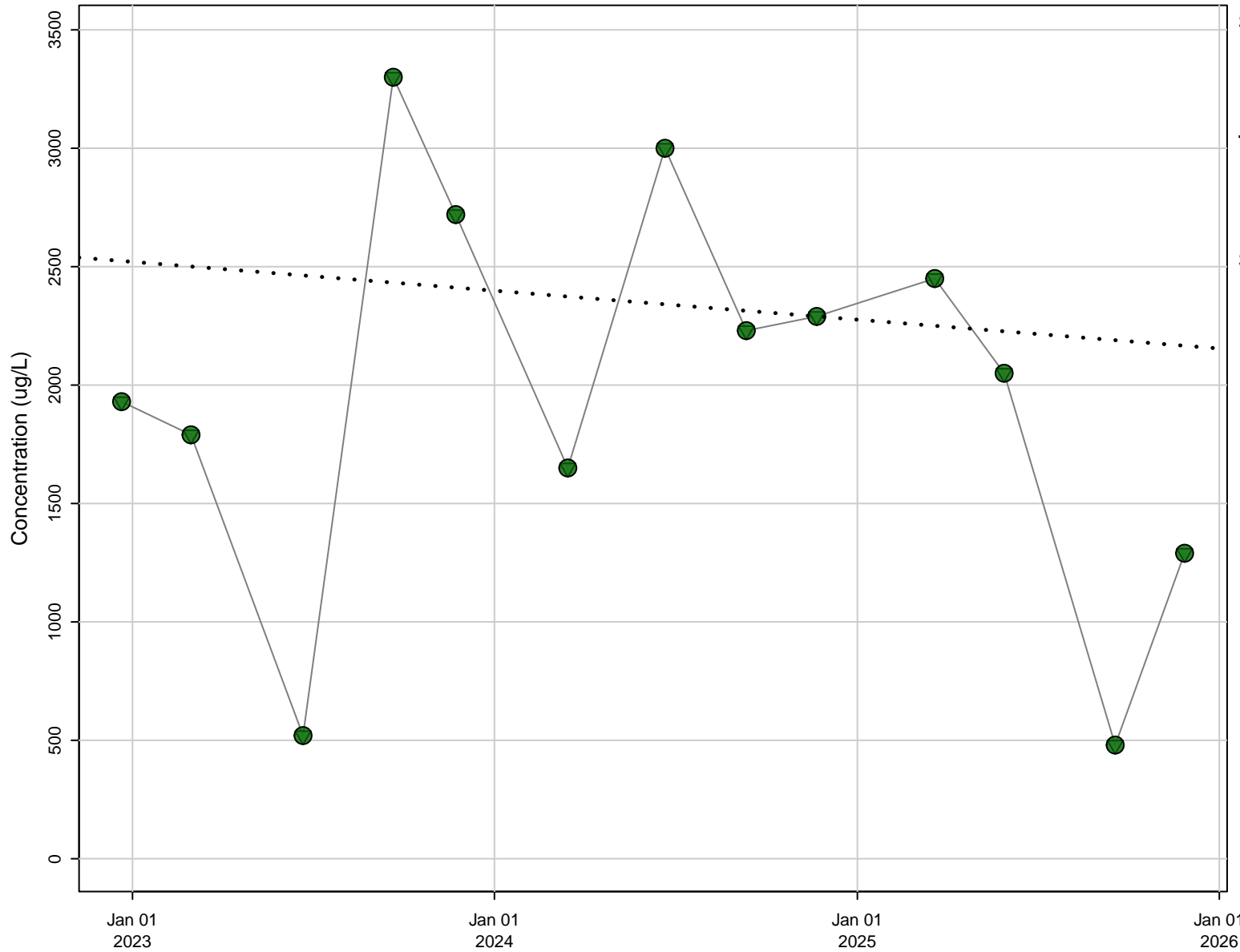
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.306

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D16A, Iron [ug/L]



Stats

N Data: 13
N Detect: 13
% Detect: 100

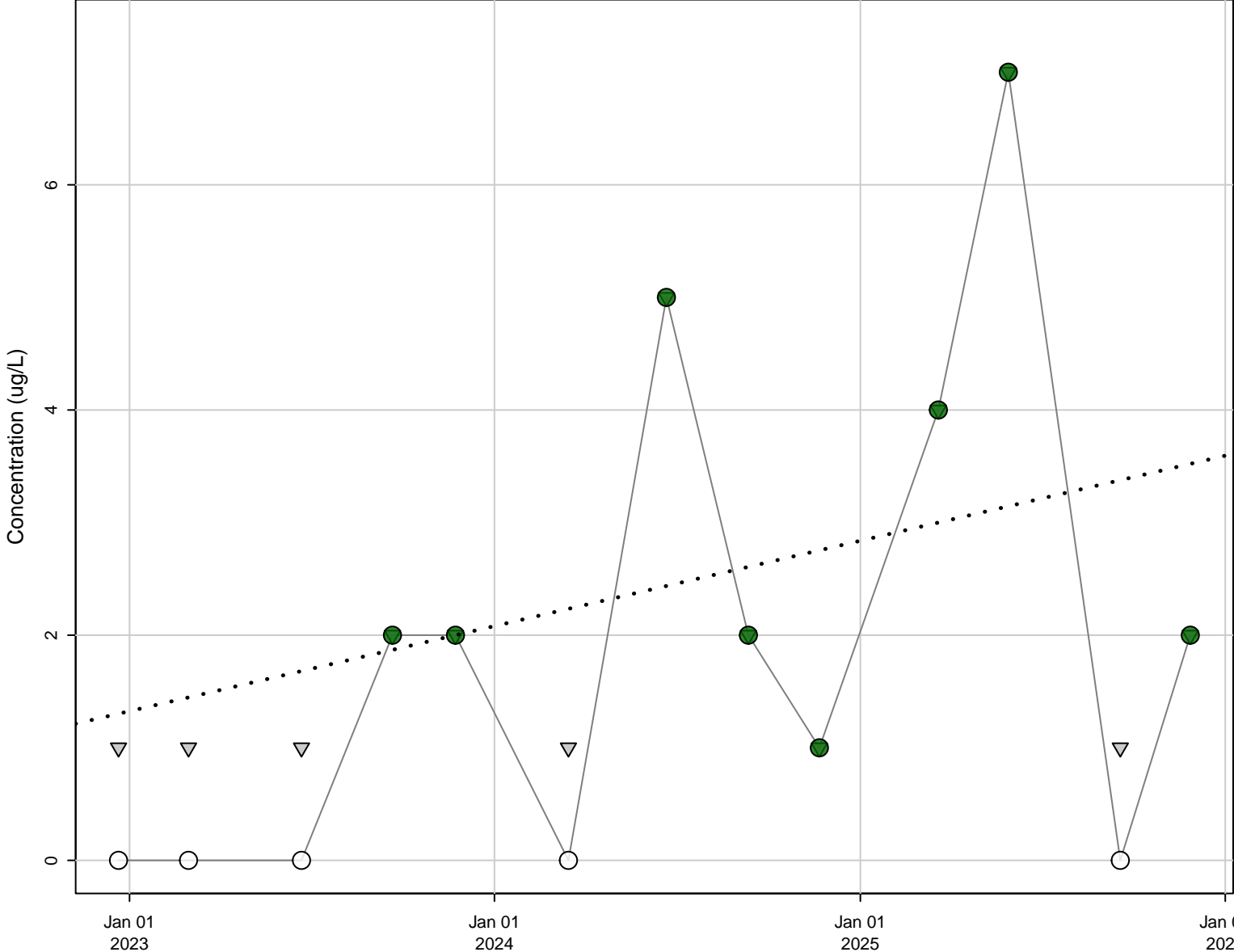
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.51

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D16A, Lead [ug/L]



Stats

N Data: 13
N Detect: 8
% Detect: 62

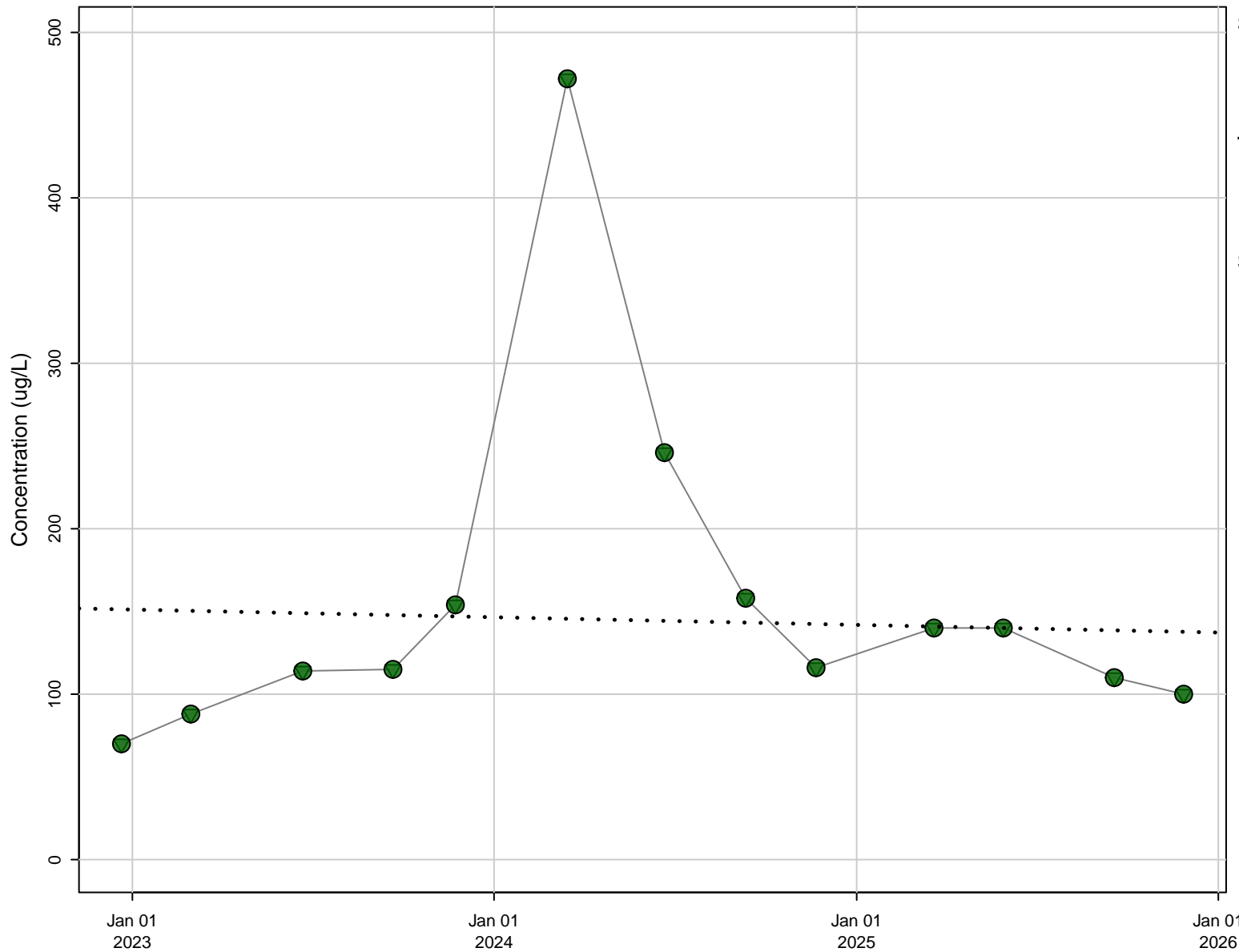
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0956

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D16A, Manganese [ug/L]



Stats

N Data: 13
N Detect: 13
% Detect: 100

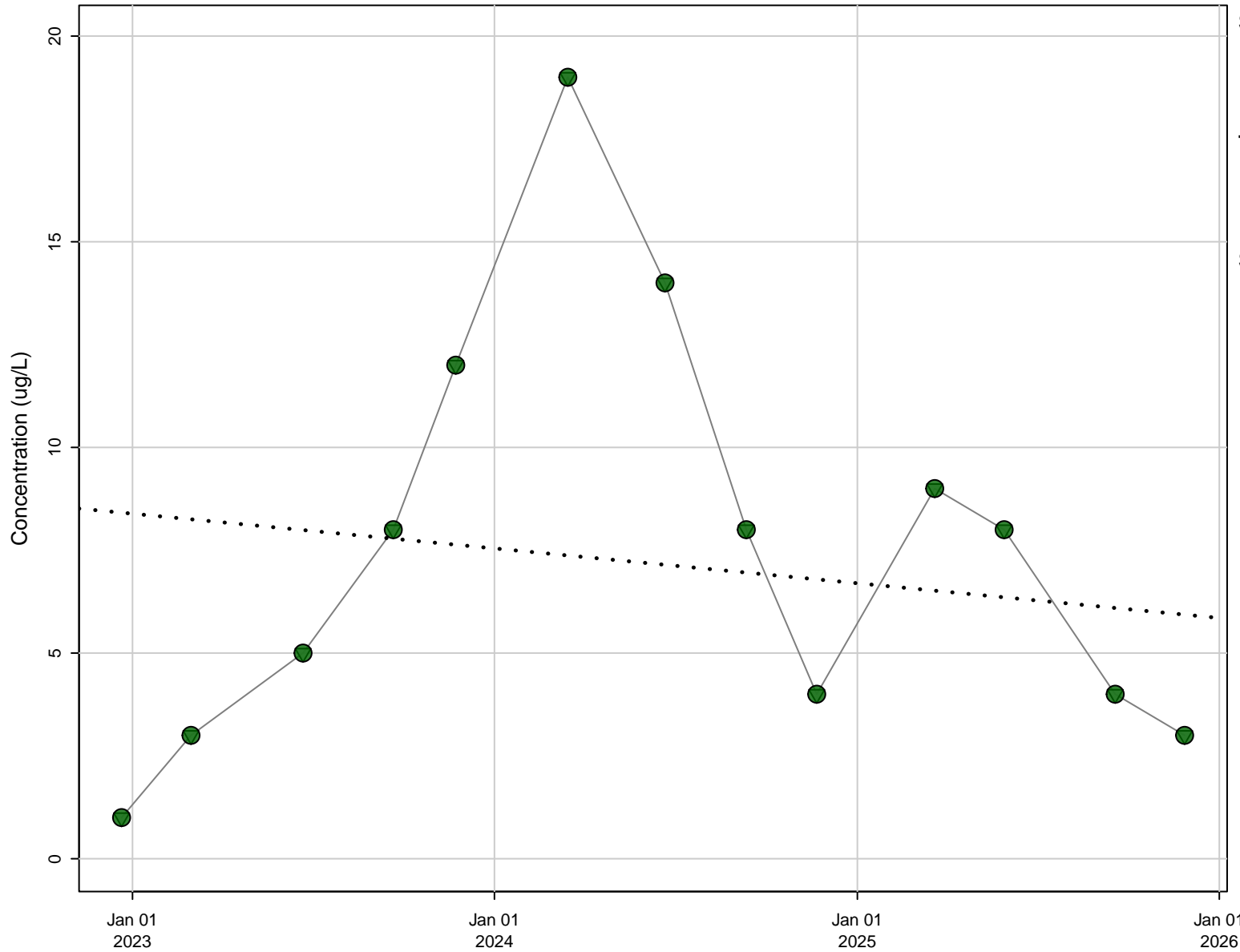
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.582

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D16A, Nickel [ug/L]



Stats

N Data: 13
N Detect: 13
% Detect: 100

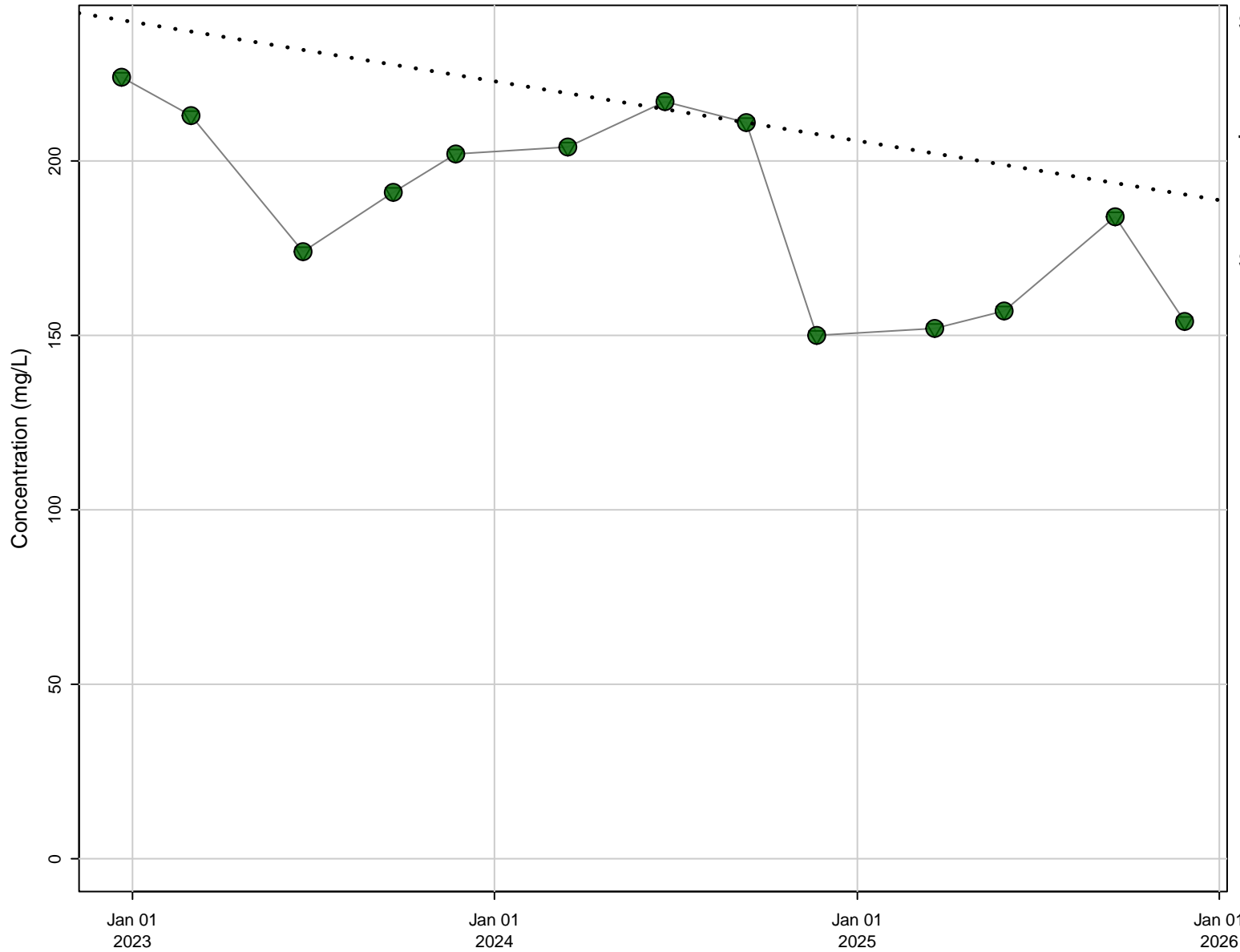
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.853

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D16A, Sulfate (as SO4) [mg/L]



Stats

N Data: 13
N Detect: 13
% Detect: 100

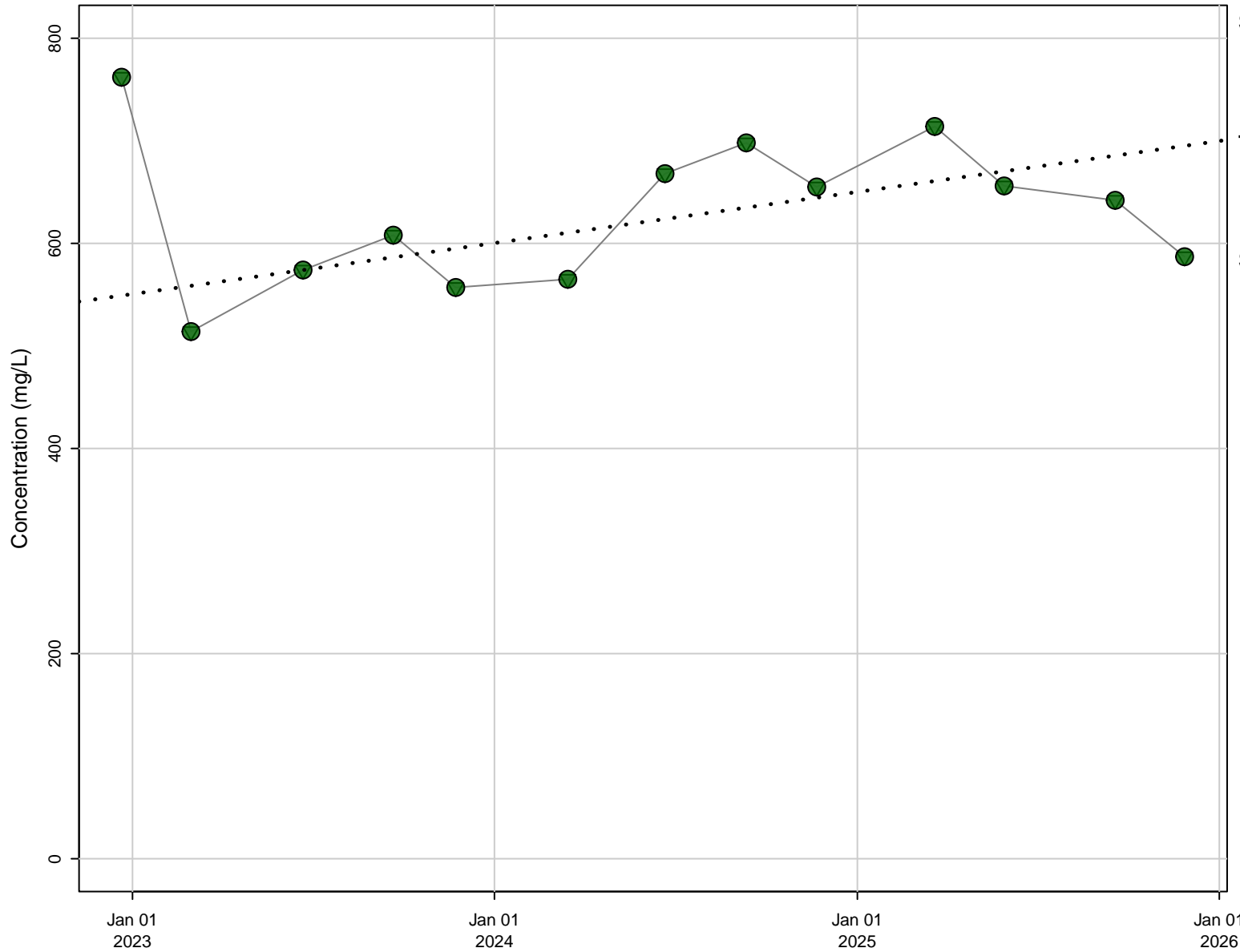
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0763

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D16A, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 13
N Detect: 13
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.51

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D18, Boron [ug/L]

Stats

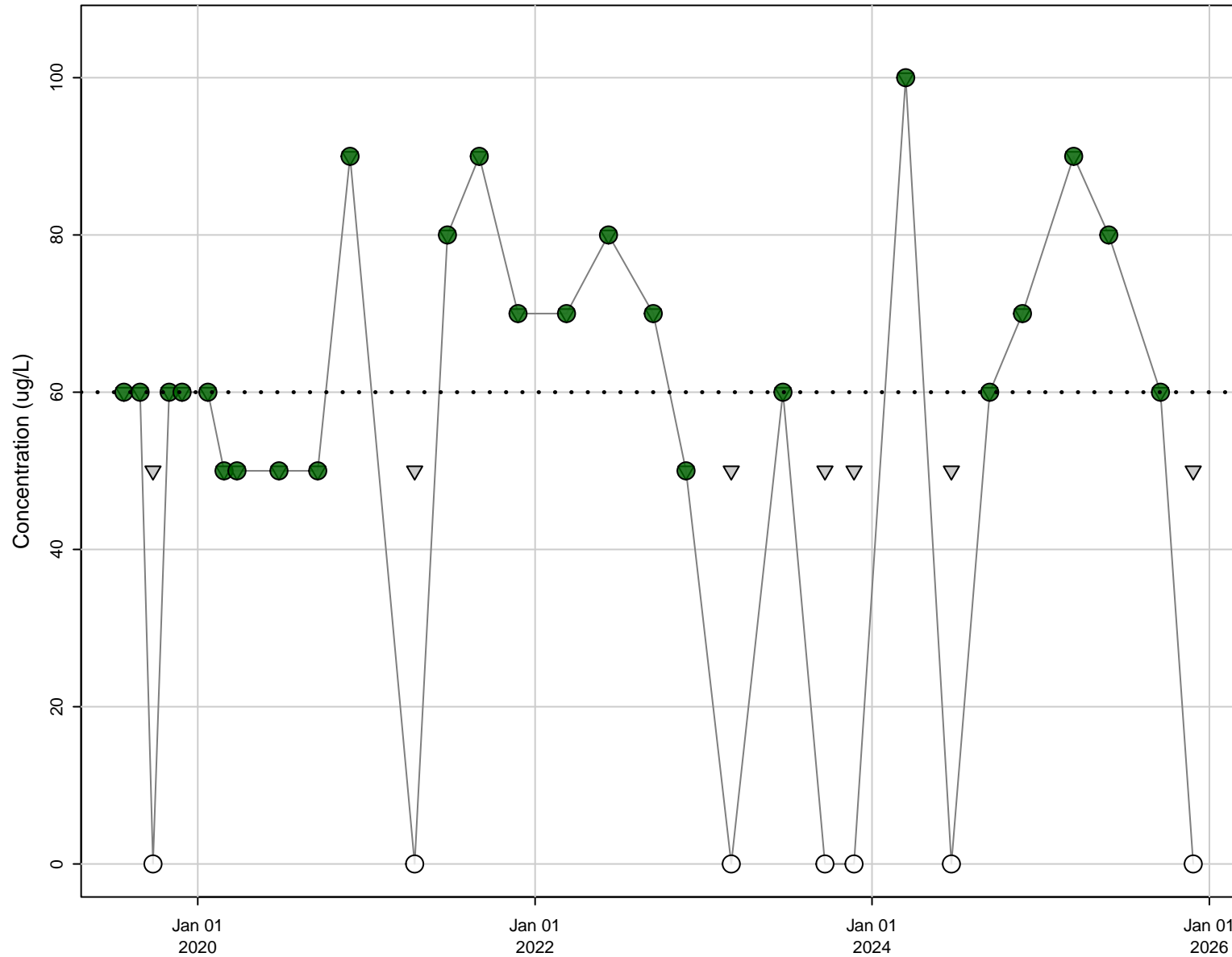
N Data: 31
N Detect: 24
% Detect: 77

Trend Results

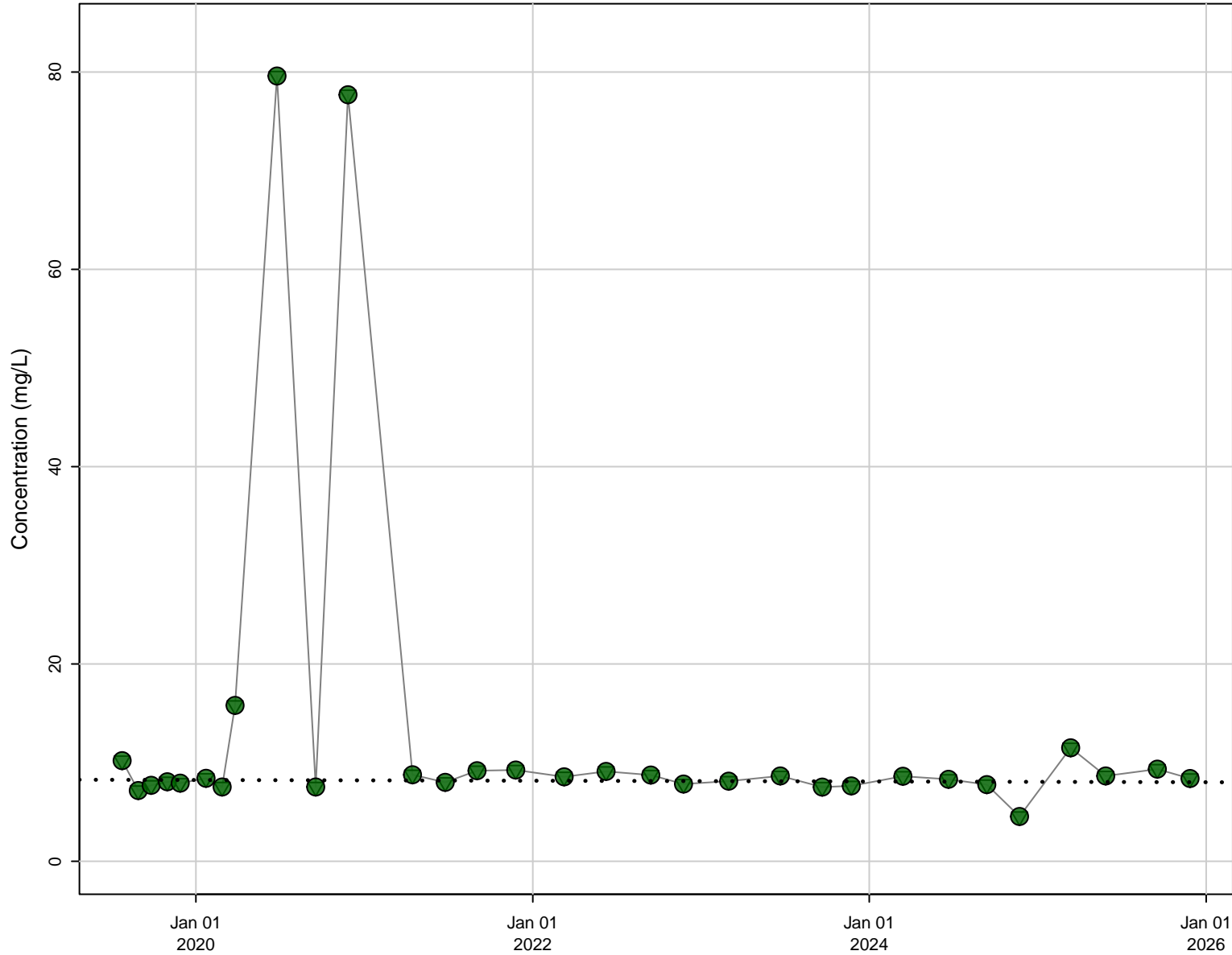
Trend: Not Significant
Confidence Level: 95%
p-value: 0.781

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D18, Chloride [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

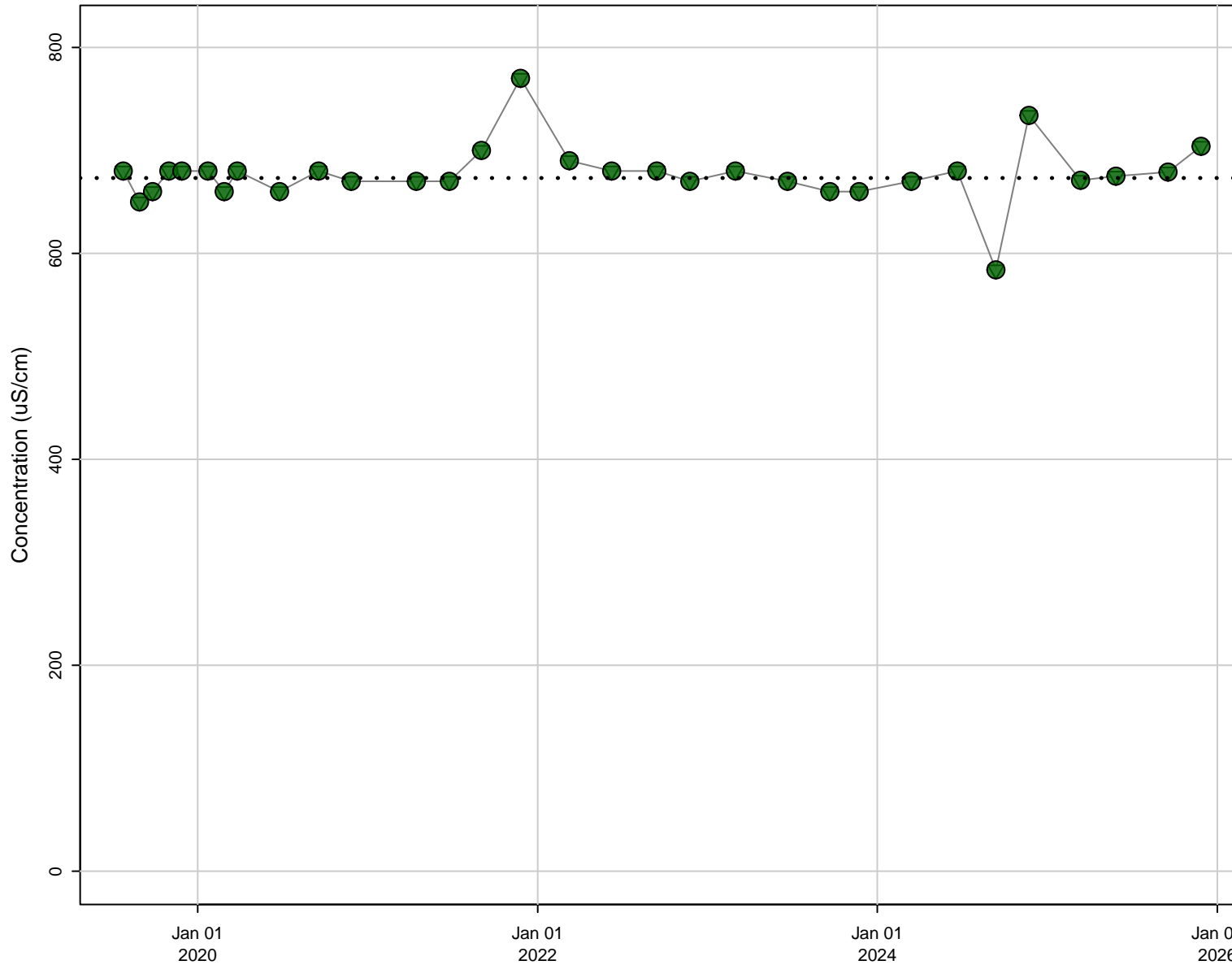
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.959

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D18, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 31
N Detect: 31
% Detect: 100

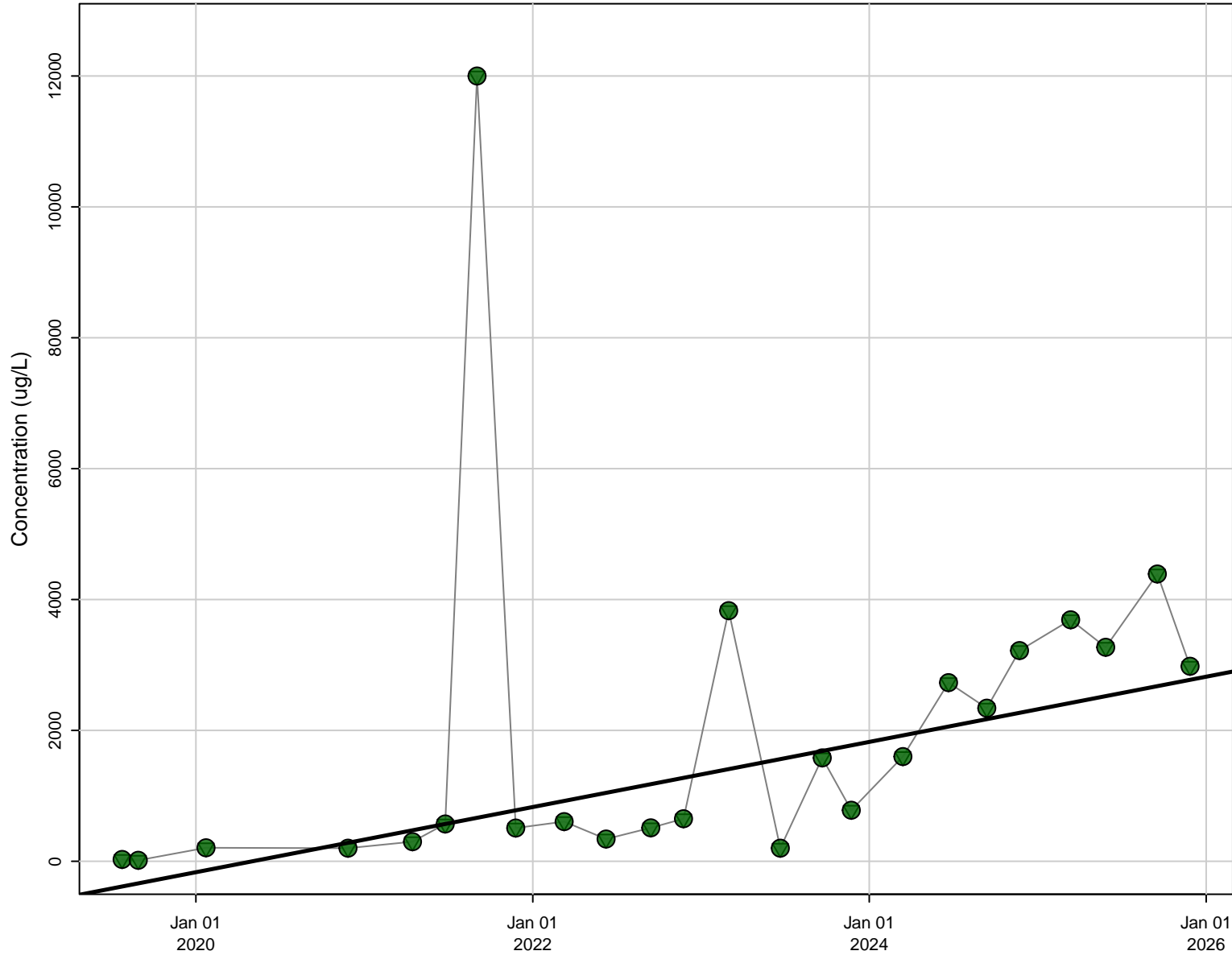
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.589

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D18, Iron [ug/L]



Stats

N Data: 24
N Detect: 24
% Detect: 100

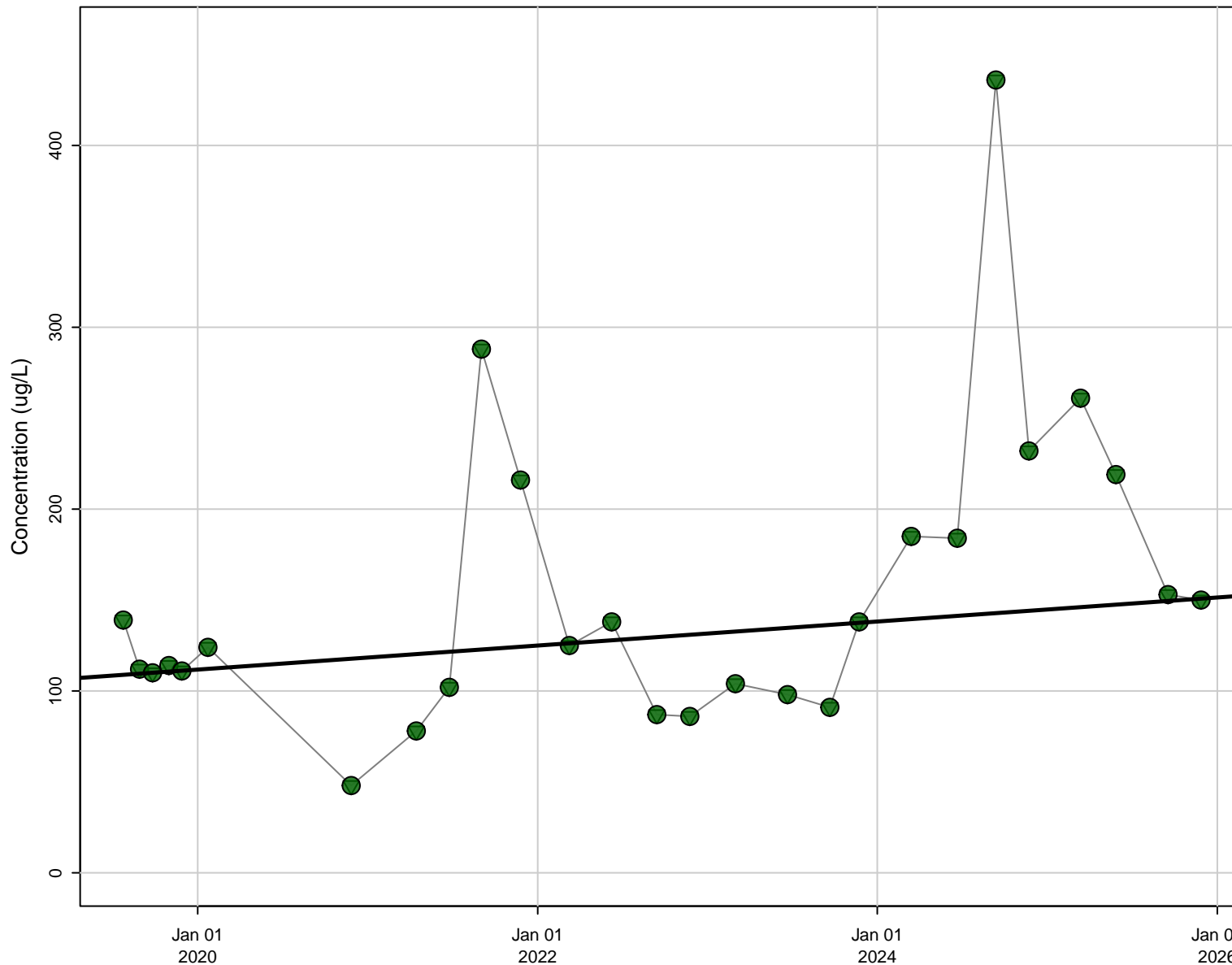
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D18, Manganese [ug/L]



Stats

N Data: 27
N Detect: 27
% Detect: 100

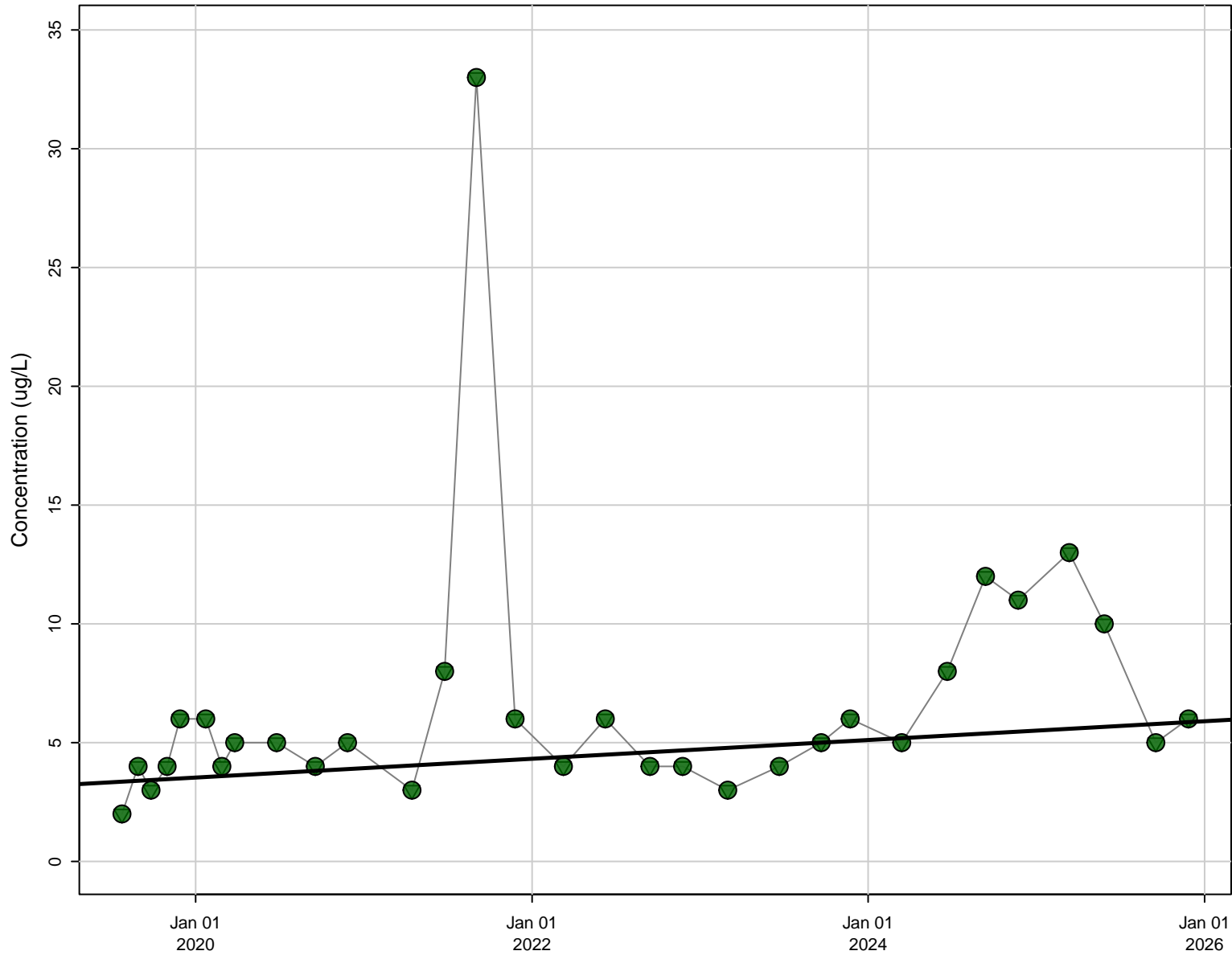
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0334

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D18, Nickel [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

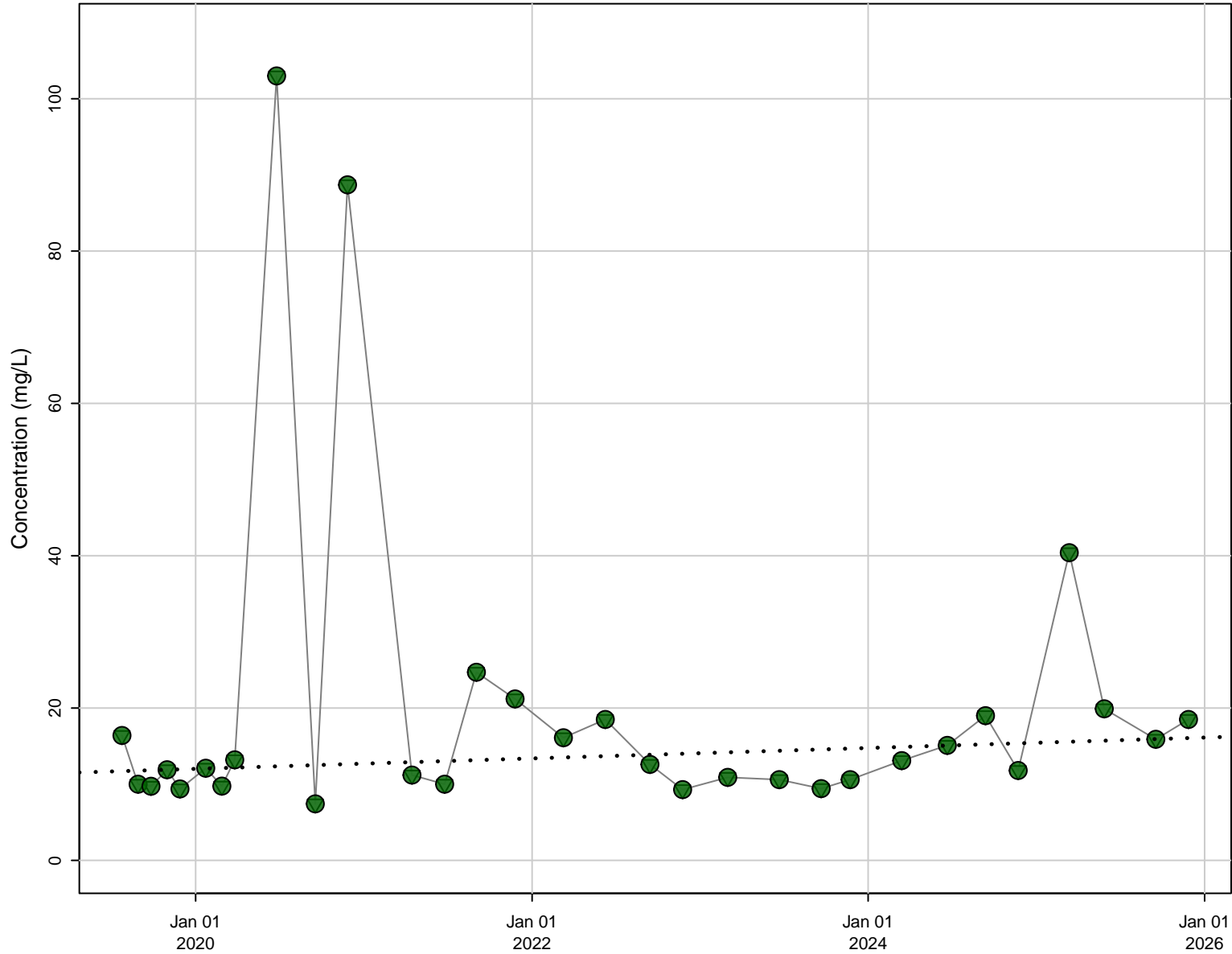
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.00476

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D18, Sulfate (as SO4) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

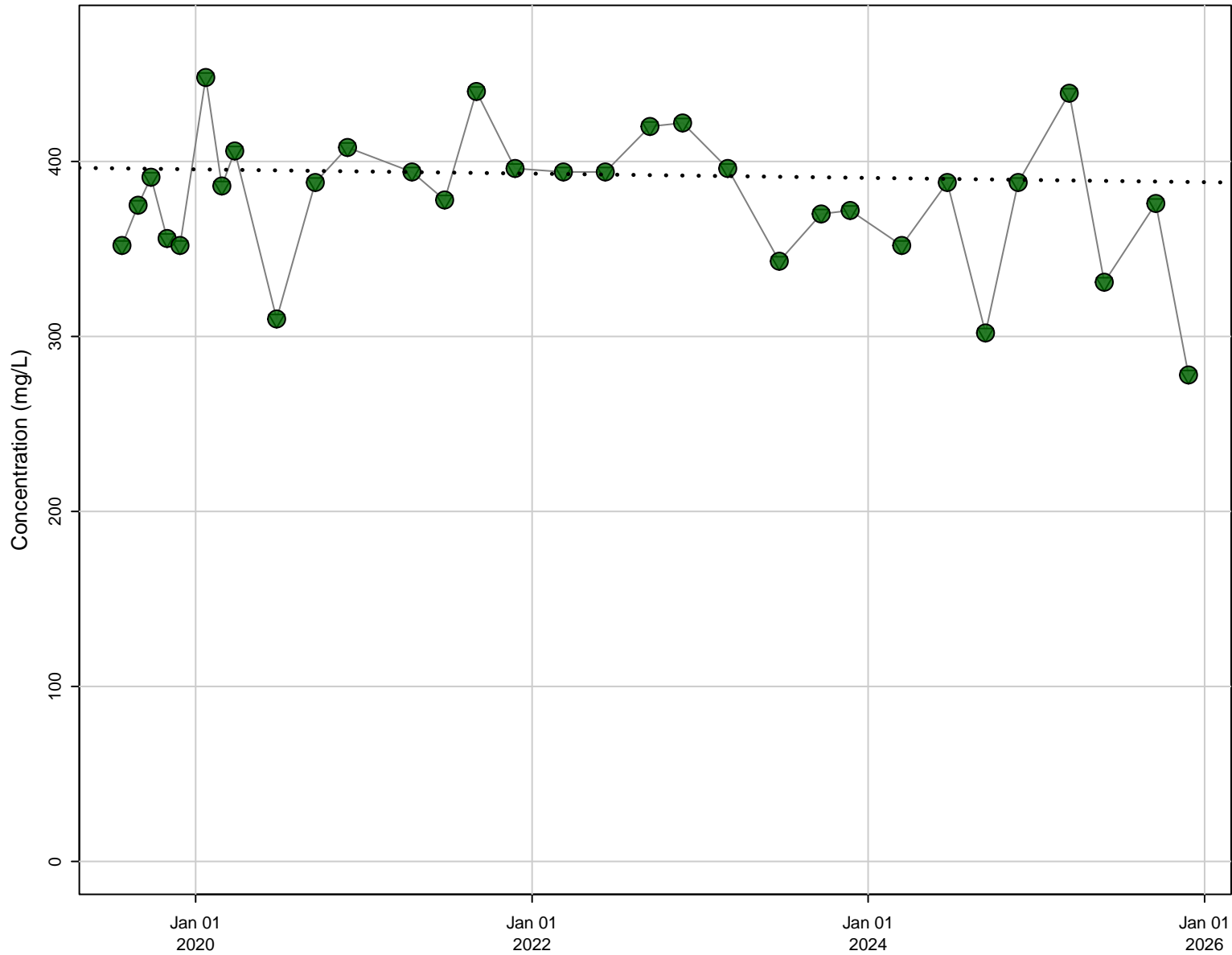
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.153

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D18, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

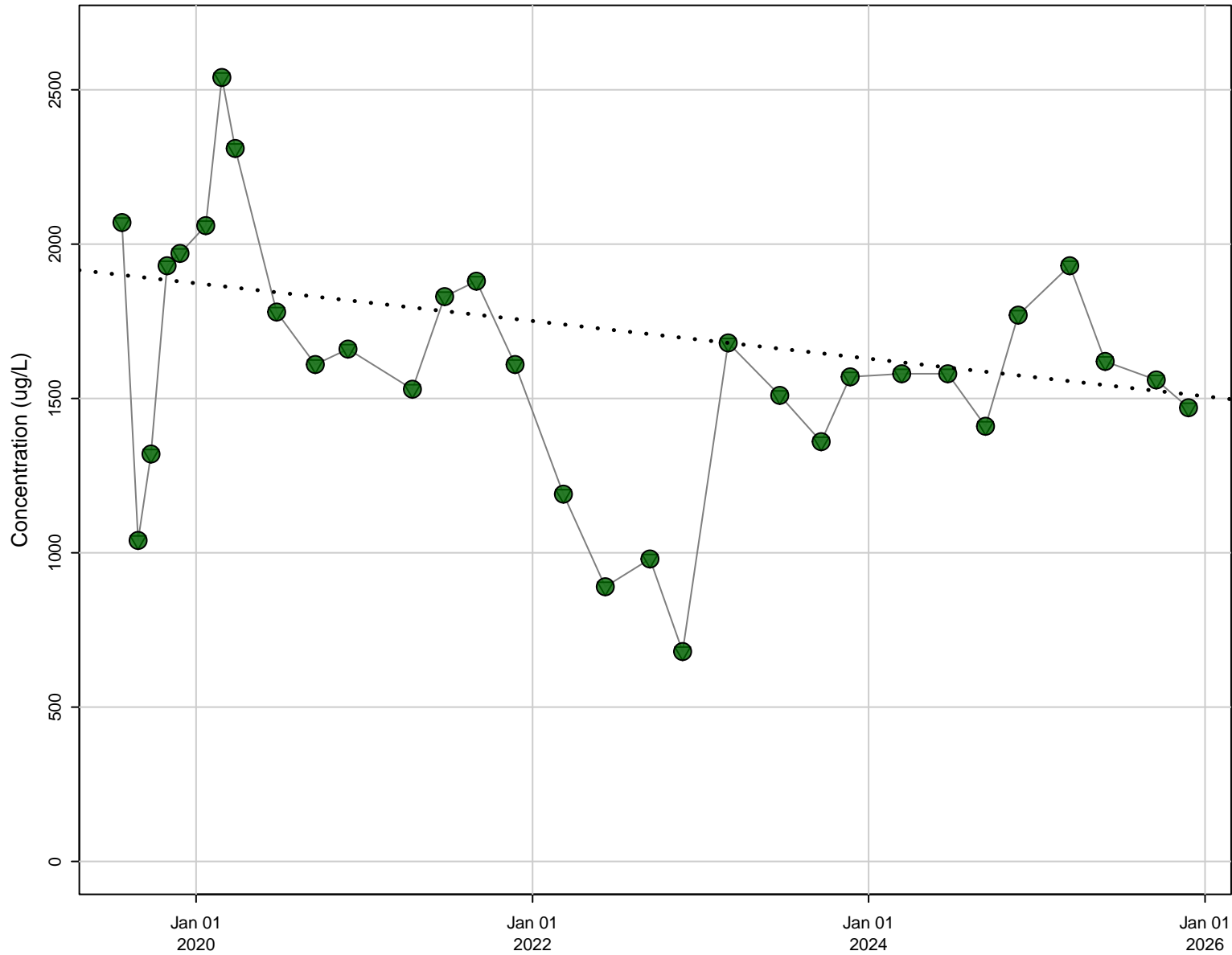
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.444

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D19, Boron [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

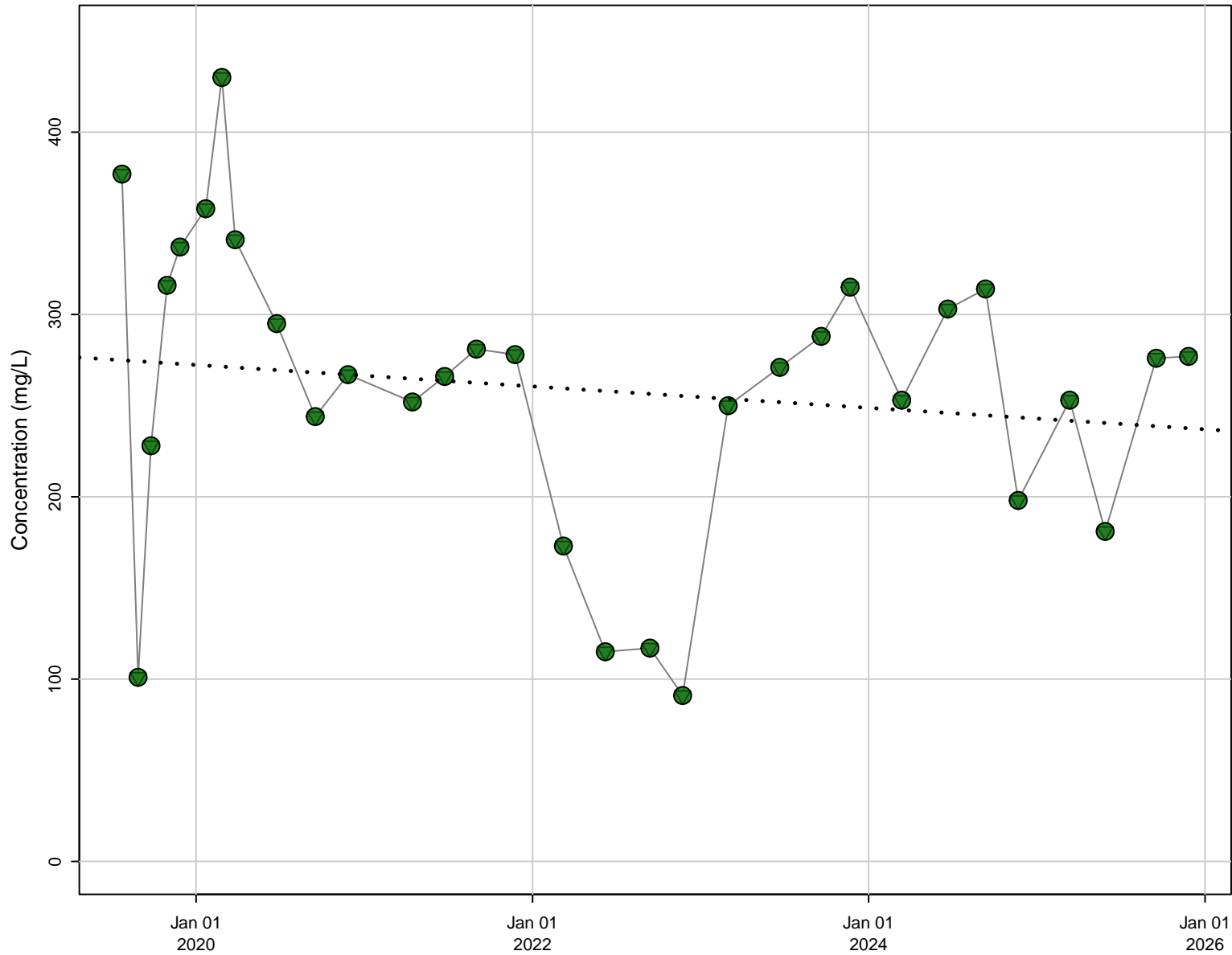
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0715

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D19, Chloride [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

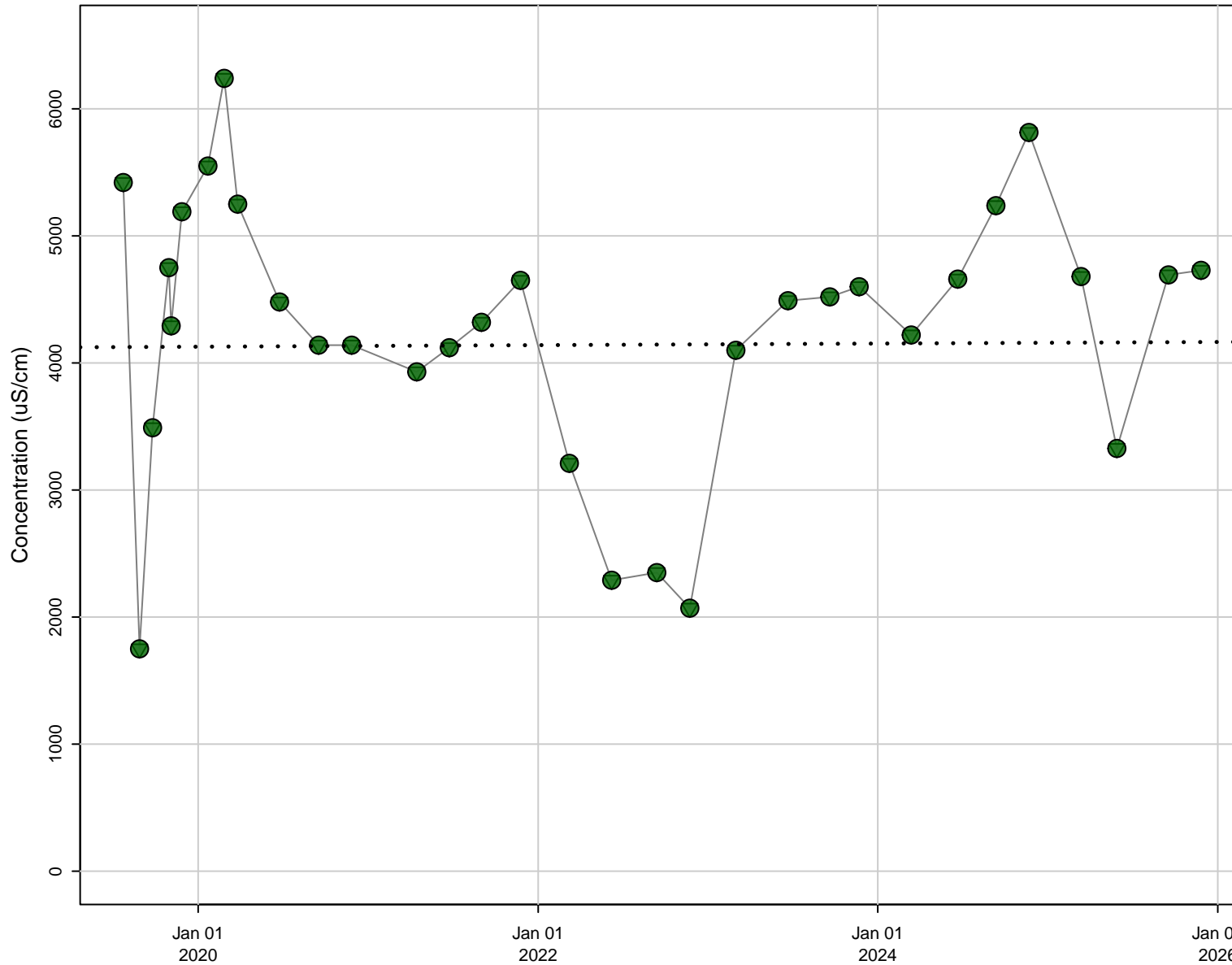
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.208

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D19, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 32
N Detect: 32
% Detect: 100

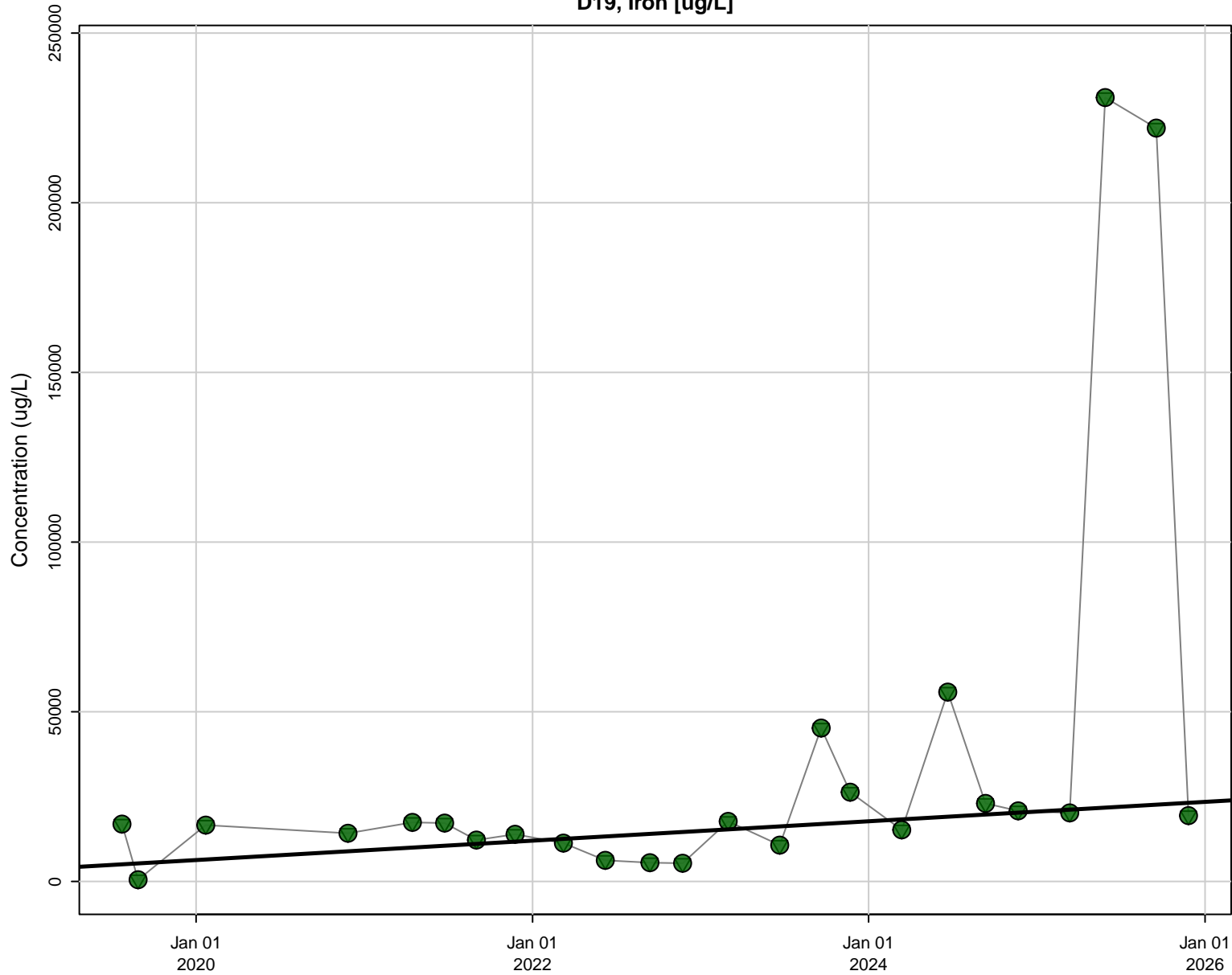
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.685

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D19, Iron [ug/L]



Stats

N Data: 24
N Detect: 24
% Detect: 100

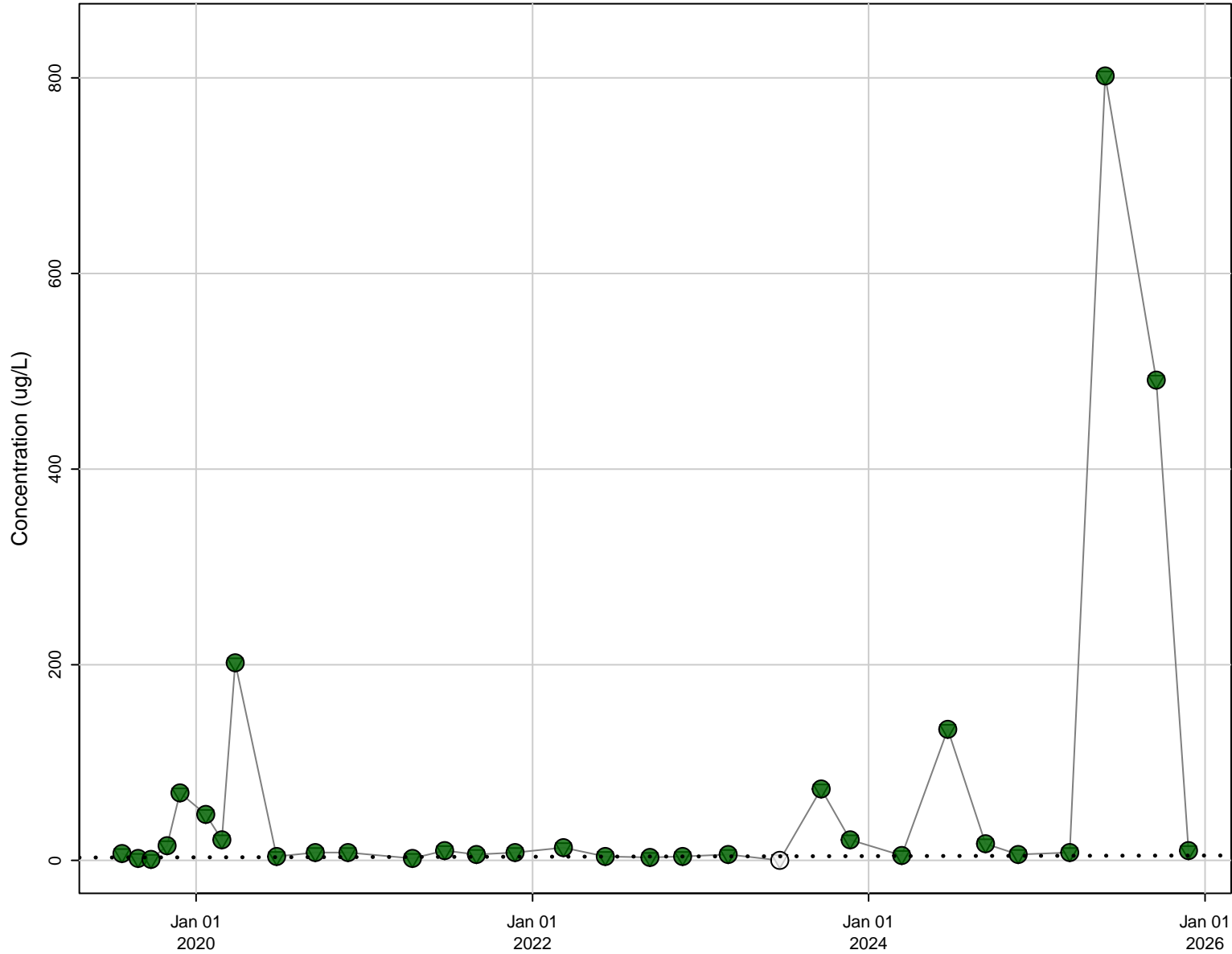
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0111

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D19, Lead [ug/L]



Stats

N Data: 31
N Detect: 30
% Detect: 97

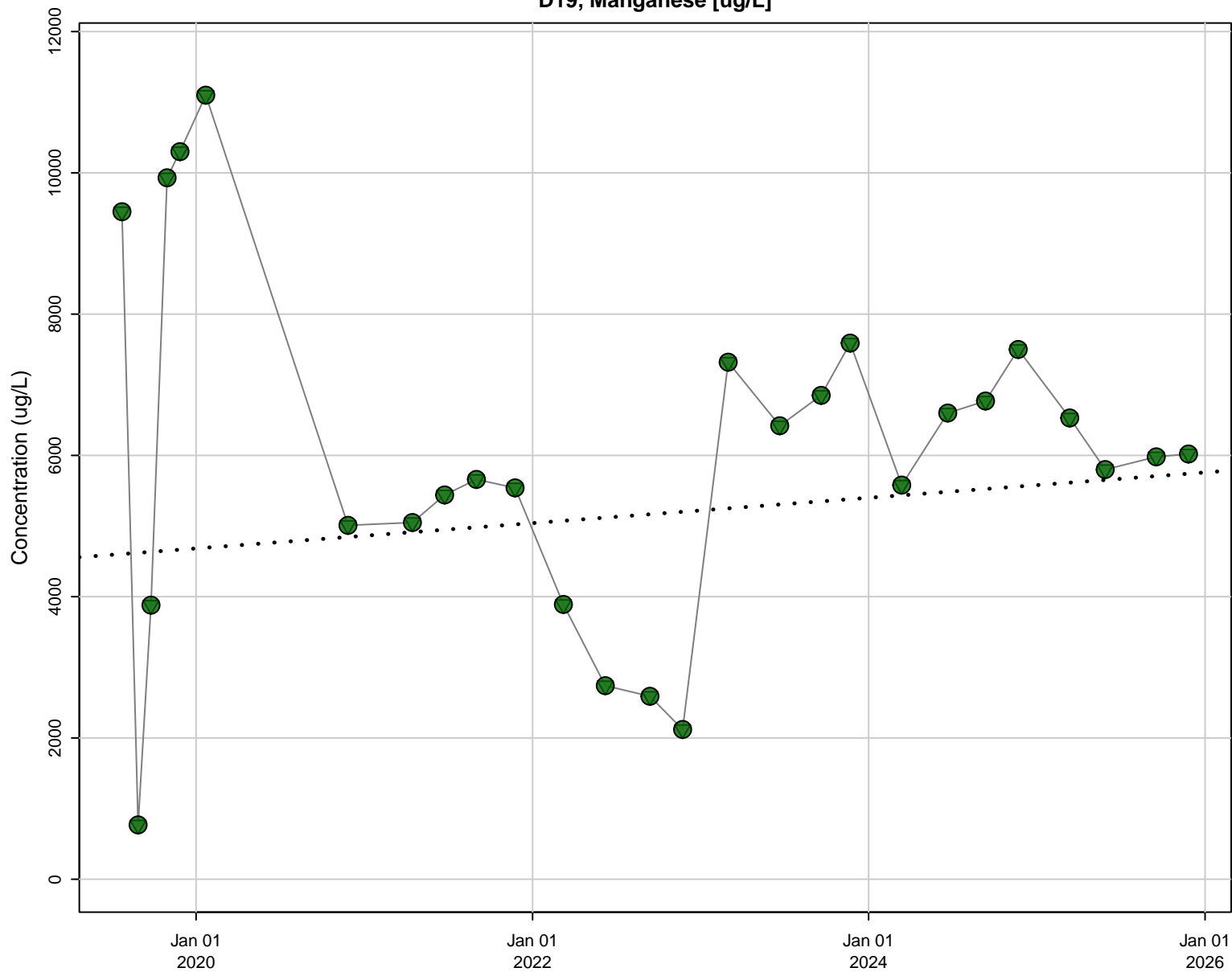
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.261

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D19, Manganese [ug/L]



Stats

N Data: 27
N Detect: 27
% Detect: 100

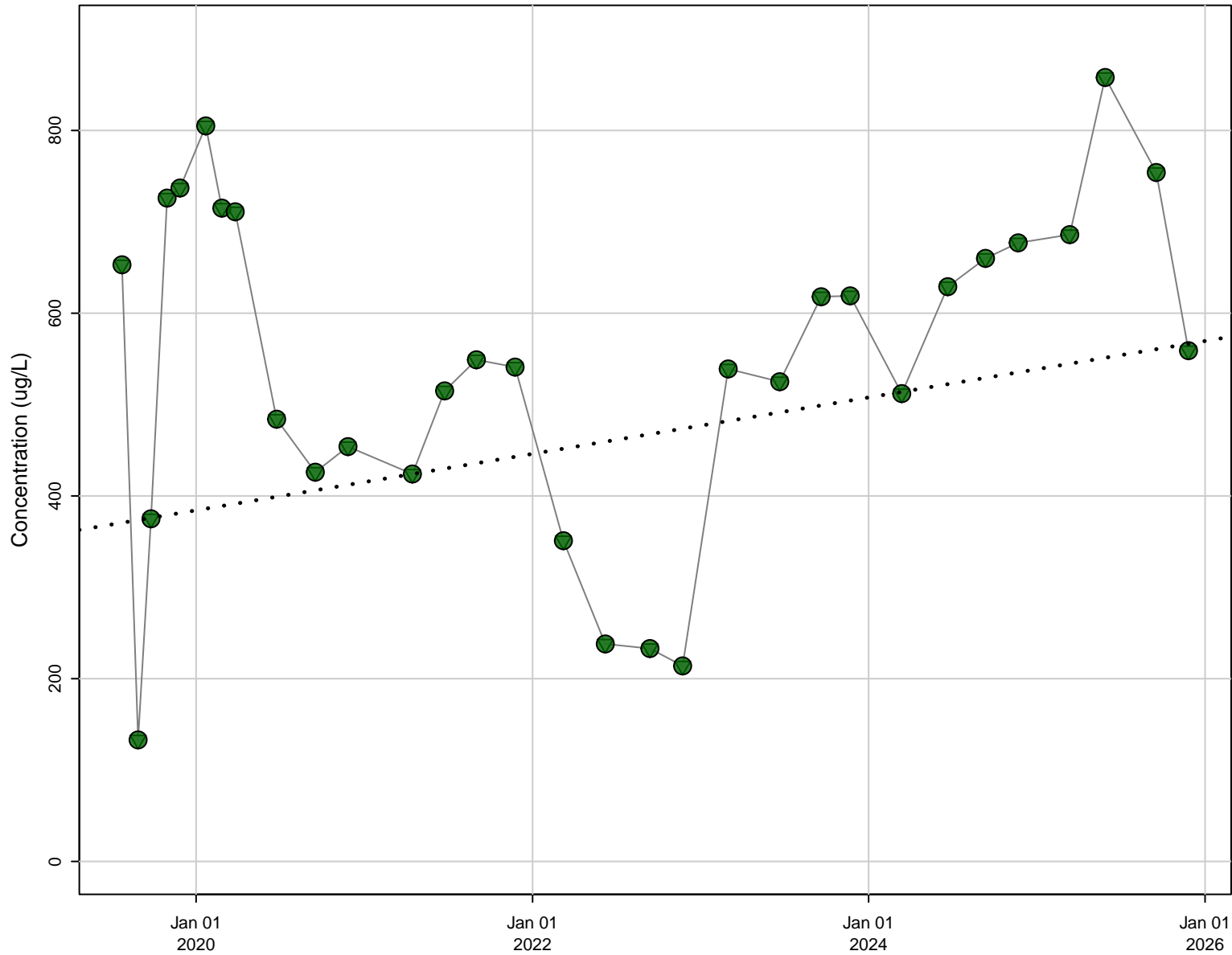
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.535

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D19, Nickel [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

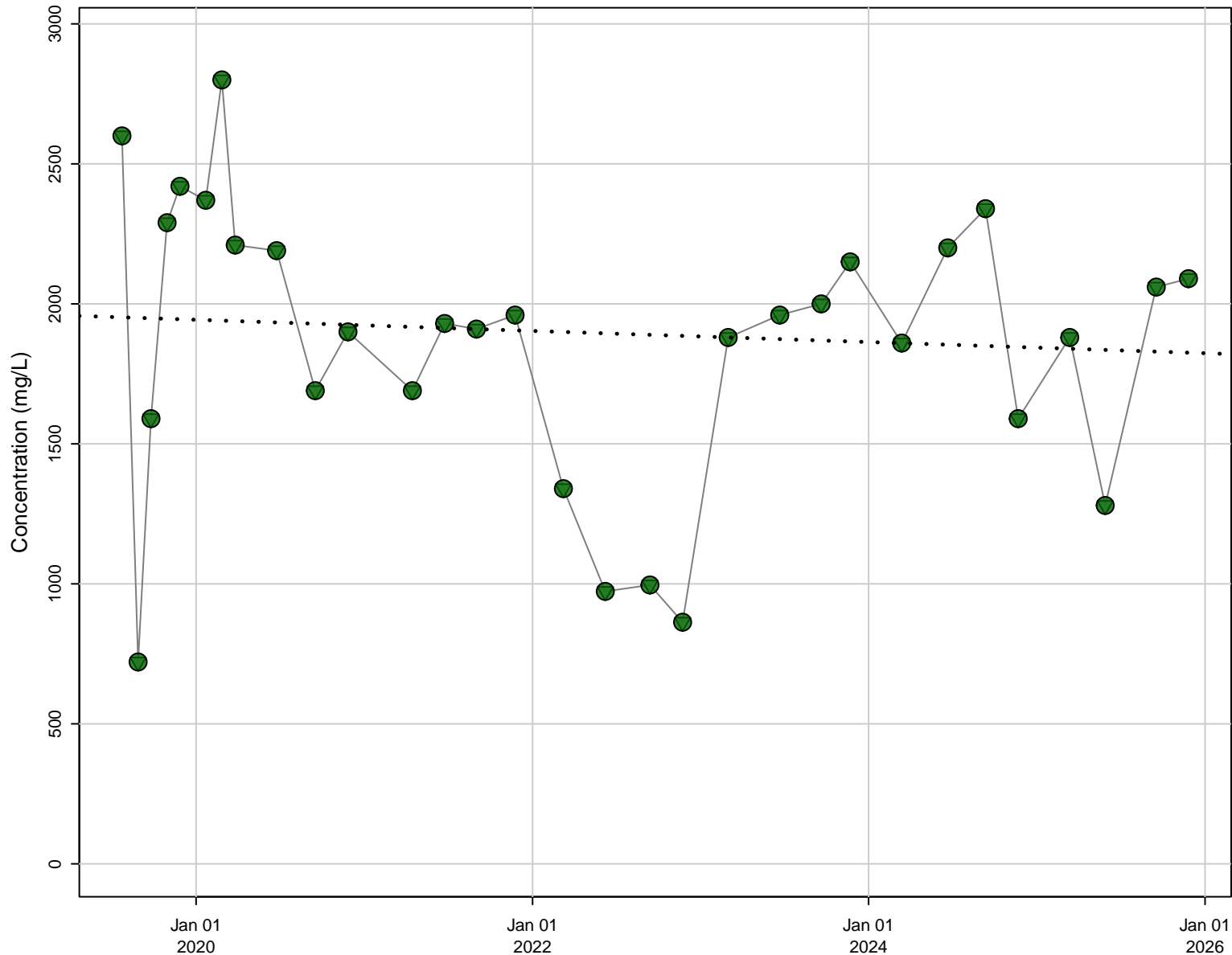
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.25

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D19, Sulfate (as SO4) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

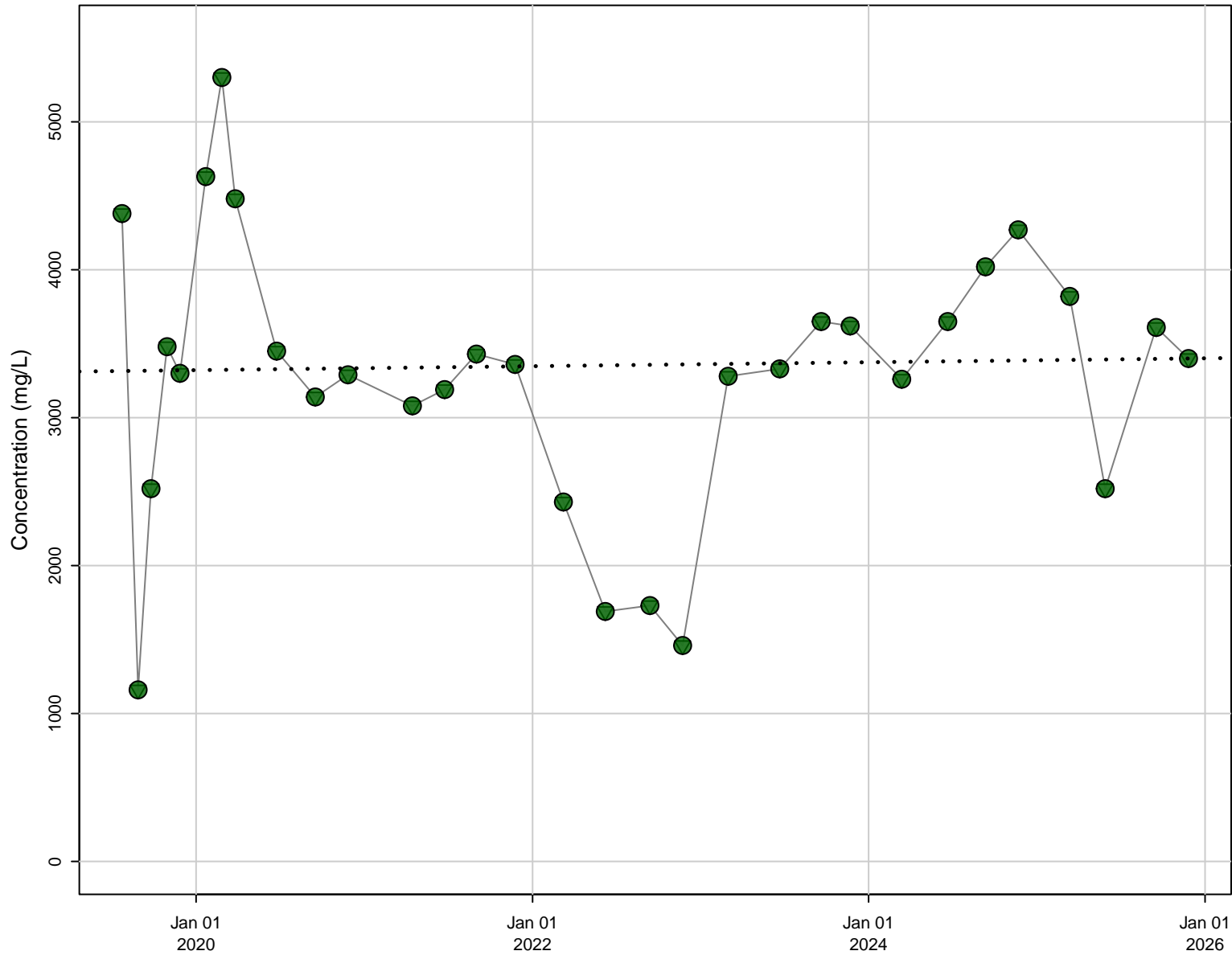
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.332

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D19, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

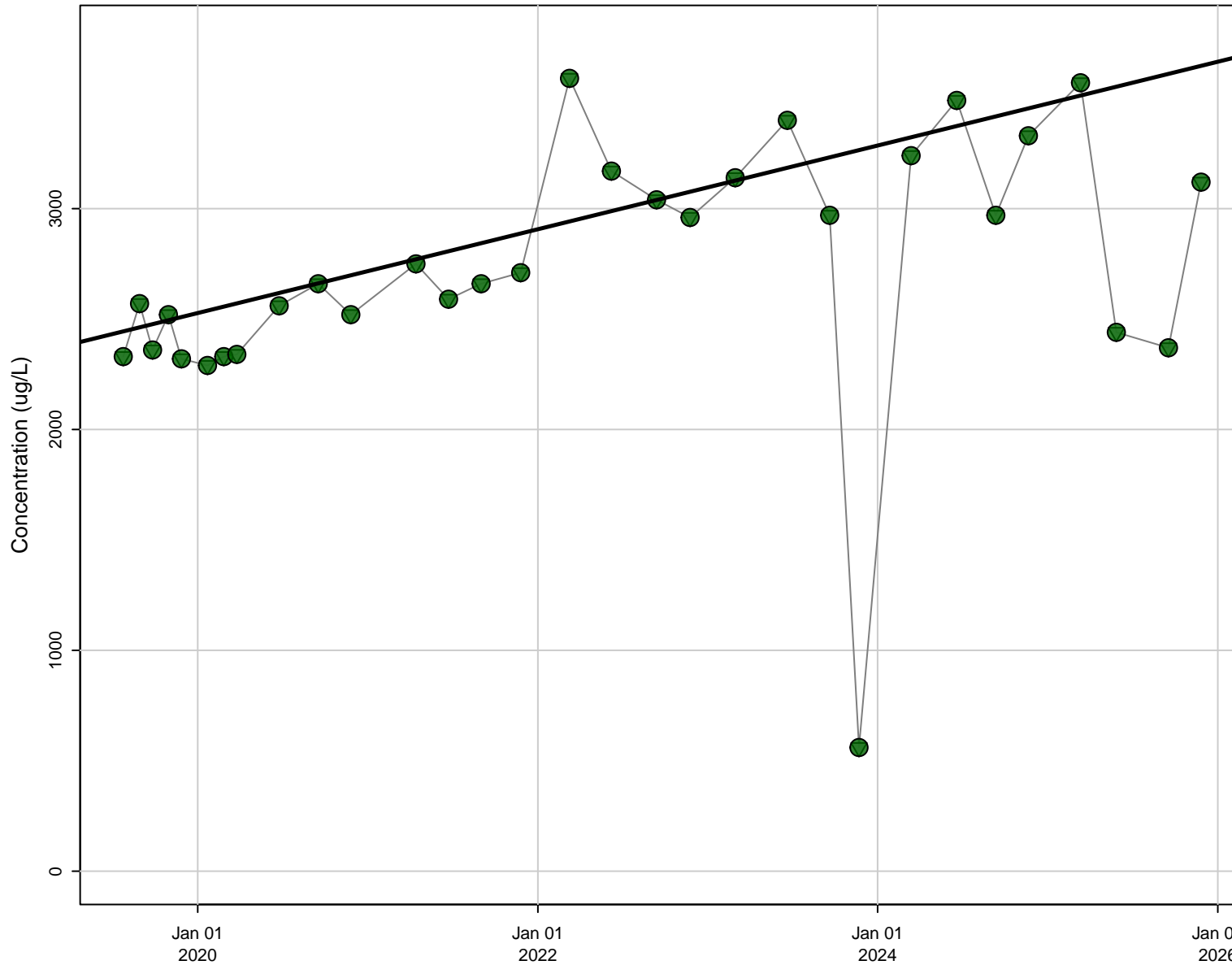
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.747

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D1, Boron [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

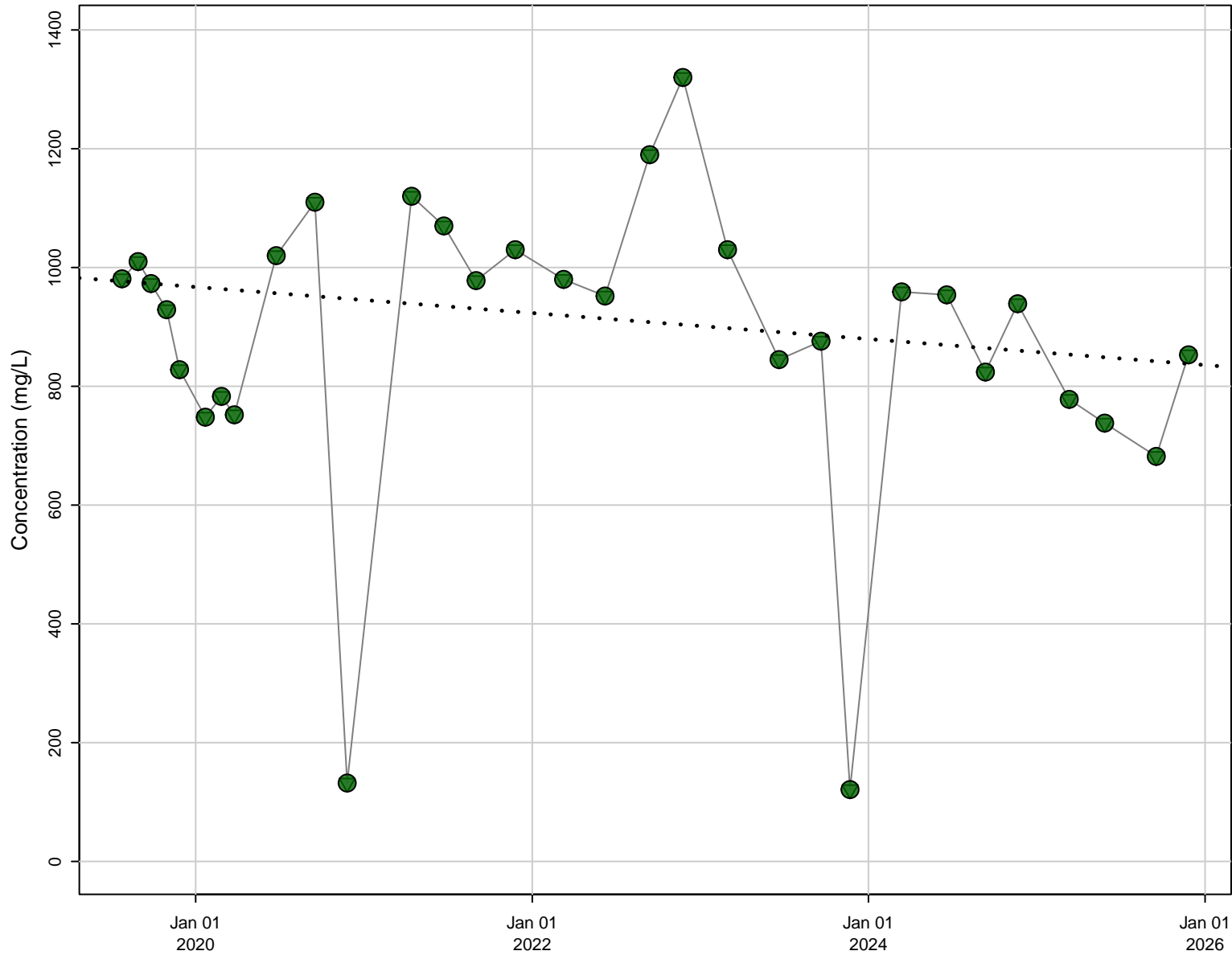
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D1, Chloride [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

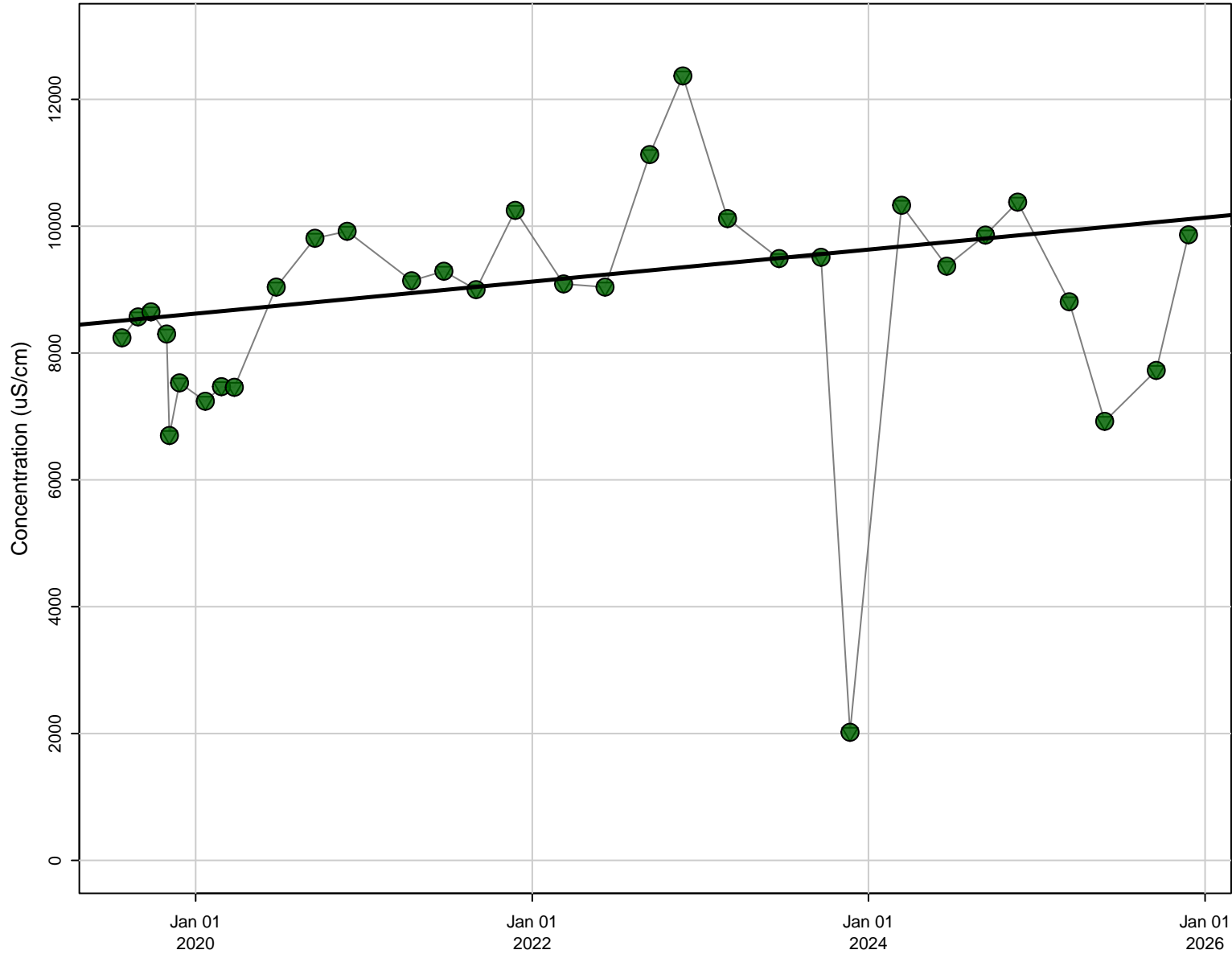
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.118

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D1, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 32
N Detect: 32
% Detect: 100

Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0242

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D1, Iron [ug/L]

Stats

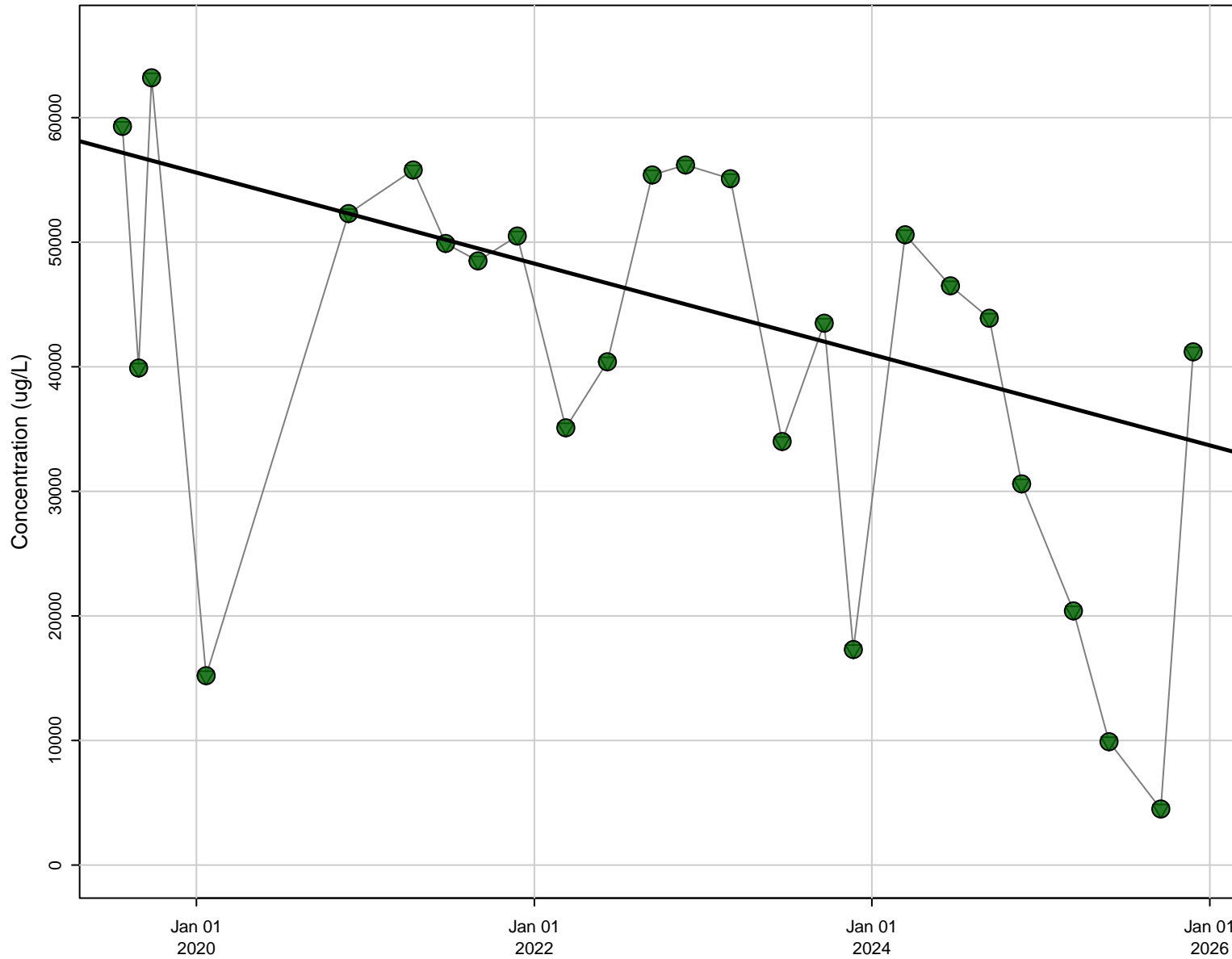
N Data: 25
N Detect: 25
% Detect: 100

Trend Results

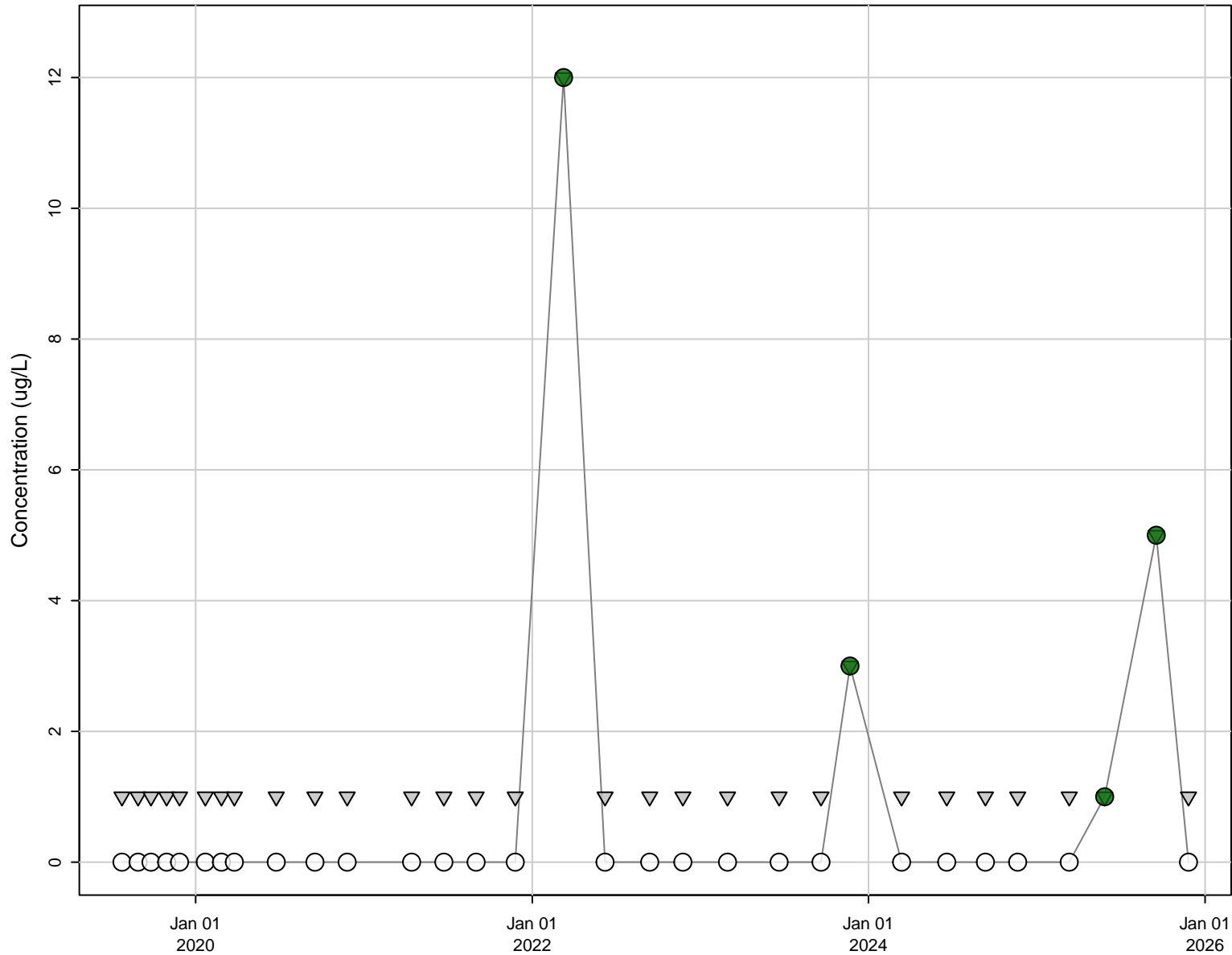
Trend: Decreasing
Confidence Level: 95%
p-value: 0.00463

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D1, Lead [ug/L]



Stats

N Data: 31
N Detect: 4
% Detect: 13

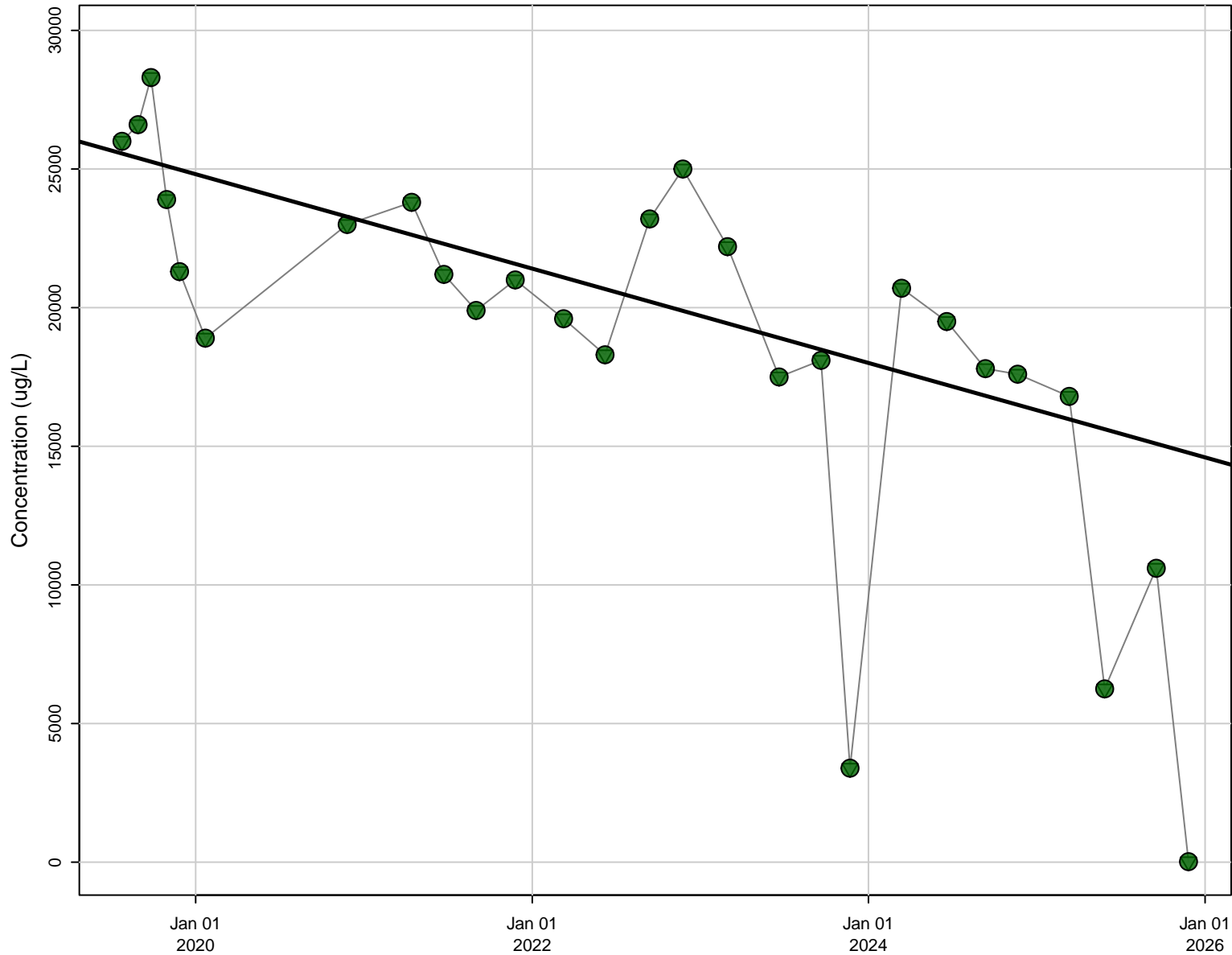
Trend Results

Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit

D1, Manganese [ug/L]



Stats

N Data: 27
N Detect: 27
% Detect: 100

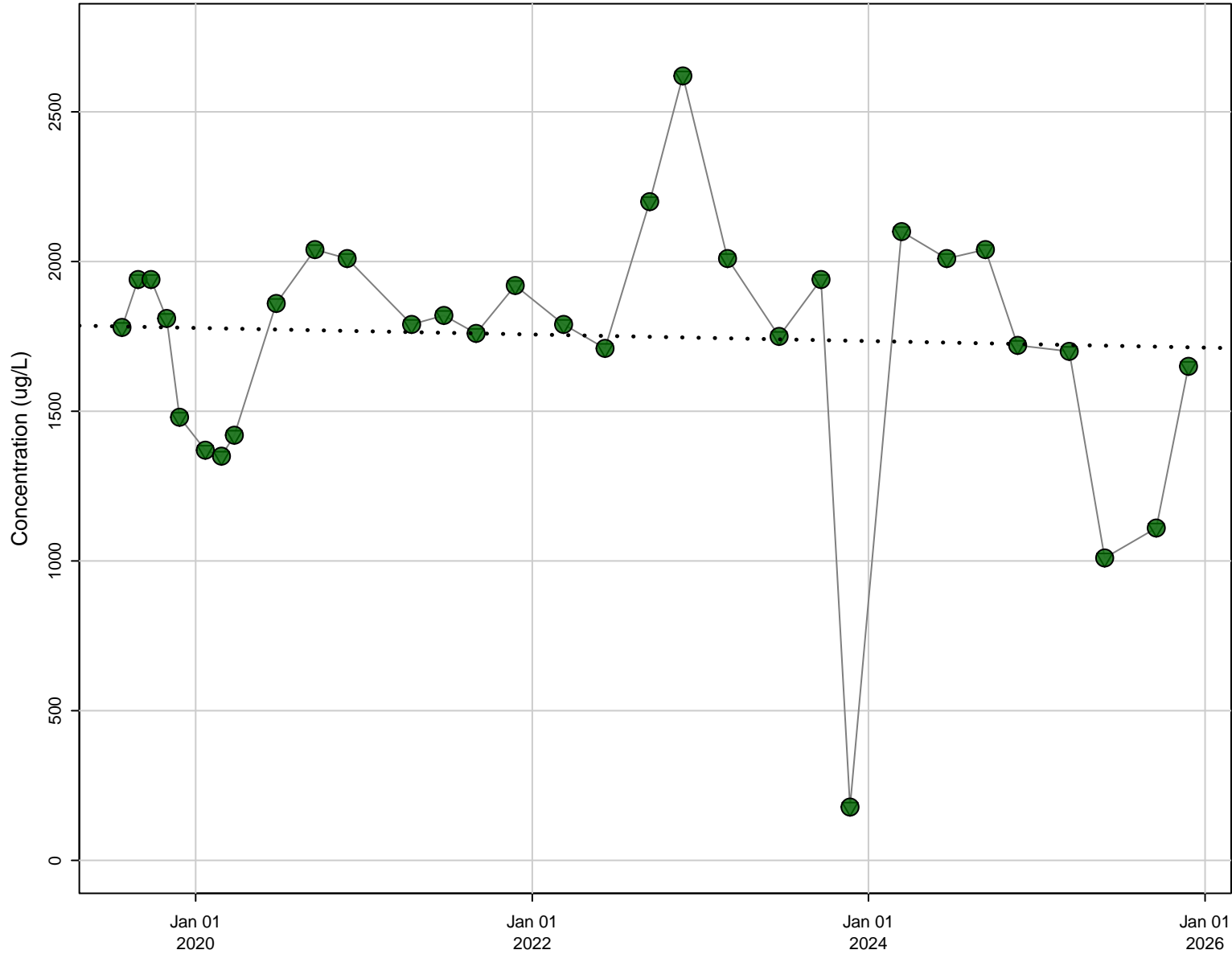
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D1, Nickel [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

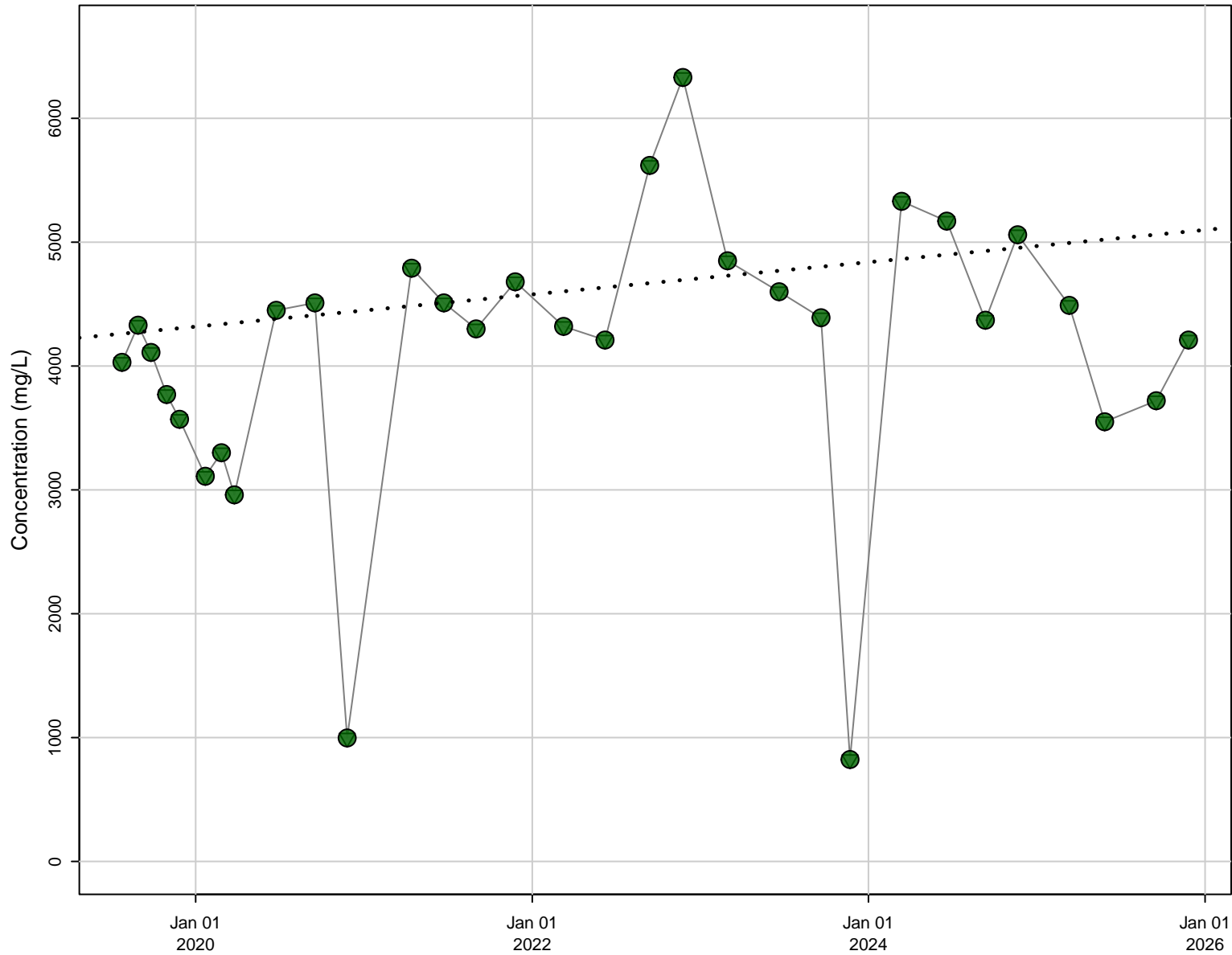
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.646

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D1, Sulfate (as SO4) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

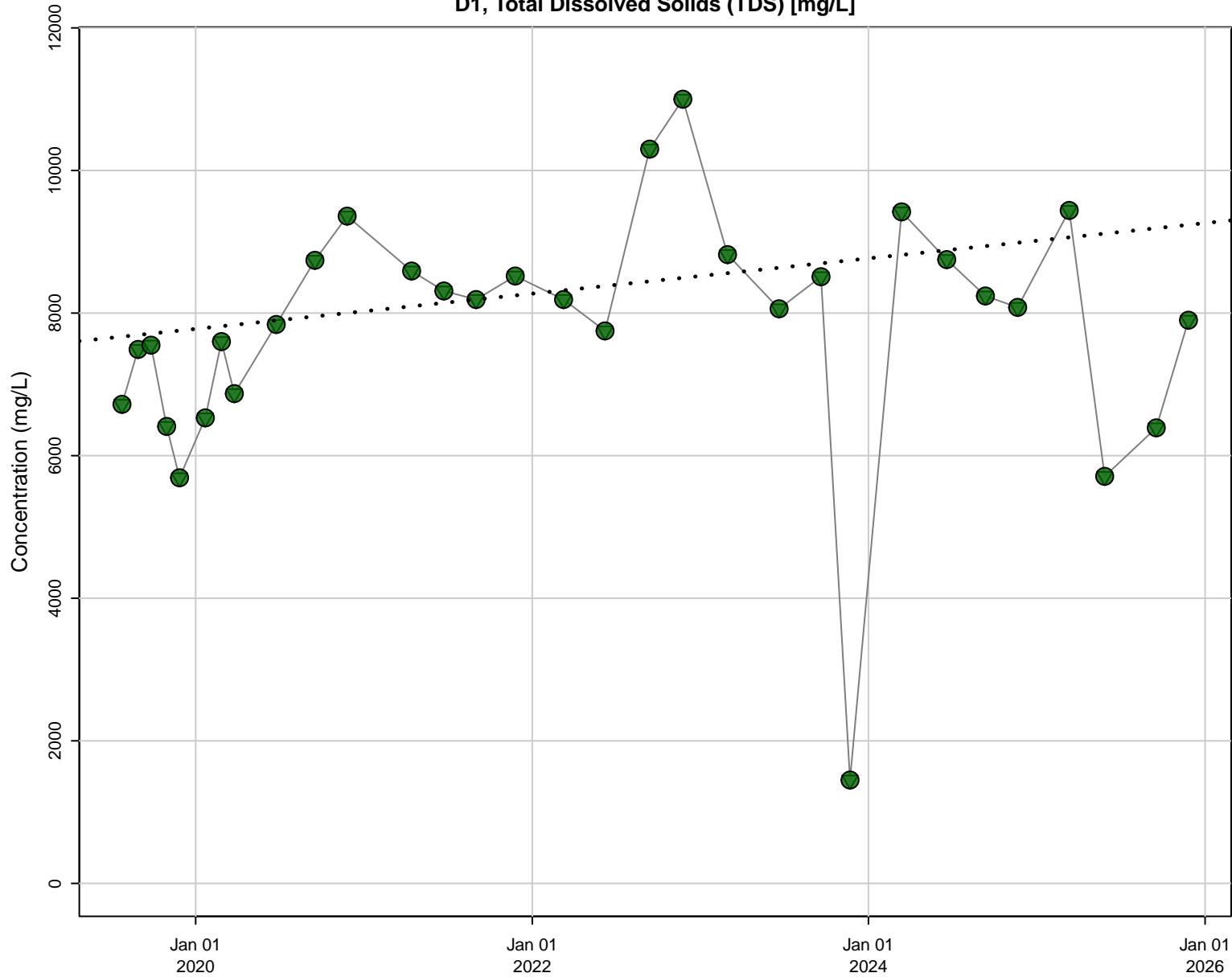
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.148

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D1, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0957

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D2, Boron [ug/L]

Stats

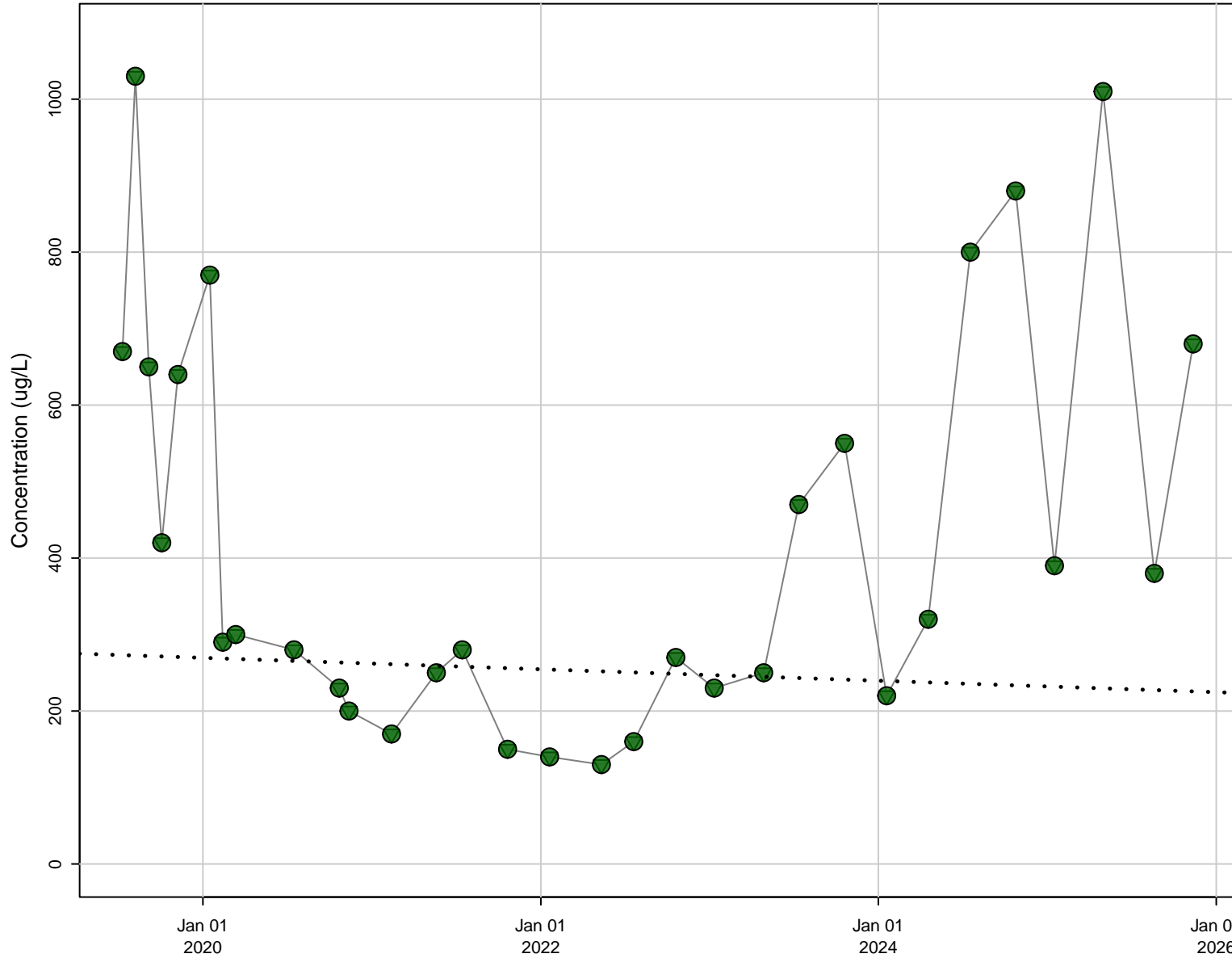
N Data: 31
N Detect: 31
% Detect: 100

Trend Results

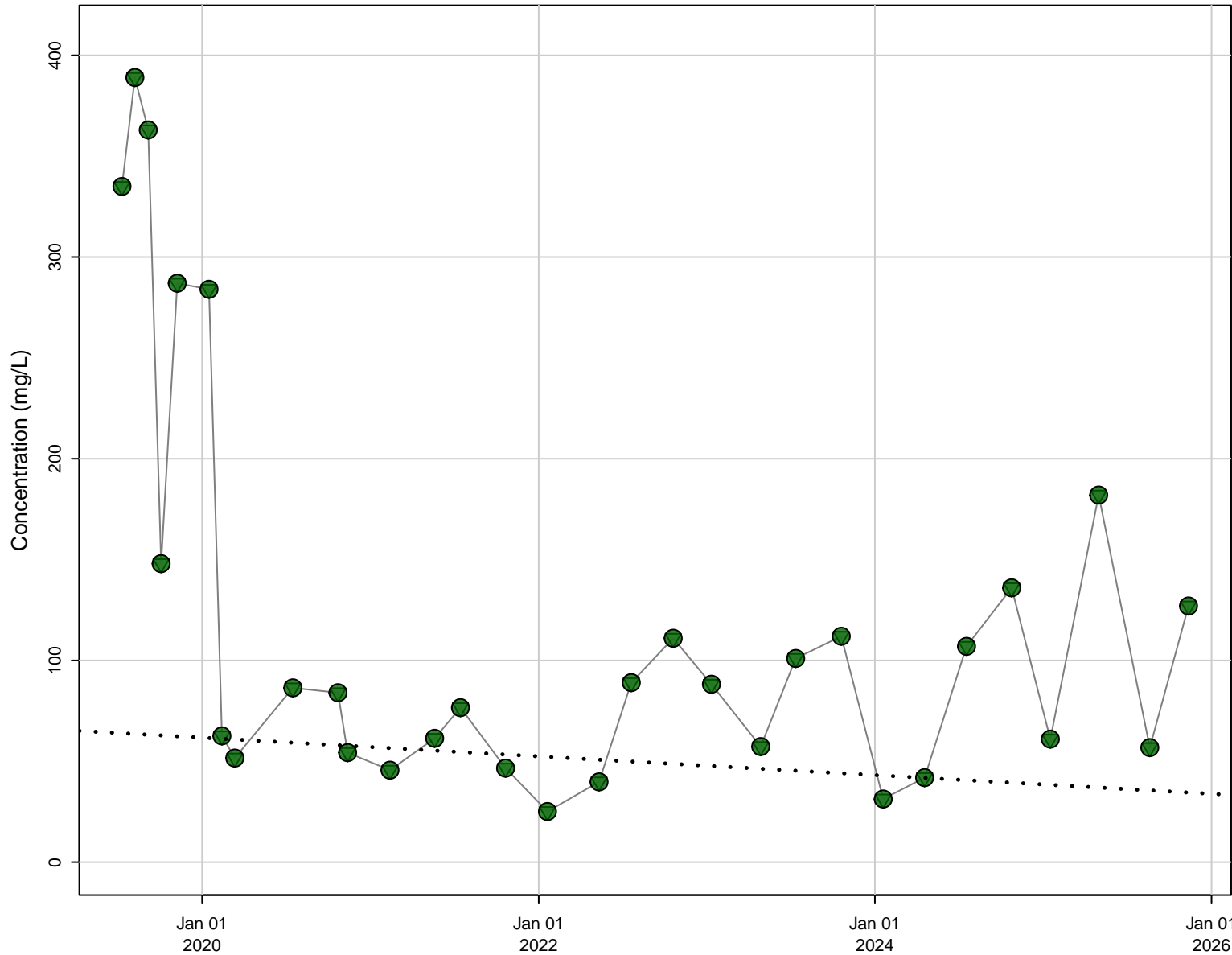
Trend: Not Significant
Confidence Level: 95%
p-value: 0.946

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D2, Chloride [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

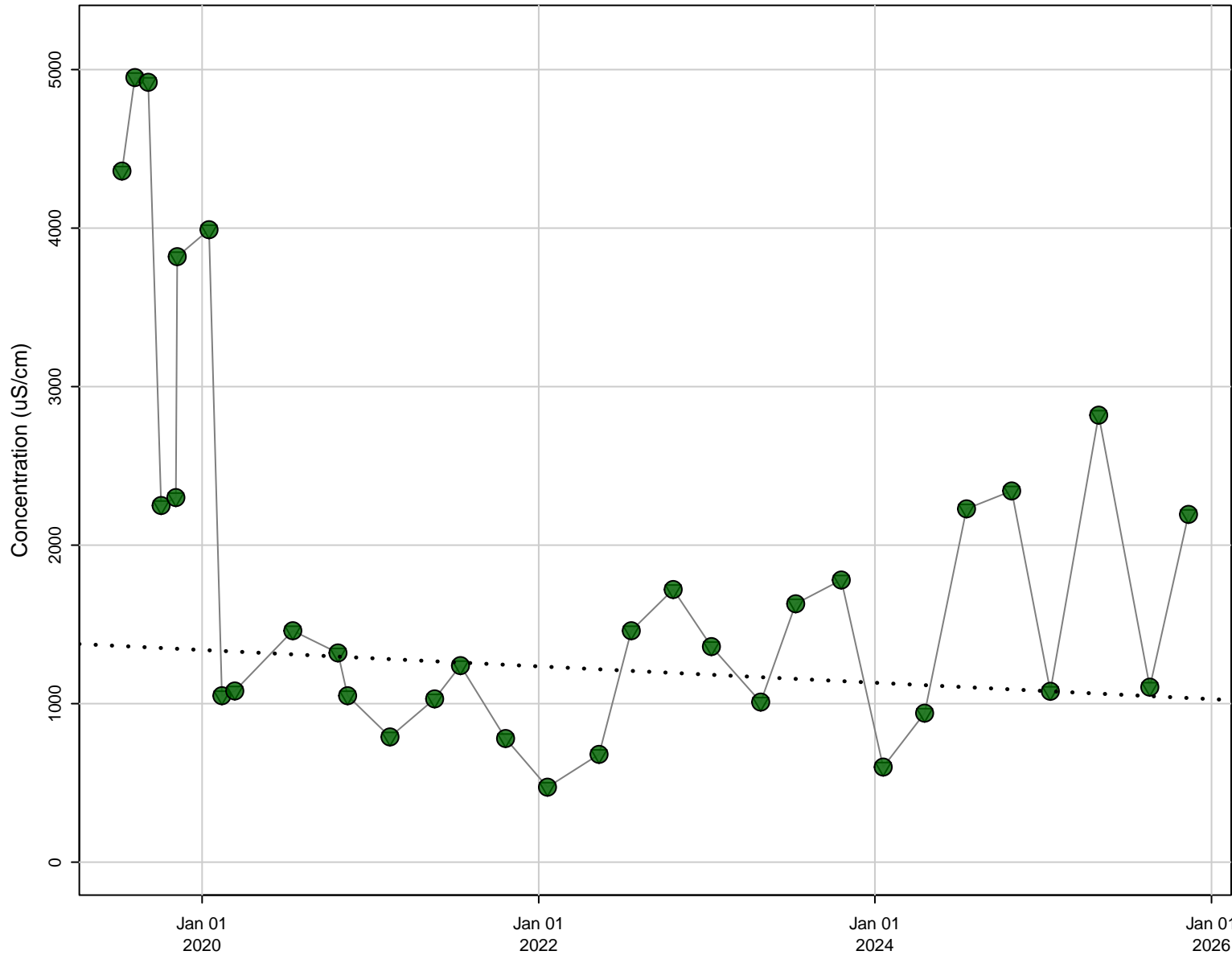
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.175

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D2, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 32
N Detect: 32
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.127

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D2, Iron [ug/L]

Stats

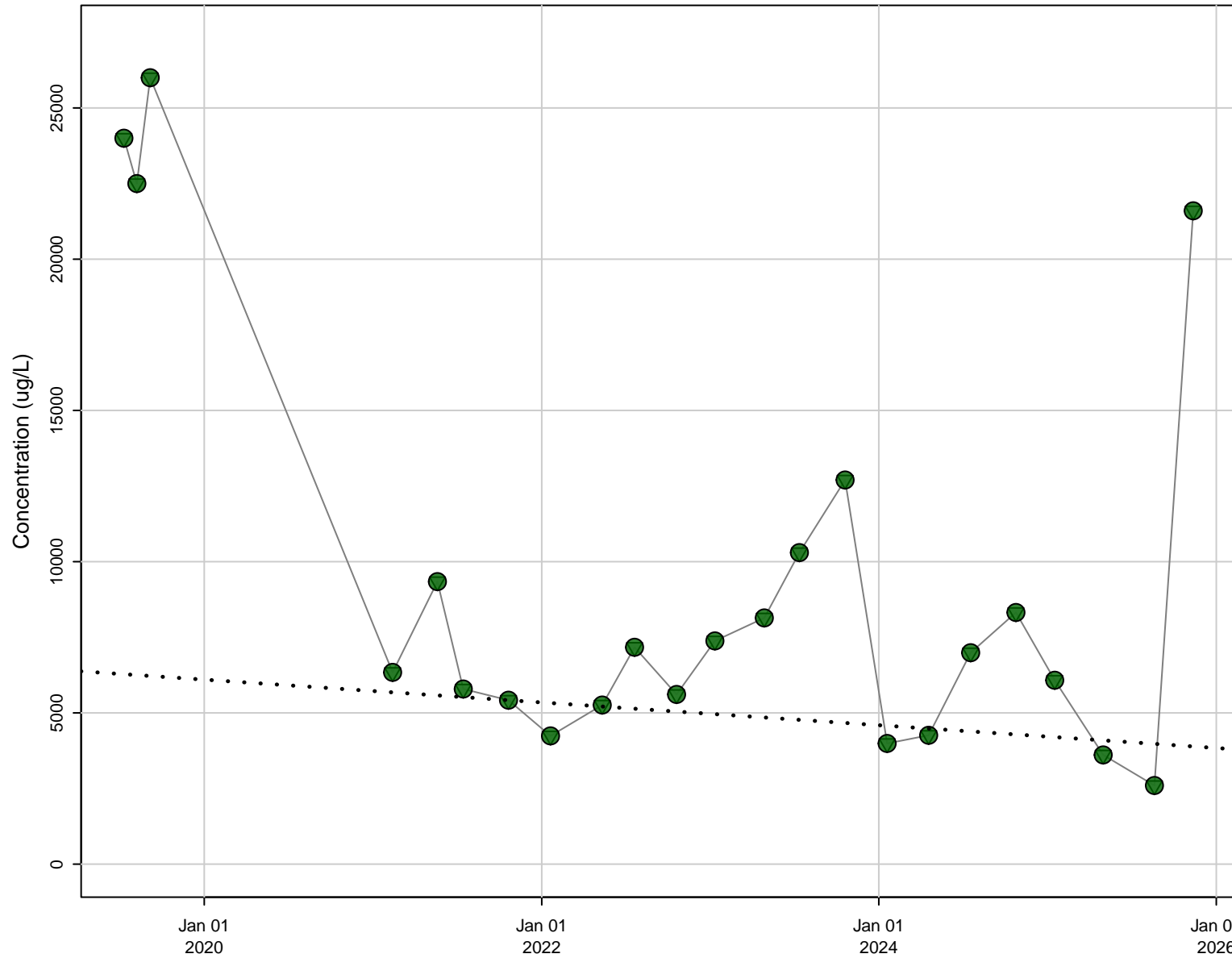
N Data: 23
N Detect: 23
% Detect: 100

Trend Results

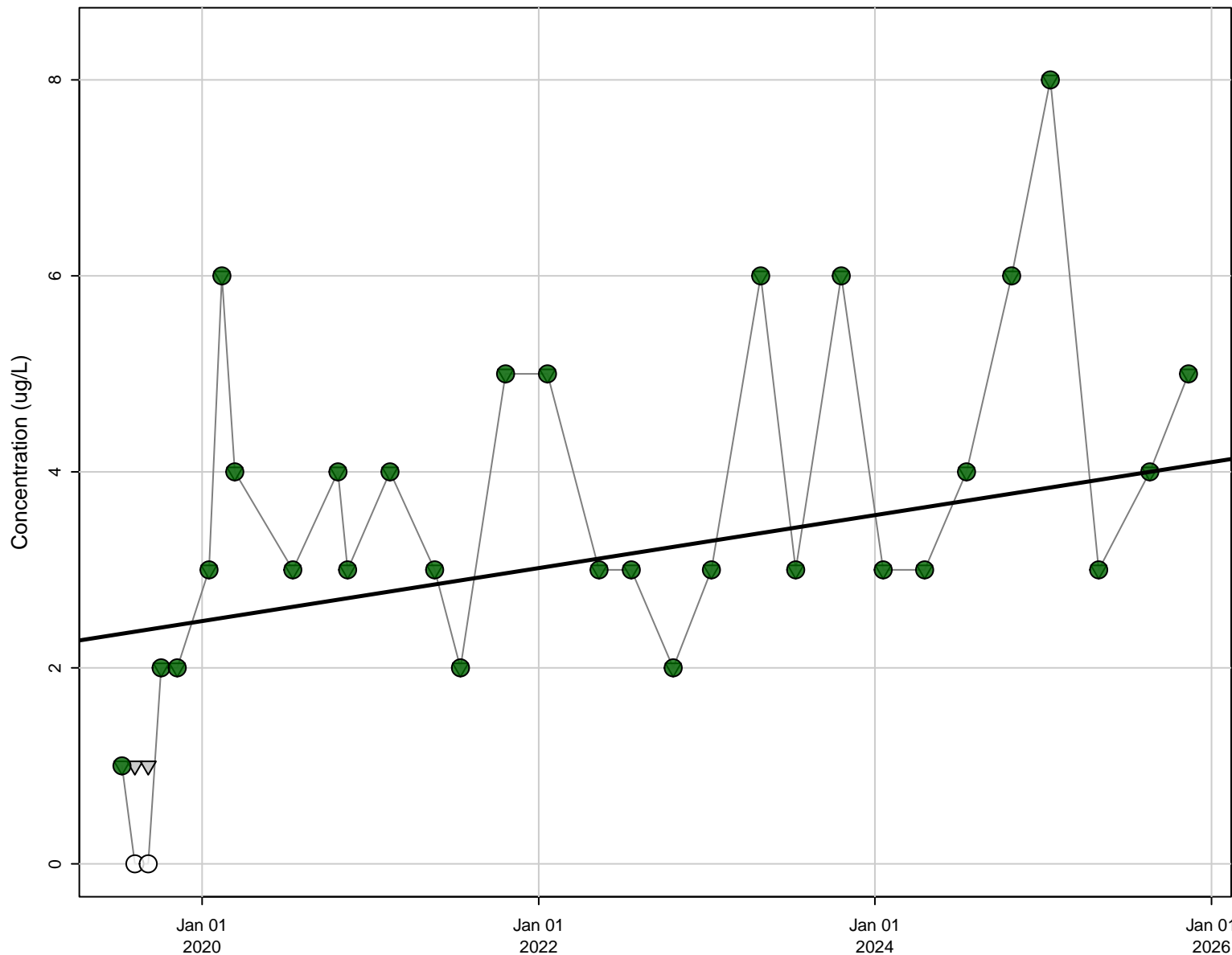
Trend: Not Significant
Confidence Level: 95%
p-value: 0.114

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D2, Lead [ug/L]



Stats

N Data: 31
N Detect: 29
% Detect: 94

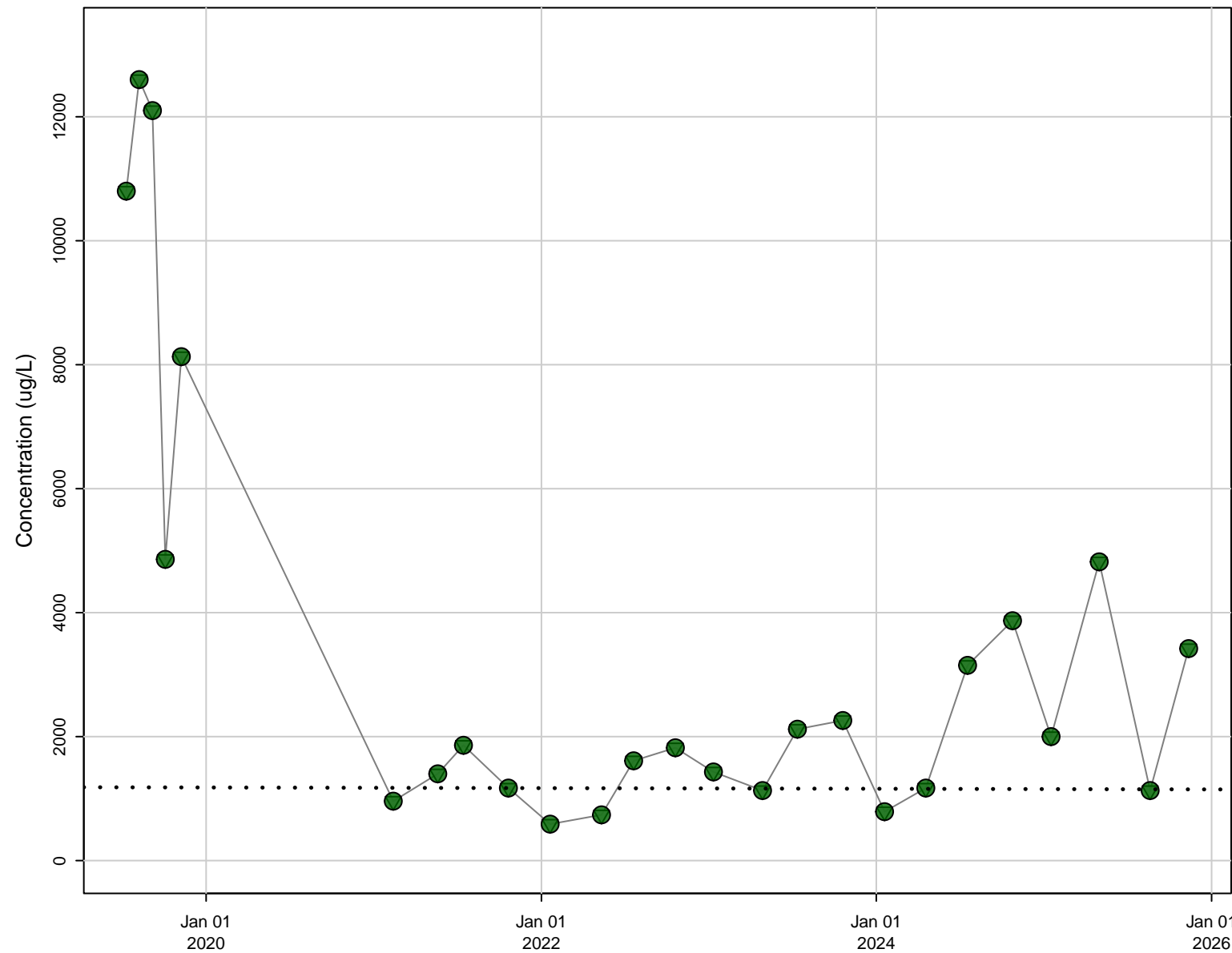
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0023

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D2, Manganese [ug/L]



Stats

N Data: 25
N Detect: 25
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.483

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D2, Nickel [ug/L]

Stats

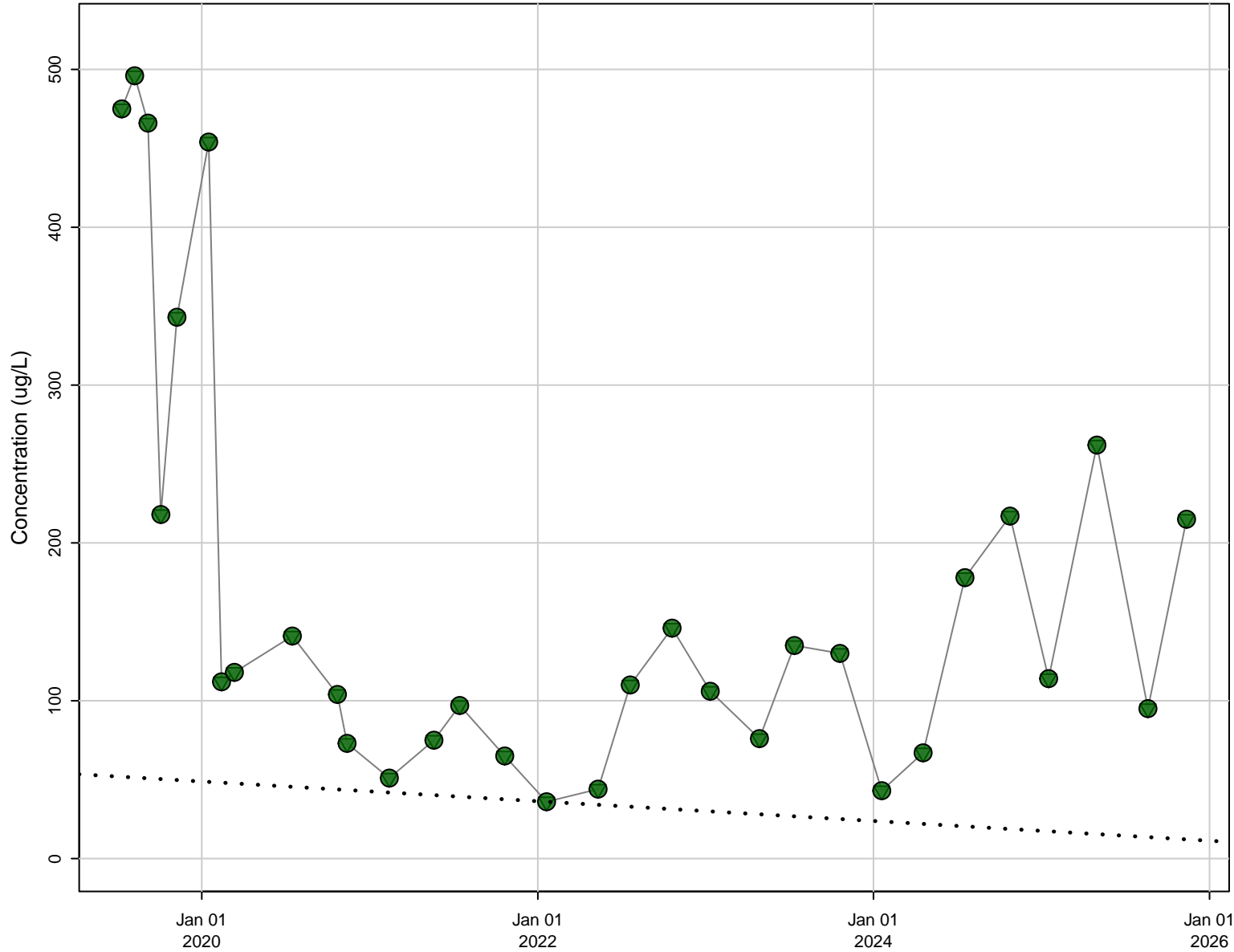
N Data: 31
N Detect: 31
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.127

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D2, Sulfate (as SO4) [mg/L]

Stats

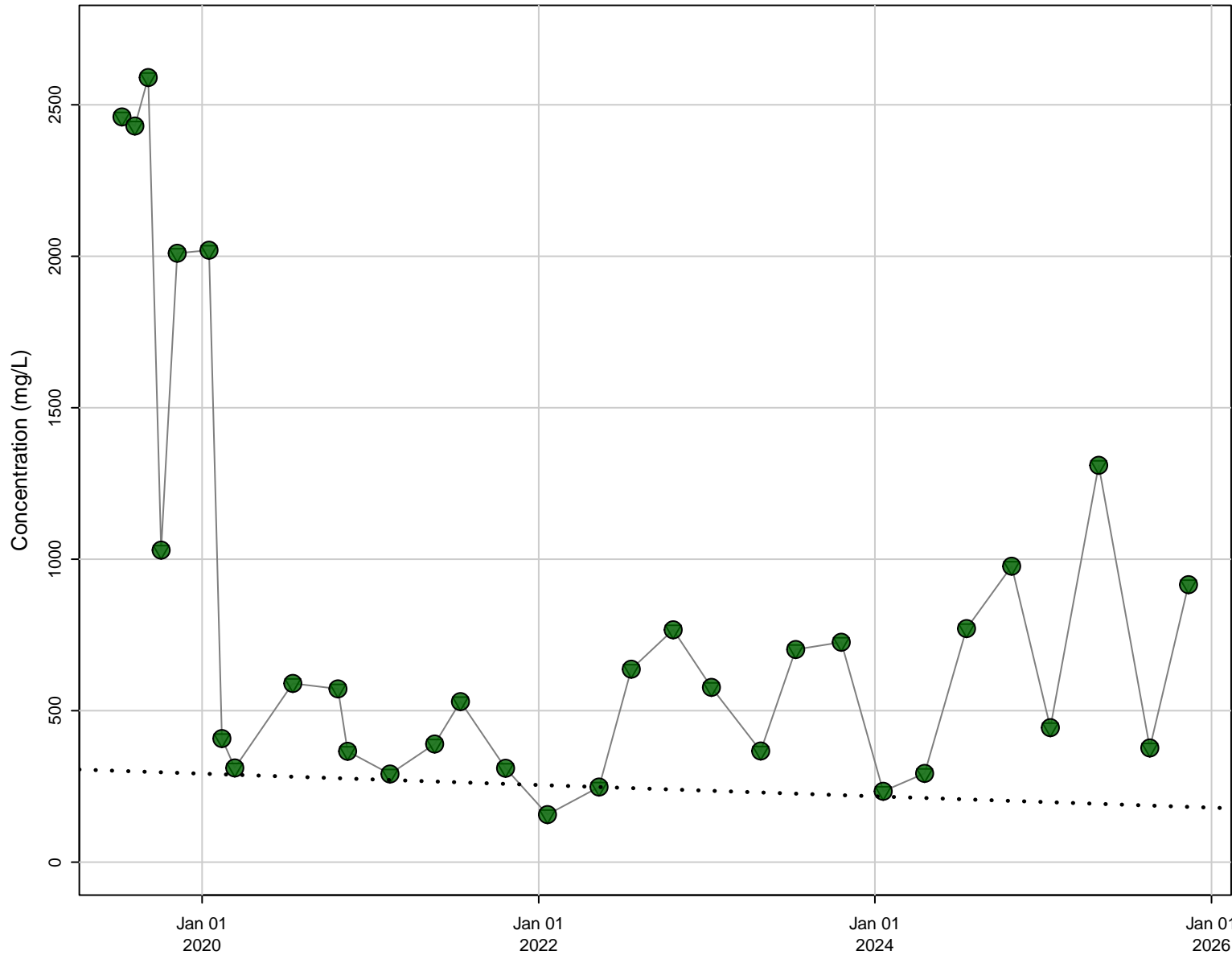
N Data: 31
N Detect: 31
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.236

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D2, Total Dissolved Solids (TDS) [mg/L]

Stats

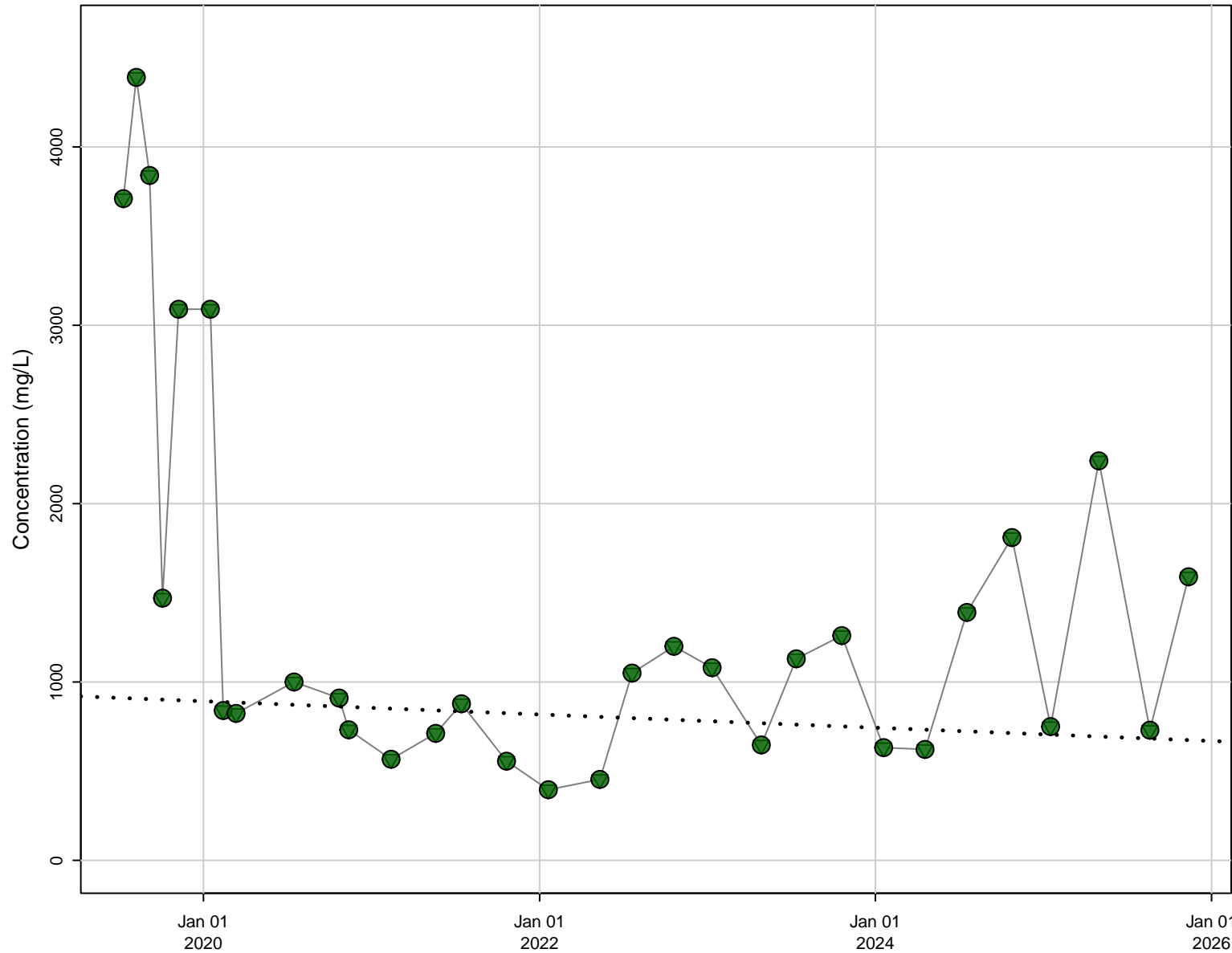
N Data: 31
N Detect: 31
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.208

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D3, Boron [ug/L]

Stats

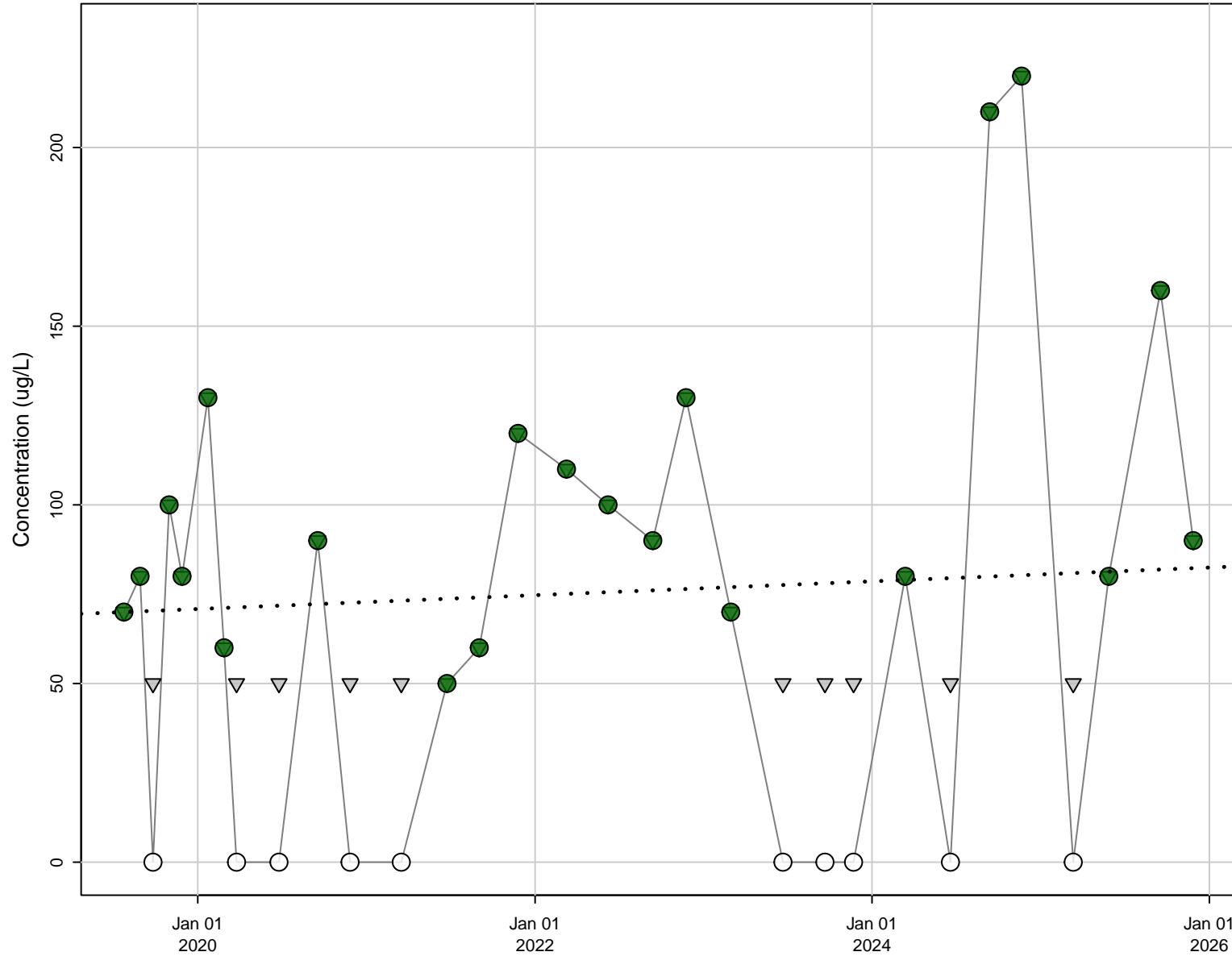
N Data: 31
N Detect: 21
% Detect: 68

Trend Results

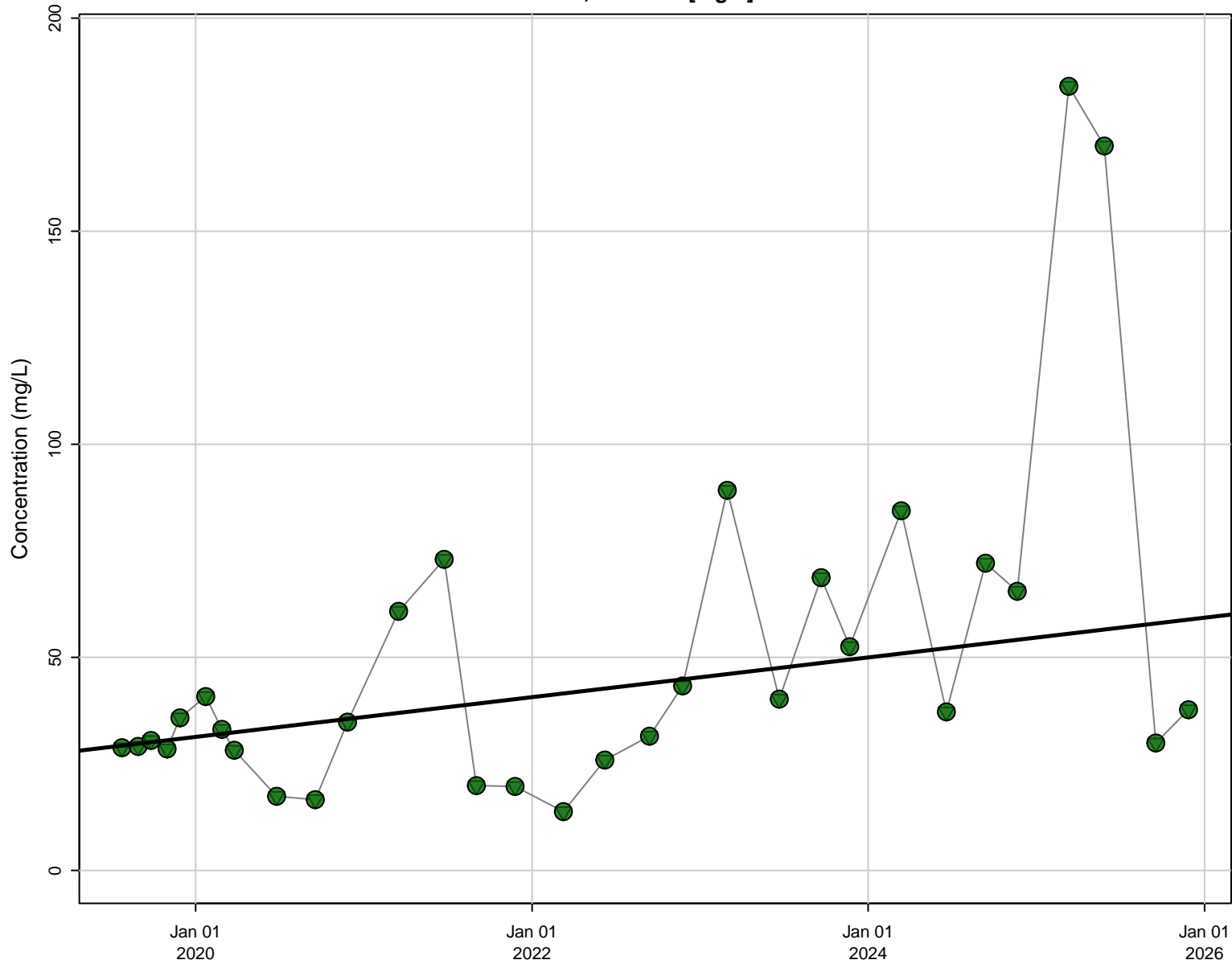
Trend: Not Significant
Confidence Level: 95%
p-value: 0.376

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D3, Chloride [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

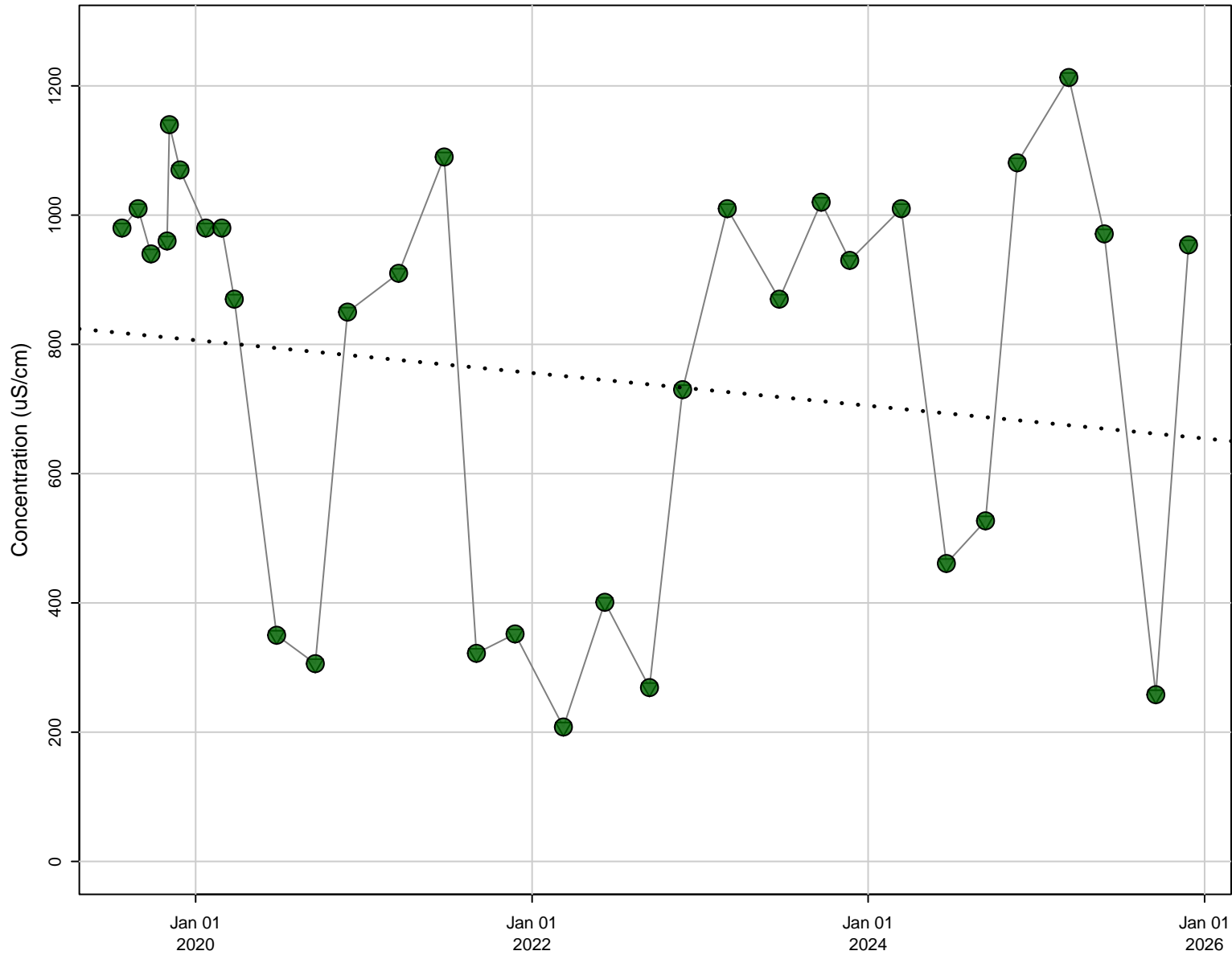
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.00466

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D3, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 32
N Detect: 32
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.548

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D3, Iron [ug/L]

Stats

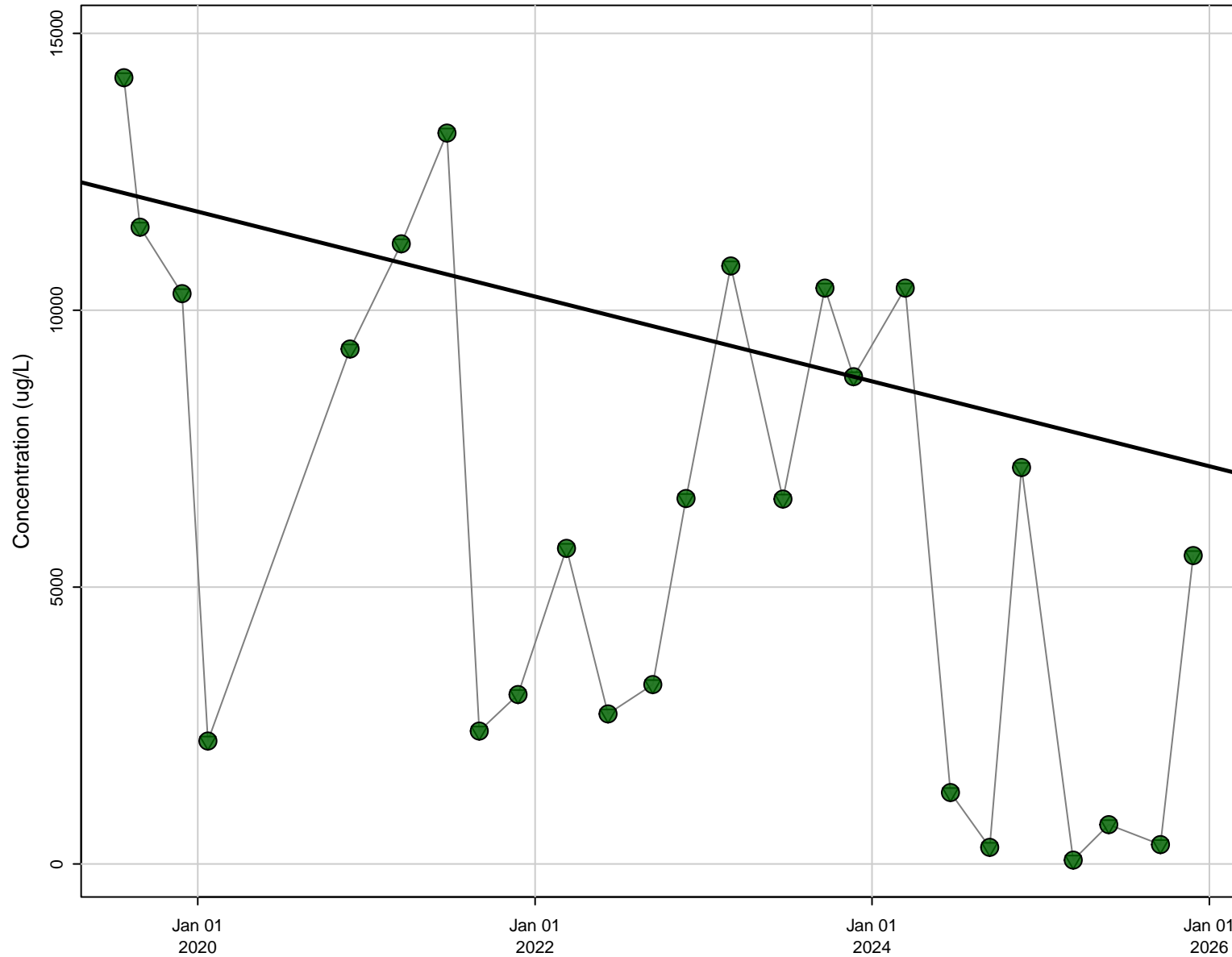
N Data: 25
N Detect: 25
% Detect: 100

Trend Results

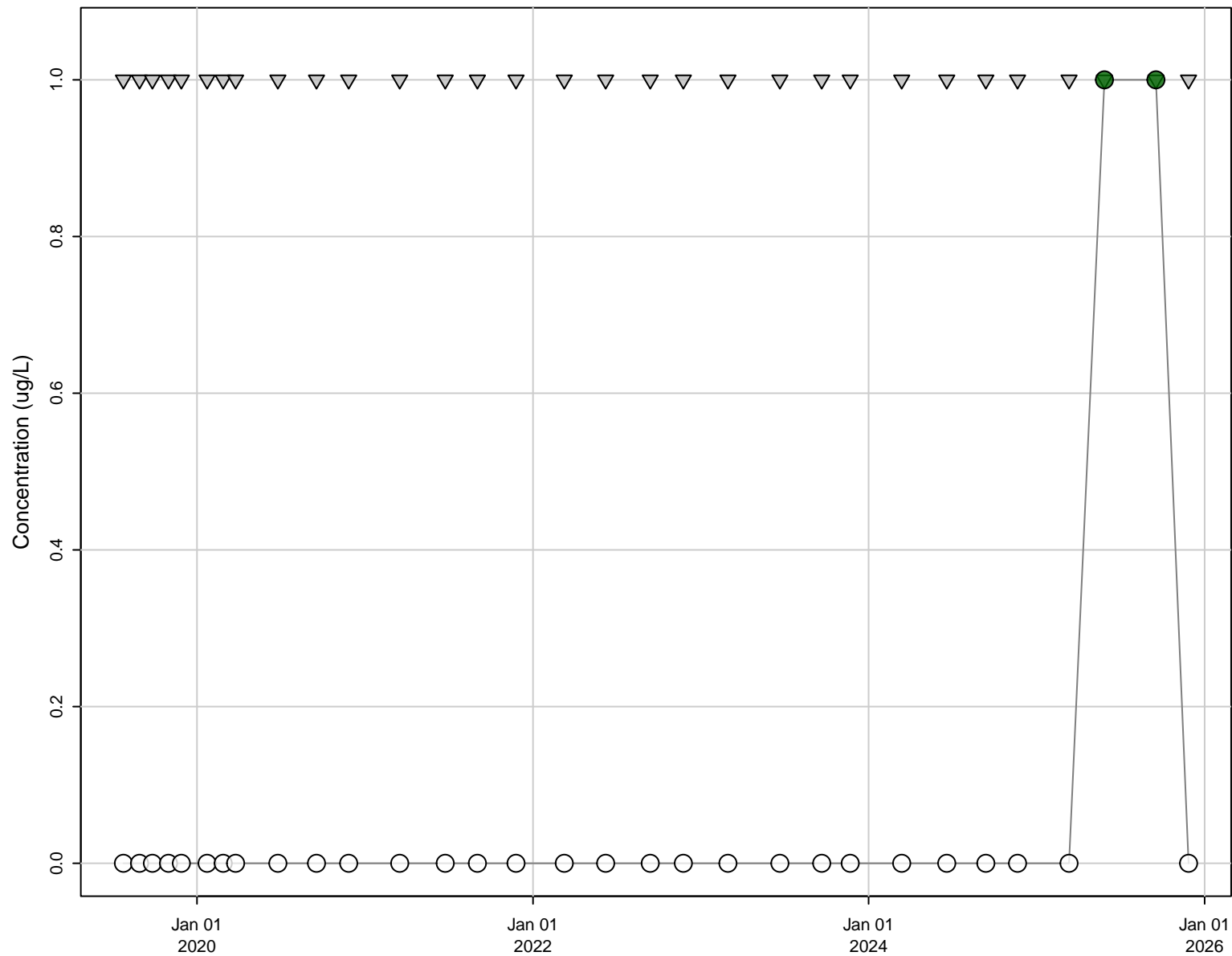
Trend: Decreasing
Confidence Level: 95%
p-value: 0.0109

Symbols

● Detect
○ Non-Detect
▽ Reporting Limit
— Theil-Sen Regression



D3, Lead [ug/L]



Stats

N Data: 31
N Detect: 2
% Detect: 6

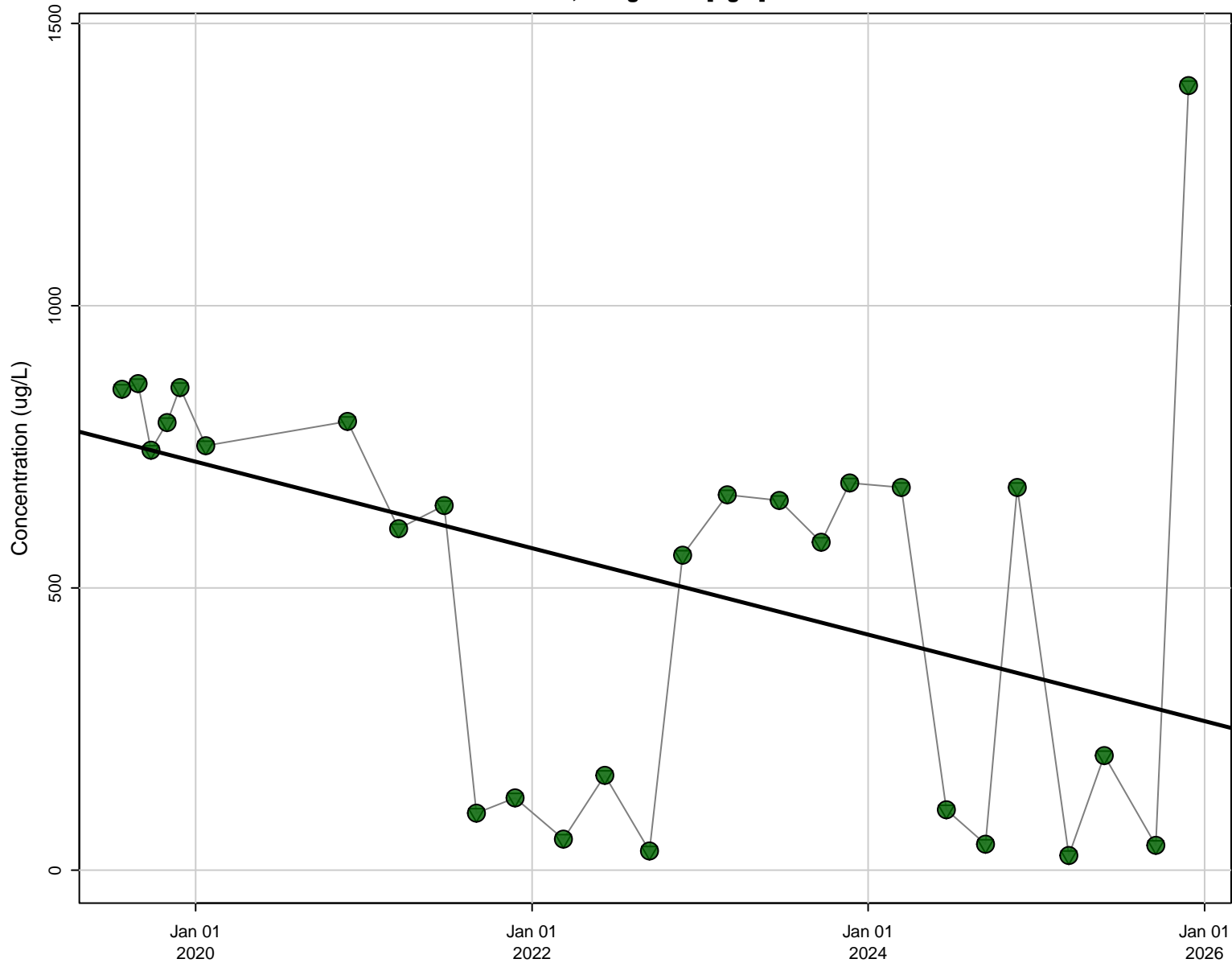
Trend Results

Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit

D3, Manganese [ug/L]



Stats

N Data: 27
N Detect: 27
% Detect: 100

Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0139

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D3, Nickel [ug/L]

Stats

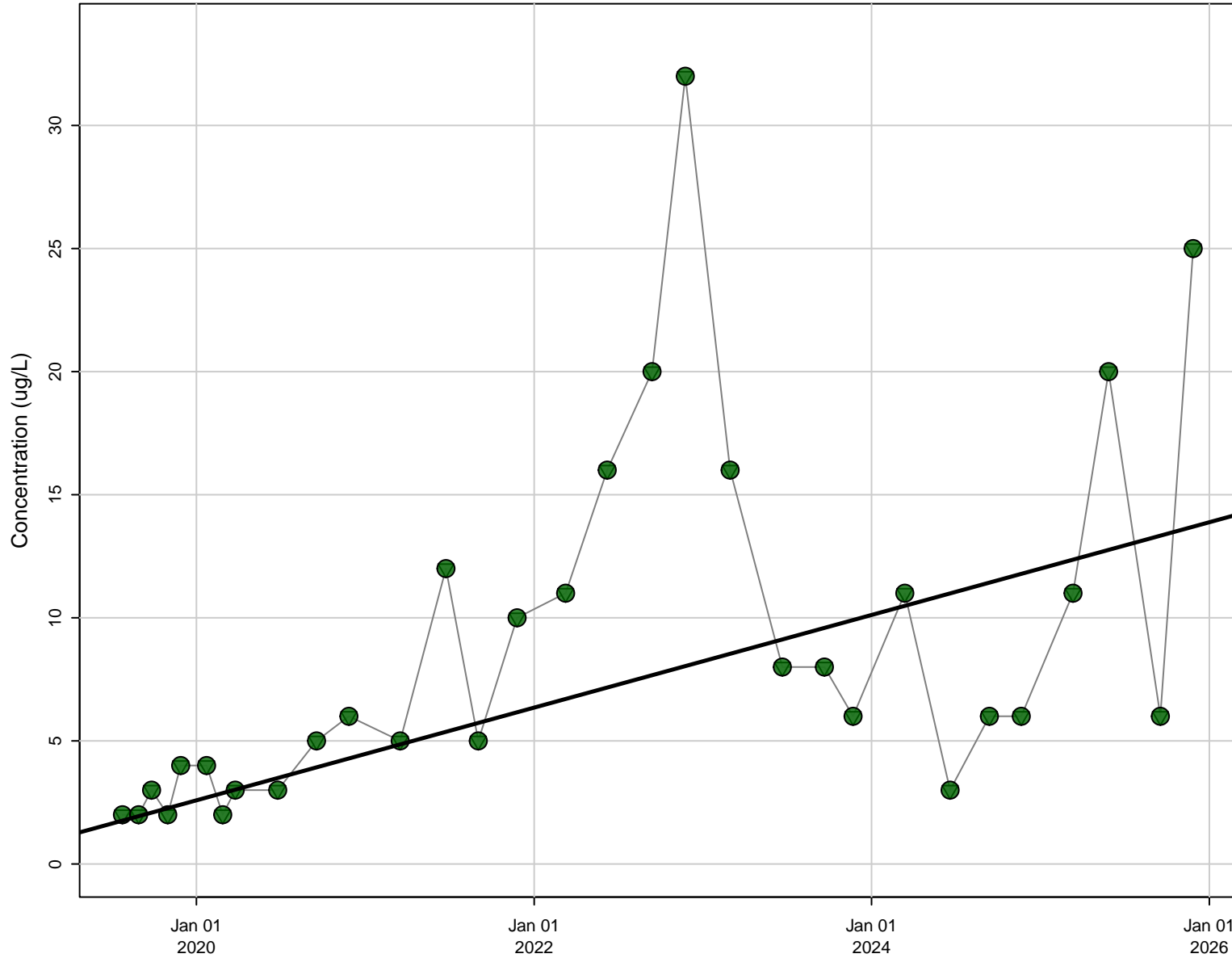
N Data: 31
N Detect: 31
% Detect: 100

Trend Results

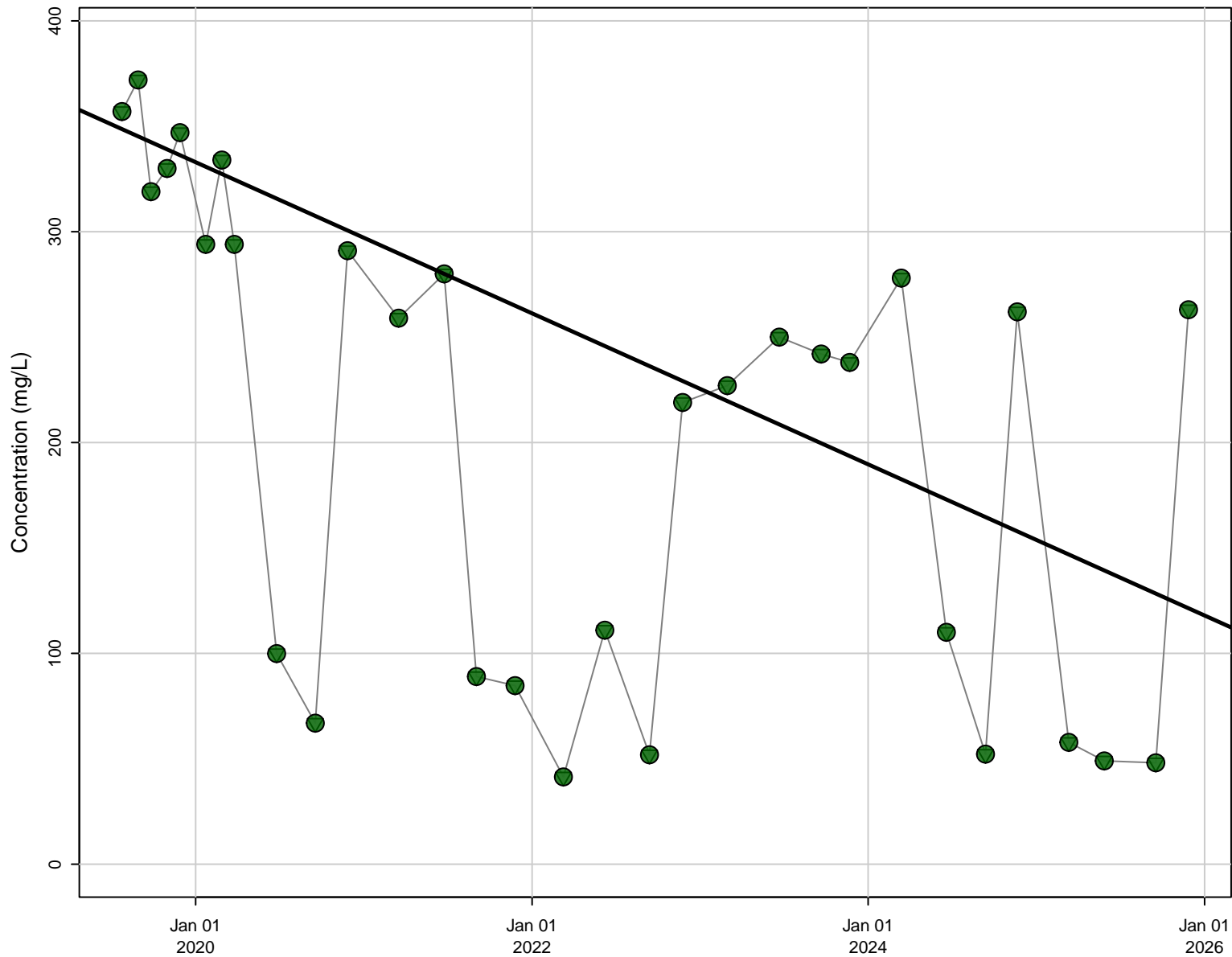
Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D3, Sulfate (as SO4) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

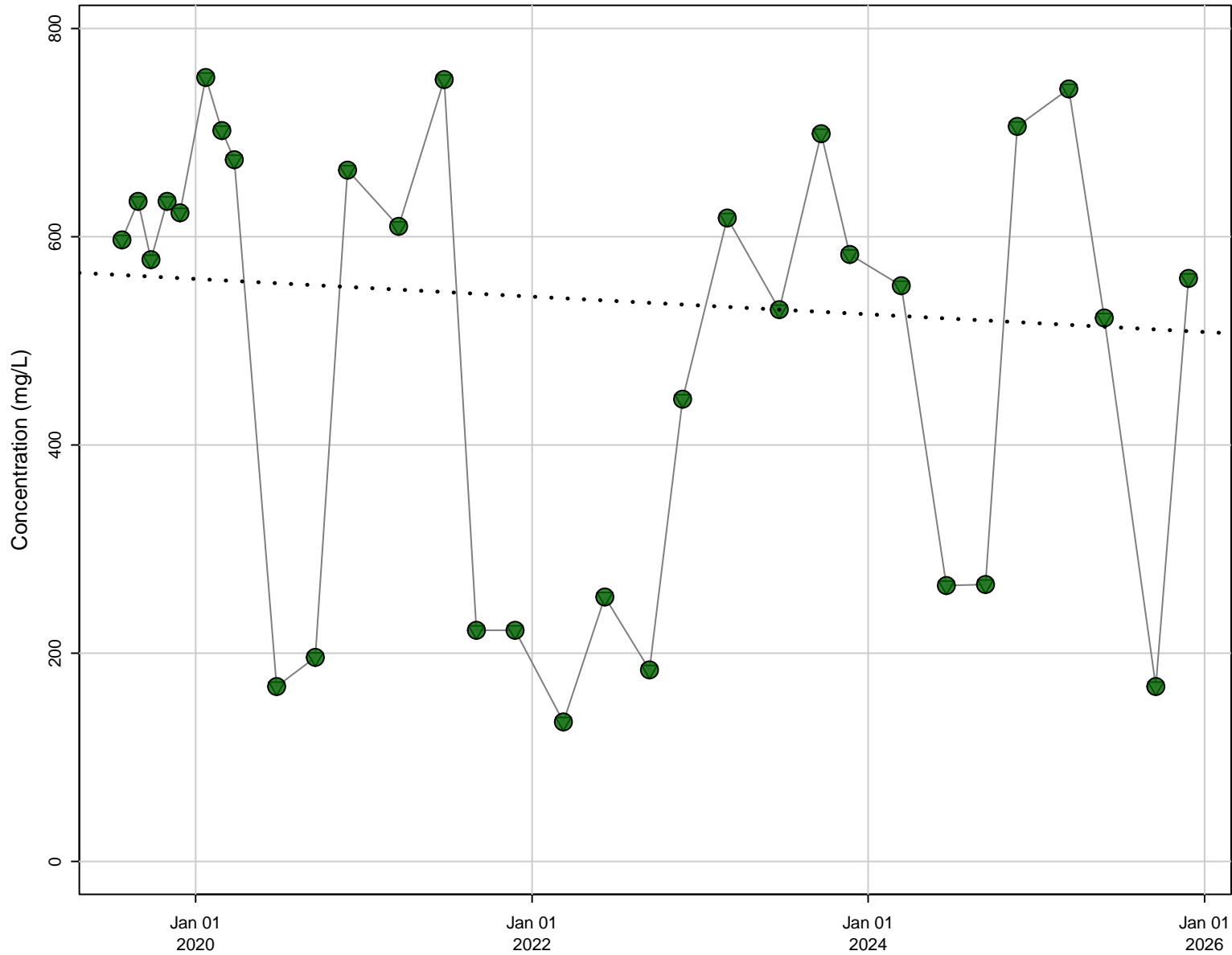
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D3, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

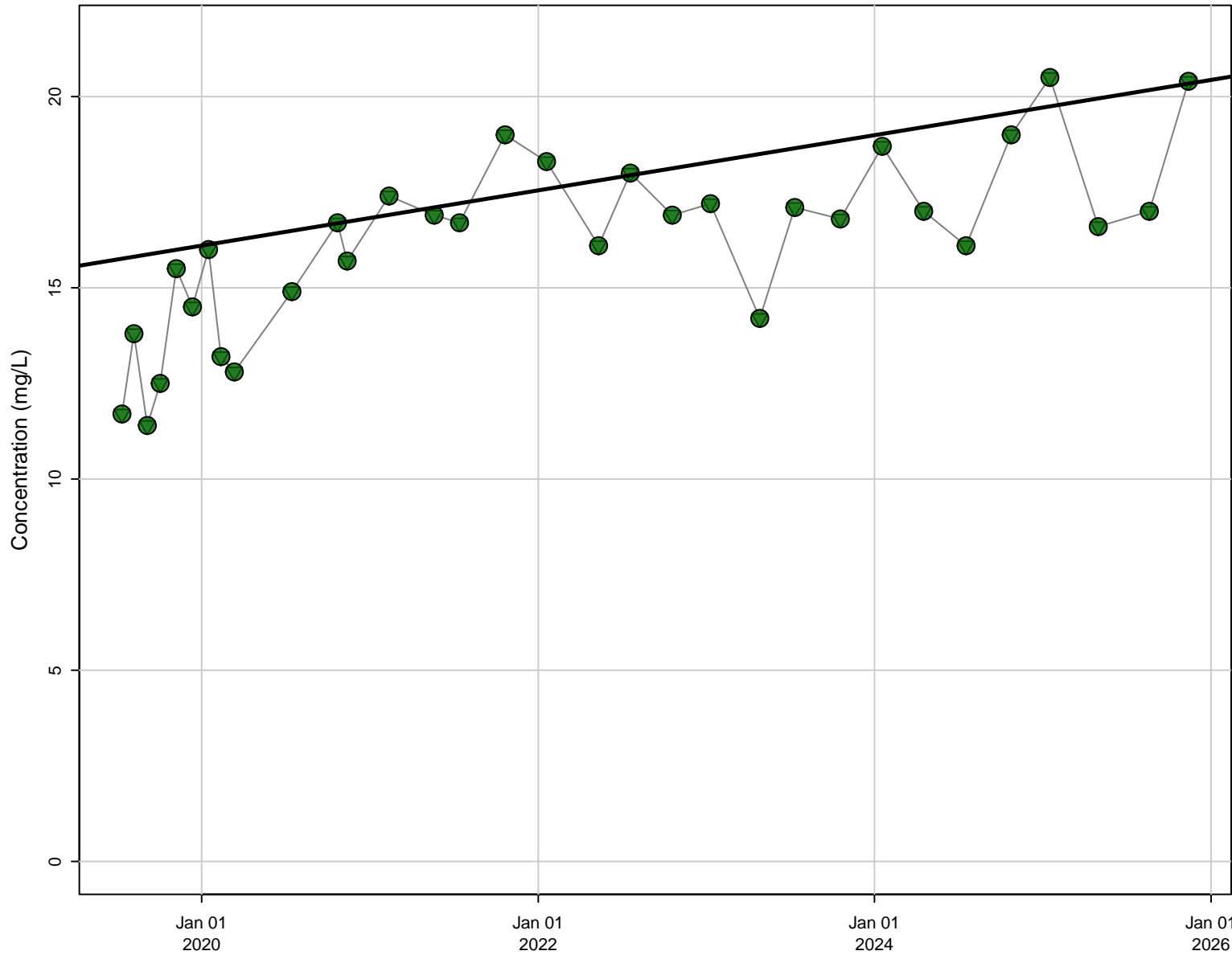
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.395

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D4, Chloride [mg/L]



Stats

N Data: 32
N Detect: 32
% Detect: 100

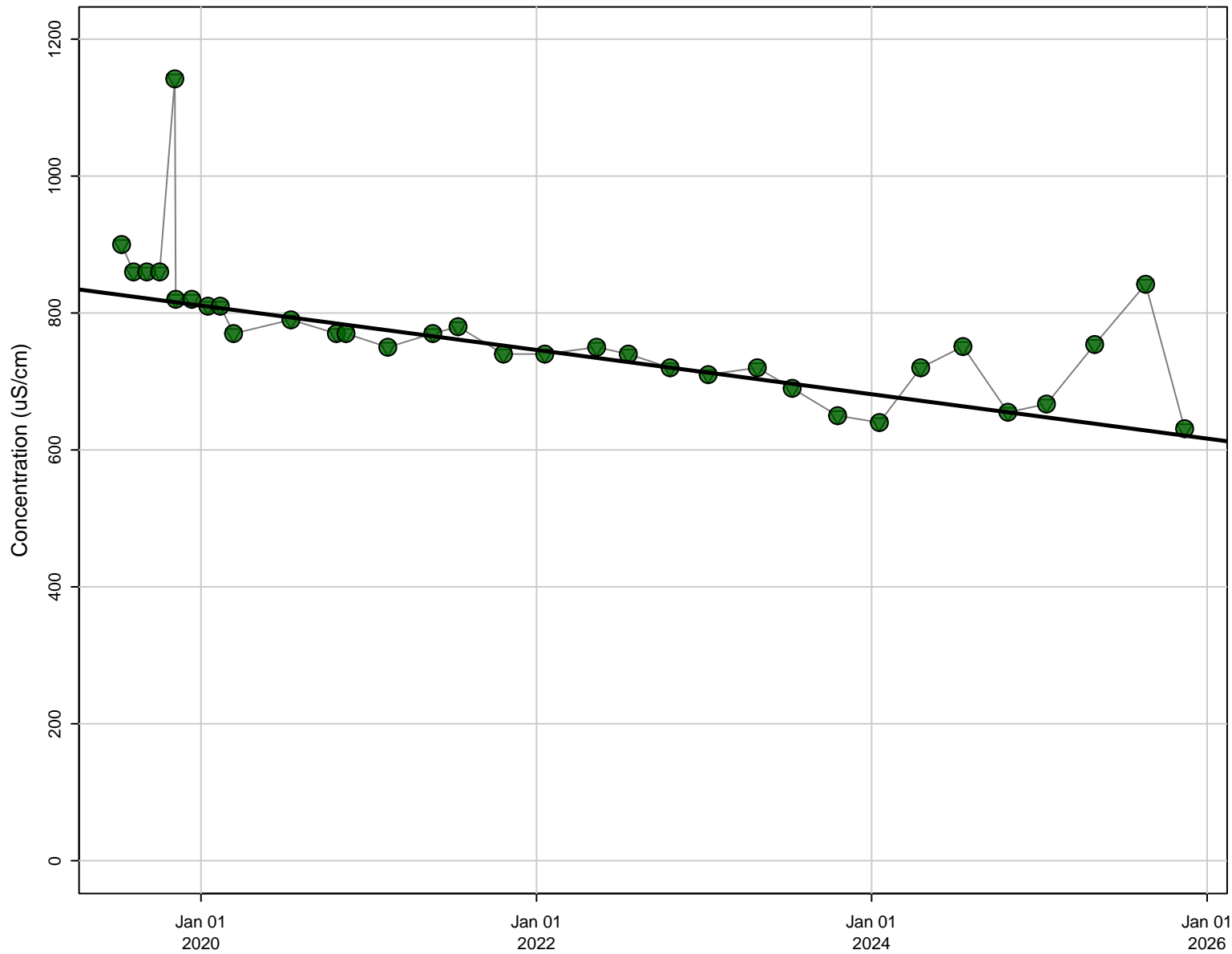
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D4, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 33
N Detect: 33
% Detect: 100

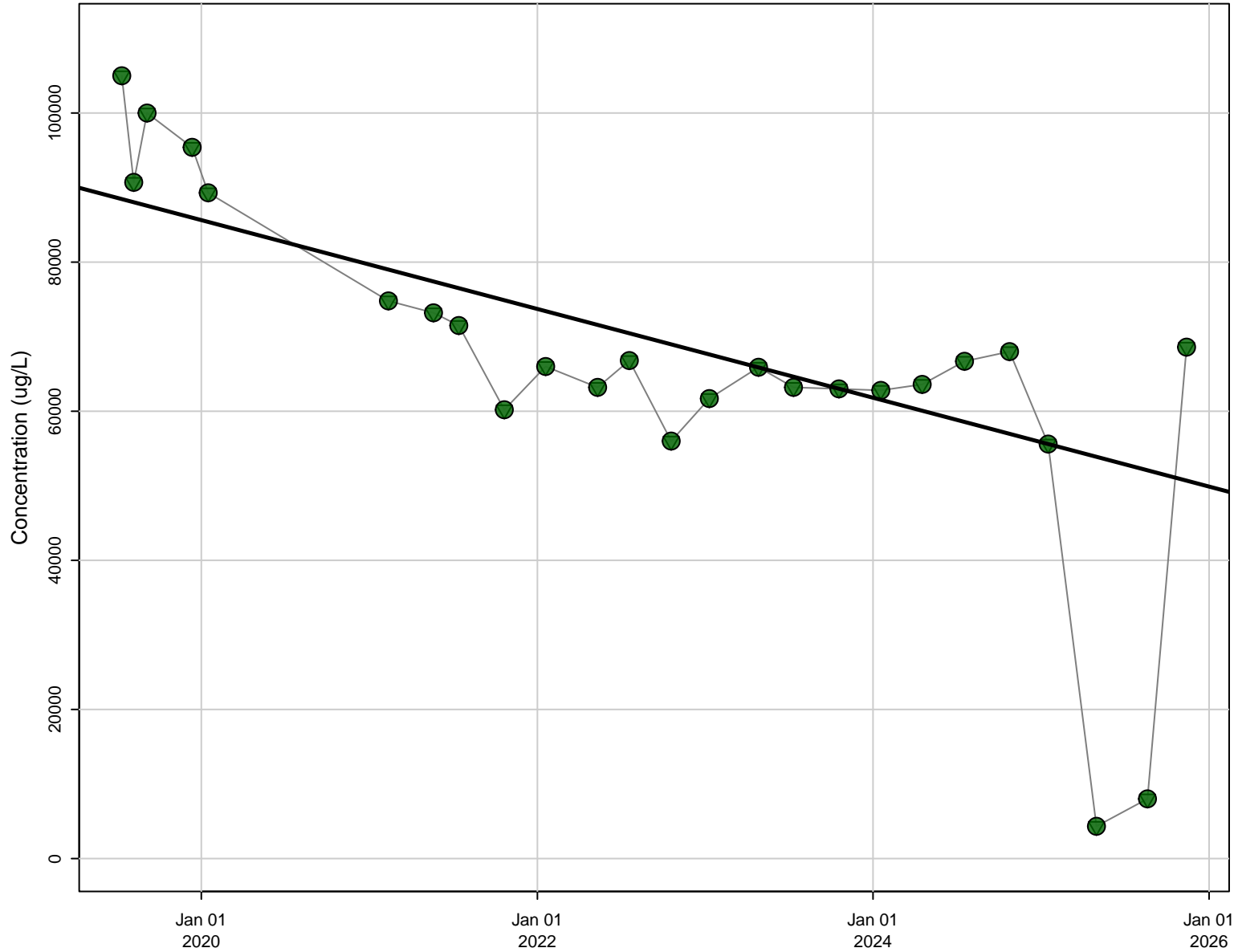
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D4, Iron [ug/L]



Stats

N Data: 25
N Detect: 25
% Detect: 100

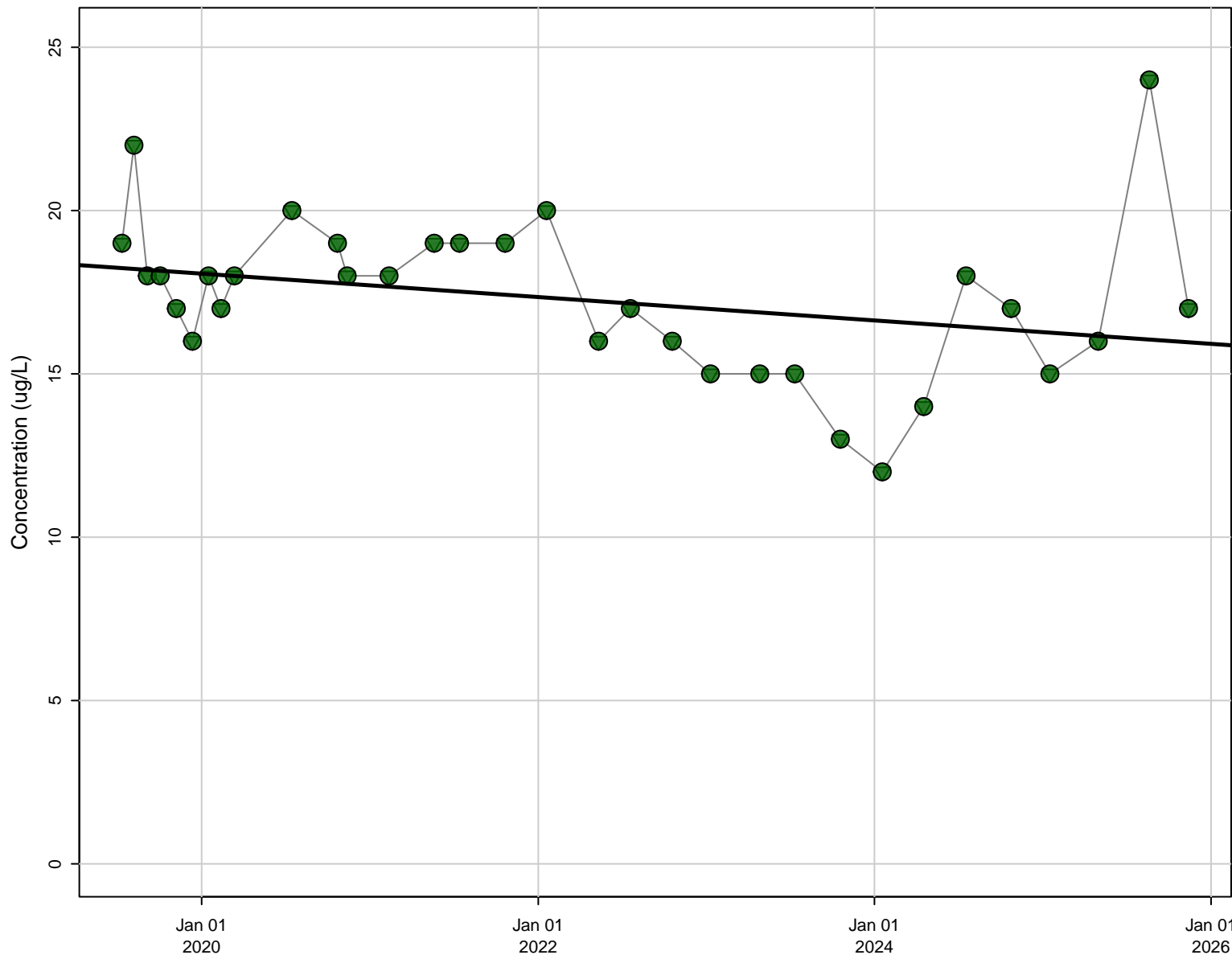
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D4, Lead [ug/L]



Stats

N Data: 32
N Detect: 32
% Detect: 100

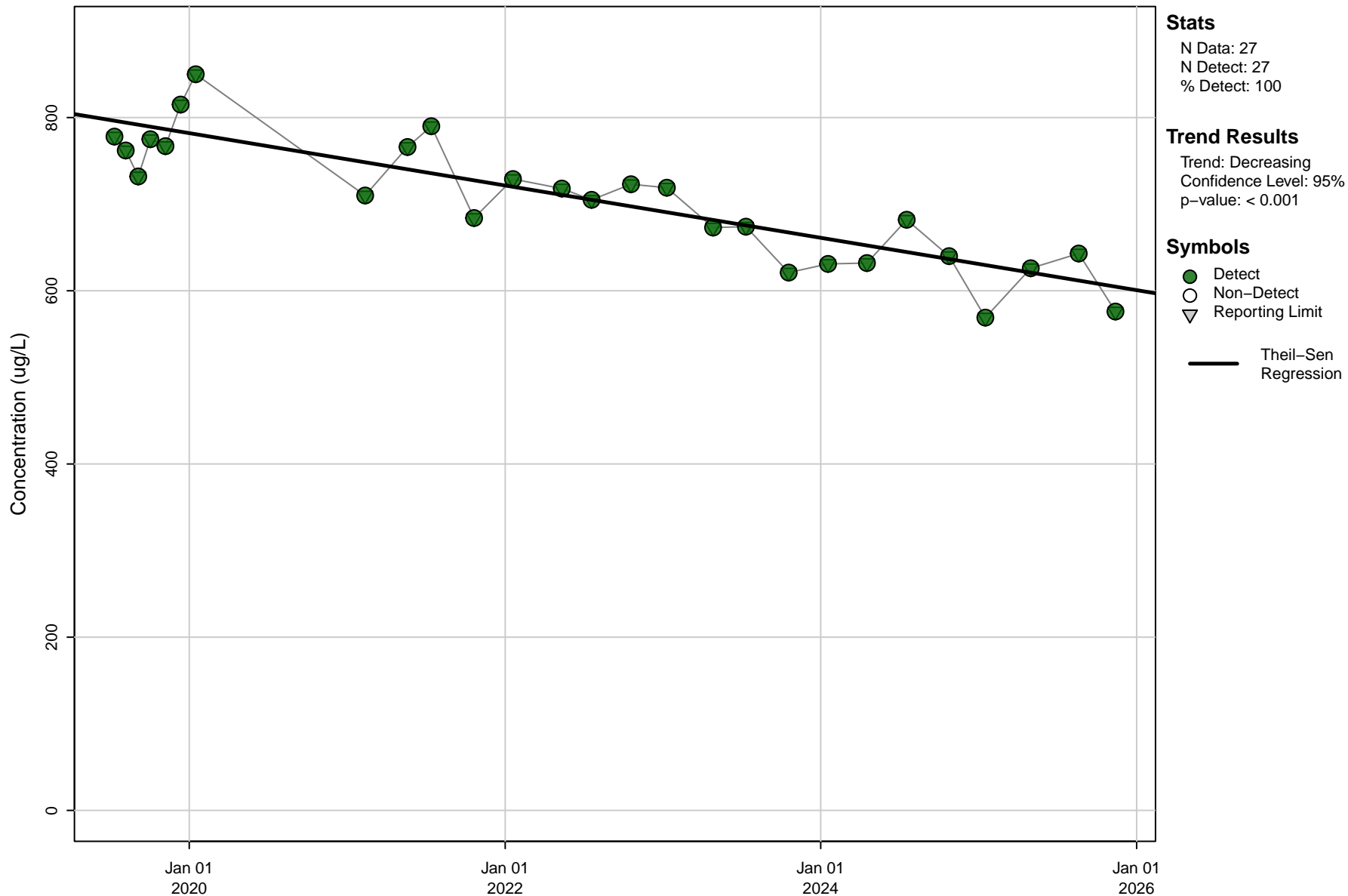
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0125

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D4, Manganese [ug/L]



D4, Nickel [ug/L]

Stats

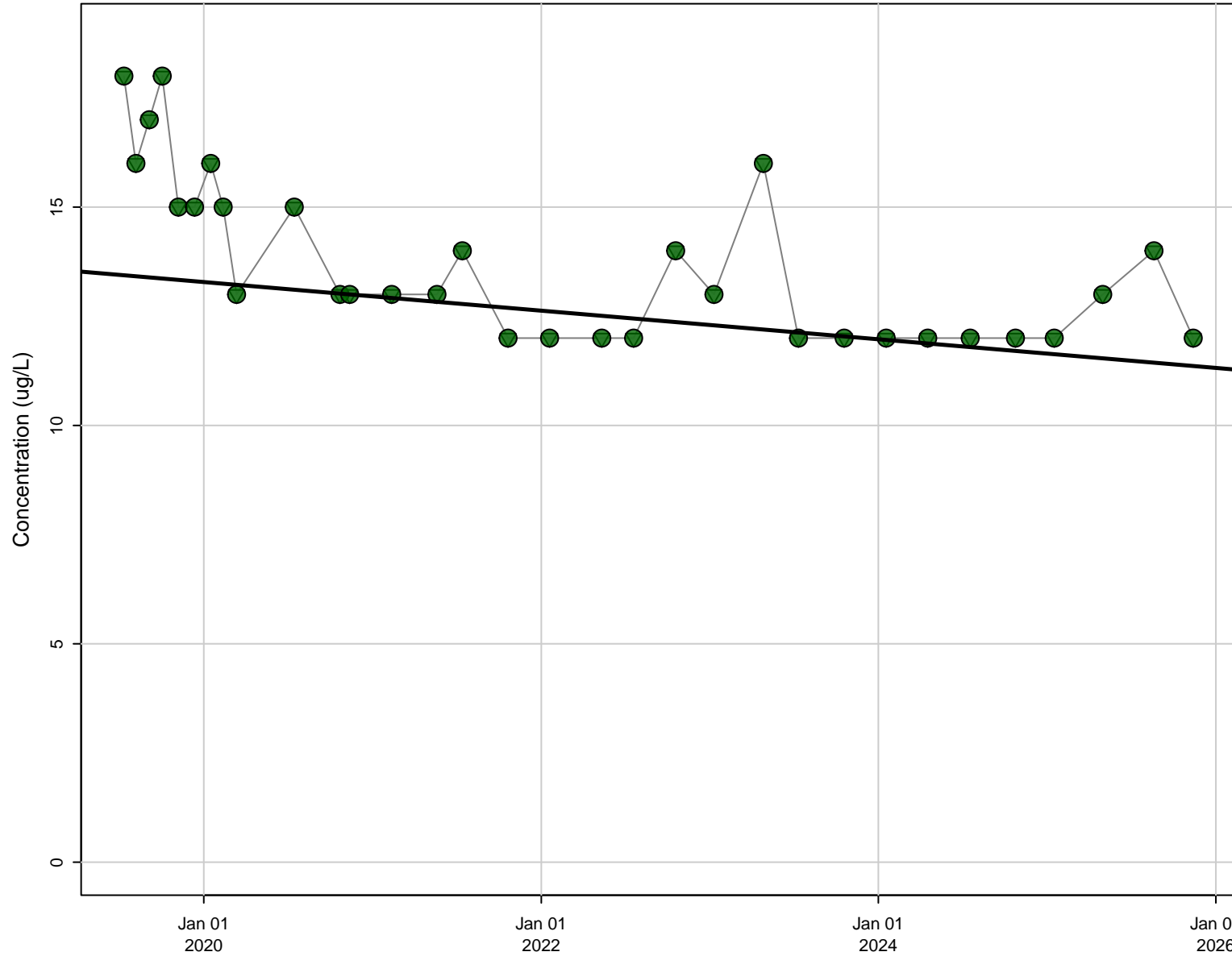
N Data: 32
N Detect: 32
% Detect: 100

Trend Results

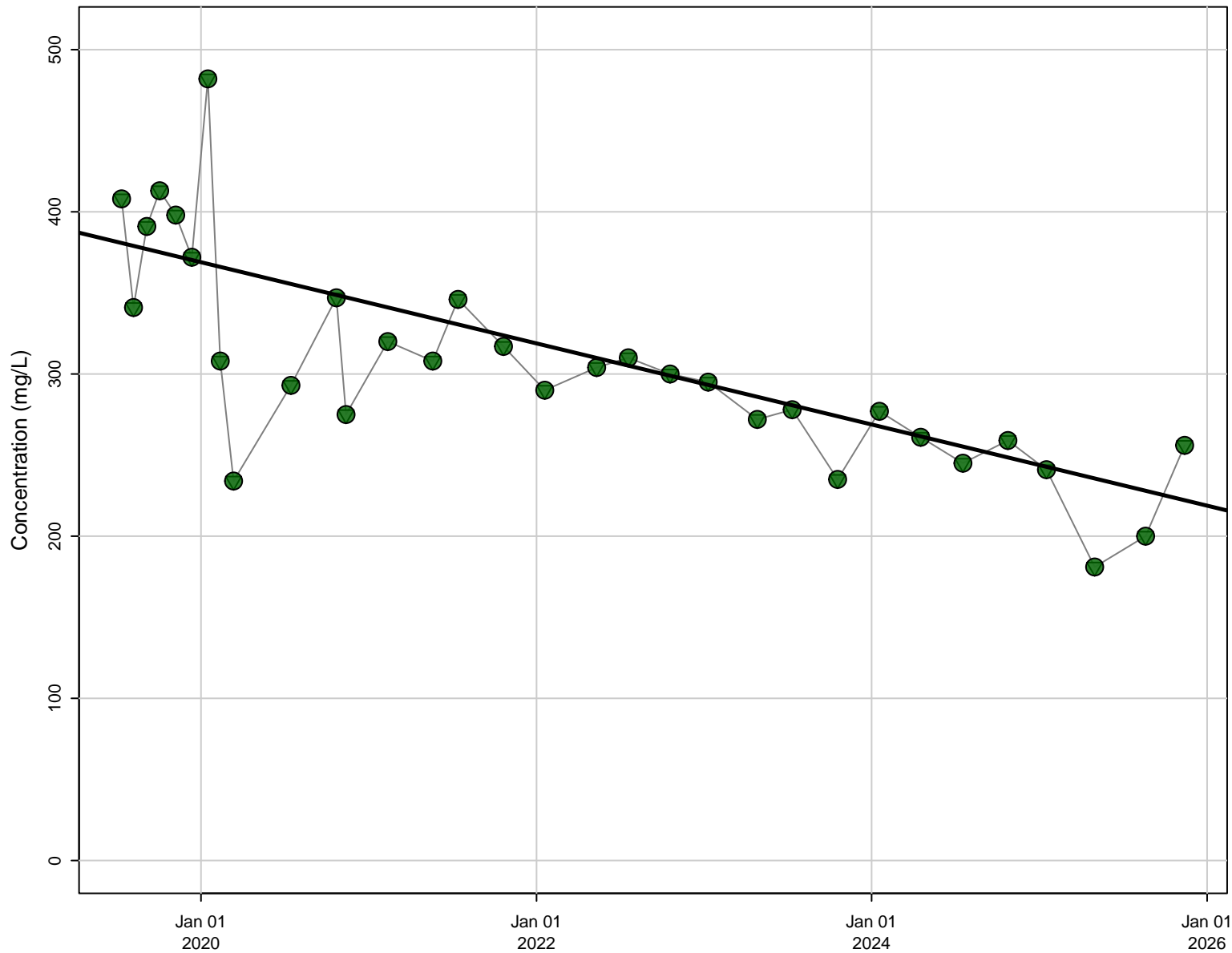
Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D4, Sulfate (as SO4) [mg/L]



Stats

N Data: 32
N Detect: 32
% Detect: 100

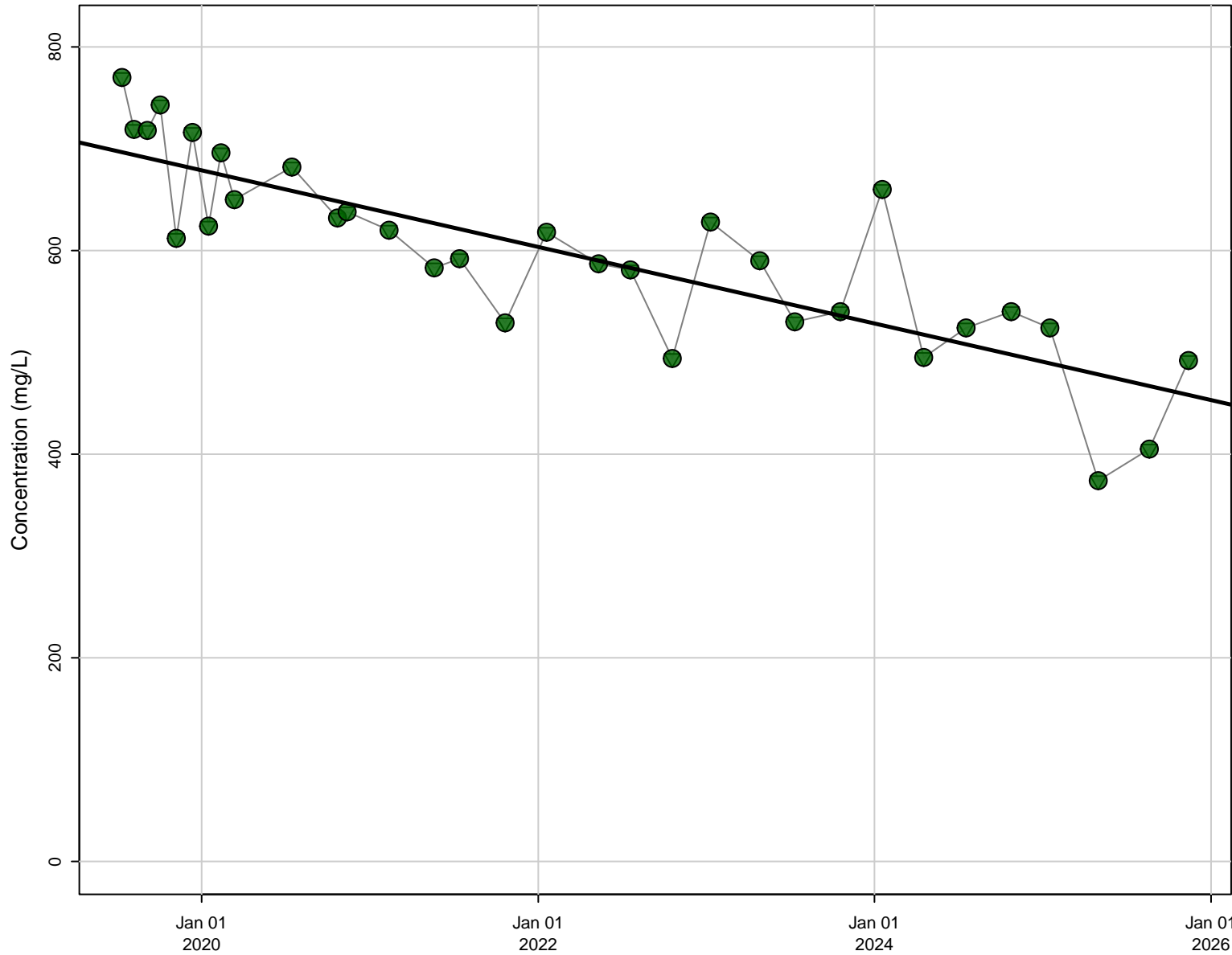
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D4, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 32
N Detect: 32
% Detect: 100

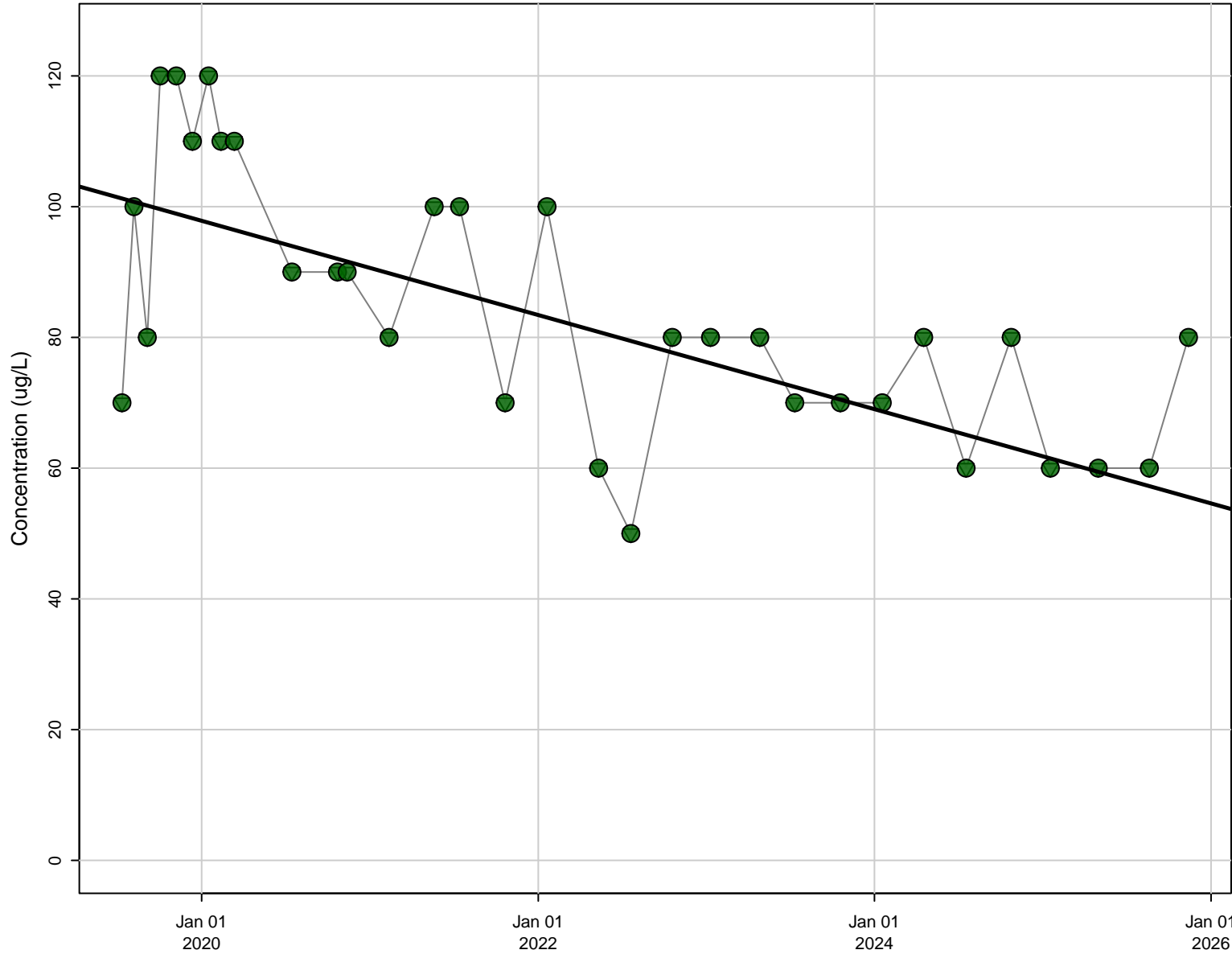
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D5, Boron [ug/L]



Stats

N Data: 32
N Detect: 32
% Detect: 100

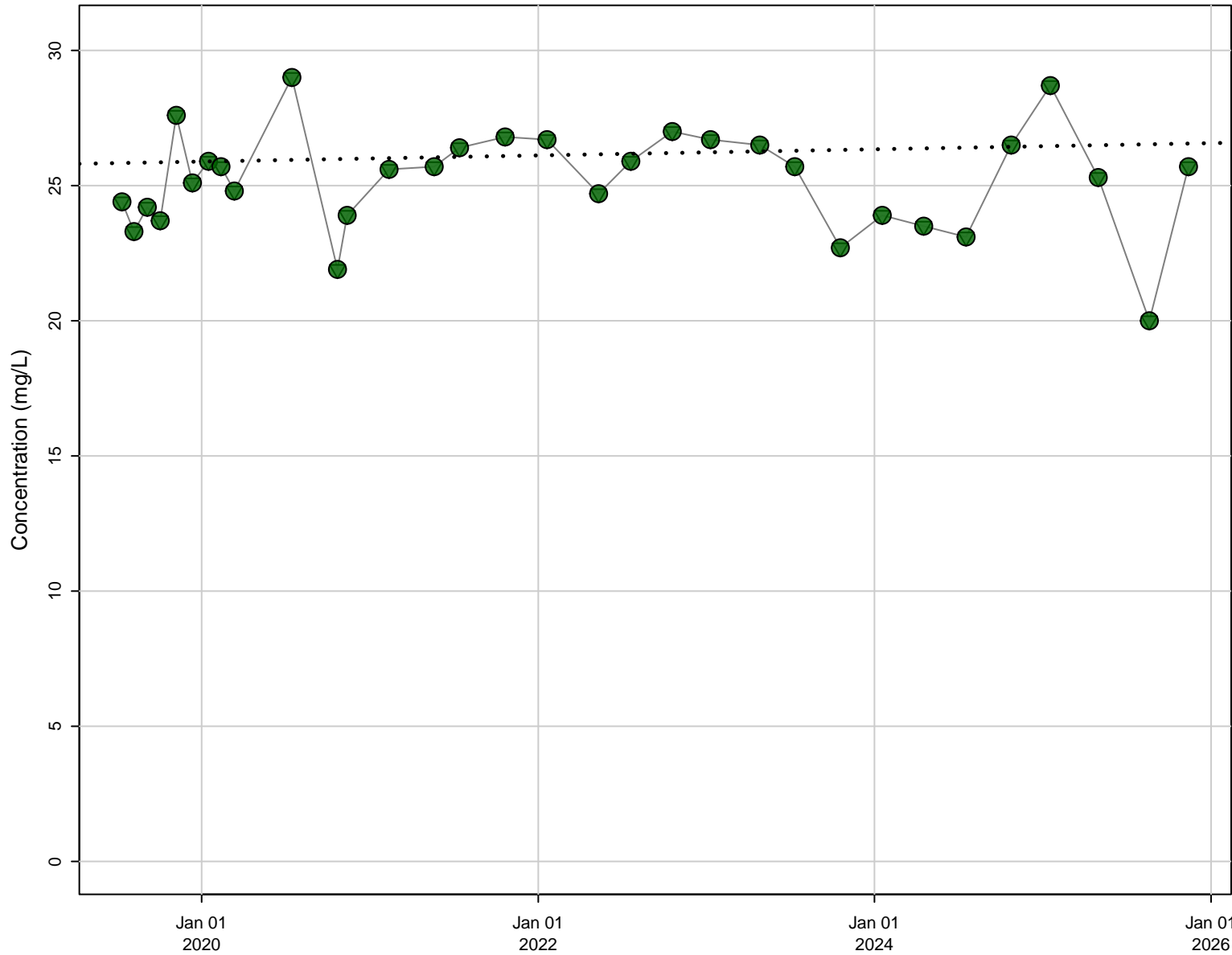
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D5, Chloride [mg/L]



Stats

N Data: 32
N Detect: 32
% Detect: 100

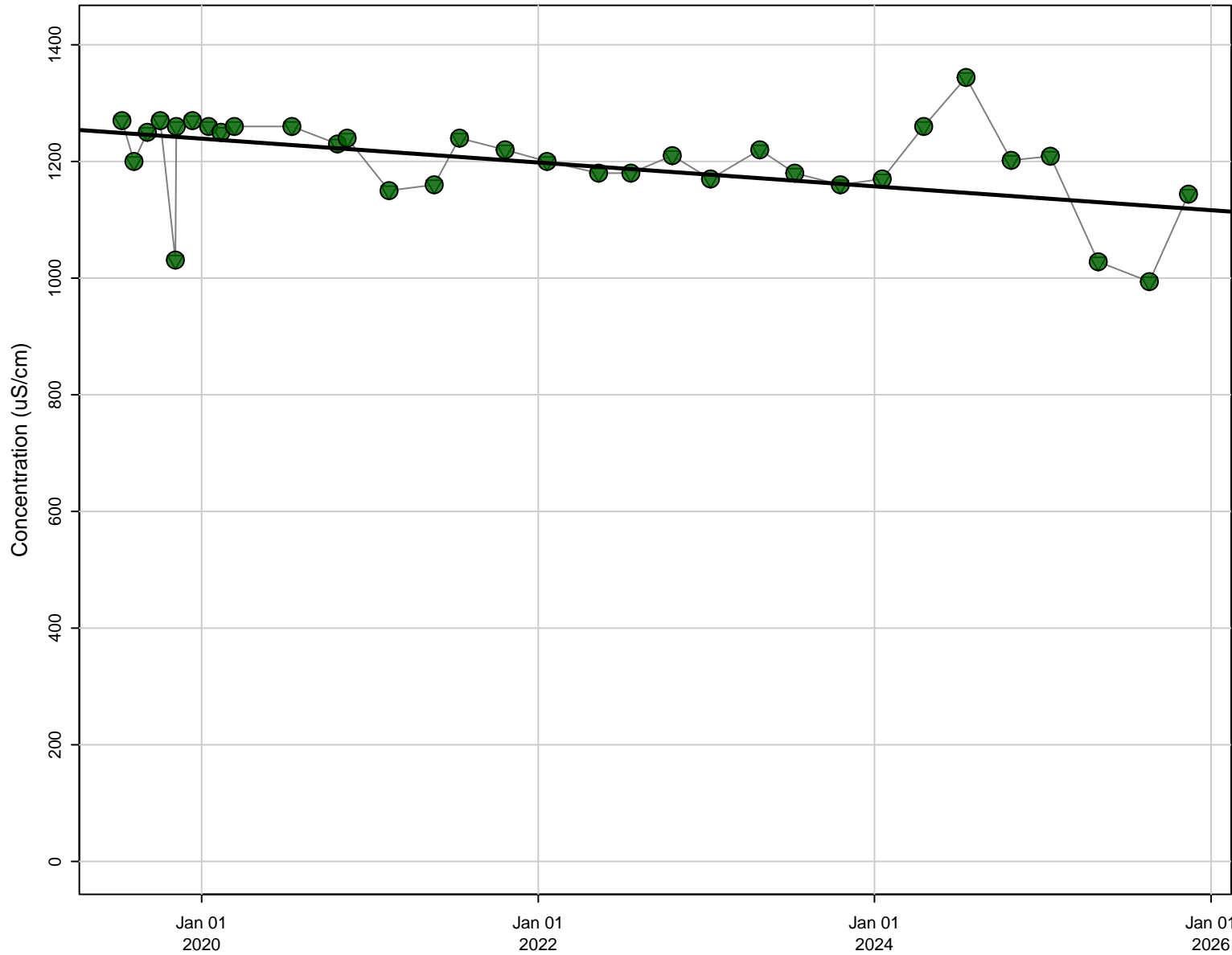
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.77

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D5, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 33
N Detect: 33
% Detect: 100

Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.00136

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D5, Iron [ug/L]

Stats

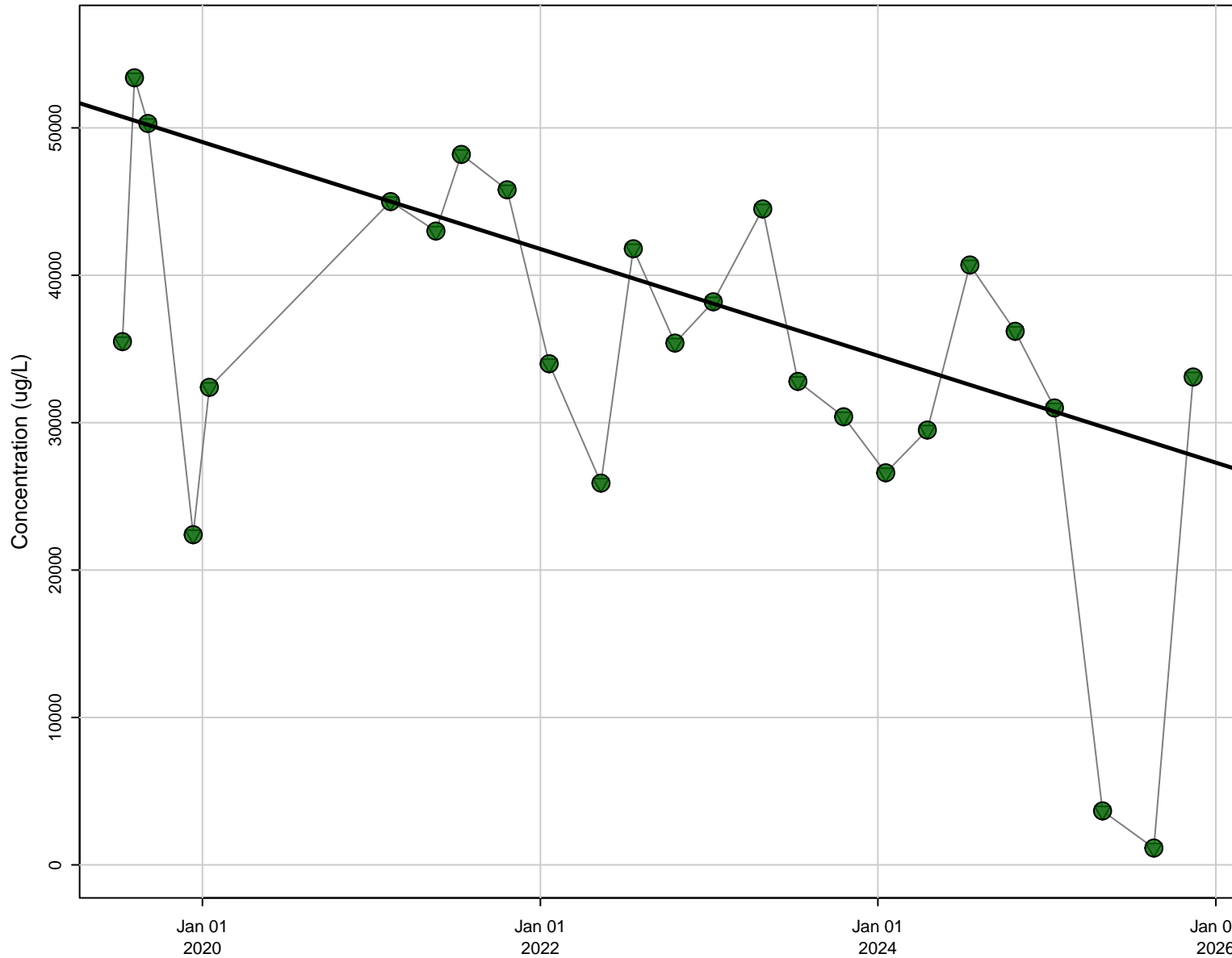
N Data: 25
N Detect: 25
% Detect: 100

Trend Results

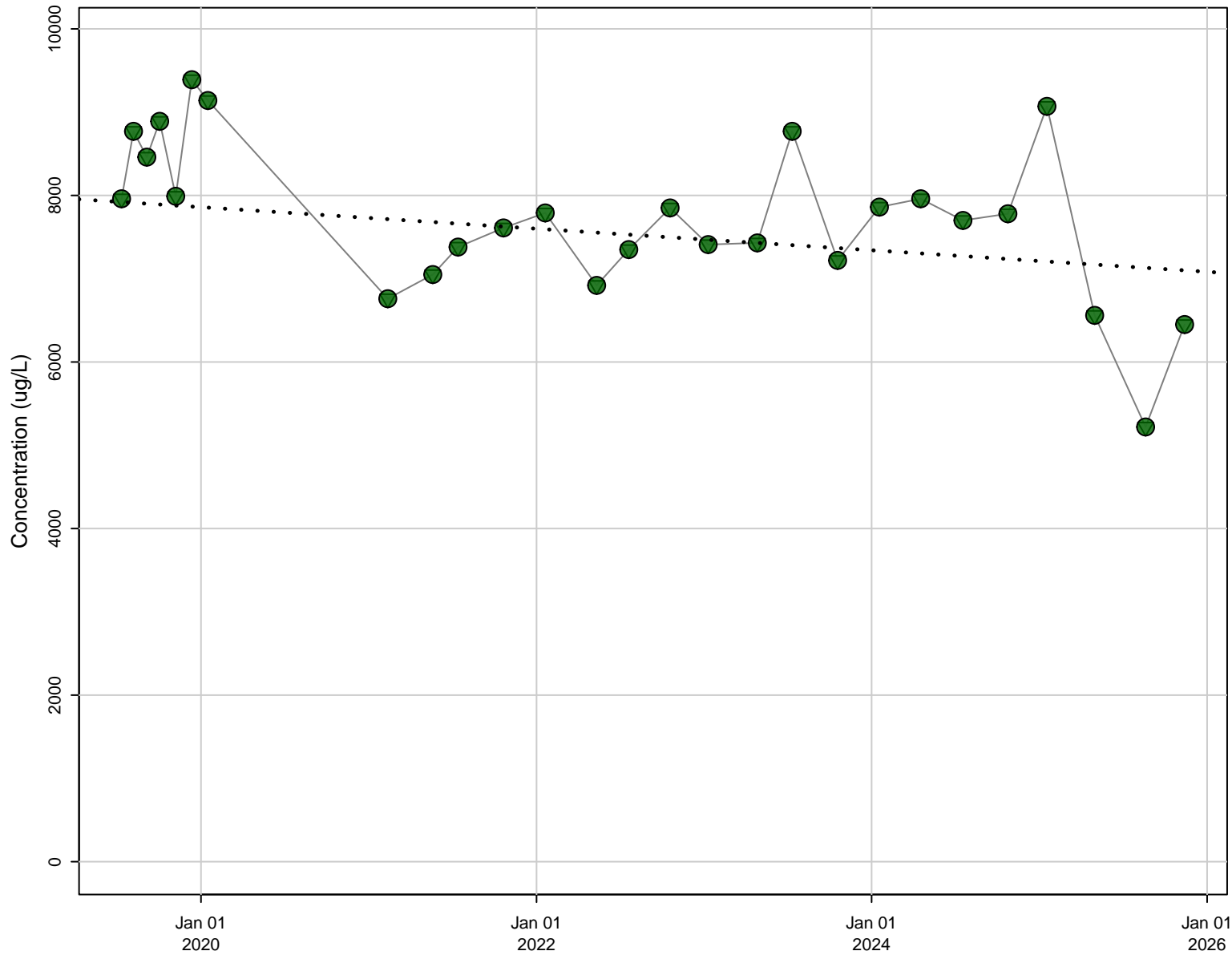
Trend: Decreasing
Confidence Level: 95%
p-value: 0.00631

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D5, Manganese [ug/L]



Stats

N Data: 27
N Detect: 27
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0524

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D5, Nickel [ug/L]

Stats

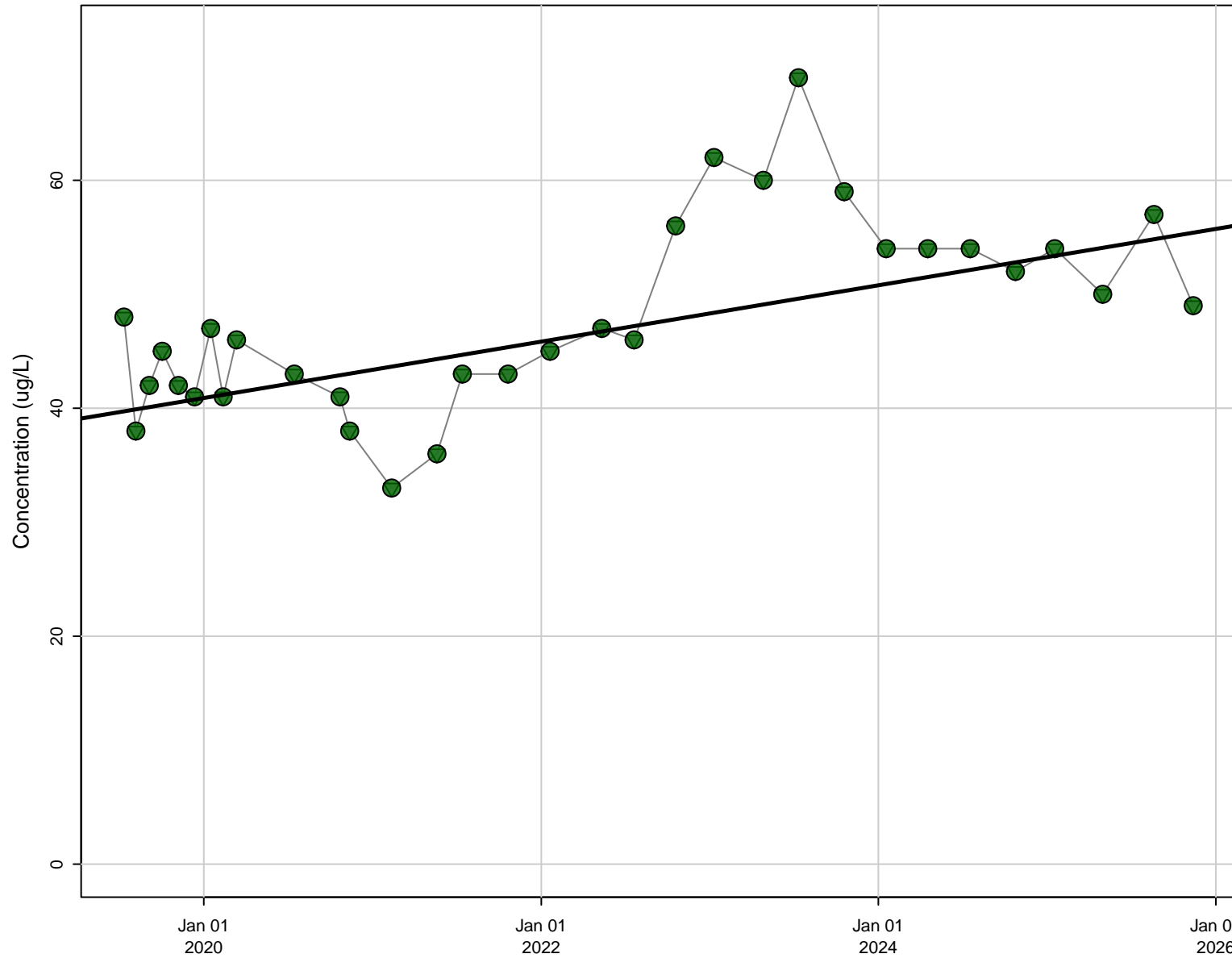
N Data: 32
N Detect: 32
% Detect: 100

Trend Results

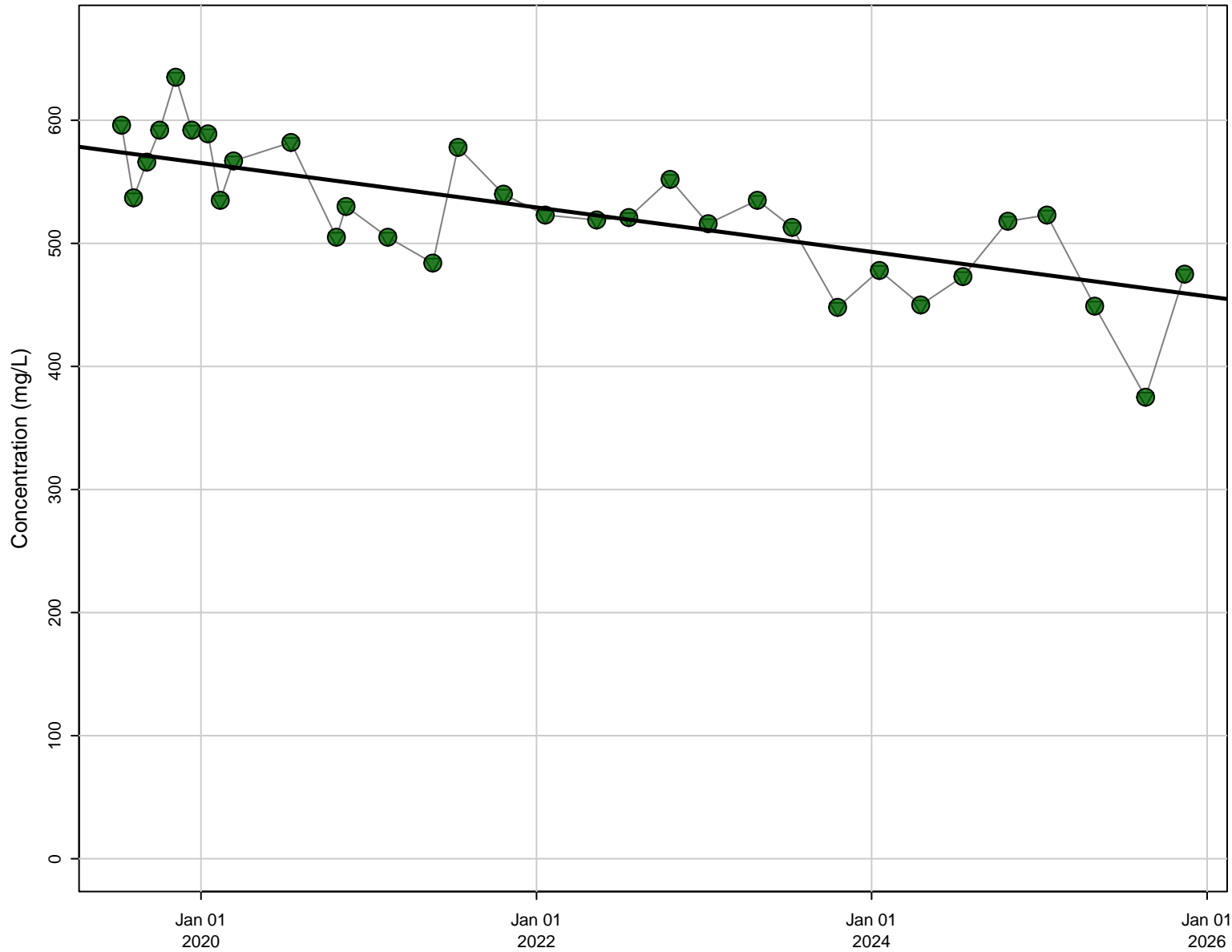
Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D5, Sulfate (as SO4) [mg/L]



Stats

N Data: 32
N Detect: 32
% Detect: 100

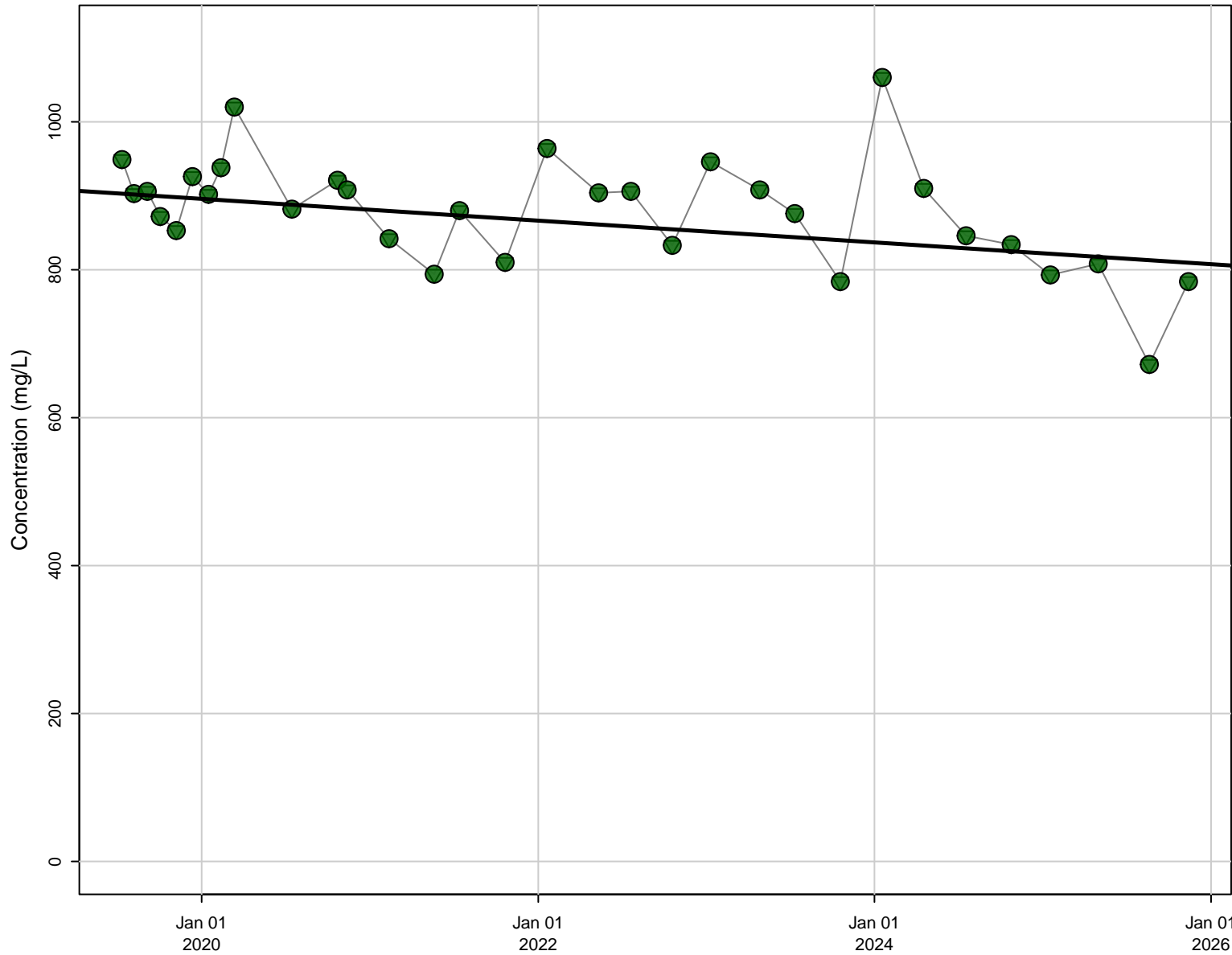
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D5, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 32
N Detect: 32
% Detect: 100

Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: 0.0099

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D8, Boron [ug/L]

Stats

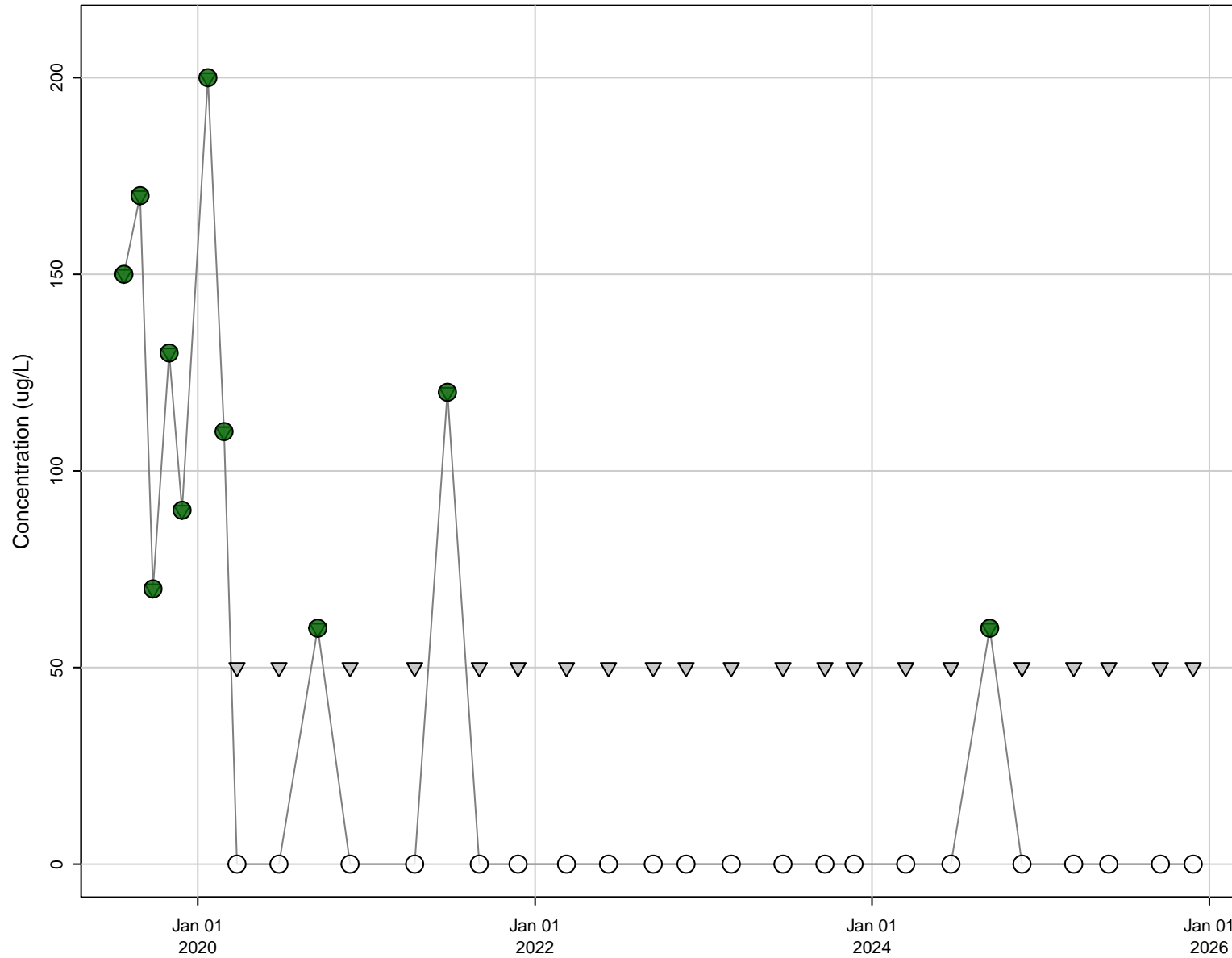
N Data: 31
N Detect: 10
% Detect: 32

Trend Results

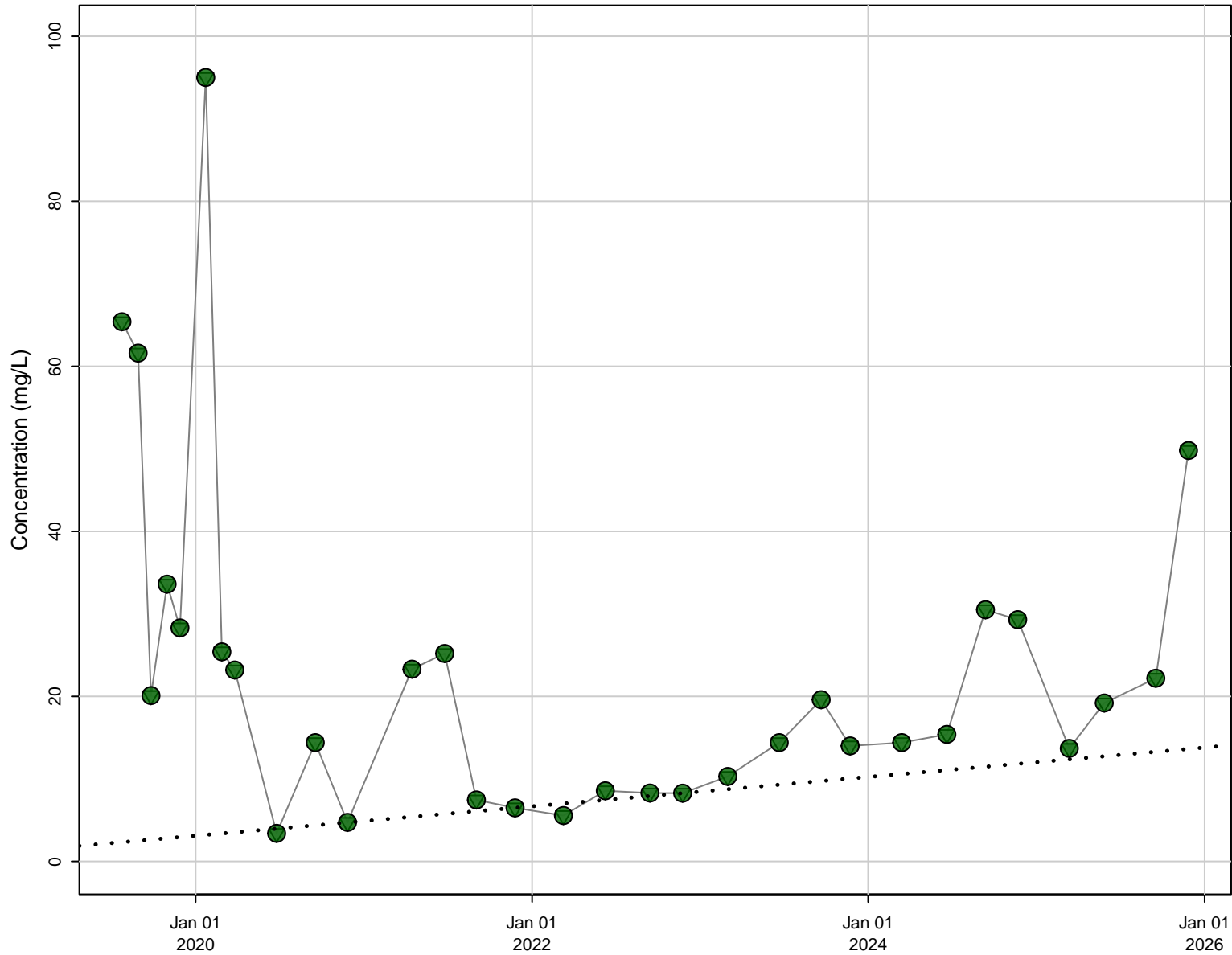
Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit



D8, Chloride [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

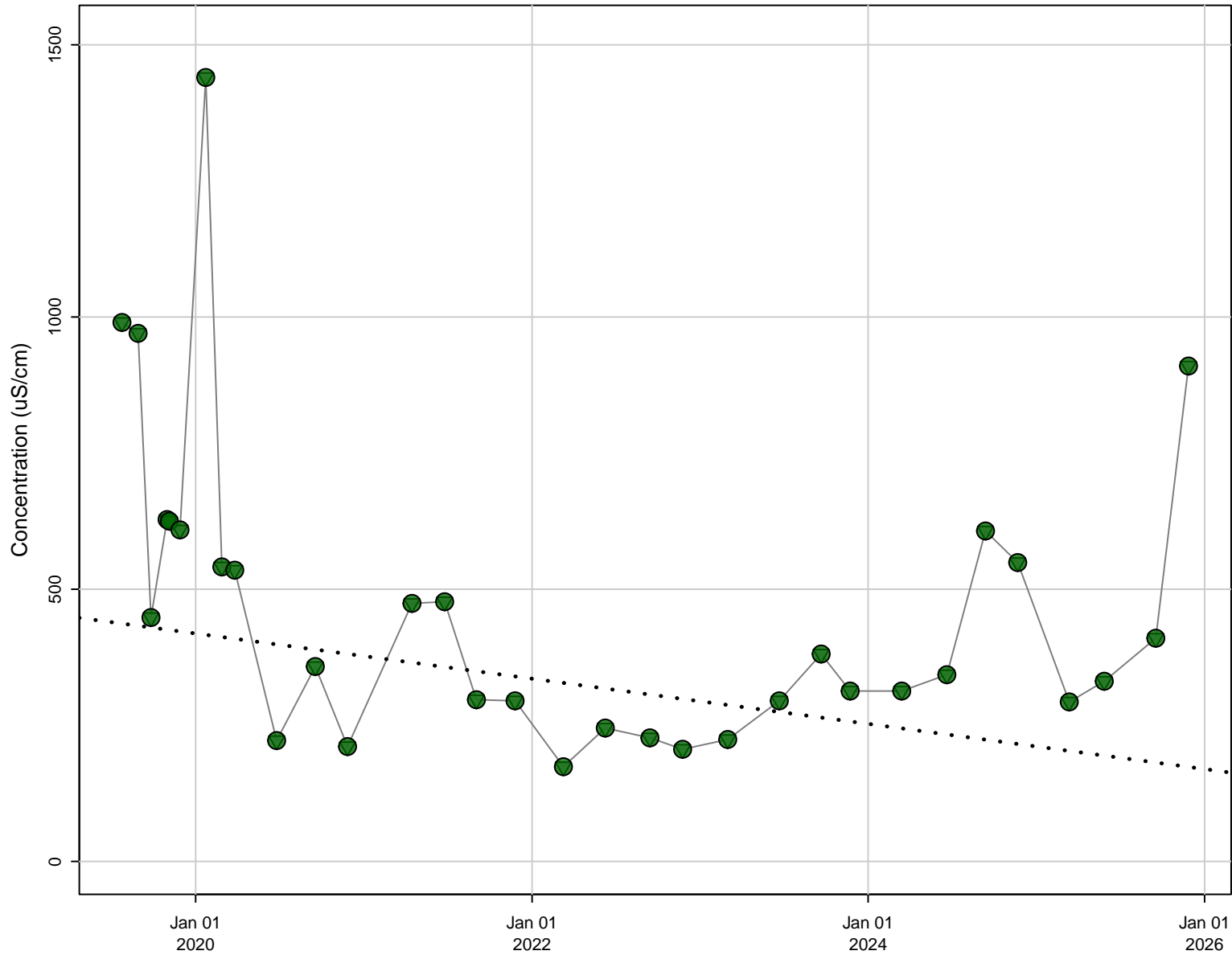
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.563

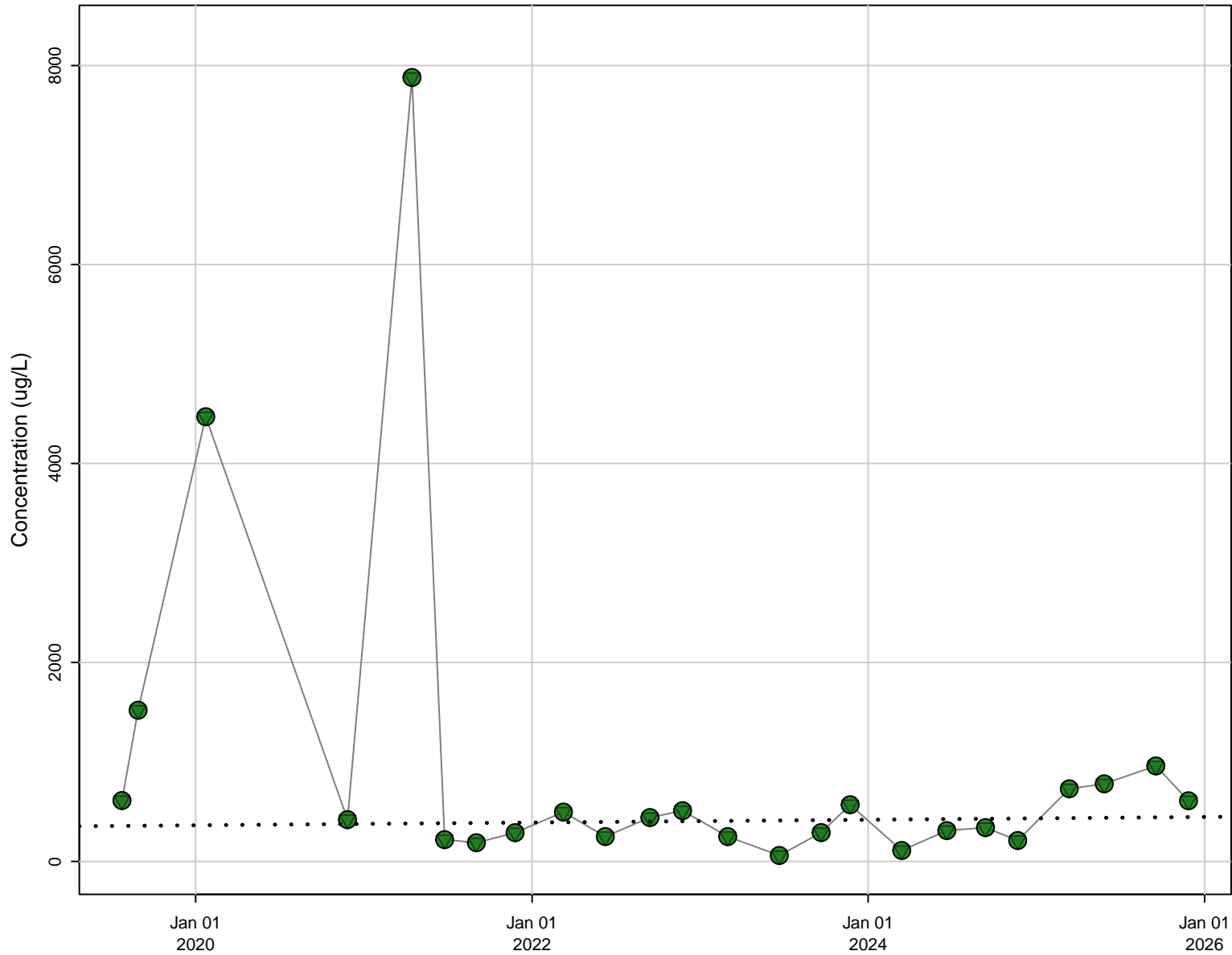
Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D8, Electrical Conductivity (Field) [uS/cm]



D8, Iron [ug/L]



Stats

N Data: 24
N Detect: 24
% Detect: 100

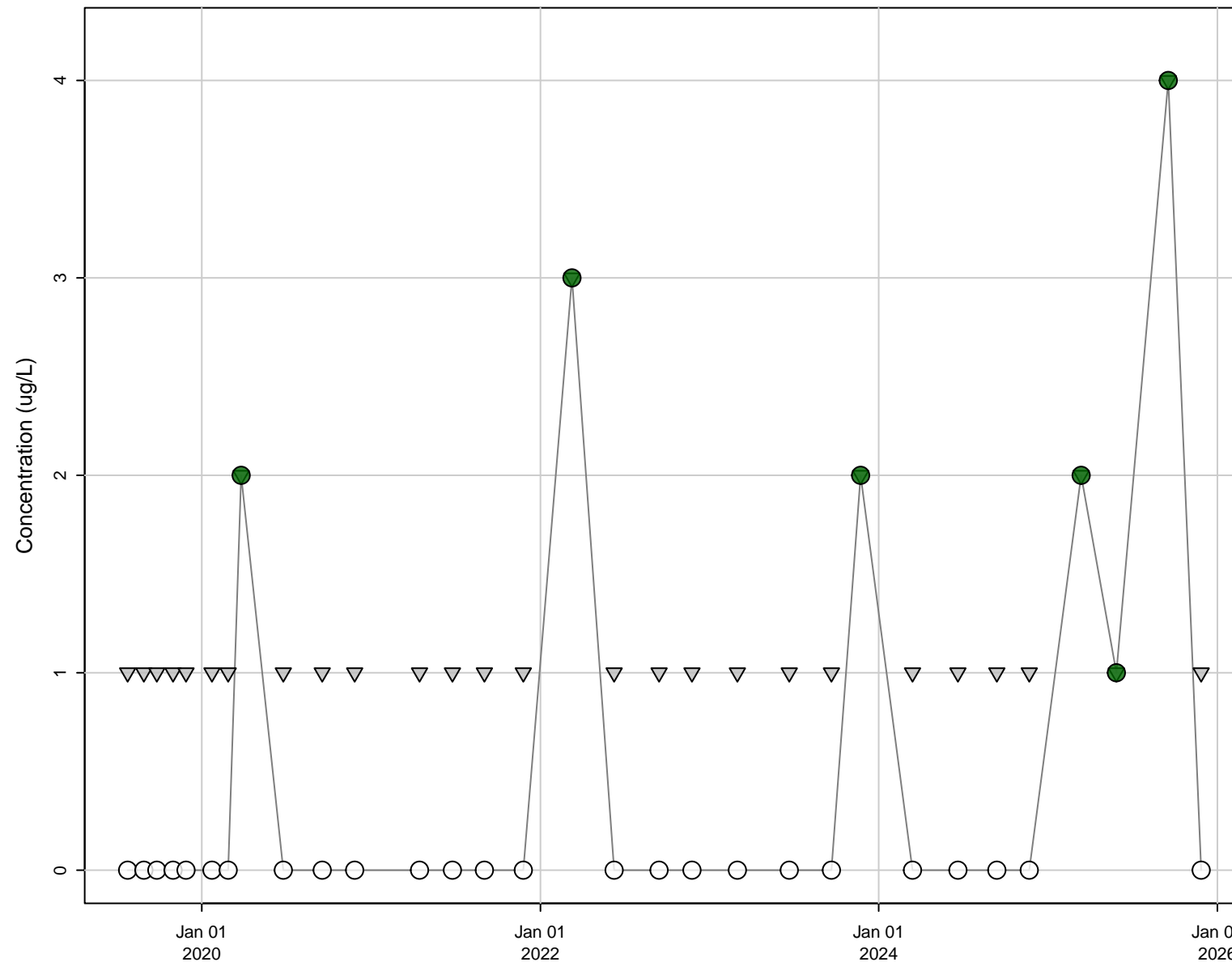
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.98

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D8, Lead [ug/L]



Stats

N Data: 31
N Detect: 6
% Detect: 19

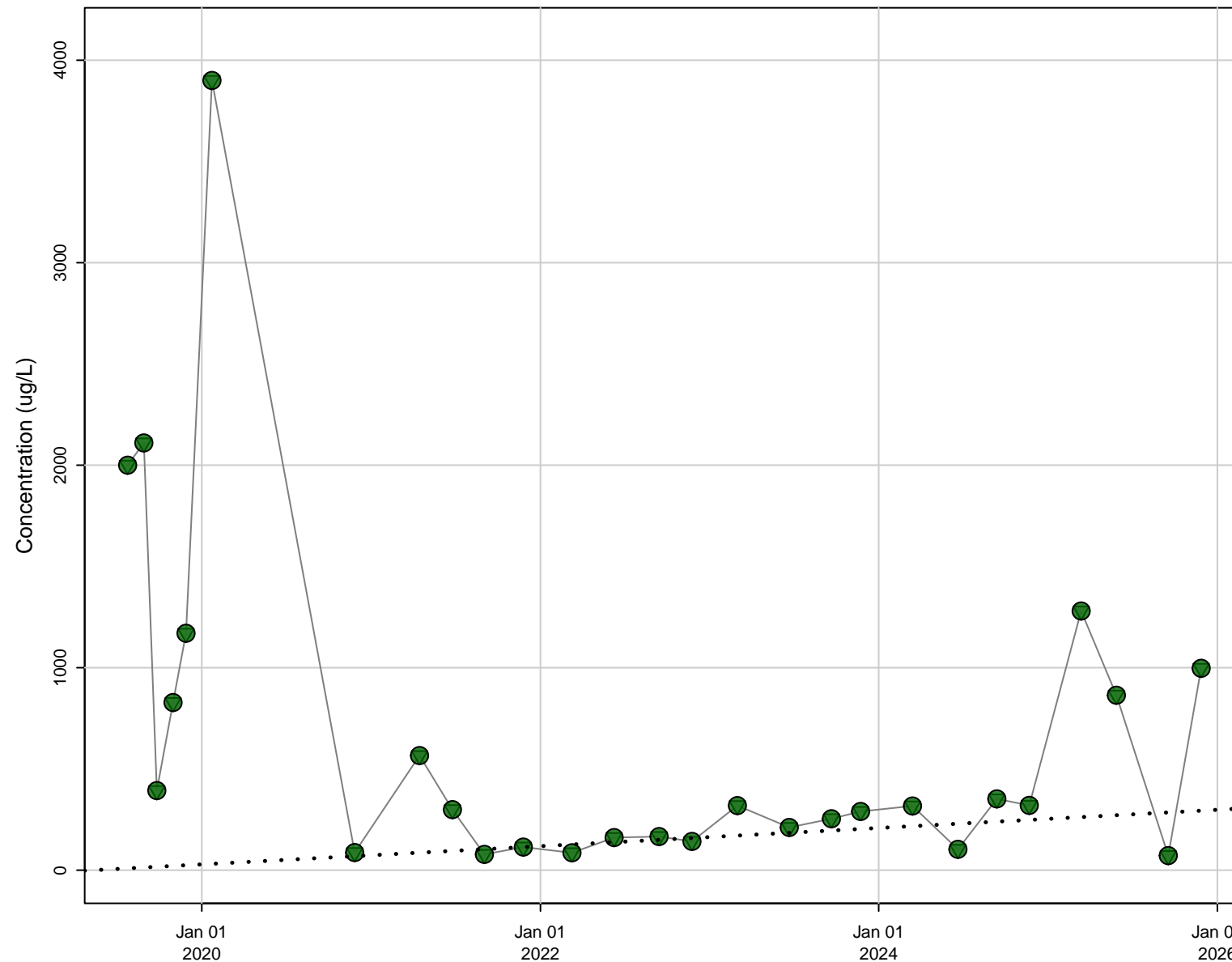
Trend Results

Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit

D8, Manganese [ug/L]



Stats

N Data: 27
N Detect: 27
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.591

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D8, Nickel [ug/L]

Stats

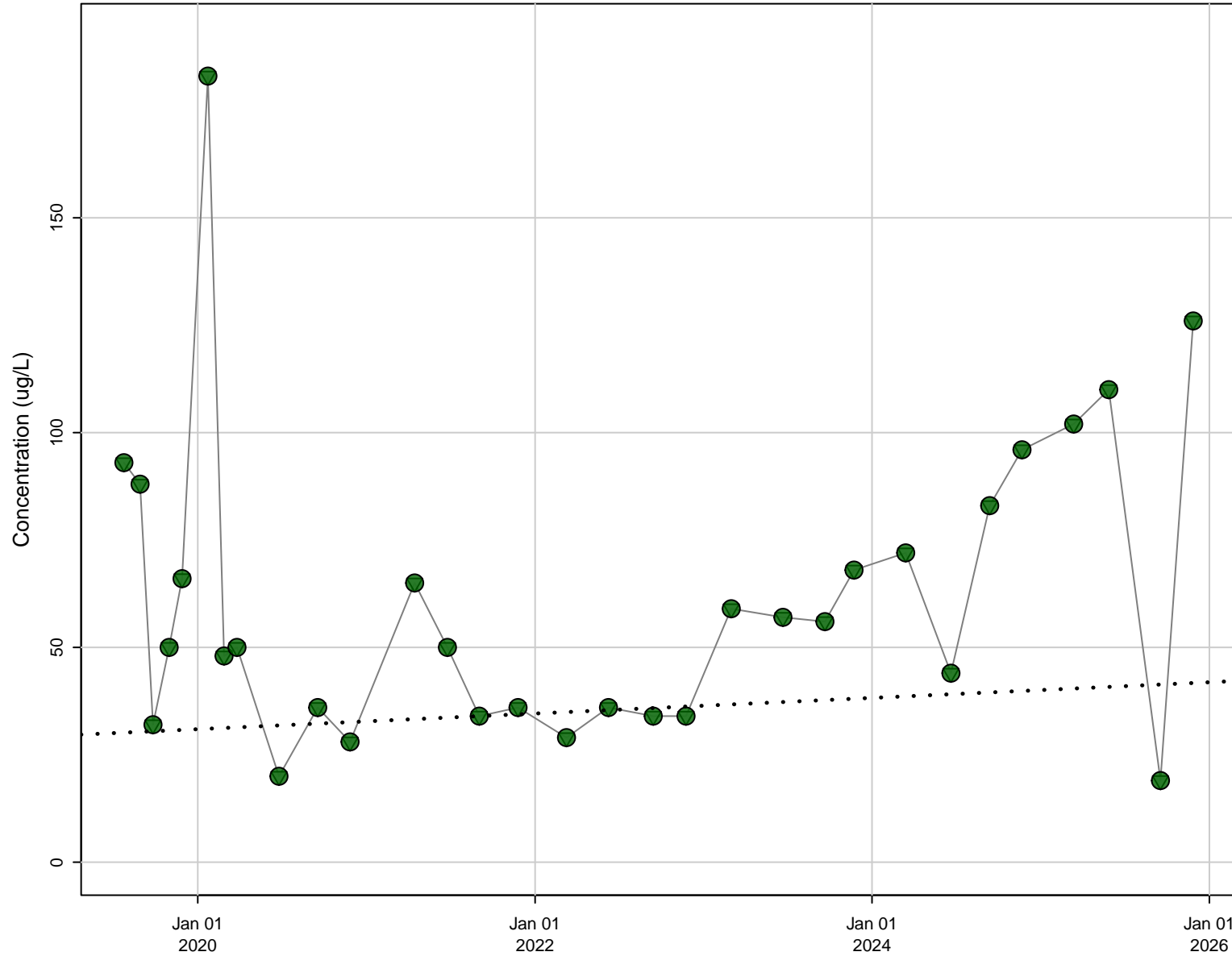
N Data: 31
N Detect: 31
% Detect: 100

Trend Results

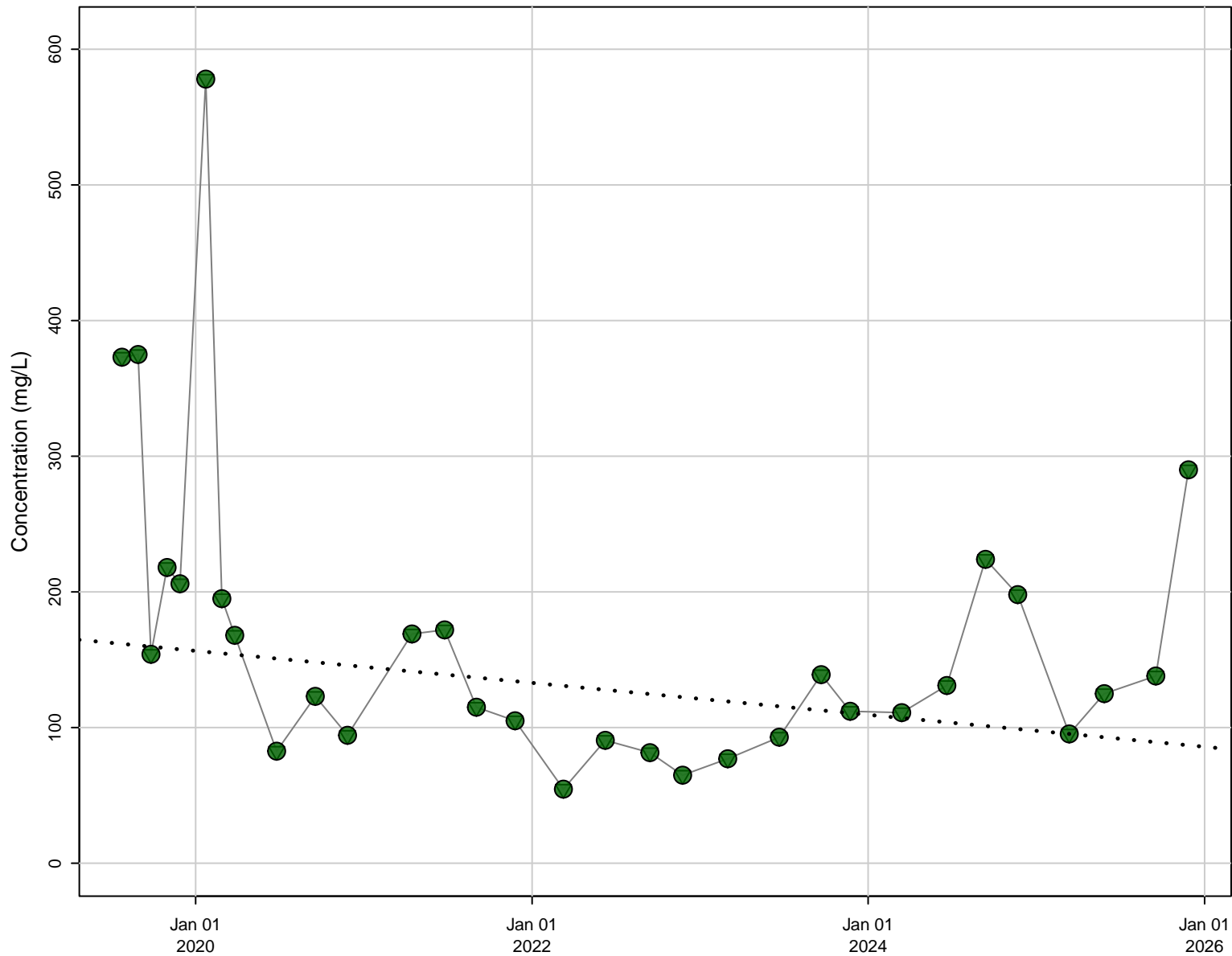
Trend: Not Significant
Confidence Level: 95%
p-value: 0.173

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D8, Sulfate (as SO4) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

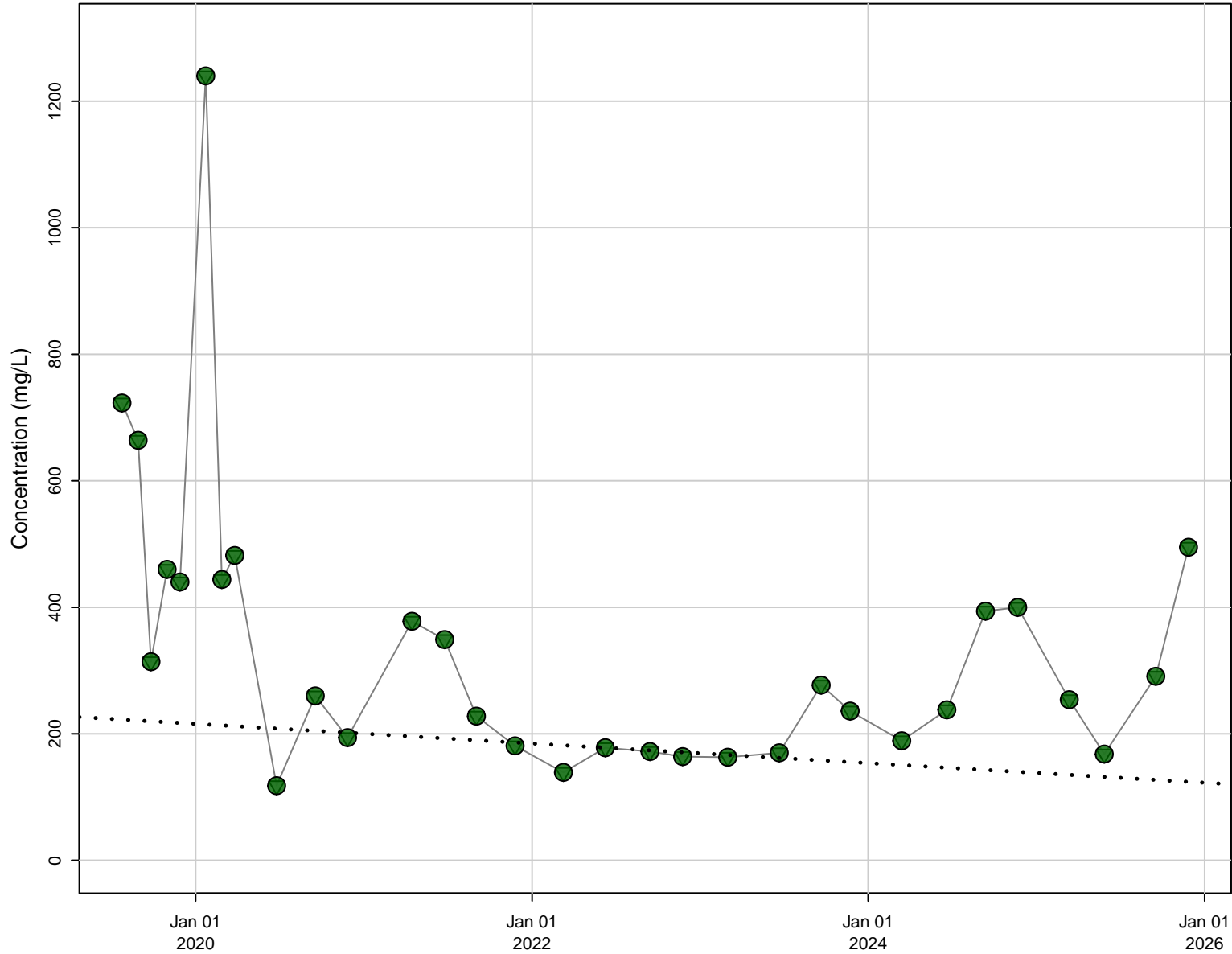
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.136

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D8, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0661

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D9, Boron [ug/L]

Stats

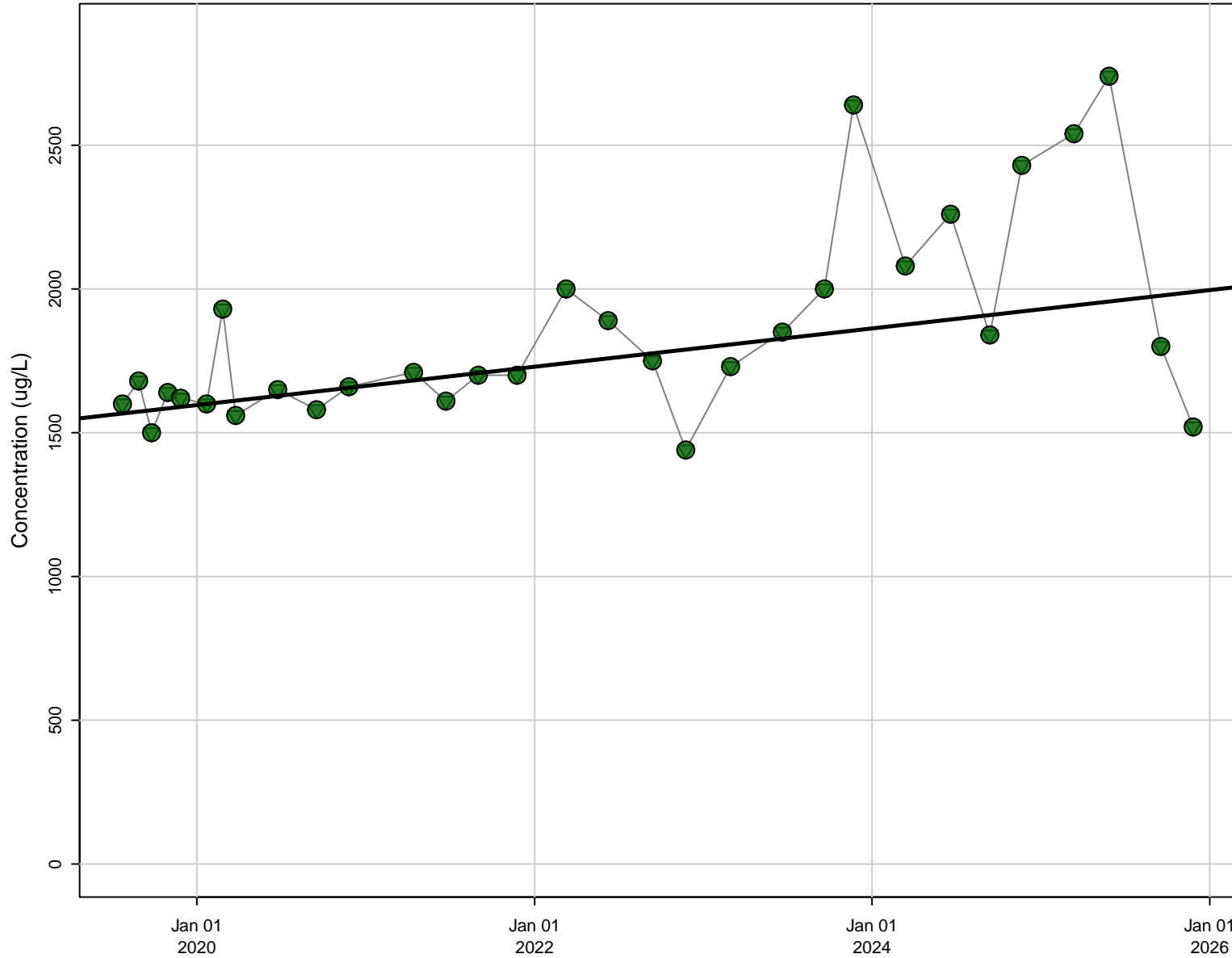
N Data: 31
N Detect: 31
% Detect: 100

Trend Results

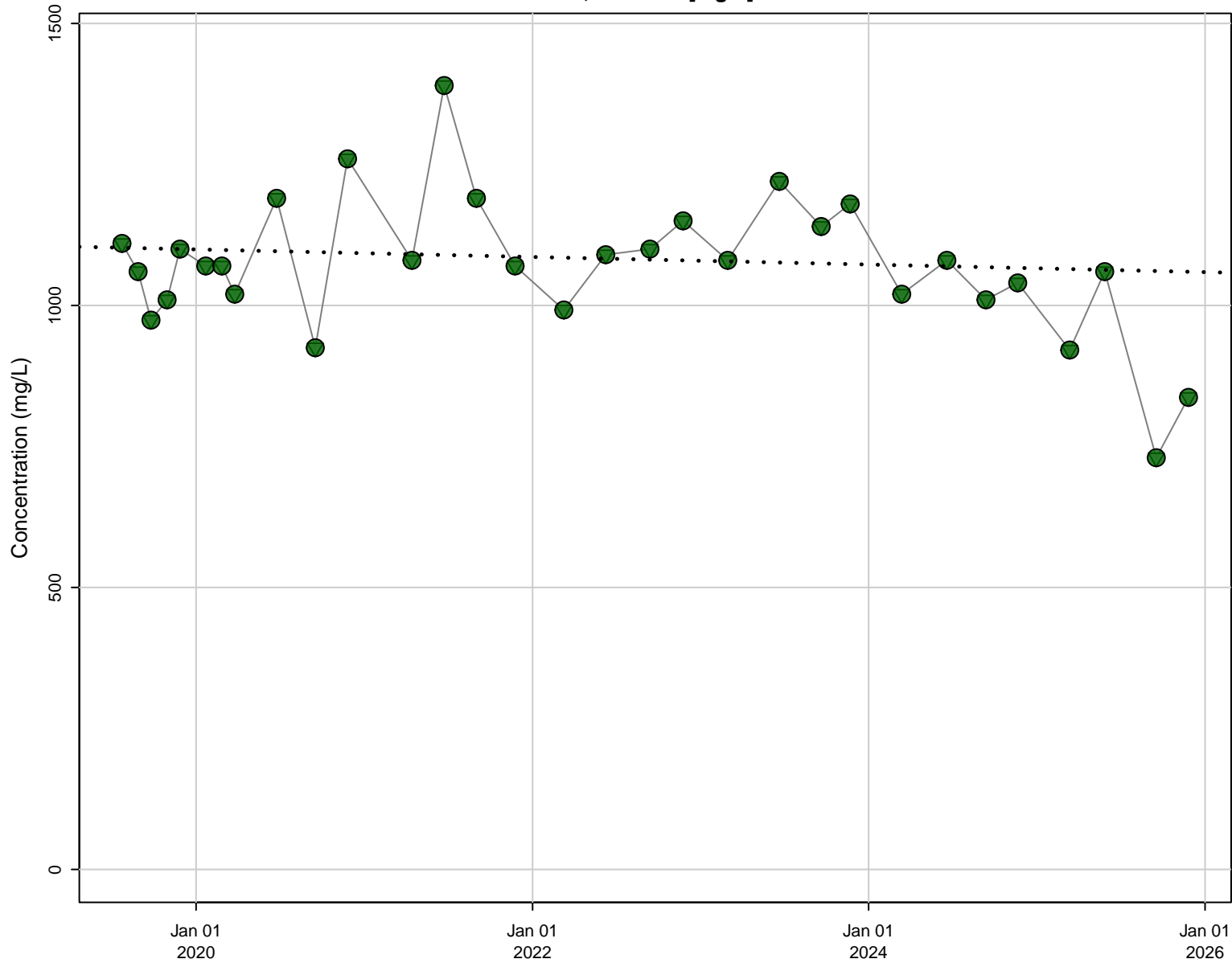
Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



D9, Chloride [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

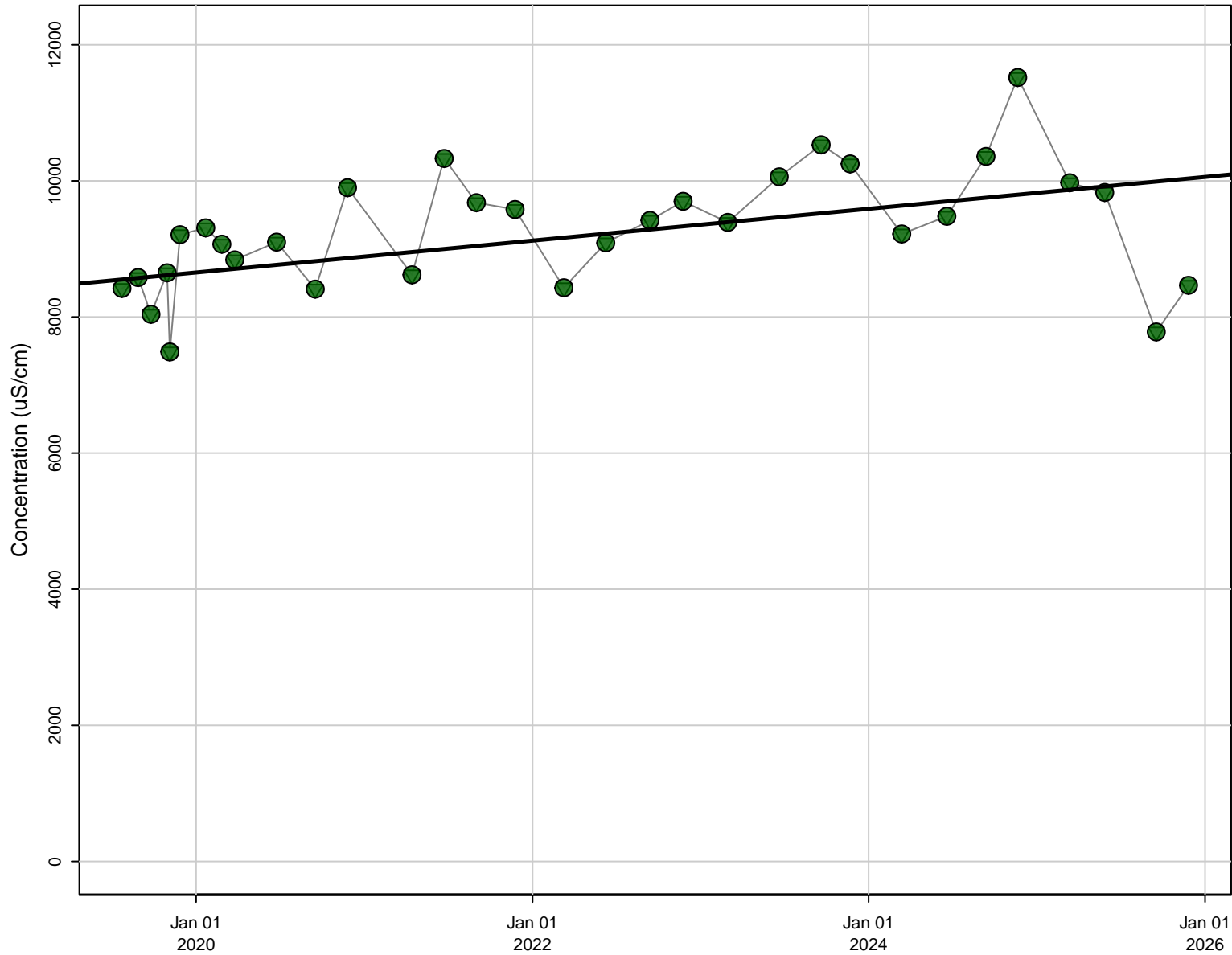
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.261

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D9, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 32
N Detect: 32
% Detect: 100

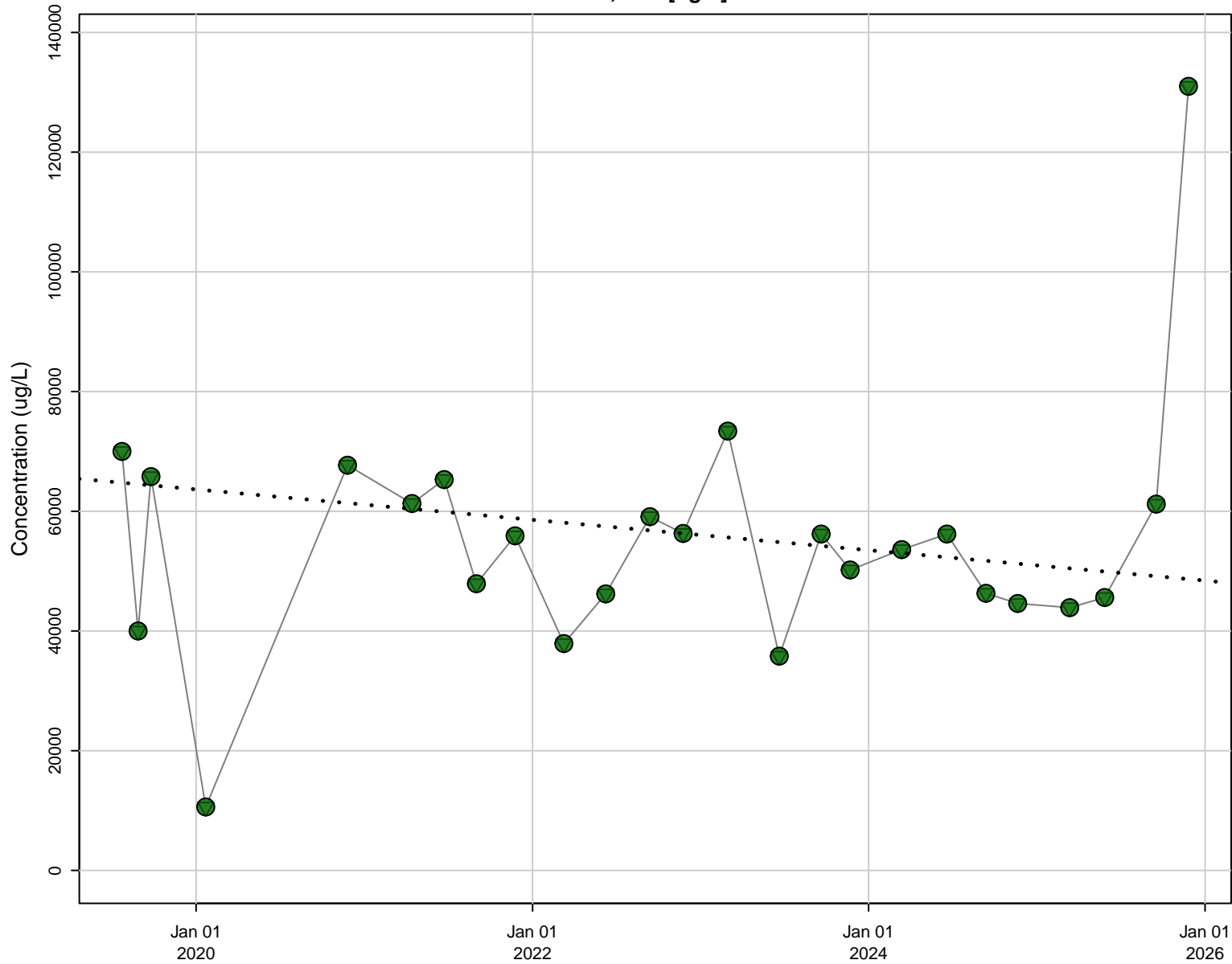
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.00225

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D9, Iron [ug/L]



Stats

N Data: 25
N Detect: 25
% Detect: 100

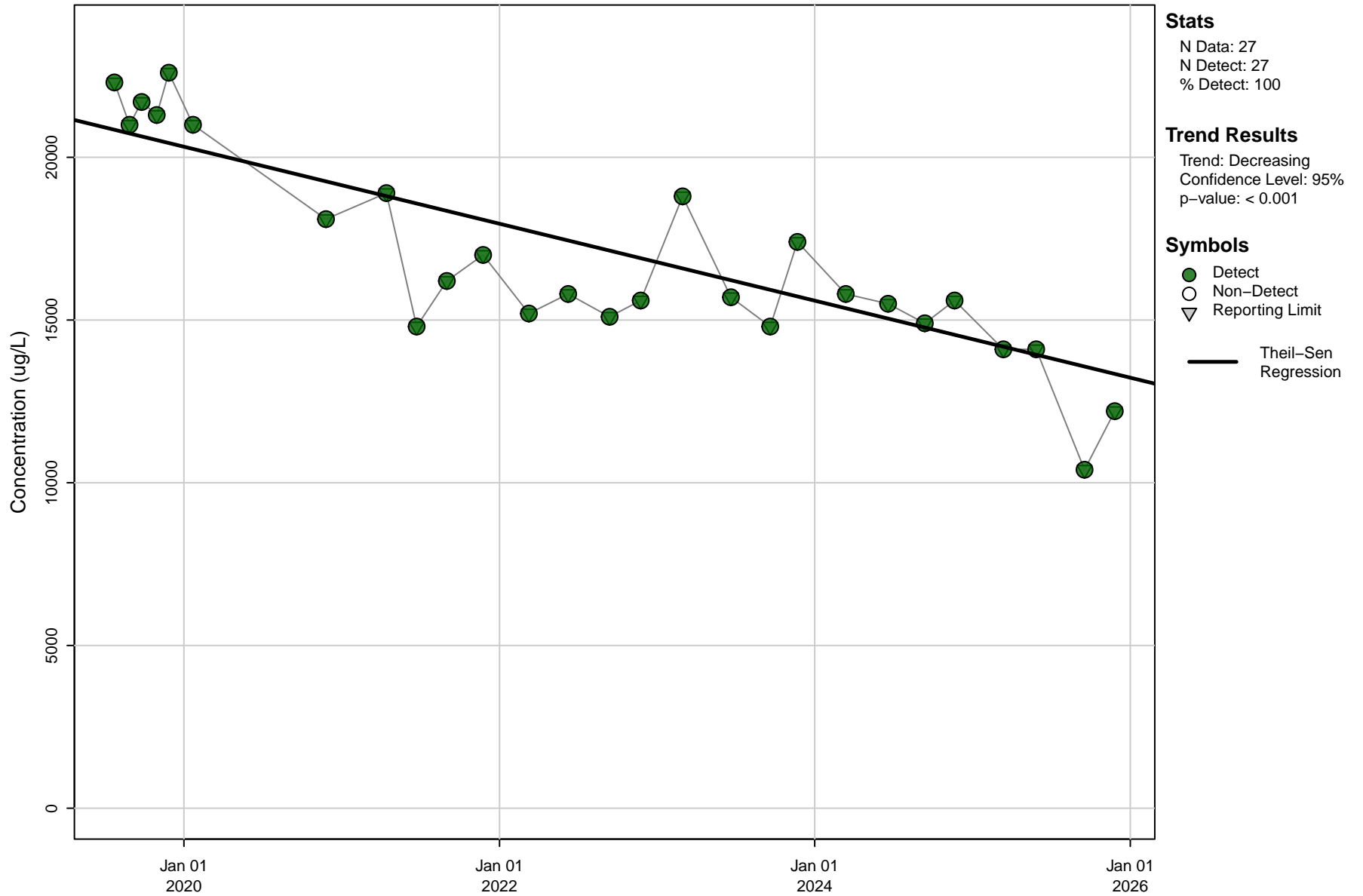
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.441

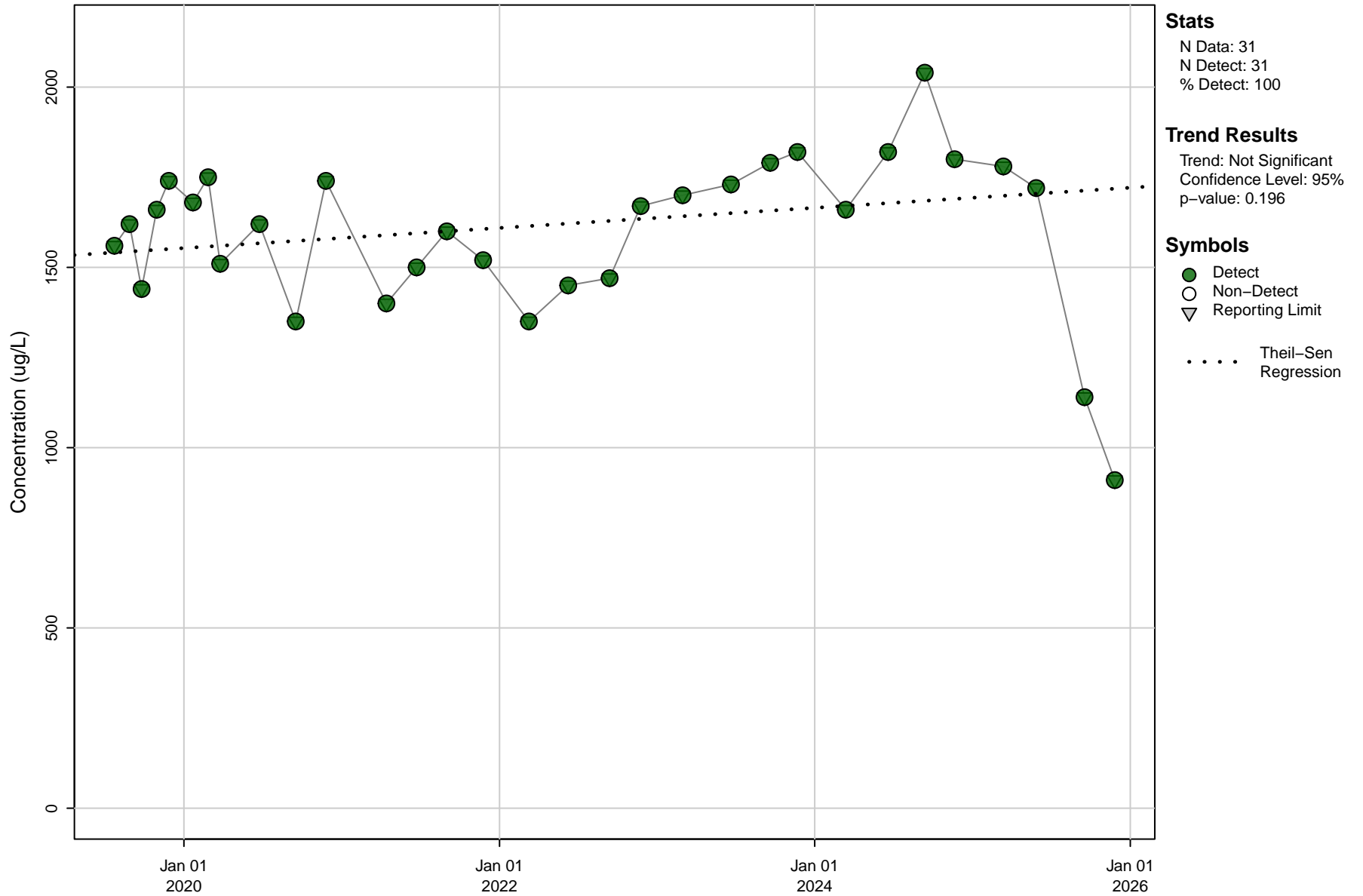
Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

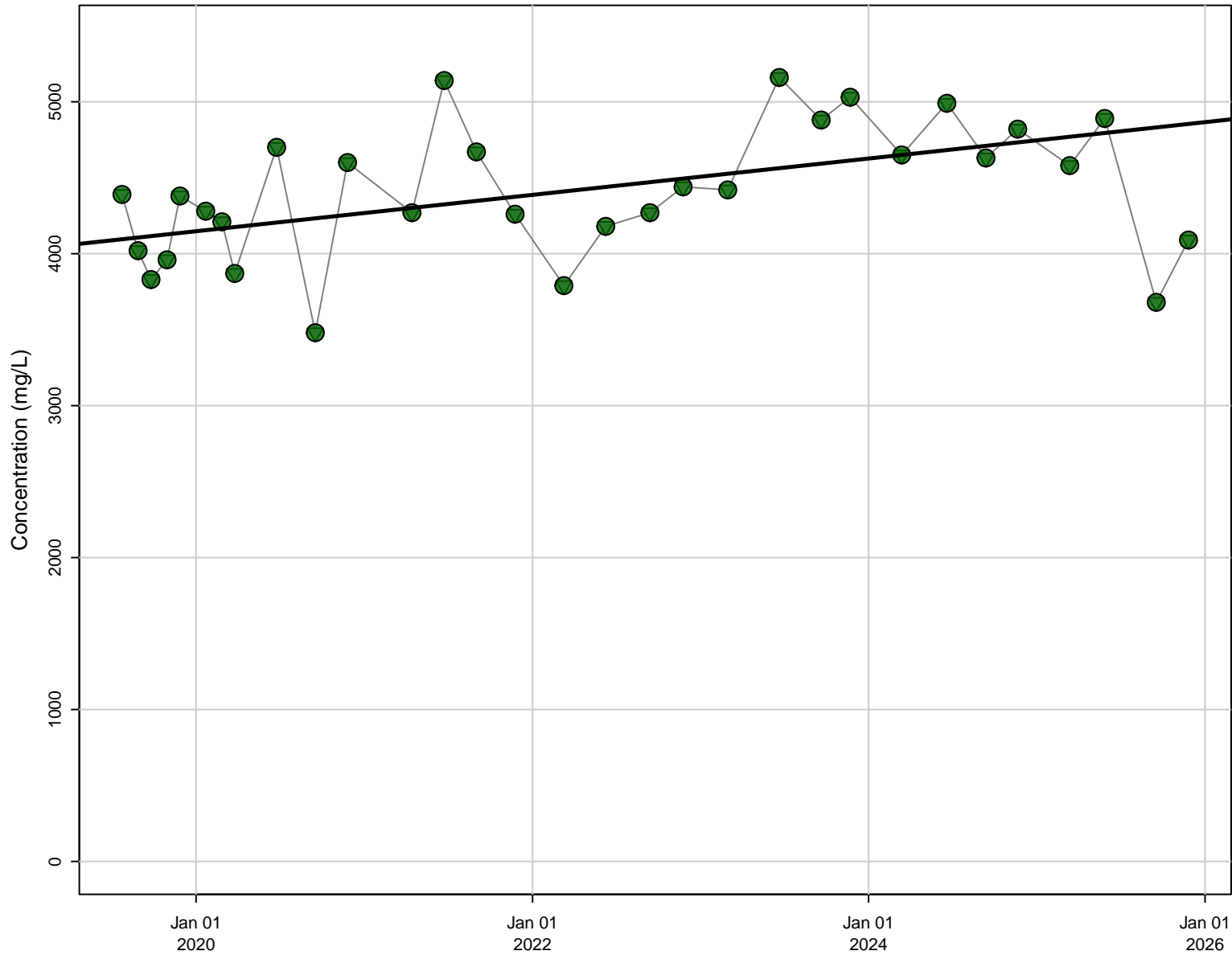
D9, Manganese [ug/L]



D9, Nickel [ug/L]



D9, Sulfate (as SO4) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

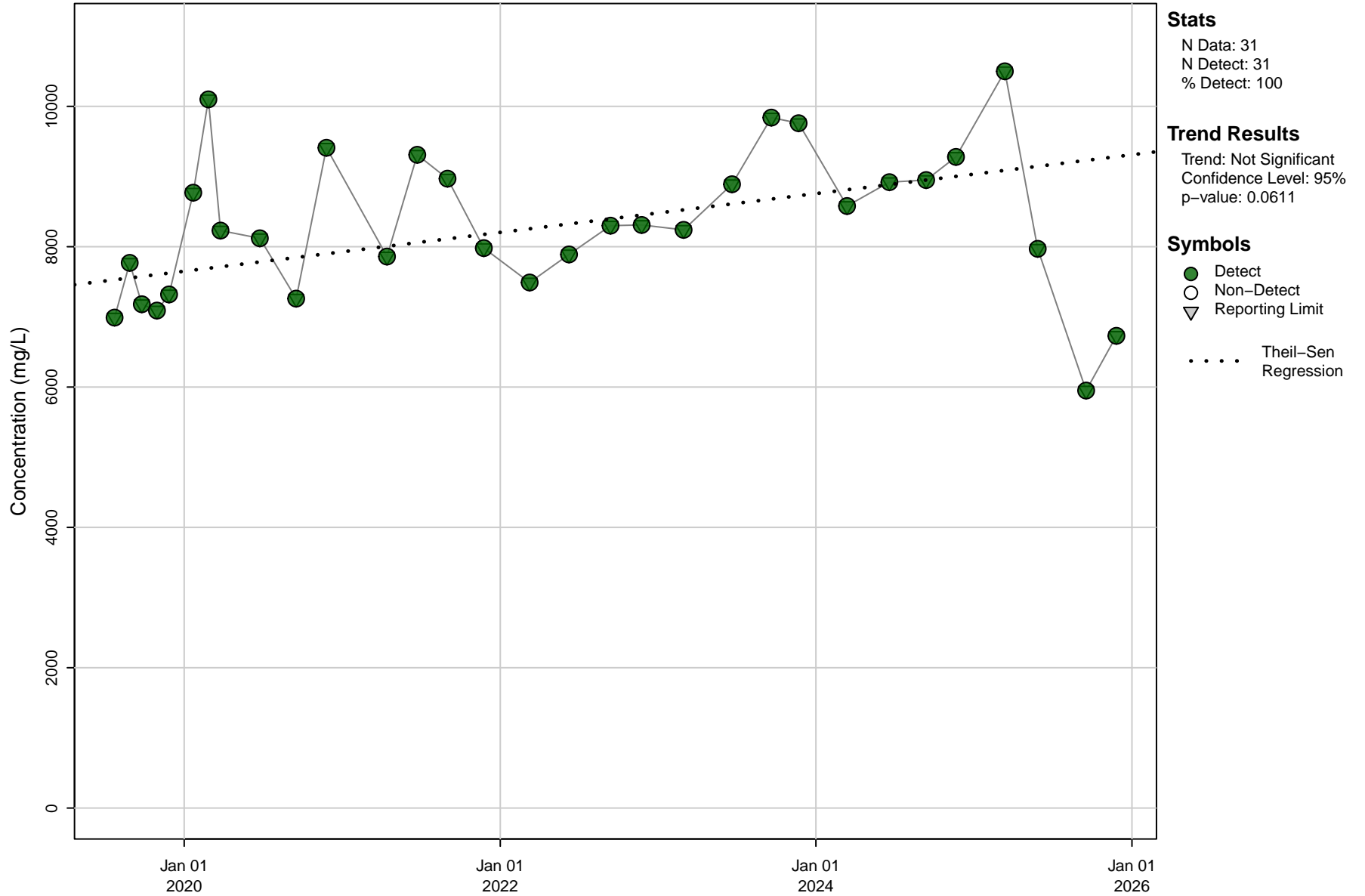
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0486

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

D9, Total Dissolved Solids (TDS) [mg/L]



MPGM5-D5, Boron [ug/L]

Stats

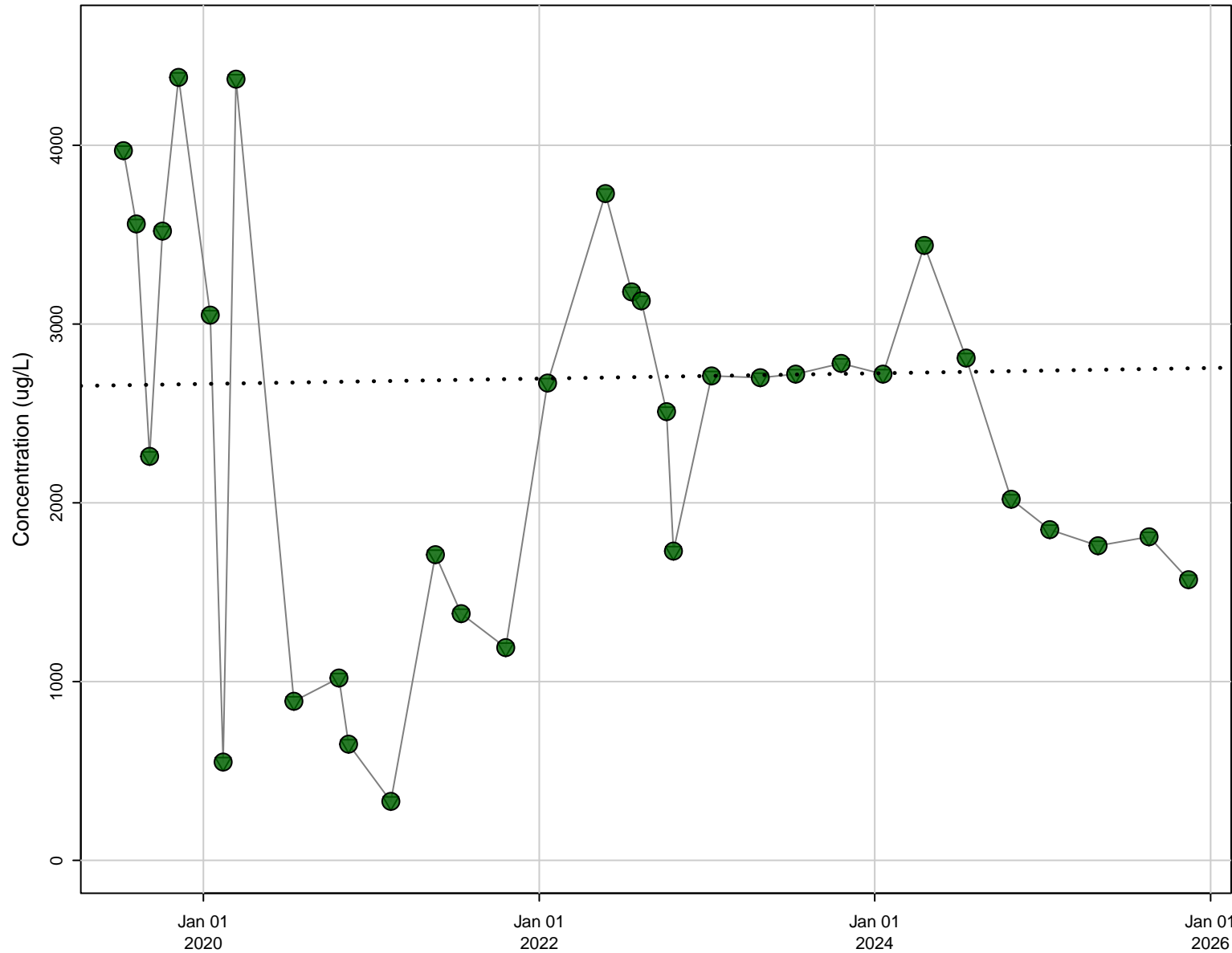
N Data: 33
N Detect: 33
% Detect: 100

Trend Results

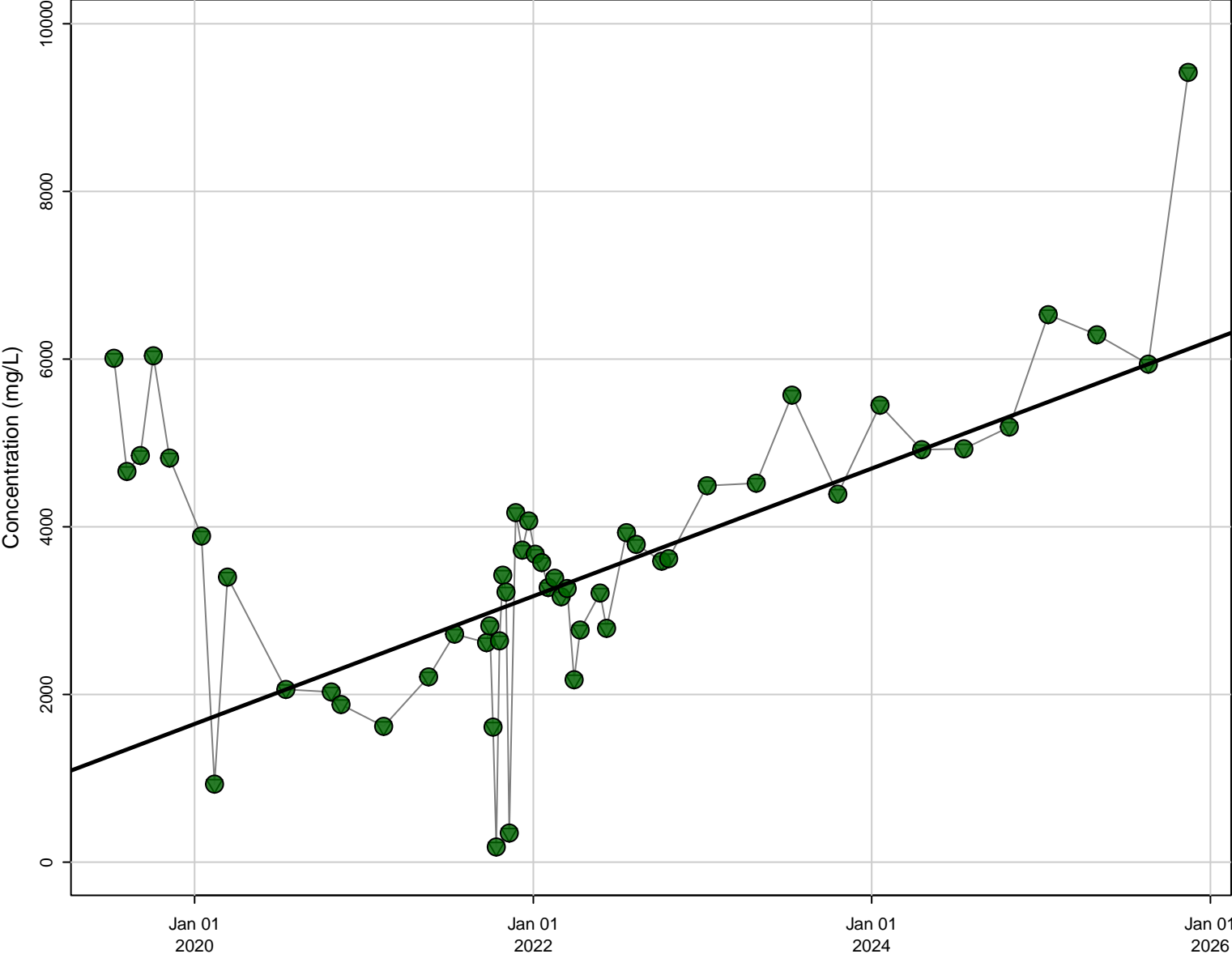
Trend: Not Significant
Confidence Level: 95%
p-value: 0.466

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



MPGM5-D5, Chloride [mg/L]



Stats

N Data: 51
N Detect: 51
% Detect: 100

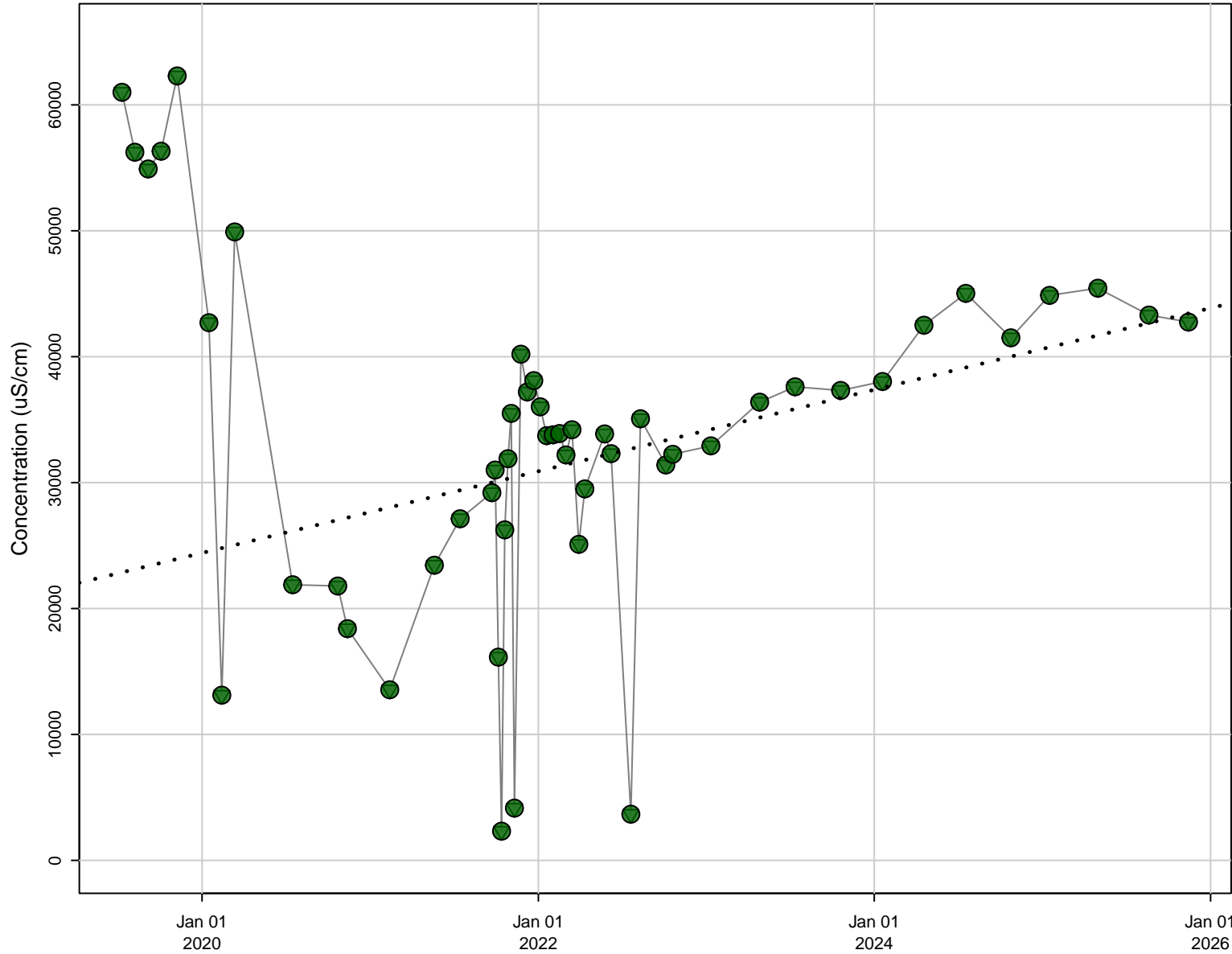
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D5, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 51
N Detect: 51
% Detect: 100

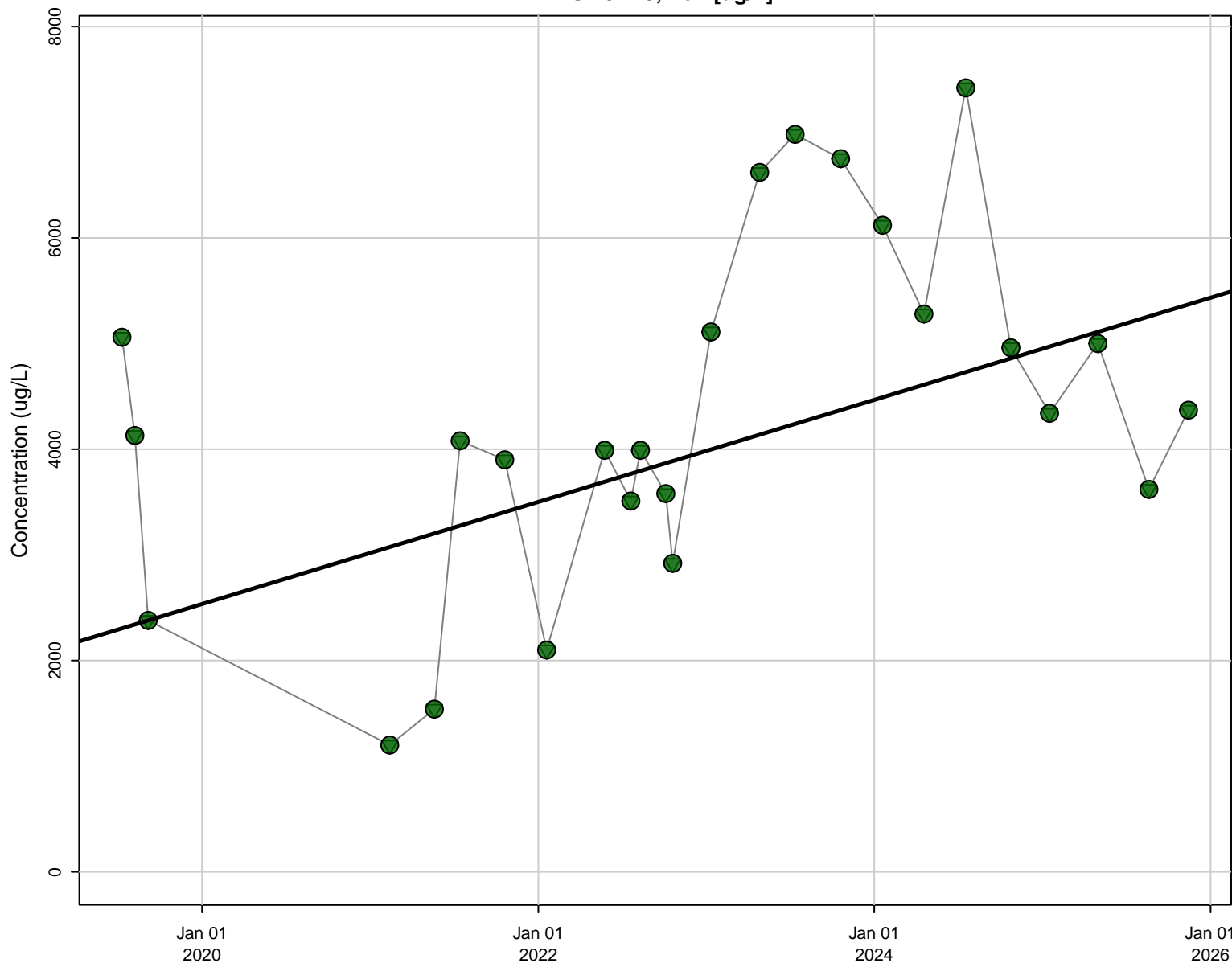
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.0584

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D5, Iron [ug/L]



Stats

N Data: 25
N Detect: 25
% Detect: 100

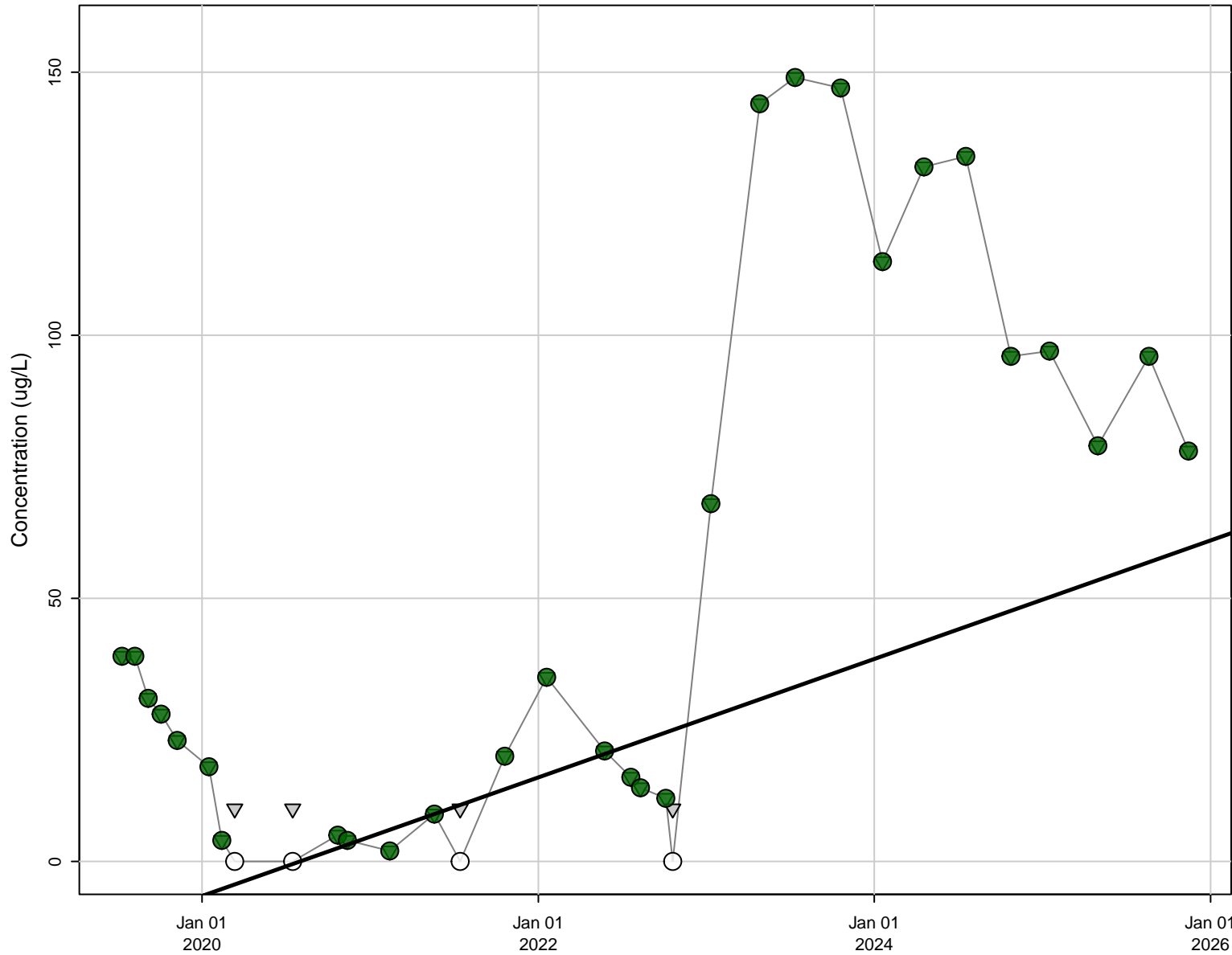
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0298

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D5, Lead [ug/L]



Stats

N Data: 33
N Detect: 29
% Detect: 88

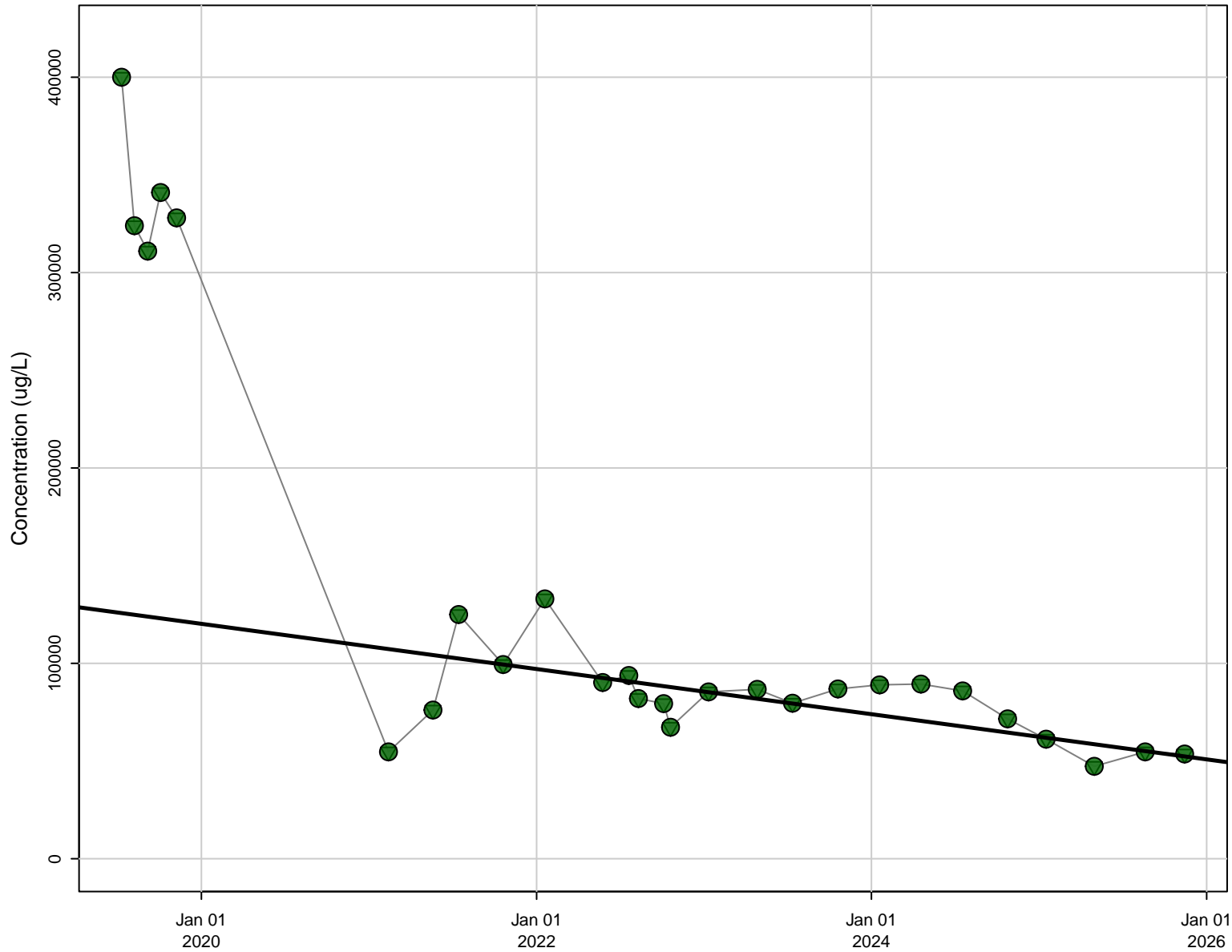
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.0136

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D5, Manganese [ug/L]



Stats

N Data: 27
N Detect: 27
% Detect: 100

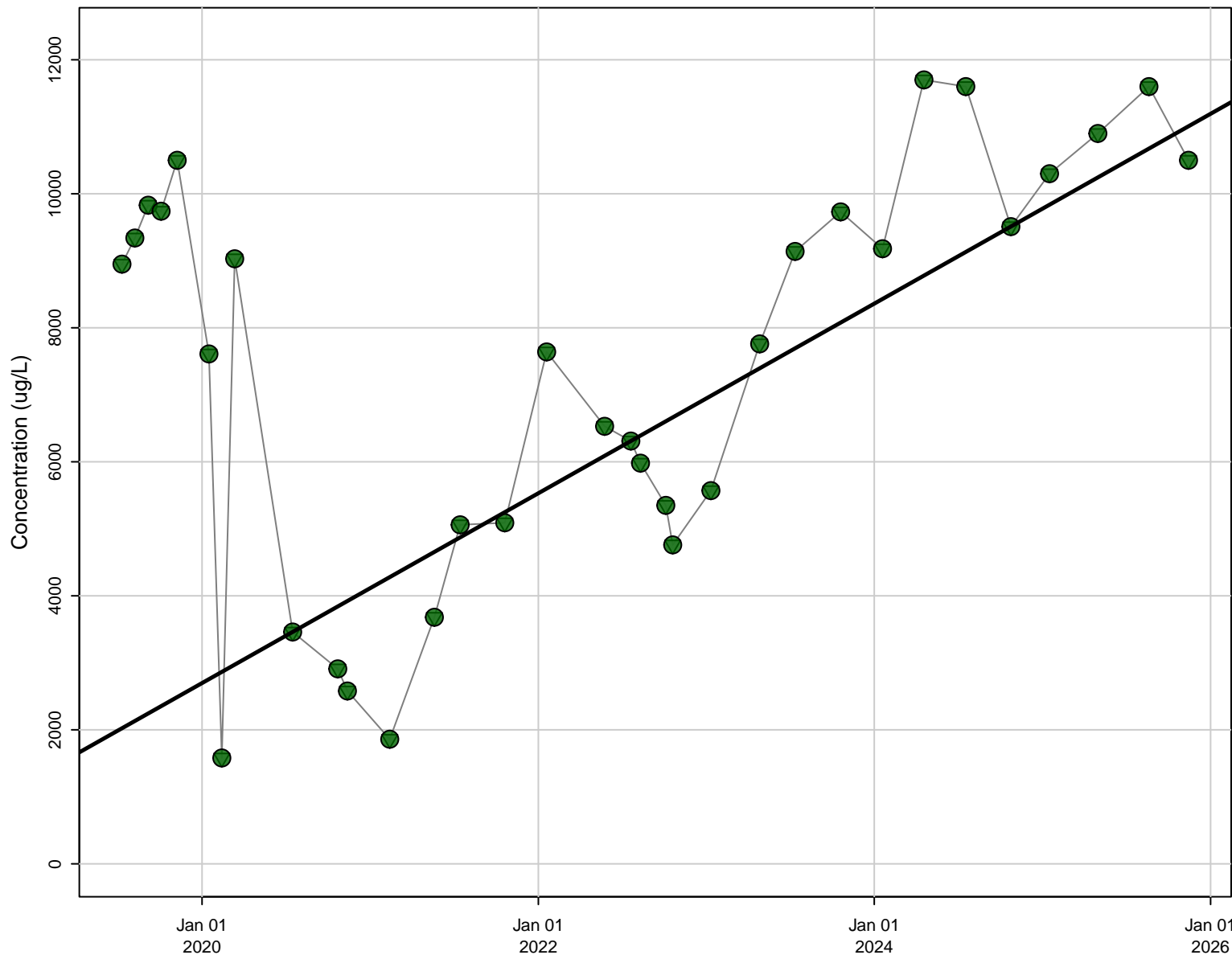
Trend Results

Trend: Decreasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D5, Nickel [ug/L]



Stats

N Data: 33
N Detect: 33
% Detect: 100

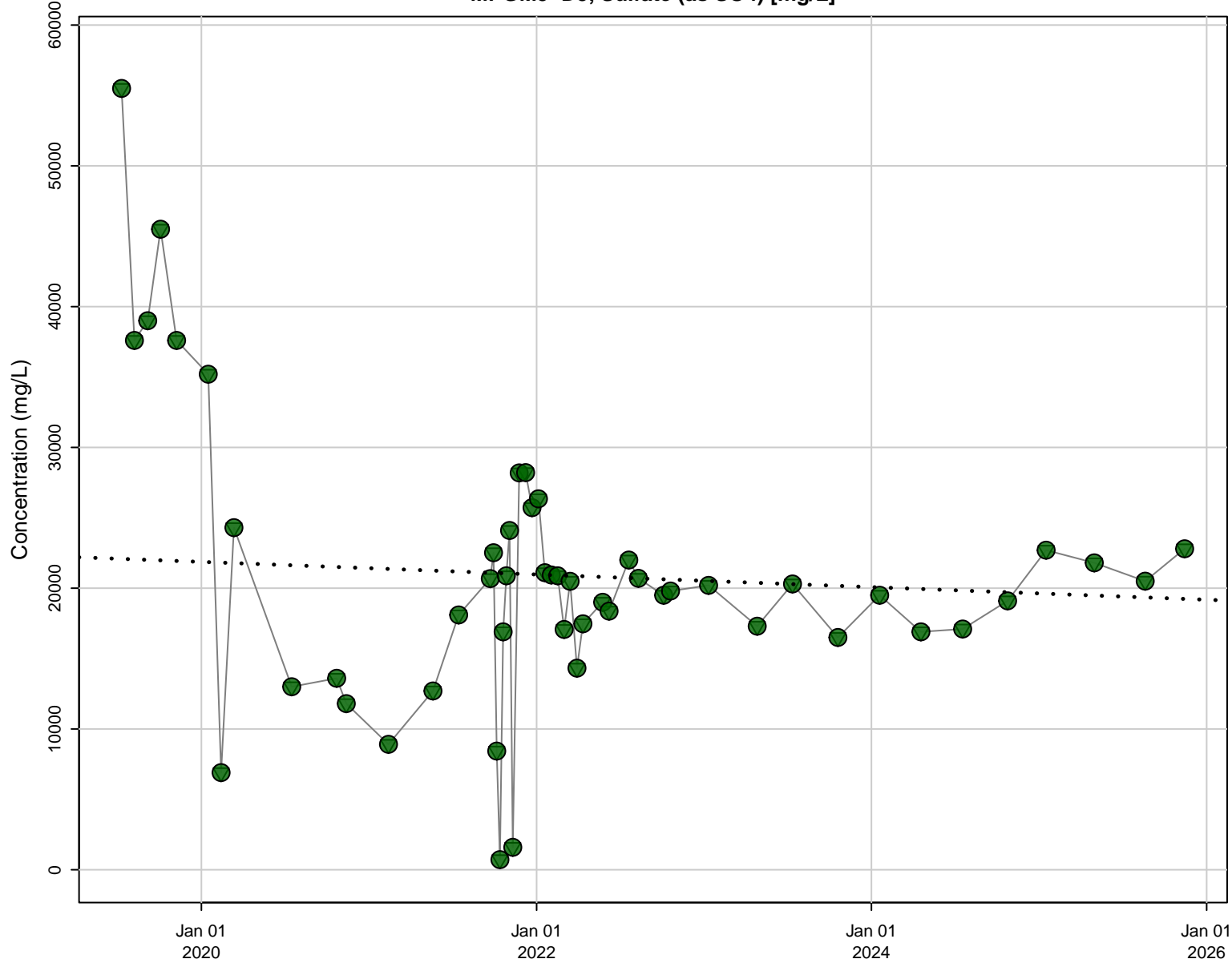
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: 0.00638

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D5, Sulfate (as SO4) [mg/L]



Stats

N Data: 51
N Detect: 51
% Detect: 100

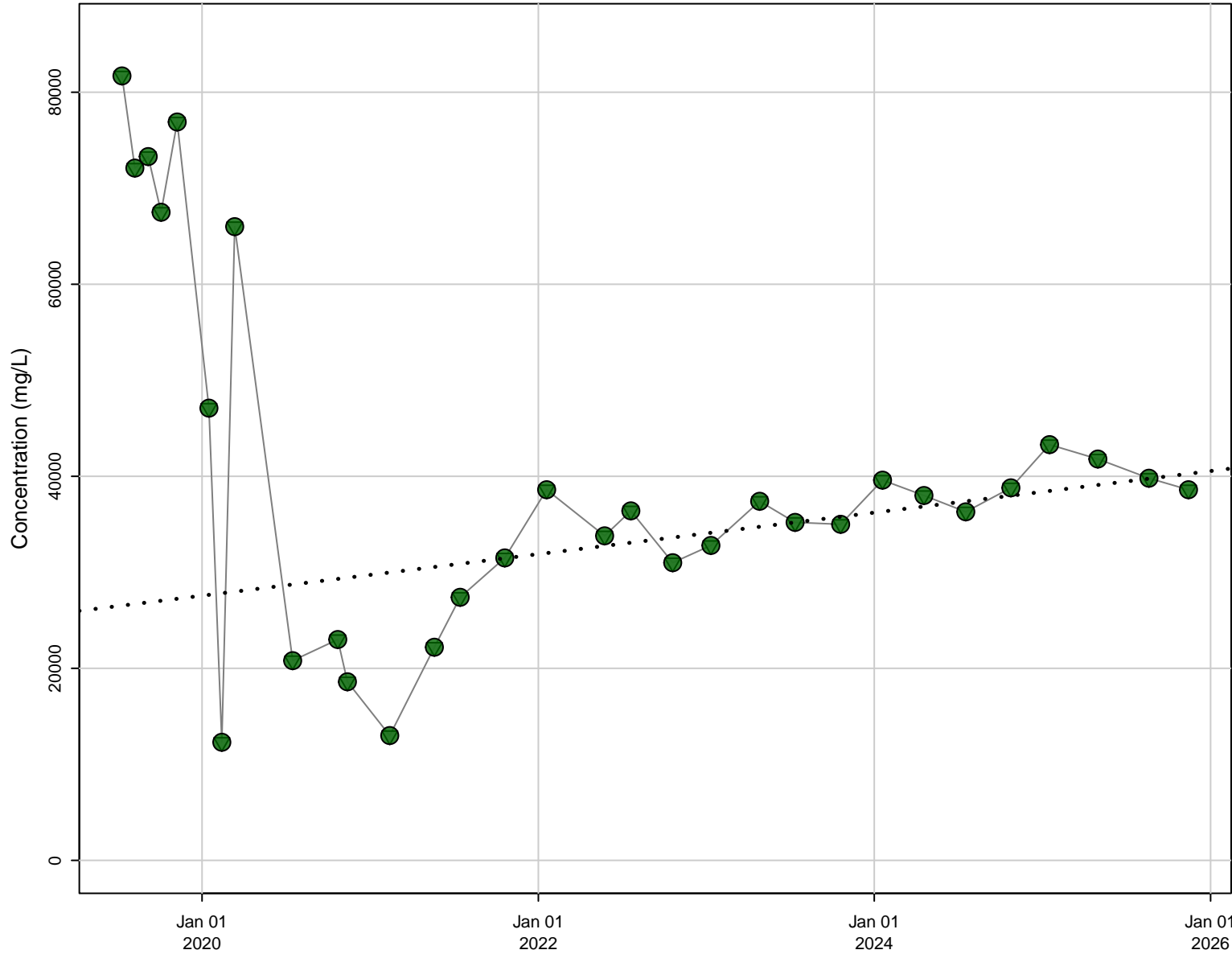
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.295

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D5, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.734

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D6, Boron [ug/L]

Stats

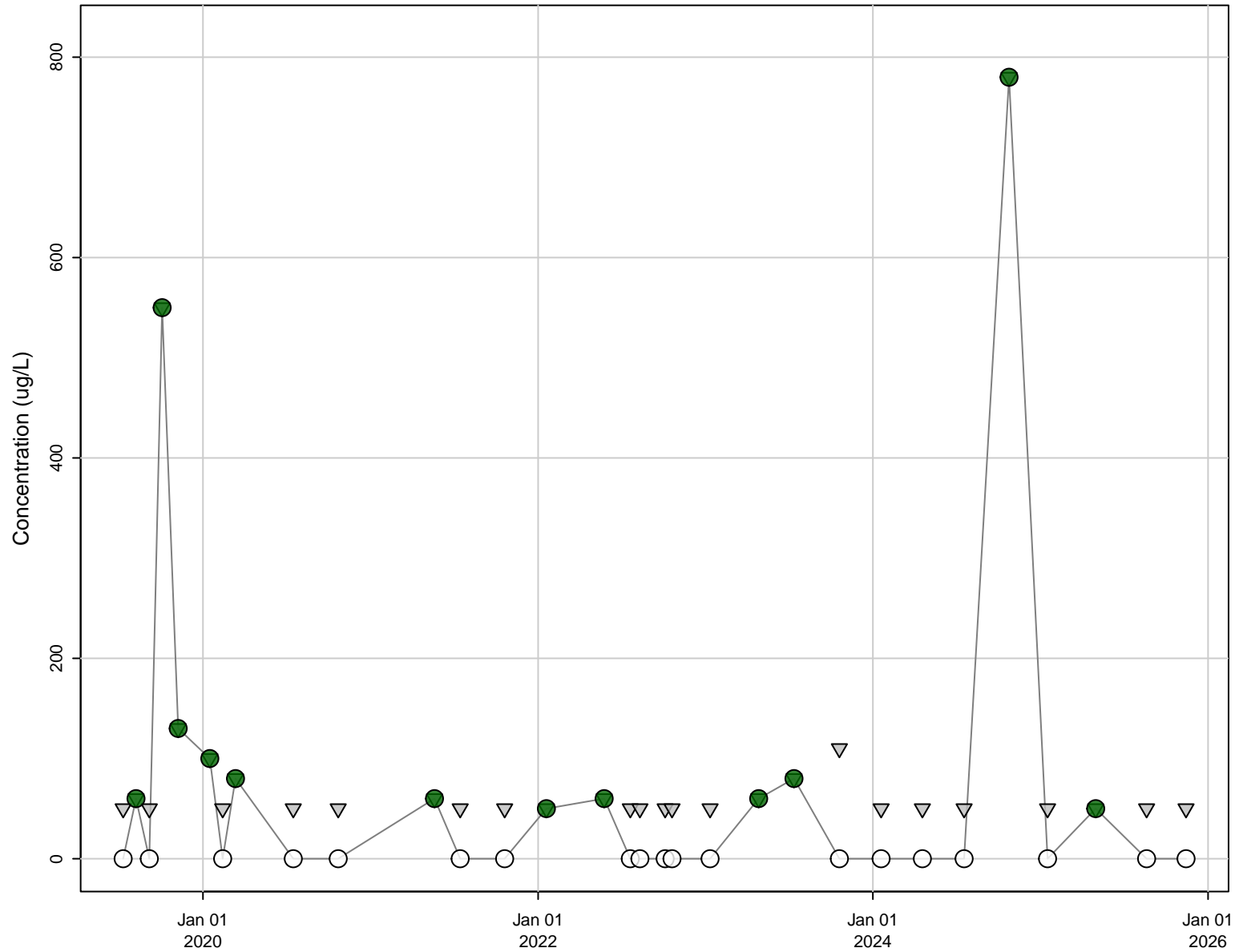
N Data: 31
N Detect: 12
% Detect: 39

Trend Results

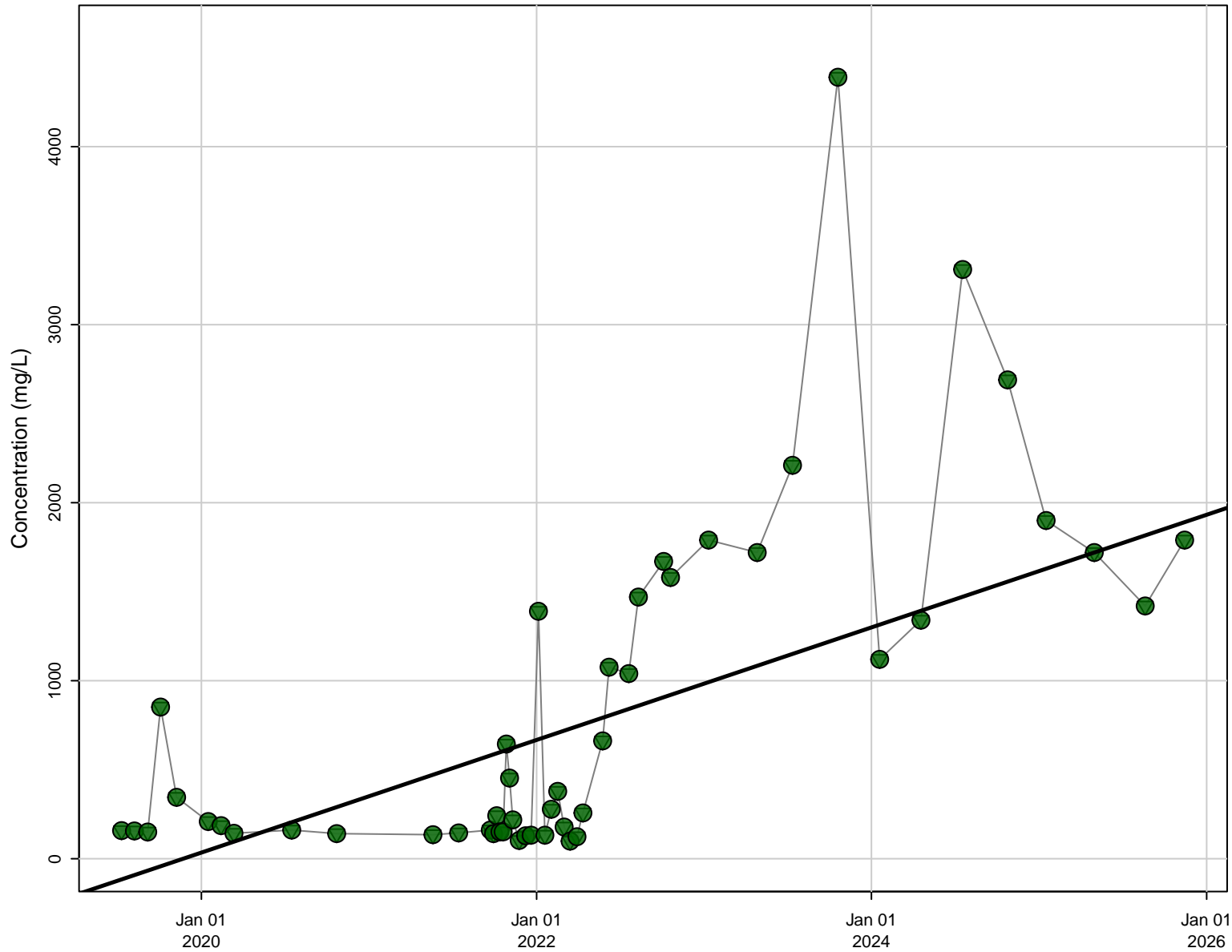
Test Criteria Not Met

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit



MPGM5-D6, Chloride [mg/L]



Stats

N Data: 49
N Detect: 49
% Detect: 100

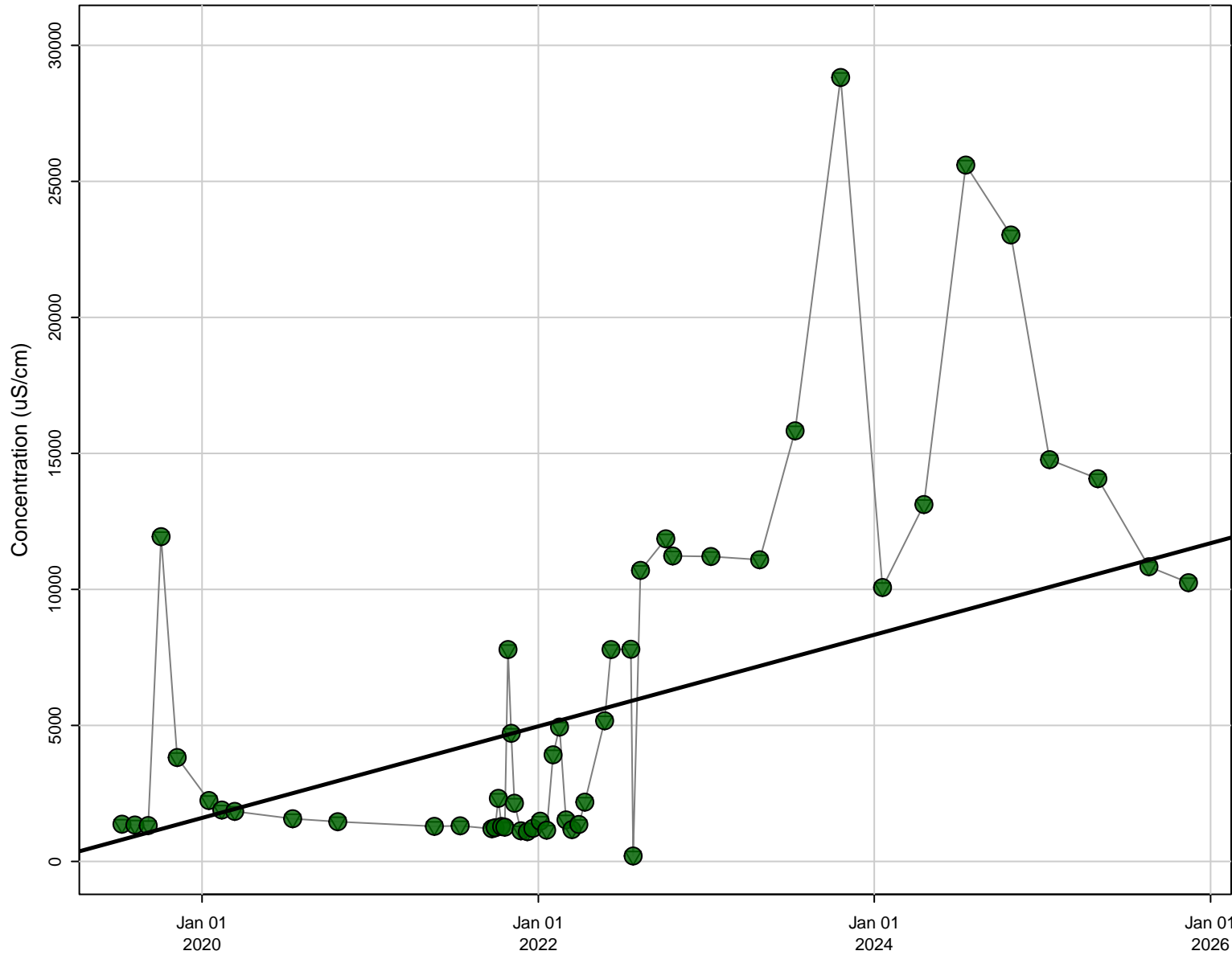
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D6, Electrical Conductivity (Field) [uS/cm]



Stats

N Data: 50
N Detect: 50
% Detect: 100

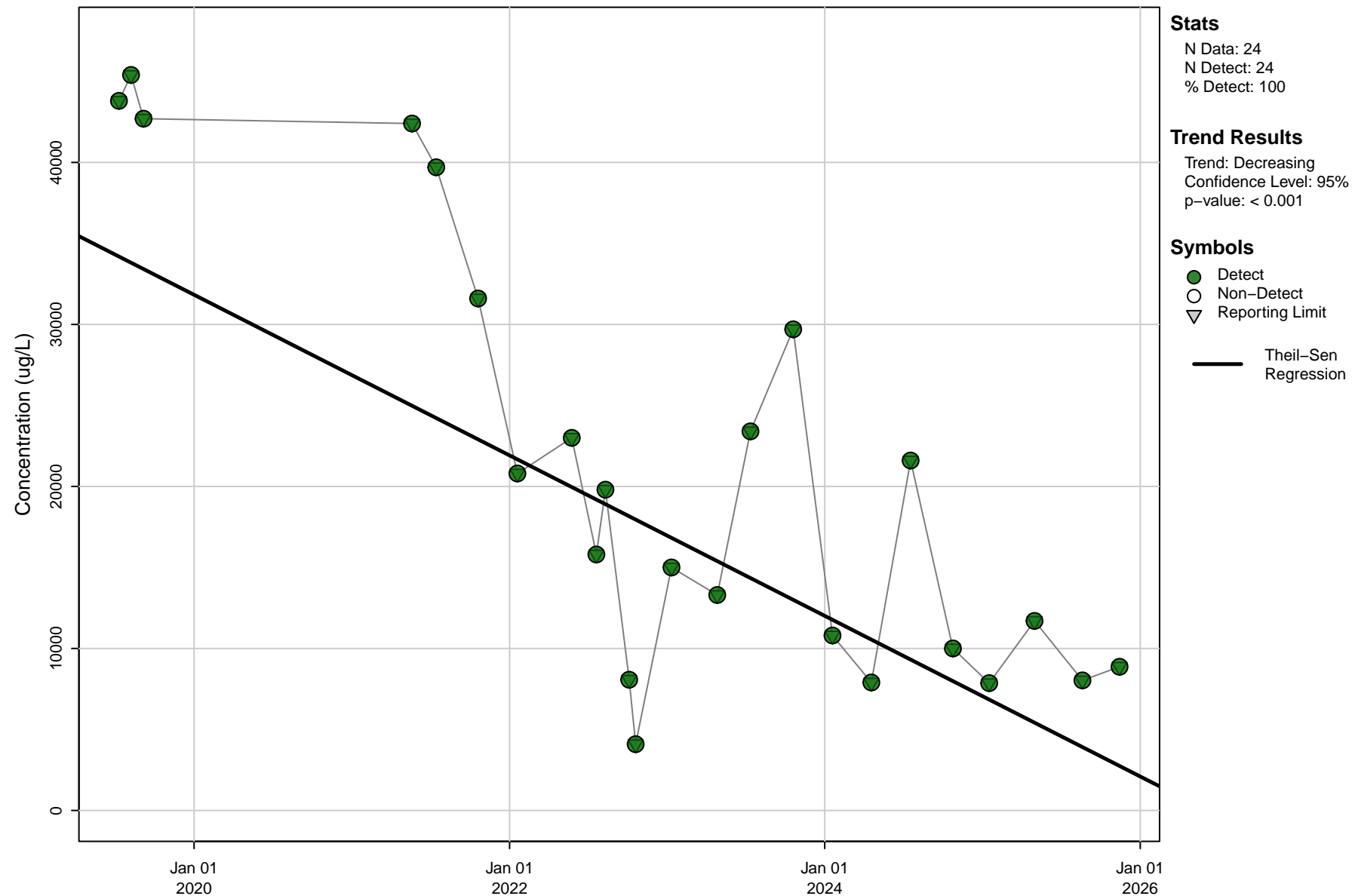
Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D6, Iron [ug/L]



MPGM5-D6, Lead [ug/L]

Stats

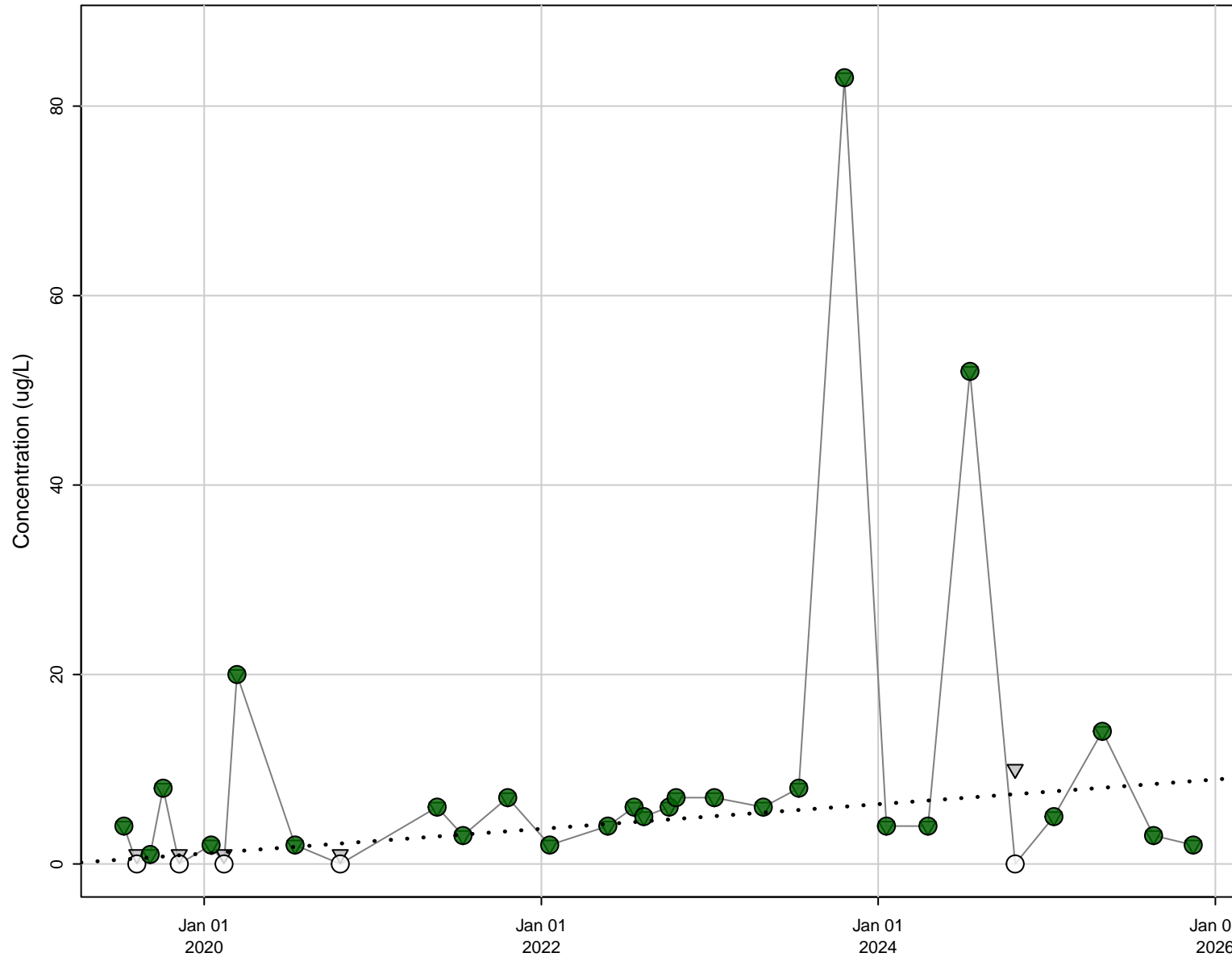
N Data: 31
N Detect: 26
% Detect: 84

Trend Results

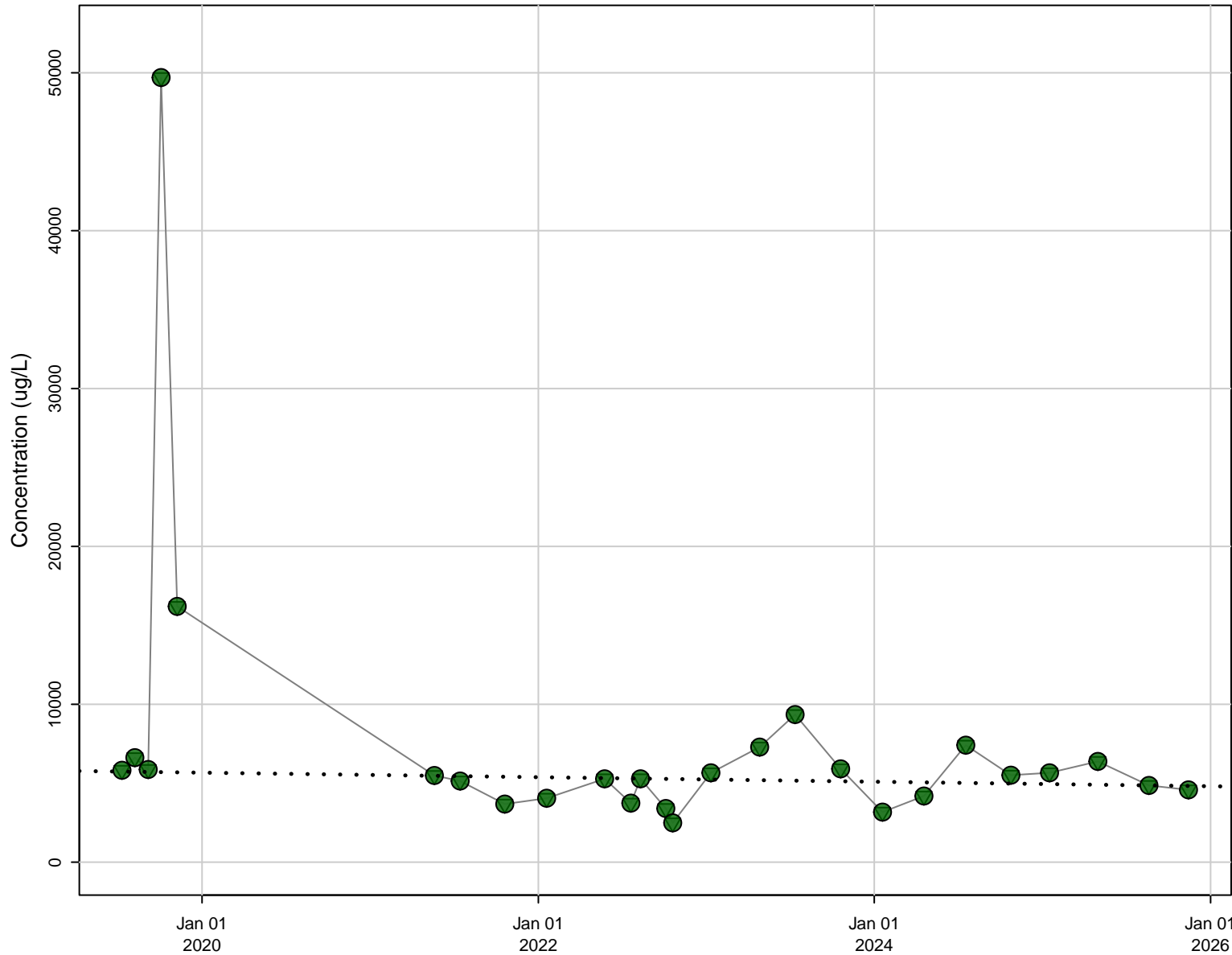
Trend: Not Significant
Confidence Level: 95%
p-value: 0.062

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



MPGM5-D6, Manganese [ug/L]



Stats

N Data: 26
N Detect: 26
% Detect: 100

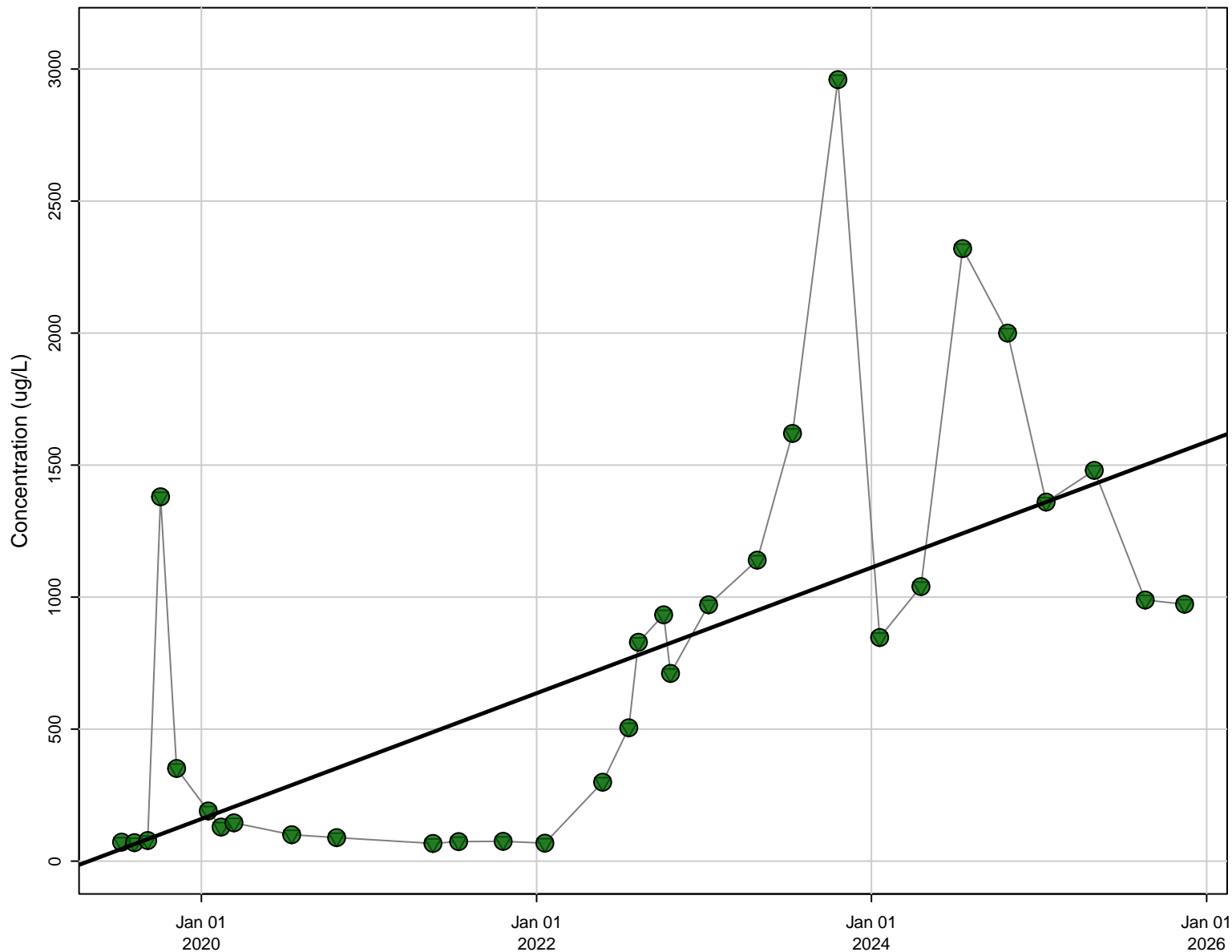
Trend Results

Trend: Not Significant
Confidence Level: 95%
p-value: 0.415

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D6, Nickel [ug/L]



Stats

N Data: 31
N Detect: 31
% Detect: 100

Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

MPGM5-D6, Sulfate (as SO4) [mg/L]

Stats

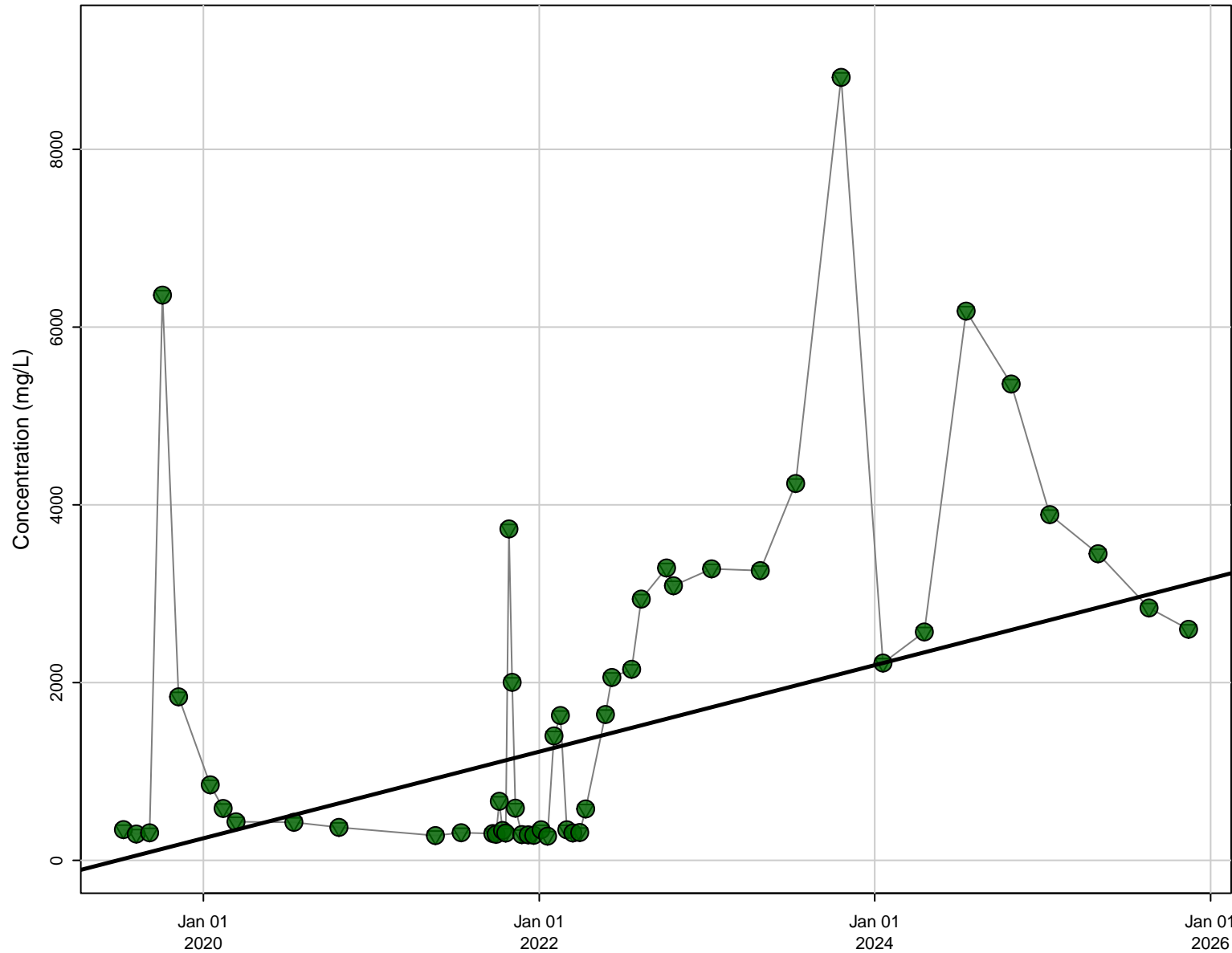
N Data: 49
N Detect: 49
% Detect: 100

Trend Results

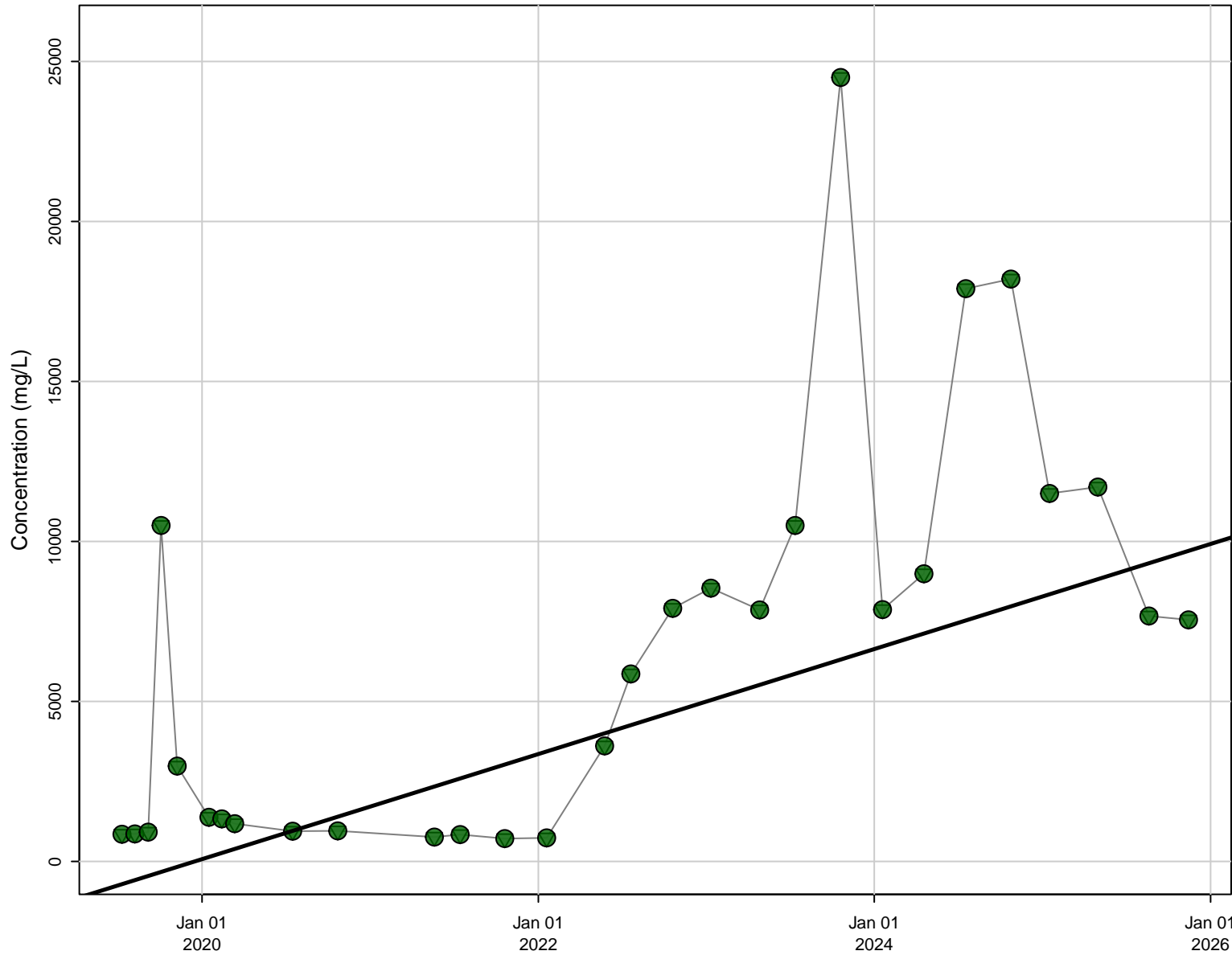
Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression



MPGM5-D6, Total Dissolved Solids (TDS) [mg/L]



Stats

N Data: 29
N Detect: 29
% Detect: 100

Trend Results

Trend: Increasing
Confidence Level: 95%
p-value: < 0.001

Symbols

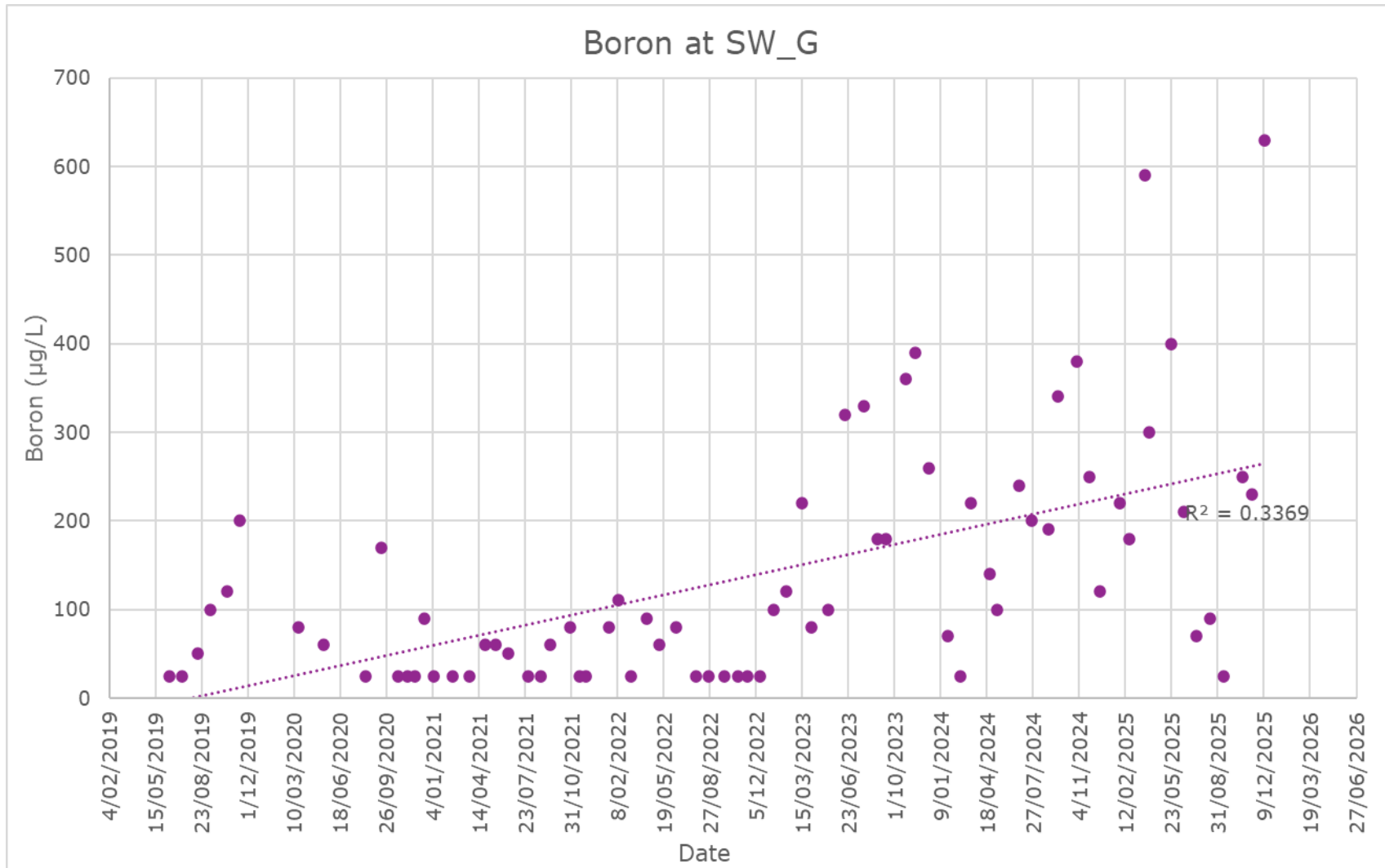
- Detect
- Non-Detect
- ▽ Reporting Limit
- Theil-Sen Regression

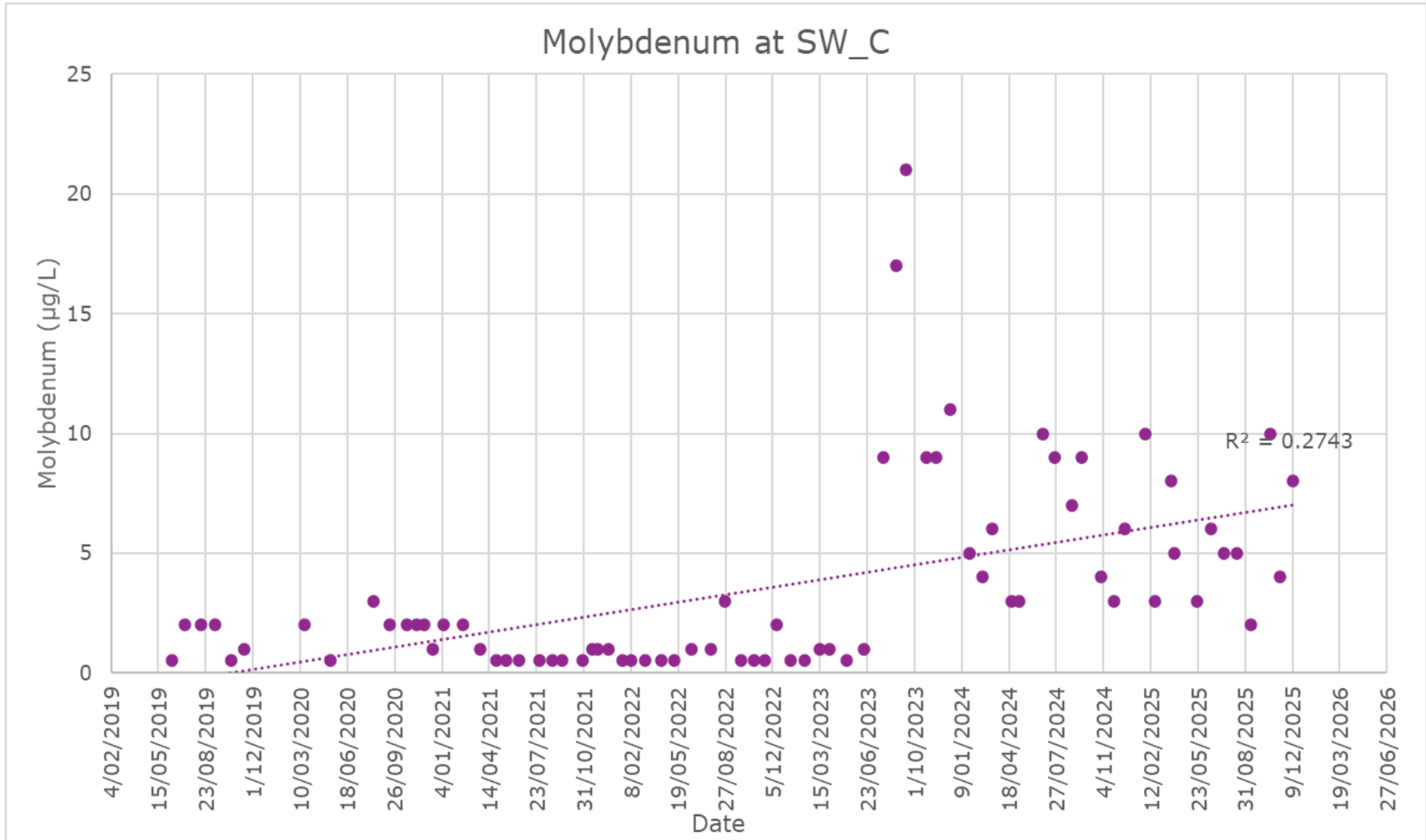


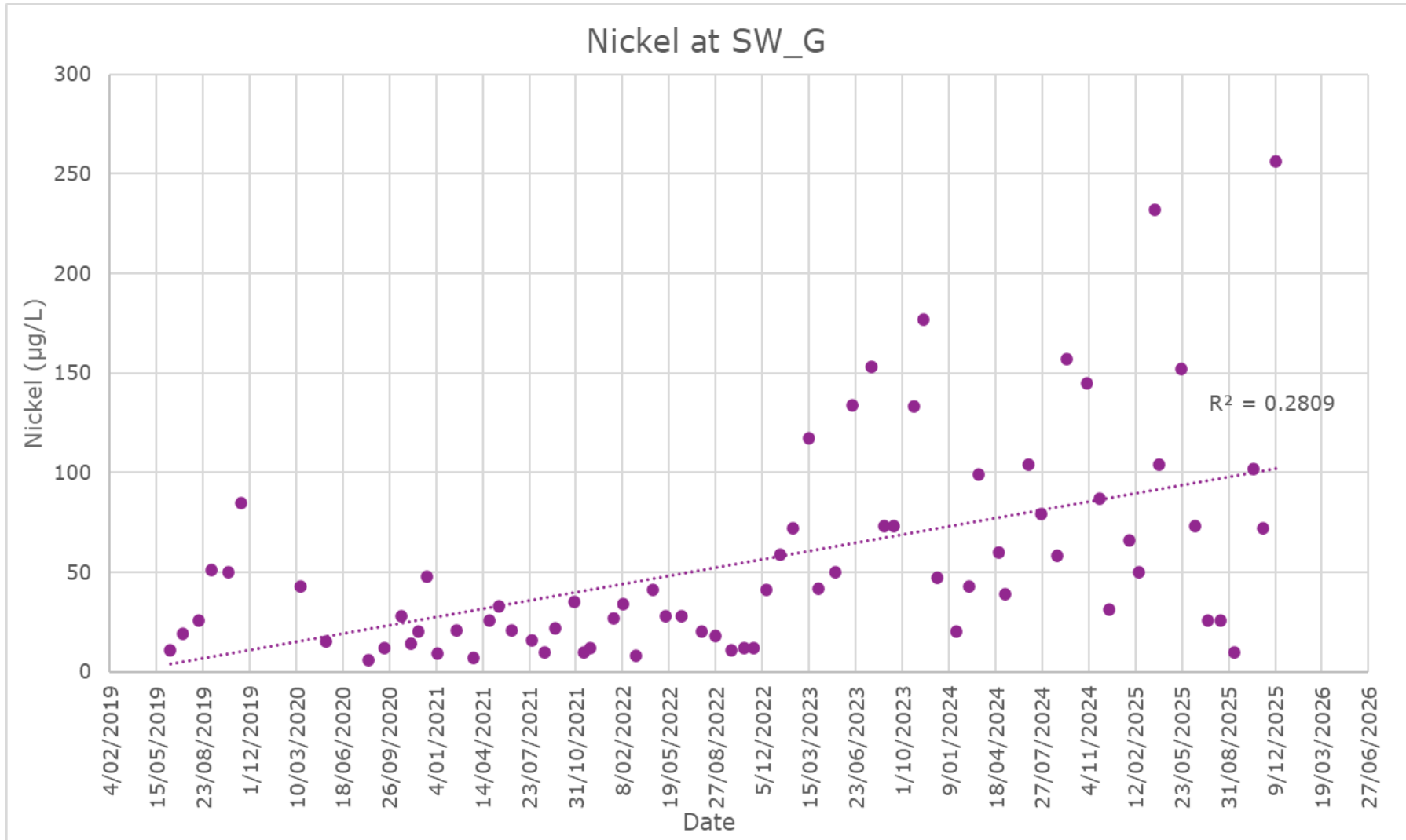
APPENDIX Q

SURFACE WATER STATISTICAL ANALYSIS

Purpose	Monitoring Location	Stats	EC (Field)	Chloride	Fluoride	Sulfate (as SO4)	TDS	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc
Upstream	LMP01	R	-0.14	-0.24	-0.18	-0.21	-0.06	-0.08	-0.29	-0.09	-0.05	-0.45	-0.08	-0.08	0.14	-0.02	0.26	-0.08	-0.06	0.03
		R2	0.02	0.06	0.03	0.05	0.00	0.006	0.08	0.01	0.00	0.20	0.0071	0.01	0.02	0.00	0.07	0.01	0.00	0.0007
Midstream	NC01	R	0.12	0.03	-0.176	0.20	0.10	0.03	0.11	0.03	0.06	0.09	-0.22	0.01	0.10	0.05	0.46	0.04	0.10	0.11
		R2	0.015	0.00	0.0309	0.04	0.01	0.001	0.01305	0.00	0.0030	0.01	0.05	0.00	0.01	0.00	0.21	0.00	0.01	0.01
	SW_C	R	0.18	-0.13	0.25	0.14	0.23	0.02	0.13	-0.03	0.10	0.10	-0.14	0.01	0.29	-0.06	0.52	0.19	-0.01	0.22
		R2	0.03	0.02	0.063	0.02	0.05	0.00	0.02	0.00	0.01	0.0102	0.02	0.00	0.08	0.00	0.27	0.03	0.00	0.05
SW_E	R	0.25	0.08	0.10	0.21	0.17	-0.01	0.44	0.00	-0.16	0.27	0.39	-0.03	0.14	-0.06	0.34	0.24	-0.05	0.41	
	R2	0.06	0.01	0.01	0.04	0.03	0.00	0.19	0.00	0.02	0.06	0.15	0.00	0.02	0.00	0.12	0.06	0.00	0.16	
Downstream	WX22	R	0.276	0.349	0.00	0.30	0.30	0.03	0.48	-0.09	0.00	0.15	-0.16	0.01	-0.14	-0.11	0.34	0.437	0.01	-0.13
		R2	0.0763	0.12181	0.00	0.089	0.0914	0.00	0.228	0.03	0.00	0.023	0.03	0.00	0.02	-0.01	0.12	0.190679	0.00	0.016
	SW_G	R	0.41	0.33	0.15	0.389	0.39	0.11	0.58	0.00	0.10	0.11	-0.03	-0.02	0.21	-0.11	0.45	0.530	-0.03	0.08
		R2	0.169	0.106	0.02	0.15122622	0.1558	0.01164	0.3369	0.00	0.01	0.011	0.00	0.00048	0.042	-0.01	0.20	0.280898	0.001	0.01









APPENDIX R

TARP EVALUATION



TABLE R-1: NEW EXCEEDANCES OF THE ADOPTED GUIDELINE VALUES

Analyte	Screening Criteria	Location	Exceedance and Maximum Concentration
<i>Groundwater Monitoring Locations</i>			
Fluoride	1.5 mg/L	MPGM5/D5	1/6 monitoring rounds – 1.75 mg/L
*Sodium	180 mg/L	D106	6/6 monitoring rounds – 1990 mg/L
		D107	6/6 monitoring rounds – 2150 mg/L
		D119	6/6 monitoring rounds – 300 mg/L
		MPGM4/D1	6/6 monitoring rounds – 1530 mg/L
		D102	6/6 monitoring rounds – 1220 mg/L
		D103	6/6 monitoring rounds – 572 mg/L
		D105	6/6 monitoring rounds – 344 mg/L
		MPGM4/D2	4/6 monitoring rounds – 346 mg/L
		MPGM4/D9	6/6 monitoring rounds – 1520 mg/L
		MPGM4/D10	7/7 monitoring rounds – 1780 mg/L
		D110	6/6 monitoring rounds – 1300 mg/L
		D113	6/6 monitoring rounds – 854 mg/L
		D117	6/6 monitoring rounds – 506 mg/L
		MPGM4/D19	6/6 monitoring rounds – 845 mg/L
		D15	6/6 monitoring rounds – 319 mg/L
		*Aluminium (filtered)	0.8 15 µg/L
MPGM5-D6	6/6 monitoring rounds – 6020 mg/L		
MPGM4/D4	6/6 monitoring rounds – 7310 µg/L		
MPGM4/D5	5/6 monitoring rounds – 60 µg/L		
D106	1/6 monitoring rounds – 10 mg/L		
D107	1/6 monitoring rounds – 10 mg/L		
D119	3/6 monitoring rounds – 10 mg/L		
MPGM4/D1	2/6 monitoring rounds – 90 µg/L		
D102	1/6 monitoring rounds – 20 µg/L		
D103	1/6 monitoring rounds – 10 µg/L		
MPGM4/D2	6/6 monitoring rounds – 1130 µg/L		
MPGM4/D8	5/6 monitoring rounds – 270 µg/L		
MPGM4/D10	7/7 monitoring rounds – 90 µg/L		
D110	3/6 monitoring rounds – 20 µg/L		

Analyte	Screening Criteria	Location	Exceedance and Maximum Concentration
		D113	1/6 monitoring rounds – 10 µg/L
		D117	6/6 monitoring rounds – 940 µg/L
		D17	1/4 monitoring rounds – 60 µg/L
*Aluminium (total)	0.8 15 µg/L	MPGM4/D4	6/6 monitoring rounds – 8070 µg/L
		MPGM4/D5	6/6 monitoring rounds – 95 µg/L
		MPGM4/D3	4/6 monitoring rounds – 125 µg/L
		D106	6/6 monitoring rounds – 3030 µg/L
		D107	6/6 monitoring rounds – 180 µg/L
		D119	6/6 monitoring rounds – 12,800 µg/L
		MPGM4/D1	6/6 monitoring rounds – 50 µg/L
		D102	6/6 monitoring rounds – 268 µg/L
		D103	6/6 monitoring rounds – 121 µg/L
		D104	6/6 monitoring rounds – 2520 µg/L
		D105	5/6 monitoring rounds – 251 µg/L
		MPGM4/D2	6/6 monitoring rounds – 1580 µg/L
		MPGM4/D8	6/6 monitoring rounds – 890 µg/L
		MPGM4/D9	6/6 monitoring rounds – 651 µg/L
		MPGM4/D10	7/7 monitoring rounds – 715 µg/L
		D110	6/6 monitoring rounds – 861 µg/L
		D113	4/6 monitoring rounds – 1100 µg/L
		D117	6/6 monitoring rounds – 212,000 µg/L
		MPGM4/D19	6/6 monitoring rounds – 18,500 µg/L
		D15	6/6 monitoring rounds – 249,000 µg/L
		D16A	6/6 monitoring rounds – 500 µg/L
		D17	4/4 monitoring rounds – 1660 µg/L
		D18	5/6 monitoring rounds – 305 µg/L
MPGM5/D5	6/6 monitoring rounds – 422 µg/L		
MPGM5/D6	6/6 monitoring rounds – 2970 µg/L		
* Antimony (total)	9 µg/L	D117	1/6 monitoring rounds – 14 µg/L
		MPGM5/D5	1/6 monitoring rounds – 15 µg/L
Arsenic (total)	24 µg/L	D106	1/6 monitoring rounds – 25 µg/L
		D105	1/6 monitoring rounds – 40 µg/L
		D117	2/6 monitoring rounds – 74 µg/L

Analyte	Screening Criteria	Location	Exceedance and Maximum Concentration
Arsenic (filtered)	24 µg/L	D15	1/6 monitoring rounds – 25 µg/L
		D18	1/6 monitoring rounds – 29 µg/L
Chromium (total)	5 µg/L	D117	1/6 monitoring rounds – 6 µg/L
Hexavalent Chromium (total)	1 µg/L	MPGM4/D4	3/6 monitoring rounds – 31 µg/L
		MPGM4/D2	3/6 monitoring rounds – 11 µg/L
		D10	2/7 monitoring rounds – 4 µg/L
		D110	1/6 monitoring rounds – 3 µg/L
		D113	1/6 monitoring rounds – 2 µg/L
		D19	1/6 monitoring rounds – 41 µg/L
		D15	1/6 monitoring rounds – 2 µg/L
		D18	1/6 monitoring rounds – 2 µg/L
*Cobalt (total)	1.4 µg/L	MPGM4/D4	6/6 monitoring rounds – 4 µg/L
		MPGM4/D5	6/6 monitoring rounds – 25 µg/L
		D106	6/6 monitoring rounds – 314 µg/L
		D107	6/6 monitoring rounds – 268 µg/L
		D119	6/6 monitoring rounds – 149 µg/L
		MPGM4/D1	6/6 monitoring rounds – 316 µg/L
		D102	6/6 monitoring rounds – 208 µg/L
		D103	6/6 monitoring rounds – 224 µg/L
		D104	6/6 monitoring rounds – 16 µg/L
		D105	6/6 monitoring rounds – 168 µg/L
		MPGM4/D2	6/6 monitoring rounds – 72 µg/L
		MPGM4/D8	5/6 monitoring rounds – 12 µg/L
		MPGM4/D9	6/6 monitoring rounds – 252 µg/L
		MPGM4/D10	7/7 monitoring rounds – 276 µg/L
		D110	6/6 monitoring rounds – 287 µg/L
		D113	6/6 monitoring rounds – 171 µg/L
		D117	6/6 monitoring rounds – 118 µg/L
		MPGM4/D19	6/6 monitoring rounds – 243 µg/L
		D15	6/6 monitoring rounds – 714 µg/L
		D16A	3/6 monitoring rounds – 2 µg/L
D17	4/4 monitoring rounds – 7 µg/L		
D18	6/6 monitoring rounds – 5 µg/L		

Analyte	Screening Criteria	Location	Exceedance and Maximum Concentration
		MPGM5/D5	6/6 monitoring rounds – 3550 µg/L
		MPGM5/D6	6/6 monitoring rounds – 222 µg/L
Copper (total)	5 µg/L	D107	1/6 monitoring rounds – 22 µg/L
		D102	1/6 monitoring rounds – 6 µg/L
		D105	1/6 monitoring rounds – 7 µg/L
		D110	4/6 monitoring rounds – 10 µg/L
		D117	2/6 monitoring rounds – 15 µg/L
		D16A	1/6 monitoring rounds – 6 µg/L
Copper (filtered)	5 µg/L	D110	1/6 monitoring rounds – 6 µg/L
		D113	1/6 monitoring rounds – 8 µg/L
Lead (total)	5 µg/L	D104	1/6 monitoring rounds – 15 µg/L
		D105	1/6 monitoring rounds – 15 µg/L
		D117	2/6 monitoring rounds – 15 µg/L
		D16A	1/6 monitoring rounds – 7 µg/L
Silver (total)	0.05 µg/L	MPGM4/D4	1/6 monitoring rounds – 0.3 µg/L
		D106	2/6 monitoring rounds – 0.3 µg/L
		D107	3/6 monitoring rounds – 0.3 µg/L
		D102	1/6 monitoring rounds – 0.4 µg/L
		D103	1/6 monitoring rounds – 0.7 µg/L
		D104	2/6 monitoring rounds – 0.2 µg/L
		D105	1/6 monitoring rounds – 0.9 µg/L
		MPGM4/D10	1/7 monitoring rounds – 0.1 µg/L
		D110	2/6 monitoring rounds – 1.2 µg/L
		D113	1/6 monitoring rounds – 0.8 µg/L
		D117	1/6 monitoring rounds – 0.2 µg/L
		D19	2/6 monitoring rounds – 2.2 µg/L
		D17	2/4 monitoring rounds – 0.2 µg/L
		MPGM5/D5	5/6 monitoring rounds – 0.5 µg/L
		MPGM5/D6	4/6 monitoring rounds – 0.3 µg/L
Molybdenum (total)	5 µg/L	MPGM4/D19	2/6 monitoring rounds – 23 µg/L
* Vanadium (total)	6 µg/L	D106	2/6 monitoring rounds – 7.7 µg/L
		D119	2/6 monitoring rounds – 15.3 µg/L
		D110	1/6 monitoring rounds – 6.2 µg/L

Analyte	Screening Criteria	Location	Exceedance and Maximum Concentration
		D117	4/6 monitoring rounds – 81.3 µg/L
		MPGM4/D19	2/6 monitoring rounds – 92.5 µg/L
		D15	2/6 monitoring rounds – 276 µg/L
		D17	1/4 monitoring rounds – 8.3 µg/L
* Ammonia	720 µg/L	MPGM4/D10	4/7 monitoring rounds – 30,300 µg/L
		D110	1/6 monitoring rounds – 900 µg/L
		MPGM5/D5	5/6 monitoring rounds – 6160 µg/L
		MPGM5/D6	6/6 monitoring rounds – 2850 µg/L
* Nitrate and Nitrite (as N)	0.015 mg/L	MPGM4/D4	2/6 monitoring rounds – 0.69 mg/L
		MPGM4/D5	3/6 monitoring rounds – 0.19 mg/L
		MPGM4/D3	3/6 monitoring rounds – 0.16 mg/L
		D106	4/6 monitoring rounds – 1.39 mg/L
		D107	1/6 monitoring rounds – 0.29 mg/L
		D119	3/6 monitoring rounds – 0.06 mg/L
		MPGM4/D1	2/6 monitoring rounds – 0.46 mg/L
		D103	2/6 monitoring rounds – 0.02 mg/L
		D104	4/6 monitoring rounds – 0.06 mg/L
		D105	2/6 monitoring rounds – 0.02 mg/L
		MPGM4/D8	5/6 monitoring rounds – 0.09 mg/L
		MPGM4/D9	2/6 monitoring rounds – 0.02 mg/L
		MPGM4/D10	3/7 monitoring rounds – 0.22 mg/L
		D110	4/6 monitoring rounds – 0.39 mg/L
		D113	3/6 monitoring rounds – 0.36 mg/L
		D117	6/6 monitoring rounds – 2.17 mg/L
		MPGM4/D19	2/6 monitoring rounds – 0.05 mg/L
		D15	4/6 monitoring rounds – 0.23 mg/L
		D16A	4/6 monitoring rounds – 0.08 mg/L
		D17	1/4 monitoring rounds – 0.04 mg/L
		D18	5/6 monitoring rounds – 0.57 mg/L
		MPGM5/D6	2/6 monitoring rounds – 0.27 mg/L
<i>Surface Water Monitoring Locations</i>			
* Turbidity	25 mg/L	LMP01	7/18 monitoring rounds – 245 mg/L
		SW_C	1/18 monitoring rounds – 74.4 mg/L

Analyte	Screening Criteria	Location	Exceedance and Maximum Concentration
		NC01	1/8 monitoring rounds – 74.8 mg/L
		SW_E	5/18 monitoring rounds – 51.9 mg/L
		SW_G	1/18 monitoring rounds – 61.6 mg/L
		F/WX22	1/18 monitoring rounds – 58.8 mg/L
* Sodium	180 mg/L	SW_E	10/18 monitoring rounds – 1050 mg/L
		SW_G	7/18 monitoring rounds – 807 mg/L
		F/WX22	6/18 monitoring rounds – 391 mg/L
* Aluminium (filtered)	0.8 15 µg/L	SW_C	4/18 monitoring rounds – 780 µg/L
		NC01	1/8 monitoring rounds – 520 µg/L
		SW_E	1/18 monitoring rounds – 500 µg/L
		F/WX22	1/18 monitoring rounds – 590 µg/L
* Aluminium (total)	0.8 15 µg/L	LMP01	17/18 monitoring rounds – 2650 µg/L
		SW_C	14/18 monitoring rounds – 1550 µg/L
		NC01	7/8 monitoring rounds – 1320 µg/L
		SW_E	1/18 monitoring rounds – 1100 µg/L
		SW_G	1/18 monitoring rounds – 1280 µg/L
		F/WX22	1/18 monitoring rounds – 590 µg/L
* Cobalt (total)	1.4 µg/L	LMP01	2/18 monitoring rounds – 4 µg/L
		SW_E	17/18 monitoring rounds – 85 µg/L
		SW_G	1/18 monitoring rounds – 3 µg/L
		F/WX22	3/18 monitoring rounds – 2 µg/L
Hexavalent Chromium (total)	1 µg/L	NC01	1/8 monitoring rounds – 2 µg/L
		F/WX22	1/18 monitoring rounds – 2 µg/L
Silver (total)	0.05 µg/L	SW_E	3/18 monitoring rounds – 0.8 µg/L
		SW_G	1/18 monitoring rounds – 0.2 µg/L
		F/WX22	2/18 monitoring rounds – 0.4 µg/L
* Nitrate and Nitrite (as N)	0.015 mg/L	LMP01	16/18 monitoring rounds – 0.2 mg/L
		SW_C	7/18 monitoring rounds – 0.16 mg/L
		NC01	5/8 monitoring rounds – 0.07 mg/L
		SW_E	5/18 monitoring rounds – 0.06 mg/L
		SW_G	2/18 monitoring rounds – 0.04 mg/L
		F/WX22	4/18 monitoring rounds – 0.05 mg/L
* Total Nitrogen	0.25 mg/L	SW_C	14/18 monitoring rounds – 1.4 mg/L

Analyte	Screening Criteria	Location	Exceedance and Maximum Concentration
		NC01	5/8 monitoring rounds – 0.07 mg/L
		SW_E	17/18 monitoring rounds – 1.2 mg/L
		SW_G	13/18 monitoring rounds – 1.1 mg/L
		F/WX22	13/18 monitoring rounds – 1.1 mg/L
* Total Phosphorus	0.02 mg/L	LMP01	10/18 monitoring rounds – 1.6 mg/L
		SW_C	7/18 monitoring rounds – 0.09 mg/L
		NC01	5/8 monitoring rounds – 0.13 mg/L
		SW_E	4/18 monitoring rounds – 0.1 mg/L
		SW_G	10/18 monitoring rounds – 0.15 mg/L
		F/WX22	6/18 monitoring rounds – 0.09 mg/L

Notes:

* First time application of ANZG (2018) guideline values.

TABLE R-2: HISTORICAL MAXIMUM EXCEEDANCES

Bore ID	Analyte	Historical Maximum	The Reporting Period
<i>Upgradient of MPAR / Background</i>			
MPGM4/D4	Boron (filtered)	<10 µg/L on- April 2024	110 µg/L – May 2025
	Nitrate	20 µg/L – October 2023	690 µg/L – May 2025
	Nitrate and Nitrite (as N)	0.02 mg/L – October 2023	0.69 mg/L – May 2025
<i>Cross-gradient MPAR / adjacent MPAR to the north and adjacent Wangcol Creek</i>			
D106	Nitrate	10 µg/L – January 2024	1270 µg/L – July 2025
	Nitrite + Nitrate (as N)	0.01 mg/L – September 2018	1.39 mg/L – July 2025
D107	Nitrate	20 µg/L – January 2024	260 µg/L – July 2025
	Nitrite + Nitrate (as N)	0.02 mg/L – September 2018	0.29 mg/L – July 2025
<i>Downgradient MPAR, areas adjacent Wangcol Creek</i>			
D1	Nitrate and Nitrite (as N)	0.02 mg/L – September 2018	0.46 mg/L – May 2025
D105	Arsenic (total)	4 µg/L – February 2022	40 µg/L – May 2025
<i>Downgradient MPAR, including LNAR (north) and historical mining disturbance (east)</i>			
D10	Nitrite + Nitrate (as N)	0.02 mg/L – September 2018	0.22 mg/L – May 2025
D113	Nitrate	30 µg/L – January 2023	360 µg/L – July 2025
	Nitrite + Nitrate (as N)	0.03 mg/L – January 2023	0.36 mg/L – July 2025
D117	Aluminium (total)	15,200 µg/L – November 2021	212,000 µg/L – March 2025
<i>Cross-gradient MPAR to the south, including LNAR (south) and historical mining disturbance</i>			
D15	Arsenic (total)	190 µg/L – July 2013	2710 µg/L – September 2024
	Silver (total)	1 µg/L – October 2013	5.2 µg/L – May 2025



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