ERM

Environmental Monitoring Report - Water Management and Monitoring 2023 - 2024

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

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

0743908

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ACRONYMS AND ABBREVIATIONS

Acronym	Description
EMR	Environmental Monitoring Report
AHD	Australian Height Datum
ANZECC	Australia and New Zealand Environment Conservation Council
ANZG	Australia and New Zealand Guidelines
BCA	Brine conditioned ash
CSP	Coal Settling Pond
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPE	NSW Department of Planning and Environment
DPHI	Department of Planning, Housing and Infrastructure
EC	Electrical conductivity
EnergyAustralia	EnergyAustralia NSW Pty Limited
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPL	Environment Protection Licence
ERM	Environmental Resources Management Australia Pty Ltd
FHP	Final Holding Pond
ha	Hectares
LCC	Lithgow City Council
LDP	Licenced Discharge Point
LMP	Licenced Monitoring Point
LNAR	Lamberts North Ash Repository
LOR	Limit of Reporting
m AHD	metres Australia Height Datum (m AHD).
MF	Micro Filtration
mg/L	milligrams per litre
ML	megalitre
MPAR	Mt Piper Ash Repository
MPPS	Mt Piper Power Station
Nalco	Nalco Water – Ecolab
NFR	Non-filterable Residue, also referred to as Turbidity.
NSW	New South Wales
OEMP	Operational Environmental Management Plan
POEO Act	Protection of the Environment Operations Act (NSW) 1997

QA/QC	Quality Assurance and Quality Control
QC	Quality Control
RL	Relative Level
RO	Reverse Osmosis
SWTP	Springvale Water Treatment Plant
TARPs	Trigger Action Response Plans
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TSS	Total Suspended Solids
WCA	Water Conditioned Ash
WMP	Water Management and Monitoring Plan
μg/L	micrograms per litre
μS/cm	microSiemens per centimetre

REPORT TERMINOLOGY

The Project - the Mt Piper Brine Conditioned Fly Ash Co-Placement Project approved under the conditions of development consent DA80/10060 (Mt Piper Consent).

The Mt Piper Consent – originally granted under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act) on 1 April 1982 and has since been modified on eight occasions. The Mt Piper Consent, as currently modified (Modification 8, dated 24 July 2019), authorises the MPPS and ancillary activities, including the Mt Piper Ash Repository (MPAR).

The WMP – the Water Management and Monitoring Plan approved for the Project, prepared by ERM and dated 28 February 2020 (the WMP).

The EMR – this report which has been developed in relation to water management and monitoring aspects of the Project in order to satisfy Conditions 44 and 45 of the Mt Piper Consent, and the relevant reporting requirements of the Water Management and Monitoring Plan approved for the Project (the WMP).

The Ash Repositories – the MPAR and the LNAR are together referred to as the Ash Repositories.

1. INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was engaged by EnergyAustralia NSW Pty Limited (EnergyAustralia) to prepare an annual Environmental Monitoring Report (EMR) for the Mt Piper Brine Conditioned Fly Ash Co-Placement Project (the Project). The Project is located at the Mount Piper Power Station (MPPS), 350 Boulder Road, Portland, New South Wales (NSW) (the site). Refer to **Figure 1** showing the location of the site.

The Project is operated under the conditions of development consent DA80/10060 (Mt Piper Consent). The Mt Piper Consent was granted under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act) on 1 April 1982 and has since been modified on eight occasions. The Mt Piper Consent, as currently modified (Modification 8, dated 24 July 2019), authorises the MPPS and ancillary activities, including the Mt Piper Ash Repository (MPAR).

This EMR has been developed in relation to water management and monitoring aspects of the Project to satisfy Conditions 44 and 45 of the Mt Piper Consent, and the relevant reporting requirements of the Water Management and Monitoring Plan approved for the Project (the WMP). It has been developed 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). **Appendix A** presents a summary of the requirements of the Mt Piper Consent and the WMP, and where they are addressed in this EMR. Consistent with feedback from the DPE on the 2021/22 EMR, **Table 1** provides a statement of compliance as at the end of the reporting period and based on the information in this EMR.

TABLE 1: STATEMENT OF COMPLIANCE

Were conditions of the relevant approval complied with?		
DC DA80/10060 (Mt Piper Consent)	Conditions 44 and 45, the annual Environmental Monitoring Report (EMR)	YES

This EMR reports on the water monitoring carried out for the Project from July 2023 to June 2024 (the reporting period) in accordance with the conditions of the Mt Piper Consent. It will be provided to the Secretary of the NSW DPHI, the NSW Environment Protection Authority (EPA), the Water Division within the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW), WaterNSW, and Lithgow City Council (LCC).

This report should be read in conjunction with the Statement of Limitations presented in **Section 9**.

1.1 PROJECT BACKGROUND

The MPPS is located in the western coalfields of NSW about 18 kilometres north-west of Lithgow. The MPPS is owned and operated by EnergyAustralia. The MPPS is regulated by a number of separate development consents and planning approvals under the EP&A Act, including the Mt Piper Consent. The MPPS is also regulated under the conditions of Environment Protection Licence 13007 (EPL) granted under the Protection of the Environment Operations Act 1997 (NSW) (the POEO Act). **Table 2** lists the approvals that apply to the Project and form the subject of this EMR.

TABLE 2: SUMMARY OF APPROVALS

Approval/ Licence	Details/Comments
Mt Piper Consent	Granted by Minister for Planning under the EP&A Act as currently modified. The WMP was approved under the conditions of the Mt Piper Consent.
EPL No. 13007	EPL held by EnergyAustralia for the MPPS, including the Project.

The Project incorporates brine management and storage facilities on the footprint of the MPPS and the ash emplacement area within the former Western Main Open Cut void adjacent to the operational power generation area.

The ash placement area is comprised of the MPAR, which is authorised under the Mt Piper Consent, and the separately approved Lamberts North Ash Repository (LNAR). The MPAR and the LNAR are together referred to as the Ash Repositories. However, this EMR is limited to the MPAR which was approved under the Mt Piper Consent.

The separately approved Springvale Water Treatment Project (SWTP) is also located on the MPPS footprint but outside of the EPL premises. Both the SWTP and the MPPS contribute brine to the MPAR. The SWTP also contributes solid mixed salts to the MPAR. Key features of the Project area are presented in **Figure 2**.

The Mt Piper Consent was modified on 3 April 2000 to authorise the co-placement of brine conditioned ash (BCA) in the existing MPAR placement area. This Stage 1 BCA co-placement activity was approved as Modification 4 to the Mt Piper Consent. As required by the conditions imposed as part of Modification 4, an early Water Management Plan was developed and implemented. Due to space limitations in the Stage 1 approval area and to provide for increased brine production due to the upgrade of generating capacity (authorised as Modification 6 to the Mt Piper Consent), a Stage 2 extension to the BCA co-placement area at the MPAR was approved on 23 March 2008 (authorised as Modification 7 to the Mt Piper Consent). A Water Management Plan (Mt Piper Power Station Brine Conditioned Flyash Co-Placement Extension Water Management and Monitoring Plan prepared by Connell Wagner and dated 26 September 2008) was prepared and implemented under the conditions of the Mt Piper Consent for the MPAR. This is referred to in this report as the “Prior WMP.”

Following the approval of Modification 8 to the Mt Piper Consent (Condition 43A), the Prior WMP was updated to account for construction and operation of a new 60 Mega Litres (ML) pond (Settling Pond D) at the MPPS. The current WMP was prepared by ERM and is dated 28 February 2020 (ERM, 2020) (the WMP).

It is noted that a separate and broader investigation of surface and groundwater conditions in the vicinity of the Ash Repositories, including the Mt Piper Brine in Ash Co-Placement area has recently been completed in line with the contingency measures identified in the WMP (the independent groundwater investigation). Based on findings from the independent groundwater investigation, a modification application for the Mt Piper Consent is pending. The proposed modification to the Mt Piper Consent is intended to enable a mitigation strategy as the MPAR transitions to a decommissioned facility.

1.1.1 RELATIONSHIP TO OTHER APPROVALS AND PLANS

While the MPAR is approved under the Mt Piper Consent, the LNAR is separately approved by Project approval 09_0186 granted under Part 3A of the EP&A Act on 16 February 2012 (LNAR Project Approval). The conditions of the LNAR Project Approval require:

- Implementation of a separately approved Operational Environmental Management Plan. The currently approved plan is the Lamberts North Ash Placement Project Operational Environmental Management Plan (Revision 6) originally prepared by CDM Smith in 2013 and last revised by EnergyAustralia in May 2022 (LNAR Operations Environment Management Plan (OEMP)). The LNAR OEMP includes a Groundwater Management Plan and a Surface Water Management Plan; and
- The carrying out of groundwater and surface water monitoring programs as specified in the LNAR OEMP. The results of the LNAR monitoring are reported in a separate EMR prepared in accordance with the conditions of the LNAR Project Approval.

As the LNAR is operated in accordance with the separately approved LNAR OEMP under the conditions of the LNAR Project Approval, this EMR does not cover water management, monitoring and reporting aspects required under the LNAR OEMP.

In addition, the SWTP was separately approved under development consent number SSD-7592 (SWTP Consent) granted under the EP&A Act in 2017.

1.2 OBJECTIVES

The objectives of the EMR are to meet the reporting requirements of the Mt Piper Consent and the WMP for the reporting period (July 2023 to June 2024).

This includes the requirements of Condition 45 of the Mt Piper Consent which requires that the EMR include:

- A summary and discussion of all available results and analyses from Water Monitoring Programs (i.e., those contained in the WMP);
- A discussion of the aims of the WMP and to what degree these aims have been attained in the context of results and analyses of the Water Monitoring Programs; and
- 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 the LCC.

The WMP requires that the EMR is to involve the following scope of works:

- Review of surface water and groundwater quality data;
- Review of long-term trends in surface water and groundwater concentrations, with reference to statistical assessment of concentration trends and triggers;
- Assessment of the data to evaluate potential interactions with Wangcol Creek water quality;
- Reporting when the Environmental Goals have not been achieved;
- An interpretation and discussion of results;
- Update on the contingency measures currently being implemented in accordance with the WMP; and
- Preparation of this report in accordance with the WMP and the Mt Piper Consent.

It is noted that other reporting requirements, including provision of water quality data, form part of the EPL annual return reporting process; the data presented in this EMR will also be published online as required by regulation. The reporting requirements under the EPL will be provided separately to this EMR.

1.3 CONTACT

The contact details for the key personnel responsible for the environmental management of the Project are listed in **Table 3**.

TABLE 3: CONTACT DETAILS

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

1.4 SCOPE

In order to meet the objectives of the EMR, the following works have been implemented by ERM:

- Import of environmental monitoring data provided by EnergyAustralia to the existing database for the site;
- Export of summary tables for available water quality and weather data collected by EnergyAustralia from the monitoring conducted in accordance with the WMP;
- Preparation of selected graphs of environmental monitoring data collected by EnergyAustralia from the monitoring conducted in accordance with the WMP;
- Review of surface water (seven locations), groundwater (20 locations, noting that three wells were unserviceable during the reporting period) and leak detection (two locations) monitoring data at the Project area for the reporting period;
- Review of changes in water quality data including long-term trends in surface water and groundwater concentrations and water levels;
- Assessment of the groundwater data to evaluate potential interactions with Wangcol Creek water quality; and
- Preparation of this EMR to
  - Present an overview of Project operations, including ash placement activities,
  - Present findings of the water quality monitoring, including interpretation and discussion of results, in accordance with the WMP,
  - Present outcomes of the statistical assessment of water quality data that were above the Environmental Goals during the reporting period, including a discussion of trigger, action, response plans (TARPs) where implemented,
  - Provide an update on the contingency measures currently being implemented at the site in accordance with the WMP, and
  - Provide a summary of recommended actions to be taken, if any, to mitigate adverse environmental impacts, and to meet the requirements of the relevant government authorities and the WMP.

This EMR has been developed with consideration of the independent investigation of groundwater and surface water conditions in the vicinity of both the MPAR and the LNAR (the independent investigation). Refer to **Section 7.4** for further details.

2. OPERATIONS SUMMARY

Ash placement operations for MPPS, including those within the Project area, are undertaken by the contracted specialist in ash placement. ServiceStream is the current service provider for EnergyAustralia in all aspects of ash and dust management in relation to the Project, which is currently managed in accordance with the WMP approved under the Mt Piper Consent. Refer to **Figure 2** for a site layout plan that presents key features of the Project area.

2.1 SITE WATER DISCHARGE

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 51.3 ML. LDP12 water quality complied with the discharge water quality criteria under EPL 13007 Condition L3.7 on all occasions.

Following high rainfall and after receiving more than 56 mm over five consecutive days, LDP12 was subject to overtopping during five days (the period from 17/01/2024 to 18/01/2024 and in the period from 06/04/2024 to 08/04/2024) during the reporting period. The discharge of water during these periods complied with EPL 13007 condition L3.10 and L3.11. Records of discharge flows at LDP12 during the reporting period are provided in **Appendix B**, with associated water quality data presented in **Appendix G**.

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 from 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 associated with the MPPS. Surface water monitoring location 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 5** presents the locations of LDP12 and LMP01.

2.2 ASH PLACEMENT AND GEOMETRY

The MPAR is located within the former Western Main Open Cut mine void in the eastern area of the MPPS facility, which is discussed further in **Section 3.2**.

The MPPS commenced operations in 1993 and since that time water conditioned ash (WCA) has been placed at the MPAR. WCA and BCA have been placed at the MPAR since 2000, with placement of BCA limited to approved areas, as described below. In accordance with the WMP, the conditioning of the ash occurs at the MPPS, and the conditioned ash is then transferred via conveyors or trucks to the MPAR for placement.

The MPAR has approval for development up to a Relative Level (RL) of 980 m Australian Height Datum (AHD), with the upper surface of the ash to be finished with 1 m of WCA, following the contours of the placement plan approved by the LCC in 1990, as replicated in **Figure 3**. Further, condition 38A of the Mt Piper Consent requires that the placement of BCA may only occur between the levels of RL 946 metres Australia Height Datum (m AHD) and RL 980 m AHD in approved BCA placement areas (Stage 1 and Stage 2 approval areas). Refer to **Figure 2** and **Figure 3** for representation of the approved MPAR placement area and schematic of external batter placement.

With reference to the Ash Repository Survey (**Appendix C**) derived from a drone survey conducted on 3 June 2024 and **Figure 4**, BCA continued to be deposited across Stage 1 and Stage 2 approval areas for the Project over the reporting period, with some areas of the MPAR having reached the approved height of 980 m AHD.

Based on information supplied by EnergyAustralia, 64,915.2 tonnes (t) of WCA was placed in the MPAR over the reporting period, while zero BCA was placed in the MPAR over the reporting period. Refer to **Table 4** for a summary of the Project operations for the reporting period, with comparison to the previous reporting period.

TABLE 4: OPERATIONS SUMMARY FOR THE PROJECT

Activity	Previous Reporting Period (2022-2023)	Current Reporting Period (2023-2024)
Ash delivered (t) [2]	373,247[1]	560,720[1]
WCA placed (t) [2]	197,483	64,915.2
BCA placed (t) [2]	125,900	0
Total ash footprint (ha) [2]	71.2	71.2
Area of repository capped (ha)[2]	42.65	42.65

[1] = Refers to MPAR and LNAR combined
[2] = Refers to MPAR only
t = tonnes, ha = hectares

2.3 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 (**Figure 1**). The separately approved brine and solid mixed salts from the SWTP are integrated with the MPPS water management system, and brine from the SWTP is transferred to the MPPS for use in conditioning ash prior to its placement in the MPAR.

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. 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 below.

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.

During the reporting period the average concentrations of key 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 33,904 mg/L while those in Brine Waste Pond B averaged 41,621 mg/L;
- Silver concentrations reported from Brine Waste Pond A averaged 5.7 µg/L while concentrations from Brine Waste Pond B averaged 4.9 µg/L;
- Chromium (total) concentrations reported from Brine Waste Pond A averaged 79 µg/L while concentrations from Brine Waste Pond B averaged 97 µg/L;
- Iron concentrations reported from Brine Waste Pond A averaged 160 µg/L while concentrations from Brine Waste Pond B averaged 113 µg/L;
- Barium concentrations reported from Brine Waste Pond A averaged 14 µg/L while concentrations from Brine Waste Pond B averaged 5.3 µg/L;
- Boron concentrations reported from Brine Waste Pond A averaged 4,841 µg/L while concentrations from Brine Waste Pond B averaged 3,152 µg/L;
- Manganese concentrations reported from Brine Waste Pond A averaged 59 µg/L while concentrations from Brine Waste Pond B averaged 16 µg/L; and
- Nickel concentrations reported from Brine Waste Pond A averaged 367 µg/L while concentrations from Brine Waste Pond B averaged 307 µg/L.

Note, metals are reported as total (unfiltered) concentrations.

3. ENVIRONMENTAL SETTING

Details of the environmental site setting are presented in the following sections to provide context to the surface water and groundwater assessments presented below.

3.1 CLIMATE

The 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 5** and a copy of the data is presented in **Appendix E**. Rainfall data is graphed in the hydrographs included in **Appendix F**.

TABLE 5: LOCAL CLIMATE DATA FOR 2023/2024

Month	Rainfall Total (mm)	Min. Temperature (°C)	Max. Temperature (°C)
July 2023	23.6	0.4	11.9
August 2023	44.4	0.9	14.0
September 2023	22.4	2.0	18.8
October 2023	36.8	5.0	19.8
November 2023	108.2	9.2	22.3
December 2023	72.9	12.3	26.1
January 2024	135.6	14.2	25.1
February 2024	86.6	13.9	25.3
March 2024	39.8	10.1	23.4
April 2024	98.4	5.9	17.9
May 2024	49.6	4.5	14.0
June 2024	53.6	0.3	10.4
TOTAL / MIN / MAX	**771.9**	**0.3**	**26.1**

Data from MPPS Weather Station provided by EnergyAustralia

The total rainfall for the reporting period was 771.9 mm. This is lower than the total reported rainfall of 930.5 mm for the 2022/23 reporting period and the 1,191.4 mm recorded during the 2021/22 reporting period, but higher than the 607.0 mm recorded during the 2020/21 reporting period and the 513.1 mm recorded for 2019/20 reporting period. The higher-than-average periods of rain from December 2020 and March 2021 broke the period of relative drought experienced at the site, and more broadly within NSW, between 2017 and 2020.

The 2023/24 reporting period was characterised by slightly higher than average rainfall, although the monthly rainfall data shows fluctuations throughout the reporting period. January 2024 was the month that recorded the highest rainfall (135.6 mm), and September 2023 recorded the lowest rainfall (22.4 mm). Overall, the highest rainfall occurred in November 2023 through April 2024.

3.2 GEOLOGY AND HYDROGEOLOGY

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 6**.

TABLE 6 LOCAL GEOLOGICAL UNITS

Narrabeen Group	Illawarra Coal Measures	Shoalhaven Group
• 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).	• 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).	• 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).

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 6a** to **Figure 6b**). 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.

Prior to the placement of ash in the former Western Main Open Cut mine void (now occupied by the MPAR), the bottom of the mine void was covered with mine spoil to a minimum level of 908 m AHD. This was to facilitate groundwater flow from the adjacent areas of the unmined Lithgow coal seam aquifer and mine goaf areas surrounding the Western Main Open Cut mine void (Connell Wagner, 2007). The background groundwater level (water table elevation) prior to the filling of the mine voids and placement of ash was reported to be approximately 910 m AHD.

Historically, groundwater seepage from beneath the MPAR was collected in the Groundwater Collection Basin that was previously located to the east of MPAR (SKM, 2010). In 2012, this basin was filled in with mine spoil and compacted as part of the construction of the adjacent LNAR; the footprint of the former Groundwater Collection Basin is located beneath the LNAR (refer to **Figure 2**).

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 at the site indicates that the water table occurs variably in the former below ground mined out areas and open cuts and, away from the Ash Repositories, predominantly in the overlying Bunnyong Sandstone. Over the reporting period, the water table elevation ranged from approximately 903.4 m AHD (D2) in the south-east up to 919.1 m AHD (MPGM/D5) in the north-west of the Ash Repositories (refer to **Appendix H**). Perched water is present in the southern part of the MPAR.

3.3 HYDROLOGY

The Project site is within the catchment of Wangcol Creek, a tributary of the Coxs River. The site itself 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 MPAR, approximately 250 m from the active ash placement area at its closest point. Wangcol Creek flows to the east and south-east and joins the Coxs River approximately 3.2 km east of the site.

Clean water diversion structures divert surface waters around the operational areas of the MPPS, where possible (see **Figure 2**). Stormwater within the operational area of the MPPS is directed to water management and storage infrastructure for use at the Project site.

4. WATER MONITORING AND MANAGEMENT PLAN

The aim of the WMP is to minimise the effect of ash placement at the MPAR on local natural surface waters and groundwater. The WMP addresses water cycle management associated with the Project. It includes a surface water and groundwater monitoring program, a requirement for an annual water quality report, and associated TARPs, contingency and strategies for brine reduction as appropriate for the reporting period.

The WMP approved under the Mt Piper Consent outlines the following key elements:

- Water cycle management plan describing the management of surface water run off at the ash repository;
- Brine cycle management including brine minimisation strategies and future mine disposal strategies;
- Water cycle management including the potential uses of multipurpose lined water storages present at the MPPS; and
- Water monitoring program, including surface water and groundwater monitoring, and the Environmental Goals to be adopted.

4.1 ENVIRONMENTAL GOALS

The Environmental Goals for groundwater and surface water monitoring in the WMP are consistent with those applied to monitoring of the LNAR, as approved in the LNAR OEMP. The Environmental Goals were developed by Aurecon (2009) to account for hardness corrected guideline values and were presented by CDM Smith (2013).

The Environmental Goals utilise the 95% ecosystem protection values, stock watering, irrigation water or drinking water values based on the Australian and New Zealand Guidelines (ANZG, 2018) water quality guidelines (formerly Australia and New Zealand Environment Conservation Council, ANZECC, 2000), 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 the former Groundwater Collection Basin (for groundwater).

It is noted that, where the Environmental Goals for groundwater are based on the ANZG (2018) water quality guidelines, these guidelines are applicable to receiving waters and not to groundwater. However, they form an appropriate basis for undertaking a conservative initial screening assessment.

The Environmental Goals adopted for this assessment are presented with the surface water and groundwater data in **Appendix G** and **Appendix H**, respectively.

5. SURFACE WATER ASSESSMENT

5.1 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 Environmental Goals to assess changes in water quality and to assess whether the TARPs or contingency measures should be considered and/or implemented.

5.2 SURFACE WATER MONITORING LOCATIONS AND FREQUENCY

A summary of the surface water monitoring site locations under the WMP is described in **Table 7** and the locations are shown on **Figure 5**.

TABLE 7: SURFACE WATER MONITORING LOCATIONS

Site ID	Position	Location Description	Frequency	No. of Samples in 2023/24
CSP	Upstream	Monitor the stormwater in the CSP and discharge from the CSP. 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 surface water conditions. Data from LDP12 is not regulated by the Environmental Goals and is provided in this report for comparison only.	As required during discharge[1]	9
LDP12	Upstream			11
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.	Quarterly	12
NC01	Mid-stream	Located midstream in the monitored area of Wangcol Creek, upstream to the Ash Repositories.	Monthly	12
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.	Quarterly	12
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.	Quarterly	12

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	12
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.	Quarterly	12

It is noted that several surface water sample locations have been sampled more frequently than required by the WMP and the frequency of sampling conducted during the reporting period is considered adequate to meet the requirements of the WMP.

5.3 SURFACE WATER MONITORING METHODOLOGY

Surface water quality monitoring was undertaken by Nalco Water – Ecolab (Nalco) on behalf of EnergyAustralia. Details regarding the Nalco sampling method and quality assurance and quality control (QA/QC) program are presented in **Appendix I**.

5.4 SURFACE WATER QUALITY DATASET

Surface water samples were obtained by Nalco for field and/or laboratory analysis for the following parameters, in accordance with the monitoring and analysis schedule outlined within the WMP:

- Electrical conductivity (EC - µS/cm, field measured);
- pH (field measured);
- Total Dissolved Solids (TDS);
- Cations and anions (calcium, chloride, fluoride, magnesium, potassium, sodium, sulfate) i.e., major and minor ions;
- Alkalinity (total alkalinity, bicarbonate alkalinity, phenolphthalein alkalinity);
- Total and dissolved metals (aluminium, arsenic, boron, copper, iron, manganese, nickel, vanadium, and zinc) – field filtered at 0.45 µm for dissolved analysis;
- Non-filterable residue (NFR, turbidity or TSS);
- Total phosphorus; and
- Nitrogen, nitrate, nitrite, total Kjeldahl nitrogen (TKN).

The trace metals in surface water samples were reported as both total (unfiltered) and dissolved (filtered) samples, except for antimony, arsenic (III), arsenic (V), barium, beryllium, cadmium, chromium, speciated chromium, cobalt, lead, magnesium, mercury, molybdenum, selenium, silver and strontium, which were reported as total sample concentrations only.

Evidence of the collection of field quality control (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, internal duplicates, method blanks or spike data were also not presented for review during compilation of this EMR.

5.5 SURFACE WATER RESULTS

The surface water field and analytical results obtained for the reporting period are presented alongside the Environmental Goals for surface water in **Appendix G** and **Figure 7**. Graphs of concentrations over the last 10 years for selected analytes (boron, chloride, manganese, nickel, sulfate and TDS), considered to be indicators of potential changing conditions resulting from the Project, are provided in **Appendix J.**

5.5.1 UPSTREAM MONITORING RESULTS

LDP12 is the licenced discharge point for the MPPS under EPL 13007. The licenced discharge point is located at the CSP, which is a sediment basin for the coal stockpile area. Samples from the CSP are routinely collected (monthly) and prior to planned discharge events and are presented in this report (in accordance with the WMP).

Discharge via LDP12 occurs as required following confirmation by laboratory analysis that the water quality is within the approved EPL discharge limits. Samples of the water are collected from the discharge point, and these are presented as LDP12. Location LDP12, which is the licenced discharge point from the CSP, is not considered to be representative of upstream conditions relative to the MPAR in the monitored area of Wangcol Creek.

Discharge from LDP12 enters the western stormwater drain, which is part of the upstream Wangcol Creek catchment, before flowing into the FHP. The FHP holds stormwater from the clean water diversions from around the MPPS and 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 a pollution control structure downstream from the operational areas of the MPPS. LMP01 is the sampling location within Wangcol Creek downstream of the FHP.

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, in **Figure 7**, and in **Table 2**, **Appendix G**; however, assessment of trends and statistical assessment of LDP12, and comparison with Environmental Goals 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 J**.

5.5.1.1 FIELD PARAMETERS

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

- pH values (field measured) of surface water samples from LMP01 ranged from 7.5 to 8.3. The pH at LMP01 was marginally outside of the range (more alkaline) of the Environmental Goal (6.5 to 8.0) during three sampling events of the reporting period (July, August and October). pH values at LDP12 ranged from 6.9 to 7.7, within the EPL discharge limits; and
- Field EC values obtained from LMP01 ranged from 202 µS/cm to 760 µS/cm. Field EC measured at LDP12 ranged from 233 µS/cm to 367 µS/cm. The reported field EC values were generally consistent with the laboratory TDS concentrations (when analysed).

EC and TDS values throughout the reporting period were below the Environmental Goals (2,200 µS/cm for EC and 1,500 mg/L for TDS) for surface water at LMP01. Graphs of concentrations over the last 10 years show TDS concentrations at LMP01 have consistently remained below the Environmental Goal over this period. They generally remained stable with some fluctuations up to 2022. In 2022, TDS values appeared to increase, but have remained generally stable since, consistently below the Environmental Goal. Concentrations during the current reporting period remained below the Environmental Goal and generally within historical ranges and demonstrated a mostly stable trend over the reporting period. A spike in TDS concentration in LMP01 was reported during October 2023 sampling event (480 mg/L). This is the highest concentration recorded since July 2019 (430 mg/L) but remains well below the Environmental Goal of 1500 mg/L.

5.5.1.2 MAJOR AND MINOR IONS

Throughout the reporting period, concentrations of major and minor ions for which there are Environmental Goals (chloride, sulfate and fluoride) at LMP01 were below the relevant Environmental Goals for surface water.

Graphs of concentrations over the last 10 years for LMP01 (**Appendix J**) show fluctuations of sulfate and chloride over time, however, the concentrations in the current reporting period appeared generally steady, with a spike in concentrations noted in October 2023 for sulfate (214 mg/L), followed by a decrease in concentrations. Concentrations of major and minor ions remained within the historical range and below the Environmental Goals for surface water. Previously, high sulfate and chloride results relative to the historical dataset were reported intermittently from July 2019 to January 2020. The spikes in concentrations were attributed to a brine leak event that occurred in 2019 (ERM, 2020a); these were notified to the EPA and the liner was repaired in 2019.

5.5.1.3 METALS

Throughout the reporting period copper, iron, and molybdenum were reported on one or more occasions at concentrations above the relevant Environmental Goals for surface water at LMP01, as presented in **Appendix G** and summarised in **Figure 7**.

Speciated chromium (hexavalent and trivalent), and silver had LORs above the Environmental Goals on one or more occasions for samples from LMP01. However, the LOR of total chromium was below the Environmental Goal and both upstream locations did not report total chromium above the Environmental Goal.

Selenium was reported above the 0.2 µg/L LOR for most monitoring events, and below the Environmental Goal of 5 µg/L.

ERM understands that a laboratory LOR that is lower than the Environmental Goal for silver (0.05 µg/L) is unachievable by the laboratory. Based on the results of previous monitoring, including concentrations of silver in brine (<1 µg/L for most samples during 2022/23 and below the LOR for all samples during the current reporting period), and <1 µg/L in groundwater, silver is not considered to represent a primary constituent of concern for monitoring in accordance with the WMP.

Graphs of concentrations over the last 10 years for LMP01 (**Appendix J**) show fluctuations of manganese, boron, and nickel over time. Similar to the trend identified for the major and minor ions, the boron concentration (filtered) increased during the October 2023 sampling event, but subsequently declined. The concentrations of these and other metals measured during the reporting period were below the Environmental Goals and were generally consistent and within the historical ranges.

5.5.2 MIDSTREAM 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.

The surface water field and analytical results obtained from sample points NC01, SW_C and SW_E, for the reporting period are presented in **Table 1, Appendix G**, and summarised in **Figure 7**. Graphs showing the concentrations of key analytes over time are presented in **Appendix J**.

A brief discussion of results is presented in the following subsections.

5.5.2.1 FIELD PARAMETERS

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

- pH (field) values ranged from 6.3 to 8.2, with results from the midstream surface water sample locations indicating pH values above (more basic) than the Environmental Goal (6.5 to 8.0) at SW_E and SW_C, and results from one sample at SW_E (SW_E, March 2024) more acidic than the Environmental Goal;
- Field EC values reported at NC01, SW_C and SW_E ranged from 277 µS/cm to 7,450 µS/cm. Field EC values were generally consistent with laboratory TDS values. Except for SW_E, results were not reported above the Environmental Goals for either EC or TDS (2,200 µS/cm for EC and 1,500 mg/L for TDS). At SW_E, concentrations from four sampling events (four months) were above the Environmental Goals for both EC and TDS, with concentrations ranging from 3,650 to 7,450 µS/cm for EC and 2,930 to 5,980 mg/L for TDS; and
- Graphs of concentrations over the last 10 years show TDS concentrations at NC01 and SW_C have remained low and stable, below the Environmental Goals for surface water. However, TDS concentrations from the November 2023 sampling event the highest to date for each of NC01 and SW_C.

  TDS concentrations at SW_E have increased since late 2022, with the highest reported TDS concentrations over the 10 year period reported in March 2024 (similar to the TDS concentration reported in January 2020). TDS concentrations from SW_E increased above the Environmental Goal from October 2023 and decreased slightly but remained above the Environmental Goal in November 2023 and December 2023; they then spiked in March 2024. From April 2024 onwards TDS concentrations at SW_E returned to below the Environmental Goal. Throughout the reporting period, EC and TDS values at SW_E were higher than those further upstream at NC01 and SW_C.

5.5.2.2 MAJOR AND MINOR IONS

Throughout the reporting period, major and minor ions including chloride, sulfate, and fluoride were reported at NC01 and SW_C at concentrations below the Environmental Goals for surface water.

Graphs of concentrations over the last 10 years for chloride and sulfate are consistent with the trends identified for TDS concentrations and show that chloride and sulfate concentrations at NC01 and SW_C have remained low and stable. Consistent with increased TDS and EC values at SW_E, concentrations of chloride and sulfate at SW_E increased from October 2023, with peak concentrations reported during the March 2024 sampling round. Chloride and sulfate concentrations subsequently returned to concentrations below the Environmental Goals from the April 2024 sampling event to the end of the reporting period.

As for EC and TDS, chloride and sulfate concentrations at SW_E were elevated compared to those further upstream at NC01 and SW_C, exceeding the Environmental Goals on several occasions over the reporting period.

5.5.2.3 METALS

Throughout the reporting period boron (SW_E), chromium (SW_C), copper, iron, manganese (SW_E), molybdenum, and nickel (SW_E) concentrations were, on one or more occasion, above the relevant Environmental Goals for surface water at NC01, SW_C and/or SW_E, as presented in **Appendix G** and summarised in **Figure 7**.

LORs for speciated chromium (hexavalent and trivalent) and silver were above the Environmental Goals for one or more sample events.

For all samples throughout the reporting period, silver concentrations were reported below the laboratory LOR (<1 µg/L) which were above the Environmental Goal for silver (0.05 µg/L). The LOR for speciated chromium was also above the Environmental Goal for both hexavalent (1.0 µg/L) and trivalent (3.3 µg/L) chromium. No results were reported above the LORs for speciated chromium.

Refer to **Section 5.5.1.3** for commentary relating to the laboratory LORs versus the Environmental Goals for silver and speciated chromium in surface water.

Concentrations of metals in surface water were above the relevant Environmental Goals during the reporting period as follows:

- Boron (total and filtered) concentrations in surface water from SW_E on four occasions;
- Chromium (total) concentrations during the June 2024 sampling event from SW_C. Total chromium was below the LOR during all other sampling events;
- Copper (total) concentrations in surface water on two occasions at all midstream monitoring locations;
- Copper (filtered) concentrations during the March 2024 sampling event at SW_E;
- Iron (total) at each of the three midstream locations during every sampling event;
- Iron (filtered) and Nickel (total and filtered) during every sampling event at SW_E;
- Manganese (total) on ten occasions and manganese (filtered) on eight occasions at SW_E; and
- Molybdenum (total) on four occasions at SW_C and on five occasions at NC01.

Graphs of concentrations over the last 10 years for boron, manganese and nickel (**Appendix** J) are generally consistent with TDS; specifically, concentrations of these selected metals in surface water samples from NC01 and SW_C have remained low and stable. Boron, manganese and nickel concentrations at SW_E increased from October 2023 and spiked during the March 2024 sampling round but subsequently decreased however nickel remained above the Environmental Goal in June. Concentrations of these metals at NC01 and SW_C remained below the Environmental Goals throughout the reporting period.

Concentrations of boron (both total and filtered) at SW_E remained within historical range and below the Environmental Goal with the exception of results from March 2024 sampling event. Concentrations from the subsequent sampling events (April 2024 onwards) were within the historical range and below the Environmental Goal.

Manganese concentrations also increased during this reporting period at SW_E. Although concentrations remained below the maximum historical concentration (January 2020), concentrations at SW_E were above the Environmental Goal in 10 out of 12 sampling events for total manganese and eight out of 12 sampling events for filtered manganese. Total manganese and filtered manganese have not been reported above the Environmental Goal since November 2019; however concentrations were below the Environmental Goal from May 2024.

Nickel concentrations (filtered and total) at SW_E remained with the historical range, but were above the Environmental Goal during every sampling event in the reporting period. Both total and filtered nickel concentrations followed a similar trend to that identified for manganese concentrations at SW_E, peaking during the March 2024 sampling round and declining from April 2024 through to the end of the reporting period. Nickel (filtered and total) concentrations at NC01 and SW_C remained below the Environmental Goal throughout the current reporting period.

5.5.3 DOWNSTREAM 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 is downstream of and, in the case of SW_G, has been subject to open cut mining operations.

The surface water field and analytical results obtained from sample points WX22 (SW_F) and SW_G for the reporting period are presented in **Table 1, Appendix G**, and summarised in **Figure 7**. Graphs showing the concentrations of key analytes over time are presented in **Appendix J**.

A brief discussion of results is presented in the following subsections.

5.5.3.1 FIELD PARAMETERS

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

- Field pH values ranged from 7.4 to 8.2 and were generally within the Environmental Goal range (6.5 to 8.0) for pH in surface water, except for one event from WX22 and two events from SW_G which were above (more basic) than the Environmental Goal;

- Field measured EC values ranged from 458 µS/cm to 2,310 µS/cm and were generally consistent with the laboratory determined TDS values. EC and TDS were generally reported below the respective Environmental Goals for surface water (2,200 µS/cm for EC and 1,500 mg/L for TDS) at both locations during the reporting period, except for a sampling event in November 2023 during which both WX22 and SW_G reported values above the Environmental Goals for EC and TDS; and
- Graphs of concentrations over the last 10 years (**Appendix J**) for WX22 and SW_G show TDS at these locations has fluctuated over time. Concentrations of TDS have typically increased during summer months; TDS concentrations were above the Environmental Goal twice at SW_G, previously in July 2018 and again in November 2023 during this reporting period. Previously (in 2018 and 2020), TDS values at WX22 declined after a summer peak; however, in this reporting period, although below the Environmental Goal, TDS concentrations remained above typical historical values. Similar behaviour was identified at SW_G. TDS had remained below the Environmental Goal for WX22 over the 10 year period until November 2023 after which concentrations declined to below the Environmental Goal. For WX22 and SW_G in this reporting period, the typical summer peak occurred earlier than previously, and subsequent concentrations, although below the Environmental Goal, were higher than typical.

5.5.3.2 MAJOR AND MINOR IONS

Throughout the reporting period, concentrations of major and minor ions including chloride, sulfate and fluoride were reported below the relevant Environmental Goals at WX22 and SW_G, with the exception of the December 2023 sampling round at SW_G in which the laboratory LOR for fluoride was raised (<2 mg/L) to a value above the Environmental Goal (1.5 mg/L). The raised laboratory LOR above the Environmental Goal was related to sample matrix interference, as confirmed by EnergyAustralia.

Graphs of concentrations over the last 10 years for WX22 and SW_G (**Appendix J**) show chloride and sulfate concentrations have fluctuated over time and are generally consistent with TDS trends (i.e., typically increase during and following summer months). Similar to historic TDS concentrations, chloride and sulfate concentrations were highest during February 2014, February 2018 and January 2020. For the current reporting period, the highest concentrations of sulfate and chloride were recorded during the November 2023 sampling event, however, concentrations remained below the respective Environmental Goals.

5.5.3.3 METALS

Throughout the reporting period, boron, copper (WX22), iron, mercury (WX22), molybdenum (WX22) and nickel were identified on one or more occasions at concentrations above the relevant Environmental Goal for surface water at WX22 and/or SW_G, as presented in **Table 1, Appendix G**, and summarised in **Figure 7**.

LORs for speciated chromium (hexavalent and trivalent), selenium, and silver were above the relevant Environmental Goals for one or more sample events. No concentrations above the LORs were reported for these analytes during the reporting period. Refer to **Section 5.5.1.3** for commentary relating to the laboratory LORs versus the Environmental Goals for speciated chromium, selenium, and silver in surface water.

Graphs of concentrations over the last 10 years for WX22 and SW_G (**Appendix J**) show boron, manganese and nickel concentrations over time.

Boron concentrations were generally reported below the Environmental Goal for surface water during this reporting period, although, similar to TDS and EC concentrations, boron concentrations at both WX22 and SW_G were above the Environmental Goal, but within historic values, during the November 2023 sampling event.

Concentrations of nickel fluctuated and were above the Environmental Goal for all sampling events throughout the reporting period. Similar to TDS, EC and boron, the nickel concentrations was highest in the November 2023 sample.

Concentrations of iron were above the Environmental Goal during the summer months, between November 2023 and March 2024 for both SW_G and WX22, peaking in January 2024. Concentrations increased above the Environmental Goal during the May 2024 monitoring round but were below the Environmental Goal in June 2024.

For this reporting period, copper (total), mercury, and molybdenum concentrations at WX 22 were above the corresponding Environmental Goals in 1 of the 12 sampling events only. Copper, mercury, and molybdenum concentrations at SW_G remained below the corresponding Environmental Goals throughout the reporting period.

5.5.4 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 per day) over the six year period July 2018 to June 2024. Flow volume data was sourced from WaterNSW via Real-time water data (waternsw.com.au), using NSW site 212055 which correlates with the downstream monitoring point WX22.

Over the past two years of monitoring, both TDS and chloride concentrations are noted to have increased (December 2022 to November 2023) relative to previous concentrations. This period correlates to an extended period of low surface water flow, also between December 2022 and November 2023, noting that the highest mean surface water discharge event in this six year period was recorded on 15 November 2022. This pattern is consistent with that seen previously, including the 2018-2019 period as presented on Plate 1 and Plate 2. Plate 3 demonstrates the generally direct relationship between stream flow and rainfall, noting that the highest rainfall events in 2023-2024 did not correlate directly with high stream flow.

The highest TDS and chloride concentrations were reported at SW_E in March 2024. This corresponds to the low stream flow rates between January 2024 and April 2024 and with a period of high rainfall in April 2024. For downstream monitoring locations, SW_G and WX22, TDS and chloride concentrations peaked in November 2023 with concentrations decreasing towards the end of the reporting period. These decreasing TDS and chloride concentrations at WX22 and SW_G generally corresponded with the higher surface water flow volumes (and rainfall) observed from December 2023.

The stream flow rate 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 vs 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 stream channel.

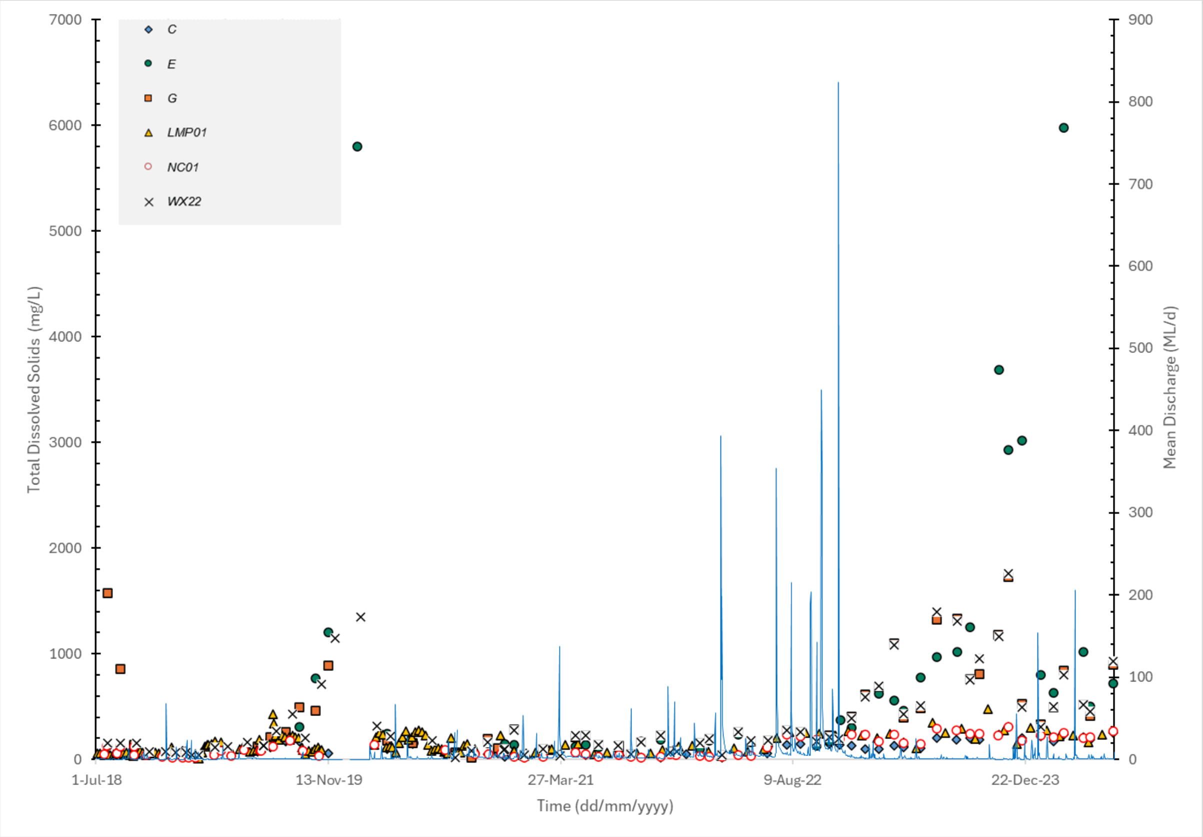

PLATE 1 TOTAL DISSOLVED SOLIDS VS SURFACE WATER DISCHARGE

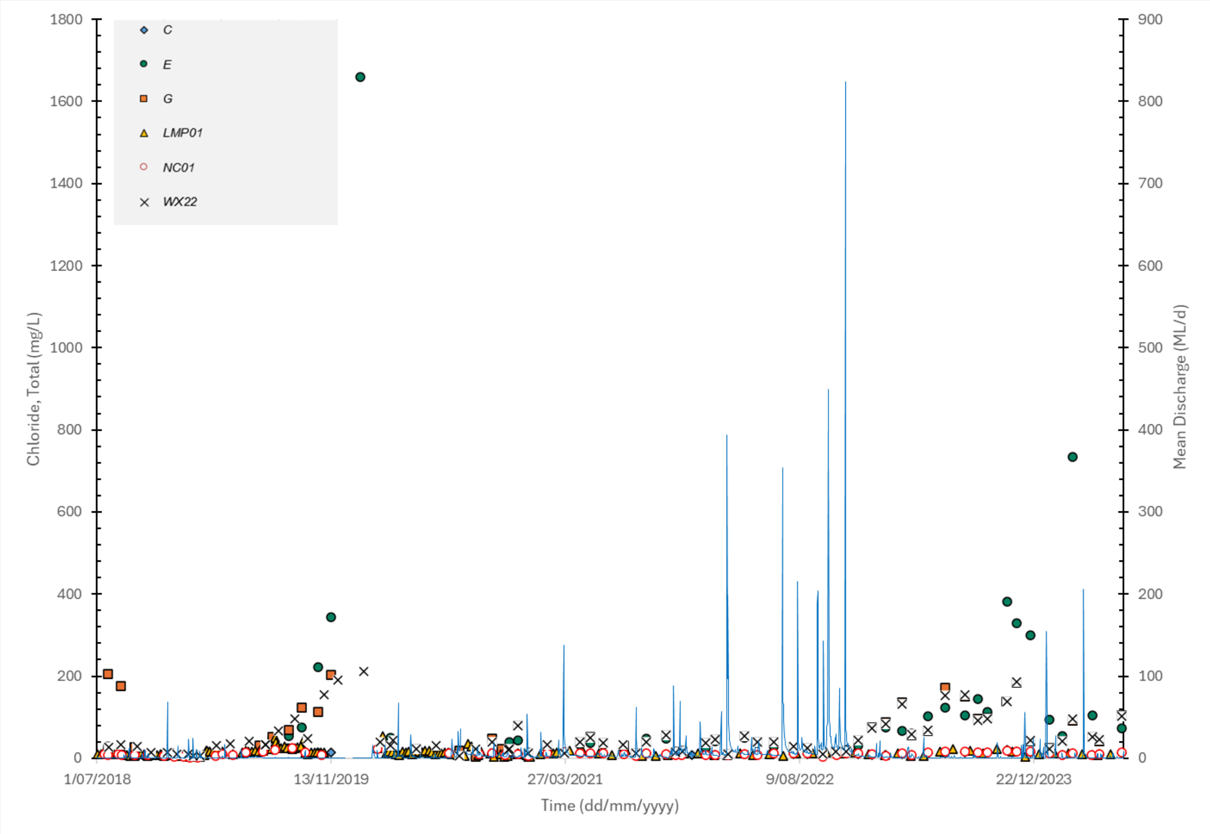

PLATE 2 CHLORIDE CONCENTRATIONS VS SURFACE WATER DISCHARGE

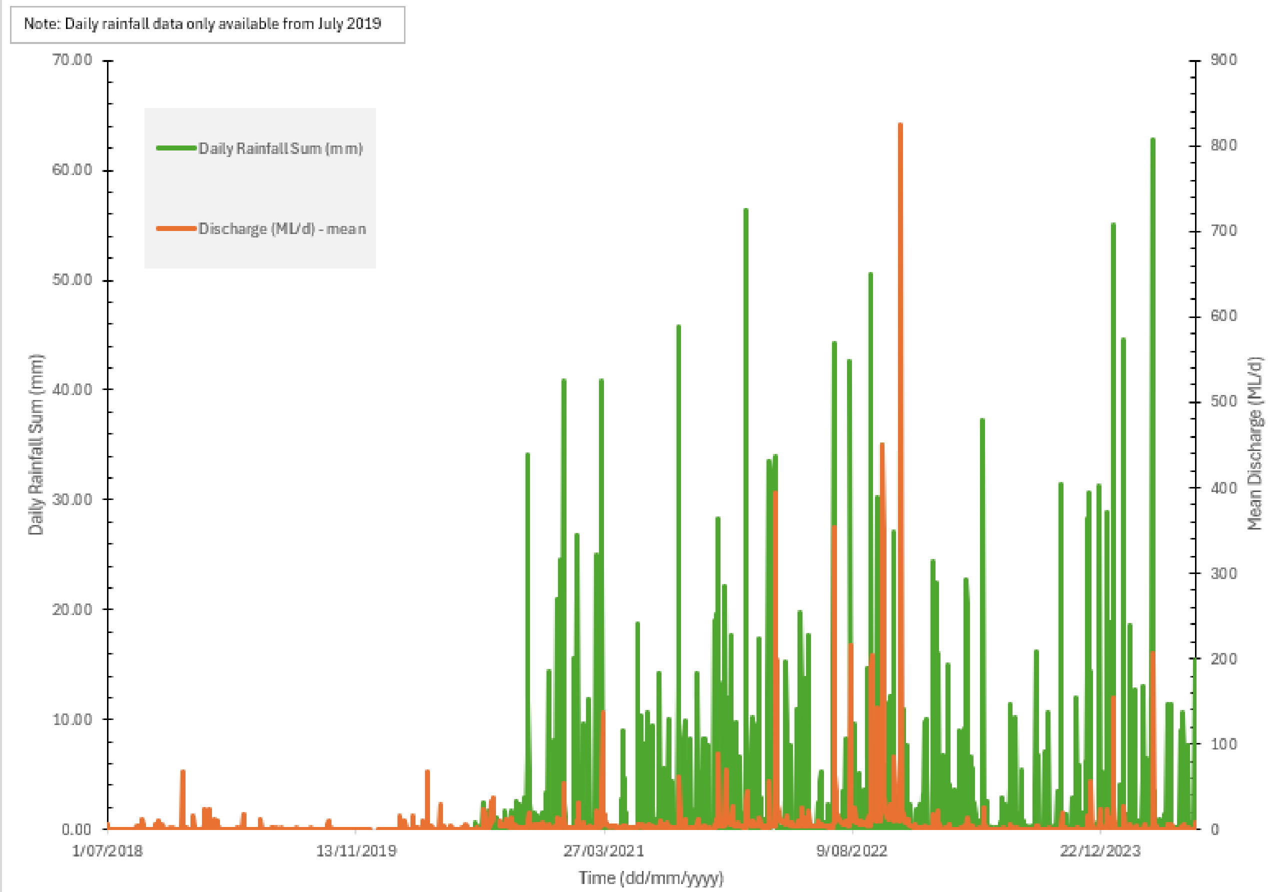

PLATE 3 DAILY RAINFALL DATA VS SURFACE WATER DISCHARGE

5.5.5 SUMMARY

During the reporting period, LMP01 reported concentrations of pH, chromium, copper, iron, and molybdenum above the Environmental Goals on one or more occasions.

Results from midstream monitoring locations NC01, SW_C and SW_E were typically below the Environmental Goals for surface water, except for iron concentrations which were consistently above the Environment Goal throughout the reporting period at NC01, SW_C and SW_E. pH, EC, TDS, boron, chromium, copper, iron, manganese, molybdenum and nickel were reported above the Environmental Goals on one or more occasions from at least one of these locations. SW_E accounted for majority of the concentrations reported above the Environmental Goals throughout the reporting period.

Surface water quality at the midstream locations showed a summer peak in concentrations generally similar to last reporting period (2022/23) although 10 year graphs of key analytes (**Appendix J**) show higher concentrations during the summer peak than last reporting period were reported for all key analytes. Additionally, a second spike in concentrations of key analytes was reported around March 2024. This is considered to be related to the drier conditions followed by rainfall that was experienced during March 2024 compared to last reporting period.

At the downstream monitoring locations (WX22 and SW_G), concentrations of nickel in surface water were frequently above the relevant Environmental Goals during the reporting period. The concentrations of nickel were similar at the midstream monitoring location SW_E and downstream locations WX22 and SW_G. TDS, EC, and boron concentrations were reported above the Environmental Goals for surface water for both downstream monitoring locations during the November 2023 sampling event. Copper, mercury, and molybdenum concentrations were reported above the Environmental Goals for surface water during one event at WX22. Iron concentrations were reported above the Environmental Goals at WX22 and SW_G over the summer months (November to March) and again in the May 2024 sampling event.

The surface water quality at downstream locations WX22 and SW_ G generally showed an overall decreasing trend in concentrations towards the end of the reporting period, after the March 2024 peak. During the March 2024, nickel concentrations remained below the historic maximum concentrations (2018 for SW_G, 2020 for WX22) but were above the Environmental Goal for nickel for all sampling events at both downstream locations. The occurrence of higher concentrations in March 2024 was consistent with the observation for midstream surface water locations and is likely related to the drier conditions experienced during the summer months of this reporting period.

Nickel concentrations were consistently above the Environmental Goals at midstream and downstream monitoring locations. Iron concentrations were consistently above the Environmental Goal at midstream locations, and were above the Environmental Goal at downstream monitoring locations at times during the summer months and again in March 2024, during a period of low rainfall. Iron concentrations are related to background conditions in the local environment as a result of the mining history and disturbed geology. Nickel concentrations in surface water are considered to be influenced by interaction between groundwater and the surface water of Wangcol Creek. Concentrations of key analytes in surface water were, for SW_C, WX22 and SW_G, higher overall than in the 2022/23 reporting period, including the higher concentrations from October to March that likely resulted from the drier conditions in the summer months leading up to March 2024. Due to the drier conditions, water within the Creek is influenced more by the discharge of groundwater to the creek, particularly through former mined out areas, than by surface flow in Wangcol Creek, resulting in higher concentrations of key analytes in this part of the creek over the summer months.

6. GROUNDWATER

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 established Environmental Goals to assess changes in groundwater quality and the extent to which changes may be related to activities associated with the Project.

6.2 GROUNDWATER MONITORING LOCATIONS AND FREQUENCY

A summary of the groundwater monitoring locations is presented in **Table 8:** and **Figure 5**.

TABLE 8: GROUNDWATER MONITORING NETWORK

Bore ID	Location Description	Screened Material	Frequency	No. of Samples in 2023/24
Upgradient of MPAR (background)				
MPGM4/D4	Background groundwater monitoring location, north-west (upgradient) of the MPAR	Fill	Quarterly	4
MPGM4/D5	Background groundwater monitoring location, north-west (upgradient) of the MPAR	Mudstone/ Sandstone and coal	Quarterly	4
Within MPAR and the Mine Disturbance Area East of MPAR				
B5	Within the MPAR	Fill	Quarterly	0 (blocked)
SW3-D	Within the south-east portion of the MPAR	Fill – clay/silty clay	Quarterly	0 (dry)
MPGM4/D23	Adjacent (south) of the MPAR	Sandstone	Quarterly	0 (destroyed)
MPGM4/D10	East (downgradient) of the MPAR, and adjacent to LN Pond 2	Fill / mine spoil	Quarterly	3 (unsafe access during Q4 of the reporting period)
MPGM4/D11	Within the eastern extent of the MPAR (decommissioned Feb 2023)	Fill beneath the ash	Quarterly	0 (decommissioned in February 2023)
MPGM4/D19	East (downgradient) of the Ash Repositories	Fill / mine spoil	Quarterly	4

Bore ID	Location Description	Screened Material	Frequency	No. of Samples in 2023/24
D113	East (downgradient) of the Ash Repositories. Nested (deeper) with D19	Siltstone	Quarterly	4
Within Mine Disturbance Area – South and South-east of MPAR				
MPGM4/D15	South of the Ash Repositories	Sandstone and/or shale	Quarterly	4
MPGM4/D16A#	South of the Ash Repositories (commissioned in October 2022 to replace D16)	Sandstone and/or shale	Quarterly	4
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	4
Adjacent to MPAR – To the North				
MPGM4/D3	Background groundwater monitoring location, north (cross gradient) of the MPAR	Sandstone and/or siltstone	Quarterly	4
D107	North (cross gradient) of MPAR and adjacent Wangcol Creek	Siltstone and/or shale	Quarterly	4
D106	North (cross gradient) of MPAR and adjacent Wangcol Creek	Weathered sandstone and/or Shale	Quarterly	4
Adjacent MPAR and Downgradient				
MPGM4/D1	North-east (downgradient) of the MPAR	Mudstone, sandstone and coal	Quarterly	4
MPGM4/D9	North-east (downgradient) of the MPAR and adjacent to Wangcol Creek	Alluvial deposits	Quarterly	4

Bore ID	Location Description	Screened Material	Frequency	No. of Samples in 2023/24
D102	North-east (downgradient) of the MPAR and adjacent to Wangcol Creek. Nested (deeper) with D9	Siltstone	Quarterly	4
D105	East (downgradient) of the MPAR and adjacent Wangcol Creek	Coal	Quarterly	4
MPGM4/D8	East (downgradient) of the MPAR and adjacent to the northern side of Wangcol Creek	Alluvial deposits	Quarterly	4
D104	East (downgradient) of the MPAR and adjacent Wangcol Creek	Sandstone	Quarterly	4
D103	East (downgradient) of the MPAR and adjacent Wangcol Creek	Coal and/or siltstone	Quarterly	4
MPGM4/D2	East (downgradient) of the MPAR and adjacent Wangcol Creek	Not known	Quarterly	4
Brine Waste Pond Leak Detection Bores				
MPGM5/D5	Adjacent (downgradient) Brine Waste Pond A	Not known	Quarterly	4
MPGM5/D6	Adjacent (downgradient) Brine Waste Pond B	Not known	Quarterly	4
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)

Since Oct 2022, MPGM4/D16A has replaced MPGM4/D16, which was previously decommissioned

EnergyAustralia provided clarifications as to why some bores were not sampled as frequently as required. Bores B5, SW3-D and MPGM4/D23 were not sampled during the reporting period because they were blocked (B5), recorded as dry (SW3 D), or damaged and unable to be sampled (MPGM4/D23). Considerations are being made to remove B5 from the WMP. D11 was decommissioned in February 2023. D10 was only sampled three times during the reporting period as access was unsafe during the last quarter of the reporting period. D16 was previously decommissioned and, since Oct 2022 has been replaced by bore D16A.

6.3 GROUNDWATER MONITORING METHODOLOGY

Groundwater quality monitoring was undertaken by Nalco on behalf of EnergyAustralia. Details regarding the Nalco sampling method and QA/QC program are presented in **Appendix I**.

6.4 GROUNDWATER QUALITY DATASET

Nalco collected groundwater samples from 22 groundwater monitoring bores throughout the reporting period. Samples were obtained for field and laboratory analysis in accordance with the following monitoring and analysis schedule:

- Depth to water (in m AHD - prior to purging);
- EC (µS/cm, field measured);
- pH (field measured);
- TDS;
- Cations and anions (calcium, chloride, fluoride, potassium, sodium, sulfate);
- Alkalinity (total alkalinity, bicarbonate alkalinity, phenolphthalein alkalinity); and
- Total and dissolved metals (aluminium, arsenic, boron, copper, iron, manganese, nickel, vanadium, zinc) – field filtered at 0.45 µm for dissolved metals.

The trace metals in groundwater samples were reported as both total (unfiltered) and dissolved (filtered) samples except for antimony, barium, beryllium, cadmium, chromium, speciated chromium, cobalt, lead, magnesium, mercury, molybdenum, selenium, silver and strontium, which were reported as total concentrations only.

Evidence of the collection of field 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, internal duplicates, method blanks or spike data were also not provided for review during compilation of this EMR.

6.5 GROUNDWATER RESULTS

For the purpose of this discussion, the groundwater data review has considered the groundwater monitoring locations (see **Figure 5**) in five monitoring zones:

- Bores upgradient of MPAR (background): MPGM4/D4, MPGM4/D5;
- Bores within MPAR and the Mine Disturbance Area East of MPAR: MPGM4/D10, MPGM4/D11, D113, MPGM4/D19;
- Bores within the Mine Disturbance Area south and south-east of MPAR: MPGM4/D15, MPGM4/D16A, MPGM4/D17, MPGM4/D18;
- Bores adjacent to MPAR to the north: MPGM4/D3, D107, D106;
- Adjacent to and downgradient of MPAR: MPGM4/D1, D102, D103, D104, D105, MPGM4/D2, MPGM4/D8, MPGM4/D9; and
- Brine Waste Pond Leak Detection Bores: MPGM5/D5, MPGM5/D6.

Graphs of concentrations over the last 10 years for selected analytes (boron, chloride, manganese, nickel, sulfate and TDS) that are considered to be indicators of potential changing conditions resulting from Project activities are provided in **Appendix K**.

6.5.1 GROUNDWATER ELEVATIONS AND INFERRED FLOW DIRECTION

Hydrographs showing groundwater elevations for each bore have been grouped by monitoring zone, as outlined in **Section 6.5** (**Appendix F**). Due to previously observed artesian (above ground surface) flow at bore D107, additional casing (stick up) was added, and groundwater elevation was not measured from October 2021 to October 2022.

The hydrographs show measured groundwater elevations over the last 2 reporting periods (24 months). Groundwater elevations at most wells remained generally stable over this reporting period. However:

- at D5 groundwater elevations increased, likely in response to higher rainfall events in early 2024;
- Groundwater elevations fluctuated by approximately 1 m at bores D10, D19 and D113, and in D15, D16A, D17 and D18 over the reporting period; and
- Groundwater elevations at D18 (March 2024) and D105 (January 2024) were several metres lower than the previous or following measurements, potentially indicating erroneous measurements.

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

No groundwater elevation data was available for B5 (blocked), SW3-D (dry), D16 (decommissioned), or D23 (destroyed). For the current reporting period, only three measurements were provided for D10 due to access limitations.

Survey data is not available for bores MPGM5-D5 and MPGM5-D6. As such the groundwater levels from these bores are reported as metres below a point of reference (m 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 to approximately 5 m above the water bearing zone targeted by other nearby monitoring bores. Depth to water measured from MPGM5-D5 decreased (indicating shallower water levels) in October 2023, then remained generally consistent for the rest of the reporting period. Water levels at MPGM5-D6 fluctuated slightly but water levels were relatively consistent throughout the reporting period, slightly higher than those in the previous reporting period.

While groundwater elevations in several bores varied during the reporting period, groundwater elevation contours indicate that regional groundwater flow beneath the MPAR is generally toward the east, consistent with previously inferred groundwater flow directions. Although groundwater elevation fluctuated throughout the reporting period, the inferred groundwater flow directions have remained relatively consistent throughout the reporting period, as indicated in the seasonal groundwater flow contours from in October 2023 and May 2024 presented in **Figure 6a** and **Figure 6b**, respectively. Seasonal groundwater flow contours (October 2023 and May 2024) from this current reporting period were generally consistent with the seasonal groundwater flow contours (October 2022 and May 2023) of the previous reporting period, with the bores to the north and east of MPAR indicating an inferred flow to the east while a south-eastern flow is inferred from the bores to the south-east of MPAR.

6.5.2 GROUNDWATER QUALITY 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 outlined below and compared to the Environmental Goals for groundwater. Bores MPGM4/D4 and MPGM4/D5 are considered to represent background groundwater conditions in the area and, based on their location up hydraulic gradient of MPAR, are not considered to have been affected by activities at MPAR. Groundwater monitoring data for the current reporting period is presented in **Appendix H** and summarised in **Figure 8a**. Graphs of concentrations over the last 10 years are provided in **Appendix K.**

6.5.2.1 FIELD PARAMETERS

Field parameters monitored at MPGM4/D4 and MPGM4/D5 for the reporting period are summarised as follows:

- pH values for groundwater from MPGM4/D4 and MPGM4/D5 ranged from 3.42 to 5.9. The pH from bore D4 has been consistently acidic, and varied from 3.42 to 3.48 during the reporting period, consistent with the 2022/23 reporting period and prior monitoring events. Throughout the reporting period the measured pH values were generally stable from these bores, and were consistently more acidic than the Environmental Goal range for groundwater (6.5 to 8.0); and
- EC values obtained from field measurements ranged from 640 µS/cm to 1,260 µS/cm and were generally stable throughout the reporting period. TDS values were generally consistent with the field EC measurements. EC and TDS values did not exceed the Environmental Goals for groundwater (2,200 µS/cm for EC and 1,500 mg/L for TDS) during the reporting period.

Graphs of concentrations over the last 10 years for up gradient (background) bores MPGM4/D4 and MPGM4/D5 show concentrations of TDS in groundwater have been stable and below the Environmental Goal for groundwater throughout the historical dataset.

6.5.2.2 MAJOR AND MINOR IONS

Throughout the reporting period, concentrations of major and minor ions, including chloride, sulfate and fluoride were reported below the relevant Environmental Goals for bores MPGM4/D4 and MPGM4/D5.

Graphs of concentrations over the last 10 years for up gradient (background) bores MPGM4/D4 and MPGM4/D5 show concentrations of chloride and sulfate follow trends consistent with TDS and have been stable and below the Environmental Goals for groundwater throughout the historical dataset.

6.5.2.3 METALS

Throughout the reporting period, arsenic (total and filtered) (MPGM4/D4), iron (total and filtered) (MPGM4/D4 and MPGM4/D5), lead (total) (MPGM4/D4), and manganese (total and filtered) (MPGM4/D5) were identified on several or more occasions at concentrations above the Environmental Goal for groundwater, as presented in **Appendix H** and summarised in **Figure 8a**.

LORs for speciated chromium (hexavalent and trivalent), and silver (total) were above the Environmental Goals for one or more sample events.

The raised laboratory LOR above the Environmental Goal for speciated chromium was due to previous laboratory methods being unable to detect concentrations as low as the Environmental Goal, as confirmed by EnergyAustralia. The raised laboratory LOR above the Environmental Goal for silver was related to sample matrix interference, as confirmed by EnergyAustralia.

Total chromium concentrations were below the Environmental Goal for MPGM4/D4 and MPGM4/D5 during the reporting period.

ERM understands that a laboratory LOR lower than the Environmental Goal for silver (total) (0.05 µg/L) is unachievable by the laboratory. Based on the results of previous monitoring, including concentrations of silver (total) in brine (<10 µg/L for most samples during 2022/23 and below the LOR for most samples for the current reporting period) silver (total) is not considered to represent a primary constituent of concern for groundwater monitoring in accordance with the WMP.

Concentrations of arsenic (total and filtered), iron (total and filtered) 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. However, manganese concentrations were an order of magnitude higher at MPGM4/D5 than MPGM4/D4.

Graphs of concentrations over the last 10 years (**Appendix K**) for up gradient (background) bores MPGM4/D4 and MPGM4/D5 show concentrations of boron (total and filtered) and nickel (total and filtered) have remained stable and below the Environmental Goal for groundwater throughout the historical dataset. Manganese (total and filtered) concentrations in groundwater from MPGM4/D5 have remained above the Environmental Goal historically and during this reporting period, with relatively stable concentrations within the historical range during this reporting period.

6.5.3 GROUNDWATER QUALITY WITHIN MPAR AND THE MINE DISTURBANCE AREA EAST OF MPAR

Data obtained from groundwater bores situated within the MPAR or in the mine disturbance area immediately to the east (D10, D19, and D113) are summarised below and compared to the Environmental Goals for groundwater. Bores D11, D23, SW3-D and B5 are located within this area, but have been decommissioned (D11), destroyed (D23), are blocked (B5) or are dry / have insufficient water to sample (SW3-D), and as such no groundwater quality data was available for these bores during this reporting period.

Groundwater monitoring data for the current reporting period is presented in **Appendix H** and summarised in **Figure 8b**. Graphs of concentrations over the last 10 years are provided in **Appendix K**.

6.5.3.1 FIELD PARAMETERS

Field parameters monitored from bores within MPAR or in the mine disturbance area immediately to the east for the reporting period are summarised as follows:

- pH values of groundwater in this area were slightly acidic, ranging from 5.91 to 6.13 throughout the reporting period. pH values measured during the reporting period remained generally stable and similar to those reported in 2022/23. pH values were consistently more acidic than the Environmental Goal range (6.5 to 8.0); and

- EC values obtained from field measurements ranged from 4,220 µS/cm to 11,330 µS/cm, with values remaining generally consistent with the previous reporting period. TDS concentrations ranged from 3,260 mg/L to 10,400 mg/L. Both EC and TDS values in groundwater from these bores were consistently above the Environmental Goals for groundwater (2,200 µS/cm for EC and 1,500 mg/L for TDS).

Graphs of concentrations over the last 10 years for data from bores within this area show concentrations of TDS in groundwater have fluctuated over time, with a general increase in concentrations (except for bore D23) to above the Environmental Goal for groundwater occurring prior to 2013. TDS concentrations in groundwater from these bores have generally remained above the Environmental Goal since 2013. TDS concentrations in groundwater from bores D10, D19 and D113 generally declined from mid-2018 to late 2019/early 2020. Since early 2020, concentrations have declined in groundwater from D19 and D113 to values below the Environmental Goal. Since late-2022, TDS concentrations in groundwater from bore D10 increased to values that have remained above the Environmental Goal, but within the historical range. Bore D10 was not sampled in the May/June 2024 due to access restrictions.

6.5.3.2 MAJOR AND MINOR IONS

Throughout the reporting period, major and minor ions including chloride, sulfate and fluoride were analysed in groundwater from bores D10, D19, and D113. Sulfate concentrations were above the Environmental Goal for groundwater for all sampling events during the reporting period from these three bores. Chloride concentrations in groundwater from bore D10 were reported above the Environmental Goals for all four sampling events while chloride concentrations in groundwater from D19 and D113 remained consistently below the Environmental Goal. With the exception of the TDS concentration in groundwater from D10 in November 2023, which subsequently declined, TDS, sulfate and chloride concentrations were within the historic range.

During the reporting period, fluoride concentrations were consistently below the Environmental Goal, with the majority of sampling events reporting fluoride concentrations below the LOR in groundwater from these three bores.

Graphs of concentrations over the last 10 years for bores within this area show chloride and sulfate concentrations have fluctuated over time. Chloride and sulfate concentrations increased from approximately 2014 to approximately 2018. Since 2018, chloride concentrations at D19 D113 and D10 generally decreased until concentrations started to increase from March 2023 until concentrations stabilised in March 2024. Similarly, sulfate concentrations generally decreased from mid-2019, with a slight increase from mid to late 2022 through to mid- to late-2023, after which they stabilised (D19, D113) or declined (D10)

6.5.3.3 METALS

Throughout the reporting period arsenic (total), boron (total and filtered), chromium (D113, D19) (total), copper (total), iron (total and filtered), lead (total) (D10, D19), manganese (total and filtered), molybdenum (total) (D10), and nickel (total and filtered) were measured on one or more occasions at concentrations above the Environmental Goals for groundwater from bores D10, D19 and/or D113. These results are presented in **Appendix H**, and summarised in **Figure 8b**.

LORs for speciated chromium (hexavalent and trivalent) and silver (total) were above the relevant Environmental Goals for one or more sampling events. Commentary about the raised LORs is provided in **Section 6.5.2.3**.

Concentrations of metals in groundwater were above the relevant Environmental Goals during the reporting period as follows:

- Arsenic (total) concentrations in groundwater from D19 on two occasions;
- Chromium (total) concentrations for two out of the four sampling events in groundwater from D113 and all four sampling events from D19;
- Copper (total) concentrations in August 2023 for D10 and D113 and on three occasions for D19;
- Lead (total) concentrations for all sampling events for D10 and D19;
- Molybdenum (total) concentrations for two out of the three sampling events for D10;
- Manganese (total and filtered) and nickel (total and filtered) for the majority of sampling events for all three wells within this area; and
- Boron (total and filtered) and iron (total and filtered) concentrations in all samples collected from these bores during the reporting period.

Graphs of concentrations over the last 10 years for bores within this area show boron (total and filtered), manganese (total and filtered), and nickel (total and filtered) concentrations have fluctuated over time (**Appendix K**). These metals were also reported at concentrations above the Environmental Goals for groundwater before 2014. Concentrations have remained consistently above the Environmental Goals for boron in groundwater for all bores within the area. Manganese (total and filtered) concentrations fluctuate but have, overall, declined in groundwater in this area since mid-2019. Boron (total and filtered) and nickel (total and filtered) concentrations increased from the start of 2023 but remained within the historical range. Concentrations of other metals in groundwater from bore D113 and D19 were generally stable and within historical range.

6.5.4 GROUNDWATER QUALITY WITHIN MINE DISTURBANCE AREA SOUTH AND SOUTH-EAST OF MPAR

Data obtained from groundwater bores that are considered to be situated within the mine disturbance area to the south and south-east of the MPAR are summarised below and compared to the relevant groundwater Environmental Goals. Bores in this area include D15, D16A, D17, and D18. D16 was replaced by D16A, which was sampled from December 2022; however, the two represent different data sets, therefore discussion of historical concentrations at D16 relative to D16A is not provided.

Groundwater monitoring data for the current reporting period is presented in **Appendix H** and summarised in **Figure 8c**. Graphs of concentrations over the last 10 years are provided in **Appendix K**.

6.5.4.1 FIELD PARAMETERS

Field parameters monitored at these bores, which are situated within the MPAR and mine spoil disturbance area, are summarised as follows for the reporting period:

- pH values were consistently more acidic than the Environmental Goal range in groundwater from D15 and D17 although values were generally stable ranging between 5.43 and 6.58.

pH values at D18 and D16A were generally stable, ranging between 6.68 and 6.81, and within the Environmental Goal range (6.5 to 8.0); and

- EC values obtained from field measurements were 660 µS/cm to 2,220 µS/cm, and generally consistent with laboratory TDS concentrations of 352 mg/L to 1,760 mg/L. EC and TDS were above the Environmental Goals for groundwater (2,200 µS/cm for EC and 1,500 mg/L for TDS) in groundwater from bore D15 for all four sampling events and from D17 for three out of the four sampling events. Values in groundwater from the other bores within this area were below the Environmental Goals.

Graphs of concentrations over the last 10 years for bores within this area show concentrations of TDS in groundwater from bores D15 and D17 increased over time and were above the groundwater Environmental Goal from at least mid-2013. However, since mid-2021, TDS concentrations in these bores have declined, with concentrations in groundwater decreasing below the Environmental Goal from late 2022 (D15) and from March 2024 (D17)

Concentrations of TDS in groundwater from bore D18 appear stable and remained consistently below the Environmental Goal for groundwater. During the current reporting period, TDS concentrations in groundwater from bore D16A were stable and consistently below the Environmental Goal.

6.5.4.2 MAJOR AND MINOR IONS

Throughout the reporting period, concentrations of major and minor ions including chloride, sulfate and fluoride were reported for groundwater from bores D15, D17, D16A and D18. Fluoride concentrations were consistently below the Environmental Goal in groundwater from all four bores. Concentrations of sulfate were generally higher in groundwater from bores D15 and D17. However, only sulfate concentrations in groundwater from bore D17 from September 2023 were above the Environmental Goal during this reporting period, declining to below the Environmental Goal in this reporting period for the first time since 2014. For this reporting period, and consistent with historical data, chloride concentrations were below the Environmental Goal in groundwater from all the bores in this area.

Graphs of concentrations over the last 10 years for bores within this area show concentrations of chloride and sulfate in groundwater that are consistent with the trends observed from TDS concentrations. Concentrations of chloride and sulfate increased in groundwater from bores D15 and D17 from about 2014 to 2019 followed by a decreasing trend, which continued throughout the current reporting period, with sulfate reported below the Environmental Goal from September 2022 at bore D15 and September 2023 at bore D17, and chloride concentrations consistently below the Environmental Goal. Chloride and sulfate concentrations at D18 have remained stable and low. During the current reporting period, chloride and sulfate concentrations in groundwater from bore D16A were stable and consistently below the Environmental Goals.

6.5.4.3 METALS

Throughout the reporting period arsenic (total) (D15), barium (total) (D18), boron (total) (D15), chromium (total) (D15, D17), copper (total), iron (total and filtered), lead (total) (D15, D16A, D17), mercury (total) (D17), molybdenum (total) (D15, D16A, D17) and selenium (total) (D17) were identified on one or more occasions at concentrations above the

Environmental Goals in groundwater from bores D15, D16A, D17 and/or D18. Results are presented in **Appendix H**, and summarised in **Figure 8c**.

LORs for speciated chromium (hexavalent and trivalent) and silver (total) were above the Environmental Goals for one or more sample events. Commentary about the raised LORs is included in **Section 6.5.2.3**.

Graphs of concentrations over the last 10 years for bores within this area show that the concentration trends for manganese (total and filtered) and nickel (total and filtered) generally follow similar decreasing trends to those noted for TDS, chloride and sulfate. These decreasing trends continued into the current reporting period with concentrations remaining below the Environmental Goals.

Boron (total and filtered) concentrations appear to have remained relatively stable throughout the last 10 years, fluctuating within a similar concentration range at each monitoring bore in this area, particularly since 2020 or before. One boron (total) concentration in groundwater from D15 was marginally above but within the same magnitude as the Environmental Goal for the November 2023 sampling round; however concentrations were below the Environmental Goal in 2024. Concentrations of boron (total and filtered) in groundwater from D17, D16A and D18 in this area remained below the Environmental Goal for groundwater throughout the reporting period, consistent with historical data.

Although concentrations of manganese in D15 and D17 have varied, the data indicates an overall decreasing trend since 2019 which continued into the current reporting period. D16A and D18 have consistently reported much lower manganese (total and filtered) concentrations (< 400 µg/L) over the past 10 years or since installation. Manganese (total and filtered) concentrations in groundwater from all bores in this area remained below the Environmental Goal for groundwater throughout the historical dataset and the reporting period.

Concentrations of nickel (total and filtered) appear stable, except in groundwater from bore D15, since at least 2014. Concentrations in groundwater from bore D15 were higher than the other bores in this area and were above the Environmental Goal from late 2017 until early 2022 but have since continued to decline, remaining below the Environmental Goal since 2021. Concentrations of nickel (total and filtered) in groundwater from D17 and D18 have remained generally stable since at least 2014 and consistently below the Environmental Goal for groundwater throughout the historical dataset and the reporting period. Nickel (total and filtered) concentrations in groundwater from bore D16A have remained below the Environmental Goal for since monitoring of this bore began in December 2022.

6.5.5 GROUNDWATER QUALITY ADJACENT TO MPAR – TO THE NORTH

Groundwater data obtained from groundwater bores MPGM4/D3, D106, and D107 adjacent and to the north of MPAR (cross gradient) is summarised with reference to the Environmental Goals for groundwater below.

6.5.5.1 GROUNDWATER MONITORING DATA FOR THE CURRENT REPORTING PERIOD IS PRESENTED IN **APPENDIX H** AND SUMMARISED IN **FIGURE 8A**. GRAPHS OF CONCENTRATIONS OVER THE LAST 10 YEARS ARE PROVIDED IN **APPENDIX K, K.1A** THROUGH **K.1I)**.FIELD PARAMETERS

Field parameters monitored at MPGM4/D3, D106, and D107 for the reporting period are summarised as follows:

- pH values were between 6.03 and 6.96, indicating slightly acidic groundwater conditions, and were generally more acidic than the Environmental Goal range for groundwater (6.5 to 8.0) throughout the reporting period; and
- EC values ranged from 461 µS/cm to 13,630 µS/cm and were generally consistent with laboratory TDS values (between 8,580 mg/L and 12,000 mg/L). EC and TDS values were consistently above the Environmental Goals for groundwater (2,200 µS/cm for EC and 1,500 mg/L for TDS) from D106 and D107. EC and TDS values from MPGM4/D3 were consistently reported below the Environmental Goals for groundwater.

TDS concentrations over the last 10 years from bore MPGM4/D3 have been stable and below the Environmental Goal for groundwater throughout the historical dataset, including the reporting period. This is consistent with data from up gradient (background) bores MPGM4/D4 and MPGM4/D5.

Graphs of concentrations since 2018 for bores D106 and D107 show higher and more variable TDS concentrations (between 6,000 and 14,600 mg/L) in groundwater. Concentrations have remained above the Environmental Goal since September 2018, when these bores were first sampled.

6.5.5.2 MAJOR AND MINOR IONS

Throughout the reporting period, concentrations of major and minor ions, including chloride, sulfate, and fluoride were reported for groundwater from MPGM4/D3, D106 and D107. Concentrations of these ions were higher in groundwater from bores D106 and D107 when compared to data from bore MPGM4/D3. Sulfate and chloride concentrations have consistently been above the Environmental Goals for groundwater from bores D106 and D107 since they were first sampled in 2018, while concentrations in groundwater from bore MPGM4/D3 have remained below the Environmental Goals for groundwater. Fluoride concentrations in groundwater from each of these bores were below the Environmental Goal for groundwater, noting that the LOR was raised to <2 mg/L, which is above the Environmental Goal of 1.5 mg/L, during the August 2023 sampling event for D106 and D107. The raised laboratory LOR above the Environmental Goal was related to sample matrix interference, as confirmed by EnergyAustralia.

Consistent with the TDS trend, chloride and sulfate concentrations in groundwater from bore MPGM4/D3 have been stable and below the Environmental Goals throughout the historical dataset. This is consistent with up gradient (background) bores MPGM4/D4 and MPGM4/D5.

6.5.5.3 ALSO CONSISTENT WITH THE TDS TRENDS, CHLORIDE AND SULFATE CONCENTRATIONS IN GROUNDWATER FROM BORES D107 AND D106 HAVE BEEN HIGHER THAN MPGM4/D3 AND HAVE REMAINED ABOVE THE ENVIRONMENTAL GOALS FOR GROUNDWATER SINCE SEPTEMBER 2018 WHEN THESE BORES WERE FIRST SAMPLED. CONCENTRATIONS OF SULFATE AND CHLORIDE MEASURED AT D106 AND D107 FLUCTUATE BETWEEN MONITORING EVENTS, ALTHOUGH THE RANGE OF CONCENTRATIONS IS GENERALLY CONSISTENT.METALS

Throughout the reporting period boron (total and filtered) (D106 and D107), chromium (total) (D106 and D107), copper (total) (D106), iron (total and filtered) (MPGM4/D3, D106, D107), lead (total) (D106 and D107), manganese (total and filtered) (D106 and D107), mercury (total) (D106 and D107), and nickel (total and filtered) (D106 and D107) were identified on one or more occasions at concentrations above the Environmental Goals in groundwater from bores MPGM4/D3, D106 and/or D107. Results are presented in **Appendix H**, and summarised in **Figure 8a**.

LORs for speciated chromium (hexavalent and trivalent) and silver (total) were above the Environmental Goals for one or more sampling events. Commentary about the raised LORs is included in **Section 6.5.2.3**.

Similar to TDS and major and minor ions, metal concentrations in groundwater from bore MPGM4/D3, located further upstream, adjacent to MPAR, were generally lower than concentrations in groundwater from bores D106 and D107. Bores D106 and D107 accounted for the majority of monitoring events with concentrations above the Environmental Goals.

Graphs of concentrations over the last 10 years for bores MPGM4/D3, D106 and D107 show that trends in concentrations of boron (total and filtered), manganese (total and filtered), and nickel (total and filtered) are generally consistent with those for TDS. Concentrations in groundwater from bore MPGM4/D3 were stable and consistently below the Environmental Goals whereas concentrations of boron (total and filtered), nickel (total and filtered) and manganese (total and filtered) in groundwater from bores D106 and D107 were above the Environmental Goals. This is consistent with upgradient (background) bores MPGM4/D4 and MPGM4/D5.

Graphs of concentrations for bores D107 and D106 show concentrations of boron (total and filtered), manganese (total and filtered), and nickel (total and filtered) in groundwater have been above the Environmental Goals for groundwater since the bores were first sampled in 2018. During the current reporting period, concentrations in groundwater from bores D106 and D107 period fluctuated but were generally within the historical range for manganese (total and filtered) and indicated potentially decreasing trends for manganese and nickel in groundwater from D107. The highest boron concentrations since 2018 were measured in groundwater from D107 in August 2023 and from D106 in May 2024.

6.5.6 GROUNDWATER QUALITY ADJACENT TO MPAR AND DOWNGRADIENT

Groundwater data obtained from groundwater bores MPGM4/D1, MPGM4/D9, D102, D105, MPGM4/D8, D104, D103, and MPGM4/D2 located adjacent to and hydraulically downgradient of the MPAR is summarised below, with reference to the Environmental Goals for groundwater.

Groundwater monitoring data for the current reporting period is presented in **Appendix H** and summarised in **Figure 8d**. Graphs of concentrations over the last 10 years are provided in **Appendix K**.

6.5.6.1 FIELD PARAMETERS

Field parameters monitored at bores adjacent and to the north of the MPAR (cross gradient) for the reporting period are summarised as follows:

- pH values measured from the bores in this area were between 5.29 and 6.26, indicating slightly acidic groundwater conditions, and were consistently more acidic than the Environmental Goal range for groundwater (6.5 to 8.0) throughout the reporting period; and
- EC values obtained from field measurements ranged from 313 µS/cm to 10,530 µS/cm and were generally consistent with laboratory TDS values that were between 189 mg/L and 9,840 mg/L. EC and TDS values were consistently above the Environmental Goals for groundwater (2,200 µS/cm for EC and 1,500 mg/L for TDS) in groundwater from bores D1, D102, D103, D9. However, TDS values in groundwater from bores D104, D2, and D8 remained below the Environmental Goals throughout the reporting period.

Concentrations graphs for the last 10 years show that TDS concentrations in groundwater from D1, D102, and D9 have increased over time, with concentrations from MPGM4/D1, MPGM4/D9 and MPGM4/D2 reported above the Environmental Goal since before 2014. TDS concentrations in groundwater from MPGM4/D1 increased consistently from before 2014 to 2018, and again from 2019 to 2021. Since 2021 TDS concentrations from MPGM4/D1 have been relatively stable but remain above the Environmental Goal for groundwater, except for the TDS concentration from November 2023, which was below the Environmental Goals and a historical low, returning to the historical range from March 2024. TDS concentrations in groundwater from MPGM4/D9 increased from 2018 through 2020; since then, concentrations have been relatively stable but remain above the Environmental Goal. Concentrations in groundwater from MPGM4/D2 have declined to below the Environmental Goals since early 2020; since then concentrations have fluctuated but have remained below the Environmental Goals.

Concentration vs time graphs for bores D102, D103 and D105 show the concentrations of TDS in groundwater from these bores have remained above the Environmental Goal for groundwater since September 2018 when these bores were first sampled. Concentrations have fluctuated over time, but a slight decreasing trend is noted for TDS in groundwater from D103 and D105, although they remain above the Environmental Goal. Concentration graphs for groundwater from bores D104 and MPGM4/D8 show fluctuating TDS concentrations over time that have remained consistently below the Environmental Goal throughout the historical dataset and the current reporting period.

6.5.6.2 MAJOR AND MINOR IONS

Throughout the reporting period, concentrations of chloride and sulfate were above the Environmental Goals for groundwater in groundwater from bores MPGM4/D1, D102, and MPGM4/D9 (chloride), and from bores MPGM4/D1, MPGM4/D9, D102, D103, and D105 (sulfate). Fluoride concentrations in groundwater from these bores were consistently below the Environmental Goal for groundwater.

Concentrations of major and minor ions were lower and below the Environmental Goals in groundwater from bores MPGM4/D2, MPGM4/D8 and D104 when compared to concentrations in groundwater from bores MPGM4/D1, MPGM4/D9, D102, D103 and D105. The difference in groundwater quality between these locations is considered likely to be due to the spatial distribution of these locations relative to the MPAR and related groundwater flow paths.

Sulfate was reported at concentrations above the Environmental Goal throughout the reporting period from groundwater from bores MPGM4/D1, MPGM4/D9, D102, D103 and D105. Sulfate concentrations in groundwater from bores MPGM4/D2, MPGM4/D8 and D104 remained below the Environmental Goal during the reporting period.

Chloride was reported at concentrations that were consistently above the Environmental Goal in groundwater from bores D102 and MPGM4/D9, with three out of the four sampling events reporting chloride above the Environmental Goal at D1. Chloride concentrations in groundwater from bores MPGM4/D2, MPGM4/D8, D103, D104 and D105 remained below the Environmental Goal throughout the reporting period.

Concentrations of chloride and sulfate in groundwater over the last 10 years are consistent with the trends exhibited by TDS concentrations (**Appendix K**). Concentrations of selected major and minor ions from D1, D2, D102 and D9 increased until mid-2020 then stabilised and slightly decreased to the end of this reporting period. Chloride concentrations in groundwater from D103 and D105 have remained below the Environmental Goal but increased towards the end of the reporting period.

Sulfate has consistently been reported above the Environmental Goals in groundwater from MPGM4/D1 and MPGM4/D9 since before 2013, while chloride has consistently been reported at concentrations above the Environmental Goals for groundwater from MPGM4/D1 since early 2015 and MPGM4/D9 since August 2018.

Chloride concentrations in groundwater from MPGM4/D2 generally increased, although concentrations fluctuated, until January 2020 when concentrations started to decline. Similar trends are apparent in sulfate concentrations in groundwater from MPGM4/D2 although sulfate concentrations have increased above the Environmental Goal since 2014 and started to decrease below the Environmental Goal from January 2020. Sulfate and chloride concentrations have been stable in groundwater from MPGM4/D2 since decreasing in early 2020 and remained below the Environmental Goals for groundwater throughout the reporting period.

Sulfate concentrations over the last 10 years in groundwater from bore D103 have generally declined; however, a slight increase is noted during this reporting period although concentrations remained within the historical range. Concentrations of sulfate at D103 have remained above the Environmental Goal since September 2018 when the bore was first sampled.

Concentrations of chloride in groundwater from D103 have declined since monitoring commenced and have remained below the Environmental Goal for groundwater since October 2019, although a slight increase in chloride concentrations at D103 is noted during the current reporting period.

Sulfate concentrations in groundwater from D105 appear to be relatively stable and have remained above the Environmental Goal for groundwater. Chloride concentrations in groundwater from D105 also appear to be relatively stable and have remained below the Environmental Goal for groundwater.

Graphs of concentrations over the last 10 years for bores D104 and MPGM4/D8 show generally stable chloride and sulfate concentrations over time, with concentrations of these analytes consistently remaining below the Environmental Goals for groundwater throughout the historical dataset and current reporting period.

6.5.6.3 METALS

Throughout the reporting period boron (total and filtered) (D1, D102, D103, D105, D2 D9), chromium (total) (D105), copper (total) (D104, D2, D8), copper (filtered) (D1), iron (total and filtered) (D1, D102, D103, D104, D105, D2, D9), lead (total) (D2), manganese (total and filtered) (D1, D102, D103, D105, D9) , and nickel (total and filtered) (D1, D102, D103, D105, D9) were identified on one or more occasions at concentrations above the relevant Environmental Goals for groundwater at the bores located downgradient of MPAR. Results are presented in **Appendix H** and summarised in **Figure 8d**.

LORs for speciated chromium (hexavalent and trivalent) and silver (total) were above the Environmental Goals for one or more sampling events. Commentary about the raised LORs is included in **Section 6.5.2.3**.

Concentrations of metals were generally lower in groundwater from bores MPGM4/D2, MPGM4/D8, D104, and D105 with concentrations higher in groundwater from bores MPGM4/D1, MPGM4/D9, D102, and D103.

Graphs of concentrations over the last 10 years show concentrations of boron (total and filtered), manganese (total and filtered) and nickel (total and filtered) are generally consistent with the trends exhibited by the TDS values. Concentrations of nickel (total and filtered), manganese (total and filtered) and boron (total and filtered) have remained generally stable and below the Environmental Goals in groundwater from MPGM4/D8 and D104. In groundwater from MPGM4/D2, concentrations previously fluctuated below the Environmental Goal for groundwater, with the exception on boron (total and filtered) which increased above the Environmental Goal for the July 2023 and October 2023 reporting period but then have decreased below the Environmental Goals towards the end of the reporting period. Metal concentrations for MPGM4/D2 have decreased since early 2020 and have since been stable and below the Environmental Goals for manganese (total and filtered) and nickel (total), noting that nickel (filtered) has only been sampled since early 2021.

Graphs of concentrations over the last 10 years show that concentrations of boron (total and filtered), manganese (total and filtered) and nickel (total and filtered) in groundwater have increased over time at MPGM4/D1 and MPGM4/D9 to concentrations that remain above the Environmental Goals for groundwater. Concentrations decreased towards the end of 2022, and then increased from September to November 2022 until the end of this reporting period, except for manganese which generally decreased during the reporting period. It is noted that boron (total and filtered), manganese (total and filtered) and nickel (total and filtered) from D1 reported a historical low in November 2023, with concentrations below the Environmental Goal and of similar magnitude to D104, MPGM4/D2, and MPGM4/D8. Subsequent reported concentrations were more similar to previous values.

Graphs of concentrations in groundwater from bores D102, D103 and D105 show concentrations of boron (total and filtered), manganese (total and filtered), and nickel (total and filtered) have generally been decreasing since September 2018, when these bores were first sampled. The nickel (total) concentrations in groundwater from bore D105 in October 2023 was below the Environmental Goal for groundwater, consistent with the previous reporting period, and was below the Environmental Goal again in May 2024 (lowest value reported). For boron (total and filtered), a historical high concentration was reported for groundwater from D9 in November 2023, with concentrations decreasing to within the historical range from the March 2024 sampling event although concentrations continued to increase until the end of the reporting period.

6.5.7 BRINE WASTE POND LEAK DETECTION BORES

Water quality results from monitoring bores MPGM5/D5 and MPGM5/D6, adjacent to the Brine Waste Holding Ponds (to the west and upgradient of the MPAR, but downgradient of the Brine Waste Holding Ponds) are summarised with reference to the Environmental Goals 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. Therefore, the presence of water at these locations is not inferred to reflect the regional groundwater table.

Water monitoring data for the current reporting period is presented in **Appendix H** and summarised in **Figure 8e**. Graphs of concentrations over the last 10 years are provided in **Appendix K**.

6.5.7.1 FIELD PARAMETERS

Field parameters monitored at bores adjacent to the Brine Waste Holding Ponds for the reporting period are summarised as follows:

- pH values were 6.56 to 7.19, with most values indicating slightly acidic groundwater conditions throughout the reporting period. All pH values were within the Environmental Goal range (6.5 to 8.0); and
- EC values obtained from field measurements at MPGM5/D5 and MPGM5/D6 were between 10,070 µS/cm and 42,500 µS/cm, and this was generally consistent with laboratory TDS values reported at 7,870 mg/L to 39,600 mg/L. EC and TDS values were consistently above the Environmental Goals (2,200 µS/cm for EC and 1,500 mg/L for TDS) for groundwater at bores MPGM5/D5 and MPGM5/D6.

Graphs of concentrations over the last 10 years show that TDS had remained below or within the range of the Environmental Goals at both bores until approximately October 2019, when a leak was detected in the liner of Brine Waste Bond A, which is closest to MPGM5/D5. The 2019 leak was repaired during the 2019/20 reporting period and notified to the EPA (ERM, 2020a).

Since the repairs, TDS concentrations in water from MPGM5/D5 and MPGM5/D6 have declined, with concentrations at MPGM5/D6 below the Environmental Goal. However, TDS concentrations at MPGM5/D5 have increased since February 2021 and MPGM5/D6 since January 2023, with concentrations above the Environmental Goal in water from both bores throughout the reporting period. During the reporting period, TDS concentrations for MPGM5/D6 spiked in October 2023 but then returned to within the historical range in April 2024. The recently increasing TDS concentrations are considered to be related to the rising groundwater elevations remobilising residual impact related to the 2019 leak. This is discussed further in **Section 6.5.13**.

6.5.7.2 MAJOR AND MINOR IONS

Concentrations of major and minor ions, including chloride and sulfate reported concentrations above the Environmental Goals in water from bores MPGM5/D5 and MPGM5/D6 throughout the reporting period. Chloride and sulfate concentrations from MPGM5/D6 increased to concentrations above the Environmental Goals from early 2022.

During the current reporting period, sulfate concentrations were generally within the post 2019 historic range for MPGM5/D5, while MPGM5/D6 reported sulfate concentrations above the historic range in October 2023 but returned to concentrations within the historic range from January 2024.

Chloride concentrations in MPGM5/D5 increased in the beginning of the reporting period with concentrations similar to the concentrations associated with the 2019 leak recorded in July 2023, from then concentrations have decreased to the end of the reporting period though remained above the concentrations from the previous reporting period (2022/23). Similar to sulfate, MPGM5/D6 reported chloride concentrations above the historic range in October 2023 with concentrations returned to within the historic range for the January 2024 and April 2024 sampling events.

Similar to TDS, the recently increasing sulfate and chloride concentrations are considered to be related to the rising water levels remobilising residual impact related to the 2019 leak. This is discussed further in **Section 6.5.13**.

The LOR (between <2 mg/L and <5 mg/L) for fluoride was above the Environmental Goal (1.5 mg/L) at both MPGM5/D5 and MPGM5/D6 for several events during the reporting period.

6.5.7.3 METALS

Throughout the reporting period arsenic (total) (MPGM5/D6), boron (total) (MPGM5/D5, MPGM5/D6), cadmium (total) (MPGM5/D5, MPGM5/D6), chromium (total) (MPGM5/D6), copper (total) (MPGM5/D5, MPGM5/D6), iron (total) (MPGM5/D5, MPGM5/D6), lead (total) (MPGM5/D5, MPGM5/D6), manganese (total and filtered) (MPGM5/D5, MPGM5/D6), mercury (total) (MPGM5/D5, MPGM5/D6), molybdenum (total) (MPGM5/D5, MPGM5/D6), nickel (total and filtered) (MPGM5/D5, MPGM5/D6) and zinc (total and filtered) (MPGM5/D5) were identified on one or more occasions at concentrations above the relevant Environmental Goals for water from bores MPGM5/D5 and MPGM5/D6. Results are presented in **Appendix H** and summarised in **Figure 8e**.

Chromium (total), speciated chromium (hexavalent and trivalent), copper (total and filtered) and silver (total) had LORs above the Environmental Goals for one or more sample events.

The raised laboratory LOR above the Environmental Goal for chromium and speciated chromium was due to previous laboratory methods being unable to detect concentrations as low as the Environmental Goal, as confirmed by EnergyAustralia. The raised laboratory LORs above the Environmental Goal for copper and silver were related to sample matrix interference, as confirmed by EnergyAustralia

Bore MPGM5/D5 accounts for the majority of exceedances from the leak detection bores, with concentrations generally higher than MPGM5/D6, apart from iron (total and filtered), which had higher concentrations from MPGM5/D6 during the reporting period.

Graphs of concentrations over the last 10 years show similar trends for boron, manganese and nickel as for TDS, i.e., a spike in concentrations in 2019 at both bores, with subsequently decreasing concentrations until early 2021. Concentrations of these analytes have fluctuated and appeared to have increased slightly at MPGM5/D5 and MPGM5/D6 until mid to late 2021 but seem to have generally stabilised in the current reporting period. However, total nickel concentrations at MPGM5/D5 increased to their highest historical value in September 2023, declining by almost an order of magnitude by April 2024. The fluctuating concentrations of select metals is considered to be related to the rising groundwater elevations remobilising residual impact related to the 2019 leak. This is discussed further in **Section 6.5.13**.Summary.

6.5.8 GROUNDWATER QUALITY UPGRADIENT OF MPAR (BACKGROUND)

Acidic groundwater and concentrations of metals including arsenic (total and filtered), iron (total and filtered), lead (total) and manganese (total and filtered) elevated above the Environmental Goals were identified in groundwater from background bores MPGM4/D4 and MPGM4/D5. As these bores are located up hydraulic gradient, and away from the MPAR, the reported results are not considered to be related to the Project activities.

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 metals concentrations are likely associated with this oxidation and acidification mobilising metals into groundwater. Graphs of concentrations over the last 10 years presented in **Appendix K** for key analytes in groundwater including TDS, chloride, sulfate, boron (total and filtered), manganese (total and filtered) and nickel (total and filtered) show that the concentrations of these analytes have remained relatively stable in this area historically, as well as over the reporting period, and consistent with the representation of background conditions.

6.5.9 GROUNDWATER QUALITY WITHIN MPAR AND THE MINE DISTURBANCE AREA EAST OF MPAR

pH values in groundwater both within and east of the MPAR were typically below (more acidic than) the Environmental Goal for groundwater. 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. On this basis, the pH of groundwater in this area will continue to be monitored, consistent with the WMP, but is not discussed further.

Elevated EC and TDS values as well as concentrations of sulfate, chloride (D10) and metals arsenic (total), boron (total and filtered), chromium (D113, D19) (total), copper (total), iron (total and filtered), lead (total) (D10, D19), manganese (total and filtered), molybdenum (total) (D10), and nickel (total and filtered) were identified at concentrations at or above the Environmental Goals in groundwater from bores within the MPAR and the mine disturbance area to the east (D10, D19 and D113).

Concentrations of iron (total and filtered), lead (total) and manganese (total and filtered) in groundwater from the bores at and downgradient of the MPAR were 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 potentially for D19 from June 2024, which is an order of magnitude above MPGM4/D4.

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).

In consideration of the brine composition (refer to Section 2.3 and **Appendix D**), which also contains elevated concentrations of these constituents, groundwater in this area has been influenced by leaching of BCA placed in the MPAR to the underlying water table. The leaching of constituents from the BCA placement area to the underlying groundwater was assessed in the completed independent investigation.

During this reporting period concentrations of TDS, chloride, sulfate, boron (total and filtered), manganese (total and filtered) and nickel (total and filtered) concentrations in groundwater from D10, D19 and D113 have increased, although concentrations remained within the historical range. This is thought to be a return to the previous concentrations, after the higher-than-average rainfall experienced 2021 and 2022.

6.5.10 GROUNDWATER QUALITY WITHIN MINE DISTURBANCE AREA SOUTH AND SOUTH-EAST OF MPAR

Concentrations of analytes including sulfate, chloride and metals were typically lower in groundwater from D18 and D16A than in the surrounding bores in this area (D15 and D17). D18 results were also lower than when compared to background concentrations in groundwater from bores MPGM4/D4 and MPGM4/D5. D18 also had barium (total) concentrations an order of magnitude above the surrounding bores in the area.

Based on this information, the integrity of bore D18 may have been compromised, allowing fresh water to enter the bore from the surface or may be directly connected through a mine void or fill to surface water. Groundwater elevations in bore D18 have historically been more variable than in nearby bores, with more rapid responses to rainfall. During this reporting period, D18 reported a significant drop (6 m) in groundwater elevation during the March 2024 sampling event. Additionally, groundwater elevation measured from D18 was not consistent with trends in the surrounding bores during the reporting period. Based on this information, water quality in bore D18 is not considered to represent groundwater quality in the area.

Elevated concentrations of iron (total and filtered) from groundwater bores within this area were consistent with / slightly lower than those reported in groundwater from background bores MPGM4/D4 and MPGM4/D5, except at D18. These iron (total and filtered) concentrations, which were above the Environmental Goal, are considered to be consistent with background groundwater conditions.

Sulfate concentrations were slightly higher in groundwater from bores D15 and D17 than in the background bores MPGM4/D4 and MPGM4/D5. Concentrations of EC, TDS and sulfate generally decreased to below the Environmental Goals in groundwater from D15 and D17, except for one sampling event (D17, in September 2023). Metal concentrations above the Environmental Goals, apart from iron (total and filtered), were mostly recorded from D15. Concentrations of arsenic (total), boron (total), chromium (total), copper (total), iron (total and filtered), lead (total), and molybdenum (total) were above the Environmental Goals in groundwater from bore D15 on one or more occasions during the reporting period.

Concentrations of target analytes in groundwater from bore D15 that exceeded Environmental Goals are considered likely to have been influenced by activities at the MPAR. Bore D15 appears to be 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. The seepage of constituents from the BCA placement area to underlying and adjacent groundwater has been assessed as part of the independent investigation.

6.5.11 GROUNDWATER QUALITY ADJACENT TO MPAR – TO THE NORTH

Groundwater quality at bore D3, which is the furthest up hydraulic gradient of the bores adjacent to MPAR was similar to the background groundwater conditions identified at background bores MPGM4/D4 and MPGM4/D5. Iron (total and filtered) concentrations at D3 were within an order of magnitude of concentrations in the background bores (MPGM4/D4 and MPGM4/D5) and, unlike D106 and D107, concentrations of chloride, sulfate, boron (total and filtered) and nickel (total and filtered) remained below the Environmental Goals for groundwater.

Concentrations of EC, pH, TDS, chloride, sulfate, boron (total and filtered) (D106 and D107), chromium (total) (D106 and D107), copper (total) (D106), iron (total and filtered) (MPGM4/D3, D106, D107), lead (total) (D106 and D107), manganese (total and filtered) (D106 and D107), mercury (total) (D106 and D107), and nickel (total and filtered) (D106 and D107) were above the Environmental Goals in groundwater from bores D106 and D107, located to the north-east of the MPAR. Iron and a component of manganese 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, in which concentrations were a similar order of magnitude. 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 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 and in groundwater beneath and immediately downgradient of the MPAR. Therefore, concentrations of analytes in groundwater from bores D106 and D107 are considered to be related to 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 investigation.

6.5.12 GROUNDWATER QUALITY ADJACENT TO MPAR AND DOWNGRADIENT

Some exceedances of the Environmental Goals for iron were reported in groundwater from bores D2 and D104. These concentrations are considered likely to be related to the background water quality in the area based on higher iron concentrations in groundwater from the background bores MPGM4/D4 and MPGM4/D5.

Concentrations of TDS, EC, sulfate, chloride, boron (total and filtered), iron (total and filtered), nickel (total and filtered) and/or manganese (total and filtered) that were above the Environmental Goals were reported in groundwater from bores MPGM4/D1, MPGM4/D9, D102, D103, and D105, located down hydraulic gradient of the MPAR.

pH values were also generally more acidic than the Environmental Goal range for groundwater. The elevated iron and manganese concentrations and the acidic pH values are considered to represent background groundwater conditions in the area.

The concentrations of EC and TDS, chloride, sulfate, boron (total and filtered) and nickel (total and filtered) that were above the Environmental Goals 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. This was considered as part of the independent investigation.

The concentrations of these key analytes [TDS, chloride, sulfate, boron (total and filtered), manganese (total and filtered), and nickel (total and filtered)] in groundwater from MPGM4/D2 during the current reporting period fluctuate slightly, varying due to seasonal influences with concentrations having increased towards the later quarter of the year (October sampling event) over the past two years. Despite seasonal trends, concentrations have remained within the historical range and appear generally stable.

Except for boron (total and filtered), iron (total and filtered), and pH (consistently), copper (total) and lead (total) on several occasions, the concentrations of key analytes were at or below the Environmental Goal for MPGM4/D2 during the current reporting period. Given the location and the hydraulic setting of the area, this bore is considered to be representative of background groundwater conditions in the area.

Concentrations of chromium (total) (D105), and copper (total and filtered) in groundwater from bores D1, D102, D103, D104, D105 and MPGM4/D2 above the Environmental Goals continued to vary, consistent with previous reporting periods. However, concentrations of lead (total) and mercury (total) which were reported above the Environmental Goals in the last reporting period (2022/23) were below the Environmental Goals for groundwater throughout this reporting period (2023/24).

6.5.13 GROUNDWATER QUALITY ADJACENT TO BRINE WASTE HOLDING PONDS

Concentrations of EC, TDS, chloride, boron and nickel have continued to increase slightly in water from MPGM5/D5 for the current reporting period; however, except for nickel (total) concentrations in April 2024 and nickel (filtered) in October 2023, concentrations have remained below historical peak concentrations recorded in 2019 which were associated with the liner leak at Brine Waste Pond A. The leak was repaired during the 2019/20 period and notified to the EPA. The suspected reason for the continued increasing trend for these analytes is outlined below. Manganese and sulfate concentrations in MPGM5/D5 have stabilised since the end of the last reporting period (2022/23), with the trend continuing to the current reporting period (2023/24).

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 have been 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.

During this reporting period TDS, chloride, sulfate, and nickel (total and filtered) concentrations were above the historical range (including the spike associated with the 2019 leak) in the October 2023 sampling event for groundwater from MPGM5/D6. However, subsequent concentrations (January 2024 and April 2024) had declined back to within historical range. These higher concentrations in October 2023 are considered to be associated with rising water levels measured from MPGM5/D6 during the October 2023 sampling event, which were higher than in the previous year. As such a rise in groundwater levels could remobilise the elevated concentrations associated with the previously identified and repaired leak in the liner at Brine Waste Pond A.

Boron (total and filtered) concentrations in water from MPGM5/D6 have remained low and stable, below the Environmental Goal for groundwater, and manganese (total and filtered) concentrations have fluctuated around the Environmental Goal but appear generally stable.

7. EARLY WARNING ASSESSMENT

In addition to comparing results with the Environmental Goals for surface water and groundwater, an early warning assessment of the groundwater and surface water monitoring data is required as part of the WMP. This includes assessment of concentration plots through time, as described in **Sections 5.5** and **Section 6.5**, and statistical analysis where appropriate, as described below.

7.1 TREND ASSESSMENT APPROACH

Trends in target analyte concentrations in groundwater and surface water were assessed through a combination of graphical and statistical tools.

Firstly, graphs of concentrations over the last 10 years were created for target analyte concentrations for individual monitoring locations to evaluate temporal trends of solute concentrations. A qualitative description of historical concentrations over the last ten years (since 2014) and concentrations relative to Environmental Goals is provided in **Section 5** (for surface water) and **Section 6** (for groundwater). The graphs of concentrations over the last 10 years (July 2014 to June 2024) include the relevant Environmental Goals for comparison and are presented for surface water and groundwater in **Appendix J** and **Appendix K,** respectively.

7.2 STATISTICAL ASSESSMENT OF TRENDS

For both groundwater and surface water, the last two years of data (covering the last two reporting periods) were adopted for statistical assessment. Statistical tools were applied and included the use of the Mann-Kendall method (groundwater data) and linear regressions (surface water data) to evaluate trends in target analyte concentrations in groundwater and surface water from each individual monitoring location. Statistical trend plots from the statistical assessment for surface water and groundwater are presented in **Appendix L** and **Appendix M**, respectively. Further details of the ERM Mann-Kendall and the data assessment methodology are provided in **Appendix N**.

7.2.1 SURFACE WATER

Surface water statistical trend plots (linear regression graphs) comparing concentrations in surface water vs time were generated for each individual monitoring location for selected analytes reported and are included in **Appendix L**. Where surface water concentrations were reported below the laboratory LOR, a concentration of half the laboratory LOR was adopted for the statistical trend assessment.

Due to the seasonal variability within the dataset for surface water, linear regression graphs were identified as the most appropriate statistical assessment tool for the current two-year dataset. The outputs in **Appendix L** include data from the beginning of the 2022/23 reporting period and the linear regression trend assessment. For the purposes of this assessment a trend was considered a strong positive trend (increasing trend) when the R value was reported between 0.5 and 1, and a strong negative trend (decreasing trend) when the R value was reported between -0.5 and -1.

For the surface water trends, the R^2 value presented in the surface water statistical trend plots evaluates the scatter of the data points around a fitted regression line (presented as a solid blue line on the trend graphs). The R^2 value is reported between -1 and 1, where a larger R^2 value, or one that is closer to 1 or -1, indicates a stronger trend, with less variability.

Table 9 presents a summary from the statistical assessment of trends assessed for all locations and analytes reported above the relevant Environmental Goal during the reporting period.

7.2.2 GROUNDWATER

Groundwater statistical trend plots (concentrations in groundwater vs time) were generated for each individual monitoring location for selected analytes by the ERM Mann-Kendall application which was developed by ERM's Data Science and Visualisation Group to facilitate Mann-Kendall trend analysis and reporting. Plots are included in **Appendix M.**

The outputs include data from the beginning of the 2022/23 reporting period, and the statistical trend assessment. For the groundwater trends, the p-value presented in the trend plots indicates the level of statistical significance that can be attributed to the trend. A p-value of less than 0.05 relates to a statistical significance of 95%, i.e., if a trend has a p-value of less than 0.05 there is a 95% level of confidence that the data presents an actual trend and not a random distribution of data. The 95% confidence level has been adopted by ERM as an indicator of statistical significance in trends, and trends with these characteristics are shown in a solid black line; those that are not statistically significant do not include a solid black line.

Where no p-value is provided on the graphical outputs, a sufficient number of data points were not available to evaluate the significance of trends through the Mann-Kendall test. Concentrations both above and below the LOR and with respect to the relevant adopted background concentration (where available) are shown.

A minimum of four data points above the LOR and a threshold of 50% of data points above the LOR was set for the Mann-Kendall Analysis. Parameters of the analysis are detailed in **Appendix N.**

Further details on the Mann-Kendall procedure are presented in the Western Australia Department of Environment's guidance document entitled *Use of Monitored Natural Attenuation for Groundwater Remediation* (2004).

TABLE 9: SUMMARY OF STATISTICAL ASSESSMENT FOR TARGET ANALYTES

Monitoring Location	As	B	Cd*	Cl	Cr*	Cu	F	Fe	Pb*	Mn	Hg*	Mo*	Ni	Se*	SO_4	Zn	TDS	EC
Surface Water																		
LMP01	NT	Up	Up	NT	NT	NT	Up	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
NC01	NT	NT	Down	NT	NT	NT	Up	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SW_C	NT	NT	NT	NT	NT	NT	Up	NT	NT	Up	NT	NT	NT	NT	Up	NT	Up	Up
SW_E	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	Down	NT	NT	NT	Up
WX22	NT	Up	NT	NT	NT	NT	Up	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
SW_G	NT	Down	NT	NT	NT	NT	NT	NT	NT	NT	NT	Up	NT	NT	NT	NT	NT	NT
Groundwater																		
Within MPAR / mine disturbance area – east of MPAR																		
B5	Not sampled in current reporting period (blocked)																	
SW3-D	Not sampled in current reporting period (dry)																	
D23	Not sampled in current reporting period (destroyed)																	
D10	NT	NT	-	Up	-	-	-	NT	NT	NT	-	NT	NT	Up	Up	NT	Up	Up
D11	Not sampled in current reporting period (decommissioned)																	
D19	NT	NT	NT	Up	NT	-	-	NT	NT	NT	-	NT	NT	NT	Up	NT	NT	Up
D113	-	NT	NT	NT	Down	-	-	NT	NT	NT	-	-	NT	-	NT	NT	NT	NT
Within MPAR / mine disturbance area – south / southeast of MPAR																		
D15	NT	NT	NT	NT	NT	-	-	Down	NT	Down	-	NT	Down	NT	NT	Down	NT	NT
D16A	-	-	-	NT	NT	-	NT	NT	-	Up	-	Up	Up	-	NT	NT	NT	NT
D17	-	NT	-	Down	NT	-	NT	NT	NT	Down	-	NT	Down	NT	Down	NT	Down	Down
D18	NT	-	-	NT	NT	-	NT	NT	-	Up	-	Up	NT	Up	NT	Up	NT	NT

Monitoring Location	As	B	Cd*	Cl	Cr*	Cu	F	Fe	Pb*	Mn	Hg*	Mo*	Ni	Se*	SO_4	Zn	TDS	EC
Background and adjacent MPAR – north																		
MPGM4/D3	-	-	-	NT	-	-	-	NT	-	NT	-	-	Down	-	NT	NT	NT	NT
MPGM4/D4	NT	-	Down	NT	NT	NT	-	NT	Down	NT	-	-	NT	-	Down	NT	NT	NT
MPGM4/D5	NT	NT	-	Down	-	-	-	NT	-	NT	-	-	NT	NT	Down	Down	NT	NT
D106	-	NT	NT	NT	-	-	-	Down	NT	NT	-	-	NT	NT	NT	NT	NT	NT
D107	NT	NT	NT	NT	NT	-	-	NT	NT	NT	NT	-	NT	NT	NT	NT	Down	NT
Adjacent MPAR – downgradient																		
MPGM4/D1	NT	NT	-	NT	-	-	-	Down	-	Down	-	-	Down	NT	NT	Down	NT	NT
MPGM4/D2	-	NT	-	NT	-	NT	NT	NT	NT	NT	-	-	NT	Up	NT	Down	NT	NT
MPGM4/D8	-	-	-	Up	-	NT	-	-	-	NT	-	-	NT	-	NT	NT	NT	Up
MPGM4/D9	NT	NT	-	NT	-	-	-	NT	-	NT	-	-	NT	NT	NT	NT	NT	NT
D102	-	NT	-	NT	-	-	-	NT	-	NT	-	-	NT	NT	NT	NT	NT	NT
D103	NT	NT	-	NT	-	-	-	NT	-	NT	-	-	NT	-	NT	NT	NT	NT
D104	NT	NT	-	Up	-	-	-	NT	-	NT	-	NT	NT	-	NT	NT	NT	Up
D105	NT	NT	-	NT	-	-	-	NT	-	NT	-	-	NT	-	NT	NT	NT	Up
Brine waste pond leak detection bores																		
MPGM5/D5	-	NT	NT	Up	-	-	-	Up	NT	NT	NT	NT	NT	NT	Down	NT	NT	Up
MPGM5/D6	NT	-	NT	NT	-	Down	-	NT	NT	NT	-	Up	Up	Up	NT	NT	NT	NT

NT = *No statistically significant trend apparent*

Up = *Statistically significant increasing trend (upward black trend line presented on graph)*

Down = *Statistically significant decreasing trend (downward black trend line presented on graph)*

- = Mann Kendall trend analysis not conducted, insufficient data points with concentrations above the LOR (> 50% data points below LOR)
** = Specifies total metal concentrations for groundwater, where not specified metal concentrations for groundwater are reported as filtered. For surface water, all metal concentrations are reported as total.*

7.3 TREND ASSESSMENT SUMMARY

7.3.1 SURFACE WATER

Concentration data presented for the previous reporting period (2022/23) indicated increasing trends for boron, chloride, nickel, sulfate, TDS and EC in surface water from SW_E, WX22, and SW_G, while increasing trends for fluoride, iron, lead, molybdenum and TDS were indicated at NC01. The increasing trends identified during that reporting period were attributed to the above average rainfall experienced during the 2021/22 reporting period, which lowered the concentrations of monitored analytes in the surface water, then increased during the 2022/23 reporting period as the rainfall returned to average conditions.

Similar to last reporting period, in the 2023/24 reporting period several increasing trends were identified for the monitored analytes in surface water. An increasing trend was identified for fluoride at LMP01, NC01, SW_C, and WX22 over the past two years. No other increasing trends were identified for upstream location (LMP01) and midstream location (NC01). Increasing trends were identified for manganese, sulfate, TDS, and EC at midstream location SW_C. An increasing trend was identified for EC at SW_E together with a decreasing trend for selenium (however, the decreasing trend for selenium at SW_E is likely attributed to the raised LOR from July 2022 to September 2022). At downstream location WX22, an increasing trend was identified for boron. An increasing trend for Molybdenum was identified at SW_G.

Above average rainfall conditions were experienced in 2021/22 (1,191.4 mm); since then rainfall has decreased, continuing into the current reporting period. The decrease in rainfall over this reporting period, particularly from July 2023 to October 2023, is considered to have contributed to the increasing trends identified by the linear regression trend assessment. Concentrations of the monitored analytes have generally remained below Environmental Goals, except for major and minor ions and metals (boron, copper, chromium, iron, lead, manganese, molybdenum and nickel) from SW_E from October 2023 to December 2023 and again in March 2024. Of these, concentrations of chromium, copper, iron and molybdenum were similar to those between the upstream location (LMP01) and midstream/downstream locations and, as such, are considered to be representative of background conditions. These higher concentrations are considered to have resulted from changes in the amount of surface water flow relative to groundwater inflows to Wangcol Creek as rainfall has varied; however, the increase in TDS concentrations in upgradient (LMP01) surface water monitoring location indicates some potential contribution from upstream / background sources.

7.3.2 GROUNDWATER

For bores background / upgradient to MPAR, no increasing trends were identified from the groundwater data collected over the two years (i.e. 2022/23 and 2023/24). Statistically significant decreasing trends were identified for cadmium (total), chloride, iron, lead (total), nickel, sulfate, zinc and TDS. It is noted that during the previous reporting period (2022/23), increasing trends were identified for chloride, copper, iron, nickel and zinc in groundwater from the bores background to MPAR. These bores are hydraulically upgradient of MPAR and concentrations are considered to represent background conditions, unrelated to site activities.

Within MPAR / mine disturbance area east of MPAR, increasing trends were reported for chloride, selenium, sulfate, TDS and EC. A decreasing trend was reported for chromium (total) in groundwater from bore D113. This is consistent with the overall trends identified during the previous reporting period (2022/23), with D10 and D19 reporting increasing trends and only D113 reporting decreasing trends.

For the bores within MPAR / mine disturbance area south / south-east of the MPAR, D15 and D17 reported only decreasing trends, with D15 reporting a decreasing trend for fluoride, manganese, nickel and zinc and D17 reporting a decreasing trend for chloride, manganese, nickel, sulfate, TDS and EC. D16A and D18 only reported increasing trends for the dataset, with increasing trends identified for manganese, molybdenum (total), nickel (D16A), selenium (total) (D18), and zinc (D18). D18 was the only bore in the dataset to report an increasing trend for zinc. During the previous reporting period (2022/23) no increasing trends were identified from this group of bores, noting that there was insufficient data from D16A to undertake the statistical analysis as monitoring at D16A commenced in December 2022.

Hydraulically downgradient of MPAR, increasing trends were identified for chloride (MPGM4/D8 and D104), selenium (total) (MPGM4/D2) and EC (MPGM4/D8, 104, 105). MPGM4/D1 reported a decreasing trend for iron, manganese, nickel and zinc. MPGM4/D2 also reported a decreasing trend for zinc. No statistically significant trends were identified for MPGM4/D9, D102 and D103. The previously increasing TDS concentrations at MPGM4/D1, MPGM4/D2, D102 and D105 were stable (i.e. no trend) in the current reporting period.

Within the brine waste pond leak detection bores, two decreasing trends were identified for copper (MPGM4/D6) and sulfate (MPGM4/D5). Three increasing trends were identified at MPGM4/D5 for chloride, iron, and EC. MPGM5/D6 also reported a total of three increasing trends, for molybdenum (total), nickel and selenium (total). **Section 6.5.13** includes a discussion of the previous data review in relation to the brine waste pond leak detection bores (ERM, 2022).

Elevated concentrations of the monitored analytes in groundwater from bores adjacent to and downgradient from the MPAR are considered to be from the leaching of the BCA placed in the MPAR, and subsequent transport of solutes within the regional groundwater. In this area, increasing trends were generally identified during the end of previous reporting period and have continued into the current reporting period. These increasing trends are considered to be indicative of concentrations returning to earlier conditions, before the higher-than-average rainfall experienced over the 2021/22 reporting period.

7.4 IMPLEMENTATION OF CONTINGENCY AND MITIGATION MEASURES

Where increasing trends have been identified, these have been recognised as triggers for action in accordance with the TARPs as presented in the Water Management Plan.

In the case of groundwater to the north, east and hydraulically downgradient of the MPAR, the completed independent groundwater investigation has identified controls to mitigate further leaching of BCA that has been placed in the MPAR.

Based on findings from the independent groundwater investigation, a modification application for the Mt Piper Consent is pending. The proposed modification to the Mt Piper Consent is intended to enable a mitigation strategy as the MPAR transitions to a decommissioned facility.

Planning for implementation of these controls at MPAR is currently underway.

8. CONCLUSIONS

Based on the review of the surface water and groundwater quality data for the Project obtained in accordance with the WMP for the 2023/2024 reporting period, it is considered that the objectives of the EMR have been met. The MPAR operation(s) were generally compliant with the relevant approval Conditions 44 and 45 of the Mt Piper Consent (DA80/10060). The following conclusions are drawn.

- Over this reporting period, concentrations of target analytes in surface water have been reported above the Environmental Goal for surface water at monitoring locations midstream (particularly SW_E) and downstream of MPAR. Elevated levels of key analytes including TDS, chloride, sulfate, boron, manganese and nickel are considered to be due to leaching of these analytes from the BCA placed in MPAR and subsequent interaction between groundwater and surface water within Wangcol Creek. During the reporting period concentrations in surface water were reported to have generally increased since the previous reporting period (2022/23), with several analytes (TDS, sulfate, and boron) reported above the historical range during the October / November 2023 or March 2024 sampling events. Concentrations of these COPCs subsequently declined to within historical ranges, as discussed in Section 5.5. The increasing trends identified are considered to reflect the drier conditions experienced during the reporting period where surface water flows were lower.
- Concentrations of several target analytes in groundwater were reported above the relevant Environmental Goals for groundwater at monitoring locations within and immediately downgradient to the east of the MPAR. Elevated levels of key analytes including chloride, sulfate, boron and nickel, are considered to be due to the leaching of these analytes from the BCA placed in MPAR and subsequent transport of solutes with the regional groundwater. During the current reporting period concentrations in groundwater from several bores increased, however they remained generally within historical ranges.
- Impacted groundwater is migrating from the vicinity of the MPAR toward the alignment of Wangcol Creek, as indicated by the groundwater quality results reported to the north at D106 and D107, to the east at MPGM4/D1, MPGM4/D9, and D102, and to a lesser extent at D105 and D103. These locations in particular have reported concentrations of target analytes in groundwater above the Environmental Goals for groundwater in areas downgradient of the MPAR. For this reporting period, increasing trends in target analytes were reported for a higher number of bores within MPAR / mine disturbance east of MPAR and bores adjacent and downgradient of MPAR than in 2022/23; however, decreasing trends of some of these analytes also identified in several bores. These changes in trends are considered to relate to return of drier conditions after the above average rainfall experienced in 2021/22, causing the concentrations to return to historical concentrations.
- Concentrations of key target 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 EPA. Groundwater conditions had improved at MPGM5/D5 and MPGM5/D6 toward pre-leak levels or below the Environmental Goals until early 2021. From early 2021, concentrations of key target analytes increased in water from MPGM5/D5. From early 2022, concentrations of key target analytes increased in water from MPGM5/D6. Concentrations from both MPGM5/D5 and MPGM5/D6 appear to have stabilised since early 2023, although during the current reporting period, chloride and nickel (total and filtered)

concentrations increased in water from MPGM5/D5 and MPGM5/D6, likely related to changing rainfall patterns. The suspected source of increasing concentrations in groundwater from MPGM5/D5 in 2021 and 2022 was reviewed by ERM (ERM, 2020b), with the following conclusions:

- The results did 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 shallower groundwater levels following higher rainfall, particularly in late 2021 and into 2022;
- The groundwater impacts associated with the original 2019 leak of brine from Waste Pond A are delineated downgradient of bore MPGM5/D5 based on the field survey of EC conducted by ERM in March 2022;
- Since the leak is considered to be associated with historic impacts in groundwater around Brine Waste Pond A and impacts to groundwater are localised (as indicated via the field survey), no further remediation, beyond the repair of the identified liner leak in 2019, is recommended as long as water quality data remains consistent or improves; and
- Monitoring of water levels and water quality in leak detection bore MPGM5/D5 will continue in accordance with the WMP.

Results of the groundwater and surface water monitoring program indicate that groundwater quality in the vicinity of the MPAR and the Brine Waste Ponds is influenced by Project activities. In portions of Wangcol Creek, surface water quality has historically been shown to be affected, primarily through the flow of groundwater into the creek during periods of low rainfall. The increasing trends identified within the downstream surface water monitoring points in mid-2023 are considered to reflect the drier conditions experienced during the reporting period during which surface water flows were lower. As such, the concentrations of the monitored analytes are returning to historical range / slightly higher for several analytes (TDS, sulfate and boron) after a period of lower concentrations due to the higher-than-average period of rainfall experienced in 2021/22. Where increasing trends have been identified, these have been recognised as triggers for action in accordance with the TARP. These actions are underway.

In the case of groundwater to the north, east and down hydraulic gradient of MPAR, and historically surface water, the independent groundwater investigation informed potential mitigation measures. Based on findings from the independent groundwater investigation, a modification application for the Mt Piper Consent is pending. The proposed modification to the Mt Piper Consent is intended to enable a mitigation strategy, as the MPAR transitions to a decommissioned facility.

Consistent with the 2019/20, 2020/21, and 2021/22 reporting periods, due to bore construction appearing to have been compromised, permanently blocked, or bores repeatedly being dry or inaccessible, it is recommended that monitoring of bores B5, D23 and SW3D be removed from the monitoring program, and these bores be decommissioned if damaged.

As presented in **Table 1**:, and consistent with the information presented in **Table A.1**, as at the end of the 2023/24 reporting period the operation was compliant with the relevant approval conditions, Conditions 44 and 45, of the Mt Piper Consent (DA80/10060).

9. STATEMENT OF LIMITATIONS

1. This report is based solely on the scope of work described in our proposal P0659049 dated 25/6/24 and confirmed via email on 5/7/24 (Scope of Work) and performed by Environmental Resources Management Australia Pty Ltd (ERM) for EnergyAustralia NSW Pty Ltd (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 July 2023 and September 2024 and is based on conditions encountered and information reviewed at the time of preparation. This 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 standard for 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;
   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 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 material 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 environmental 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 of 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 and 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 constructed as, legal advice.

10. REFERENCES

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10.2 GENERAL

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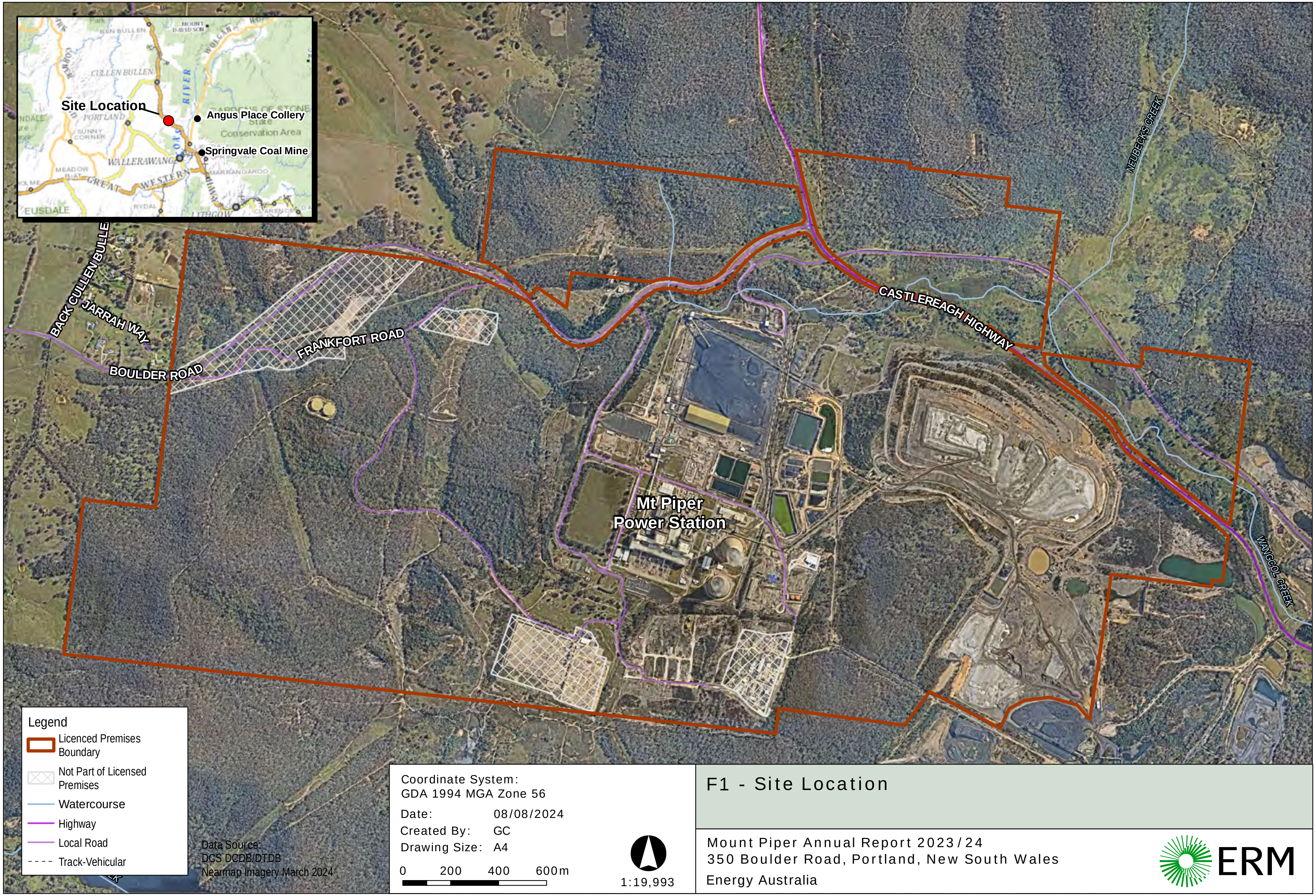
FIGURES



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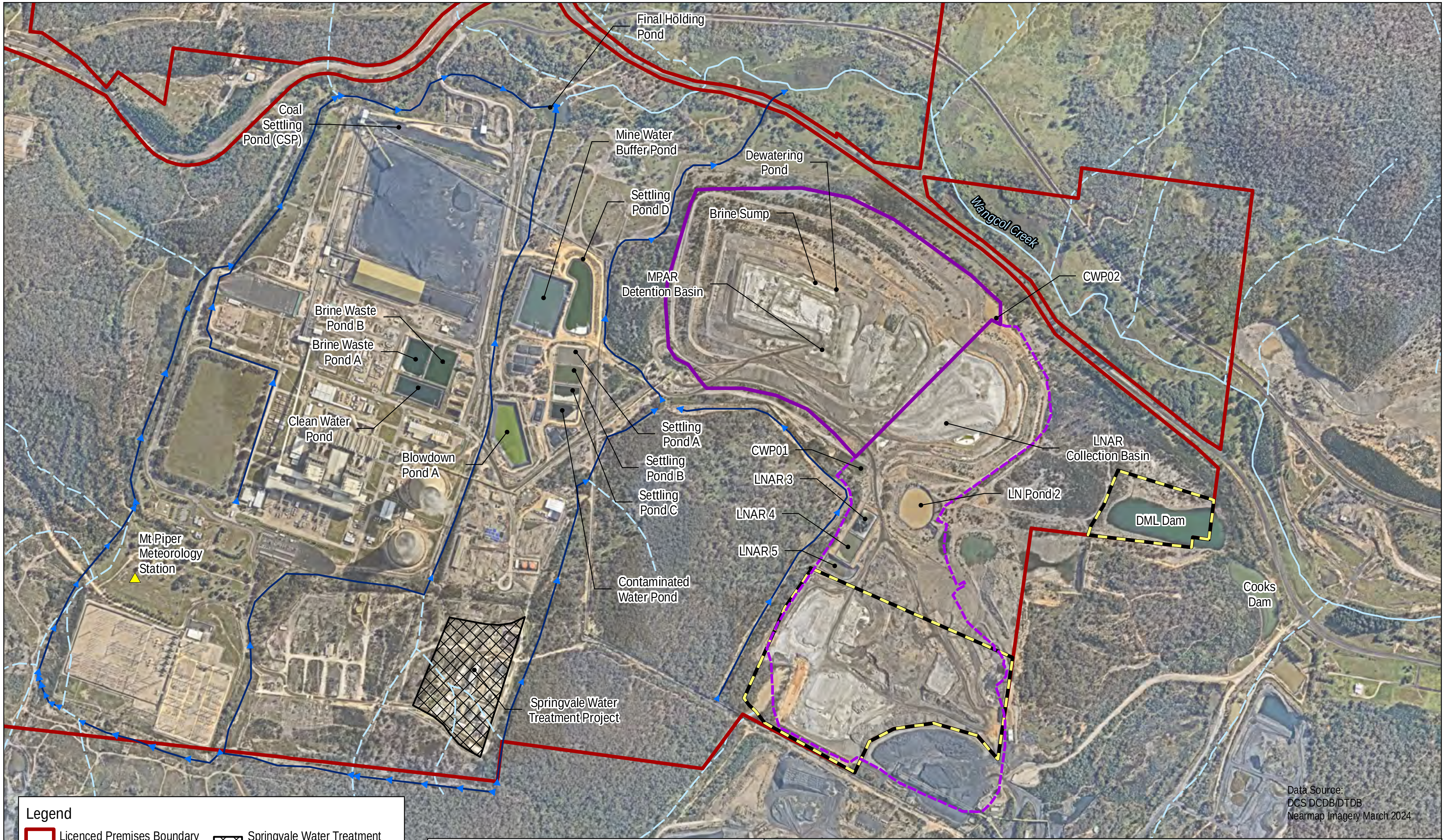


Legend

- Licenced Premises Boundary
- Mt Piper Ash Repository
- Lamberts North Ash Repository (Approval Area)
- Leased to Centennial (Neighbouring Operations)
- Springvale Water Treatment Project
- Existing Clean Water Flow Path
- Watercourse - Non Perennial
- Watercourse - Perennial
- Weather Monitoring Site

Coordinate System:
GDA 1994 MGA Zone 56

Date: 29/08/2024
Created By: GC
Drawing Size: A4

0 100 200 300m

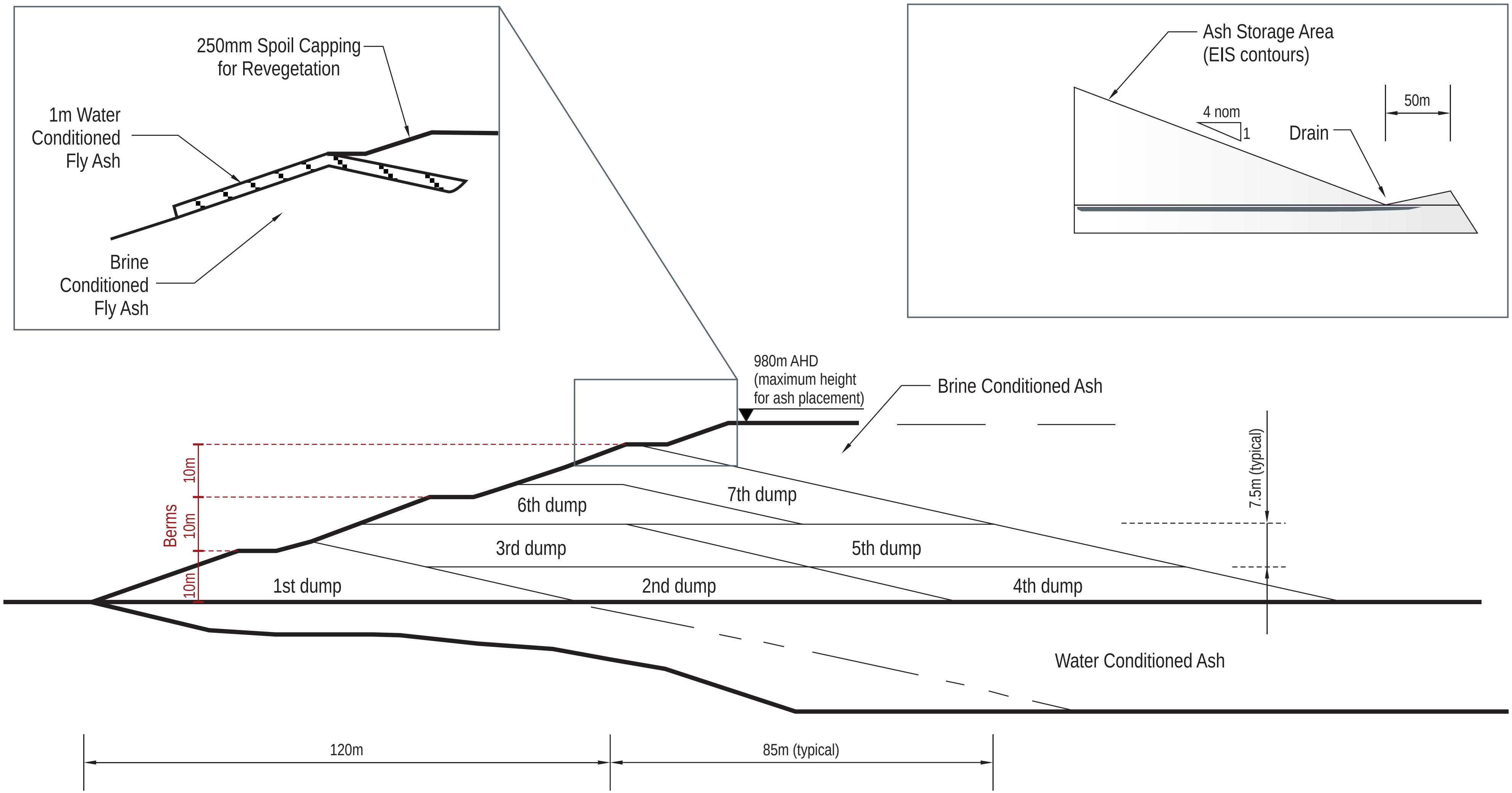
1:13,800

F2 - Site Details

Mount Piper Annual Report 2023/24
350 Boulder Road, Portland, New South Wales
Energy Australia

ERM

0743908_AEMR24_G002_R0.mxd



Notes:
Details shown are diagrammatical only.

Source:
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.

Date: 08/08/2024
Created by: GC
Drawing Size: A4

Drawing Not to Scale

F3 - Schematic of External Batter Placement

Mount Piper Annual Report 2023/24
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Energy Australia

ERM

0743908_AEMR24_I001_R0.ai

Legend

- Ash Placement Plan
- Topographic Contours

Data Source:
DCS DCDB/DTDB
Nearmap Imagery March 2024
Elevation data - Client Provided 2024
(Lend Lease Mt Piper Ash)

Coordinate System:
GDA 1994 MGA Zone 56

Date: 08/08/2024
Created By: GC
Drawing Size: A4

0 50 100 150m

1:6,000

F4 - Ash Placement Plan

Mount Piper Annual Report 2023/24
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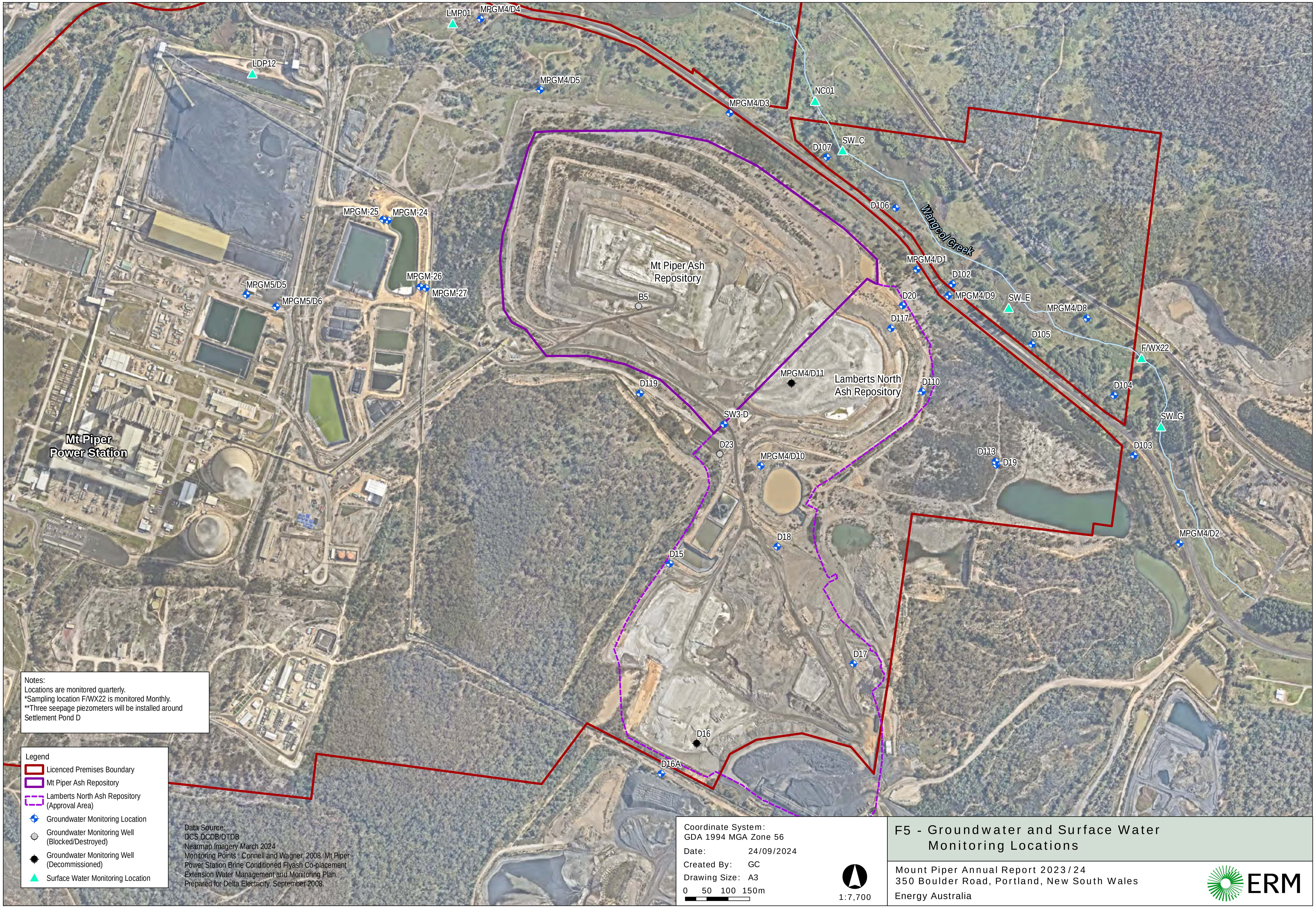
Energy Australia

ERM

0743908_AEMR24_G003_R0.mxd



Coordinate System:
GDA 1994 MGA Zone 56

Date: 24/09/2024

Created By: GC

Drawing Size: A3

F5 - Groundwater and Surface Water Monitoring Locations

Mount Piper Annual Report 2023/24
350 Boulder Road, Portland, New South Wales

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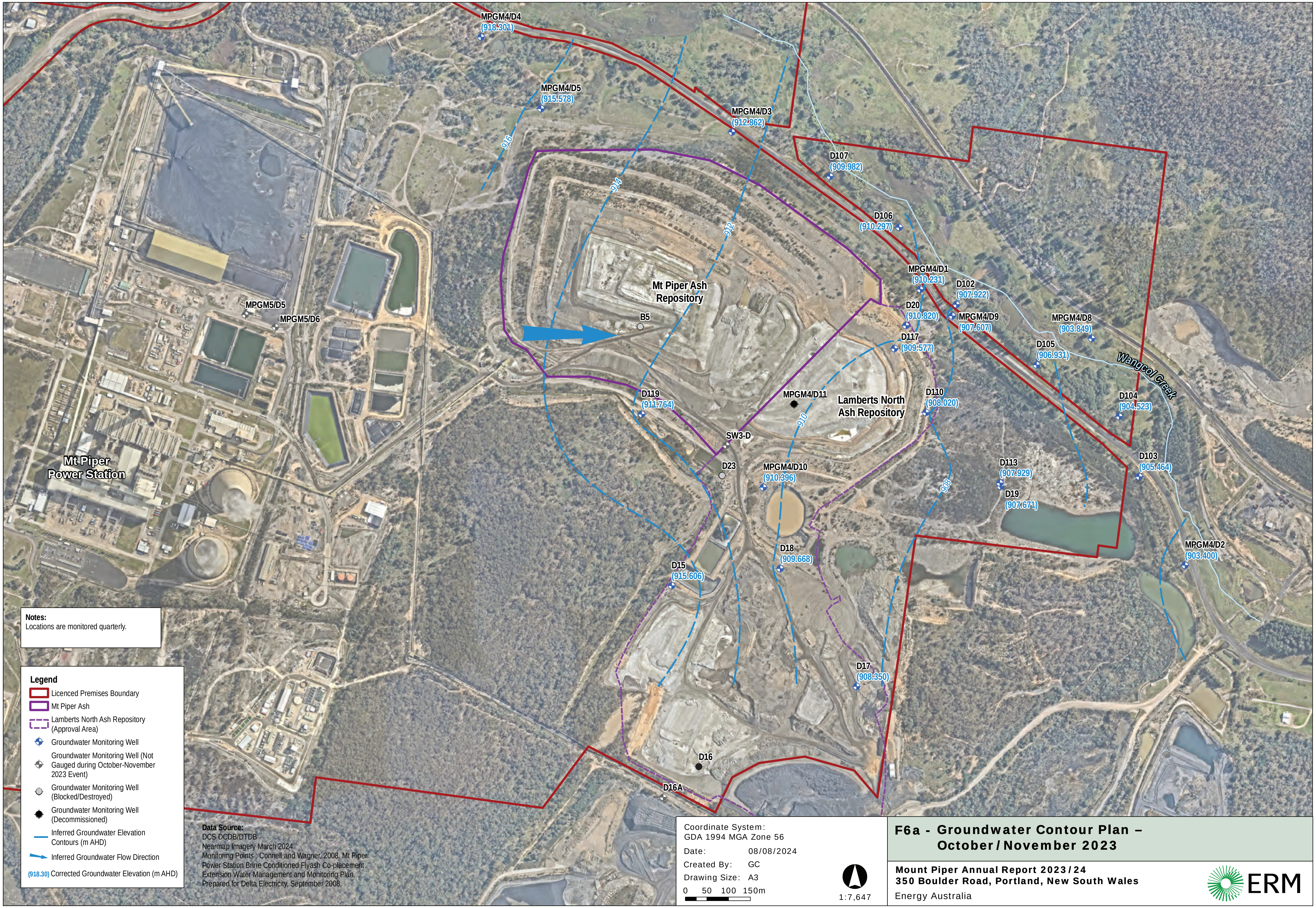

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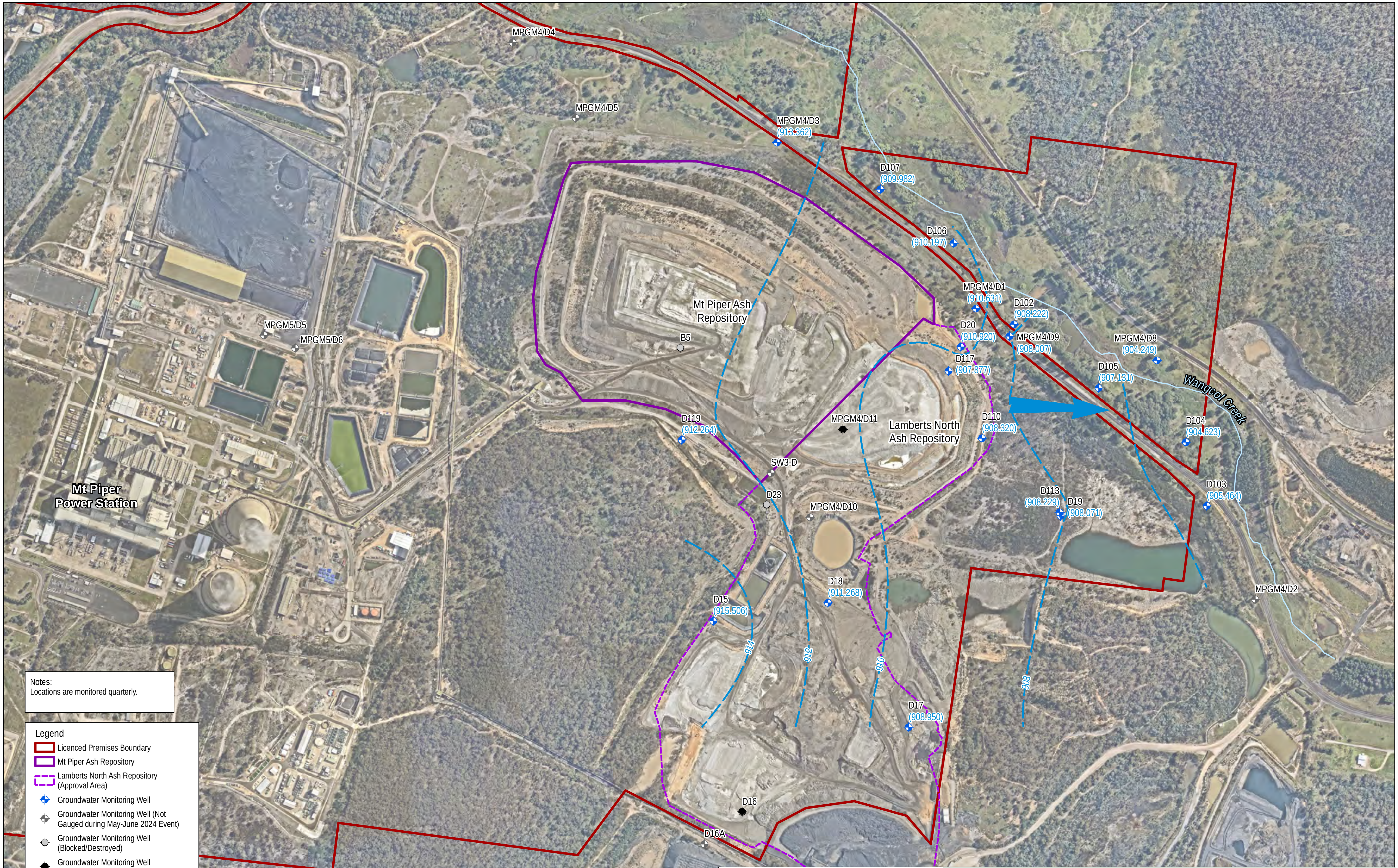

Notes:
Locations are monitored quarterly.

Legend

- Licenced Premises Boundary
- Mt Piper Ash Repository
- Lamberts North Ash Repository (Approval Area)
- Groundwater Monitoring Well
- Groundwater Monitoring Well (Not Gauged during May-June 2024 Event)
- Groundwater Monitoring Well (Blocked/Destroyed)
- Groundwater Monitoring Well (Decommissioned)
- Inferred Groundwater Elevation Contours (m AHD)
- Inferred Groundwater Flow Direction
- (918.30) Corrected Groundwater Elevation (m AHD)

Data Source:
DCS DCDB/DTDB
Nearmap Imagery March 2024
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: 24/09/2024
Created By: GC
Drawing Size: A3

0 50 100 150m

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F6b - Groundwater Contour Plan – May/June 2024

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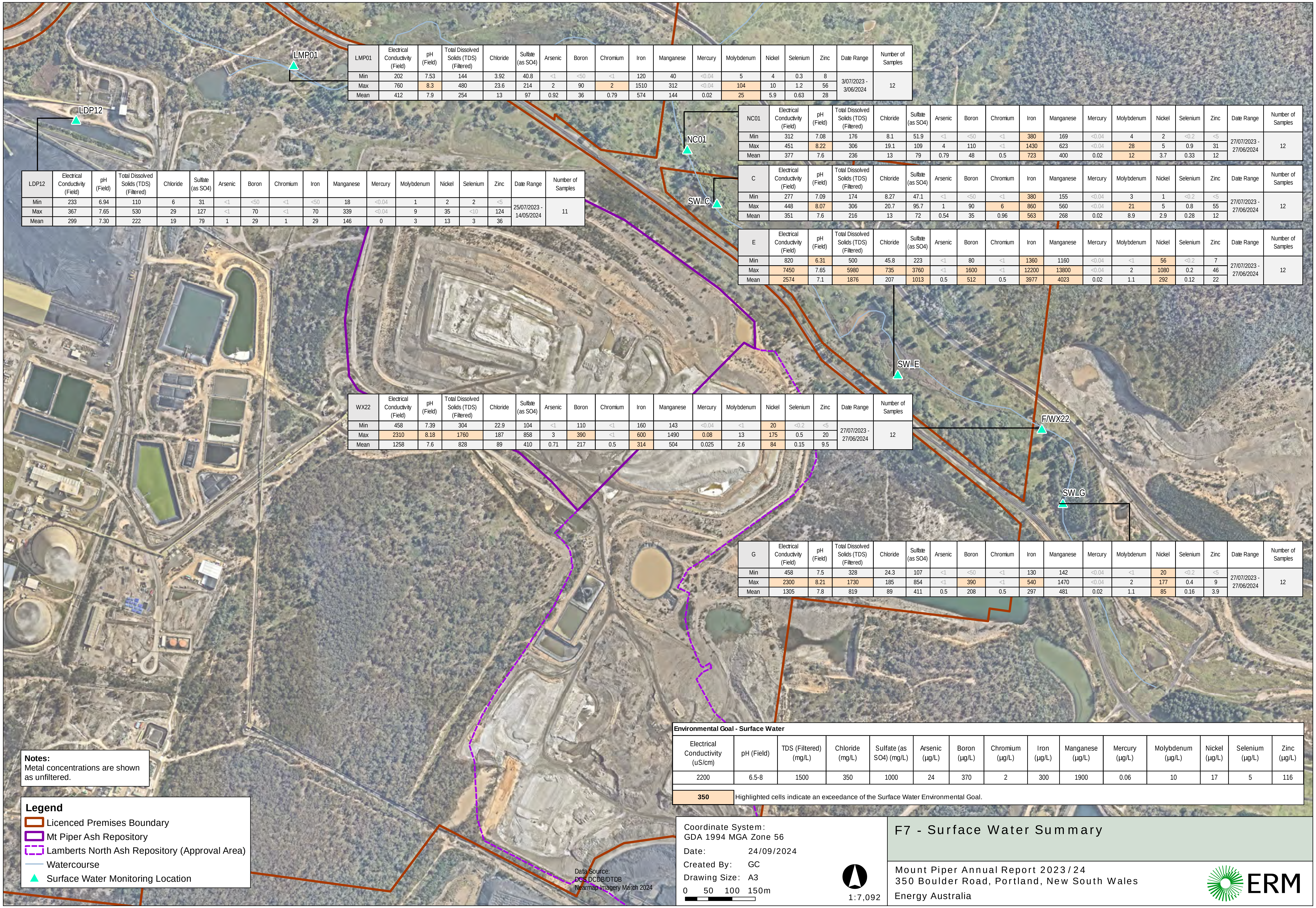
0743908_AEMR24_G006_R0.mxd



LMP01	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS) (Filtered)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	202	7.53	144	3.92	40.8	<1	<50	<1	120	40	<0.04	5	4	0.3	8	3/07/2023 - 3/06/2024	12
Max	760	8.3	480	23.6	214	2	90	2	1510	312	<0.04	104	10	1.2	56		
Mean	412	7.9	254	13	97	0.92	36	0.79	574	144	0.02	25	5.9	0.63	28		

NC01	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS) (Filtered)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	312	7.08	176	8.1	51.9	<1	<50	<1	380	169	<0.04	4	2	<0.2	<5	27/07/2023 - 27/06/2024	12
Max	451	8.22	306	19.1	109	4	110	<1	1430	623	<0.04	28	5	0.9	31		
Mean	377	7.6	236	13	79	0.79	48	0.5	723	400	0.02	12	3.7	0.33	12		

C	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS) (Filtered)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	277	7.09	174	8.27	47.1	<1	<50	<1	380	155	<0.04	3	1	<0.2	<5	27/07/2023 - 27/06/2024	12
Max	448	8.07	306	20.7	95.7	1	90	6	860	560	<0.04	21	5	0.8	55		
Mean	351	7.6	216	13	72	0.54	35	0.96	563	268	0.02	8.9	2.9	0.28	12		

E	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS) (Filtered)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	820	6.31	500	45.8	223	<1	80	<1	1360	1160	<0.04	<1	56	<0.2	7	27/07/2023 - 27/06/2024	12
Max	7450	7.65	5980	735	3760	<1	1600	<1	12200	13800	<0.04	2	1080	0.2	46		
Mean	2574	7.1	1876	207	1013	0.5	512	0.5	3977	4023	0.02	1.1	292	0.12	22		

LDP12	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS) (Filtered)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	233	6.94	110	6	31	<1	<50	<1	<50	18	<0.04	1	2	2	<5	25/07/2023 - 14/05/2024	11
Max	367	7.65	530	29	127	<1	70	<1	70	339	<0.04	9	35	<10	124		
Mean	299	7.30	222	19	79	1	29	1	29	146	0	3	13	3	36		

WX22	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS) (Filtered)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	458	7.39	304	22.9	104	<1	110	<1	160	143	<0.04	<1	20	<0.2	<5	27/07/2023 - 27/06/2024	12
Max	2310	8.18	1760	187	858	3	390	<1	600	1490	0.08	13	175	0.5	20		
Mean	1258	7.6	828	89	410	0.71	217	0.5	314	504	0.025	2.6	84	0.15	9.5		

G	Electrical Conductivity (Field)	pH (Field)	Total Dissolved Solids (TDS) (Filtered)	Chloride	Sulfate (as SO4)	Arsenic	Boron	Chromium	Iron	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc	Date Range	Number of Samples
Min	458	7.5	328	24.3	107	<1	<50	<1	130	142	<0.04	<1	20	<0.2	<5	27/07/2023 - 27/06/2024	12
Max	2300	8.21	1730	185	854	<1	390	<1	540	1470	<0.04	2	177	0.4	9		
Mean	1305	7.8	819	89	411	0.5	208	0.5	297	481	0.02	1.1	85	0.16	3.9		

Environmental Goal - Surface Water

Electrical Conductivity (uS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic (µg/L)	Boron (µg/L)	Chromium (µg/L)	Iron (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Zinc (µg/L)
2200	6.5-8	1500	350	1000	24	370	2	300	1900	0.06	10	17	5	116

350 Highlighted cells indicate an exceedance of the Surface Water Environmental Goal.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 24/09/2024

Created By: GC

Drawing Size: A3

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F7 - Surface Water Summary

Mount Piper Annual Report 2023/24
350 Boulder Road, Portland, New South Wales
Energy Australia

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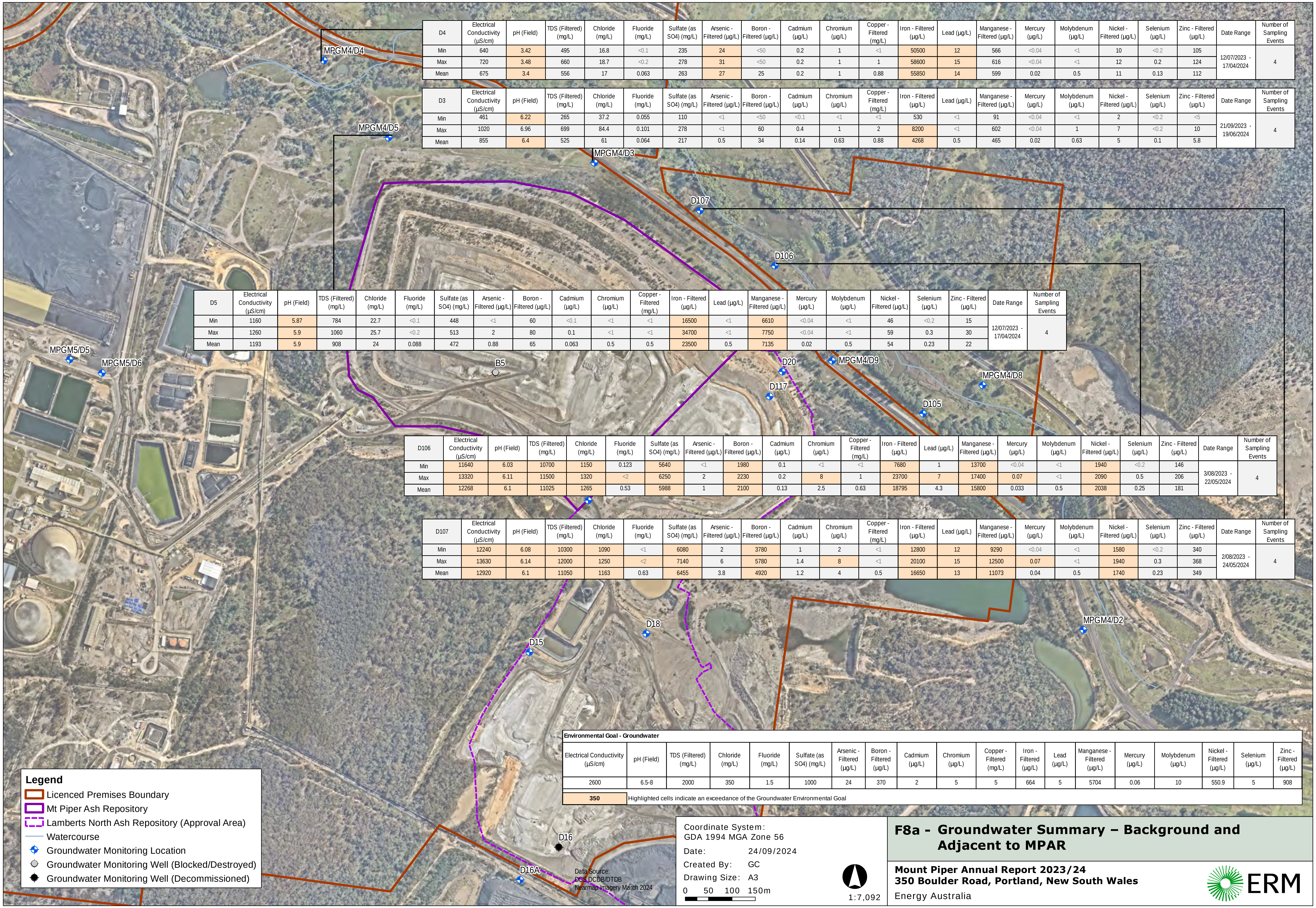
0743908_AEMR24_G007_R1.mxd

F8a - Groundwater Summary – Background and Adjacent to MPAR



D4	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	640	3.42	495	16.8	<0.1	235	24	<50	0.2	1	<1	50500	12	566	<0.04	<1	10	<0.2	105	12/07/2023 - 17/04/2024	4
Max	720	3.48	660	18.7	<0.2	278	31	<50	0.2	1	1	58600	15	616	<0.04	<1	12	0.2	124		
Mean	675	3.4	556	17	0.063	263	27	25	0.2	1	0.88	55850	14	599	0.02	0.5	11	0.13	112		

D3	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	461	6.22	265	37.2	0.055	110	<1	<50	<0.1	<1	<1	530	<1	91	<0.04	<1	2	<0.2	<5	21/09/2023 - 19/06/2024	4
Max	1020	6.96	699	84.4	0.101	278	<1	60	0.4	1	2	8200	<1	602	<0.04	1	7	<0.2	10		
Mean	855	6.4	525	61	0.064	217	0.5	34	0.14	0.63	0.88	4268	0.5	465	0.02	0.63	5	0.1	5.8		

D5	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	1160	5.87	784	22.7	<0.1	448	<1	60	<0.1	<1	<1	16500	<1	6610	<0.04	<1	46	<0.2	15	12/07/2023 - 17/04/2024	4
Max	1260	5.9	1060	25.7	<0.2	513	2	80	0.1	<1	<1	34700	<1	7750	<0.04	<1	59	0.3	30		
Mean	1193	5.9	908	24	0.088	472	0.88	65	0.063	0.5	0.5	23500	0.5	7135	0.02	0.5	54	0.23	22		

D106	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	11640	6.03	10700	1150	0.123	5640	<1	1980	0.1	<1	<1	7680	1	13700	<0.04	<1	1940	<0.2	146	3/08/2023 - 22/05/2024	4
Max	13320	6.11	11500	1320	<2	6250	2	2230	0.2	8	1	23700	7	17400	0.07	<1	2090	0.5	206		
Mean	12268	6.1	11025	1265	0.53	5988	1	2100	0.13	2.5	0.63	18795	4.3	15800	0.033	0.5	2038	0.25	181		

D107	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	12240	6.08	10300	1090	<1	6080	2	3780	1	2	<1	12800	12	9290	<0.04	<1	1580	<0.2	340	2/08/2023 - 24/05/2024	4
Max	13630	6.14	12000	1250	<2	7140	6	5780	1.4	8	<1	20100	15	12500	0.07	<1	1940	0.3	368		
Mean	12920	6.1	11050	1163	0.63	6455	3.8	4920	1.2	4	0.5	16650	13	11073	0.04	0.5	1740	0.23	349		

Environmental Goal - Groundwater

Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)
2600	6.5-8	2000	350	1.5	1000	24	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

350 Highlighted cells indicate an exceedance of the Groundwater Environmental Goal

Legend

- Licenced Premises Boundary
- Mt Piper Ash Repository
- Lamberts North Ash Repository (Approval Area)
- Watercourse
- Groundwater Monitoring Location
- Groundwater Monitoring Well (Blocked/Destroyed)
- Groundwater Monitoring Well (Decommissioned)

Coordinate System: GDA 1994 MGA Zone 56
Date: 24/09/2024
Created By: GC
Drawing Size: A3
0 50 100 150m
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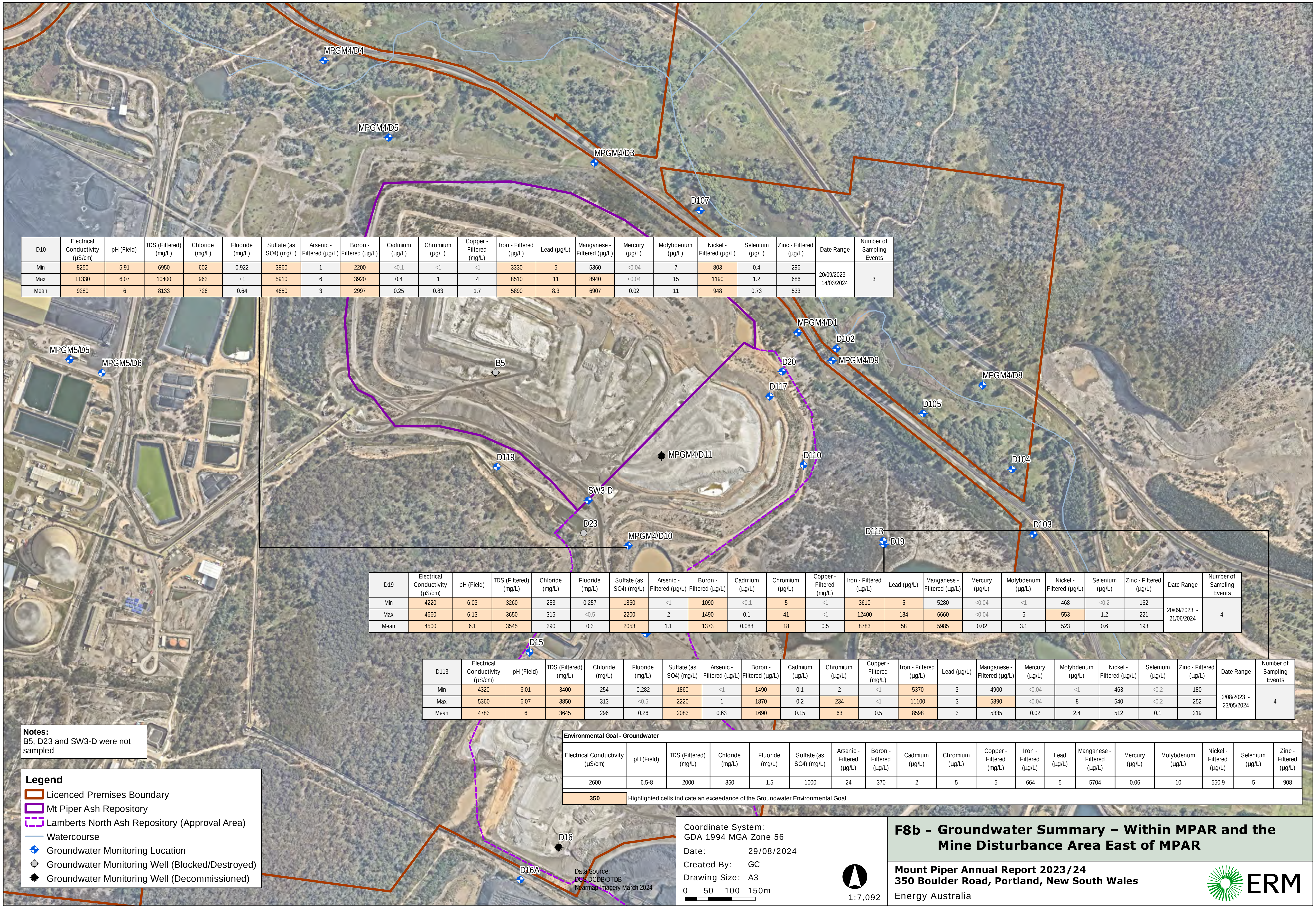
F8b - Groundwater Summary – Within MPAR and the Mine Disturbance Area East of MPAR



D10	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	8250	5.91	6950	602	0.922	3960	1	2200	<0.1	<1	<1	3330	5	5360	<0.04	7	803	0.4	296	20/09/2023 - 14/03/2024	3
Max	11330	6.07	10400	962	<1	5910	6	3920	0.4	1	4	8510	11	8940	<0.04	15	1190	1.2	686		
Mean	9280	6	8133	726	0.64	4650	3	2997	0.25	0.83	1.7	5890	8.3	6907	0.02	11	948	0.73	533		

D19	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	4220	6.03	3260	253	0.257	1860	<1	1090	<0.1	5	<1	3610	5	5280	<0.04	<1	468	<0.2	162	20/09/2023 - 21/06/2024	4
Max	4660	6.13	3650	315	<0.5	2200	2	1490	0.1	41	<1	12400	134	6660	<0.04	6	553	1.2	221		
Mean	4500	6.1	3545	290	0.3	2053	1.1	1373	0.088	18	0.5	8783	58	5985	0.02	3.1	523	0.6	193		

D113	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	4320	6.01	3400	254	0.282	1860	<1	1490	0.1	2	<1	5370	3	4900	<0.04	<1	463	<0.2	180	2/08/2023 - 23/05/2024	4
Max	5360	6.07	3850	313	<0.5	2220	1	1870	0.2	234	<1	11100	3	5890	<0.04	8	540	<0.2	252		
Mean	4783	6	3645	296	0.26	2083	0.63	1690	0.15	63	0.5	8598	3	5335	0.02	2.4	512	0.1	219		

Environmental Goal - Groundwater

Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)
2600	6.5-8	2000	350	1.5	1000	24	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

350 — Highlighted cells indicate an exceedance of the Groundwater Environmental Goal

Notes:
B5, D23 and SW3-D were not sampled

Coordinate System:
GDA 1994 MGA Zone 56

Date: 29/08/2024
Created By: GC
Drawing Size: A3

Mount Piper Annual Report 2023/24
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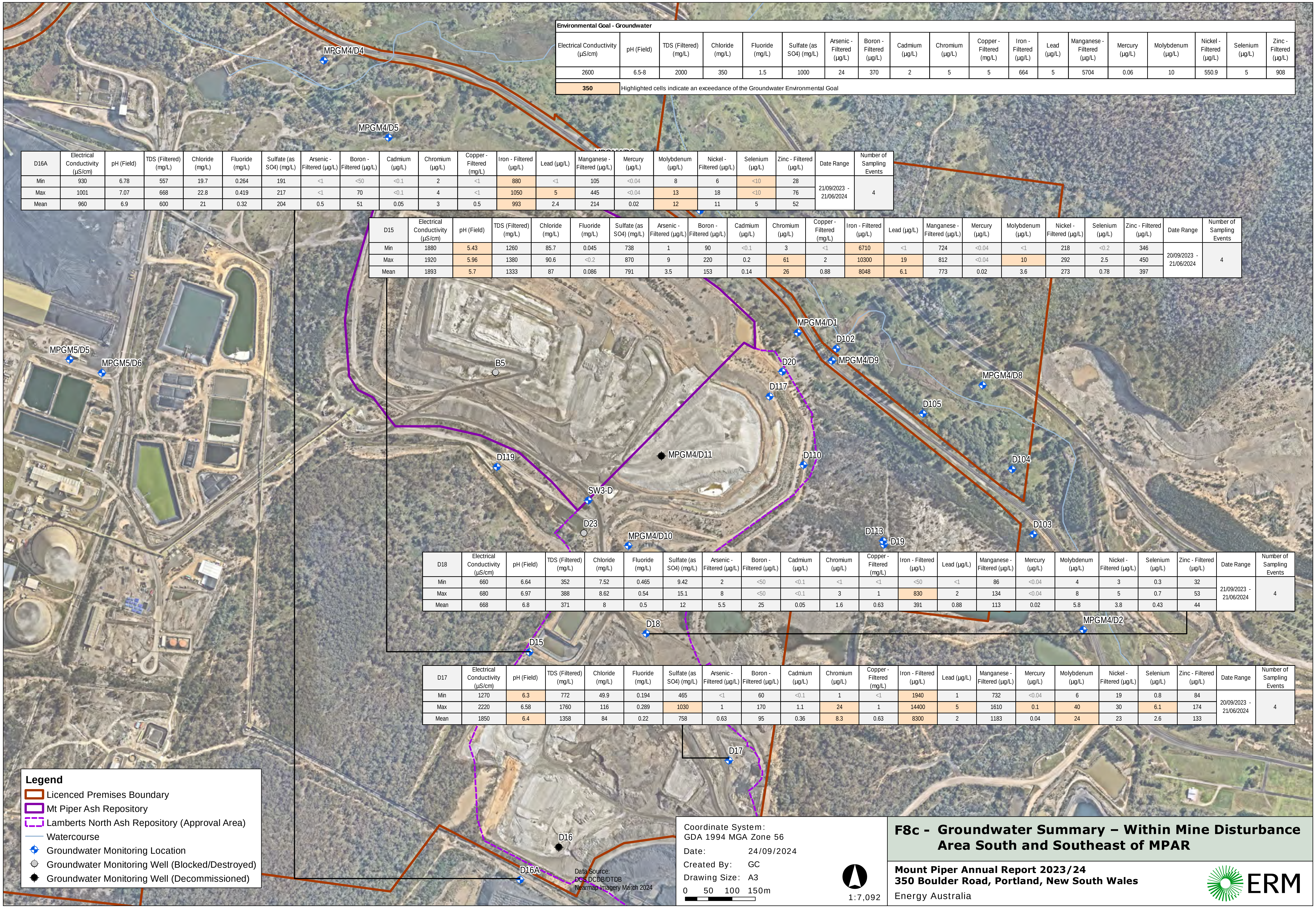

Environmental Goal - Groundwater

Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)
2600	6.5-8	2000	350	1.5	1000	24	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

350 Highlighted cells indicate an exceedance of the Groundwater Environmental Goal

D16A	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	930	6.78	557	19.7	0.264	191	<1	<50	<0.1	2	<1	880	<1	105	<0.04	8	6	<10	28	21/09/2023 - 21/06/2024	4
Max	1001	7.07	668	22.8	0.419	217	<1	70	<0.1	4	<1	1050	5	445	<0.04	13	18	<10	76		
Mean	960	6.9	600	21	0.32	204	0.5	51	0.05	3	0.5	993	2.4	214	0.02	12	11	5	52		

D15	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	1880	5.43	1260	85.7	0.045	738	1	90	<0.1	3	<1	6710	<1	724	<0.04	<1	218	<0.2	346	20/09/2023 - 21/06/2024	4
Max	1920	5.96	1380	90.6	<0.2	870	9	220	0.2	61	2	10300	19	812	<0.04	10	292	2.5	450		
Mean	1893	5.7	1333	87	0.086	791	3.5	153	0.14	26	0.88	8048	6.1	773	0.02	3.6	273	0.78	397		

D18	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	660	6.64	352	7.52	0.465	9.42	2	<50	<0.1	<1	<1	<50	<1	86	<0.04	4	3	0.3	32	21/09/2023 - 21/06/2024	4
Max	680	6.97	388	8.62	0.54	15.1	8	<50	<0.1	3	1	830	2	134	<0.04	8	5	0.7	53		
Mean	668	6.8	371	8	0.5	12	5.5	25	0.05	1.6	0.63	391	0.88	113	0.02	5.8	3.8	0.43	44		

D17	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	1270	6.3	772	49.9	0.194	465	<1	60	<0.1	1	<1	1940	1	732	<0.04	6	19	0.8	84	20/09/2023 - 21/06/2024	4
Max	2220	6.58	1760	116	0.289	1030	1	170	1.1	24	1	14400	5	1610	0.1	40	30	6.1	174		
Mean	1850	6.4	1358	84	0.22	758	0.63	95	0.36	8.3	0.63	8300	2	1183	0.04	24	23	2.6	133		

Coordinate System:
GDA 1994 MGA Zone 56

Date: 24/09/2024

Created By: GC

Drawing Size: A3

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F8c - Groundwater Summary – Within Mine Disturbance Area South and Southeast of MPAR

Mount Piper Annual Report 2023/24
350 Boulder Road, Portland, New South Wales

Energy Australia

ERM

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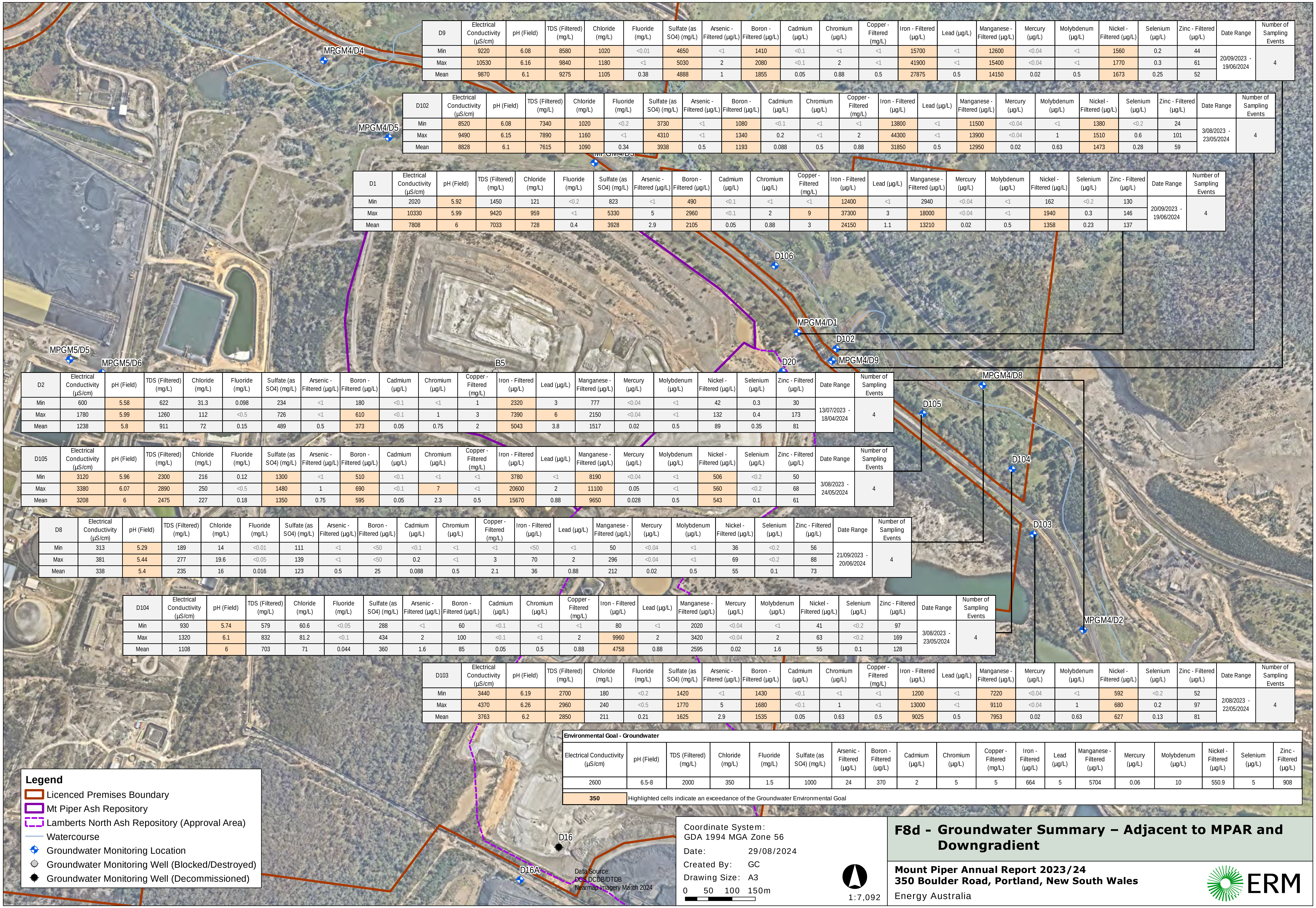

D9	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	9220	6.08	8580	1020	<0.01	4650	<1	1410	<0.1	<1	<1	15700	<1	12600	<0.04	<1	1560	0.2	44	20/09/2023 - 19/06/2024	4
Max	10530	6.16	9840	1180	<1	5030	2	2080	<0.1	2	<1	41900	<1	15400	<0.04	<1	1770	0.3	61		
Mean	9870	6.1	9275	1105	0.38	4888	1	1855	0.05	0.88	0.5	27875	0.5	14150	0.02	0.5	1673	0.25	52		

D102	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	8520	6.08	7340	1020	<0.2	3730	<1	1080	<0.1	<1	<1	13800	<1	11500	<0.04	<1	1380	<0.2	24	3/08/2023 - 23/05/2024	4
Max	9490	6.15	7890	1160	<1	4310	<1	1340	0.2	<1	2	44300	<1	13900	<0.04	1	1510	0.6	101		
Mean	8828	6.1	7615	1090	0.34	3938	0.5	1193	0.088	0.5	0.88	31850	0.5	12950	0.02	0.63	1473	0.28	59		

D1	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	2020	5.92	1450	121	<0.2	823	<1	490	<0.1	<1	<1	12400	<1	2940	<0.04	<1	162	<0.2	130	20/09/2023 - 19/06/2024	4
Max	10330	5.99	9420	959	<1	5330	5	2960	<0.1	2	9	37300	3	18000	<0.04	<1	1940	0.3	146		
Mean	7808	6	7033	728	0.4	3928	2.9	2105	0.05	0.88	3	24150	1.1	13210	0.02	0.5	1358	0.23	137		

D2	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	600	5.58	622	31.3	0.098	234	<1	180	<0.1	<1	1	2320	3	777	<0.04	<1	42	0.3	30	13/07/2023 - 18/04/2024	4
Max	1780	5.99	1260	112	<0.5	726	<1	610	<0.1	1	3	7390	6	2150	<0.04	<1	132	0.4	173		
Mean	1238	5.8	911	72	0.15	489	0.5	373	0.05	0.75	2	5043	3.8	1517	0.02	0.5	89	0.35	81		

D105	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	3120	5.96	2300	216	0.12	1300	<1	510	<0.1	<1	<1	3780	<1	8190	<0.04	<1	506	<0.2	50	3/08/2023 - 24/05/2024	4
Max	3380	6.07	2890	250	<0.5	1480	1	690	<0.1	7	<1	20600	2	11100	0.05	<1	560	<0.2	68		
Mean	3208	6	2475	227	0.18	1350	0.75	595	0.05	2.3	0.5	15670	0.88	9650	0.028	0.5	543	0.1	61		

D8	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	313	5.29	189	14	<0.01	111	<1	<50	<0.1	<1	<1	<50	<1	50	<0.04	<1	36	<0.2	56	21/09/2023 - 20/06/2024	4
Max	381	5.44	277	19.6	<0.05	139	<1	<50	0.2	<1	3	70	2	296	<0.04	<1	69	<0.2	88		
Mean	338	5.4	235	16	0.016	123	0.5	25	0.088	0.5	2.1	36	0.88	212	0.02	0.5	55	0.1	73		

D104	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	930	5.74	579	60.6	<0.05	288	<1	60	<0.1	<1	<1	80	<1	2020	<0.04	<1	41	<0.2	97	3/08/2023 - 23/05/2024	4
Max	1320	6.1	832	81.2	<0.1	434	2	100	<0.1	<1	2	9960	2	3420	<0.04	2	63	<0.2	169		
Mean	1108	6	703	71	0.044	360	1.6	85	0.05	0.5	0.88	4758	0.88	2595	0.02	1.6	55	0.1	128		

D103	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	3440	6.19	2700	180	<0.2	1420	<1	1430	<0.1	<1	<1	1200	<1	7220	<0.04	<1	592	<0.2	52	2/08/2023 - 22/05/2024	4
Max	4370	6.26	2960	240	<0.5	1770	5	1680	<0.1	1	<1	13000	<1	9110	<0.04	1	680	0.2	97		
Mean	3763	6.2	2850	211	0.21	1625	2.9	1535	0.05	0.63	0.5	9025	0.5	7953	0.02	0.63	627	0.13	81		

Environmental Goal - Groundwater

Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)
2600	6.5-8	2000	350	1.5	1000	24	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

350 Highlighted cells indicate an exceedance of the Groundwater Environmental Goal

Coordinate System:
GDA 1994 MGA Zone 56

Date: 29/08/2024

Created By: GC

Drawing Size: A3

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F8d - Groundwater Summary – Adjacent to MPAR and Downgradient

Mount Piper Annual Report 2023/24
350 Boulder Road, Portland, New South Wales

Energy Australia

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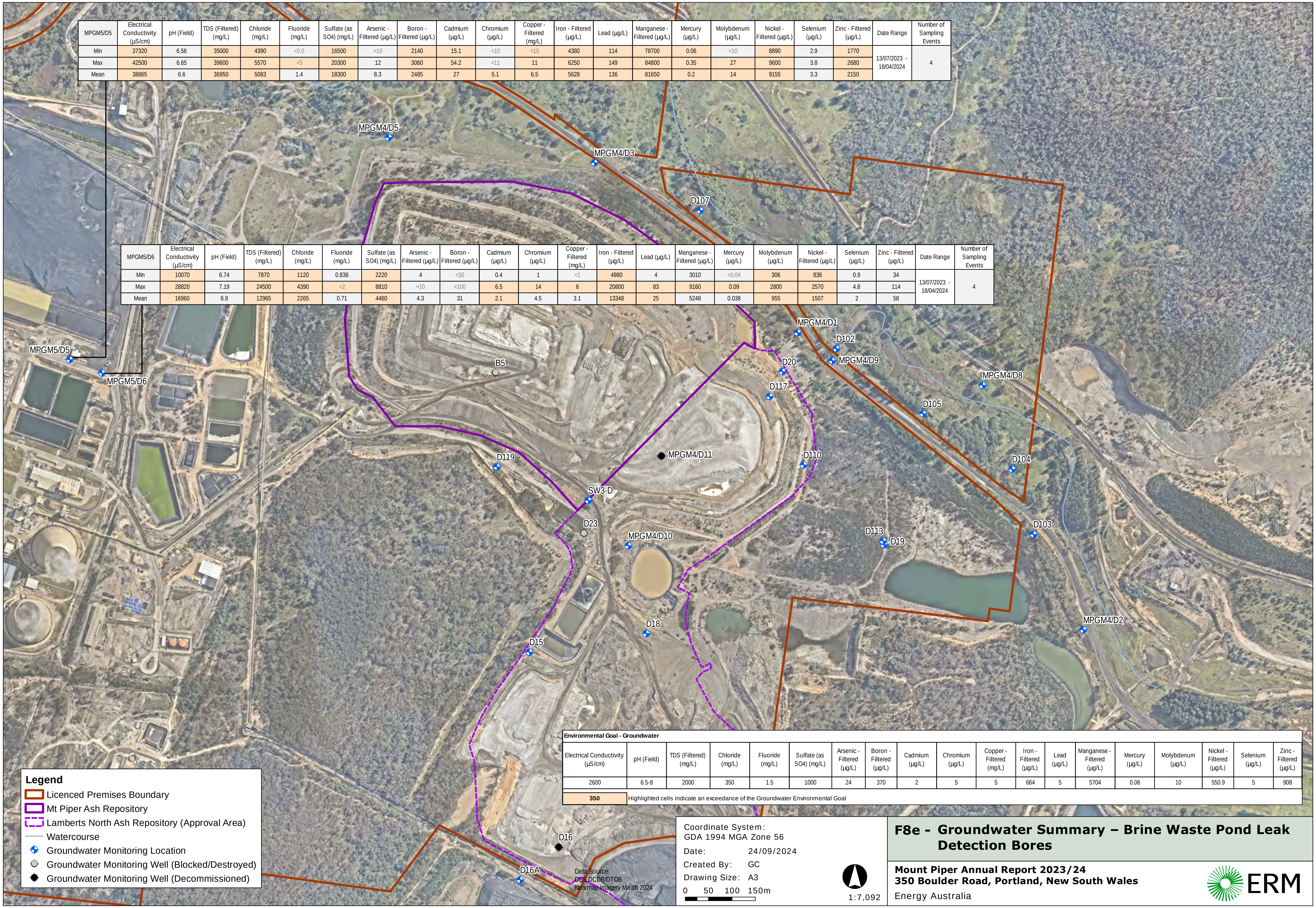
MPGM5/D5	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	37320	6.56	35000	4390	<0.5	16500	<10	2140	15.1	<10	<10	4380	114	78700	0.06	<10	8890	2.9	1770	13/07/2023 - 18/04/2024	4
Max	42500	6.65	39600	5570	<5	20300	12	3060	54.2	<11	11	6250	149	84800	0.35	27	9600	3.8	2680		
Mean	38865	6.6	36950	5083	1.4	18300	8.3	2485	27	5.1	6.5	5628	136	81650	0.2	14	9155	3.3	2150		

MPGM5/D6	Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)	Date Range	Number of Sampling Events
Min	10070	6.74	7870	1120	0.836	2220	4	<50	0.4	1	<1	4980	4	3010	<0.04	306	836	0.9	34	13/07/2023 - 18/04/2024	4
Max	28820	7.19	24500	4390	<2	8810	<10	<100	6.5	14	6	20800	83	9160	0.09	2800	2570	4.8	114		
Mean	16960	6.9	12965	2265	0.71	4460	4.3	31	2.1	4.5	3.1	13348	25	5248	0.038	955	1507	2	58		



Environmental Goal - Groundwater

Electrical Conductivity (µS/cm)	pH (Field)	TDS (Filtered) (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (as SO4) (mg/L)	Arsenic - Filtered (µg/L)	Boron - Filtered (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Copper - Filtered (mg/L)	Iron - Filtered (µg/L)	Lead (µg/L)	Manganese - Filtered (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel - Filtered (µg/L)	Selenium (µg/L)	Zinc - Filtered (µg/L)
2600	6.5-8	2000	350	1.5	1000	24	370	2	5	5	664	5	5704	0.06	10	550.9	5	908

350 Highlighted cells indicate an exceedance of the Groundwater Environmental Goal

Coordinate System: GDA 1994 MGA Zone 56
Date: 24/09/2024
Created By: GC
Drawing Size: A3
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F8e - Groundwater Summary – Brine Waste Pond Leak Detection Bores

Mount Piper Annual Report 2023/24
350 Boulder Road, Portland, New South Wales
Energy Australia

ERM

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APPENDIX A MT PIPER CONSENT REQUIREMENTS

TABLE A1: SUMMARY OF MT PIPER CONSENT AND WMP REQUIREMENTS

Project Approval Doc	Condition	Consent Requirements	How addressed by this EMR	Compliance Status
Mt Piper Consent (Modification 8, dated 24 July 2019)	38A	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: (i) The extended area must lie within the existing ash placement area; (ii) Co-placement activities in the proposed extended area must use existing facilities and methods; (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.	Refer to Appendix C and Section 2 of this report.	Compliant
	38B	38B. The groundwater and surface water monitoring programs required by Condition No. 40 and 41 apply to the extension of the brine and ash co-placement area, permitted by Condition 38 A.	Refer to relevant conditions below.	Compliant
	38C	38C. The Applicant must update the Water Management Plan (WMP) required by Condition No. 43, and obtain the approval of the Secretary for the update, prior to undertaking any works permitted by Condition No. 38 A. In determining whether to grant approval, the Secretary must consult with the BCD, WaterNSW, DPIE Water, and Council.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant

Project Approval Doc	Condition	Consent Requirements	How addressed by this EMR	Compliance Status
	40	40. The Applicant shall, at least one month prior to the first placement of brine-conditioned flyash, consult with the EPA, DPIE Water and WaterNSW to establish the requirements for Water Monitoring Programs for groundwater and surface water. The Water Monitoring Programs shall: (i) be based on the monitoring programs presented in the Statement of Environmental Effects for this modification; (ii) include water quality testing at a minimum frequency of every three months; (iii) be at the expense of the Applicant.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant
	41	41. The Applicant shall expand the groundwater and surface water monitoring programs, including, if so required, the establishment of additional groundwater monitoring bores and surface water sampling points, in accordance with any reasonable requirements of the EPA, DPIE Water or WaterNSW.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant
Mt Piper Consent	43	43. At least one month prior to the placement of brine-conditioned flyash, or within such further period as the Secretary may agree, the Applicant shall prepare and submit for the approval of the EPA, WaterNSW, DPIE Water, Council, and the Secretary, a Water Management Plan (WMP) which shall include, but not be limited to: (a) Details of the monitoring programs for surface water and groundwater required under conditions 40 and 41. (b) Details of measures to be employed to control surface water run-off from the site. (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.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant

Project Approval Doc	Condition	Consent Requirements	How addressed by this EMR	Compliance Status
		(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.		
	43A	43A. The Applicant must update the Water Management Plan required by Condition 43 to the satisfaction of the Secretary, prior to commissioning the storage pond associated with Modification 8. The Applicant must implement the approved Water Management Plan.	Condition is met by the WMP dated 28 February 2020, as outlined in Section 1 and Section 4 to Section 8 of this report.	Compliant
	44	44. The Applicant shall provide to the Secretary, EPA, DPIE Water, WaterNSW and Council, an Environmental Monitoring Report (EMR) on a yearly basis, with the first EMR to be submitted no later than six months after the first placement of brine-conditioned flyash onsite. The Applicant shall agree to Council making the Environmental Monitoring Reports available on request for public inspection.	Condition is met by the development of this report in its entirety.	Compliant
	45	45. The Environmental Monitoring Report shall include, but not be limited to: (a) a summary and discussion of all available results and analyses from Water Monitoring Programs; (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 Programs; (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, DPIE Water, WaterNSW or Council.	Refer to Section 4 to Section 8 of this report, along with Appendix B to Appendix L of this report.	Compliant

Project Approval Doc	Condition	Consent Requirements	How addressed by this EMR	Compliance Status
The WMP (ERM, 2020)		Section 5.1 – Environmental Goals The results of all surface water and groundwater monitoring are intended to be assessed relative to the Environmental Goals	Refer to Section 5 (surface water) and Section 6 (groundwater), along with Appendix F to Appendix J of this report.	Compliant
		Section 5.1.1 – Early Warning Assessment In addition to comparing results with the Environmental Goals for surface water and groundwater an early warning assessment will be conducted. This assessment will include a review of concentration trends through time at each location, including statistical assessment.	Refer to Section 7, along with Appendix H to Appendix L of this report.	Compliant
		Section 6.1 – Monitoring Locations	Refer to Section 5.2 (surface water) and Section 6.2 (groundwater) of this report.	Compliant
		Section 6.2 – Monitoring Frequency	Refer to Section 5.2 (surface water) and Section 6.2 (groundwater) of this report.	Compliant
		Section 6.3 – Monitoring Method	Refer to Section 5.3 (surface water) and Section 6.3 (groundwater) of this report.	Compliant. Observation of laboratory LORs were reported for chromium, silver, and selenium as described in Section 6.5 of this report. These laboratory LORs do not impact upon the conclusions of this report, as these are not considered to represent primary constituents of concern for groundwater monitoring in accordance with the WMP.

Project Approval Doc	Condition	Consent Requirements	How addressed by this EMR	Compliance Status
		Section 6.4 – Monitored Parameters	Refer to Section 1.1 and Section 6.4 of this report.	Compliant
		Section 6.5 – Data Management and Assessment The monitoring data is compared with the existing historical dataset for an assessment of trends related to potential influence of the brine management and BCA placement activities on surface water and groundwater.	Refer to Section 5.5, Section 5.5.4, Section 6.5, Section 6.6 and Section 7 of this report.	Compliant
		Section 6.6 – Reporting Requirements The reporting requirements of the WMP form the objectives of this EMR.	Refer to Section 1.2, Section 7 to Section 8 of this report.	Compliant
		Section 7.1 – Performance Criteria The key aim of TARPs is the mitigation and control of impacts, ideally through early detection. Therefore, TARPs for groundwater and surface water quality are based on the Environmental Goals for the monitoring program. In addition, long-term trends in surface and groundwater concentrations are assessed using the routine monitoring data and with reference to a statistical assessment of water quality data. Should concentrations at a given location indicate a statistically significant increasing concentration trend in groundwater or surface water, or exceed the relevant Environmental Goal, the triggers are considered to have been exceeded and actions are to be implemented.	Refer to Section 7 of this report.	Compliant

Project Approval Doc	Condition	Consent Requirements	How addressed by this EMR	Compliance Status
The WMP (ERM, 2020)		Section 7.2 – Incident Response An impact to groundwater or surface water is considered to be present when concentrations of a monitoring parameter are recorded above the Environmental Goals. In the event of an impact to groundwater or surface water that is considered to be potentially associated with brine management and/or handling/placement of BCA at MPAR, the WMP outlines an incident response procedure. It is noted that the EPL 13007 outlines separate incident response requirements. The reporting requirements of the EPL will be provided to the regulators separately to this EMR.	Refer to Section 7.4 of this report.	Compliant
		Section 7.3 – Contingency Measures Should routine monitoring data suggest that further changes in water quality are being caused by brine management (e.g., brine waste ponds) or other BCA placement and related activities at the MPPS, the WMP outlines contingency items that may be implemented.	Refer to Section 7.4 of this report.	Compliant

APPENDIX B 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)
25/07/2023	972	1239	1439	2	135.00
10/10/2023	1747.62	1130	1726	6	141.00
11/10/2023	1747.62	837	1206	3.69	138.70
5/12/2023	2156.22	1114	1610	4.96	121.00
6/12/2023	1680.78	758	1214	4.56	109.00
7/12/2023	3687.6	843	1601	7.58	140.00
8/12/2023	1109.76	738	953	2.15	136.00
22/12/2023	6022.97	813	2004	11.88	140.79
8/01/2024	5041.53	958	1938	9.6	144.37
9/01/2024	826.40	1007	1143	1.62	141.99
10/01/2024	3051.01	843	1446	6.08	139.32
15/01/2024	180.37	1041	1101	0.35	143.15
17/01/2024	Overtopping	-	-	-	-
18/01/2024	Overtopping	-	-	-	-
22/01/2024	Recirculation	-	-	-	-
24/01/2024	1080.94	1224	1436	2.22	133
7/02/2024	2511.81	1143	1639	4.93	141.43
8/02/2024	1547.74	819	1123	3.08	139.44
9/02/2024	998.67	921	1121	2.02	137.56
1/03/2024	4570.13	1033	1939	9.12	139.25
19/03/2024	3506.75	1040	1745	7.05	137.52
20/03/2024	93.68	852	903	0.51	120.10
6/04/2024	Overtopping	-	-	-	-
7/04/2024	Overtopping	-	-	-	-
8/04/2024	Overtopping	-	-	-	-
11/04/2024	1797.83	1402	1745	3.72	134.37
12/04/2024	1774.45	539	906	3.52	140.16
14/05/2024	4192.52	851	1657	806	143.48
15/05/2024	974.06	826	1021	1.93	139.95
TOTAL	**51272**	**-**	**-**	-	-

ERM

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 03/06/2024.
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 03/06/2024.
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 1, 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) VOLUMES FOR LNAR STAGE 2A & WCA1 AREAS ARE CALCULATED BETWEEN SURVEYED SURFACE AND SURFACE AS SUPPLIED BY GHD/SERVICE STREAM DATED 13/12/2023, CALCULATION BOUNDARIES FOR LNAR STAGE 2A & WCA1 ADOPTED FROM GHD PLAN#12610307-C005, REV.0.

SERVICESTREAM

MOUNT PIPER - ASH PLACEMENT
SURVEY : 3rd JUNE 2024

SCALE - 1:5000 (A3 SHEET) DATUM: MGA (ZONE56)

GRID NORTH

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

DATE	03-06-2024
AMENDED	17-06-2024
SURVEYOR	TH/BN
DRAWN	TH/GM
CHECKED	

DRAWING No:
MPA0524
(as surveyed)

CCAD6 JOB & DWG:
MPA0524_gm - MPA0524 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]
pH	7.9	8.1	7.9	9.3	8.75	10	10	10	9.82	11	11
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
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
Alk (CaCO3)	1,360	1,346	976	14,735	6,067	11,836	22,943	14,243	19,708	33,904	41,621
Cl (mg/L)	19,864	23,889	10,390	7,776	8,270	10,298	7,905	9,700	8,887	7567	4927
F	21.178*	125.66	64.65	55.40	72.63	38.00	48.00	46.00	72.00	62	62
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
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
K (mg/L)	4,258	7,362	3,460	1,721	2,518	1,738	1,498	2,380	2,045	1938	1580
Ca (mg/L)	645	606	780	696	458	146	29	164	22	25	26
Mg (mg/L)	5,480	9,010	4,010	1,540	2,541	88	57	194	71	43	50
ug/L											
As	409^^^	143	438	522	199	209	209	225	255	663	310
Ag	1.4^^	<50	10	<1	<1	4.7	6.6	5.5	5.7	5.7	4.9
Ba	272*	30	1,000	6.43	116	95	5.9	136	11	14	5.3
Be	17^	5.8	-	<10	<10	5	5	5.5	5.7	5.7	5
B	73,560*	115,000	35,800	41,500	9,570	4,738	2,847	6,897	3,612	4841	3152
Cd	19+	42	5.3	2.3	3.58	4	2.7	4.5	4.1	4	2.5
Cr ***	49+	<50	1,050	50	40.4	34	48	26	53	79	97
Cu	7,858*	7,197	12,400	5,991	4,626	764	237	1,746	245	422	365
Fe	833*	-	1,580	151	340	884	201	172	234	160	113
Hg	1.35^^	-	0.04	0.11	0.23	0.23	0.23	0.19	0.14	0.14	0.4
Mn	17,530*	34,000	7,210	5,170	231	427	17	639	20	59	16
Mo	2,600^^	-	-	2,625	2,490	5,146	4,877	8,505	8,602	7096	6317
Ni	4,187*	4,017	3,880	348	1,570	492	309	808	455	367	307
Pb	6^^	-	10	<10	11.6	7.2	5	25	6.1	7.4	5.3
Se	245*	-	130	115	114	99	50	166	68	564	119
Zn	2,020*	-	1,050	2,180	1,373	1,477	223	3,679	336	493	377

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.

APPENDIX E SITE WEATHER DATA

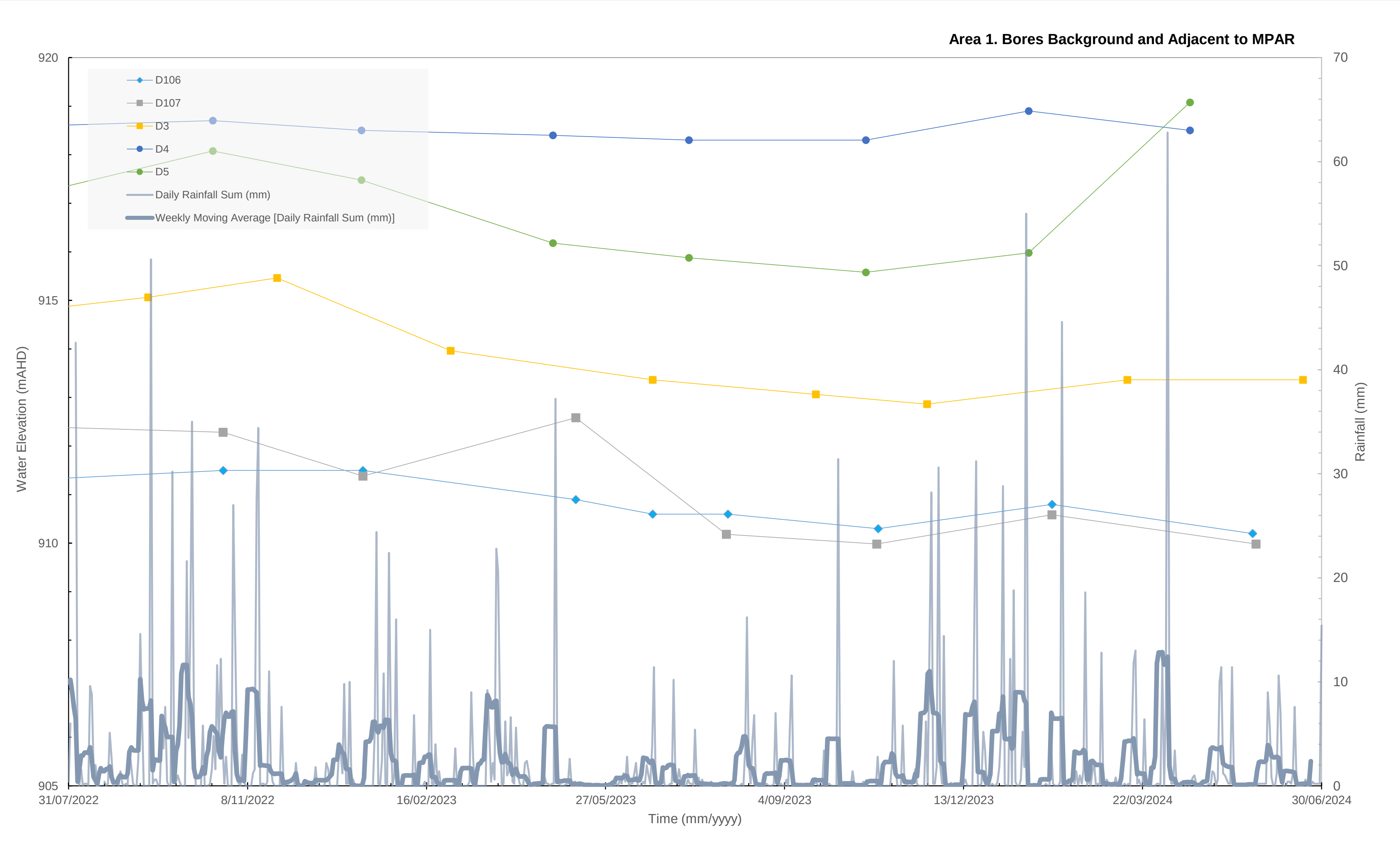
Month	Jul-23			Aug-23			Sep-23			Oct-23			Nov-23			Dec-23		
Measurement	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall
Date	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm
1	0.0	9.1	0.0	1.2	14.9	0.0	1.1	14.0	0	7.1	27.2	0	4.5	20.9	0	10.4	23.2	0.2
2	-3.9	12.3	0.2	1.9	13.6	0.2	-1.8	15.4	0.2	9.5	26.7	0	9.5	21.3	0	9.9	22.7	14.4
3	0.1	10.6	0.2	1.3	16.1	0.2	-0.1	16.6	0	12.0	27.2	0	9.6	21.0	2	6.5	23.7	0
4	7.9	9.5	10.2	-1.2	15.7	0.2	1.9	19.6	0	6.2	19.1	31.4	9.8	18.0	12	12.0	25.0	0
5	4.9	11.9	1.2	3.1	11.9	0.4	6.4	13.7	0.6	5.0	10.7	0.2	9.1	13.6	2	9.3	30.5	0
6	-0.2	7.1	0.4	5.5	12.1	0.4	-1.1	18.1	0	4.6	16.2	0	9.0	18.3	0	14.9	32.8	0.3
7	3.7	7.2	1.6	1.4	12.5	0.2	-1.5	21.7	5.8	5.6	14.7	0	3.8	22.3	0	12.3	30.9	0
8	3.5	9.2	0.4	2.3	13.7	0.0	2.3	12.8	10.6	4.4	17.8	0	6.1	21.1	0	17.5	32.4	0
9	4.7	7.3	0.0	-1.6	14.5	0.0	-0.3	8.9	0	1.1	19.4	0	8.3	22.9	5.8	17.0	34.4	0
10	2.8	9.8	0.0	0.8	14.1	0.0	-4.1	12.0	0.2	1.8	19.5	0	6.9	24.2	0.2	15.7	29.9	0
11	-1.0	11.8	0.0	-3.5	13.4	0.2	-3.4	15.4	0.2	5.1	21.6	0	8.8	29.3	0.2	13.7	31.1	0
12	-4.0	13.4	0.6	-1.1	14.4	0.0	-1.4	15.9	0	3.2	24.9	1.4	10.7	29.4	0	16.4	28.5	0
13	-3.8	13.9	0.2	1.8	11.2	3.6	-0.4	18.8	0.2	5.3	14.5	0.2	4.9	26.6	0	12.4	31.2	0.2
14	-1.7	13.5	0.2	3.0	12.1	16.2	0.6	22.0	0.2	7.2	18.0	0	10.1	27.0	0	14.5	29.7	0.6
15	5.6	14.2	0.0	3.1	12.2	2.2	2.1	22.7	0	6.9	20.5	0	11.0	24.8	0.8	11.2	29.5	0
16	5.5	9.9	5.4	-0.7	11.8	0.2	4.2	23.9	0	3.9	15.1	0	7.5	24.8	1.6	10.9	26.5	0
17	4.0	12.9	0.0	-2.8	14.2	4.2	5.2	23.7	0	-0.5	12.5	0	6.9	20.2	0.2	10.1	28.5	0
18	3.5	12.8	0.8	3.4	8.1	6.8	3.3	26.2	0	7.1	16.3	0.4	9.6	24.8	0	16.4	31.4	0
19	-4.0	11.7	0.0	2.0	7.1	0.2	6.2	24.6	0	5.7	22.2	0	6.5	27.6	0	16.1	28.5	16.4
20	-7.0	13.7	0.6	-0.2	12.2	0.2	9.0	25.3	0	3.1	24.5	0	9.2	19.6	0	11.6	16.7	31.2
21	-0.4	8.8	0.0	-1.5	15.4	0.2	6.9	15.9	0.4	6.1	27.4	0	7.2	25.3	0	11.7	16.1	0.2
22	-4.9	10.7	0.2	-0.3	17.4	0.2	4.8	13.0	0.2	7.8	20.2	0	9.3	22.2	6.2	11.2	22.2	0
23	-5.3	12.0	0.2	4.8	14.0	0.2	-1.3	15.9	0	4.3	20.3	0	13.1	19.5	0	8.5	23.4	0.2
24	-0.9	11.5	0.0	1.0	13.9	0.0	2.8	18.7	0	0.5	26.9	0	14.0	18.4	14.4	13.0	20.1	5.2
25	-2.4	14.8	0.4	-1.8	18.4	0.2	0.3	20.0	0	6.5	20.6	0	14.6	20.0	28.2	12.7	23.3	3.4
26	-1.8	14.9	0.2	-1.3	16.7	0	3.2	20.1	3.4	5.2	11.1	2.8	9.9	22.0	0.2	11.7	26.4	0
27	-3.0	13.8	0.2	3.0	15.9	0	4.8	20.1	0.2	5.3	13.3	0.2	7.7	25.9	0.2	9.0	20.6	0.4
28	1.0	14.5	0.2	0.5	16.6	0.0	6.1	20.4	0	4.9	17.8	0.2	13.7	19.6	1.8	9.1	25.8	0
29	2.0	16.1	0.0	-0.2	17.1	0.2	2.8	22.4	0.2	1.1	21.6	0	12.5	20.7	30.6	12.4	23.0	0.2
30	4.0	15.7	0.2	1.5	18.1	7.0	1.0	24.8	0	4.0	25.9	0	12.9	18.5	1.8	10.0	23.8	0
31	3.1	14.4	0.0	1.0	14.0	1.0	-	-	-	5.5	19.8	0	-	-	-	12.9	16.2	0
Min	-7.0	7.1	0.0	-3.5	7.1	0.0	-4.1	8.9	0.0	-0.5	10.7	0.0	3.8	13.6	0.0	6.5	16.1	0.0
Max	7.9	16.1	10.2	5.5	18.4	16.2	9.0	26.2	10.6	12.0	27.4	31.4	14.6	29.4	30.6	17.5	34.4	31.2
Average	0.4	11.9		0.9	14.0		2.0	18.8		5.0	19.8		9.2	22.3		12.3	26.1	
Total			23.6			44.4			22.4			36.8			108.2			72.9

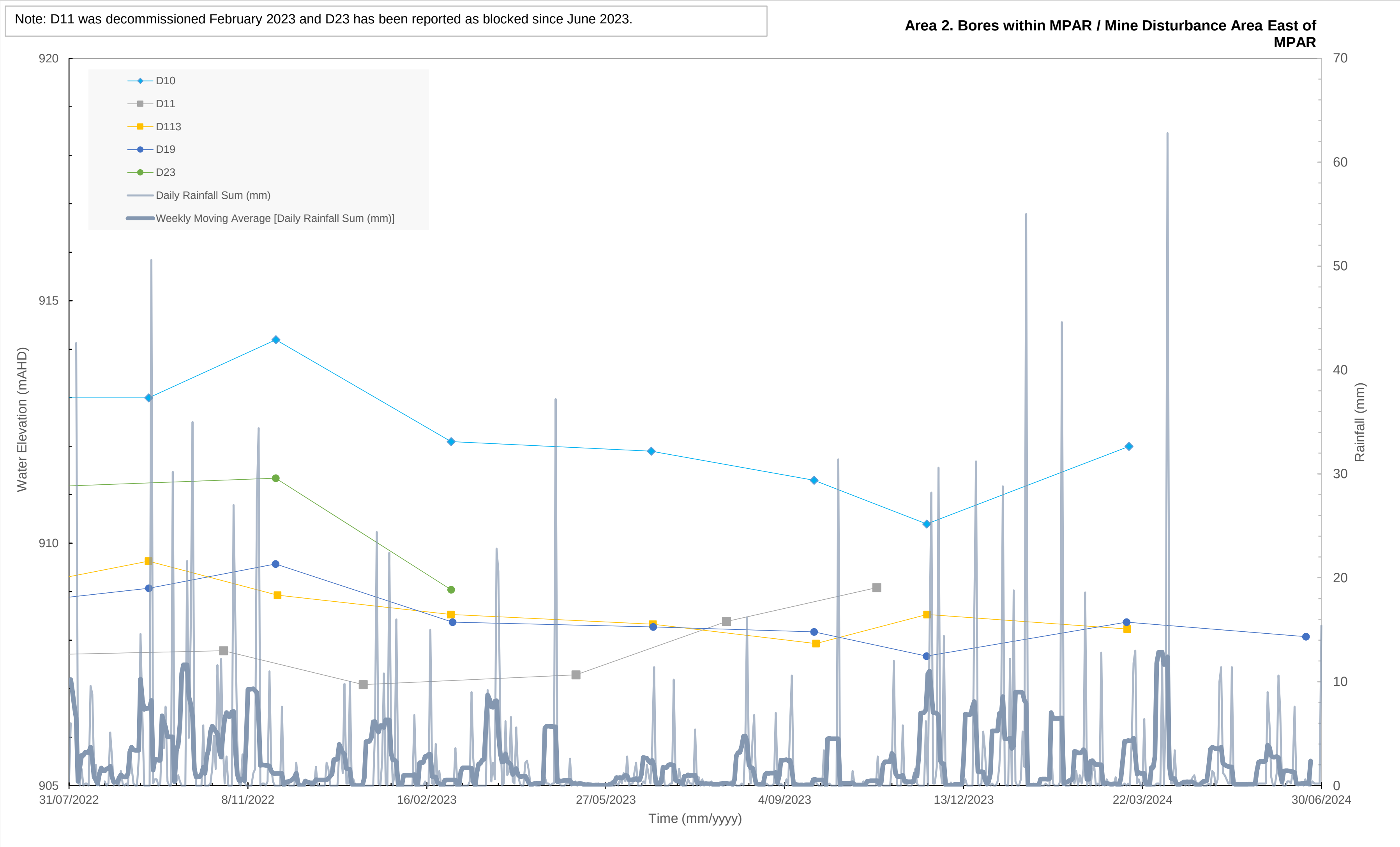
Note:
"-" signifies data not provided
Weather Observations from Mt Piper Weather Station

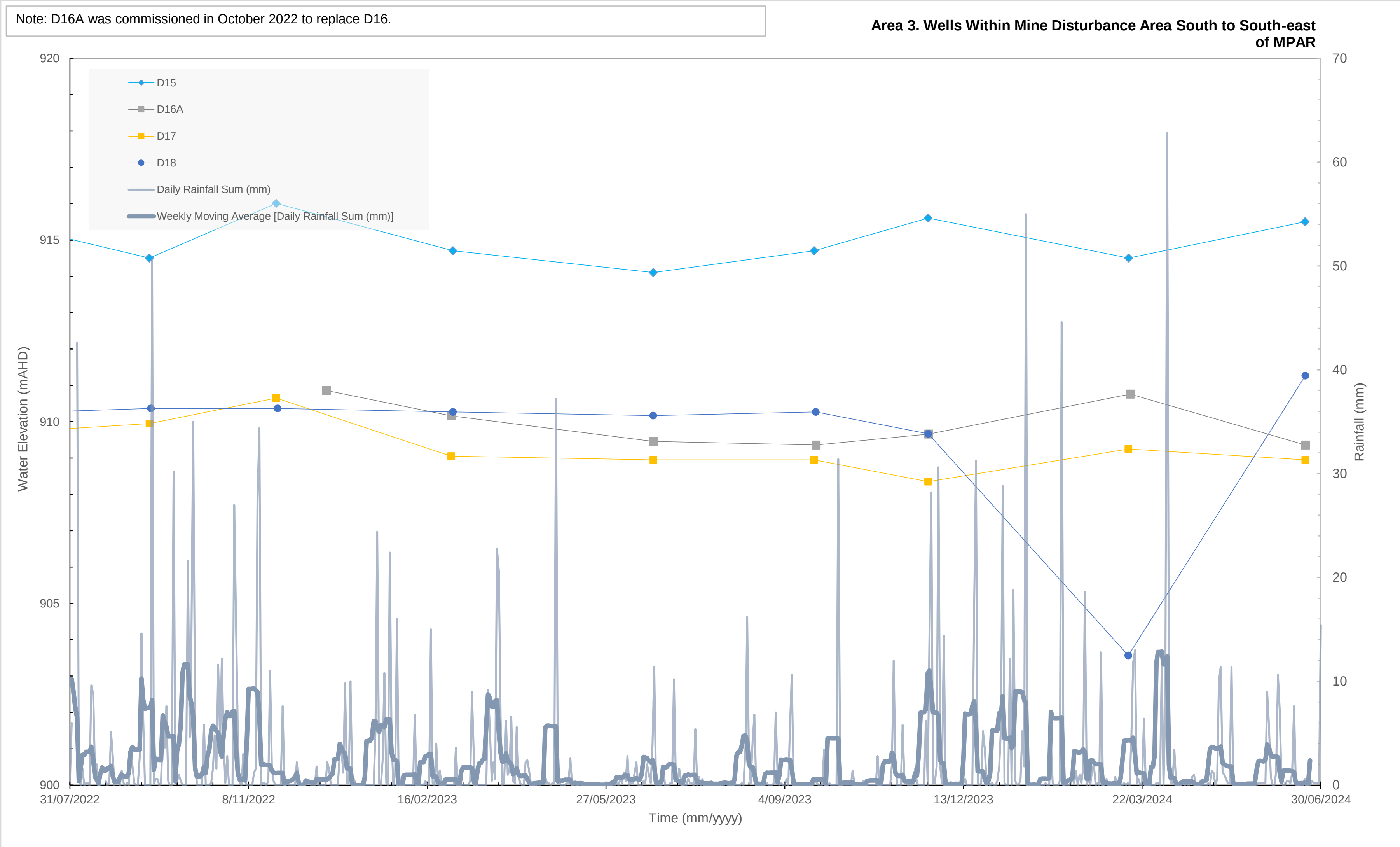
Month	Jan-24			Feb-24			Mar-24			Apr-24			May-24			Jun-24		
Measurement	AT 2M 1Hr Min	AT 2M 1Hr Max	Rain	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall	AT 2M 1Hr Min	AT 2M 1Hr Max	Rainfall
Date	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm	°C	°C	mm
1	13.4	21.7	0.4	15.9	29.8	0.2	18.1	30.2	0	7.7	26.0	0.0	7.5	11.5	1.2	6.7	9.9	5.8
2	16.9	25.4	1.8	11.7	31.7	0	15.5	23.5	0.6	9.5	19.9	11.8	8.0	12.3	0	3.1	7.7	0.8
3	14.7	25.8	5.6	16.2	29.9	0	7.0	25.1	0.2	5.8	20.1	0.0	6.8	12.9	0.6	-0.4	8.3	0
4	13.8	26.4	28.8	13.6	33.9	0	6.5	20.1	0	12.4	13.8	7.4	9.3	13.0	10	1.3	10.4	0
5	13.0	18.6	0.2	20.3	27.0	0.4	9.6	24.6	0	12.5	14.1	62.8	8.9	11.6	11.4	2.8	12.2	1.2
6	10.6	19.7	0	13.2	20.5	44.6	9.3	27.3	0	10.5	19.4	7.6	8.7	12.5	1.2	6.5	10.8	10.6
7	13.5	23.6	0	11.3	19.4	0.2	15.1	26.5	0.8	9.8	18.7	0.2	8.8	13.7	1	6.5	9.7	7.2
8	16.0	18.6	12.2	12.7	16.6	0	15.1	25.3	0	8.0	19.0	0.2	9.1	13.9	0.6	1.0	11.6	0.2
9	16.2	26.2	0	9.8	26.6	0	11.7	23.8	0.2	6.3	14.2	3.4	9.6	14.4	0.2	4.7	10.7	0
10	16.7	27.6	18.8	14.1	19.2	0	10.1	24.9	0	3.2	15.8	0.2	10.2	13.6	0.2	-1.9	10.2	0
11	16.6	26.4	0.4	13.2	21.2	0.2	10.7	25.5	0	2.6	18.0	-	10.0	11.6	11.4	-2.0	11.7	0.4
12	17.2	25.7	0	13.7	25.0	0.6	8.2	29.9	0.2	6.1	19.0	0.0	7.5	15.1	0.4	0.8	8.8	0.4
13	12.6	29.3	0	12.7	27.0	0.2	9.0	28.0	0	3.7	21.0	0.2	6.5	16.0	0.2	-4.5	9.5	0.2
14	16.4	23.3	0.6	15.2	26.4	1.4	10.9	28.6	0.2	5.4	20.5	0.2	3.2	16.5	0.2	1.9	9.7	1.2
15	13.7	16.6	5.2	15.1	18.9	0	11.2	18.1	0	2.4	20.3	0.0	4.2	14.2	0.2	4.1	8.3	7.6
16	13.6	20.2	1.8	15.8	24.7	1	10.8	17.2	4.6	3.0	20.4	0.2	3.7	15.9	0	-0.8	8.5	0.2
17	16.2	23.1	55	14.7	27.5	0.2	12.1	19.4	11.8	9.3	20.2	0.0	5.6	16.4	0.2	1.6	9.9	0
18	10.1	22.7	0.4	12.0	26.9	1.6	13.8	19.9	13	5.6	17.5	0.2	2.7	9.4	0	-2.1	9.9	0.2
19	8.0	27.1	0	11.3	23.2	18.6	12.6	25.2	0.2	1.9	14.0	0.8	-2.5	11.1	0	-3.2	10.1	0.2
20	14.9	26.5	0	11.5	20.4	0	12.2	19.3	0.6	8.9	11.2	1.0	2.0	12.5	-	-2.8	10.5	0
21	11.8	31.7	0.2	14.9	23.3	0.6	8.1	15.0	0	5.7	17.6	0.2	0.5	13.8	0.2	-0.4	9.0	0.6
22	10.0	23.8	0	13.6	29.1	0	8.9	20.9	0	3.2	17.6	0.2	-0.5	12.8	0.2	-0.7	9.8	0.2
23	13.7	22.9	0	13.2	30.0	1.4	8.0	20.6	6.4	6.6	19.8	0.0	-2.5	14.6	0	-0.7	8.8	0
24	10.5	29.1	0	13.6	18.4	2	8.3	21.8	0.4	4.3	18.1	0.2	-1.4	15.8	0.2	-2.5	11.4	0
25	18.9	30.8	0	12.7	27.3	0	5.2	23.8	0.2	3.0	15.6	0.0	4.0	13.8	0	-3.6	11.8	0.4
26	18.2	30.9	0	10.3	28.1	0.2	4.7	22.1	-	0.6	16.8	0.0	1.5	15.0	0.2	-0.2	14.0	0.2
27	12.8	25.1	0	14.3	20.5	0	8.5	22.2	0	2.6	17.1	0.0	-1.3	14.9	0.2	-3.7	10.8	0.2
28	8.3	25.2	0.2	16.6	30.6	12.8	8.0	21.9	0	4.3	18.6	0.2	-1.0	17.5	0.2	-4.7	12.4	0.2
29	14.3	32.3	0	18.6	31.8	0.4	10.2	23.4	0	3.6	19.2	0.0	-1.2	16.6	0.2	-3.3	13.9	0.2
30	19.5	26.5	0	-	-	-	7.8	25.7	0.2	8.6	12.8	1.4	0.4	16.2	0.2	4.0	12.3	15.4
31	17.1	26.3	4	-	-	-	7.0	24.2	0.2	-	-	-	10.2	13.4	9	-	-	-
Min	8.0	16.6	0.0	9.8	16.6	0.0	4.7	15.0	0.0	0.6	11.2	0.0	-2.5	9.4	0.0	-4.7	7.7	0.0
Max	19.5	32.3	55.0	20.3	33.9	44.6	18.1	30.2	13.0	12.5	26.0	62.8	10.2	17.5	11.4	6.7	14.0	15.4
Average	14.2	25.1		13.9	25.3		10.1	23.4		5.9	17.9		4.5	14.0		0.3	10.4	
Total			135.6			86.6			39.8			98.4			49.6			53.6

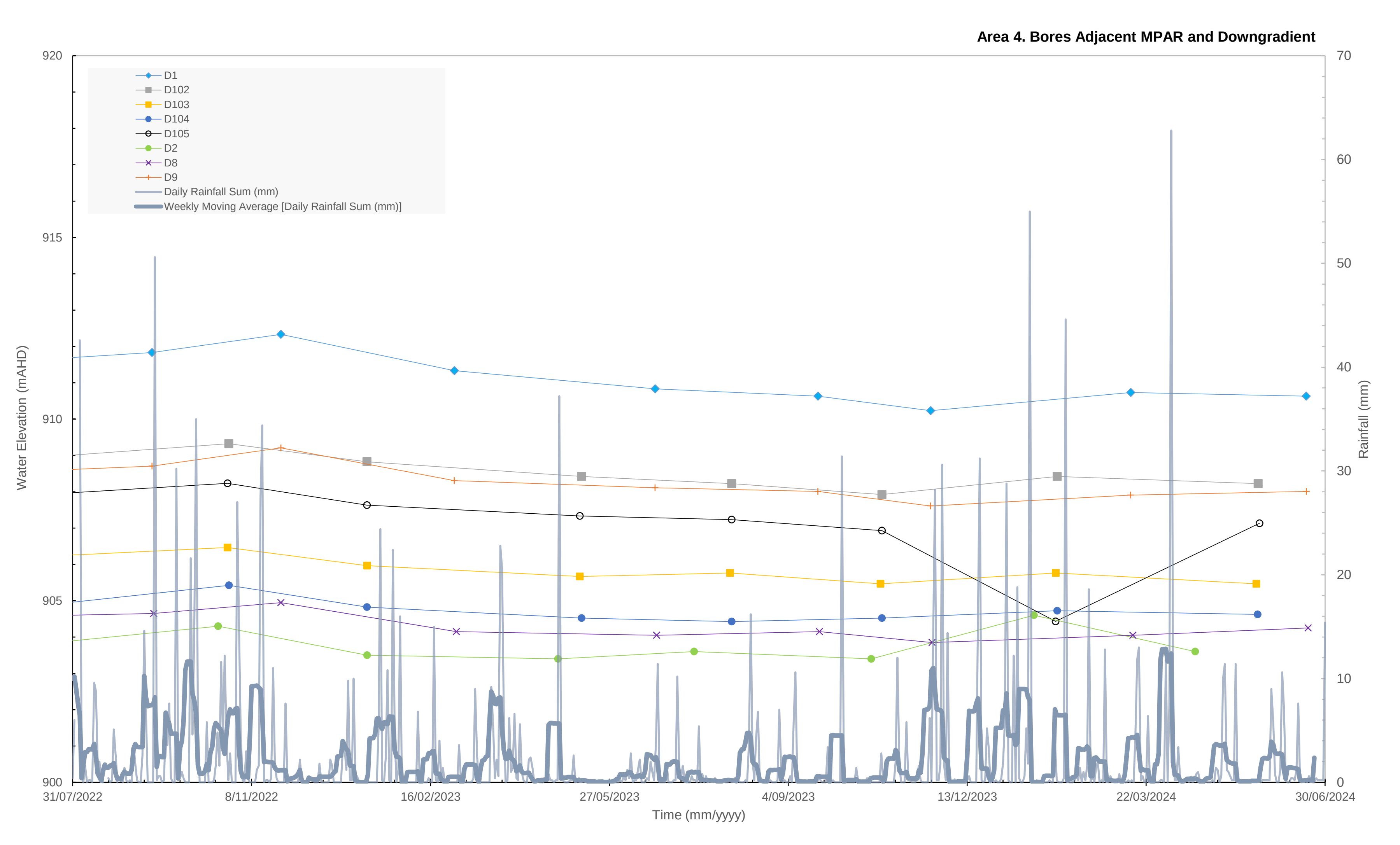
Note:
"-" signifies data not provided
Weather Observations from Mt Piper Weather Station

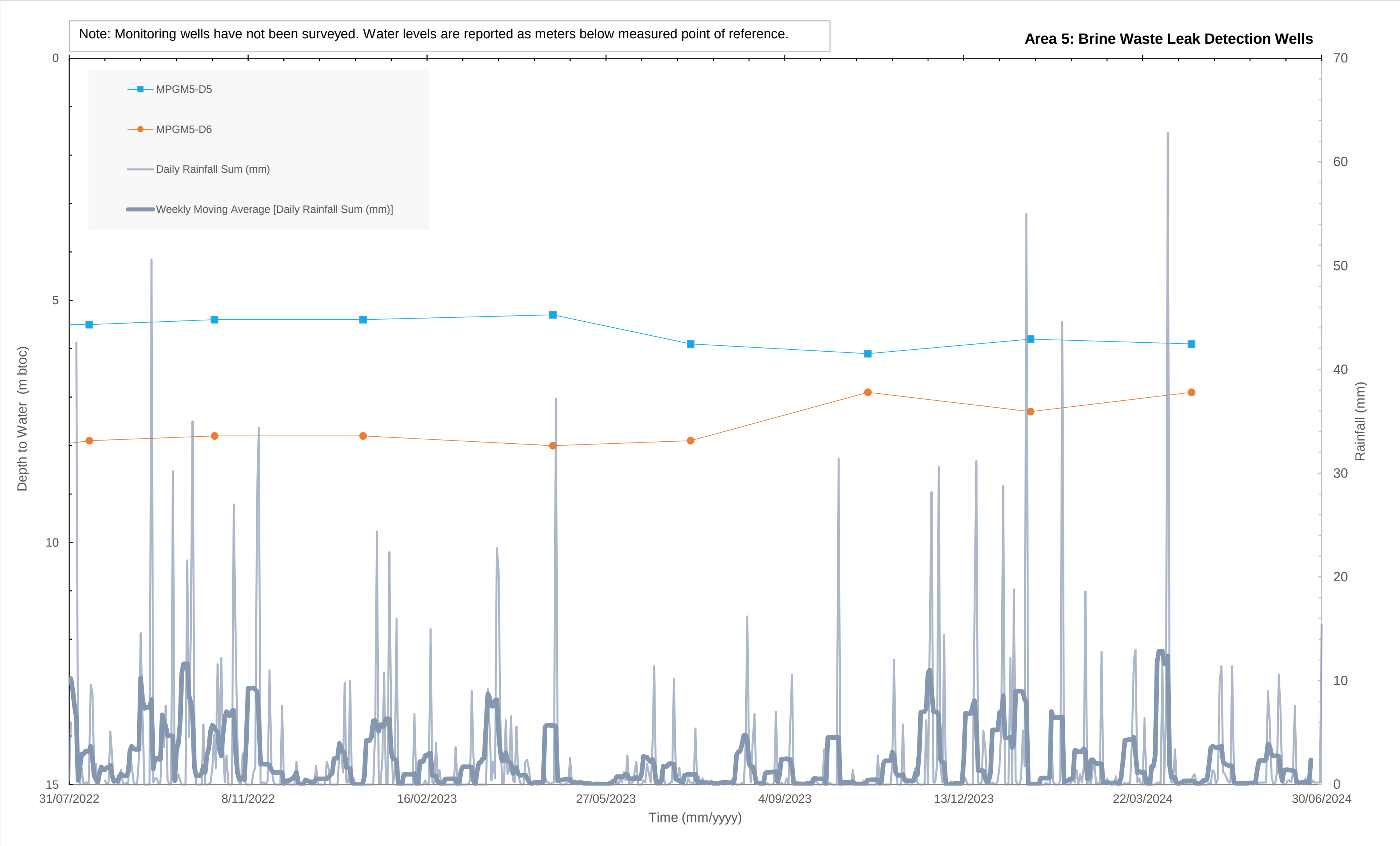
APPENDIX F HYDROGRAPHS


Area 1. Bores Background and Adjacent to MPAR
D106
D107
D3
D4
D5
Daily Rainfall Sum (mm)
Weekly Moving Average [Daily Rainfall Sum (mm)]
Water Elevation (mAHD)
920
915
910
905
Rainfall (mm)
70
60
50
40
30
20
10
0
31/07/2022
8/11/2022
16/02/2023
27/05/2023
4/09/2023
13/12/2023
22/03/2024
30/06/2024
Time (mm/yyyy)


Note: D11 was decommissioned February 2023 and D23 has been reported as blocked since June 2023.
Area 2. Bores within MPAR / Mine Disturbance Area East of MPAR
D10
D11
D113
D19
D23
Daily Rainfall Sum (mm)
Weekly Moving Average [Daily Rainfall Sum (mm)]
Water Elevation (mAHD)
920
915
910
905
Rainfall (mm)
70
60
50
40
30
20
10
0
31/07/2022
8/11/2022
16/02/2023
27/05/2023
4/09/2023
13/12/2023
22/03/2024
30/06/2024
Time (mm/yyyy)


Note: D16A was commissioned in October 2022 to replace D16.
Area 3. Wells Within Mine Disturbance Area South to South-east of MPAR
D15
D16A
D17
D18
Daily Rainfall Sum (mm)
Weekly Moving Average [Daily Rainfall Sum (mm)]
Water Elevation (mAHD)
Rainfall (mm)
920
915
910
905
900
70
60
50
40
30
20
10
0
31/07/2022
8/11/2022
16/02/2023
27/05/2023
4/09/2023
13/12/2023
22/03/2024
30/06/2024
Time (mm/yyyy)


Area 4. Bores Adjacent MPAR and Downgradient
D1
D102
D103
D104
D105
D2
D8
D9
Daily Rainfall Sum (mm)
Weekly Moving Average [Daily Rainfall Sum (mm)]
Water Elevation (mAHD)
Rainfall (mm)
920
915
910
905
900
70
60
50
40
30
20
10
0
31/07/2022
8/11/2022
16/02/2023
27/05/2023
4/09/2023
13/12/2023
22/03/2024
30/06/2024
Time (mm/yyyy)


Note: Monitoring wells have not been surveyed. Water levels are reported as meters below measured point of reference.
Area 5: Brine Waste Leak Detection Wells
MPGM5-D5
MPGM5-D6
Daily Rainfall Sum (mm)
Weekly Moving Average [Daily Rainfall Sum (mm)]
Depth to Water (m btoc)
Rainfall (mm)
Time (mm/yyyy)
0
5
10
15
70
60
50
40
30
20
10
0
31/07/2022
8/11/2022
16/02/2023
27/05/2023
4/09/2023
13/12/2023
22/03/2024
30/06/2024

APPENDIX G TABULATED SURFACE WATER DATA

Purpose	Field_ID	LocCode	Sampled_Date-Time	Field Parameters				Major Anions and Cations											Nutrients								Physical Parameters		
				Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Fluoride	Magnesium	Phenolphthalein Alkalinity	Potassium	Sodium	Sulfate (as SO4)	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)	Nitrogen (N) - Kjeldahl	Nitrogen (N)	Phosphorus	Total Dissolved Solids (TDS) (Filtered)	Total Suspended Solids (TSS)	Turbidity
				mg/L	uS/cm	pH units	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU
ANZECC (2000) or Local Guidelines - Surface Water					2200	6.5-8						350	1.5					1000									1500		
Downstream	Wangcol Ck Surface Water_G	G	27/07/2023	10.9	1970	7.98	75.1	<1	76	78	76	150	<0.5	73.4	<1	17.4	228	695	20	239	30	<10	0.03	0.4	0.4	0.03	1330	<5	0.8
Downstream	Wangcol Ck Surface Water_G	G	24/08/2023	10.1	1770	7.68	0.4	<1	55	47.1	55	95.7	<0.2	41.7	<1	12.8	125	436	<10	127	<10	<10	<0.01	0.2	0.2	<0.01	758	<5	0.9
Downstream	Wangcol Ck Surface Water_G	G	13/09/2023	10.4	1290	8.14	4.3	<1	53	45.7	53	99.2	<0.1	42.4	<1	12.2	128	465	<10	133	<10	<10	<0.01	0.2	0.2	0.02	808	<5	1
Downstream	Wangcol Ck Surface Water_G	G	25/10/2023	8.2	1910	7.5	105.8	<1	84	78.6	84	138	<0.2	72.1	<1	19.9	223	622	<10	240	<10	<10	<0.01	0.4	0.4	<0.01	1180	<5	1.8
Downstream	Wangcol Ck Surface Water_G	G	15/11/2023	7.4	2300	7.53	101.5	<1	94	94	94	185	<0.2	85.9	<1	22.9	281	854	40	279	<10	<10	<0.01	0.4	0.4	0.03	1730	<5	1.3
Downstream	Wangcol Ck Surface Water_G	G	14/12/2023	6.6	850	7.93	44.6	<1	108	35	108	42.3	<2	29.7	<1	9.84	96.9	209	<10	76	<10	<10	<0.01	0.5	0.5	0.02	526	<5	2.3
Downstream	Wangcol Ck Surface Water_G	G	24/01/2024	7.9	458	7.62	73.8	<1	84	20	84	24.3	0.135	14.6	<1	5.85	48.6	107	<10	34	<10	<10	<0.01	0.3	0.3	<0.01	328	<5	4.5
Downstream	Wangcol Ck Surface Water_G	G	21/02/2024	7.6	700	8.21	42.3	<1	109	30.6	109	41.6	0.138	23.6	<1	8.89	77.4	184	<10	56	<10	<10	<0.01	0.3	0.3	<0.01	492	<5	2.5
Downstream	Wangcol Ck Surface Water_G	G	13/03/2024	7.3	1290	7.52	71.5	<1	149	54.5	149	91.7	0.116	48.5	<1	15.3	123	396	20	138	<10	<10	<0.01	0.3	0.3	<0.01	839	<5	2.6
Downstream	Wangcol Ck Surface Water_G	G	24/04/2024	8.9	930	7.78	60.1	<1	83	31.2	83	51.8	0.101	27.8	<1	8.75	86.1	252	<10	84	<10	<10	<0.01	0.1	0.1	<0.01	520	<5	1.3
Downstream	Wangcol Ck Surface Water_G	G	9/05/2024	9.9	760	7.71	135.9	<1	94	33	94	41.8	<0.1	27	<1	9.78	76.9	199	<10	72	<10	<10	<0.01	0.2	0.2	0.01	416	<5	3.1
Downstream	Wangcol Ck Surface Water_G	G	27/06/2024	13.3	1434	7.76	136.5	<1	79	50.8	79	105	0.107	50.4	<1	12.8	150	507	<10	151	<10	<10	<0.01	0.3	0.3	<0.01	900	<5	1.8
Downstream	Wangcol Ck Surface Water_G	G	**Min.**	6.6	458	7.5	0.4	<1	53	20	53	24.3	<0.1	14.6	<1	5.85	48.6	107	<10	34	<10	<10	<0.01	0.1	0.1	<0.01	328	<5	0.8
Downstream	Wangcol Ck Surface Water_G	G	**Max.**	13.3	2300	8.21	136.5	<1	149	94	149	185	<2	85.9	<1	22.9	281	854	40	279	30	<10	0.03	0.5	0.5	0.03	1730	<5	4.5
Downstream	Wangcol Ck Surface Water_G	G	**Average**	9	1305	7.8	71	0.5	89	50	89	89	0.19	45	0.5	13	137	411	10	136	7.1	5	0.007	0.3	0.3	0.012	819	2.5	2
Downstream	Wangcol Ck_F/Stream Gauge	WX22	27/07/2023	12.9	1970	7.46	85.1	<1	63	79.2	63	154	<0.5	74.6	<1	17.6	230	704	40	241	<10	<10	<0.01	0.2	0.2	0.02	1310	<5	0.8
Downstream	Wangcol Ck_F/Stream Gauge	WX22	24/08/2023	10.7	1170	7.47	-0.5	<1	55	47.7	55	91.5	<0.2	42.6	<1	13	127	414	<10	129	<10	<10	<0.01	0.2	0.2	<0.01	750	<5	0.9
Downstream	Wangcol Ck_F/Stream Gauge	WX22	13/09/2023	9.9	1300	7.61	10.9	<1	57	47.8	57	95.8	<0.1	44.1	<1	12.9	134	423	20	140	<10	<10	<0.01	0.6	0.6	0.02	956	<5	1.2
Downstream	Wangcol Ck_F/Stream Gauge	WX22	25/10/2023	8.9	1910	7.44	100.9	<1	78	79	78	139	<0.2	72.4	<1	20.2	225	630	40	250	<10	<10	<0.01	1.5	1.5	<0.01	1160	<5	1.7
Downstream	Wangcol Ck_F/Stream Gauge	WX22	15/11/2023	7	2310	7.56	93.4	<1	92	93.8	92	187	0.082	85.2	<1	22.9	280	858	50	274	<10	<10	<0.01	1	1	<0.01	1760	<5	1.5
Downstream	Wangcol Ck_F/Stream Gauge	WX22	14/12/2023	6.7	840	7.52	62	<1	107	31.7	107	44.6	0.134	26.8	<1	8.95	89.7	214	150	69	<10	<10	<0.01	0.9	0.9	0.02	489	<5	1.6
Downstream	Wangcol Ck_F/Stream Gauge	WX22	24/01/2024	7.2	458	7.69	63.2	<1	87	19.9	87	22.9	0.121	14.3	<1	5.66	48.2	104	20	33	<10	<10	<0.01	0.3	0.3	0.01	304	<5	6.6
Downstream	Wangcol Ck_F/Stream Gauge	WX22	21/02/2024	8.6	700	7.87	62.3	<1	108	31.3	108	41	0.138	23.9	<1	8.79	77.8	182	<10	56	<10	<10	<0.01	0.3	0.3	0.01	501	<5	3.3
Downstream	Wangcol Ck_F/Stream Gauge	WX22	13/03/2024	7.3	1300	7.39	99.4	<1	149	57	149	95.5	0.129	49.6	<1	15.3	126	417	20	143	<10	<10	<0.01	0.3	0.3	<0.01	803	<5	1.8
Downstream	Wangcol Ck_F/Stream Gauge	WX22	24/04/2024	12.46	940	8.18	41.1	<1	82	31.8	82	51.3	0.1	28.4	<1	9.04	88.3	251	<10	82	<10	<10	<0.01	0.2	0.2	<0.01	516	<5	1.5
Downstream	Wangcol Ck_F/Stream Gauge	WX22	9/05/2024	9.4	770	7.57	151.3	<1	92	32.8	92	45.3	<0.1	26.8	<1	10	76.7	207	10	73	<10	<10	<0.01	0.4	0.4	0.03	450	<5	3
Downstream	Wangcol Ck_F/Stream Gauge	WX22	27/06/2024	13.2	1428	7.76	134.8	<1	65	51	65	103	0.138	50.7	<1	13.6	153	510	<10	151	<10	<10	<0.01	0.4	0.4	<0.01	932	<5	1.8
Downstream	Wangcol Ck_F/Stream Gauge	WX22	**Min.**	6.7	458	7.39	-0.5	<1	55	19.9	55	22.9	0.082	14.3	<1	5.66	48.2	104	<10	33	<10	<10	<0.01	0.2	0.2	<0.01	304	<5	0.8
Downstream	Wangcol Ck_F/Stream Gauge	WX22	**Max.**	13.2	2310	8.18	151.3	<1	149	93.8	149	187	<0.5	85.2	<1	22.9	280	858	150	274	<10	<10	<0.01	1.5	1.5	0.03	1760	<5	6.6
Downstream	Wangcol Ck_F/Stream Gauge	WX22	**Average**	9.5	1258	7.6	75	0.5	86	50	86	89	0.12	45	0.5	13	138	410	31	137	5	5	0.005	0.53	0.53	0.012	828	2.5	2.1
Mid-stream	Wangcol Ck Surface Water_C	C	27/07/2023	13.3	321	7.96	-40.3	<1	56	19	56	13.6	0.073	11.5	<1	4.5	25.9	73.8	10	24	30	<10	0.03	0.1	0.1	0.04	188	<5	4.6
Mid-stream	Wangcol Ck Surface Water_C	C	24/08/2023	8.8	277	7.56	63.9	<1	57	18.3	57	13.5	0.078	10.6	<1	4.9	20.9	63.5	<10	19	<10	<10	<0.01	0.2	0.2	<0.01	202	6	8.4
Mid-stream	Wangcol Ck Surface Water_C	C	13/09/2023	11.1	348	8.04	58	<1	66	20.1	66	13.8	0.141	11.6	<1	5.18	27	87.5	<10	25	20	<10	0.02	0.5	0.5	0.02	188	<5	9.7
Mid-stream	Wangcol Ck Surface Water_C	C	25/10/2023	7.9	409	7.29	92.5	<1	85	21.8	85	20.7	0.139	12.1	<1	7.66	49.2	87.7	40	29	20	<10	0.02	1.3	1.3	0.01	236	17	4.2
Mid-stream	Wangcol Ck Surface Water_C	C	16/11/2023	5.1	448	7.31	123.2	<1	107	25.7	107	15.7	0.142	13.9	<1	7.31	48.4	95.7	30	31	<10	<10	<0.01	1	1	0.08	306	10	8
Mid-stream	Wangcol Ck Surface Water_C	C	14/12/2023	3.2	326	7.41	82.5	<1	86	15.7	86	14.5	0.151	7.85	<1	4.68	37.4	47.1	30	19	<10	20	0.02	0.6	0.6	0.02	203	19	12.8
Mid-stream	Wangcol Ck Surface Water_C	C	24/01/2024	5.2	318	7.46	101.2	<1	80	16.8	80	12.4	0.133	8.96	<1	3.92	35.1	60.6	20	19	30	<10	0.03	0.2	0.2	<0.01	218	<5	9.3
Mid-stream	Wangcol Ck Surface Water_C	C	21/02/2024	6.2	302	7.66	75.1	<1	90	21.4	90	8.27	0.128	11.5	<1	5.18	25.5	53.1	10	16	<10	<10	<0.01	0.3	0.3	0.03	174	11	17.6
Mid-stream	Wangcol Ck Surface Water_C	C	13/03/2024	3.7	363	7.09	158.6	<1	109	23.6	109	11.7	0.129	12.8	<1	6.13	21.9	66.6	10	32	60	<10	0.06	0.2	0.3	<0.01	234	<5	3.2
Mid-stream	Wangcol Ck Surface Water_C	C	24/04/2024	7.8	389	8.07	80.5	<1	83	20.5	83	8.62	0.111	12.5	<1	4.76	29.3	88	10	26	10	<10	0.01	0.1	0.1	<0.01	208	<5	3.2
Mid-stream	Wangcol Ck Surface Water_C	C	9/05/2024	8.1	320	7.65	66.7	<1	85	21.9	85	9.94	0.099	12.7	<1	5.43	25.2	58.5	20	21	10	<10	0.01	0.3	0.3	0.04	185	<5	7.3
Mid-stream	Wangcol Ck Surface Water_C	C	27/06/2024	13.3	386	7.75	98	<1	87	22.4	87	11.4	0.125	14.1	<1	4.53	33.6	84.3	<10	29	20	<10	0.02	0.2	0.2	0.05	253	<5	7.3
Mid-stream	Wangcol Ck Surface Water_C	C	**Min.**	3.2	277	7.09	-40.3	<1	56	15.7	56	8.27	0.073	7.85	<1	3.92	20.9	47.1	<10	16	<10	<10	<0.01	0.1	0.1	<0.01	174	<5	3.2
Mid-stream	Wangcol Ck Surface Water_C	C	**Max.**	13.3	448	8.07	158.6	<1	109	25.7	109	20.7	0.151	14.1	<1	7.66	49.2	95.7	40	32	60	20	0.06	1.3	1.3	0.08	306	19	17.6
Mid-stream	Wangcol Ck Surface Water_C	C	**Average**	7.8	351	7.6	80	0.5	83	21	83	13	0.12	12	0.5	5.3	32	72	16	24	18	6.3	0.02	0.42	0.43	0.026	216	6.7	8

Purpose	Field_ID	LocCode	Sampled_Date-Time	Metals																																	
				Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Arsenic III	Arsenic V	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Surface Water							24	24	24	13	700	100	370	370	0.85	2	1	3.3		3.5	3.5	300	300	5	1900	1900	0.06	10	17	17	5	0.05				116	116
Downstream	Wangcol Ck Surface Water_G	G	27/07/2023	<10	<10	<1	<1	<1	<1	<1	33	<1	330	320	<0.1	<1	<10	<10	2	<1	<1	160	60	<1	370	363	<0.04	<1	153	151	<0.2	<1	0.427	<10	<10	<5	<5
Downstream	Wangcol Ck Surface Water_G	G	24/08/2023	10	<10	<1	<1	<1	<1	<1	18	<1	180	180	<0.1	<1	<10	<10	1	1	<1	130	70	<1	142	138	<0.04	1	73	71	<0.2	<1	0.25	<10	<10	7	7
Downstream	Wangcol Ck Surface Water_G	G	13/09/2023	20	<10	<1	<1	<1	<1	<1	15	<1	180	220	<0.1	<1	<10	<10	1	<1	<1	170	50	<1	159	131	<0.04	<1	73	72	<0.2	<1	0.234	<10	<10	<5	<5
Downstream	Wangcol Ck Surface Water_G	G	25/10/2023	20	<10	<1	<1	<1	<1	<1	23	<1	360	320	<0.1	<1	<10	<10	1	1	<1	220	<50	<1	260	265	<0.04	<1	133	130	<0.2	<1	0.422	<10	<10	6	<5
Downstream	Wangcol Ck Surface Water_G	G	15/11/2023	20	<10	<1	<1	<1	<1	<1	28	<1	390	450	<0.1	<1	<10	<10	2	<1	<1	230	<50	<1	275	310	<0.04	<1	177	182	<0.2	<1	0.534	<10	<10	5	<5
Downstream	Wangcol Ck Surface Water_G	G	14/12/2023	50	<10	<1	<1	<1	<1	<1	10	<1	260	190	<0.1	<1	<10	<10	1	<1	<1	410	150	<1	278	263	<0.04	2	47	46	<0.2	<1	0.173	<10	<10	<5	<5
Downstream	Wangcol Ck Surface Water_G	G	24/01/2024	130	10	<1	<1	<1	<1	<1	7	<1	70	<50	<0.1	<1	<10	<10	<1	<1	<1	540	90	<1	426	402	<0.04	2	20	18	0.4	<1	0.088	<10	<10	<5	<5
Downstream	Wangcol Ck Surface Water_G	G	21/02/2024	70	<10	<1	<1	<1	<1	<1	12	<1	<50	80	<0.1	<1	<10	<10	1	<1	<1	480	100	<1	813	726	<0.04	2	43	36	0.3	<1	0.146	<10	<10	<5	<5
Downstream	Wangcol Ck Surface Water_G	G	13/03/2024	40	<10	<1	<1	<1	<1	<1	21	<1	220	200	<0.1	<1	<10	<10	3	<1	<1	500	70	<1	1470	1230	<0.04	2	99	91	<0.2	<1	0.276	<10	<10	<5	6
Downstream	Wangcol Ck Surface Water_G	G	24/04/2024	10	<10	<1	<1	<1	<1	<1	16	<1	140	130	<0.1	<1	<10	<10	1	<1	<1	210	60	<1	716	638	<0.04	1	60	47	0.3	<1	0.185	<10	<10	<5	<5
Downstream	Wangcol Ck Surface Water_G	G	9/05/2024	40	<10	<1	<1	<1	<1	<1	15	<1	100	100	<0.1	<1	<10	<10	<1	<1	<1	370	100	<1	417	411	<0.04	<1	39	37	<0.2	<1	0.15	<10	<10	<5	9
Downstream	Wangcol Ck Surface Water_G	G	27/06/2024	9	<10	<1	<1	<1	<1	<1	24	<1	240	220	<0.1	<1	<1	<0.001	2	<1	<1	140	<50	<1	449	395	<0.04	1	104	92	<0.2	<0.1	0.287	<0.2	<10	9	<5
Downstream	Wangcol Ck Surface Water_G	G	**Min.**	9	<10	<1	<1	<1	<1	<1	7	<1	<50	<50	<0.1	<1	<1	<0.001	<1	<1	<1	130	<50	<1	142	131	<0.04	<1	20	18	<0.2	<0.1	0.088	<0.2	<10	<5	<5
Downstream	Wangcol Ck Surface Water_G	G	**Max.**	130	10	<1	<1	<1	<1	<1	33	<1	390	450	<0.1	<1	<10	<10	3	1	<1	540	150	<1	1470	1230	<0.04	2	177	182	0.4	<1	0.534	<10	<10	9	9
Downstream	Wangcol Ck Surface Water_G	G	**Average**	35	5.4	0.5	0.5	0.5	0.5	0.5	19	0.5	208	203	0.05	0.5	4.6	4.6	1.3	0.58	0.5	297	69	0.5	481	439	0.02	1.1	85	81	0.16	0.46	0.26	4.6	5	3.9	3.7
Downstream	Wangcol Ck_F/Stream Gauge	WX22	27/07/2023	<10	<10	<1	<1	<1	<1	<1	34	<1	320	290	<0.1	<1	<10	<10	2	<1	<1	170	50	<1	394	381	<0.04	<1	152	153	<0.2	<1	0.436	<10	<10	6	<5
Downstream	Wangcol Ck_F/Stream Gauge	WX22	24/08/2023	10	<10	<1	<1	<1	<1	<1	17	<1	180	200	<0.1	<1	<10	<10	1	<1	<1	160	60	<1	143	135	<0.04	3	73	69	<0.2	<1	0.25	<10	<10	9	<5
Downstream	Wangcol Ck_F/Stream Gauge	WX22	13/09/2023	10	<10	<1	<1	<1	<1	<1	15	<1	190	250	<0.1	<1	<10	<10	1	3	2	160	80	<1	157	143	<0.04	<1	74	77	<0.2	<1	0.237	<10	<10	18	11
Downstream	Wangcol Ck_F/Stream Gauge	WX22	25/10/2023	10	<10	<1	<1	<1	<1	<1	25	<1	320	340	<0.1	<1	<10	<10	<1	2	1	240	90	<1	287	342	<0.04	<1	133	130	<0.2	<1	0.421	<10	<10	13	18
Downstream	Wangcol Ck_F/Stream Gauge	WX22	15/11/2023	20	<10	<1	<1	<1	<1	<1	28	<1	390	410	<0.1	<1	<10	<10	2	2	<1	320	50	<1	351	320	<0.04	<1	175	181	<0.2	<1	0.534	<10	<10	20	<5
Downstream	Wangcol Ck_F/Stream Gauge	WX22	14/12/2023	50	<10	<1	<1	<1	<1	<1	10	<1	230	170	<0.1	<1	<10	<10	1	<1	2	360	140	<1	298	276	<0.04	3	47	46	<0.2	<1	0.17	<10	<10	9	10
Downstream	Wangcol Ck_F/Stream Gauge	WX22	24/01/2024	180	<10	<1	<1	<1	<1	<1	8	<1	110	<50	<0.1	<1	<10	<10	1	<1	<1	600	80	<1	467	446	<0.04	4	20	18	0.5	<1	0.092	<10	<10	<5	<5
Downstream	Wangcol Ck_F/Stream Gauge	WX22	21/02/2024	90	20	<1	<1	<1	<1	<1	11	<1	110	90	<0.1	<1	<10	<10	1	<1	<1	500	90	<1	874	799	<0.04	3	43	36	0.2	<1	0.142	<10	<10	<5	6
Downstream	Wangcol Ck_F/Stream Gauge	WX22	13/03/2024	20	<10	<1	3	<1	<1	<1	21	<1	240	170	<0.1	<1	<10	<10	3	<1	2	520	70	<1	1490	1360	<0.04	13	98	100	<0.2	<1	0.267	<10	<10	13	15
Downstream	Wangcol Ck_F/Stream Gauge	WX22	24/04/2024	<10	<10	<1	<1	<1	<1	<1	15	<1	130	170	<0.1	<1	<10	<10	1	<1	<1	190	50	<1	694	729	<0.04	2	55	54	0.2	<1	0.172	<10	<10	<5	6
Downstream	Wangcol Ck_F/Stream Gauge	WX22	9/05/2024	40	<10	<1	<1	<1	<1	<1	15	<1	110	100	<0.1	<1	<10	<10	1	<1	<1	380	90	<1	426	421	0.08	1	40	38	<0.2	<1	0.15	<10	<10	8	5
Downstream	Wangcol Ck_F/Stream Gauge	WX22	27/06/2024	14	<10	<1	<1	<1	<1	<1	25	<1	270	210	<0.1	<1	<1	<0.001	2	29	<1	170	<50	<1	465	421	<0.04	<1	101	94	<0.2	<0.1	0.287	<0.2	<10	10	<5
Downstream	Wangcol Ck_F/Stream Gauge	WX22	**Min.**	<10	<10	<1	<1	<1	<1	<1	8	<1	110	<50	<0.1	<1	<1	<0.001	<1	<1	<1	160	<50	<1	143	135	<0.04	<1	20	18	<0.2	<0.1	0.092	<0.2	<10	<5	<5
Downstream	Wangcol Ck_F/Stream Gauge	WX22	**Max.**	180	20	<1	3	<1	<1	<1	34	<1	390	410	<0.1	<1	<10	<10	3	29	2	600	140	<1	1490	1360	0.08	13	175	181	0.5	<1	0.534	<10	<10	20	18
Downstream	Wangcol Ck_F/Stream Gauge	WX22	**Average**	38	6.3	0.5	0.71	0.5	0.5	0.5	19	0.5	217	202	0.05	0.5	4.6	4.6	1.4	3.3	0.92	314	73	0.5	504	481	0.025	2.6	84	83	0.15	0.46	0.26	4.6	5	9.5	7
Mid-stream	Wangcol Ck Surface Water_C	C	27/07/2023	140	<10	<1	<1	<1	<1	<1	25	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	440	80	<1	155	147	<0.04	9	1	1	<0.2	<1	0.06	<10	<10	<5	6
Mid-stream	Wangcol Ck Surface Water_C	C	24/08/2023	240	20	<1	<1	<1	<1	<1	29	<1	<50	<50	<0.1	<1	<10	<10	<1	1	<1	530	120	<1	205	200	<0.04	17	2	2	<0.2	<1	0.059	<10	<10	6	<5
Mid-stream	Wangcol Ck Surface Water_C	C	13/09/2023	210	20	<1	<1	<1	<1	<1	24	<1	<50	60	<0.1	<1	<10	<10	<1	2	1	460	110	<1	160	132	<0.04	21	2	2	0.2	<1	0.061	<10	<10	12	5
Mid-stream	Wangcol Ck Surface Water_C	C	25/10/2023	320	20	<1	<1	<1	<1	<1	25	<1	<50	<50	<0.1	<1	<10	<10	<1	5	1	590	70	<1	272	304	<0.04	9	3	2	0.3	<1	0.066	<10	<10	55	<5
Mid-stream	Wangcol Ck Surface Water_C	C	16/11/2023	320	<10	<1	<1	<1	<1	<1	31	<1	50	60	<0.1	<1	<10	<10	<1	12	<1	580	60	<1	480	440	<0.04	9	5	4	0.2	<1	0.083	<10	<10	17	8
Mid-stream	Wangcol Ck Surface Water_C	C	14/12/2023	490	20	<1	1	<1	<1	<1	27	<1	90	60	<0.1	<1	<10	<10	<1	<1	<1	700	130	<1	353	296	<0.04	11	4	3	0.5	<1	0.054	<10	<10	10	<5
Mid-stream	Wangcol Ck Surface Water_C	C	24/01/2024	200	10	<1	<1	<1	<1	<1	20	<1	<50	<50	<0.1	<1	<10	<10	<1	2	<1	620	80	<1	246	210	<0.04	5	3	2	0.8	<1	0.052	<10	<10	<5	<5
Mid-stream	Wangcol Ck Surface Water_C	C	21/02/2024	620	20	<1	<1	<1	<1	<1	23	<1	<50	<50	<0.1	<1	<10	<10	<1	2	<1	860	70	<1	206	136	<0.04	4	5	2	0.3	<1	0.063	<10	<10	11	<5
Mid-stream	Wangcol Ck Surface Water_C	C	13/03/2024	280	10	<1	<1	<1	<1	<1	27	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	570	100	<1	560	322	<0.04	6	2	3	0.3	<1	0.07	<10	<10	6	<5
Mid-stream	Wangcol Ck Surface Water_C	C	24/04/2024	50	<10	<1	<1	<1	<1	<1	23	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	380	60	<1	168	142	<0.04	3	3	2	0.4	<1	0.07	<10	<10	9	<5
Mid-stream	Wangcol Ck Surface Water_C	C	9/05/2024	170	20	<1	<1	<1	<1	<1	24	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	440	90	<1	187	139	<0.04	3	2	2	<0.2	<1	0.064	<10	<10	8	<5
Mid-stream	Wangcol Ck Surface Water_C	C	27/06/2024	179	<10	<1	<1	<1	<1	<1	24	<1	60	<50	<0.1	6	<1	<0.001	<1	1	<1	580	70	<1	222	172	<0.04	10	3	3	<0.2	<0.1	0.07	0.3	<10	8	6
Mid-stream	Wangcol Ck Surface Water_C	C	**Min.**	50	<10	<1	<1	<1	<1	<1	20	<1	<50	<50	<0.1	<1	<1	<0.001	<1	<1	<1	380	60	<1	155	132	<0.04	3	1	1	<0.2	<0.1	0.052	0.3	<10	<5	<5
Mid-stream	Wangcol Ck Surface Water_C	C	**Max.**	620	20	<1	1	<1	<1	<1	31	<1	90	60	<0.1	6	<10	<10	<1	12	1	860	130	<1	560	440	<0.04	21	5	4	0.8	<1	0.083	<10	<10	55	8
Mid-stream	Wangcol Ck Surface Water_C	C	**Average**	268	13	0.5	0.54	0.5	0.5	0.5	25	0.5	35	34	0.05	0.96	4.6	4.6	0.5	2.3	0.58	563	87	0.5	268	220	0.02	8.9	2.9	2.3	0.28	0.46	0.064	4.6	5	12	3.8

Purpose	Field_ID	LocCode	Sampled_Date-Time	Field Parameters				Major Anions and Cations											Nutrients								Physical Parameters		
				Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Fluoride	Magnesium	Phenolphthalein Alkalinity	Potassium	Sodium	Sulfate (as SO4)	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)	Nitrogen (N) - Kjeldahl	Nitrogen (N)	Phosphorus	Total Dissolved Solids (TDS) (Filtered)	Total Suspended Solids (TSS)	Turbidity
				mg/L	uS/cm	pH units	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU
ANZECC (2000) or Local Guidelines - Surface Water					2200	6.5-8						350	1.5					1000									1500		
Mid-stream	Wangcol Ck Surface Water_E	E	27/07/2023	12.8	1600	7.47	-99.3	<1	54	58	54	104	<0.2	55.8	<1	14.4	180	455	50	184	<10	<10	<0.01	0.2	0.2	0.04	1020	7	30.8
Mid-stream	Wangcol Ck Surface Water_E	E	24/08/2023	10.6	1790	7.24	-63.3	<1	62	64.5	62	144	<0.2	64.7	<1	18.6	212	678	40	212	<10	<10	<0.01	0.2	0.2	<0.01	1250	8	25.2
Mid-stream	Wangcol Ck Surface Water_E	E	13/09/2023	12	1530	7.65	-87.9	<1	64	50	64	113	<0.1	49.6	<1	13.9	158	537	30	163	<10	<10	<0.01	0.4	0.4	0.02	953	<5	19
Mid-stream	Wangcol Ck Surface Water_E	E	25/10/2023	5.7	4850	6.54	81.1	<1	119	176	119	382	<0.5	201	<1	61.5	725	1820	90	743	20	<10	0.02	0.9	0.9	<0.01	3690	20	44.2
Mid-stream	Wangcol Ck Surface Water_E	E	16/11/2023	7.3	3650	6.78	154.2	<1	94	131	94	330	0.062	143	<1	44.2	513	1650	60	500	<10	<10	<0.01	0.6	0.6	0.03	2930	5	8.8
Mid-stream	Wangcol Ck Surface Water_E	E	14/12/2023	4	4270	6.72	28.5	<1	141	132	141	300	0.115	152	<1	43.6	540	1460	60	535	<10	<10	<0.01	1	1	0.01	3020	11	25.5
Mid-stream	Wangcol Ck Surface Water_E	E	24/01/2024	7.3	1150	7.26	37.1	<1	114	40.3	114	94.6	0.172	37.5	<1	12.2	131	442	20	111	<10	<10	<0.01	0.3	0.3	<0.01	797	<5	6.9
Mid-stream	Wangcol Ck Surface Water_E	E	21/02/2024	8	870	7.49	77.6	<1	127	36.6	127	53.7	0.147	30.3	<1	9.84	99	247	20	77	<10	<10	<0.01	0.3	0.3	0.01	630	5	7.5
Mid-stream	Wangcol Ck Surface Water_E	E	13/03/2024	3.6	7450	6.31	144.3	<1	183	302	183	735	<0.5	336	<1	98.5	1070	3760	50	1270	<10	<10	<0.01	0.8	0.8	<0.01	5980	20	96.6
Mid-stream	Wangcol Ck Surface Water_E	E	24/04/2024	9.99	1780	7.15	-29.8	<1	105	50	105	105	0.104	51.4	<1	15.5	175	523	30	178	<10	<10	<0.01	0.2	0.2	<0.01	1020	<5	16.6
Mid-stream	Wangcol Ck Surface Water_E	E	9/05/2024	9.6	820	7.4	110.7	<1	98	34.8	98	45.8	<0.1	29.3	<1	9.74	85.7	223	30	81	<10	<10	<0.01	0.4	0.4	0.03	500	<5	5.5
Mid-stream	Wangcol Ck Surface Water_E	E	27/06/2024	14.8	1133	7.6	117	<1	74	39.2	74	72.5	0.103	37.6	<1	10.4	116	366	20	112	<10	10	<0.01	0.7	0.7	0.02	720	<5	11.8
Mid-stream	Wangcol Ck Surface Water_E	E	**Min.**	3.6	820	6.31	-99.3	<1	54	34.8	54	45.8	0.062	29.3	<1	9.74	85.7	223	20	77	<10	<10	<0.01	0.2	0.2	<0.01	500	<5	5.5
Mid-stream	Wangcol Ck Surface Water_E	E	**Max.**	14.8	7450	7.65	154.2	<1	183	302	183	735	<0.5	336	<1	98.5	1070	3760	90	1270	20	10	0.02	1	1	0.04	5980	20	96.6
Mid-stream	Wangcol Ck Surface Water_E	E	**Average**	8.8	2574	7.1	39	0.5	103	93	103	207	0.13	99	0.5	29	334	1013	42	347	6.3	5.4	0.006	0.5	0.5	0.015	1876	7.4	25
Mid-stream	Wangcol Creek NC01	NC01	27/07/2023	12	416	8.02	-11.3	<1	76	26.4	76	17.1	0.127	15.9	<1	5.93	33.3	109	20	33	50	<10	0.05	0.2	0.2	0.03	273	<5	3.3
Mid-stream	Wangcol Creek NC01	NC01	24/08/2023	8.9	349	7.76	65.2	<1	75	25.1	75	14.5	0.117	14.2	<1	5.92	25.7	82.9	<10	26	<10	<10	<0.01	0.2	0.2	<0.01	242	7	13.1
Mid-stream	Wangcol Creek NC01	NC01	13/09/2023	9.2	399	8.22	61	<1	80	24	80	13.6	0.159	13.3	<1	5.89	30.3	96.1	10	29	20	<10	0.02	0.8	0.8	0.04	240	26	26.1
Mid-stream	Wangcol Creek NC01	NC01	25/10/2023	6.8	419	7.25	86.9	<1	81	22.1	81	19.1	0.145	12.3	<1	7.11	48.9	87.4	40	29	<10	<10	<0.01	0.8	0.8	0.02	229	18	8.5
Mid-stream	Wangcol Creek NC01	NC01	16/11/2023	5.1	451	7.28	136.2	<1	100	25.7	100	15.8	0.099	13.6	<1	6.86	47	97	10	35	<10	<10	<0.01	0.4	0.4	<0.01	306	<5	4.9
Mid-stream	Wangcol Creek NC01	NC01	14/12/2023	3.7	329	7.48	88.6	<1	82	15.5	82	15.5	0.15	7.5	<1	4.34	37.9	51.9	20	16	<10	<10	<0.01	0.8	0.8	0.03	176	27	19.7
Mid-stream	Wangcol Creek NC01	NC01	24/01/2024	4.6	322	7.47	109.9	<1	79	16.6	79	12.2	0.114	8.85	<1	4.05	36.4	61.5	20	20	<10	<10	<0.01	0.4	0.4	0.01	224	6	7.5
Mid-stream	Wangcol Creek NC01	NC01	21/02/2024	7.5	312	7.73	89.7	<1	91	22.8	91	8.1	0.135	12.1	<1	5.34	26	56.5	<10	18	<10	<10	<0.01	0.4	0.4	0.06	207	13	18.5
Mid-stream	Wangcol Creek NC01	NC01	13/03/2024	3.5	365	7.08	158	<1	106	24.6	106	12.1	0.14	13.5	<1	6.51	24.2	72.8	10	24	<10	<10	<0.01	0.3	0.3	<0.01	251	<5	5.2
Mid-stream	Wangcol Creek NC01	NC01	24/04/2024	8.13	394	7.59	79.7	<1	84	21.5	84	8.21	0.113	13	<1	4.96	30.6	84.8	<10	32	10	<10	0.01	0.1	0.1	<0.01	202	7	3.8
Mid-stream	Wangcol Creek NC01	NC01	9/05/2024	6.6	346	7.86	75.3	<1	98	23.8	98	9.68	0.103	14	<1	6.09	26.6	57.6	20	21	<10	<10	<0.01	0.3	0.3	0.03	213	7	8.2
Mid-stream	Wangcol Creek NC01	NC01	27/06/2024	9.3	420	7.42	127	<1	103	25.6	103	15	0.191	15.9	<1	5.69	39.3	96	30	29	10	<10	0.01	0.7	0.7	0.04	270	16	15.5
Mid-stream	Wangcol Creek NC01	NC01	**Min.**	3.5	312	7.08	-11.3	<1	75	15.5	75	8.1	0.099	7.5	<1	4.05	24.2	51.9	<10	16	<10	<10	<0.01	0.1	0.1	<0.01	176	<5	3.3
Mid-stream	Wangcol Creek NC01	NC01	**Max.**	12	451	8.22	158	<1	106	26.4	106	19.1	0.191	15.9	<1	7.11	48.9	109	40	35	50	<10	0.05	0.8	0.8	0.06	306	27	26.1
Mid-stream	Wangcol Creek NC01	NC01	**Average**	7.1	377	7.6	89	0.5	88	23	88	13	0.13	13	0.5	5.7	34	79	16	26	11	5	0.011	0.45	0.45	0.023	236	11	11
Upstream	Wangcol Creek Weir	LMP01	3/07/2023	10.8	415	8.3	134.1	<1	68	20.2	68	23.6	0.097	11.6	<1	5.48	41.8	93.4	30	30	260	<10	0.26	0.2	0.5	<0.01	254	6	14.2
Upstream	Wangcol Creek Weir	LMP01	7/08/2023	11.1	464	8.12	141.7	<1	89	29.2	89	18.5	0.104	17.9	<1	6.81	38.1	118	<10	40	80	<10	0.08	0.1	0.2	0.02	288	<5	2.3
Upstream	Wangcol Creek Weir	LMP01	4/09/2023	6.5	368	7.75	109.9	<1	69	24.6	69	11.5	0.135	14.1	<1	5.44	23.5	92.5	20	29	60	<10	0.06	0.3	0.4	0.04	192	9	22.7
Upstream	Wangcol Creek Weir	LMP01	3/10/2023	7.4	760	8.21	100.2	<1	117	32	117	23.2	0.266	18.4	<1	10.8	85.9	214	20	66	50	<10	0.05	0.6	0.6	0.04	480	24	22.6
Upstream	Wangcol Creek Weir	LMP01	6/11/2023	8.7	463	7.98	106.8	<1	100	27.1	100	16.2	0.184	13	<1	7.75	52.1	108	20	33	140	<10	0.14	0.5	0.6	0.02	274	29	43.5
Upstream	Wangcol Creek Weir	LMP01	4/12/2023	6.6	202	7.53	125.8	<1	48	14.2	48	3.92	0.144	5.56	<1	4.88	20.5	40.8	30	13	130	10	0.14	0.6	0.7	0.06	144	44	108
Upstream	Wangcol Creek Weir	LMP01	2/01/2024	7.5	465	7.83	135.5	<1	87	20.2	87	10.8	0.18	11.3	<1	6.06	55.8	112	10	36	40	<10	0.04	0.3	0.3	0.01	298	6	4.8
Upstream	Wangcol Creek Weir	LMP01	5/02/2024	6.7	459	7.92	132.6	<1	112	28	112	12.4	0.158	16.9	<1	6.69	38	100	<10	32	40	<10	0.04	0.4	0.4	0.03	275	<5	4.9
Upstream	Wangcol Creek Weir	LMP01	4/03/2024	8.1	371	7.71	139	<1	63	20.5	63	12.6	0.115	10.9	<1	5.82	34.8	86.7	20	29	180	<10	0.18	0.2	0.4	<0.01	220	<5	3.6
Upstream	Wangcol Creek Weir	LMP01	2/04/2024	8.2	354	7.88	125.8	<1	96	23.6	96	10.5	0.146	13.8	<1	5.2	27.9	72.2	<10	21	40	<10	0.04	0.2	0.2	<0.01	230	6	7.6
Upstream	Wangcol Creek Weir	LMP01	6/05/2024	6.1	270	7.87	126.7	<1	67	18.6	67	7.46	0.131	10.9	<1	5.27	18.8	57.3	20	18	90	<10	0.09	0.4	0.5	0.06	164	44	56.4
Upstream	Wangcol Creek Weir	LMP01	3/06/2024	7.8	354	7.92	122.6	<1	84	23.8	84	9.97	0.144	14.2	<1	5.47	32	74.6	20	26	150	<10	0.15	0.3	0.4	0.02	232	18	45.4
Upstream	Wangcol Creek Weir	LMP01	**Min.**	6.1	202	7.53	100.2	<1	48	14.2	48	3.92	0.097	5.56	<1	4.88	18.8	40.8	<10	13	40	<10	0.04	0.1	0.2	<0.01	144	<5	2.3
Upstream	Wangcol Creek Weir	LMP01	**Max.**	11.1	760	8.3	141.7	<1	117	32	117	23.6	0.266	18.4	<1	10.8	85.9	214	30	66	260	10	0.26	0.6	0.7	0.06	480	44	108
Upstream	Wangcol Creek Weir	LMP01	**Average**	8	412	7.9	125	0.5	83	24	83	13	0.15	13	0.5	6.3	39	97	17	31	105	5.4	0.11	0.34	0.43	0.026	254	16	28

Purpose	Field_ID	LocCode	Sampled_Date-Time	Metals																																	
				Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Arsenic III	Arsenic V	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Surface Water							24	24	24	13	700	100	370	370	0.85	2	1	3.3		3.5	3.5	300	300	5	1900	1900	0.06	10	17	17	5	0.05				116	116
Mid-stream	Wangcol Ck Surface Water_E	E	27/07/2023	<10	<10	<1	<1	<1	<1	<1	41	<1	270	230	<0.1	<1	<10	<10	17	<1	<1	3760	2520	<1	2780	2450	<0.04	<1	149	146	<0.2	<1	0.332	<10	<10	12	8
Mid-stream	Wangcol Ck Surface Water_E	E	24/08/2023	<10	<10	<1	<1	<1	<1	<1	42	<1	300	300	<0.1	<1	<10	<10	20	<1	<1	3840	2670	<1	2990	2840	<0.04	1	177	173	<0.2	<1	0.391	<10	<10	14	11
Mid-stream	Wangcol Ck Surface Water_E	E	13/09/2023	10	10	<1	<1	<1	<1	<1	35	<1	230	270	<0.1	<1	<10	<10	14	1	<1	3130	830	<1	2210	2210	<0.04	<1	128	128	<0.2	<1	0.292	<10	<10	16	7
Mid-stream	Wangcol Ck Surface Water_E	E	25/10/2023	20	<10	<1	<1	<1	<1	<1	47	<1	1160	1010	<0.1	<1	<10	<10	65	2	<1	7380	4450	<1	6900	5860	<0.04	<1	609	550	<0.2	<1	1.18	<10	<10	44	22
Mid-stream	Wangcol Ck Surface Water_E	E	16/11/2023	20	<10	<1	<1	<1	<1	<1	52	<1	760	850	<0.1	<1	<10	<10	39	4	<1	3950	650	<1	4920	4740	<0.04	<1	432	439	<0.2	<1	0.896	<10	<10	46	16
Mid-stream	Wangcol Ck Surface Water_E	E	14/12/2023	50	<10	<1	<1	<1	<1	<1	46	<1	980	800	<0.1	<1	<10	<10	40	3	<1	3330	1580	<1	5660	5510	<0.04	2	451	428	<0.2	<1	0.933	<10	<10	29	16
Mid-stream	Wangcol Ck Surface Water_E	E	24/01/2024	40	<10	<1	<1	<1	<1	<1	26	<1	180	160	<0.1	<1	<10	<10	10	1	<1	2170	1020	<1	1950	1880	<0.04	2	91	85	0.2	<1	0.219	<10	<10	10	<5
Mid-stream	Wangcol Ck Surface Water_E	E	21/02/2024	40	<10	<1	<1	<1	<1	<1	28	<1	80	110	<0.1	<1	<10	<10	7	<1	<1	1860	680	<1	1930	1850	<0.04	2	67	59	0.2	<1	0.176	<10	<10	13	5
Mid-stream	Wangcol Ck Surface Water_E	E	13/03/2024	<10	10	<1	<1	<1	<1	<1	63	<1	1600	1460	<0.1	<1	<10	<10	116	<1	4	12,200	8700	<1	13,800	13,300	<0.04	<1	1080	1040	<0.2	<1	2.09	<10	<10	37	37
Mid-stream	Wangcol Ck Surface Water_E	E	24/04/2024	<10	<10	<1	<1	<1	<1	<1	34	<1	280	260	<0.1	<1	<10	<10	19	<1	1	3060	1130	<1	2640	2370	<0.04	1	170	137	<0.2	<1	0.356	<10	<10	10	8
Mid-stream	Wangcol Ck Surface Water_E	E	9/05/2024	20	<10	<1	<1	<1	<1	<1	30	<1	110	120	<0.1	<1	<10	<10	6	<1	<1	1360	900	<1	1340	1350	<0.04	<1	56	54	<0.2	<1	0.167	<10	<10	7	<5
Mid-stream	Wangcol Ck Surface Water_E	E	27/06/2024	30	<10	<1	<1	<1	<1	-	23	<1	190	170	<0.1	<1	<1	<0.001	9	7	<1	1680	740	<1	1160	1030	<0.04	2	98	80	<0.2	<0.1	0.215	<0.2	<10	21	7
Mid-stream	Wangcol Ck Surface Water_E	E	**Min.**	<10	<10	<1	<1	<1	<1	<1	23	<1	80	110	<0.1	<1	<1	<0.001	6	<1	<1	1360	650	<1	1160	1030	<0.04	<1	56	54	<0.2	<0.1	0.167	<0.2	<10	7	<5
Mid-stream	Wangcol Ck Surface Water_E	E	**Max.**	50	10	<1	<1	<1	<1	<1	63	<1	1600	1460	<0.1	<1	<10	<10	116	7	4	12200	8700	<1	13800	13300	<0.04	2	1080	1040	0.2	<1	2.09	<10	<10	46	37
Mid-stream	Wangcol Ck Surface Water_E	E	**Average**	21	5.8	0.5	0.5	0.5	0.5	0.5	39	0.5	512	478	0.05	0.5	4.6	4.6	30	1.8	0.83	3977	2156	0.5	4023	3783	0.02	1.1	292	277	0.12	0.46	0.6	4.6	5	22	12
Mid-stream	Wangcol Creek NC01	NC01	27/07/2023	280	<10	<1	<1	<1	<1	<1	24	<1	<50	<50	<0.1	<1	<10	<10	<1	1	<1	870	<50	<1	263	114	<0.04	14	2	2	0.2	<1	0.076	<10	<10	11	<5
Mid-stream	Wangcol Creek NC01	NC01	24/08/2023	210	<10	<1	<1	<1	<1	<1	21	<1	<50	110	<0.1	<1	<10	<10	<1	2	1	670	<50	<1	224	209	<0.04	25	2	2	<0.2	<1	0.069	<10	<10	10	<5
Mid-stream	Wangcol Creek NC01	NC01	13/09/2023	460	<10	<1	<1	<1	<1	<1	26	<1	60	100	<0.1	<1	<10	<10	<1	5	2	1080	100	1	458	122	<0.04	28	4	2	0.3	<1	0.071	<10	<10	31	5
Mid-stream	Wangcol Creek NC01	NC01	25/10/2023	70	<10	<1	<1	<1	<1	<1	20	<1	<50	<50	<0.1	<1	<10	<10	<1	2	<1	410	80	<1	436	401	<0.04	7	4	3	0.3	<1	0.065	<10	<10	17	<5
Mid-stream	Wangcol Creek NC01	NC01	16/11/2023	80	10	<1	<1	<1	<1	<1	26	<1	<50	<50	<0.1	<1	<10	<10	<1	8	<1	520	70	<1	552	476	<0.04	9	5	3	0.2	<1	0.084	<10	<10	10	<5
Mid-stream	Wangcol Creek NC01	NC01	14/12/2023	220	10	<1	<1	<1	<1	<1	21	<1	100	80	<0.1	<1	<10	<10	<1	<1	<1	830	180	<1	623	574	<0.04	11	4	3	0.5	<1	0.052	<10	<10	8	<5
Mid-stream	Wangcol Creek NC01	NC01	24/01/2024	200	<10	<1	<1	<1	<1	<1	18	<1	80	<50	<0.1	<1	<10	<10	<1	2	<1	650	60	<1	323	244	<0.04	8	3	2	0.9	<1	0.052	<10	<10	8	<5
Mid-stream	Wangcol Creek NC01	NC01	21/02/2024	480	10	<1	<1	<1	<1	<1	19	<1	50	<50	<0.1	<1	<10	<10	<1	1	<1	720	<50	<1	169	104	<0.04	6	5	2	0.4	<1	0.064	<10	<10	10	<5
Mid-stream	Wangcol Creek NC01	NC01	13/03/2024	60	<10	<1	4	<1	<1	<1	25	<1	110	<50	<0.1	<1	<10	<10	<1	2	3	550	120	<1	383	330	<0.04	22	5	4	0.3	<1	0.069	<10	<10	<5	6
Mid-stream	Wangcol Creek NC01	NC01	24/04/2024	60	<10	<1	<1	<1	<1	<1	20	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	1	380	<50	<1	319	113	<0.04	5	3	3	0.4	<1	0.065	<10	<10	9	6
Mid-stream	Wangcol Creek NC01	NC01	9/05/2024	170	<10	<1	<1	<1	<1	<1	22	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	570	90	<1	454	238	<0.04	4	3	2	0.2	<1	0.069	<10	<10	7	<5
Mid-stream	Wangcol Creek NC01	NC01	27/06/2024	423	<10	<1	<1	<1	<1	<1	27	<1	<50	50	<0.1	<1	<1	<0.001	<1	3	<1	1430	180	<1	599	474	<0.04	8	4	3	0.2	<0.1	0.076	0.8	<10	17	7
Mid-stream	Wangcol Creek NC01	NC01	**Min.**	60	<10	<1	<1	<1	<1	<1	18	<1	<50	<50	<0.1	<1	<1	<0.001	<1	<1	<1	380	<50	<1	169	104	<0.04	4	2	2	<0.2	<0.1	0.052	0.8	<10	<5	<5
Mid-stream	Wangcol Creek NC01	NC01	**Max.**	480	10	<1	4	<1	<1	<1	27	<1	110	110	<0.1	<1	<10	<10	<1	8	3	1430	180	1	623	574	<0.04	28	5	4	0.9	<1	0.084	<10	<10	31	7
Mid-stream	Wangcol Creek NC01	NC01	**Average**	226	6.3	0.5	0.79	0.5	0.5	0.5	22	0.5	48	45	0.05	0.5	4.6	4.6	0.5	2.3	0.92	723	82	0.54	400	283	0.02	12	3.7	2.6	0.33	0.46	0.068	4.7	5	12	3.7
Upstream	Wangcol Creek Weir	LMP01	3/07/2023	150	<10	<1	<1	<1	<1	<1	18	<1	<50	<50	<0.1	<1	<10	<10	<1	6	2	180	<50	<1	92	73	<0.04	18	7	3	0.8	<1	0.055	<10	<10	25	8
Upstream	Wangcol Creek Weir	LMP01	7/08/2023	40	<10	<1	<1	<1	<1	<1	23	<1	<50	<50	<0.1	<1	<10	<10	<1	2	<1	120	<50	<1	67	38	<0.04	50	4	3	0.4	<1	0.09	<10	<10	8	<5
Upstream	Wangcol Creek Weir	LMP01	4/09/2023	340	10	<1	1	<1	<1	<1	39	<1	<50	<50	<0.1	<1	<10	<10	<1	4	3	440	<50	<1	101	<1	<0.04	104	4	4	0.3	<1	0.008	<10	<10	21	11
Upstream	Wangcol Creek Weir	LMP01	3/10/2023	540	<10	<1	<1	<1	<1	<1	30	<1	90	150	<0.1	<1	<10	<10	1	8	4	850	110	<1	312	8	<0.04	57	8	5	0.4	<1	0.105	<10	<10	33	9
Upstream	Wangcol Creek Weir	LMP01	6/11/2023	1090	10	<1	2	<1	<1	<1	26	<1	<50	<50	0.1	1	<10	<10	1	8	3	1270	<50	2	186	18	<0.04	19	7	3	0.8	<1	0.08	<10	<10	49	9
Upstream	Wangcol Creek Weir	LMP01	4/12/2023	1390	60	<1	2	<1	<1	<1	22	<1	<50	<50	<0.1	2	<10	<10	1	7	2	1510	110	3	117	24	<0.04	5	7	4	0.4	<1	0.038	<10	<10	39	7
Upstream	Wangcol Creek Weir	LMP01	2/01/2024	110	<10	<1	<1	<1	<1	<1	19	<1	60	<50	<0.1	<1	<10	<10	<1	3	1	130	<50	<1	69	7	<0.04	12	5	4	1	<1	0.062	<10	<10	23	5
Upstream	Wangcol Creek Weir	LMP01	5/02/2024	100	30	<1	<1	<1	<1	<1	24	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	140	<50	<1	96	16	<0.04	11	5	4	0.8	<1	0.088	<10	<10	10	<5
Upstream	Wangcol Creek Weir	LMP01	4/03/2024	80	<10	2	<1	<1	<1	<1	18	<1	60	<50	<0.1	<1	<10	<10	<1	4	<1	140	<50	<1	40	2	<0.04	6	4	4	1.2	<1	0.057	<10	<10	10	<5
Upstream	Wangcol Creek Weir	LMP01	2/04/2024	70	<10	<1	<1	<1	<1	<1	20	<1	<50	<50	<0.1	<1	<10	<10	<1	2	<1	190	<50	<1	274	<1	<0.04	7	4	2	0.6	<1	0.067	<10	<10	9	5
Upstream	Wangcol Creek Weir	LMP01	6/05/2024	990	10	<1	2	<1	<1	<1	26	1	<50	<50	0.4	2	<10	<10	3	8	<1	1200	<50	2	294	23	<0.04	6	10	3	0.3	<1	0.058	<10	<10	56	7
Upstream	Wangcol Creek Weir	LMP01	3/06/2024	520	10	<1	<1	<1	<1	<1	22	<1	<50	<50	0.1	<1	<10	<0.01	<1	7	3	720	<50	<1	84	18	<0.04	9	6	3	0.5	<1	0.062	<10	<10	52	16
Upstream	Wangcol Creek Weir	LMP01	**Min.**	40	<10	<1	<1	<1	<1	<1	18	<1	<50	<50	<0.1	<1	<10	<0.01	<1	<1	<1	120	<50	<1	40	<1	<0.04	5	4	2	0.3	<1	0.008	<10	<10	8	<5
Upstream	Wangcol Creek Weir	LMP01	**Max.**	1390	60	2	2	<1	<1	<1	39	1	90	150	0.4	2	<10	<10	3	8	4	1510	110	3	312	73	<0.04	104	10	5	1.2	<1	0.105	<10	<10	56	16
Upstream	Wangcol Creek Weir	LMP01	**Average**	452	13	0.63	0.92	0.5	0.5	0.5	24	0.54	36	35	0.088	0.79	5	4.6	0.83	5	1.7	574	39	0.96	144	19	0.02	25	5.9	3.5	0.63	0.5	0.064	5	5	28	7

Purpose	LocCode	Sampled_Date-Time	Field Parameters				Major Anions and Cations											NA	Nutrients											Physical Parameters		
			Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Fluoride	Magnesium	Phenolphthalein Alkalinity	Potassium	Sodium	Sulfate (as SO4)	Oil & Grease	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)	Nitrogen (N) - Kjeldahl	Nitrogen (N)	Total Phosphate (PO4)	Total Phosphate (PO4) (Filtered)	Phosphorus	Phosphorus (Filtered)	Total Dissolved Solids (TDS) (Filtered)	Total Suspended Solids (TSS)	Turbidity
			mg/L	uS/cm	pH units	mV	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	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU
EPL 13007 - Discharge Limits (LDP12)				500	6.5-8.5																										50	25
Upstream	LDP12	25/07/2023	10.3	362	7.58	130.1	-	51.75	5.39	51.75	28.7	0.064	2.06	0	5.24	57.8	53.6	<5	80	20	720	<10	0.72	0.7	1.4	<0.1	<0.1	0.02	0.01	270	21.33	4.14
Upstream	LDP12	10/10/2023	5	254	7.46	122.5	-	35.78	2.58	35.78	28.7	0.069	1.06	0	3.67	44.1	30.9	<5	70	11	430	<10	0.43	0.4	0.8	<0.1	<0.1	<0.01	<0.01	530	14.33	3.66
Upstream	LDP12	5/12/2023	5	236	7.04	133.8	-	25.73	3.91	25.73	27.2	<0.05	1.47	0	3.73	37.4	38.6	<5	90	14	310	<10	0.31	0.5	0.8	<0.1	<0.1	0.02	<0.01	110	8.333	8.69
Upstream	LDP12	22/12/2023	7.6	233	7.6	144	<1	<1	5.08	<1	16.2	0.072	2.08	<1	3.73	37.4	50	<5	90	18	370	<10	0.37	0.2	0.6	<0.1	<0.1	<0.01	<0.01	135	0.8	3.73
Upstream	LDP12	8/01/2024	6.9	267	7.65	111.2	<1	19	30	19	22.2	0.069	16	<1	6.15	21.4	66	<5	90	2	390	<10	0.39	0.3	0.7	<0.1	<0.1	<0.01	<0.01	136	3.333	2.07
Upstream	LDP12	24/01/2024	5.5	351	7.21	74.6	<1	12	9.61	12	27.2	<0.05	4.78	<1	5.17	44.8	103	<5	50	31	290	<10	0.29	0.3	0.6	<0.1	<0.1	<0.01	<0.01	228	6.4	8.76
Upstream	LDP12	7/02/2024	5.2	281	7.27	129.6	<1	18	8.42	18	15.8	0.077	3.81	<1	4.11	34.8	87.2	<5	60	26	300	<10	0.3	0.2	0.5	<0.1	<0.1	0.02	<0.01	188	2	3.54
Upstream	LDP12	1/03/2024	5.9	367	7.59	169.7	<1	26	14.1	26	18	0.042	6.3	<1	5.35	44.1	106	<5	60	35	380	<10	0.38	0.1	0.5	<0.1	<0.1	<0.01	<0.01	224	2	4.57
Upstream	LDP12	19/03/2024	6.1	353	7.07	121.5	<1	27	12.8	27	14.4	0.111	6.15	<1	4.36	40.8	114	<5	50	33	240	<10	0.24	0.2	0.4	<0.1	<0.1	<0.01	<0.01	208	7.333	10.6
Upstream	LDP12	11/04/2024	6.4	253	7.04	140.2	<1	9	8.91	9	6	0.097	4.63	<1	3.88	34.8	88	<5	70	32	190	<10	0.19	0.2	0.4	<0.1	<0.1	<0.01	<0.01	167	11.67	16.5
Upstream	LDP12	14/05/2024	9.3	335	6.94	169.6	<1	8	13.8	8	6.48	0.158	7.35	<1	4.02	39	127	<5	100	43	210	10	0.22	0.3	0.5	<0.1	<0.1	0.03	0.01	241	3.333	5.97
Upstream	LDP12	**Min.**	5.0	233	6.94	75	<1	<1	3	<1	6	0.04	1	0	4	21	31	<5	50	2	190	<10	0.19	0.1	0.4	<0.1	<0.1	<0.01	<0.01	110	1	2
Upstream	LDP12	**Max.**	10.3	367	7.65	170	<1	52	30	52	29	0.16	16	<1	6	58	127	<5	100	43	720	10	1	1	1	<0.1	<0.1	0.03	0.01	530	21	17
Upstream	LDP12	**Average**	6.7	299	7.30	132	1	21	10	21	19	0.07	5	0	5	40	79	3	74	24	348	6	0.35	0.3	1	0.05	0.05	0.01	0.01	222	7	7

			Metals																																	
			Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Arsenic III	Arsenic V	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EPL 13007 - Discharge Limits (LDP12)																																				
Purpose	**LocCode**	**Sampled_Date-Time**																																		
Upstream	LDP12	25/07/2023	6260	180	1	<1	<1	<1	<1	5	<1	70	80	<0.1	<1	<10	<10	<1	<1	<1	<50	<50	<1	63	60	<0.04	9	2	2	<10	<1	0.014	<10	<10	<5	<5
Upstream	LDP12	10/10/2023	3730	150	<1	<1	<1	<1	<1	4	<1	<50	100	<0.1	<1	<10	<10	<1	<1	<1	<50	<50	<1	18	17	<0.04	4	2	1	<10	<1	0.006	<10	<10	<5	<5
Upstream	LDP12	5/12/2023	12,500	140	<1	<1	<1	<1	<1	7	<1	<50	<50	<0.1	<1	<10	<10	1	<1	<1	<50	<50	<1	29	24	<0.04	5	3	2	2.7	<1	0.012	<10	<10	<5	9
Upstream	LDP12	22/12/2023	240	<10	<1	<1	<1	<1	<1	5	<1	<50	<50	<0.1	<1	<10	<10	2	<1	<1	<50	<50	<1	65	62	<0.04	4	5	5	3.6	<1	0.011	<10	<10	<5	<5
Upstream	LDP12	8/01/2024	180	30	<1	<1	<1	<1	<1	7	<1	<50	<50	<0.1	<1	<10	<10	2	<1	<1	<50	<50	<1	79	75	<0.04	3	6	6	4	<1	0.014	<10	<10	34	5
Upstream	LDP12	24/01/2024	450	30	<1	<1	<1	<1	<1	13	<1	<50	<50	0.1	<1	<10	<10	7	<1	<1	70	<50	<1	199	193	<0.04	2	9	8	3.4	<1	0.021	<10	<10	<5	<5
Upstream	LDP12	7/02/2024	470	<10	<1	<1	<1	<1	<1	10	<1	<50	<50	0.2	<1	<10	<10	9	<1	<1	<50	<50	<1	157	17	<0.04	2	14	4	2.6	<1	0.02	<10	<10	26	<5
Upstream	LDP12	1/03/2024	310	30	<1	<1	<1	<1	<1	12	<1	<50	<50	0.1	<1	<10	<10	6	<1	<1	<50	<50	2	218	203	<0.04	2	10	10	2.4	<1	0.034	<10	<10	6	<5
Upstream	LDP12	19/03/2024	690	30	<1	<1	<1	<1	<1	12	<1	<50	<50	0.5	<1	<10	<10	18	3	<1	<50	<50	<1	260	254	<0.04	3	27	25	2.8	<1	0.032	<10	<10	106	82
Upstream	LDP12	11/04/2024	260	<10	<1	<1	<1	1.4	<1	8	<1	<50	<50	0.7	<1	<10	<10	22	<1	<1	<50	<50	<1	182	164	<0.04	1	35	32	2.9	<1	0.017	<10	<10	124	104
Upstream	LDP12	14/05/2024	100	10	<1	<1	<1	<1	<1	14	<1	<50	<50	0.7	<1	<10	<10	15	<1	<1	<50	<50	<1	339	362	<0.04	1	25	26	2.4	<1	0.033	<10	<10	86	88
Upstream	LDP12	**Min.**	100	<10	<1	<1	<1	<1	<1	4	<1	<50	<50	<0.1	<1	<10	<10	<1	<1	<1	<50	<50	<1	18	17	<0.04	1	2	1	2	<1	0	<10	<10	<5	<5
Upstream	LDP12	**Max.**	12500	180	1	<1	<1	1	<1	14	<1	70	100	1	<1	<10	<10	22	3	<1	70	<50	2	339	362	<0.04	9	35	32	<10	<1	0	<10	<10	124	104
Upstream	LDP12	**Average**	2290	56	1	1	1	1	1	9	1	29	37	0.2	1	5	5	8	1	1	29	25	1	146	130	0	3	13	11	3	1	0	5	5	36	28

APPENDIX H TABULATED GROUNDWATER DATA

Purpose	LocCode	Sampled_Date-Time	Field Parameters							Major Anions and Cations										
			Groundwater Elevation (Field)	Standing Water Level (Field)	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Purge Volume	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Fluoride	Magnesium	Phenolphthalein Alkalinity	Potassium	Sodium	Sulfate (as SO4)
			m AHD	m BTOC	mg/L	uS/cm	pH units	L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ANZECC (2000) or Local Guidelines - Groundwater						2600	6.5-8							350	1.5					1000
Within Mine Disturbance Area S & SE of MPAR	D16A	21/09/2023	913.062	38.100	2.3	970	6.78	131	64.7	<1	315	123	315	19.7	0.326	41.9	<1	21.8	34.1	191
Within Mine Disturbance Area S & SE of MPAR	D16A	23/11/2023	912.862	37.800	1.7	940	6.87	133	129.6	<1	276	113	276	20.3	0.28	39.4	<1	20.6	33.7	202
Within Mine Disturbance Area S & SE of MPAR	D16A	15/03/2024	913.362	36.700	2.7	930	7.07	140	-4.5	<1	290	110	290	21.7	0.264	40.8	<1	22.8	24.5	204
Within Mine Disturbance Area S & SE of MPAR	D16A	21/06/2024	913.362	38.100	3.2	1001	6.85	131	153.4	<1	313	110	313	22.8	0.419	43.5	<1	20.6	38	217
Within Mine Disturbance Area S & SE of MPAR	D16A	**Min.**	912.862	36.700	1.7	930	6.78	131	-4.5	<1	276	110	276	19.7	0.264	39.4	<1	20.6	24.5	191
Within Mine Disturbance Area S & SE of MPAR	D16A	**Max.**	913.362	38.100	3.2	1001	7.07	140	153.4	<1	315	123	315	22.8	0.419	43.5	<1	22.8	38	217
Within Mine Disturbance Area S & SE of MPAR	D16A	**Average**	913.000	38.000	2.5	960	6.9	134	86	0.5	299	114	299	21	0.32	41	0.5	21	33	204
Adjacent to MPAR and Downgradient	D1	20/09/2023	910.631	2.300	0.7	9510	5.92	131	35.6	<1	179	438	179	876	<1	468	<1	115	1590	4390
Adjacent to MPAR and Downgradient	D1	22/11/2023	910.231	2.700	1.5	2020	5.94	50	130.9	<1	26	96.1	26	121	<0.2	78	<1	17.9	226	823
Adjacent to MPAR and Downgradient	D1	13/03/2024	910.731	2.200	1.1	10,330	5.98	132	42.4	<1	142	511	142	959	<1	512	<1	135	1560	5330
Adjacent to MPAR and Downgradient	D1	19/06/2024	910.631	2.300	3.3	9370	5.99	131	201.2	<1	170	427	170	954	<1	432	<1	121	1590	5170
Adjacent to MPAR and Downgradient	D1	**Min.**	910.231	2.200	0.7	2020	5.92	50	35.6	<1	26	96.1	26	121	<0.2	78	<1	17.9	226	823
Adjacent to MPAR and Downgradient	D1	**Max.**	910.731	2.700	3.3	10330	5.99	132	201.2	<1	179	511	179	959	<1	512	<1	135	1590	5330
Adjacent to MPAR and Downgradient	D1	**Average**	911.000	2.400	1.7	7808	6	111	103	0.5	129	368	129	728	0.4	373	0.5	97	1242	3928
Adjacent to MPAR and Downgradient	D102	3/08/2023	908.222	2.100	1.8	8750	6.08	15	54.8	<1	110	548	110	1020	<1	483	<1	80.5	1100	3810
Adjacent to MPAR and Downgradient	D102	26/10/2023	907.922	2.400	1.7	8520	6.15	15	85.9	<1	98	522	98	1040	<1	480	<1	77.8	1110	3730
Adjacent to MPAR and Downgradient	D102	1/02/2024	908.422	1.900	2.5	8550	6.12	19	113.3	<1	63	523	63	1160	<0.5	474	<1	77.8	1140	4310
Adjacent to MPAR and Downgradient	D102	23/05/2024	908.222	2.100	4.5	9490	6.08	12	175.3	<1	58	488	58	1140	<0.2	452	<1	66.3	1050	3900
Adjacent to MPAR and Downgradient	D102	**Min.**	907.922	1.900	1.7	8520	6.08	12	54.8	<1	58	488	58	1020	<0.2	452	<1	66.3	1050	3730
Adjacent to MPAR and Downgradient	D102	**Max.**	908.422	2.400	4.5	9490	6.15	19	175.3	<1	110	548	110	1160	<1	483	<1	80.5	1140	4310
Adjacent to MPAR and Downgradient	D102	**Average**	908.000	2.100	2.6	8828	6.1	15	107	0.5	82	520	82	1090	0.34	472	0.5	76	1100	3938
Adjacent to MPAR and Downgradient	D103	2/08/2023	905.764	7.100	1.4	3440	6.26	38	22.5	<1	252	154	252	180	<0.5	149	<1	32.6	449	1420
Adjacent to MPAR and Downgradient	D103	25/10/2023	905.464	7.400	1.5	3580	6.26	37	86.1	<1	228	168	228	203	<0.5	162	<1	33.1	460	1580
Adjacent to MPAR and Downgradient	D103	31/01/2024	905.764	7.100	1.1	3660	6.2	38	79.3	<1	215	175	215	219	<0.5	171	<1	34.2	483	1730
Adjacent to MPAR and Downgradient	D103	22/05/2024	905.464	7.400	1.7	4370	6.19	37	191.6	<1	205	181	205	240	<0.2	176	<1	31.7	492	1770
Adjacent to MPAR and Downgradient	D103	**Min.**	905.464	7.100	1.1	3440	6.19	37	22.5	<1	205	154	205	180	<0.2	149	<1	31.7	449	1420
Adjacent to MPAR and Downgradient	D103	**Max.**	905.764	7.400	1.7	4370	6.26	38	191.6	<1	252	181	252	240	<0.5	176	<1	34.2	492	1770
Adjacent to MPAR and Downgradient	D103	**Average**	906.000	7.300	1.4	3763	6.2	38	95	0.5	225	170	225	211	0.21	165	0.5	33	471	1625
Adjacent to MPAR and Downgradient	D104	3/08/2023	904.423	4.600	1.8	930	6.1	10	49.5	<1	90	68.2	90	60.6	<0.1	38.4	<1	8.82	68.3	288
Adjacent to MPAR and Downgradient	D104	26/10/2023	904.523	4.500	1.7	970	6.07	6	55.6	<1	85	65.2	85	68.4	<0.1	40	<1	8.67	82.2	288
Adjacent to MPAR and Downgradient	D104	1/02/2024	904.723	4.300	1.3	1210	5.99	8	67	<1	74	82.7	74	75.5	<0.1	54.5	<1	10.6	90.3	429
Adjacent to MPAR and Downgradient	D104	23/05/2024	904.623	4.400	1.3	1320	5.74	12	226.7	<1	47	84.8	47	81.2	<0.05	57.8	<1	9.01	70.7	434
Adjacent to MPAR and Downgradient	D104	**Min.**	904.423	4.300	1.3	930	5.74	6	49.5	<1	47	65.2	47	60.6	<0.05	38.4	<1	8.67	68.3	288
Adjacent to MPAR and Downgradient	D104	**Max.**	904.723	4.600	1.8	1320	6.1	12	226.7	<1	90	84.8	90	81.2	<0.1	57.8	<1	10.6	90.3	434
Adjacent to MPAR and Downgradient	D104	**Average**	905.000	4.500	1.5	1108	6	9	100	0.5	74	75	74	71	0.044	48	0.5	9.3	78	360
Adjacent to MPAR and Downgradient	D105	3/08/2023	907.231	6.600	1.3	3120	5.99	31	36.4	<1	155	168	155	216	<0.5	162	<1	25.2	312	1320
Adjacent to MPAR and Downgradient	D105	26/10/2023	906.931	6.900	1	3120	6.07	29	57.2	<1	151	175	151	220	<0.5	165	<1	24.4	312	1300
Adjacent to MPAR and Downgradient	D105	31/01/2024	904.431	9.400	1.3	3210	5.96	14	106.2	<1	122	181	122	250	0.12	168	<1	26.5	337	1480
Adjacent to MPAR and Downgradient	D105	24/05/2024	907.131	6.700	2.2	3380	6.07	31	234.2	<1	146	163	146	221	<0.2	157	<1	22.1	305	1300
Adjacent to MPAR and Downgradient	D105	**Min.**	904.431	6.600	1	3120	5.96	14	36.4	<1	122	163	122	216	0.12	157	<1	22.1	305	1300
Adjacent to MPAR and Downgradient	D105	**Max.**	907.231	9.400	2.2	3380	6.07	31	234.2	<1	155	181	155	250	<0.5	168	<1	26.5	337	1480
Adjacent to MPAR and Downgradient	D105	**Average**	906.000	7.400	1.5	3208	6	26	109	0.5	144	172	144	227	0.18	163	0.5	25	317	1350
Adjacent to MPAR and Downgradient	D2	13/07/2023	903.600	2.300	1.4	1630	5.58	57	138.1	<1	7	78.6	7	101	<0.2	64.5	<1	14.4	183	702
Adjacent to MPAR and Downgradient	D2	20/10/2023	903.400	2.500	26.6	1780	5.99	60	64.2	<1	34	83.3	34	112	<0.5	67.5	<1	17.2	206	726
Adjacent to MPAR and Downgradient	D2	19/01/2024	904.600	1.300	1.3	600	5.84	80	200.5	<1	17	26.4	17	31.3	0.132	20.4	<1	8.76	60	234
Adjacent to MPAR and Downgradient	D2	18/04/2024	903.600	2.300	1.8	940	5.94	63	132	<1	28	33.9	28	41.9	0.098	27.8	<1	10.6	91.6	293
Adjacent to MPAR and Downgradient	D2	**Min.**	903.400	1.300	1.3	600	5.58	57	64.2	<1	7	26.4	7	31.3	0.098	20.4	<1	8.76	60	234
Adjacent to MPAR and Downgradient	D2	**Max.**	904.600	2.500	26.6	1780	5.99	80	200.5	<1	34	83.3	34	112	<0.5	67.5	<1	17.2	206	726
Adjacent to MPAR and Downgradient	D2	**Average**	904.000	2.100	7.8	1238	5.8	65	134	0.5	22	56	22	72	0.15	45	0.5	13	135	489
Adjacent to MPAR and Downgradient	D8	21/09/2023	904.149	2.300	7.1	381	5.38	42	120.8	<1	10	25.8	10	19.6	<0.01	19.2	<1	2.64	18.8	139
Adjacent to MPAR and Downgradient	D8	23/11/2023	903.849	2.600	6	313	5.29	42	184.4	<1	11	21.9	11	14	<0.05	16.8	<1	2.27	10.9	112
Adjacent to MPAR and Downgradient	D8	14/03/2024	904.049	2.400	3.9	313	5.44	43	98.7	<1	10	21.5	10	14.4	<0.05	16.8	<1	3.16	7.04	111
Adjacent to MPAR and Downgradient	D8	20/06/2024	904.249	2.200	5.6	343	5.44	45	231.3	<1	11	22.8	11	15.4	<0.02	19.1	<1	2.52	12.9	131
Adjacent to MPAR and Downgradient	D8	**Min.**	903.849	2.200	3.9	313	5.29	42	98.7	<1	10	21.5	10	14	<0.01	16.8	<1	2.27	7.04	111
Adjacent to MPAR and Downgradient	D8	**Max.**	904.249	2.600	7.1	381	5.44	45	231.3	<1	11	25.8	11	19.6	<0.05	19.2	<1	3.16	18.8	139
Adjacent to MPAR and Downgradient	D8	**Average**	904.000	2.400	5.7	338	5.4	43	159	0.5	11	23	11	16	0.016	18	0.5	2.6	12	123
Adjacent to MPAR and Downgradient	D9	20/09/2023	908.007	1.700	1	10,530	6.08	17	59.9	<1	136	579	136	1140	<0.01	530	<1	106	1580	4880
Adjacent to MPAR and Downgradient	D9	22/11/2023	907.607	2.100	1.9	10,250	6.16	14	121.4	<1	130	570	130	1180	<1	506	<1	112	1550	5030
Adjacent to MPAR and Downgradient	D9	13/03/2024	907.907	1.800	1.3	9220	6.11	16	102.2	<1	119	560	119	1020	<1	482	<1	99.8	1270	4650
Adjacent to MPAR and Downgradient	D9	19/06/2024	908.007	1.700	3	9480	6.1	17	209.8	<1	132	535	132	1080	<1	463	<1	97.9	1520	4990
Adjacent to MPAR and Downgradient	D9	**Min.**	907.607	1.700	1	9220	6.08	14	59.9	<1	119	535	119	1020	<0.01	463	<1	97.9	1270	4650
Adjacent to MPAR and Downgradient	D9	**Max.**	908.007	2.100	3	10530	6.16	17	209.8	<1	136	579	136	1180	<1	530	<1	112	1580	5030
Adjacent to MPAR and Downgradient	D9	**Average**	908.000	1.800	1.8	9870	6.1	16	123	0.5	129	561	129	1105	0.38	495	0.5	104	1480	4888
Background and Adjacent to MPAR	D106	3/08/2023	910.597	0.900	1.7	12,260	6.05	23	54.2	<1	192	511	192	1320	<2	634	<1	107	2100	6250
Background and Adjacent to MPAR	D106	26/10/2023	910.297	1.200	1.2	11,850	6.11	22	126.7	<1	196	492	196	1290	<1	612	<1	112	2070	5810
Background and Adjacent to MPAR	D106	31/01/2024	910.797	0.700	1.5	11,640	6.03	25	133.6	<1	180	481	180	1300	0.123	588	<1	118	2030	6250
Background and Adjacent to MPAR	D106	22/05/2024	910.197	1.300	2.3	13,320	6.05	21	216.2	<1	175	478	175	1150	<1	567	<1	131	2050	5640
Background and Adjacent to MPAR	D106	**Min.**	910.197	0.700	1.2	11640	6.03	21	54.2	<1	175	478	175	1150	0.123	567	<1	107	2030	5640
Background and Adjacent to MPAR	D106	**Max.**	910.797	1.300	2.3	13320	6.11	25	216.2	<1	196	511	196	1320	<2	634	<1	131	2100	6250
Background and Adjacent to MPAR	D106	**Average**	910.000	1.000	1.7	12268	6.1	23	133	0.5	186	491	186	1265	0.53	600	0.5	117	2063	5988

Purpose	LocCode	Sampled_Date-Time	Nutrients					Physical Parameters													
			Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)	Total Dissolved Solids (TDS) (Filtered)	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)
			µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater								2000				24	24	700	100	370	370	2	5	1	3.3
Within Mine Disturbance Area S & SE of MPAR	D16A	21/09/2023	220	66	40	50	0.09	608	200	<10	2	1	<1	70	<1	<50	<50	<0.1	4	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D16A	23/11/2023	230	66	50	30	0.08	557	180	<10	<1	<1	<1	49	<1	90	60	<0.1	2	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D16A	15/03/2024	200	69	120	<10	0.12	565	100	<10	<1	<1	<1	37	<1	60	70	<0.1	2	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D16A	21/06/2024	240	71	120	<10	0.12	668	820	<10	<1	1	<1	73	<1	<50	50	<0.1	4	<1	<0.001
Within Mine Disturbance Area S & SE of MPAR	D16A	**Min.**	200	66	40	<10	0.08	557	100	<10	<1	<1	<1	37	<1	<50	<50	<0.1	2	<1	<0.001
Within Mine Disturbance Area S & SE of MPAR	D16A	**Max.**	240	71	120	50	0.12	668	820	<10	2	1	<1	73	<1	90	70	<0.1	4	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D16A	**Average**	223	68	83	23	0.1	600	325	5	0.88	0.75	0.5	57	0.5	50	51	0.05	3	3.9	3.8
Adjacent to MPAR and Downgradient	D1	20/09/2023	380	1550	<10	<10	<0.01	8510	20	<10	<1	8	5	24	<1	2970	2790	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D1	22/11/2023	70	283	<10	<10	<0.01	1450	770	440	<1	1	<1	50	<1	560	490	<0.1	2	<10	<10
Adjacent to MPAR and Downgradient	D1	13/03/2024	340	2010	<10	<10	<0.01	9420	20	<10	<1	8	2	24	<1	3240	2180	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D1	19/06/2024	370	1830	<200	<200	<0.2	8750	20	<10	<1	9	4	23	<1	3490	2960	<0.1	<1	<1	<0.001
Adjacent to MPAR and Downgradient	D1	**Min.**	70	283	<10	<10	<0.01	1450	20	<10	<1	1	<1	23	<1	560	490	<0.1	<1	<1	<0.001
Adjacent to MPAR and Downgradient	D1	**Max.**	380	2010	<200	<200	<0.2	9420	770	440	<1	9	5	50	<1	3490	2960	<0.1	2	<10	<10
Adjacent to MPAR and Downgradient	D1	**Average**	290	1418	29	29	0.029	7033	208	114	0.5	6.5	2.9	30	0.5	2565	2105	0.05	0.88	3.9	3.8
Adjacent to MPAR and Downgradient	D102	3/08/2023	310	1350	<10	<10	<0.01	7680	110	<10	<1	1	<1	25	<1	1390	1340	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D102	26/10/2023	230	1390	<10	<10	<0.01	7550	40	<10	<1	<1	<1	21	<1	1220	1210	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D102	1/02/2024	260	1340	<10	<10	<0.01	7890	10	<10	<1	1	<1	24	<1	1140	1140	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D102	23/05/2024	560	1400	<10	<10	<0.01	7340	60	<10	<1	<1	<1	26	<1	1290	1080	0.2	<1	<10	<10
Adjacent to MPAR and Downgradient	D102	**Min.**	230	1340	<10	<10	<0.01	7340	10	<10	<1	<1	<1	21	<1	1140	1080	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D102	**Max.**	560	1400	<10	<10	<0.01	7890	110	<10	<1	1	<1	26	<1	1390	1340	0.2	<1	<10	<10
Adjacent to MPAR and Downgradient	D102	**Average**	340	1370	5	5	0.005	7615	55	5	0.5	0.75	0.5	24	0.5	1260	1193	0.088	0.5	5	5
Adjacent to MPAR and Downgradient	D103	2/08/2023	180	484	<10	<10	<0.01	2700	260	<10	<1	6	5	17	<1	1780	1680	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D103	25/10/2023	270	552	<10	<10	<0.01	2790	130	<10	<1	4	3	16	<1	1620	1490	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D103	31/01/2024	160	555	<10	<10	<0.01	2950	50	<10	<1	3	<1	16	<1	1540	1540	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D103	22/05/2024	190	635	<10	<10	<0.01	2960	120	<10	<1	7	3	18	<1	1800	1430	<0.1	1	<10	<10
Adjacent to MPAR and Downgradient	D103	**Min.**	160	484	<10	<10	<0.01	2700	50	<10	<1	3	<1	16	<1	1540	1430	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D103	**Max.**	270	635	<10	<10	<0.01	2960	260	<10	<1	7	5	18	<1	1800	1680	<0.1	1	<10	<10
Adjacent to MPAR and Downgradient	D103	**Average**	200	557	5	5	0.005	2850	140	5	0.5	5	2.9	17	0.5	1685	1535	0.05	0.63	5	5
Adjacent to MPAR and Downgradient	D104	3/08/2023	120	91	20	20	0.04	579	310	<10	<1	8	2	192	<1	130	90	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D104	26/10/2023	40	99	20	<10	0.02	582	20	<10	<1	4	<1	122	<1	<50	60	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D104	1/02/2024	110	141	40	30	0.07	832	150	<10	<1	8	2	99	<1	60	90	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D104	23/05/2024	100	158	20	<10	0.02	818	130	<10	<1	4	2	99	<1	70	100	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D104	**Min.**	40	91	20	<10	0.02	579	20	<10	<1	4	<1	99	<1	<50	60	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D104	**Max.**	120	158	40	30	0.07	832	310	<10	<1	8	2	192	<1	130	100	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D104	**Average**	93	122	25	15	0.038	703	153	5	0.5	6	1.6	128	0.5	71	85	0.05	0.5	5	5
Adjacent to MPAR and Downgradient	D105	3/08/2023	130	446	<10	<10	<0.01	2380	20	<10	<1	2	1	23	<1	800	620	<0.1	1	<10	<10
Adjacent to MPAR and Downgradient	D105	26/10/2023	170	462	<10	<10	<0.01	2330	20	<10	<1	<1	<1	15	<1	510	560	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D105	31/01/2024	120	461	<10	<10	<0.01	2890	40	<10	<1	3	<1	17	<1	710	690	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D105	24/05/2024	130	470	<10	<10	<0.01	2300	30	<10	<1	2	1	15	<1	550	510	<0.1	7	<10	<10
Adjacent to MPAR and Downgradient	D105	**Min.**	120	446	<10	<10	<0.01	2300	20	<10	<1	<1	<1	15	<1	510	510	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D105	**Max.**	170	470	<10	<10	<0.01	2890	40	<10	<1	3	1	23	<1	800	690	<0.1	7	<10	<10
Adjacent to MPAR and Downgradient	D105	**Average**	138	460	5	5	0.005	2475	28	5	0.5	1.9	0.75	18	0.5	643	595	0.05	2.3	5	5
Adjacent to MPAR and Downgradient	D2	13/07/2023	60	229	<10	<10	<0.01	1130	880	580	1	1	<1	47	<1	470	390	<0.1	1	<10	<10
Adjacent to MPAR and Downgradient	D2	20/10/2023	40	258	60	<10	0.06	1260	920	590	<1	2	<1	37	<1	550	610	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D2	19/01/2024	40	70	<10	<10	<0.01	632	1250	610	<1	<1	<1	23	<1	220	180	<0.1	1	<10	<10
Adjacent to MPAR and Downgradient	D2	18/04/2024	50	103	<10	<10	<0.01	622	910	540	<1	2	<1	23	<1	320	310	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D2	**Min.**	40	70	<10	<10	<0.01	622	880	540	<1	<1	<1	23	<1	220	180	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D2	**Max.**	60	258	60	<10	0.06	1260	1250	610	1	2	<1	47	<1	550	610	<0.1	1	<10	<10
Adjacent to MPAR and Downgradient	D2	**Average**	48	165	19	5	0.019	911	990	580	0.63	1.4	0.5	33	0.5	390	373	0.05	0.75	5	5
Adjacent to MPAR and Downgradient	D8	21/09/2023	<10	44	40	10	0.05	277	190	20	<1	<1	<1	44	<1	<50	<50	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D8	23/11/2023	<10	35	20	<10	0.02	236	320	10	<1	<1	<1	46	<1	<50	<50	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D8	14/03/2024	10	37	10	<10	0.01	189	40	20	<1	<1	<1	42	<1	<50	<50	0.2	<1	<10	<10
Adjacent to MPAR and Downgradient	D8	20/06/2024	20	44	40	<10	0.04	238	250	70	<1	<1	<1	38	<1	<50	<50	<0.1	<1	<1	<0.001
Adjacent to MPAR and Downgradient	D8	**Min.**	<10	35	10	<10	0.01	189	40	10	<1	<1	<1	38	<1	<50	<50	<0.1	<1	<1	<0.001
Adjacent to MPAR and Downgradient	D8	**Max.**	20	44	40	10	0.05	277	320	70	<1	<1	<1	46	<1	<50	<50	0.2	<1	<10	<10
Adjacent to MPAR and Downgradient	D8	**Average**	10	40	28	6.3	0.03	235	200	30	0.5	0.5	0.5	43	0.5	25	25	0.088	0.5	3.9	3.8
Adjacent to MPAR and Downgradient	D9	20/09/2023	300	1670	<10	<10	<0.01	9840	190	<10	<1	4	1	28	<1	2000	1930	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D9	22/11/2023	350	1730	<10	<10	<0.01	9760	90	<10	<1	3	<1	30	<1	2640	2080	<0.1	2	<10	<10
Adjacent to MPAR and Downgradient	D9	13/03/2024	320	1720	<10	<10	<0.01	8580	80	<10	<1	3	<1	26	<1	2080	1410	<0.1	<1	<10	<10
Adjacent to MPAR and Downgradient	D9	19/06/2024	300	1800	<200	<200	<0.2	8920	310	<10	<1	4	2	32	<1	2260	2000	<0.1	<1	<1	<0.001
Adjacent to MPAR and Downgradient	D9	**Min.**	300	1670	<10	<10	<0.01	8580	80	<10	<1	3	<1	26	<1	2000	1410	<0.1	<1	<1	<0.001
Adjacent to MPAR and Downgradient	D9	**Max.**	350	1800	<200	<200	<0.2	9840	310	<10	<1	4	2	32	<1	2640	2080	<0.1	2	<10	<10
Adjacent to MPAR and Downgradient	D9	**Average**	318	1730	29	29	0.029	9275	168	5	0.5	3.5	1	29	0.5	2245	1855	0.05	0.88	3.9	3.8
Background and Adjacent to MPAR	D106	3/08/2023	400	1920	<10	<10	<0.01	11,000	1760	<10	<1	5	1	41	<1	1990	2070	0.1	8	<10	<10
Background and Adjacent to MPAR	D106	26/10/2023	310	2120	<10	<10	<0.01	10,900	650	<10	<1	2	<1	20	<1	1900	1980	0.1	1	<10	<10
Background and Adjacent to MPAR	D106	31/01/2024	370	2000	10	<10	0.01	11,500	70	<10	<1	2	<1	19	<1	2300	2230	0.1	<1	<10	<10
Background and Adjacent to MPAR	D106	22/05/2024	410	2160	<10	<10	<0.01	10,700	420	<10	<1	5	2	24	<1	2960	2120	0.2	<1	<10	<10
Background and Adjacent to MPAR	D106	**Min.**	310	1920	<10	<10	<0.01	10700	70	<10	<1	2	<1	19	<1	1900	1980	0.1	<1	<10	<10
Background and Adjacent to MPAR	D106	**Max.**	410	2160	10	<10	0.01	11500	1760	<10	<1	5	2	41	<1	2960	2230	0.2	8	<10	<10
Background and Adjacent to MPAR	D106	**Average**	373	2050	6.3	5	0.0063	11025	725	5	0.5	3.5	1	26	0.5	2288	2100	0.13	2.5	5	5

ERM

			Field Parameters							Major Anions and Cations											Nutrients					Physical Parameters													
			Groundwater Elevation (Field)	Standing Water Level (Field)	Dissolved Oxygen (Field) (Filtered)	Electrical Conductivity (Field)	pH (Field)	Purge Volume	Redox (Field)	Carbonate (as CaCO3)	Bicarbonate Alkalinity (as CaCO3)	Calcium	Carbonate Alkalinity (as CaCO3)	Chloride	Fluoride	Magnesium	Phenolphthalein Alkalinity	Potassium	Sodium	Sulfate (as SO4)	Ammonia	Sulfur	Nitrate	Nitrite (as NO2-)	Nitrite + Nitrate (as N)	Total Dissolved Solids (TDS) (Filtered)	Aluminium	Aluminium (Filtered)	Antimony	Arsenic	Arsenic (Filtered)	Barium	Beryllium	Boron	Boron (Filtered)	Cadmium	Chromium	Chromium (Hexavalent)	Chromium (Trivalent)
			m AHD	m BTOC	mg/L	uS/cm	pH units	L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater						2600	6.5-8							350	1.5					1000						2000				24	24	700	100	370	370	2	5	1	3.3
Purpose	**LocCode**	**Sampled_Date-Time**																																					
Background and Adjacent to MPAR	D107	2/08/2023	910.182	2.800	1.4	12,520	6.08	44	40.5	<1	249	389	249	1190	<2	520	<1	291	2260	6500	480	2000	<10	<10	<0.01	11,100	100	<10	<1	8	6	24	<1	6140	5180	1.1	3	<10	<10
Background and Adjacent to MPAR	D107	25/10/2023	909.982	3.000	1.3	12,240	6.14	42	61.6	<1	252	390	252	1120	<1	510	<1	294	2260	6080	350	2190	<10	<10	<0.01	10,800	40	<10	<1	4	4	17	<1	5020	5780	1	8	<10	<10
Background and Adjacent to MPAR	D107	31/01/2024	910.582	2.400	1.1	13,290	6.09	46	59	<1	233	403	233	1250	<1	528	<1	302	2350	7140	380	2190	20	<10	0.02	12,000	20	<10	<1	3	2	19	<1	5050	4940	1.4	3	<10	<10
Background and Adjacent to MPAR	D107	24/05/2024	909.982	3.000	2	13,630	6.12	43	212	<1	238	381	238	1090	<1	472	<1	287	2210	6100	460	2180	<10	<10	<0.01	10,300	30	<10	<1	5	3	16	<1	5050	3780	1.2	2	<10	<10
Background and Adjacent to MPAR	D107	**Min.**	909.982	2.400	1.1	12240	6.08	42	40.5	<1	233	381	233	1090	<1	472	<1	287	2210	6080	350	2000	<10	<10	<0.01	10300	20	<10	<1	3	2	16	<1	5020	3780	1	2	<10	<10
Background and Adjacent to MPAR	D107	**Max.**	910.582	3.000	2	13630	6.14	46	212	<1	252	403	252	1250	<2	528	<1	302	2350	7140	480	2190	20	<10	0.02	12000	100	<10	<1	8	6	24	<1	6140	5780	1.4	8	<10	<10
Background and Adjacent to MPAR	D107	**Average**	910.000	2.800	1.5	12920	6.1	44	93	0.5	243	391	243	1163	0.63	508	0.5	294	2270	6455	418	2140	8.8	5	0.0088	11050	48	5	0.5	5	3.8	19	0.5	5315	4920	1.2	4	5	5
Background and Adjacent to MPAR	D3	21/09/2023	913.062	7.000	1.7	1020	6.25	218	5.9	<1	178	85.1	178	68.7	0.101	52.1	<1	10.1	59	242	90	85	20	20	0.04	699	20	<10	3	1	<1	68	1	<50	<50	0.4	1	<10	<10
Background and Adjacent to MPAR	D3	22/11/2023	912.862	7.200	1.2	930	6.22	213	45.5	<1	159	79.2	159	52.5	<0.1	45.8	<1	9.8	45.9	238	70	76	10	<10	0.01	583	20	<10	<1	<1	<1	46	<1	<50	<50	<0.1	<1	<10	<10
Background and Adjacent to MPAR	D3	13/03/2024	913.362	6.700	1.7	1010	6.22	225	44.9	<1	179	79.8	179	84.4	<0.1	50.4	<1	11.1	42.3	278	70	84	20	<10	0.02	553	10	<10	<1	<1	<1	81	<1	80	60	<0.1	<1	<10	<10
Background and Adjacent to MPAR	D3	19/06/2024	913.362	6.700	3.2	461	6.96	225	140.6	<1	58	28.6	58	37.2	0.055	20	<1	4.68	31.9	110	30	38	30	<10	0.03	265	<10	<10	<1	<1	<1	56	<1	<50	<50	<0.1	<1	<1	<0.001
Background and Adjacent to MPAR	D3	**Min.**	912.862	6.700	1.2	461	6.22	213	5.9	<1	58	28.6	58	37.2	0.055	20	<1	4.68	31.9	110	30	38	10	<10	0.01	265	<10	<10	<1	<1	<1	46	<1	<50	<50	<0.1	<1	<1	<0.001
Background and Adjacent to MPAR	D3	**Max.**	913.362	7.200	3.2	1020	6.96	225	140.6	<1	179	85.1	179	84.4	0.101	52.1	<1	11.1	59	278	90	85	30	20	0.04	699	20	<10	3	1	<1	81	1	80	60	0.4	1	<10	<10
Background and Adjacent to MPAR	D3	**Average**	913.000	6.900	2	855	6.4	220	59	0.5	144	68	144	61	0.064	42	0.5	8.9	45	217	65	71	20	8.8	0.025	525	14	5	1.1	0.63	0.5	63	0.63	39	34	0.14	0.63	3.9	3.8
Background and Adjacent to MPAR	MPGM4/D4	12/07/2023	918.301	1.400	1.3	690	3.42	126	307.3	<1	<1	14	<1	17.1	<0.1	7.64	<1	8.03	19.9	278	210	86	<10	<10	<0.01	530	8260	7530	<1	33	31	18	2	<50	<50	0.2	1	<10	<10
Background and Adjacent to MPAR	MPGM4/D4	19/10/2023	918.301	1.400	0.8	650	3.48	81	239.1	<1	<1	13.8	<1	16.8	<0.2	7.84	<1	8.73	19.8	235	180	82	20	<10	0.02	540	7540	7070	<1	26	25	14	2	50	<50	0.2	1	<10	<10
Background and Adjacent to MPAR	MPGM4/D4	18/01/2024	918.901	0.800	0.8	640	3.45	90	285.8	<1	<1	13.8	<1	18.7	<0.1	7.82	<1	8.59	19.6	277	200	84	<10	<10	<0.01	660	7650	7640	<1	25	24	16	2	<50	<50	0.2	1	<10	<10
Background and Adjacent to MPAR	MPGM4/D4	17/04/2024	918.501	1.200	1.4	720	3.42	84	247.4	<1	<1	12.5	<1	17	<0.1	7.58	<1	8.15	19.8	261	200	80	<10	<10	<0.01	495	8080	7360	<1	31	28	14	2	<50	<50	0.2	1	<10	<10
Background and Adjacent to MPAR	MPGM4/D4	**Min.**	918.301	0.800	0.8	640	3.42	81	239.1	<1	<1	12.5	<1	16.8	<0.1	7.58	<1	8.03	19.6	235	180	80	<10	<10	<0.01	495	7540	7070	<1	25	24	14	2	<50	<50	0.2	1	<10	<10
Background and Adjacent to MPAR	MPGM4/D4	**Max.**	918.901	1.400	1.4	720	3.48	126	307.3	<1	<1	14	<1	18.7	<0.2	7.84	<1	8.73	19.9	278	210	86	20	<10	0.02	660	8260	7640	<1	33	31	18	2	50	<50	0.2	1	<10	<10
Background and Adjacent to MPAR	MPGM4/D4	**Average**	919.000	1.200	1.1	675	3.4	95	270	0.5	0.5	14	0.5	17	0.063	7.7	0.5	8.4	20	263	198	83	8.8	5	0.0088	556	7883	7400	0.5	29	27	16	2	31	25	0.2	1	5	5
Background and Adjacent to MPAR	MPGM4/D5	12/07/2023	915.878	9.900	0.9	1180	5.87	274	24.6	<1	93	99.6	93	25.7	<0.2	64.9	<1	9.6	31.1	513	130	161	<10	<10	<0.01	876	100	40	<1	2	2	22	3	70	60	0.1	<1	<10	<10
Background and Adjacent to MPAR	MPGM4/D5	19/10/2023	915.578	10.200	0.9	1160	5.9	266	7.8	<1	65	101	65	22.7	<0.2	66.8	<1	11	34.5	448	100	174	40	<10	0.04	784	70	10	<1	1	<1	19	2	70	80	<0.1	<1	<10	<10
Background and Adjacent to MPAR	MPGM4/D5	18/01/2024	915.978	9.800	1	1170	5.88	177	41.6	<1	73	102	73	23.9	<0.2	67.1	<1	10.5	33.2	478	390	168	<10	<10	<0.01	1060	60	40	<1	<1	<1	19	1	70	60	<0.1	<1	<10	<10
Background and Adjacent to MPAR	MPGM4/D5	17/04/2024	919.078	6.700	0.9	1260	5.9	224	44.5	<1	58	94.4	58	23.5	<0.1	64.8	<1	9.84	33.3	450	120	166	<10	<10	<0.01	910	60	60	<1	<1	<1	20	2	80	60	<0.1	<1	<10	<10
Background and Adjacent to MPAR	MPGM4/D5	**Min.**	915.578	6.700	0.9	1160	5.87	177	7.8	<1	58	94.4	58	22.7	<0.1	64.8	<1	9.6	31.1	448	100	161	<10	<10	<0.01	784	60	10	<1	<1	<1	19	1	70	60	<0.1	<1	<10	<10
Background and Adjacent to MPAR	MPGM4/D5	**Max.**	919.078	10.200	1	1260	5.9	274	44.5	<1	93	102	93	25.7	<0.2	67.1	<1	11	34.5	513	390	174	40	<10	0.04	1060	100	60	<1	2	2	22	3	80	80	0.1	<1	<10	<10
Background and Adjacent to MPAR	MPGM4/D5	**Average**	917.000	9.200	0.93	1193	5.9	235	30	0.5	72	99	72	24	0.088	66	0.5	10	33	472	185	167	14	5	0.014	908	73	38	0.5	1	0.88	20	2	73	65	0.063	0.5	5	5
Brine waste pond leak detection bores	MPGM5/D5	13/07/2023	-	5.900	1	37,610	6.57	25	32.2	<1	1670	527	1670	5570	<5	967	<1	503	11,400	20,300	5380	6030	<10	<10	<0.01	35,200	1040	<100	<10	11	11	54	<10	2720	3060	54.2	<10	<10	<10
Brine waste pond leak detection bores	MPGM5/D5	20/10/2023	-	6.100	0.9	37,320	6.56	31	94.7	<1	2000	430	2000	4390	<0.5	813	<1	474	9510	16,500	5120	5920	<100	<100	<0.1	35,000	130	<100	<11	12	12	55	<11	2780	2560	20.5	<11	<100	<100
Brine waste pond leak detection bores	MPGM5/D5	19/01/2024	-	5.800	0.9	38,030	6.6	25	189.2	<1	2070	479	2070	5450	<5	935	<1	533	10,400	19,500	5570	6100	<10	<10	<0.01	39,600	200	<100	<10	<10	<10	48	<10	2720	2140	15.1	<10	<10	<10
Brine waste pond leak detection bores	MPGM5/D5	18/04/2024	-	5.900	1.7	42,500	6.65	30	156.1	<1	2370	400	2370	4920	<1	846	<1	451	9830	16,900	5440	5750	<50	<50	<0.05	38,000	120	<100	<10	12	<10	58	<10	3440	2180	16.2	<10	<10	<10
Brine waste pond leak detection bores	MPGM5/D5	**Min.**	-	5.800	0.9	37320	6.56	25	32.2	<1	1670	400	1670	4390	<0.5	813	<1	451	9510	16500	5120	5750	<10	<10	<0.01	35000	120	<100	<10	<10	<10	48	<10	2720	2140	15.1	<10	<10	<10
Brine waste pond leak detection bores	MPGM5/D5	**Max.**	-	6.100	1.7	42500	6.65	31	189.2	<1	2370	527	2370	5570	<5	967	<1	533	11400	20300	5570	6100	<100	<100	<0.1	39600	1040	<100	<11	12	12	58	<11	3440	3060	54.2	<11	<100	<100
Brine waste pond leak detection bores	MPGM5/D5	**Average**	-	5.900	1.1	38865	6.6	28	118	0.5	2028	459	2028	5083	1.4	890	0.5	490	10285	18300	5378	5950	21	21	0.021	36950	373	50	5.1	10	8.3	54	5.1	2915	2485	27	5.1	16	16
Brine waste pond leak detection bores	MPGM5/D6	13/07/2023	-	7.900	1.3	15,830	6.74	5	-12.6	<1	2890	236	2890	2210	<2	591	<1	38.9	3740	4240	2240	1380	<10	<10	<0.01	10,500	230	10	<1	5	4	68	<1	80	<50	0.9	1	<10	<10
Brine waste pond leak detection bores	MPGM5/D6	20/10/2023	-	6.900	0.4	28,820	7.19	5	53.1	<1	7840	148	7840	4390	0.836	562	<1	72.2	7860	8810	4900	2470	<500	<100	<0.5	24,500	4040	<100	<11	24	<10	114	<11	<110	<100	6.5	14	<1000	<1000
Brine waste pond leak detection bores	MPGM5/D6	19/01/2024	-	7.300	1.2	10,070	6.85	10	111.7	<1	2110	62.2	2110	1120	<1	203	<1	30.7	2370	2220	1140	782	800	10	0.81	7870	670	20	<1	5	4	39	<1	<50	<50	0.6	2	<10	<10
Brine waste pond leak detection bores	MPGM5/D6	18/04/2024	-	6.900	2.8	13,120	6.97	6	131.1	<1	2720	68.4	2720	1340	<1	239	<1	43	2960	2570	1230	983	120	<50	0.12	8990	180	<10	<1	4	4	62	<1	<50	<50	0.4	1	<10	<10
Brine waste pond leak detection bores	MPGM5/D6	**Min.**	-	6.900	0.4	10070	6.74	5	-12.6	<1	2110	62.2	2110	1120	0.836	203	<1	30.7	2370	2220	1140	782	<10	<10	<0.01	7870	180	<10	<1	4	4	39	<1	<50	<50	0.4	1	<10	<10
Brine waste pond leak detection bores	MPGM5/D6	**Max.**	-	7.900	2.8	28820	7.19	10	131.1	<1	7840	236	7840	4390	<2	591	<1	72.2	7860	8810	4900	2470	800	<100	0.81	24500	4040	<100	<11	24	<10	114	<11	<110	<100	6.5	14	<1000	<1000
Brine waste pond leak detection bores	MPGM5/D6	**Average**	-	7.300	1.4	16960	6.9	6.5	71	0.5	3890	129	3890	2265	0.71	399	0.5	46	4233	4460	2378	1404	294	23	0.3	12965	1280	21	1.8	9.5	4.3	71	1.8	46	31	2.1	4.5	129	129
Within Mine Disturbance Area S & SE of MPAR	D15	20/09/2023	914.706	26.100	0.9	1880	5.43	26	126.4	<1	47	87.7	47	85.7	0.045	38.4	<1	25.8	247	772	400	258	<10	<10	<0.01	1320	570	20	<1	6	2	16	<1	130	120	0.1	61	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D15	23/11/2023	915.606	25.200	1.2	1880	5.55	31	183.4	<1	52	91.2	52	86	<0.2	39.6	<1	26.7	249	785	400	266	<10	<10	<0.01	1380	150	<10	<1	3	1	20	<1	410	220	0.2	3	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D15	14/03/2024	914.506	26.300	1.4	1920	5.71	25	78.4	<1	68	92.4	68	90.6	<0.2	41.3	<1	29.8	225	870	360	289	<10	<10	<0.01	1370	70	<10	<1	3	2	12	<1	200	180	<0.1	23	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D15	21/06/2024	915.506	25.300	3.2	1890	5.96	31	236.7	<1	136	75.9	136	86.4	<0.2	37.5	<1	24.2	258	738	390	244	20	<10	0.02	1260	4910	<10	<1	25	9	74	<1	120	90	0.2	15	<1	<0.001
Within Mine Disturbance Area S & SE of MPAR	D15	**Min.**	914.506	25.200	0.9	1880	5.43	25	78.4	<1	47	75.9	47	85.7	0.045	37.5	<1	24.2	225	738	360	244	<10	<10	<0.01	1260	70	<10	<1	3	1	12	<1	120	90	<0.1	3	<1	<0.001
Within Mine Disturbance Area S & SE of MPAR	D15	**Max.**	915.606	26.300	3.2	1920	5.96	31	236.7	<1	136	92.4	136	90.6	<0.2	41.3	<1	29.8	258	870	400	289	20	<10	0.02	1380	4910	20	<1	25	9	74	<1	410	220	0.2	61	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D15	**Average**	915.000	26.000	1.7	1893	5.7	28	156	0.5	76	87	76	87	0.086	39	0.5	27	245	791	388	264	8.8	5	0.0088	1333	1425	8.8	0.5	9.3	3.5	31	0.5	215	153	0.14	26	3.9	3.8
Within Mine Disturbance Area S & SE of MPAR	D17	20/09/2023	908.950	27.600	2.3	2220	6.3	35	85.1	<1	168	184	168	116	0.283	97.9	<1	22.3	188	1030	370	314	100	20	0.12	1760	1030	<10	4	5	<1	60	<1	160	170	1.1	24	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D17	23/11/2023	908.350	28.200	1.5	2070	6.39	32	167.5	<1	212	178	212	87.8	<0.2	94.7	<1	20.2	161	790	250	275	60	20	0.08	1530	240	<10	<1	<1	<1	84	<1	80	70	0.2	4	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D17	14/03/2024	909.250	27.300	2.6	1270	6.58	37	-3.8	<1	168	110	168	49.9	0.194	51.6	<1	15.2	76.6	465	500	159	1140	<10	1.14	772	190	<10	1	<1	<1	114	<1	80	80	0.1	4	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D17	21/06/2024	908.950	27.600	2.7	1840	6.39	35	203.1	<1	227	147	227	80.6	0.289	84.4	<1	16.8	133	748	290	245	100	<10	0.1	1370	210	<10	<1	2	1	39	<1	<50	60	<0.1	1	<1	<0.001
Within Mine Disturbance Area S & SE of MPAR	D17	**Min.**	908.350	27.300	1.5	1270	6.3	32	-3.8	<1	168	110	168	49.9	0.194	51.6	<1	15.2	76.6	465	250	159	60	<10	0.08	772	190	<10	<1	<1	<1	39	<1	<50	60	<0.1	1	<1	<0.001
Within Mine Disturbance Area S & SE of MPAR	D17	**Max.**	909.250	28.200	2.7	2220	6.58	37	203.1	<1	227	184	227	116	0.289	97.9	<1	22.3	188	1030	500	314	1140	20	1.14	1760	1030	<10	4	5	1	114	<1	160	170	1.1	24	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D17	**Average**	909.000	28.000	2.3	1850	6.4	35	113	0.5	194	155	194	84	0.22	82	0.5	19	140	758	353	248	350	13	0.36	1358	418	5	1.5	2	0.63	74	0.5	86	95	0.36	8.3	3.9	3.8
Within Mine Disturbance Area S & SE of MPAR	D18	21/09/2023	910.268	22.500	1.6	660	6.71	18	74.7	<1	353	84.5	353	7.52	0.518	30.4	<1	19.2	17.5	9.42	200	4	<10	40	0.04	370	250	<10	<1	13	6	662	<1	<50	<50	<0.1	3	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D18	23/11/2023	909.668	23.100	1.6	660	6.74	7	171.3	<1	350	81.6	350	7.64	0.465	29.8	<1	18.3	17.2	10.6	190	4	30	<10	0.03	372	50	<10	<1	8	2	703	<1	<50	<50	<0.1	<1	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D18	14/03/2024	903.568	29.200	2	670	6.97	6	134.6	<1	354	81.4	354	8.62	0.489	29.8	<1	20.5	10.9	13.1	180	5	70	<10	0.07	352	110	<10	<1	16	8	617	<1	100	<50	<0.1	2	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D18	21/06/2024	911.268	21.500	2.9	680	6.64	8	137.7	<1	328	73.6	328	8.31	0.54	30.4	<1	17.2	18	15.1	240	5	30	<10	0.03	388	290	<10	<1	22	6	646	<1	<50	<50	<0.1	1	<1	<0.001
Within Mine Disturbance Area S & SE of MPAR	D18	**Min.**	903.568	21.500	1.6	660	6.64	6	74.7	<1	328	73.6	328	7.52	0.465	29.8	<1	17.2	10.9	9.42	180	4	<10	<10	0.03	352	50	<10	<1	8	2	617	<1	<50	<50	<0.1	<1	<1	<0.001
Within Mine Disturbance Area S & SE of MPAR	D18	**Max.**	911.268	29.200	2.9	680	6.97	18	171.3	<1	354	84.5	354	8.62	0.54	30.4	<1	20.5	18	15.1	240	5	70	40	0.07	388	290	<10	<1	22	8	703	<1	100	<50	<0.1	3	<10	<10
Within Mine Disturbance Area S & SE of MPAR	D18	**Average**	909.000	24.000	2	668	6.8	9.8	130	0.5	346	80	346	8	0.5	30	0.5	19	16	12	203	4.5	34	14	0.043	371	175	5	0.5	15	5.5	657	0.5	44	25	0.05	1.6	3.9	3.8
Within MPAR / Mine Disturbance Area East of MPAR	D10	20/09/2023	911.296	14.800	0.7	8250	6.07	156	43.3	<1	205	261	205	614	0.922	279	<1	155	1480	3960	410	1310	<10	<10	<0.01	6950	60	60	<1	7	6	22	<1	3050	2870	<0.1	<1	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D10	22/11/2023	910.396	15.700	0.8	11,330	5.95	57	121	<1	163	346	163	962	<1	395	<1	235	2080	5910	430	1940	<10	<10	<0.01	10,400	120	70	<1	2	1	19	<1	5440	3920	0.3	1	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D10	14/03/2024	911.996	14.100	1.4	8260	5.91	167	88.2	<1	131	264	131	602	<1	288	<1	179	1380	4080	420	1540	<10	<10	<0.01	7050	110	60	<1	3	2	17	<1	3120	2200	0.4	1	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D10	**Min.**	910.396	14.100	0.7	8250	5.91	57	43.3	<1	131	261	131	602	0.922	279	<1	155	1380	3960	410	1310	<10	<10	<0.01	6950	60	60	<1	2	1	17	<1	3050	2200	<0.1	<1	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D10	**Max.**	911.996	15.700	1.4	11330	6.07	167	121	<1	205	346	205	962	<1	395	<1	235	2080	5910	430	1940	<10	<10	<0.01	10400	120	70	<1	7	6	22	<1	5440	3920	0.4	1	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D10	**Average**	911.000	15.000	0.97	9280	6	127	84	0.5	166	290	166	726	0.64	321	0.5	190	1647	4650	420	1597	5	5	0.005	8133	97	63	0.5	4	3	19	0.5	3870	2997	0.25	0.83	5	5
Within MPAR / Mine Disturbance Area East of MPAR	D113	2/08/2023	908.329	9.100	1.3	4620	6.02	53	33.8	<1	171	187	171	309	<0.5	159	<1	88.2	684	2220	250	699	<10	<10	<0.01	3630	300	<10	4	1	1	18	<1	1780	1840	0.2	234	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D113	25/10/2023	907.929	9.500	0.6	4830	6.07	51	51.4	<1	180	201	180	313	<0.5	168	<1	87.7	713	2150	240	773	<10	<10	<0.01	3850	80	<10	<1	1	<1	13	<1	1860	1870	0.1	11	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D113	31/01/2024	908.529	8.900	1.2	4320	6.05	55	132.3	<1	169	159	169	254	<0.5	138	<1	81	683	1860	210	635	<10	<10	<0.01	3400	50	<10	<1	<1	<1	11	<1	1480	1490	0.1	2	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D113	23/05/2024	908.229	9.200	1.3	5360	6.01	53	100.4	<1	167	179	167	307	0.282	156	<1	81.3	708	2100	190	786	<10	<10	<0.01	3700	60	<10	<1	1	<1	12	<1	2080	1560	0.2	3	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D113	**Min.**	907.929	8.900	0.6	4320	6.01	51	33.8	<1	167	159	167	254	0.282	138	<1	81	683	1860	190	635	<10	<10	<0.01	3400	50	<10	<1	<1	<1	11	<1	1480	1490	0.1	2	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D113	**Max.**	908.529	9.500	1.3	5360	6.07	55	132.3	<1	180	201	180	313	<0.5	168	<1	88.2	713	2220	250	786	<10	<10	<0.01	3850	300	<10	4	1	1	18	<1	2080	1870	0.2	234	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D113	**Average**	908.000	9.200	1.1	4783	6	53	79	0.5	172	182	172	296	0.26	155	0.5	85	697	2083	223	723	5	5	0.005	3645	123	5	1.4	0.88	0.63	14	0.5	1800	1690	0.15	63	5	5
Within MPAR / Mine Disturbance Area East of MPAR	D19	20/09/2023	912.064	9.300	1.1	4520	6.03	16	72.8	<1	168	192	168	288	0.257	164	<1	78.4	678	2000	490	682	<10	<10	<0.01	3650	1700	<10	<1	36	1	56	2	1360	1490	0.1	18	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D19	22/11/2023	911.764	9.800	16	4600	6.13	13	115.8	<1	166	196	166	315	<0.5	167	<1	82.4	686	2150	290	716	<10	<10	<0.01	3620	2010	30	<1	12	<1	70	<1	1570	1460	0.1	41	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D19	13/03/2024	912.364	9.100	7.3	4220	6.11	17	128.3	<1	179	158	179	253	<0.5	140	<1	79.6	590	1860	220	689	<10	<10	<0.01	3260	260	<10	2	3	1	29	<1	1580	1090	<0.1	5	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D19	21/06/2024	912.264	9.400	2.7	4660	6.08	16	171.1	<1	155	162	155	303	0.433	156	<1	75.7	696	2200	410	797	<10	<10	<0.01	3650	3730	<10	2	55	2	75	3	1580	1450	0.1	9	<1	<0.001
Within MPAR / Mine Disturbance Area East of MPAR	D19	**Min.**	911.764	9.100	1.1	4220	6.03	13	72.8	<1	155	158	155	253	0.257	140	<1	75.7	590	1860	220	682	<10	<10	<0.01	3260	260	<10	<1	3	<1	29	<1	1360	1090	<0.1	5	<1	<0.001
Within MPAR / Mine Disturbance Area East of MPAR	D19	**Max.**	912.364	9.800	16	4660	6.13	17	171.1	<1	179	196	179	315	<0.5	167	<1	82.4	696	2200	490	797	<10	<10	<0.01	3650	3730	30	2	55	2	75	3	1580	1490	0.1	41	<10	<10
Within MPAR / Mine Disturbance Area East of MPAR	D19	**Average**	912.000	9.400	6.8	4500	6.1	16	122	0.5	167	177	167	290	0.3	157	0.5	79	663	2053	353	721	5	5	0.005	3545	1925	11	1.3	27	1.1	58	1.5	1523	1373	0.088	18	3.9	3.8

			Metals																		
Purpose	LocCode	Sampled_Date-Time	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater				5	5	664	664	5	5704	5704	0.06	10	550.9	550.9	5	0.05				908	908
Within Mine Disturbance Area S & SE of MPAR	D16A	21/09/2023	1	3	<1	3300	880	2	115	105	<0.04	8	8	6	<10	<1	0.538	<10	<10	121	76
Within Mine Disturbance Area S & SE of MPAR	D16A	23/11/2023	3	2	<1	2720	1030	2	154	135	<0.04	13	12	9	<10	<1	0.508	<10	<10	116	57
Within Mine Disturbance Area S & SE of MPAR	D16A	15/03/2024	5	2	<1	1650	1050	<1	472	445	<0.04	13	19	18	<10	<1	0.465	<10	<10	56	28
Within Mine Disturbance Area S & SE of MPAR	D16A	21/06/2024	3	6	<1	3000	1010	5	246	169	<0.04	12	14	9	<10	<1	0.552	<10	<10	134	46
Within Mine Disturbance Area S & SE of MPAR	D16A	**Min.**	1	2	<1	1650	880	<1	115	105	<0.04	8	8	6	<10	<1	0.465	<10	<10	56	28
Within Mine Disturbance Area S & SE of MPAR	D16A	**Max.**	5	6	<1	3300	1050	5	472	445	<0.04	13	19	18	<10	<1	0.552	<10	<10	134	76
Within Mine Disturbance Area S & SE of MPAR	D16A	**Average**	3	3.3	0.5	2668	993	2.4	247	214	0.02	12	13	11	5	0.5	0.52	5	5	107	52
Adjacent to MPAR and Downgradient	D1	20/09/2023	344	<1	9	43,500	37,300	<1	18,100	18,000	<0.04	<1	1940	1690	<0.2	<1	2.85	<10	<10	167	146
Adjacent to MPAR and Downgradient	D1	22/11/2023	92	4	2	17,300	12,400	3	3390	2940	<0.04	<1	178	162	0.3	<1	0.428	<10	<10	158	134
Adjacent to MPAR and Downgradient	D1	13/03/2024	348	<1	<1	50,600	14,200	<1	20,700	16,100	<0.04	<1	2100	1940	0.3	<1	3.31	<10	<10	182	130
Adjacent to MPAR and Downgradient	D1	19/06/2024	349	1	<1	46,500	32,700	<1	19,500	15,800	<0.04	<1	2010	1640	0.2	<1	2.94	<10	<10	182	136
Adjacent to MPAR and Downgradient	D1	**Min.**	92	<1	<1	17300	12400	<1	3390	2940	<0.04	<1	178	162	<0.2	<1	0.428	<10	<10	158	130
Adjacent to MPAR and Downgradient	D1	**Max.**	349	4	9	50600	37300	3	20700	18000	<0.04	<1	2100	1940	0.3	<1	3.31	<10	<10	182	146
Adjacent to MPAR and Downgradient	D1	**Average**	283	1.5	3	39475	24150	1.1	15423	13210	0.02	0.5	1557	1358	0.23	0.5	2.4	5	5	172	137
Adjacent to MPAR and Downgradient	D102	3/08/2023	244	<1	<1	58,400	44,300	<1	14,400	12,800	<0.04	<1	1660	1510	0.2	<1	3.4	<10	<10	95	53
Adjacent to MPAR and Downgradient	D102	26/10/2023	199	2	<1	49,600	41,400	<1	13,600	13,600	<0.04	<1	1430	1510	0.2	<1	3.12	<10	<10	66	57
Adjacent to MPAR and Downgradient	D102	1/02/2024	212	<1	<1	50,000	13,800	<1	14,700	13,900	<0.04	<1	1600	1490	<0.2	<1	3.37	<10	<10	45	24
Adjacent to MPAR and Downgradient	D102	23/05/2024	178	4	2	38,900	27,900	<1	15,200	11,500	<0.04	1	1360	1380	0.6	<1	3.54	<10	<10	119	101
Adjacent to MPAR and Downgradient	D102	**Min.**	178	<1	<1	38900	13800	<1	13600	11500	<0.04	<1	1360	1380	<0.2	<1	3.12	<10	<10	45	24
Adjacent to MPAR and Downgradient	D102	**Max.**	244	4	2	58400	44300	<1	15200	13900	<0.04	1	1660	1510	0.6	<1	3.54	<10	<10	119	101
Adjacent to MPAR and Downgradient	D102	**Average**	208	1.8	0.88	49225	31850	0.5	14475	12950	0.02	0.63	1513	1473	0.28	0.5	3.4	5	5	81	59
Adjacent to MPAR and Downgradient	D103	2/08/2023	169	<1	<1	18,700	13,000	<1	7920	7220	<0.04	<1	647	592	<0.2	<1	0.836	<10	<10	107	97
Adjacent to MPAR and Downgradient	D103	25/10/2023	169	<1	<1	14,500	11,100	<1	8830	7710	<0.04	<1	648	595	<0.2	<1	0.776	<10	<10	96	81
Adjacent to MPAR and Downgradient	D103	31/01/2024	183	<1	<1	9830	1200	<1	9810	9110	<0.04	<1	704	641	<0.2	<1	0.884	<10	<10	74	52
Adjacent to MPAR and Downgradient	D103	22/05/2024	178	1	<1	20,100	10,800	<1	10,500	7770	<0.04	1	695	680	0.2	<1	0.92	<10	<10	121	95
Adjacent to MPAR and Downgradient	D103	**Min.**	169	<1	<1	9830	1200	<1	7920	7220	<0.04	<1	647	592	<0.2	<1	0.776	<10	<10	74	52
Adjacent to MPAR and Downgradient	D103	**Max.**	183	1	<1	20100	13000	<1	10500	9110	<0.04	1	704	680	0.2	<1	0.92	<10	<10	121	97
Adjacent to MPAR and Downgradient	D103	**Average**	175	0.63	0.5	15783	9025	0.5	9265	7953	0.02	0.63	674	627	0.13	0.5	0.85	5	5	100	81
Adjacent to MPAR and Downgradient	D104	3/08/2023	48	6	<1	9170	3230	2	4160	3420	<0.04	2	88	63	<0.2	<1	0.336	<10	<10	234	169
Adjacent to MPAR and Downgradient	D104	26/10/2023	27	4	2	2420	80	<1	2430	2320	<0.04	2	60	60	<0.2	<1	0.265	<10	<10	106	97
Adjacent to MPAR and Downgradient	D104	1/02/2024	16	2	<1	13,300	9960	<1	2640	2620	<0.04	2	55	54	<0.2	<1	0.336	<10	<10	118	126
Adjacent to MPAR and Downgradient	D104	23/05/2024	11	2	<1	10,000	5760	<1	2820	2020	<0.04	<1	43	41	<0.2	<1	0.391	<10	<10	146	119
Adjacent to MPAR and Downgradient	D104	**Min.**	11	2	<1	2420	80	<1	2430	2020	<0.04	<1	43	41	<0.2	<1	0.265	<10	<10	106	97
Adjacent to MPAR and Downgradient	D104	**Max.**	48	6	2	13300	9960	2	4160	3420	<0.04	2	88	63	<0.2	<1	0.391	<10	<10	234	169
Adjacent to MPAR and Downgradient	D104	**Average**	26	3.5	0.88	8723	4758	0.88	3013	2595	0.02	1.6	62	55	0.1	0.5	0.33	5	5	151	128
Adjacent to MPAR and Downgradient	D105	3/08/2023	159	<1	<1	27,300	20,600	<1	10,500	9350	0.05	<1	586	552	<0.2	<1	0.729	<10	<10	82	68
Adjacent to MPAR and Downgradient	D105	26/10/2023	144	<1	<1	21,500	20,300	<1	10,100	9960	<0.04	<1	542	560	<0.2	<1	0.661	<10	<10	64	63
Adjacent to MPAR and Downgradient	D105	31/01/2024	167	<1	<1	21,000	3780	2	12,000	11,100	<0.04	<1	607	553	<0.2	<1	0.855	<10	<10	80	50
Adjacent to MPAR and Downgradient	D105	24/05/2024	119	<1	<1	23,800	18,000	<1	10,000	8190	<0.04	<1	452	506	<0.2	<1	0.624	<10	<10	62	63
Adjacent to MPAR and Downgradient	D105	**Min.**	119	<1	<1	21000	3780	<1	10000	8190	<0.04	<1	452	506	<0.2	<1	0.624	<10	<10	62	50
Adjacent to MPAR and Downgradient	D105	**Max.**	167	<1	<1	27300	20600	2	12000	11100	0.05	<1	607	560	<0.2	<1	0.855	<10	<10	82	68
Adjacent to MPAR and Downgradient	D105	**Average**	147	0.5	0.5	23400	15670	0.88	10650	9650	0.028	0.5	547	543	0.1	0.5	0.72	5	5	72	61
Adjacent to MPAR and Downgradient	D2	13/07/2023	70	2	1	10,300	7390	3	2120	2070	<0.04	<1	135	132	0.3	<1	0.355	<10	<10	177	173
Adjacent to MPAR and Downgradient	D2	20/10/2023	58	10	2	12,700	7310	6	2260	2150	<0.04	<1	130	124	0.3	<1	0.361	<10	<10	95	87
Adjacent to MPAR and Downgradient	D2	19/01/2024	23	5	2	3990	3150	3	789	777	<0.04	<1	43	42	0.4	<1	0.115	<10	<10	51	32
Adjacent to MPAR and Downgradient	D2	18/04/2024	25	7	3	4260	2320	3	1170	1070	<0.04	<1	67	57	0.4	<1	0.167	<10	<10	49	30
Adjacent to MPAR and Downgradient	D2	**Min.**	23	2	1	3990	2320	3	789	777	<0.04	<1	43	42	0.3	<1	0.115	<10	<10	49	30
Adjacent to MPAR and Downgradient	D2	**Max.**	70	10	3	12700	7390	6	2260	2150	<0.04	<1	135	132	0.4	<1	0.361	<10	<10	177	173
Adjacent to MPAR and Downgradient	D2	**Average**	44	6	2	7813	5043	3.8	1585	1517	0.02	0.5	94	89	0.35	0.5	0.25	5	5	93	81
Adjacent to MPAR and Downgradient	D8	21/09/2023	2	3	3	290	70	<1	254	256	<0.04	<1	56	56	<0.2	<1	0.129	<10	<10	84	77
Adjacent to MPAR and Downgradient	D8	23/11/2023	2	2	<1	570	<50	2	290	244	<0.04	<1	68	57	<0.2	<1	0.117	<10	<10	108	88
Adjacent to MPAR and Downgradient	D8	14/03/2024	2	3	2	110	<50	<1	317	296	<0.04	<1	72	69	<0.2	<1	0.115	<10	<10	79	71
Adjacent to MPAR and Downgradient	D8	20/06/2024	<1	5	3	310	<50	<1	103	50	<0.04	<1	44	36	<0.2	<1	0.135	<10	<10	71	56
Adjacent to MPAR and Downgradient	D8	**Min.**	<1	2	<1	110	<50	<1	103	50	<0.04	<1	44	36	<0.2	<1	0.115	<10	<10	71	56
Adjacent to MPAR and Downgradient	D8	**Max.**	2	5	3	570	70	2	317	296	<0.04	<1	72	69	<0.2	<1	0.135	<10	<10	108	88
Adjacent to MPAR and Downgradient	D8	**Average**	1.6	3.3	2.1	320	36	0.88	241	212	0.02	0.5	60	55	0.1	0.5	0.12	5	5	86	73
Adjacent to MPAR and Downgradient	D9	20/09/2023	249	2	<1	56,200	36,700	<1	14,800	15,400	<0.04	<1	1790	1740	0.2	<1	3.38	<10	<10	96	57
Adjacent to MPAR and Downgradient	D9	22/11/2023	254	<1	<1	50,200	15,700	<1	17,400	14,700	<0.04	<1	1820	1770	0.3	<1	3.34	<10	<10	102	44
Adjacent to MPAR and Downgradient	D9	13/03/2024	224	<1	<1	53,600	17,200	<1	15,800	12,600	<0.04	<1	1660	1560	0.2	<1	3.29	<10	<10	76	45
Adjacent to MPAR and Downgradient	D9	19/06/2024	255	2	<1	56,200	41,900	<1	15,500	13,900	<0.04	<1	1820	1620	0.3	<1	3.19	<10	<10	118	61
Adjacent to MPAR and Downgradient	D9	**Min.**	224	<1	<1	50200	15700	<1	14800	12600	<0.04	<1	1660	1560	0.2	<1	3.19	<10	<10	76	44
Adjacent to MPAR and Downgradient	D9	**Max.**	255	2	<1	56200	41900	<1	17400	15400	<0.04	<1	1820	1770	0.3	<1	3.38	<10	<10	118	61
Adjacent to MPAR and Downgradient	D9	**Average**	246	1.3	0.5	54050	27875	0.5	15875	14150	0.02	0.5	1773	1673	0.25	0.5	3.3	5	5	98	52
Background and Adjacent to MPAR	D106	3/08/2023	342	10	<1	43,300	23,700	7	18,200	16,100	0.07	<1	2140	2090	0.2	<1	3.33	<10	<10	245	206
Background and Adjacent to MPAR	D106	26/10/2023	312	3	<1	28,100	23,000	2	17,600	16,000	<0.04	<1	2040	1940	0.2	<1	3.16	<10	<10	193	173
Background and Adjacent to MPAR	D106	31/01/2024	346	<1	<1	24,600	7680	1	18,200	17,400	<0.04	<1	2210	2080	<0.2	<1	3.42	<10	<10	179	146
Background and Adjacent to MPAR	D106	22/05/2024	294	5	1	31,200	20,800	7	17,800	13,700	<0.04	<1	1990	2040	0.5	<1	3.53	<10	<10	237	200
Background and Adjacent to MPAR	D106	**Min.**	294	<1	<1	24600	7680	1	17600	13700	<0.04	<1	1990	1940	<0.2	<1	3.16	<10	<10	179	146
Background and Adjacent to MPAR	D106	**Max.**	346	10	1	43300	23700	7	18200	17400	0.07	<1	2210	2090	0.5	<1	3.53	<10	<10	245	206
Background and Adjacent to MPAR	D106	**Average**	324	4.6	0.63	31800	18795	4.3	17950	15800	0.033	0.5	2095	2038	0.25	0.5	3.4	5	5	214	181

Purpose	LocCode	Sampled_Date-Time	Cobalt	Copper	Copper (Filtered)	Iron	Iron (Filtered)	Lead	Manganese	Manganese (Filtered)	Mercury	Molybdenum	Nickel	Nickel (Filtered)	Selenium	Silver	Strontium	Vanadium	Vanadium (Filtered)	Zinc	Zinc (Filtered)
			Metals																		
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
ANZECC (2000) or Local Guidelines - Groundwater				5	5	664	664	5	5704	5704	0.06	10	550.9	550.9	5	0.05				908	908
Background and Adjacent to MPAR	D107	2/08/2023	326	<1	<1	28,700	19,600	14	12,500	10,900	0.05	<1	1890	1740	0.2	<1	3.89	<10	<10	393	368
Background and Adjacent to MPAR	D107	25/10/2023	288	1	<1	21,400	20,100	12	11,800	11,600	<0.04	<1	1690	1700	0.3	<1	3.6	<10	<10	350	343
Background and Adjacent to MPAR	D107	31/01/2024	353	1	<1	21,900	12,800	15	13,300	12,500	0.07	<1	2030	1940	<0.2	<1	4.3	<10	<10	366	346
Background and Adjacent to MPAR	D107	24/05/2024	226	<1	<1	21,700	14,100	12	11,300	9290	<0.04	<1	1370	1580	0.3	<1	3.43	<10	<10	329	340
Background and Adjacent to MPAR	D107	**Min.**	226	<1	<1	21400	12800	12	11300	9290	<0.04	<1	1370	1580	<0.2	<1	3.43	<10	<10	329	340
Background and Adjacent to MPAR	D107	**Max.**	353	1	<1	28700	20100	15	13300	12500	0.07	<1	2030	1940	0.3	<1	4.3	<10	<10	393	368
Background and Adjacent to MPAR	D107	**Average**	298	0.75	0.5	23425	16650	13	12225	11073	0.04	0.5	1745	1740	0.23	0.5	3.8	5	5	360	349
Background and Adjacent to MPAR	D3	21/09/2023	2	2	2	10,400	8200	<1	581	600	<0.04	1	8	6	<0.2	<1	0.388	<10	<10	13	10
Background and Adjacent to MPAR	D3	22/11/2023	<1	<1	<1	8800	2290	<1	686	567	<0.04	<1	6	5	<0.2	<1	0.356	<10	<10	6	<5
Background and Adjacent to MPAR	D3	13/03/2024	1	2	<1	10,400	6050	<1	678	602	<0.04	<1	11	7	<0.2	<1	0.401	<10	<10	11	8
Background and Adjacent to MPAR	D3	19/06/2024	<1	<1	<1	1290	530	<1	107	91	<0.04	<1	3	2	<0.2	<1	0.166	<10	<10	<5	<5
Background and Adjacent to MPAR	D3	**Min.**	<1	<1	<1	1290	530	<1	107	91	<0.04	<1	3	2	<0.2	<1	0.166	<10	<10	<5	<5
Background and Adjacent to MPAR	D3	**Max.**	2	2	2	10400	8200	<1	686	602	<0.04	1	11	7	<0.2	<1	0.401	<10	<10	13	10
Background and Adjacent to MPAR	D3	**Average**	1	1.3	0.88	7723	4268	0.5	513	465	0.02	0.63	7	5	0.1	0.5	0.33	5	5	8.1	5.8
Background and Adjacent to MPAR	MPGM4/D4	12/07/2023	3	2	1	63,200	57,800	15	674	601	<0.04	<1	12	11	<0.2	<1	0.073	<10	<10	138	124
Background and Adjacent to MPAR	MPGM4/D4	19/10/2023	4	<1	1	63,000	50,500	13	621	566	<0.04	<1	12	10	<0.2	<1	0.069	<10	<10	116	105
Background and Adjacent to MPAR	MPGM4/D4	18/01/2024	3	2	<1	62,800	58,600	12	631	616	<0.04	<1	12	12	<0.2	<1	0.07	<10	<10	124	108
Background and Adjacent to MPAR	MPGM4/D4	17/04/2024	3	4	1	63,600	56,500	14	632	611	<0.04	<1	12	10	0.2	<1	0.07	<10	<10	115	110
Background and Adjacent to MPAR	MPGM4/D4	**Min.**	3	<1	<1	62800	50500	12	621	566	<0.04	<1	12	10	<0.2	<1	0.069	<10	<10	115	105
Background and Adjacent to MPAR	MPGM4/D4	**Max.**	4	4	1	63600	58600	15	674	616	<0.04	<1	12	12	0.2	<1	0.073	<10	<10	138	124
Background and Adjacent to MPAR	MPGM4/D4	**Average**	3.3	2.1	0.88	63150	55850	14	640	599	0.02	0.5	12	11	0.13	0.5	0.071	5	5	123	112
Background and Adjacent to MPAR	MPGM4/D5	12/07/2023	31	<1	<1	32,800	34,700	<1	8770	7390	<0.04	<1	69	59	0.3	<1	0.451	<10	<10	35	30
Background and Adjacent to MPAR	MPGM4/D5	19/10/2023	26	<1	<1	30,400	18,100	<1	7220	6610	<0.04	<1	59	54	0.2	<1	0.395	<10	<10	28	24
Background and Adjacent to MPAR	MPGM4/D5	18/01/2024	24	<1	<1	26,600	16,500	<1	7860	7750	<0.04	<1	54	57	<0.2	<1	0.396	<10	<10	21	15
Background and Adjacent to MPAR	MPGM4/D5	17/04/2024	24	<1	<1	29,500	24,700	<1	7960	6790	<0.04	<1	54	46	0.3	<1	0.419	<10	<10	21	19
Background and Adjacent to MPAR	MPGM4/D5	**Min.**	24	<1	<1	26600	16500	<1	7220	6610	<0.04	<1	54	46	<0.2	<1	0.395	<10	<10	21	15
Background and Adjacent to MPAR	MPGM4/D5	**Max.**	31	<1	<1	32800	34700	<1	8770	7750	<0.04	<1	69	59	0.3	<1	0.451	<10	<10	35	30
Background and Adjacent to MPAR	MPGM4/D5	**Average**	26	0.5	0.5	29825	23500	0.5	7953	7135	0.02	0.5	59	54	0.23	0.5	0.42	5	5	26	22
Brine waste pond leak detection bores	MPGM5/D5	13/07/2023	4230	13	<10	6980	6060	149	79,600	84,800	0.35	11	9140	9020	2.9	<10	1.74	<100	<100	2700	2680
Brine waste pond leak detection bores	MPGM5/D5	20/10/2023	3750	<11	<10	6750	6250	147	86,900	79,600	0.06	12	9730	9600	3.4	<11	1.65	<110	<100	2130	2190
Brine waste pond leak detection bores	MPGM5/D5	19/01/2024	3720	12	11	6120	5820	114	89,000	83,500	0.09	<10	9180	8890	3.2	<10	1.57	<100	<100	2070	1960
Brine waste pond leak detection bores	MPGM5/D5	18/04/2024	4130	20	<10	5280	4380	132	89,400	78,700	0.3	27	11,700	9110	3.8	<10	1.99	<100	<100	2330	1770
Brine waste pond leak detection bores	MPGM5/D5	**Min.**	3720	<11	<10	5280	4380	114	79600	78700	0.06	<10	9140	8890	2.9	<10	1.57	<100	<100	2070	1770
Brine waste pond leak detection bores	MPGM5/D5	**Max.**	4230	20	11	6980	6250	149	89400	84800	0.35	27	11700	9600	3.8	<11	1.99	<110	<100	2700	2680
Brine waste pond leak detection bores	MPGM5/D5	**Average**	3958	13	6.5	6283	5628	136	86225	81650	0.2	14	9938	9155	3.3	5.1	1.7	51	50	2308	2150
Brine waste pond leak detection bores	MPGM5/D6	13/07/2023	202	13	6	23,400	20,800	8	9350	9160	<0.04	316	1620	1570	1.2	<1	0.981	<10	<10	143	114
Brine waste pond leak detection bores	MPGM5/D6	20/10/2023	428	102	<1	29,700	19,400	83	5910	4900	0.09	2800	2960	2570	4.8	<11	0.796	<110	<100	376	<50
Brine waste pond leak detection bores	MPGM5/D6	19/01/2024	106	9	2	10,800	8210	4	3170	3010	<0.04	396	847	836	0.9	<1	0.325	<10	<10	47	34
Brine waste pond leak detection bores	MPGM5/D6	18/04/2024	108	10	4	7900	4980	4	4190	3920	<0.04	306	1040	1050	1	<1	0.372	<10	<10	65	58
Brine waste pond leak detection bores	MPGM5/D6	**Min.**	106	9	<1	7900	4980	4	3170	3010	<0.04	306	847	836	0.9	<1	0.325	<10	<10	47	34
Brine waste pond leak detection bores	MPGM5/D6	**Max.**	428	102	6	29700	20800	83	9350	9160	0.09	2800	2960	2570	4.8	<11	0.981	<110	<100	376	114
Brine waste pond leak detection bores	MPGM5/D6	**Average**	211	34	3.1	17950	13348	25	5655	5248	0.038	955	1617	1507	2	1.8	0.62	18	16	158	58
Within Mine Disturbance Area S & SE of MPAR	D15	20/09/2023	212	4	<1	12,700	10,300	3	781	792	<0.04	3	328	290	0.2	<1	0.348	<10	<10	431	418
Within Mine Disturbance Area S & SE of MPAR	D15	23/11/2023	222	1	<1	10,800	7780	2	906	765	<0.04	<1	319	290	0.3	<1	0.379	<10	<10	482	450
Within Mine Disturbance Area S & SE of MPAR	D15	14/03/2024	220	<1	<1	11,500	7400	<1	876	812	<0.04	1	333	292	<0.2	<1	0.382	<10	<10	397	374
Within Mine Disturbance Area S & SE of MPAR	D15	21/06/2024	191	33	2	14,900	6710	19	946	724	<0.04	10	282	218	2.5	<1	0.368	10	<10	526	346
Within Mine Disturbance Area S & SE of MPAR	D15	**Min.**	191	<1	<1	10800	6710	<1	781	724	<0.04	<1	282	218	<0.2	<1	0.348	<10	<10	397	346
Within Mine Disturbance Area S & SE of MPAR	D15	**Max.**	222	33	2	14900	10300	19	946	812	<0.04	10	333	292	2.5	<1	0.382	10	<10	526	450
Within Mine Disturbance Area S & SE of MPAR	D15	**Average**	211	9.6	0.88	12475	8048	6.1	877	773	0.02	3.6	316	273	0.78	0.5	0.37	6.3	5	459	397
Within Mine Disturbance Area S & SE of MPAR	D17	20/09/2023	9	9	1	20,100	9630	5	1700	1610	<0.04	38	46	30	6.1	<1	0.779	<10	<10	291	174
Within Mine Disturbance Area S & SE of MPAR	D17	23/11/2023	4	2	<1	10,100	1940	1	1490	1330	<0.04	13	24	20	2	<1	0.698	<10	<10	135	84
Within Mine Disturbance Area S & SE of MPAR	D17	14/03/2024	4	4	<1	6450	7230	1	801	732	0.1	40	22	19	1.4	<1	0.386	<10	<10	249	169
Within Mine Disturbance Area S & SE of MPAR	D17	21/06/2024	6	3	<1	16,500	14,400	1	1300	1060	<0.04	6	25	21	0.8	<1	0.678	<10	<10	144	105
Within Mine Disturbance Area S & SE of MPAR	D17	**Min.**	4	2	<1	6450	1940	1	801	732	<0.04	6	22	19	0.8	<1	0.386	<10	<10	135	84
Within Mine Disturbance Area S & SE of MPAR	D17	**Max.**	9	9	1	20100	14400	5	1700	1610	0.1	40	46	30	6.1	<1	0.779	<10	<10	291	174
Within Mine Disturbance Area S & SE of MPAR	D17	**Average**	5.8	4.5	0.63	13288	8300	2	1323	1183	0.04	24	29	23	2.6	0.5	0.64	5	5	205	133
Within Mine Disturbance Area S & SE of MPAR	D18	21/09/2023	<1	3	<1	1580	220	<1	91	86	<0.04	4	5	3	0.3	<1	0.391	<10	<10	51	38
Within Mine Disturbance Area S & SE of MPAR	D18	23/11/2023	1	2	<1	780	<50	<1	138	113	<0.04	4	6	3	0.3	<1	0.413	<10	<10	42	32
Within Mine Disturbance Area S & SE of MPAR	D18	14/03/2024	2	4	1	1600	490	<1	185	119	<0.04	7	5	4	0.7	<1	0.39	<10	<10	68	51
Within Mine Disturbance Area S & SE of MPAR	D18	21/06/2024	2	5	<1	2730	830	2	184	134	<0.04	8	8	5	0.4	<1	0.418	<10	<10	86	53
Within Mine Disturbance Area S & SE of MPAR	D18	**Min.**	<1	2	<1	780	<50	<1	91	86	<0.04	4	5	3	0.3	<1	0.39	<10	<10	42	32
Within Mine Disturbance Area S & SE of MPAR	D18	**Max.**	2	5	1	2730	830	2	185	134	<0.04	8	8	5	0.7	<1	0.418	<10	<10	86	53
Within Mine Disturbance Area S & SE of MPAR	D18	**Average**	1.4	3.5	0.63	1673	391	0.88	150	113	0.02	5.8	6	3.8	0.43	0.5	0.4	5	5	62	44
Within MPAR / Mine Disturbance Area East of MPAR	D10	20/09/2023	212	11	<1	9600	8510	5	6480	6420	<0.04	15	845	803	0.4	<1	3.44	<10	<10	309	296
Within MPAR / Mine Disturbance Area East of MPAR	D10	22/11/2023	274	<1	<1	5830	3330	11	10,400	8940	<0.04	11	1210	1190	1.2	<1	4.94	<10	<10	676	686
Within MPAR / Mine Disturbance Area East of MPAR	D10	14/03/2024	231	<1	4	9140	5830	9	6660	5360	<0.04	7	895	852	0.6	<1	3.39	<10	<10	589	617
Within MPAR / Mine Disturbance Area East of MPAR	D10	**Min.**	212	<1	<1	5830	3330	5	6480	5360	<0.04	7	845	803	0.4	<1	3.39	<10	<10	309	296
Within MPAR / Mine Disturbance Area East of MPAR	D10	**Max.**	274	11	4	9600	8510	11	10400	8940	<0.04	15	1210	1190	1.2	<1	4.94	<10	<10	676	686
Within MPAR / Mine Disturbance Area East of MPAR	D10	**Average**	239	4	1.7	8190	5890	8.3	7847	6907	0.02	11	983	948	0.73	0.5	3.9	5	5	525	533
Within MPAR / Mine Disturbance Area East of MPAR	D113	2/08/2023	168	6	<1	14,900	10,200	3	6140	5510	<0.04	8	692	540	<0.2	<1	1.65	<10	<10	273	252
Within MPAR / Mine Disturbance Area East of MPAR	D113	25/10/2023	167	1	<1	12,100	11,100	3	6530	5890	<0.04	<1	601	538	<0.2	<1	1.7	<10	<10	256	228
Within MPAR / Mine Disturbance Area East of MPAR	D113	31/01/2024	128	<1	<1	8380	5370	3	5180	5040	<0.04	<1	485	463	<0.2	<1	1.47	<10	<10	176	180
Within MPAR / Mine Disturbance Area East of MPAR	D113	23/05/2024	134	<1	<1	13,100	7720	3	6630	4900	<0.04	<1	507	507	<0.2	<1	1.6	<10	<10	235	214
Within MPAR / Mine Disturbance Area East of MPAR	D113	**Min.**	128	<1	<1	8380	5370	3	5180	4900	<0.04	<1	485	463	<0.2	<1	1.47	<10	<10	176	180
Within MPAR / Mine Disturbance Area East of MPAR	D113	**Max.**	168	6	<1	14900	11100	3	6630	5890	<0.04	8	692	540	<0.2	<1	1.7	<10	<10	273	252
Within MPAR / Mine Disturbance Area East of MPAR	D113	**Average**	149	2	0.5	12120	8598	3	6120	5335	0.02	2.4	571	512	0.1	0.5	1.6	5	5	235	219
Within MPAR / Mine Disturbance Area East of MPAR	D19	20/09/2023	173	13	<1	45,200	12,300	73	6850	6660	<0.04	4	618	548	0.7	<1	1.56	<10	<10	418	212
Within MPAR / Mine Disturbance Area East of MPAR	D19	22/11/2023	168	6	<1	26,300	3610	21	7590	6260	<0.04	2	619	553	0.4	<1	1.56	<10	<10	286	176
Within MPAR / Mine Disturbance Area East of MPAR	D19	13/03/2024	130	<1	<1	15,200	6820	5	5580	5280	<0.04	<1	512	468	<0.2	<1	1.3	<10	<10	196	162
Within MPAR / Mine Disturbance Area East of MPAR	D19	21/06/2024	167	17	<1	55,800	12,400	134	6600	5740	<0.04	6	629	521	1.2	<1	1.53	10	<10	528	221
Within MPAR / Mine Disturbance Area East of MPAR	D19	**Min.**	130	<1	<1	15200	3610	5	5580	5280	<0.04	<1	512	468	<0.2	<1	1.3	<10	<10	196	162
Within MPAR / Mine Disturbance Area East of MPAR	D19	**Max.**	173	17	<1	55800	12400	134	7590	6660	<0.04	6	629	553	1.2	<1	1.56	10	<10	528	221
Within MPAR / Mine Disturbance Area East of MPAR	D19	**Average**	160	9.1	0.5	35625	8783	58	6655	5985	0.02	3.1	595	523	0.6	0.5	1.5	6.3	5	357	193

ERM

APPENDIX I NALCO

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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.

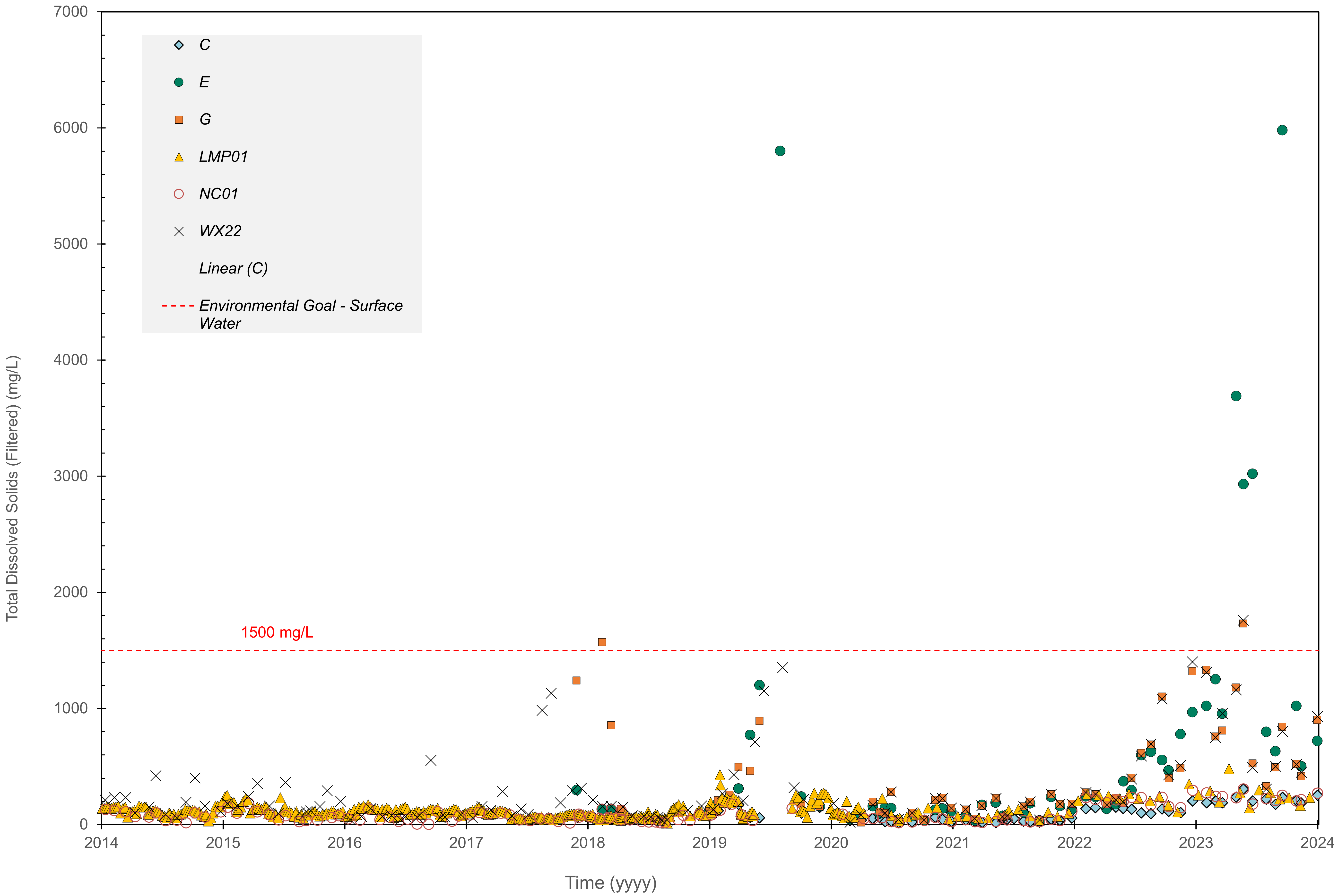
Sample Bottles

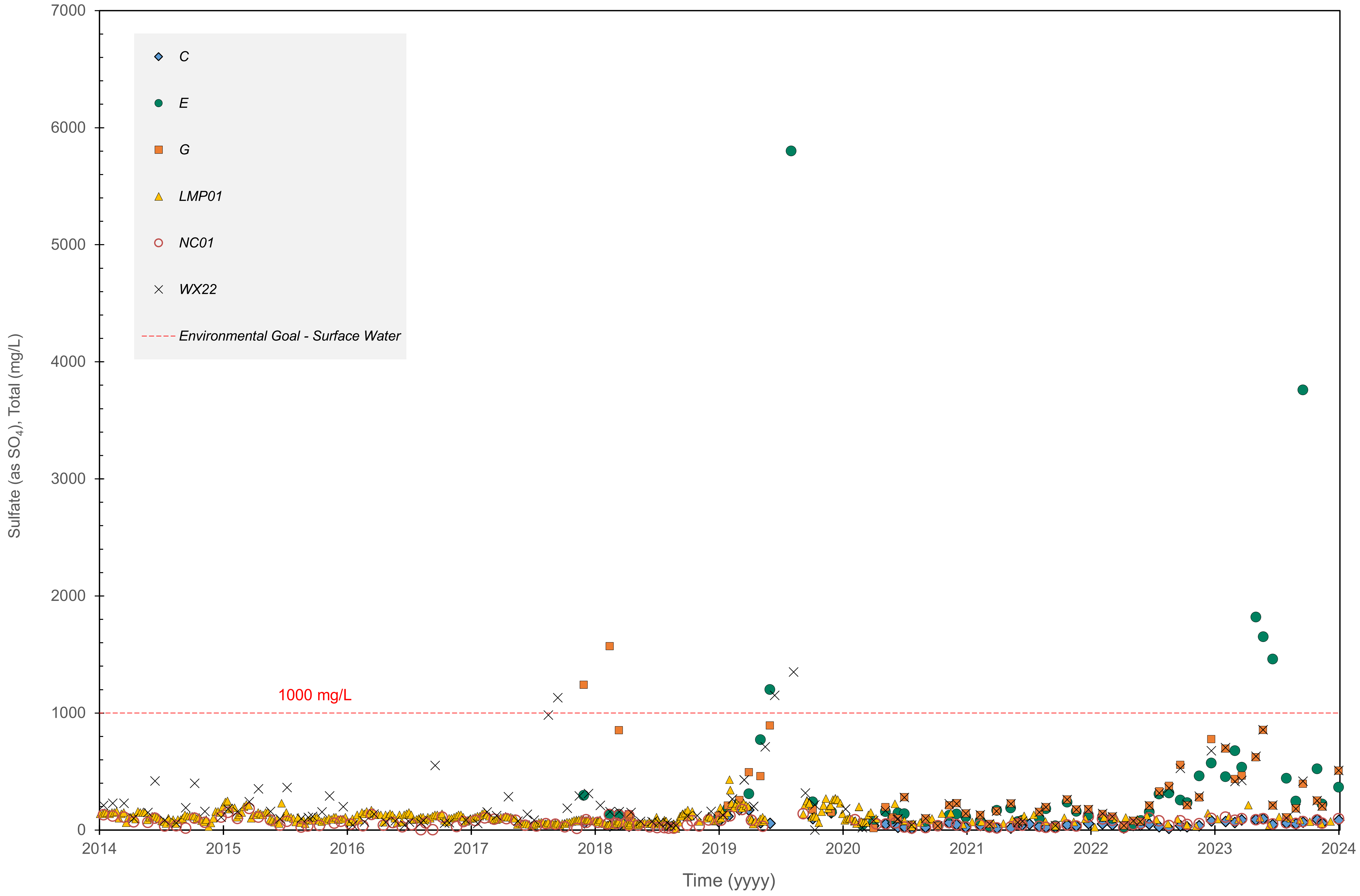
- Pre-labeled sample containers are used for routine sampling and testing.
- The sample bottles are prepared so that samples are preserved in accordance with Australian Standard 5667.1:1998 and Standard Methods for the Examination of Water and Wastewater, 22^{nd} Edition (APHA).

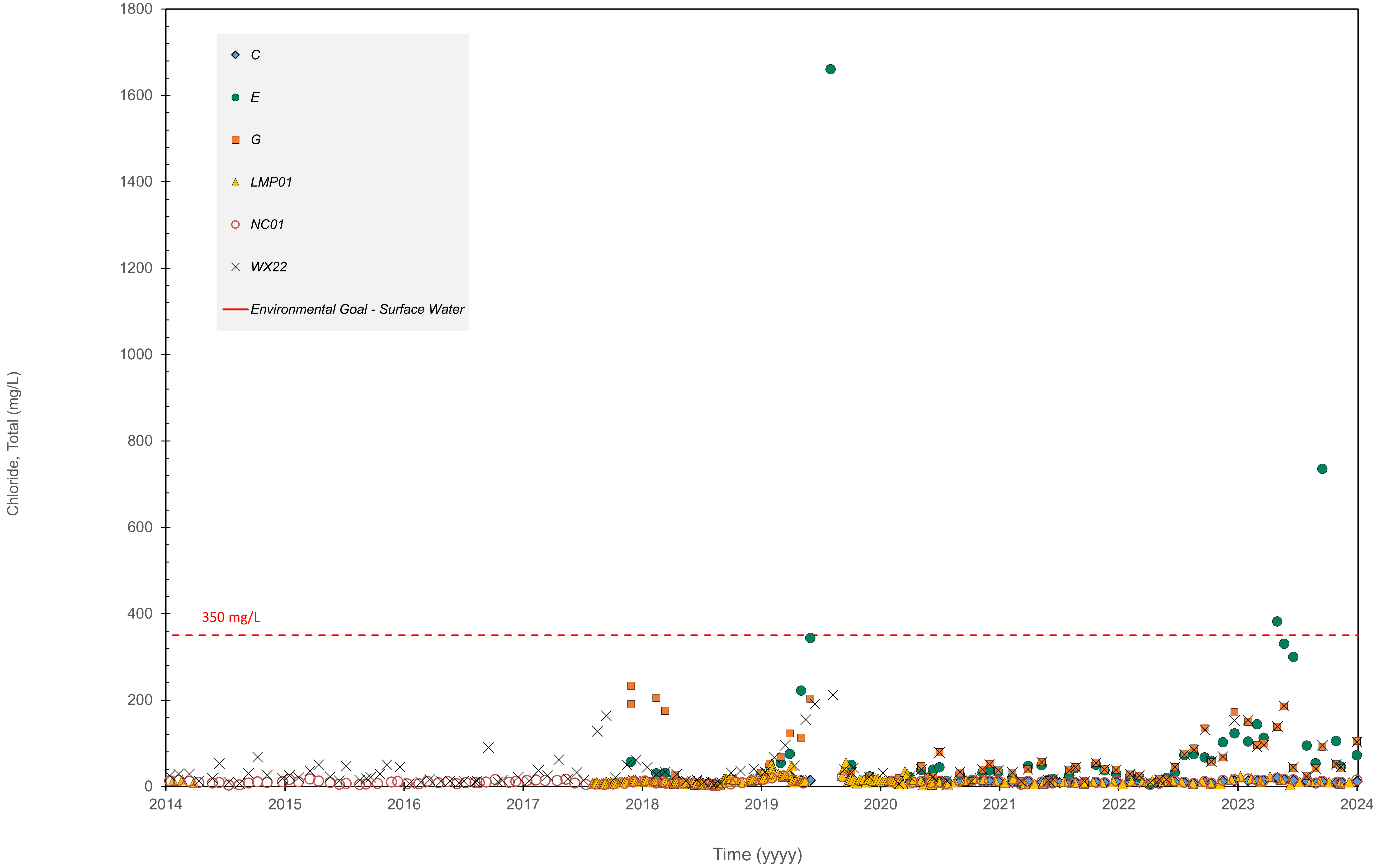
Delivery of Samples

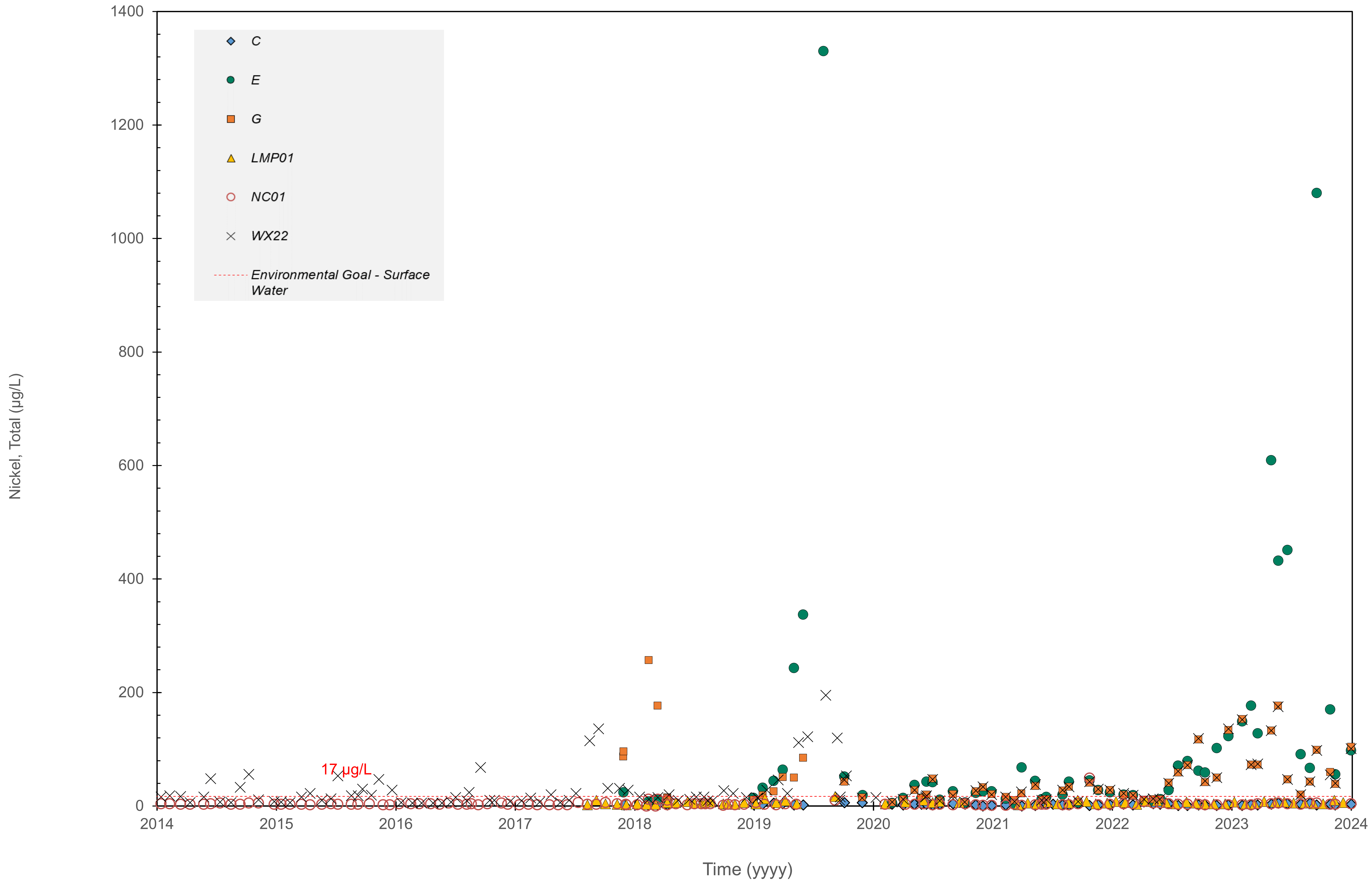
- Eskies and freezer packs are used to maintain the integrity of the samples during transport from the sampling sites to our Global Analytical & Microbiology laboratory (Sydney).

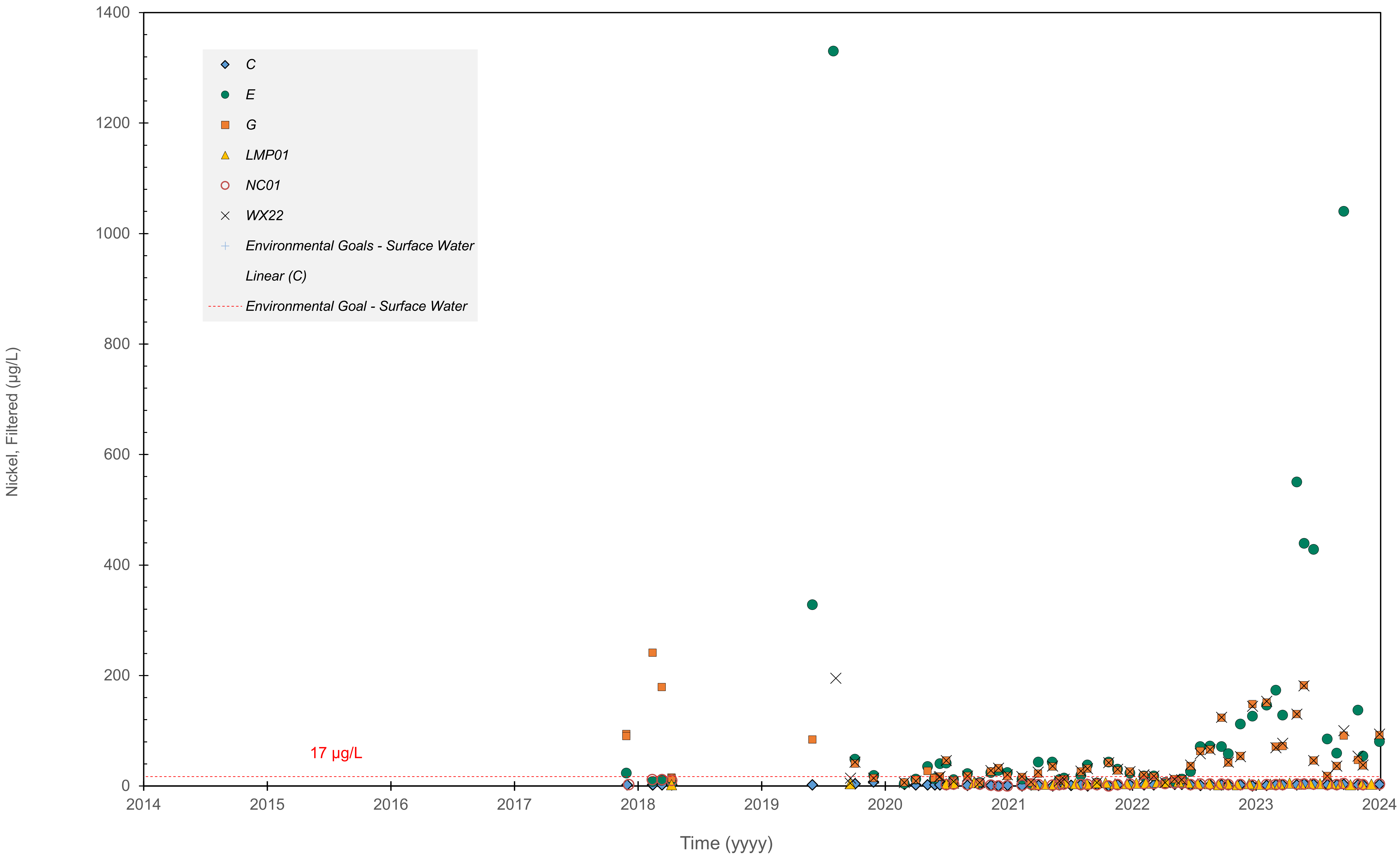
APPENDIX J SURFACE WATER TRENDS (10 YR)

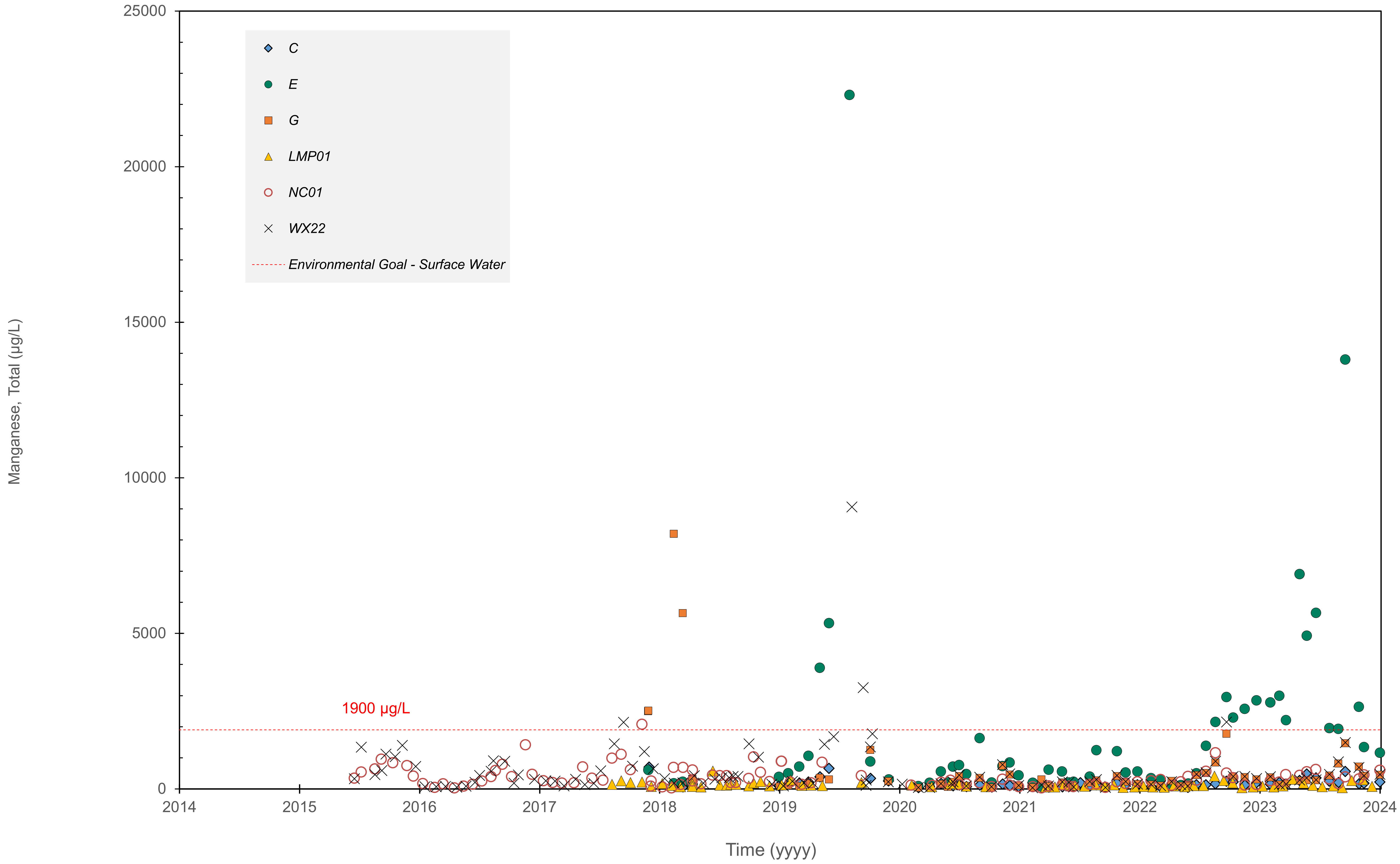

7000
6000
5000
4000
3000
2000
1000
0
Total Dissolved Solids (Filtered) (mg/L)
C
E
G
LMP01
NC01
WX22
Linear (C)
Environmental Goal - Surface Water
1500 mg/L
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

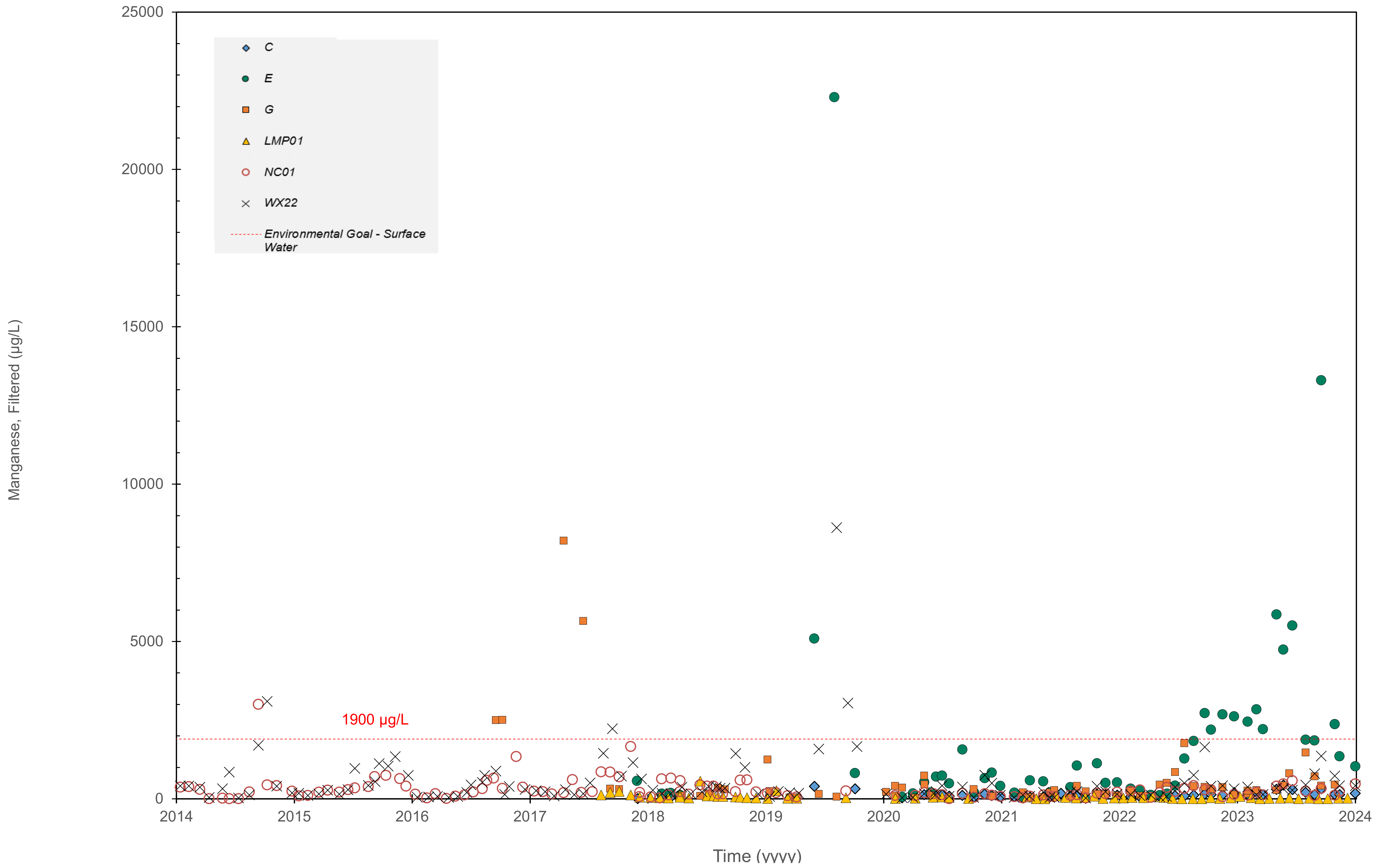

7000
6000
5000
4000
3000
2000
1000
0
C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
1000 mg/L
Sulfate (as SO4), Total (mg/L)
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

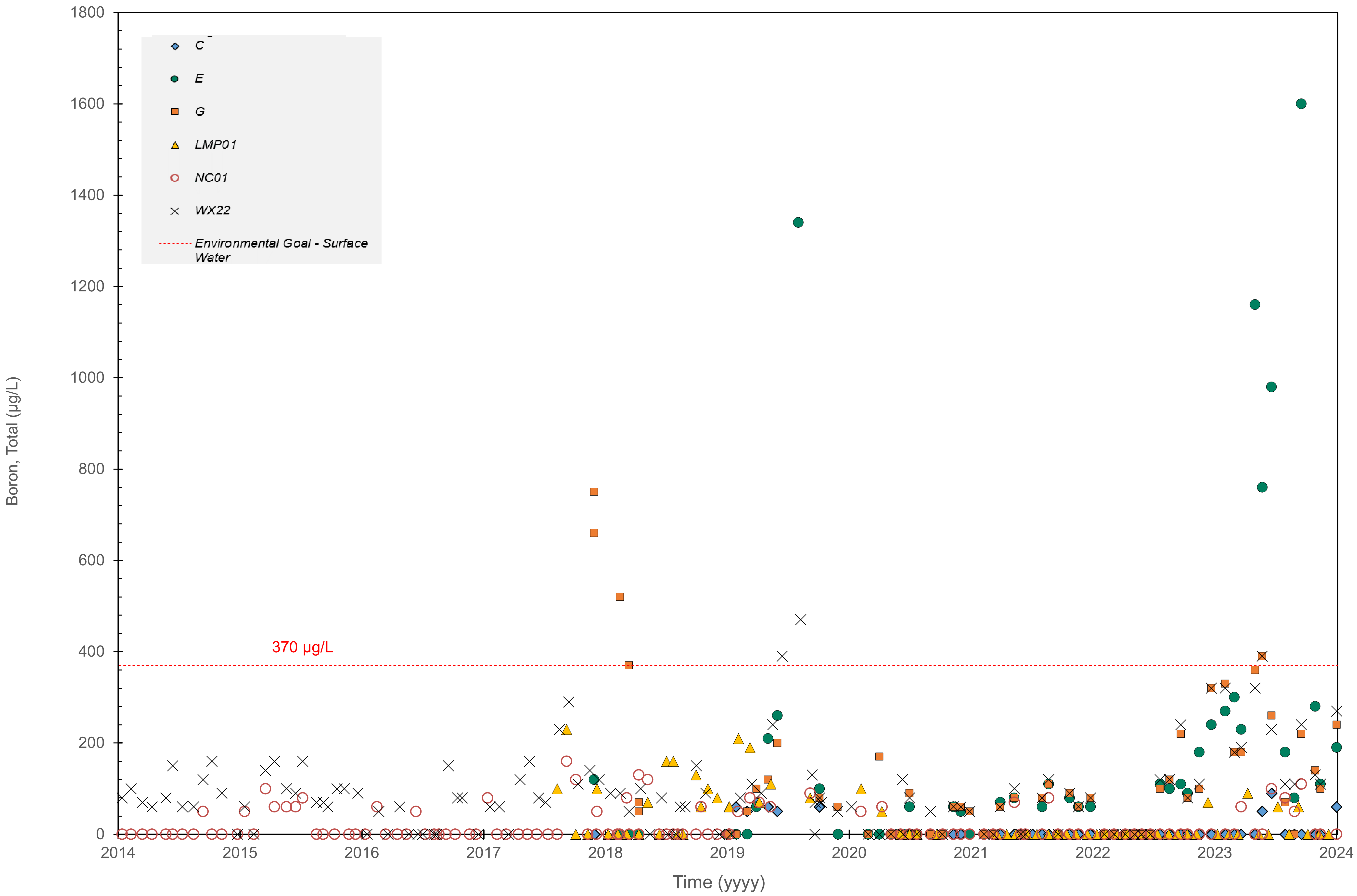

C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
350 mg/L
Chloride, Total (mg/L)
0
200
400
600
800
1000
1200
1400
1600
1800
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

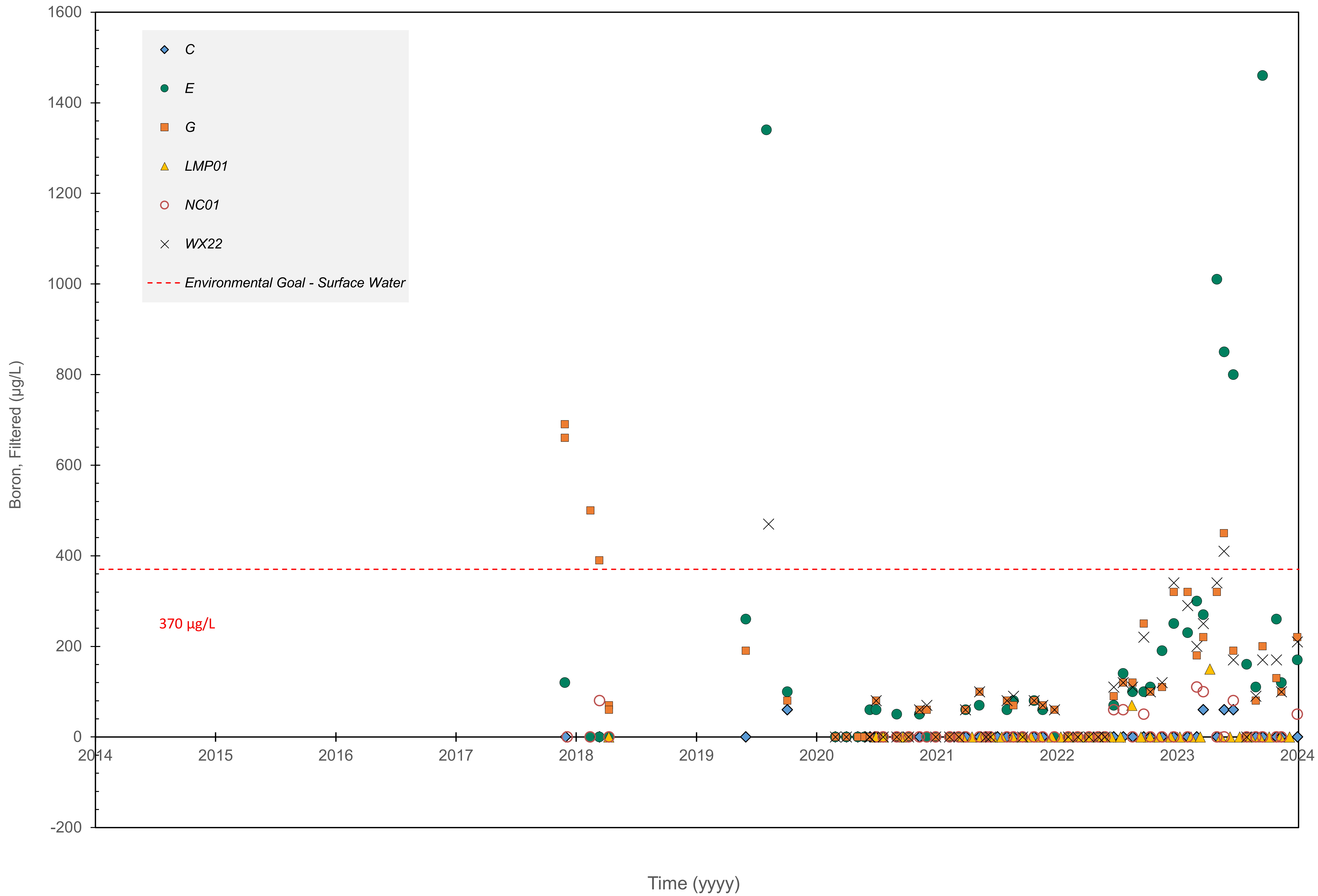

1400
1200
1000
800
600
400
200
0
Nickel, Total (µg/L)
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)
C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
17 µg/L


1400
1200
1000
800
600
400
200
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Nickel, Filtered (µg/L)
Time (yyyy)
C
E
G
LMP01
NC01
WX22
Environmental Goals - Surface Water
Linear (C)
Environmental Goal - Surface Water
17 µg/L

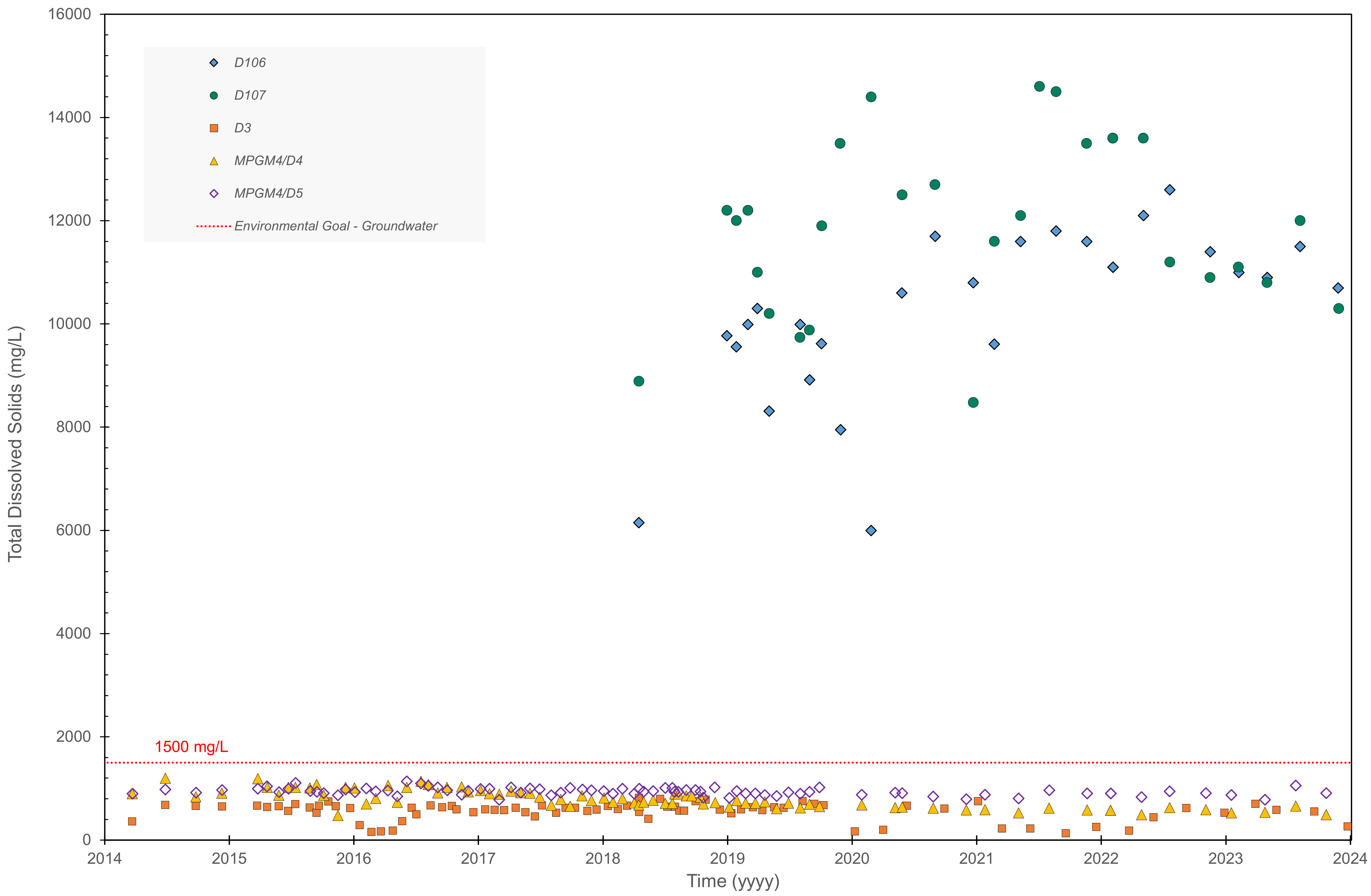

25000
20000
15000
10000
5000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Manganese, Total (µg/L)
Time (yyyy)
C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
1900 µg/L

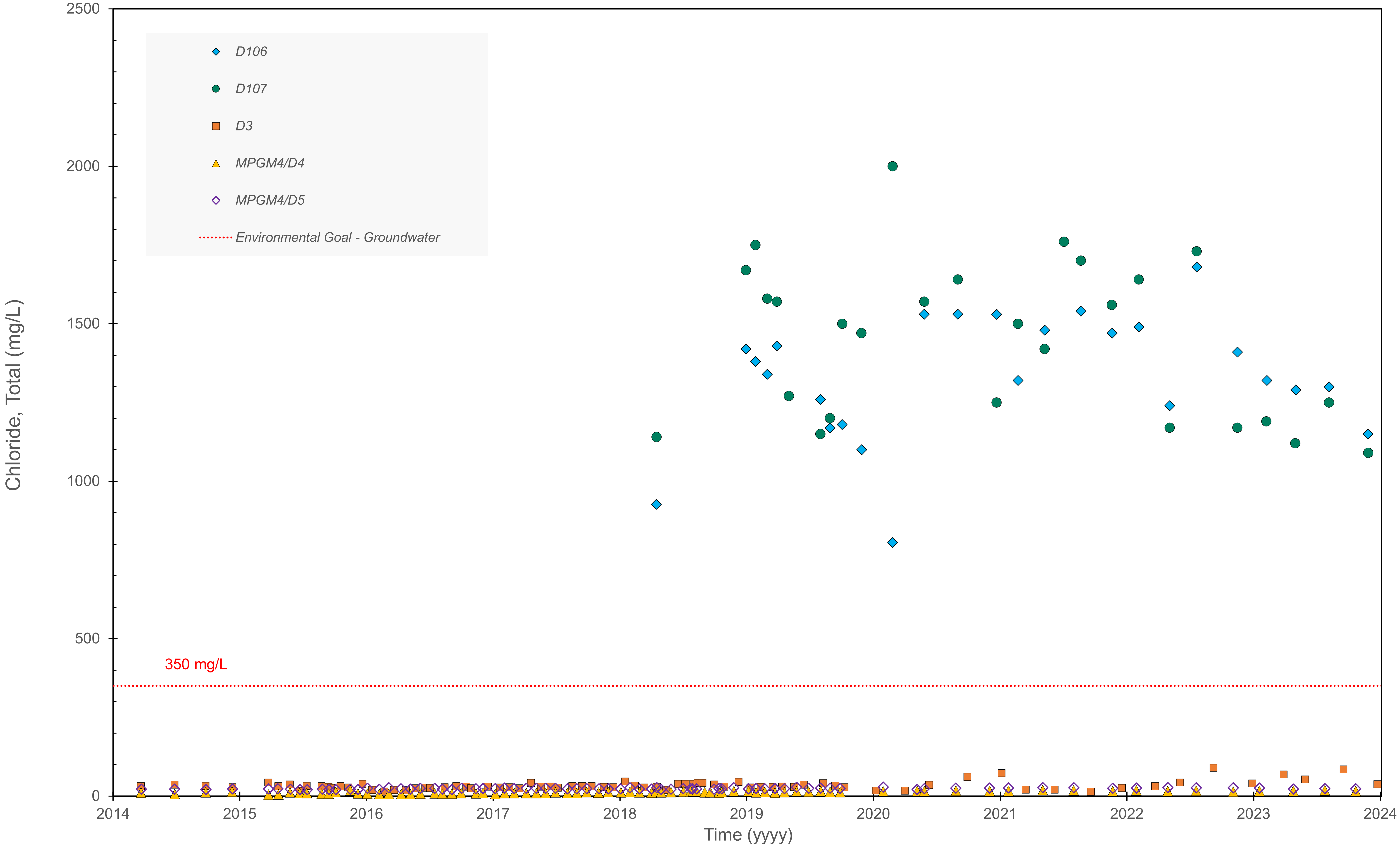

C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
1900 µg/L
Manganese, Filtered (µg/L)
Time (yyyy)
25000
20000
15000
10000
5000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

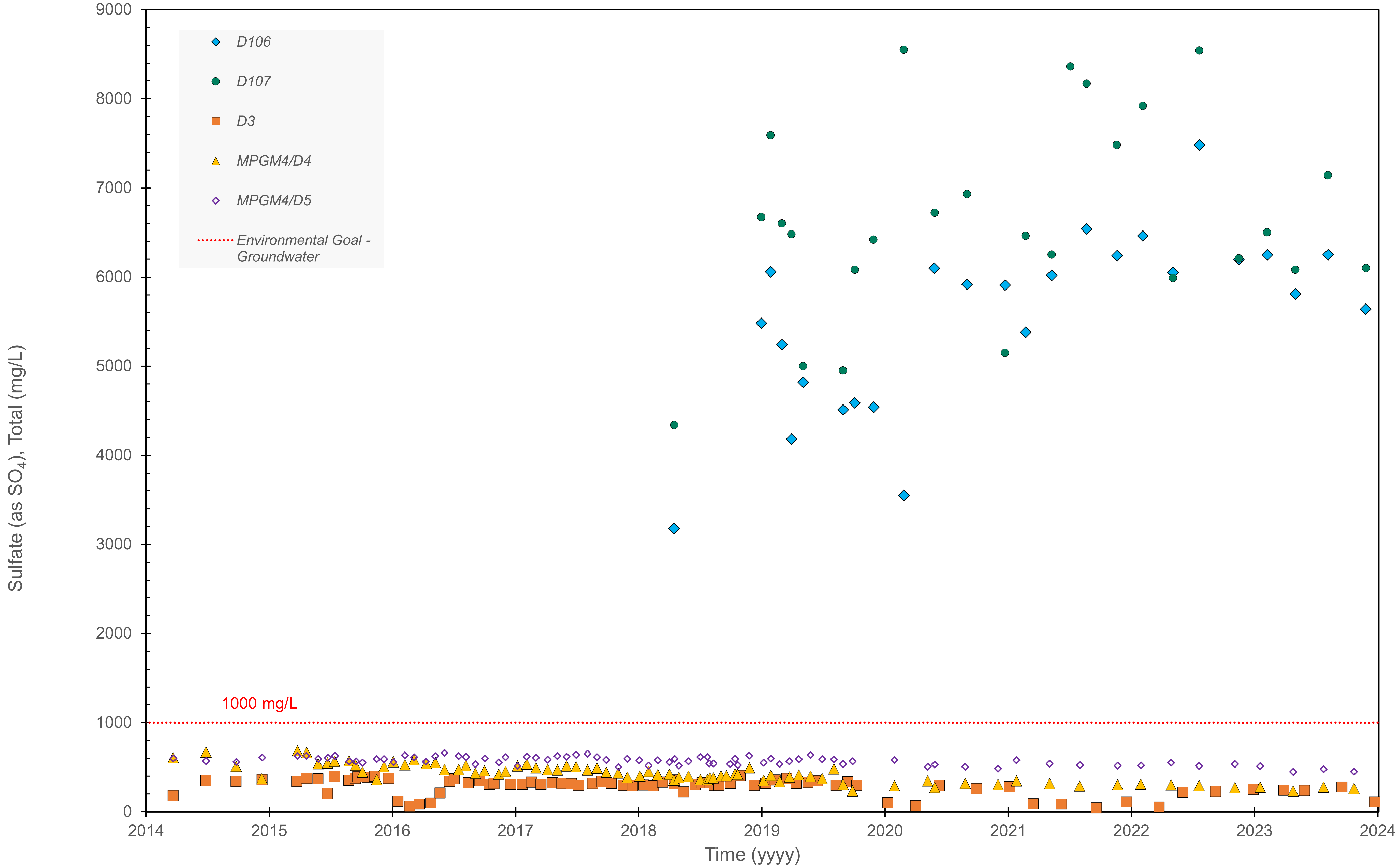

C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
370 µg/L
Boron, Total (µg/L)
Time (yyyy)
0
200
400
600
800
1000
1200
1400
1600
1800
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

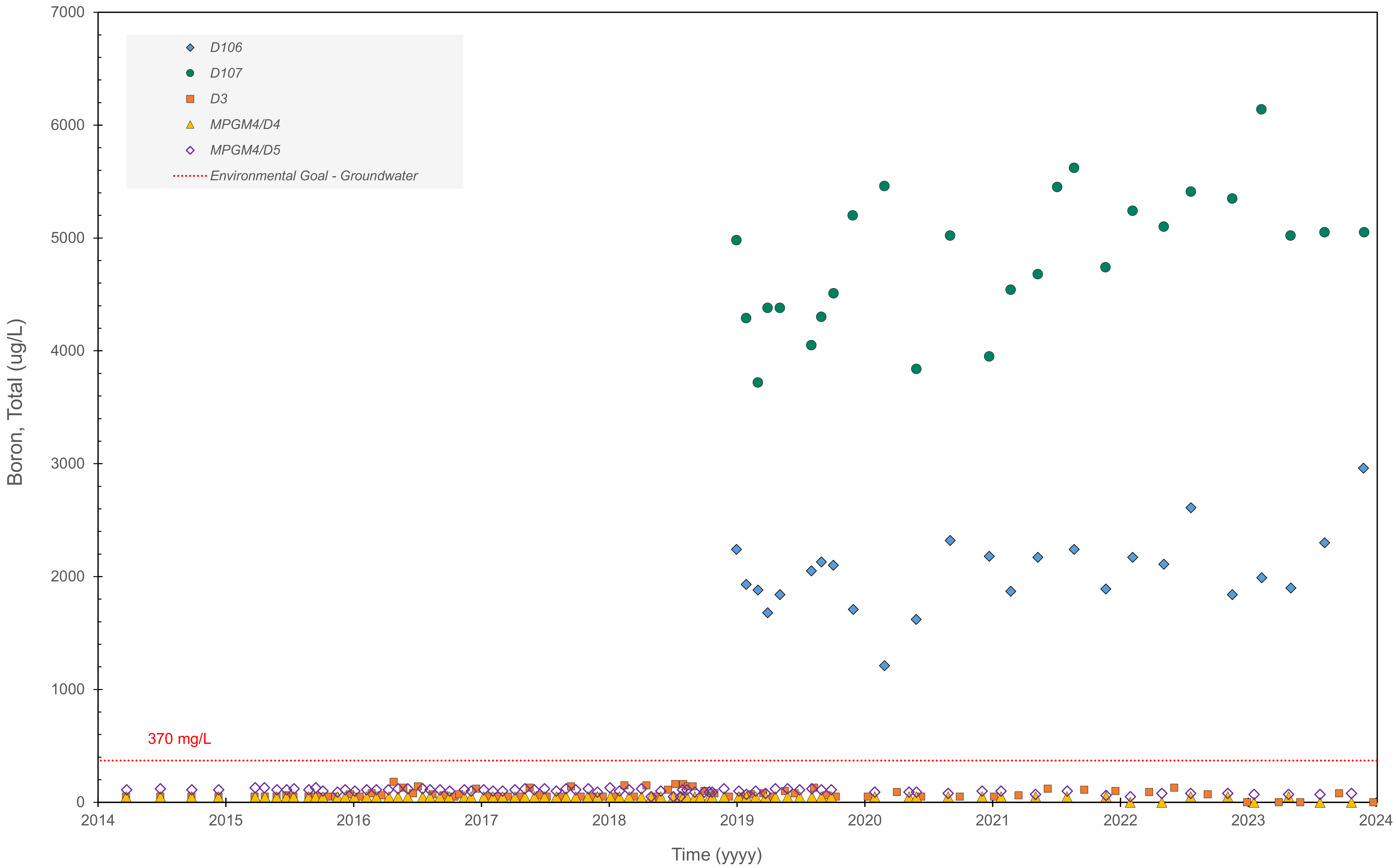

1600
1400
1200
1000
800
600
400
200
0
-200
Boron, Filtered (µg/L)
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)
C
E
G
LMP01
NC01
WX22
Environmental Goal - Surface Water
370 µg/L

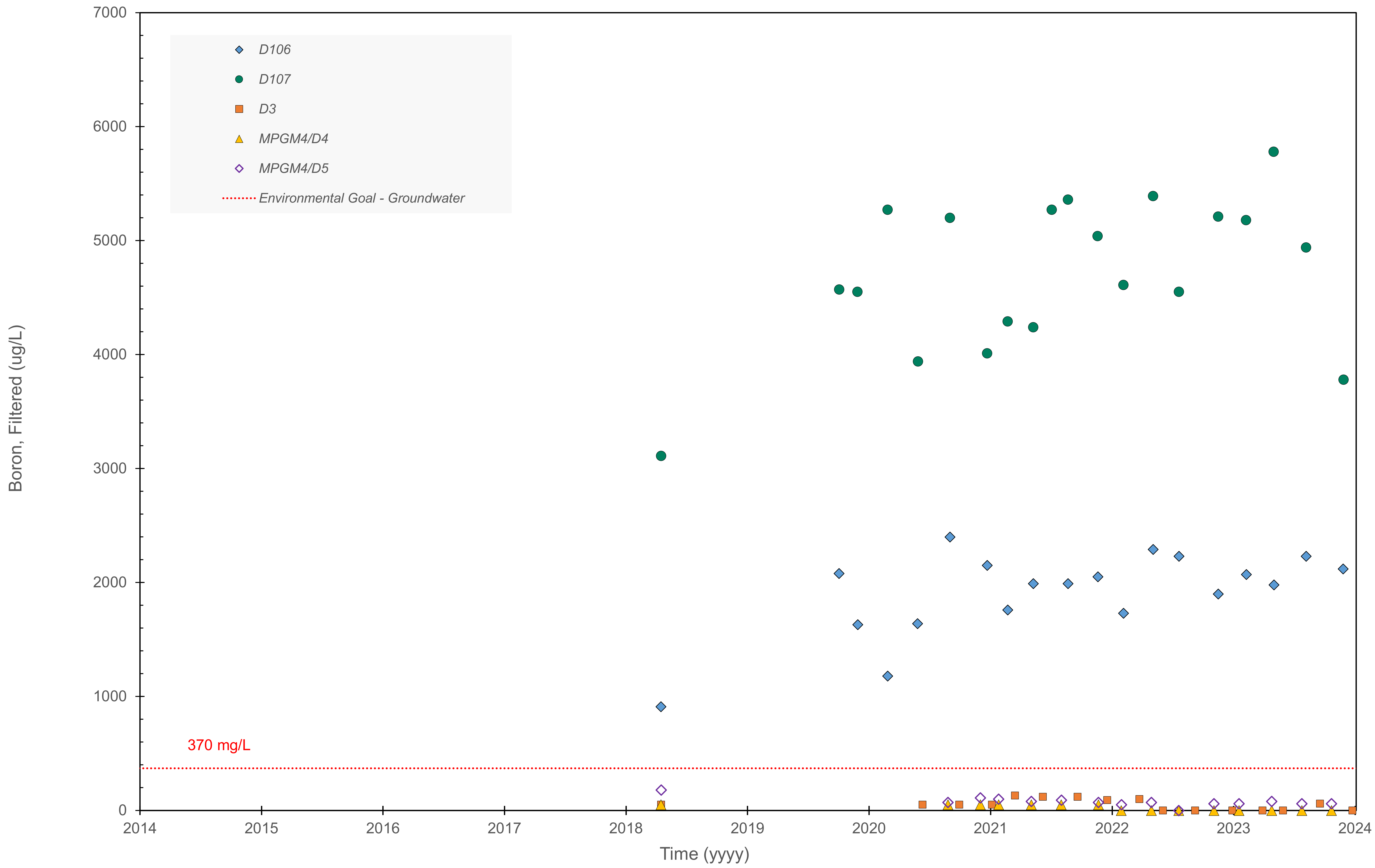
APPENDIX K GROUNDWATER TRENDS (10 YR)

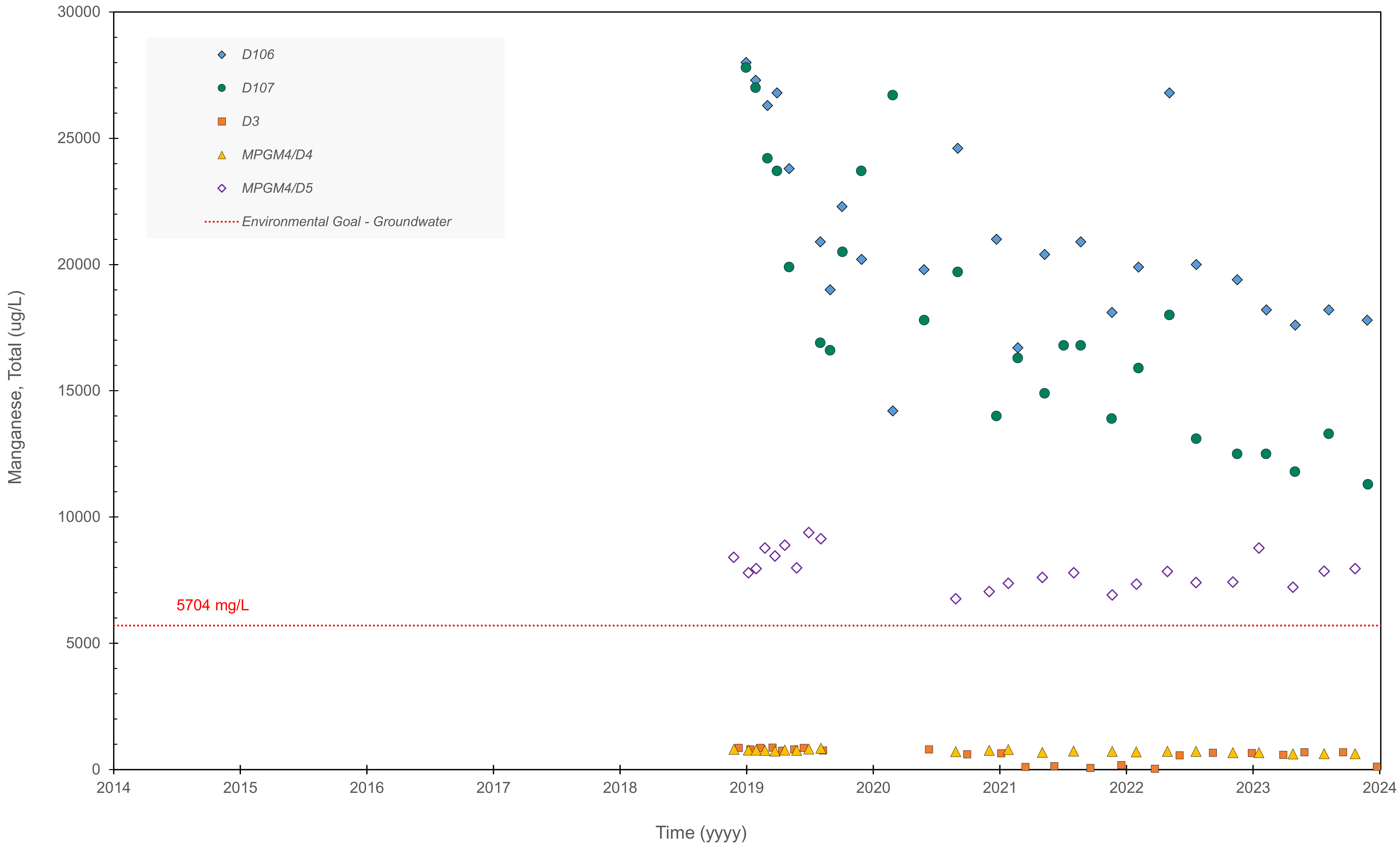

D106
D107
D3
MPGM4/D4
MPGM4/D5
Environmental Goal - Groundwater
1500 mg/L
Total Dissolved Solids (mg/L)
Time (yyyy)
0
2000
4000
6000
8000
10000
12000
14000
16000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

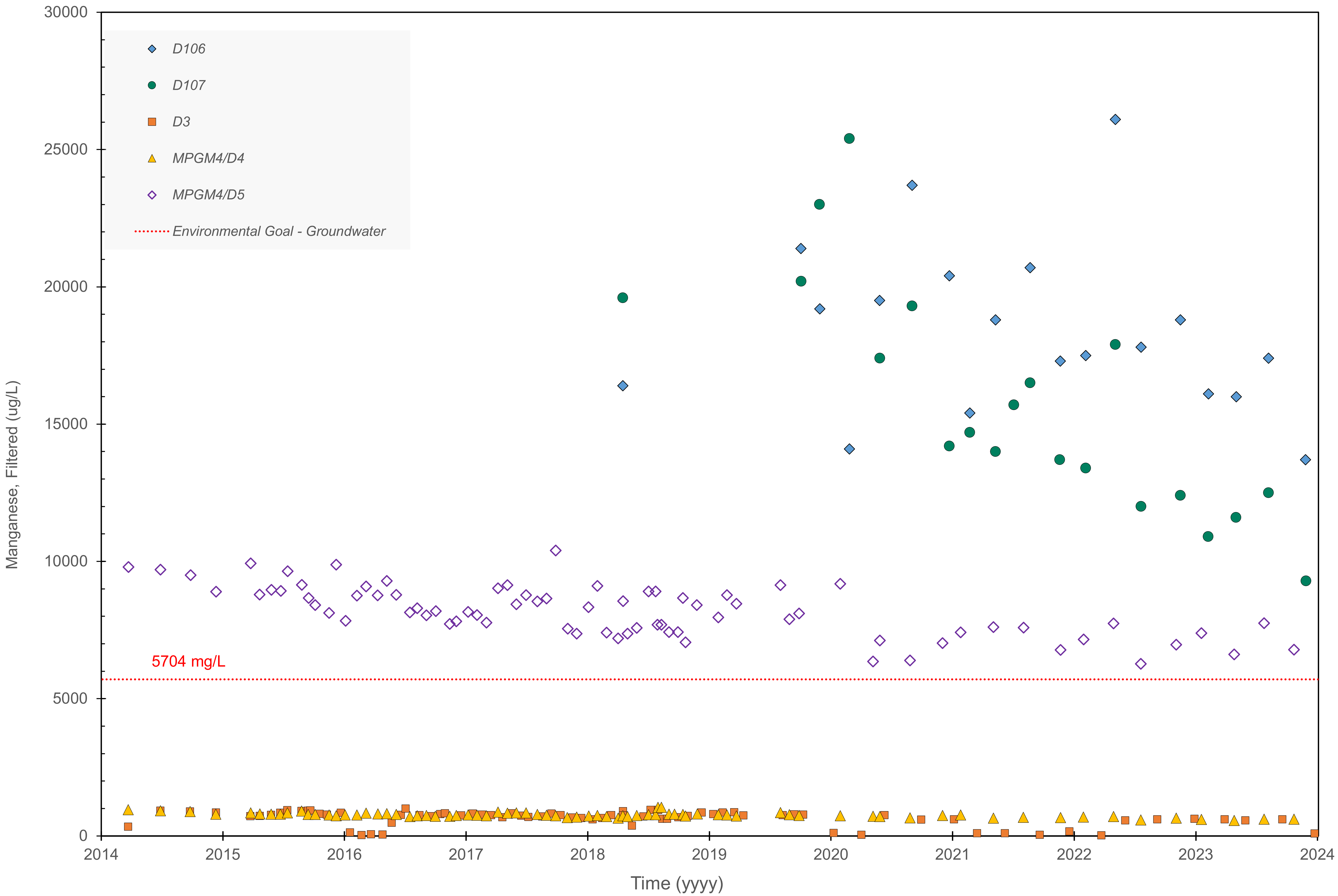

D106
D107
D3
MPGM4/D4
MPGM4/D5
Environmental Goal - Groundwater
350 mg/L
Chloride, Total (mg/L)
Time (yyyy)
2500
2000
1500
1000
500
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

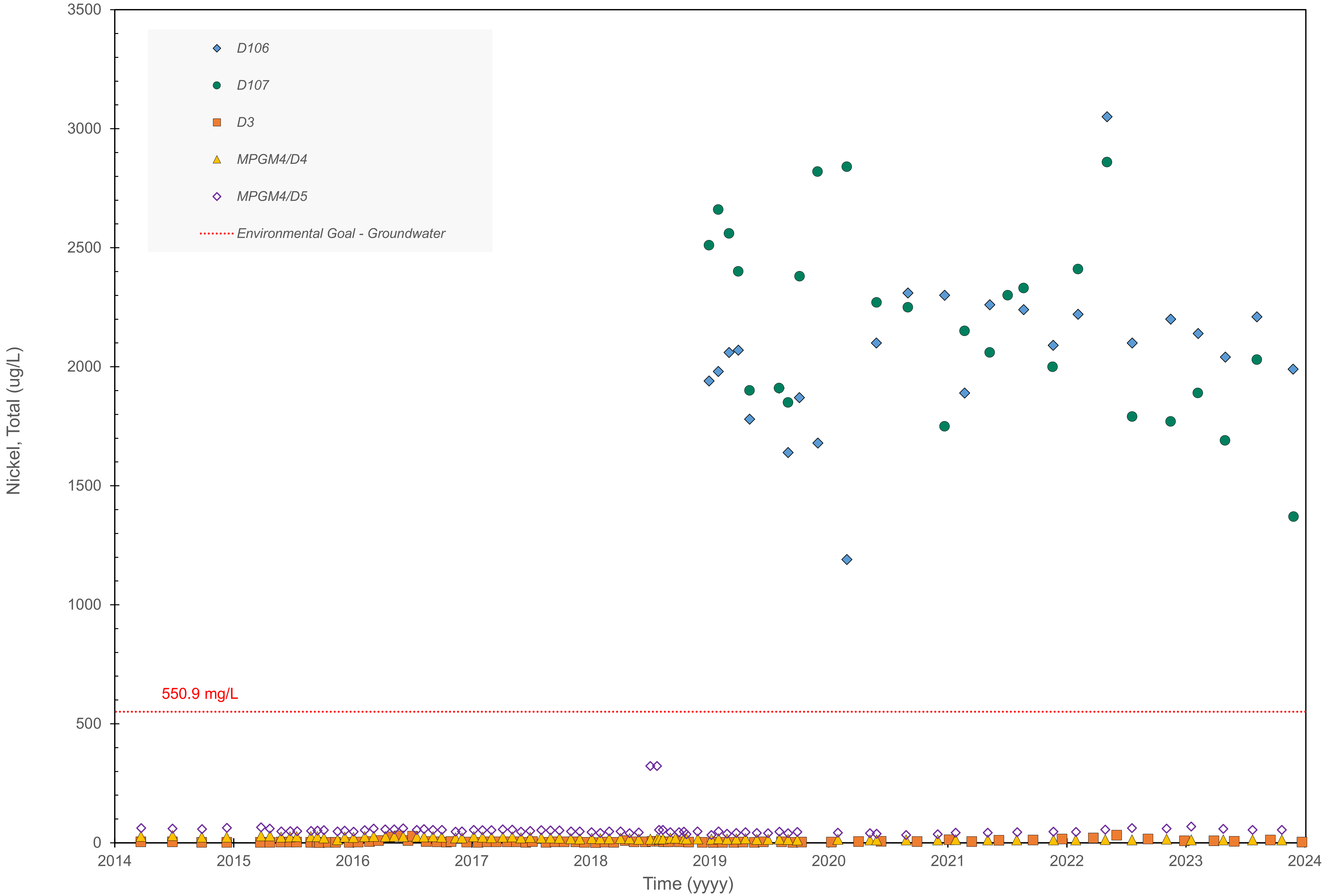

D106
D107
D3
MPGM4/D4
MPGM4/D5
Environmental Goal - Groundwater
1000 mg/L
Sulfate (as SO4), Total (mg/L)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

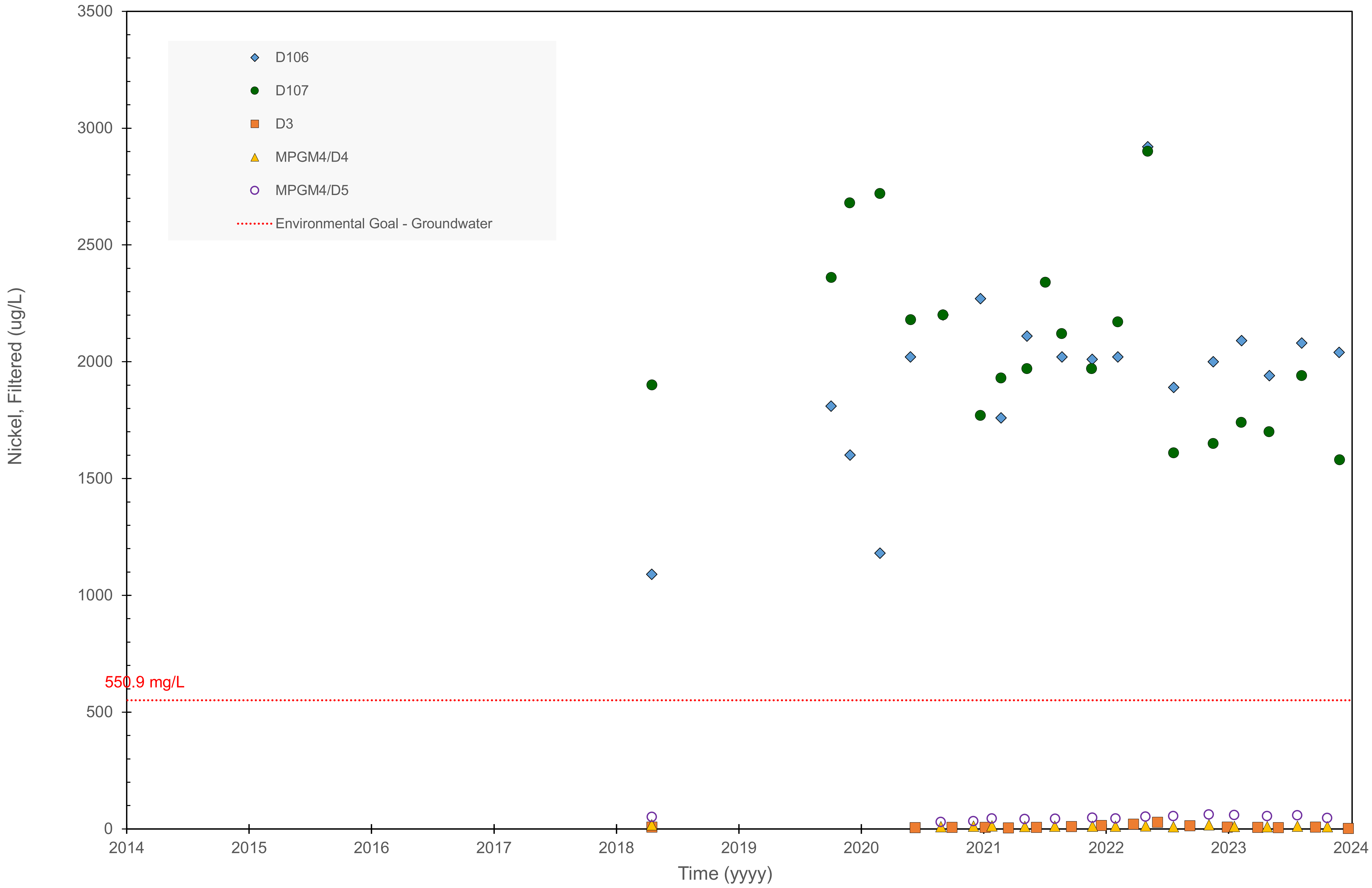

D106
D107
D3
MPGM4/D4
MPGM4/D5
Environmental Goal - Groundwater
370 mg/L
Boron, Total (ug/L)
Time (yyyy)
0
1000
2000
3000
4000
5000
6000
7000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

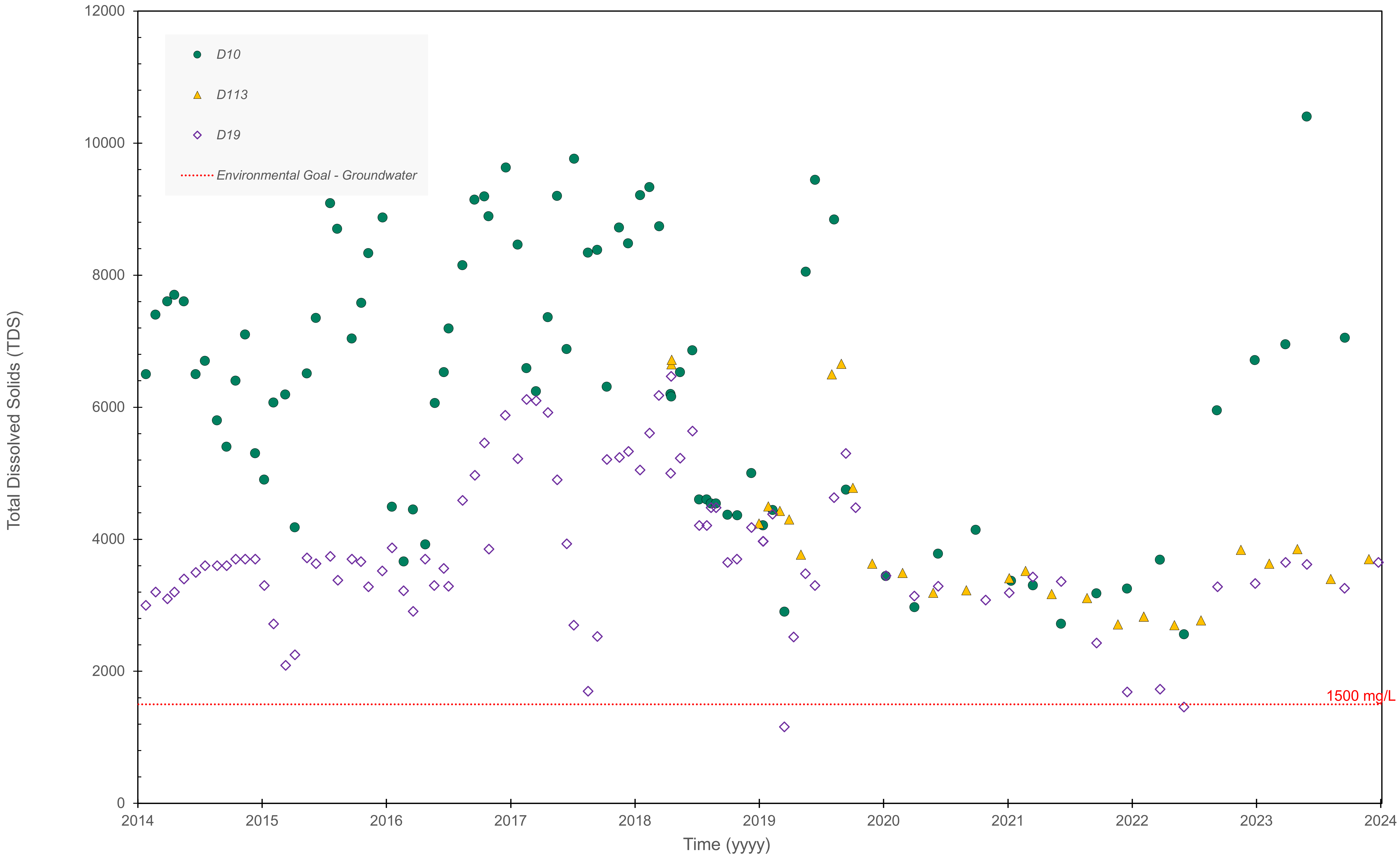

D106
D107
D3
MPGM4/D4
MPGM4/D5
Environmental Goal - Groundwater
370 mg/L
Boron, Filtered (ug/L)
Time (yyyy)
0
1000
2000
3000
4000
5000
6000
7000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024


D106
D107
D3
MPGM4/D4
MPGM4/D5
Environmental Goal - Groundwater
5704 mg/L
Manganese, Total (ug/L)
30000
25000
20000
15000
10000
5000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

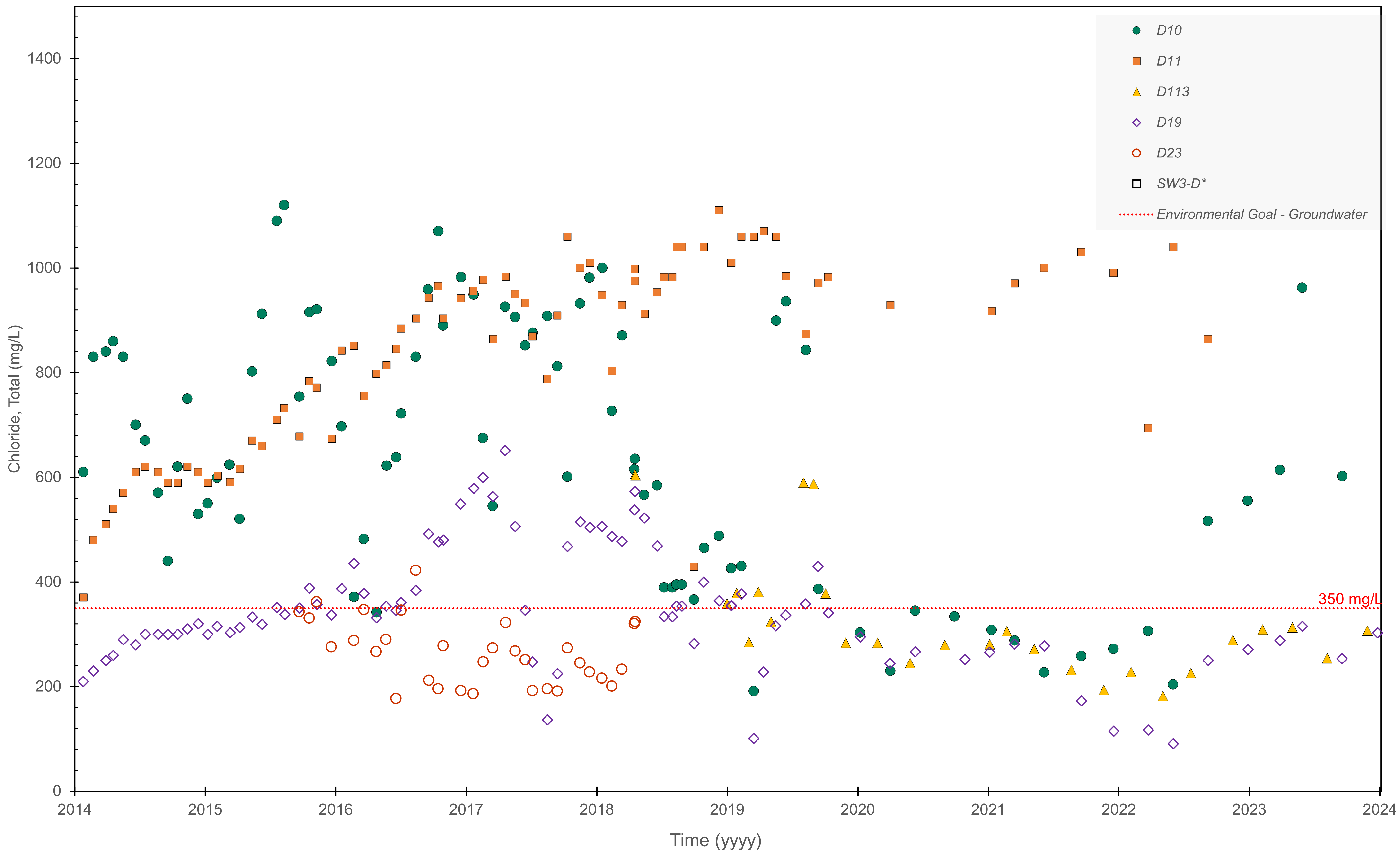

D106
D107
D3
MPGM4/D4
MPGM4/D5
Environmental Goal - Groundwater
5704 mg/L
Manganese, Filtered (ug/L)
Time (yyyy)
0
5000
10000
15000
20000
25000
30000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024


3500
3000
2500
2000
1500
1000
500
0
Nickel, Total (ug/L)
D106
D107
D3
MPGM4/D4
MPGM4/D5
Environmental Goal - Groundwater
550.9 mg/L
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

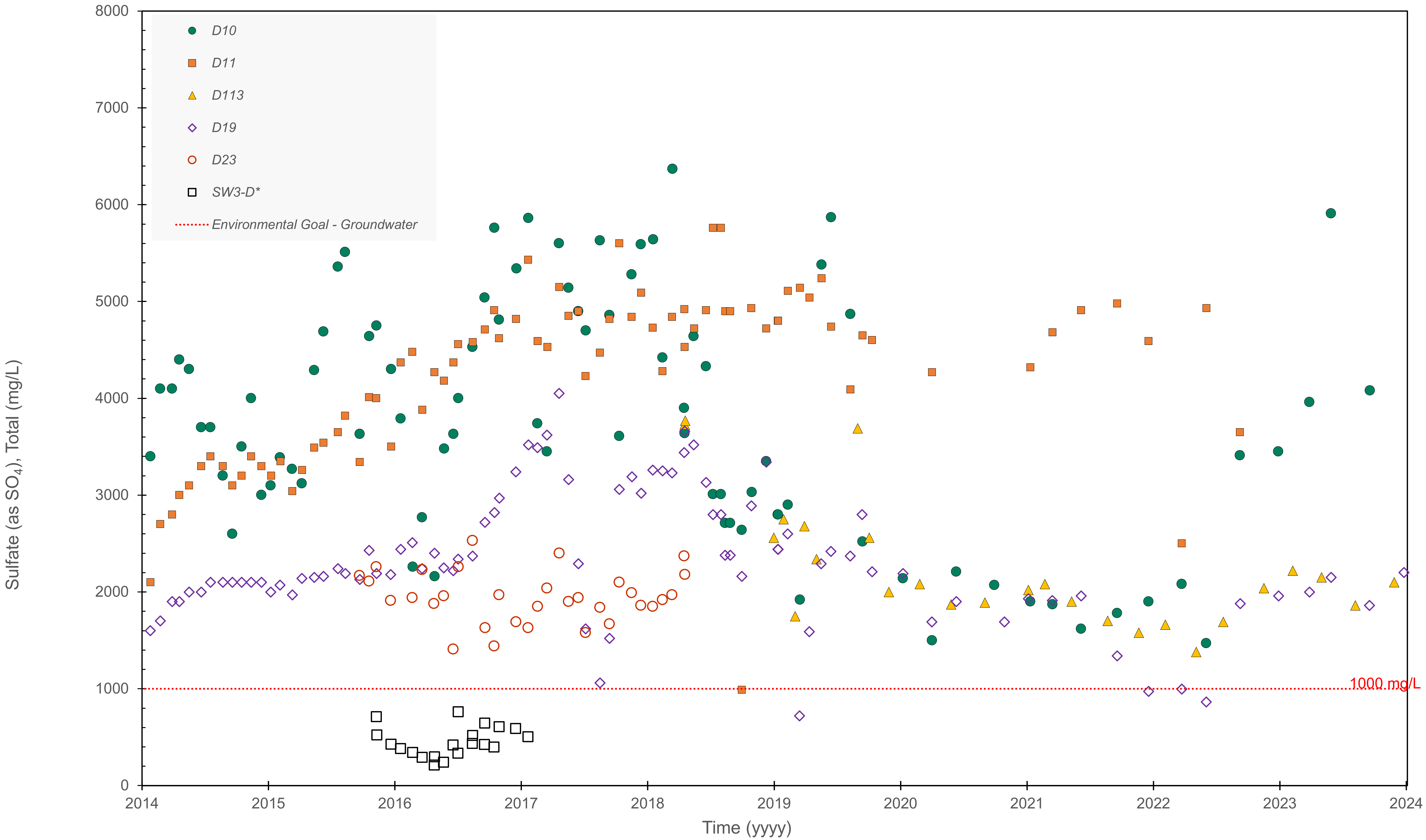

D106
D107
D3
MPGM4/D4
MPGM4/D5
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Filtered (ug/L)
Time (yyyy)
3500
3000
2500
2000
1500
1000
500
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024



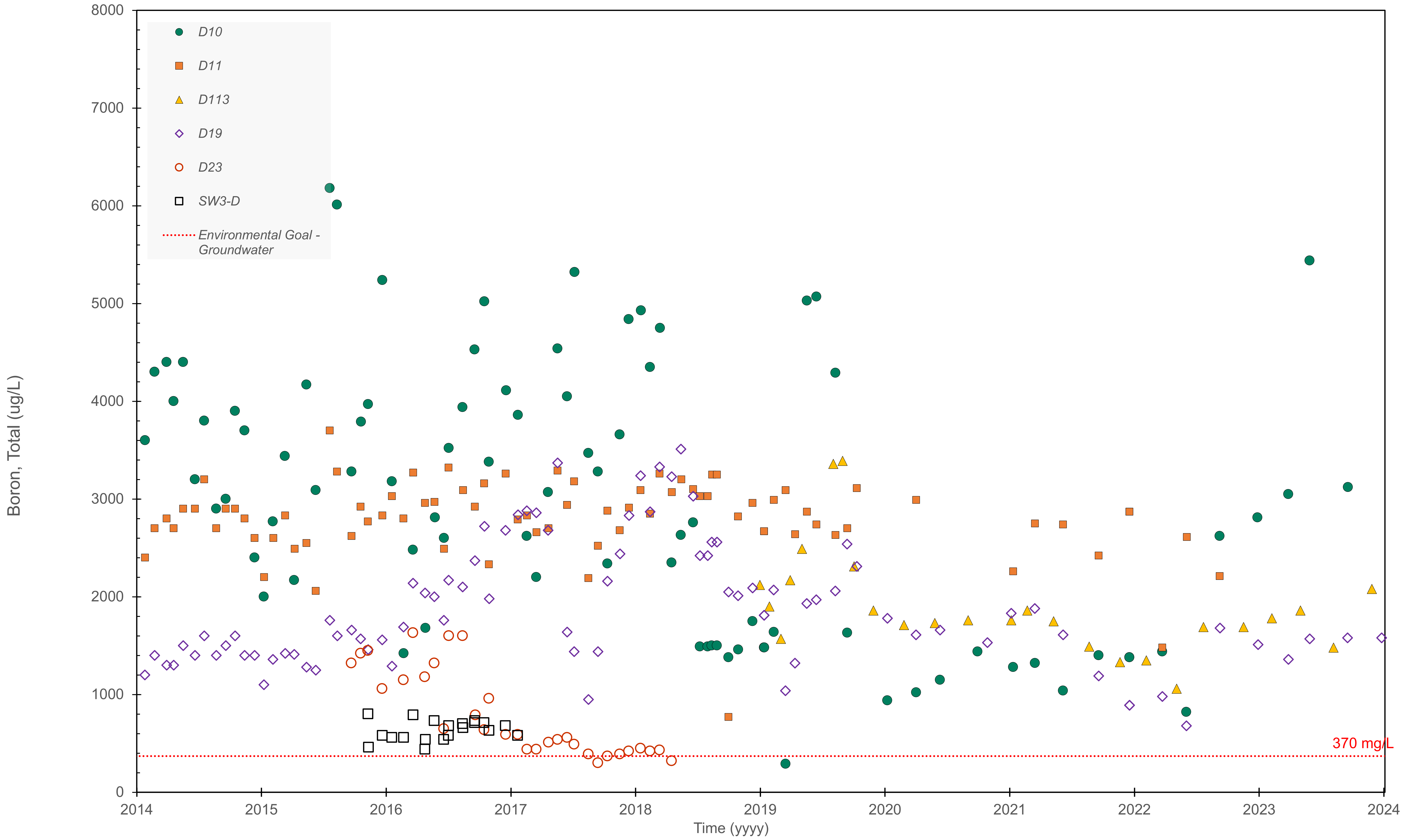
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.



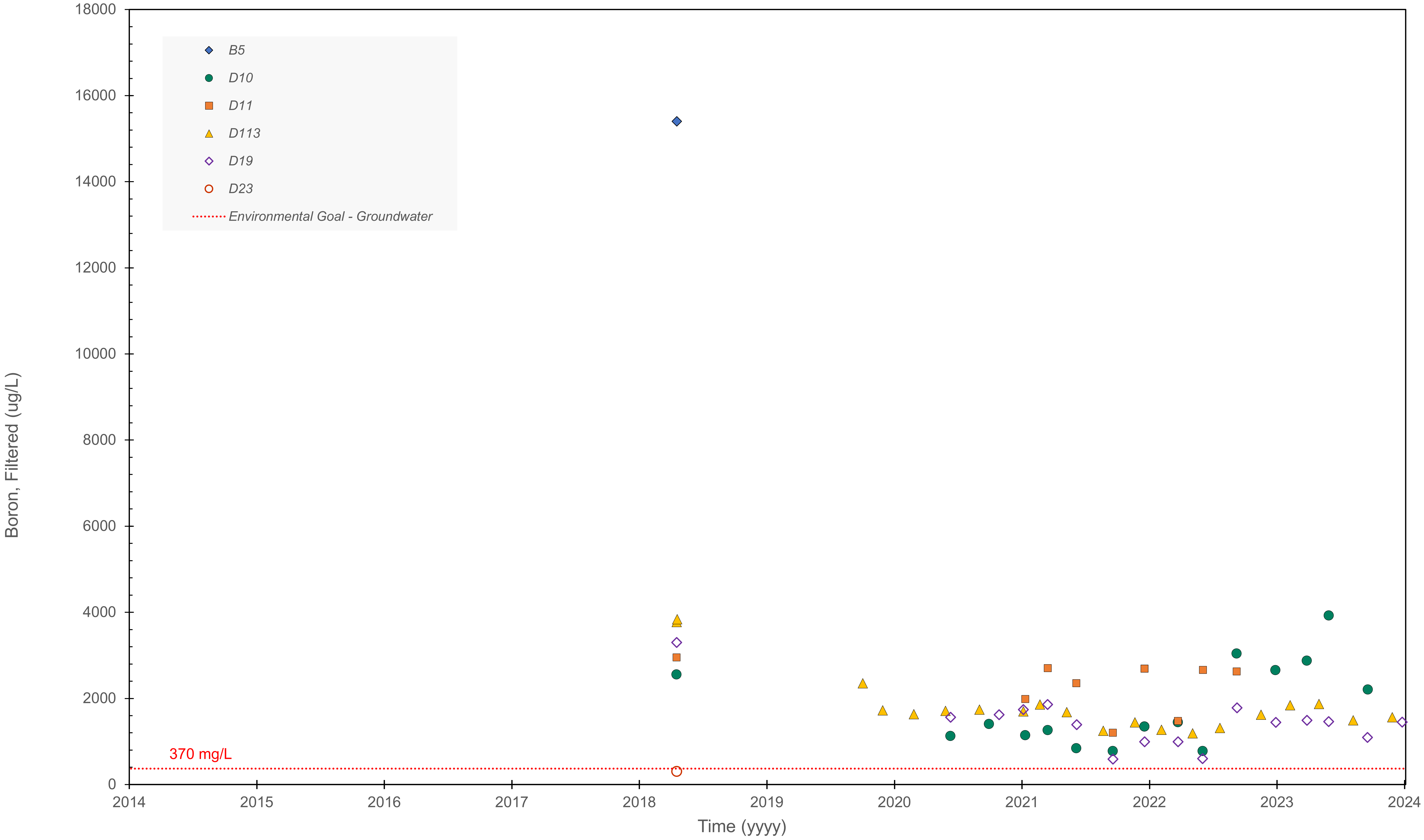
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.



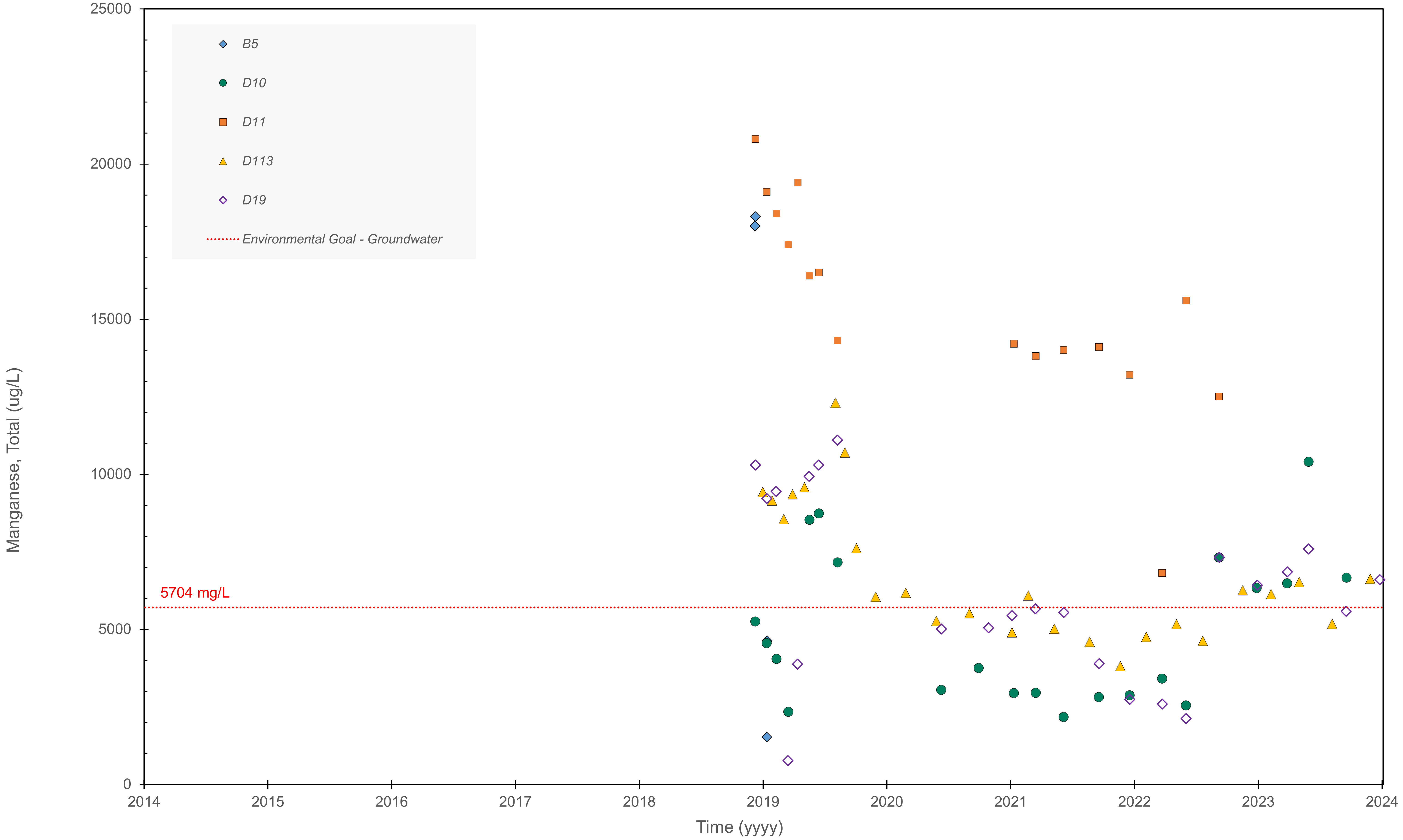
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.

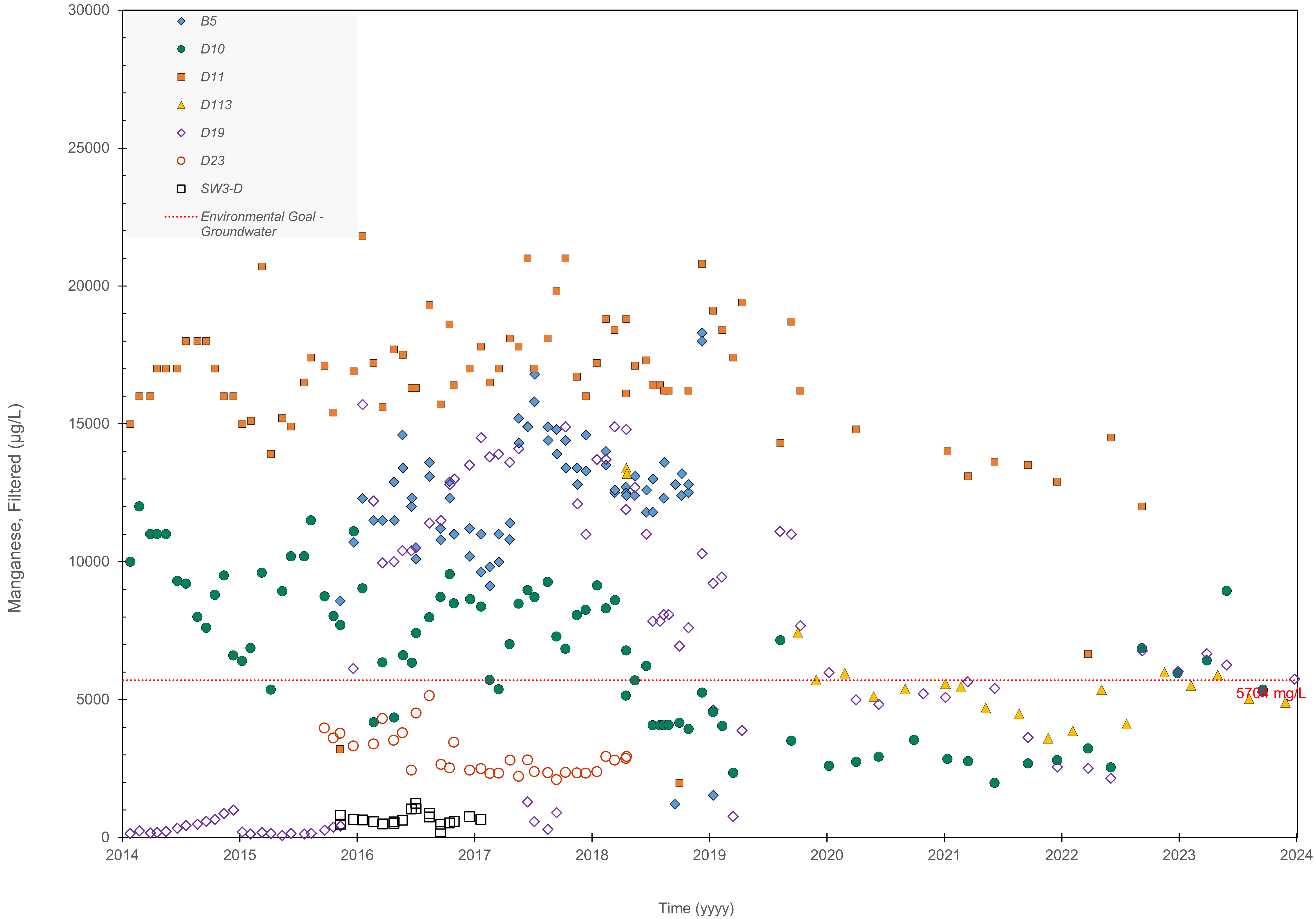


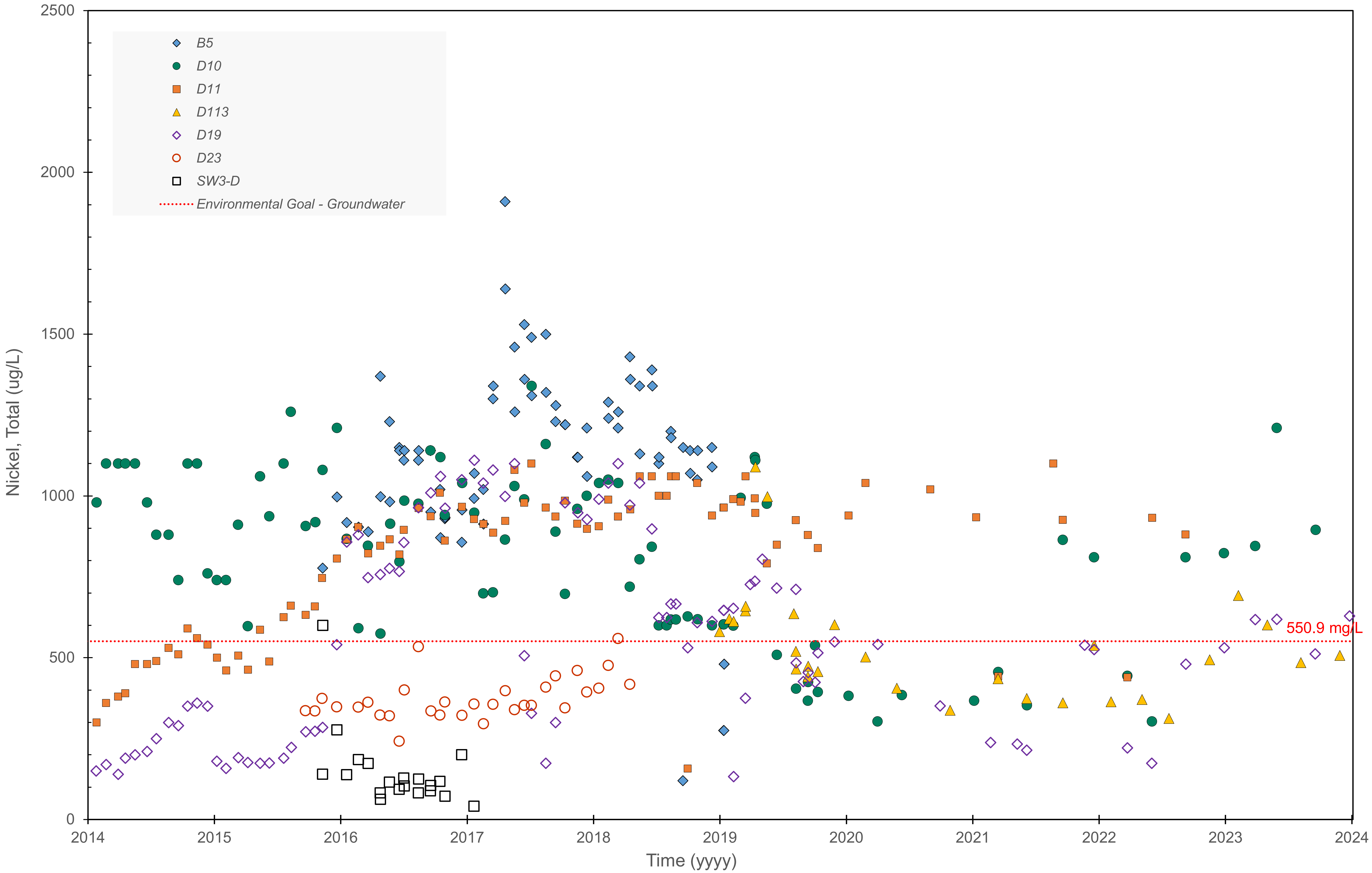
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.

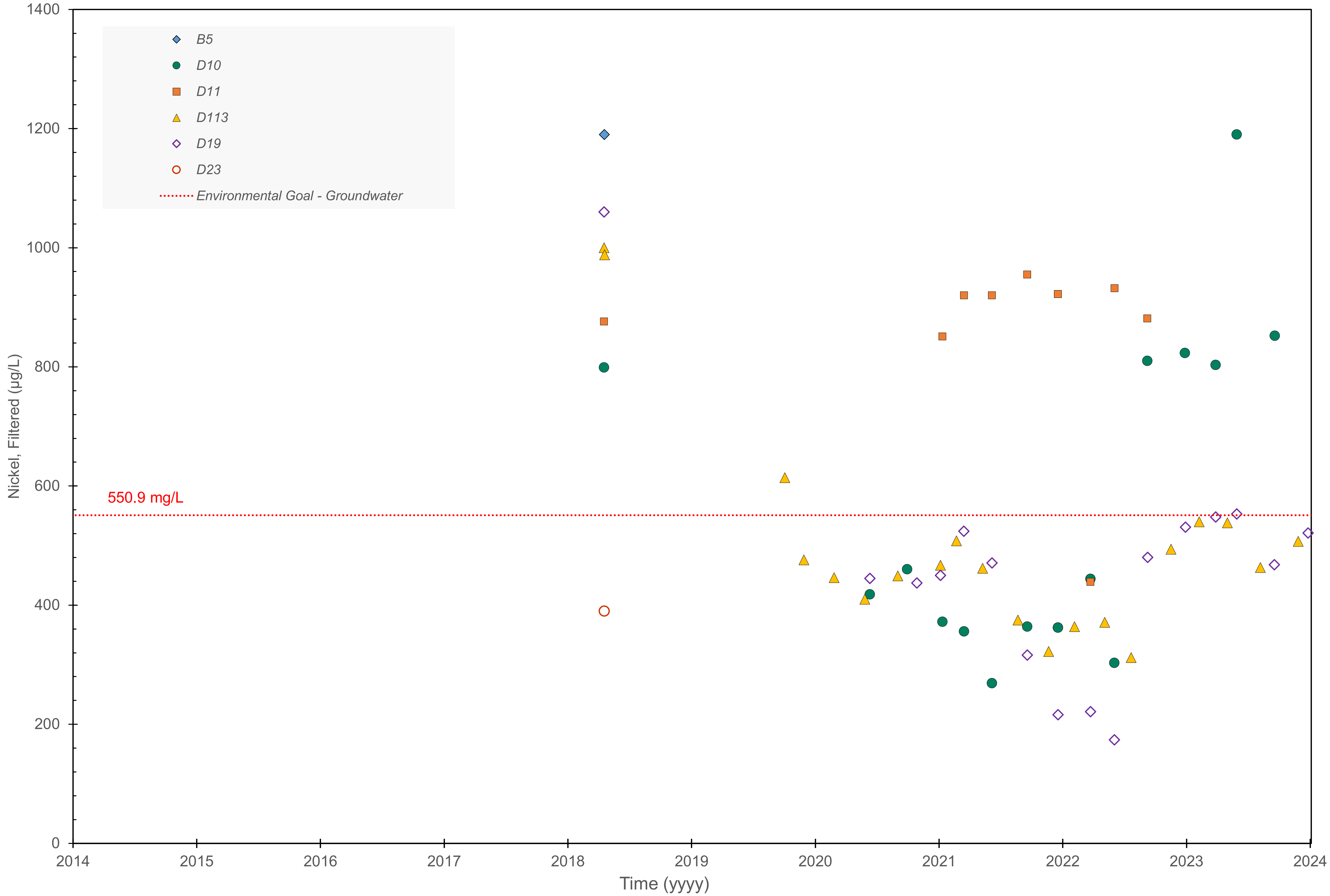


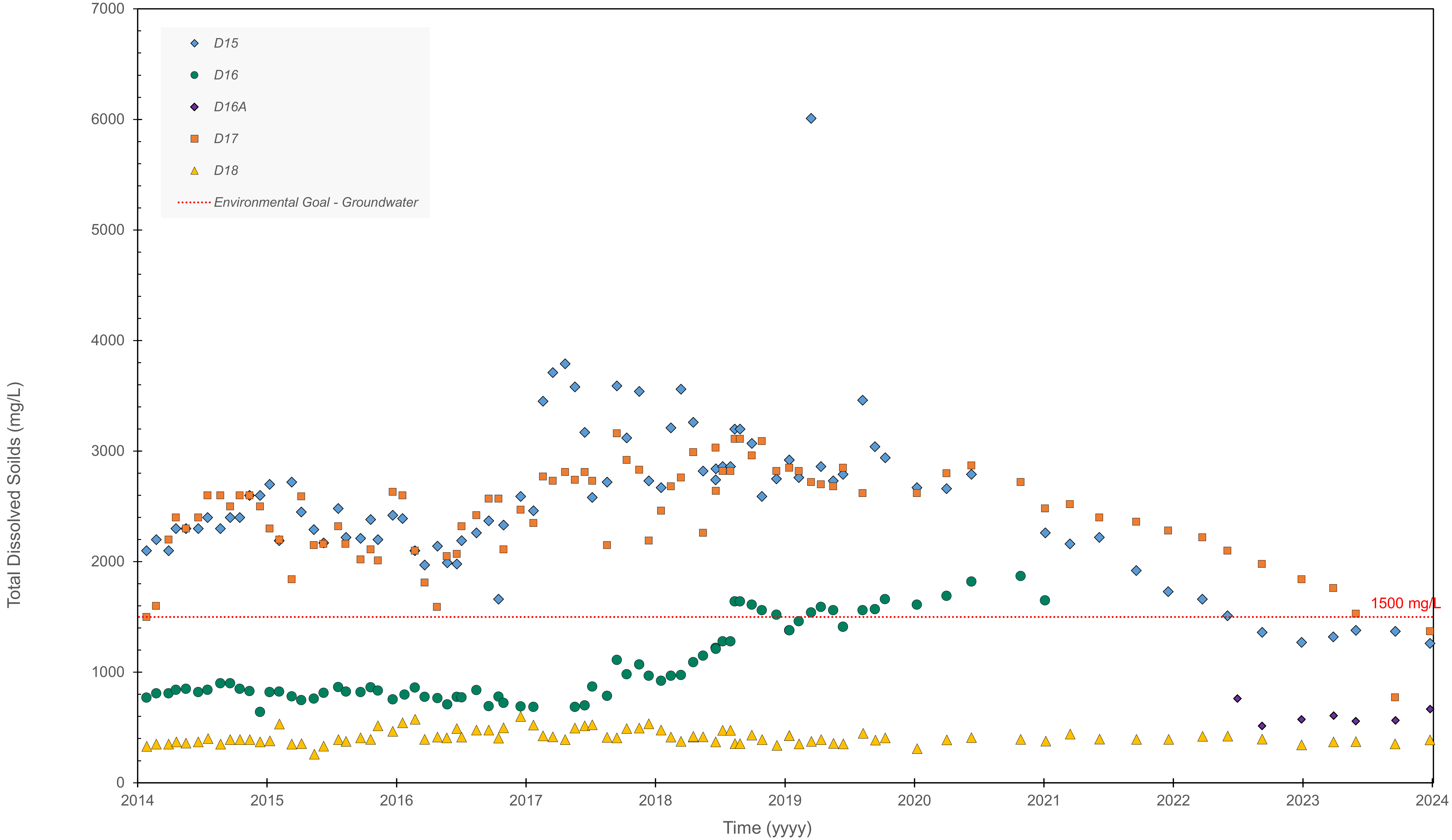
*Data for B5 and SWD-3 has not been supplied by EnergyAustralia since 2017 due to wells reported as either blocked or dry.

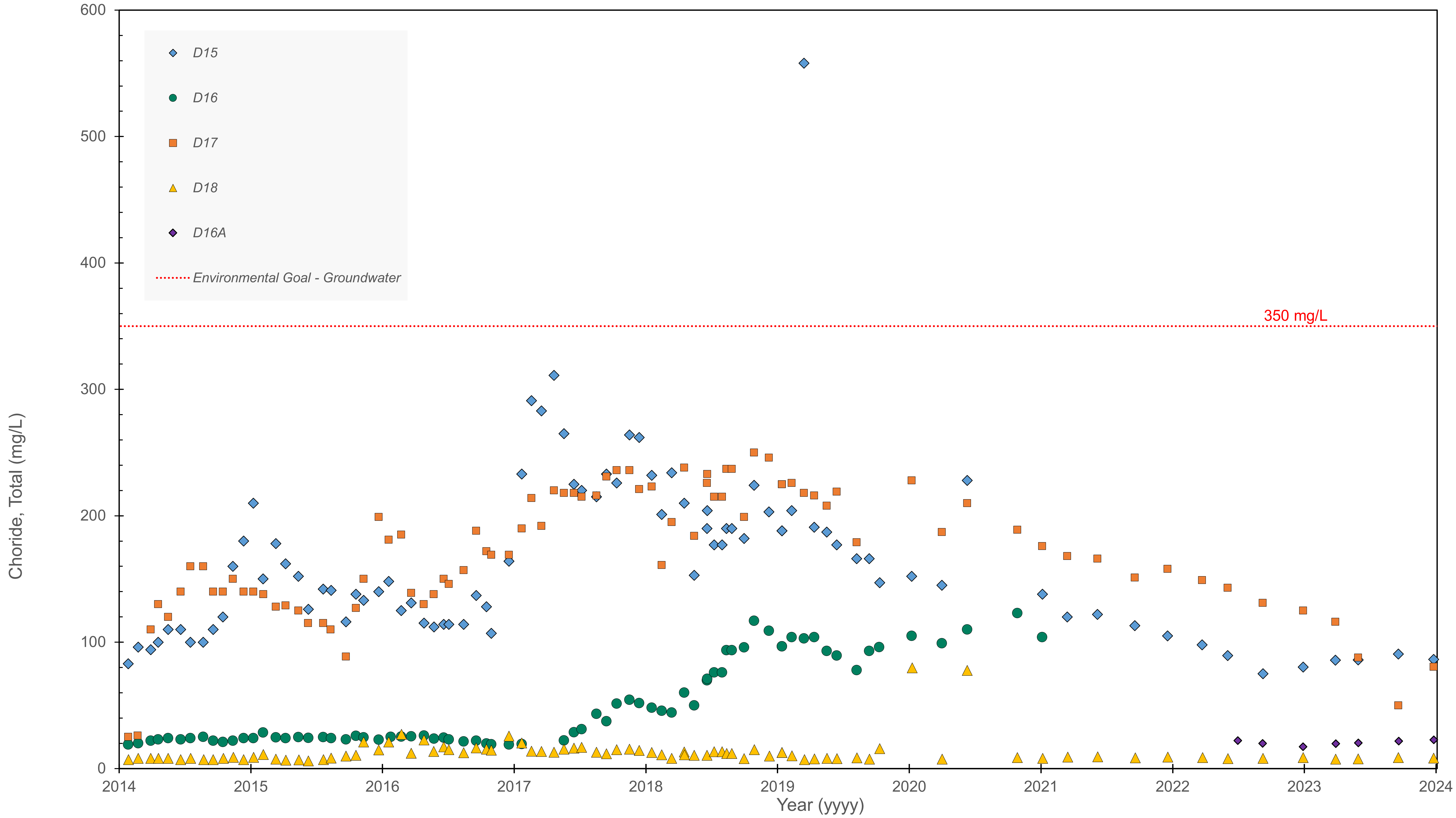

B5
D10
D11
D113
D19
Environmental Goal - Groundwater
5704 mg/L
Manganese, Total (ug/L)
Time (yyyy)
0
5000
10000
15000
20000
25000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

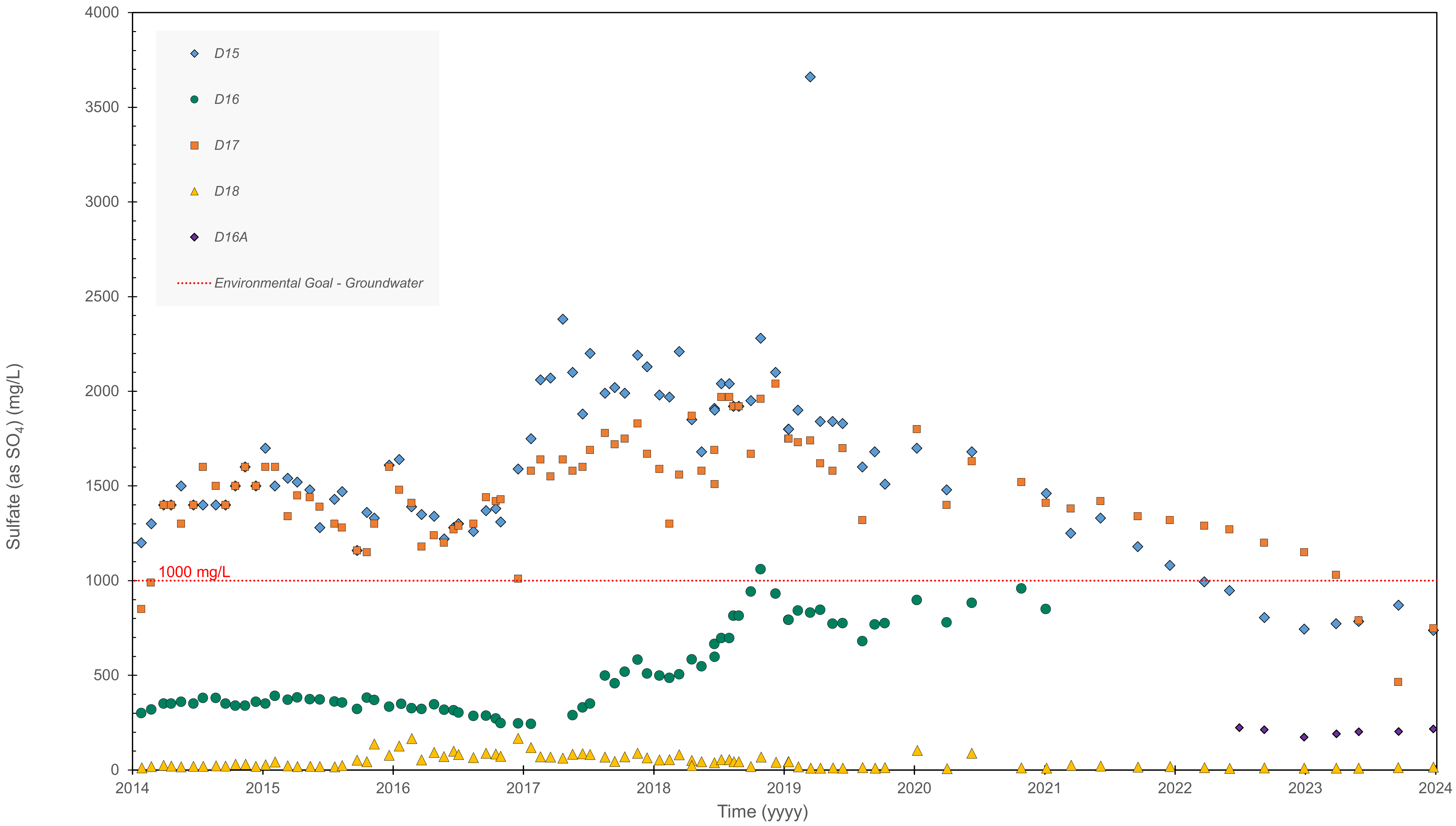

B5
D10
D11
D113
D19
D23
SW3-D
Environmental Goal - Groundwater
5704 mg/L
Manganese, Filtered (µg/L)
Time (yyyy)
0
5000
10000
15000
20000
25000
30000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

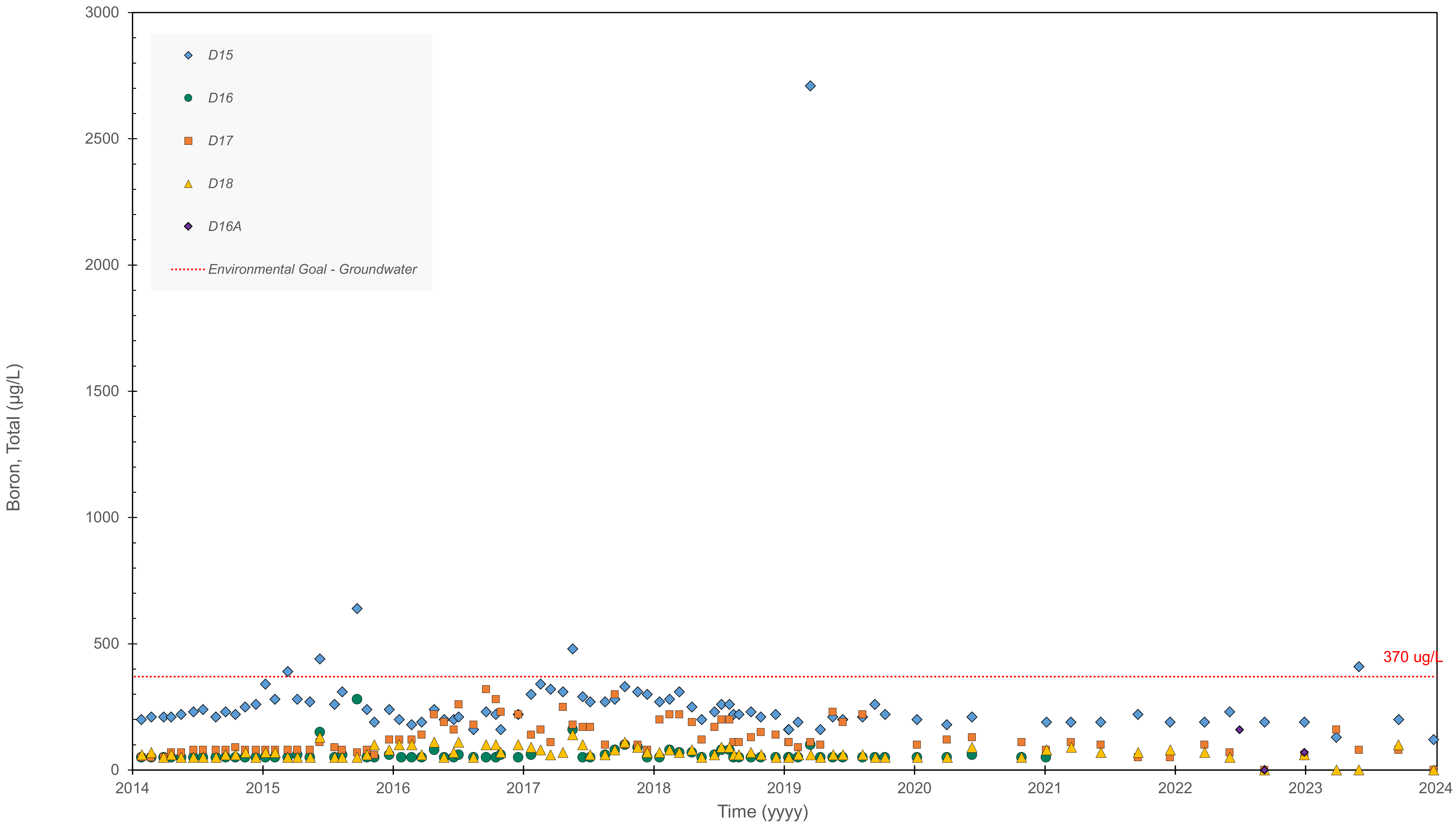

B5
D10
D11
D113
D19
D23
SW3-D
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Total (ug/L)
Time (yyyy)
0
500
1000
1500
2000
2500
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

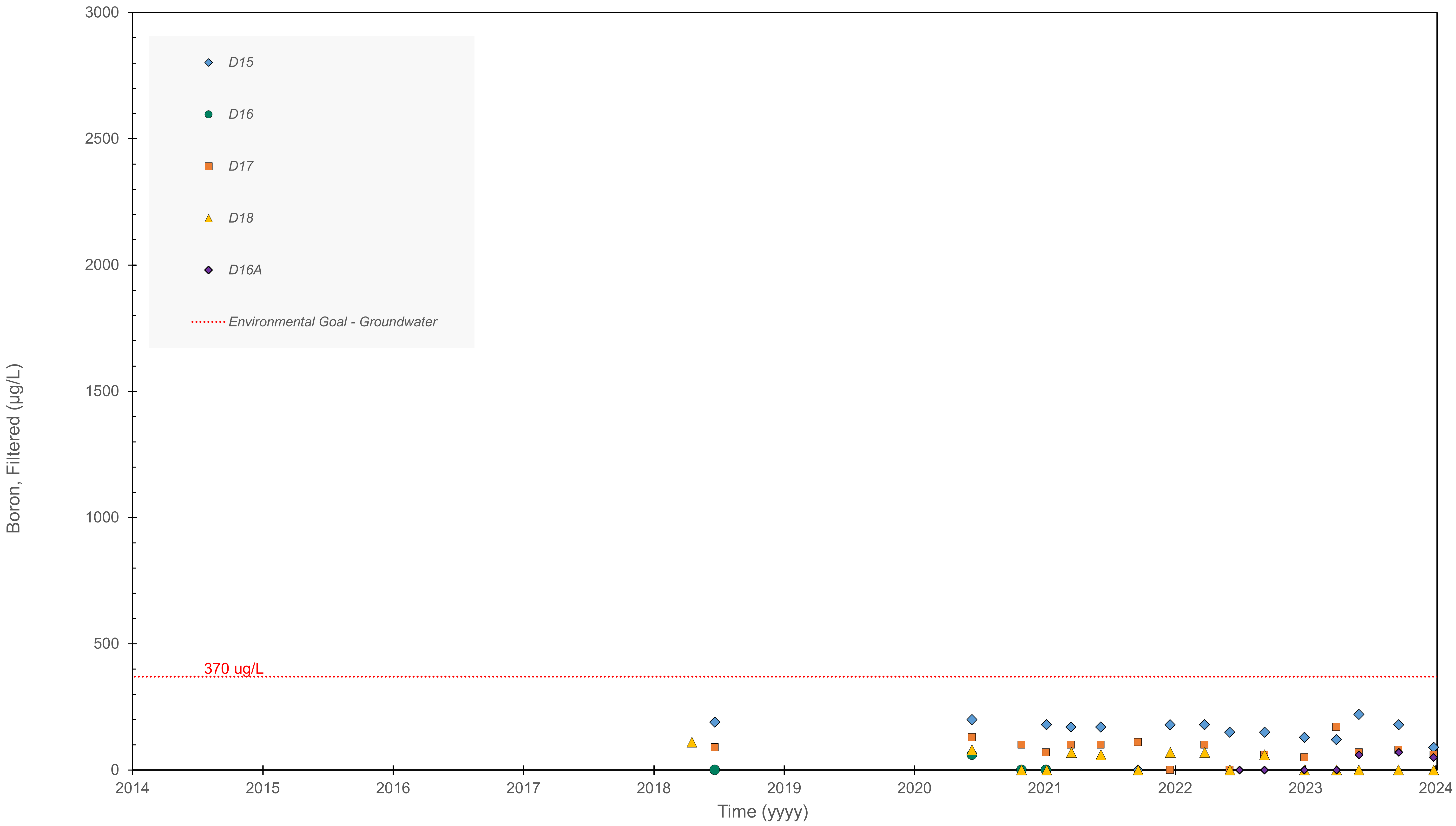

B5
D10
D11
D113
D19
D23
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Filtered (µg/L)
Time (yyyy)
0
200
400
600
800
1000
1200
1400
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

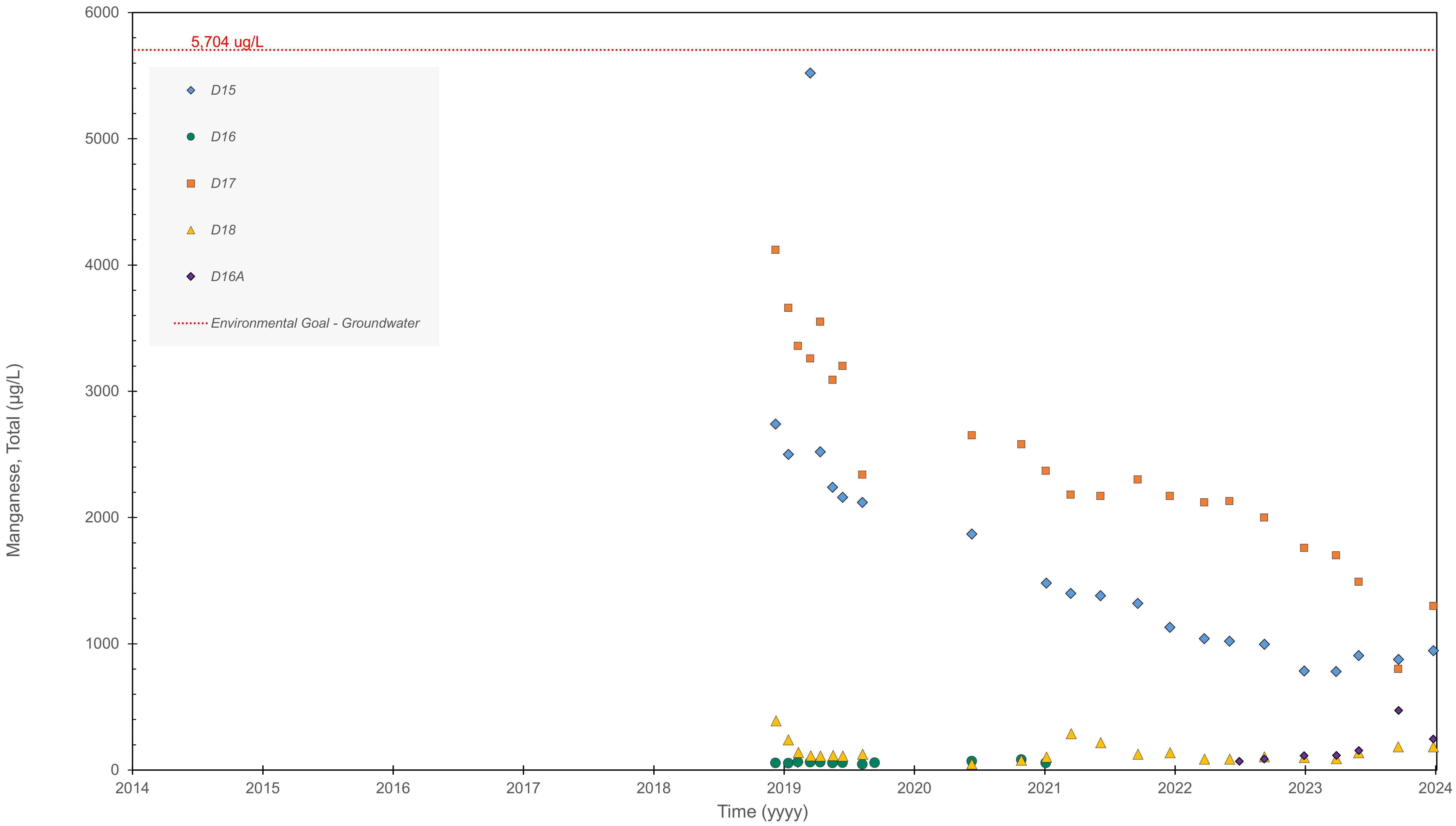

D15
D16
D16A
D17
D18
Environmental Goal - Groundwater
1500 mg/L
Total Dissolved Solids (mg/L)
Time (yyyy)
0
1000
2000
3000
4000
5000
6000
7000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

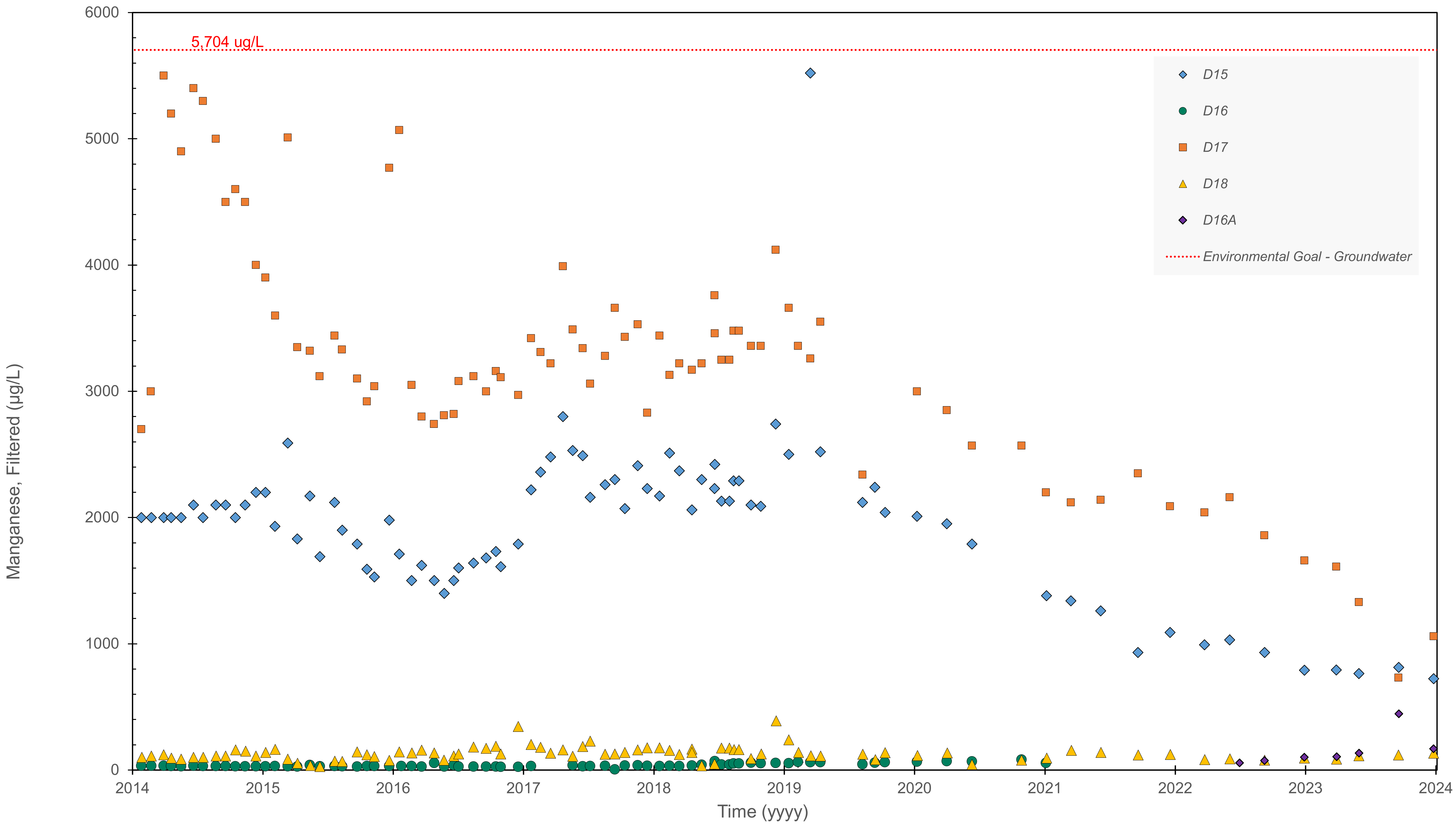

D15
D16
D17
D18
D16A
Environmental Goal - Groundwater
350 mg/L
Choride, Total (mg/L)
Year (yyyy)
0
100
200
300
400
500
600
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

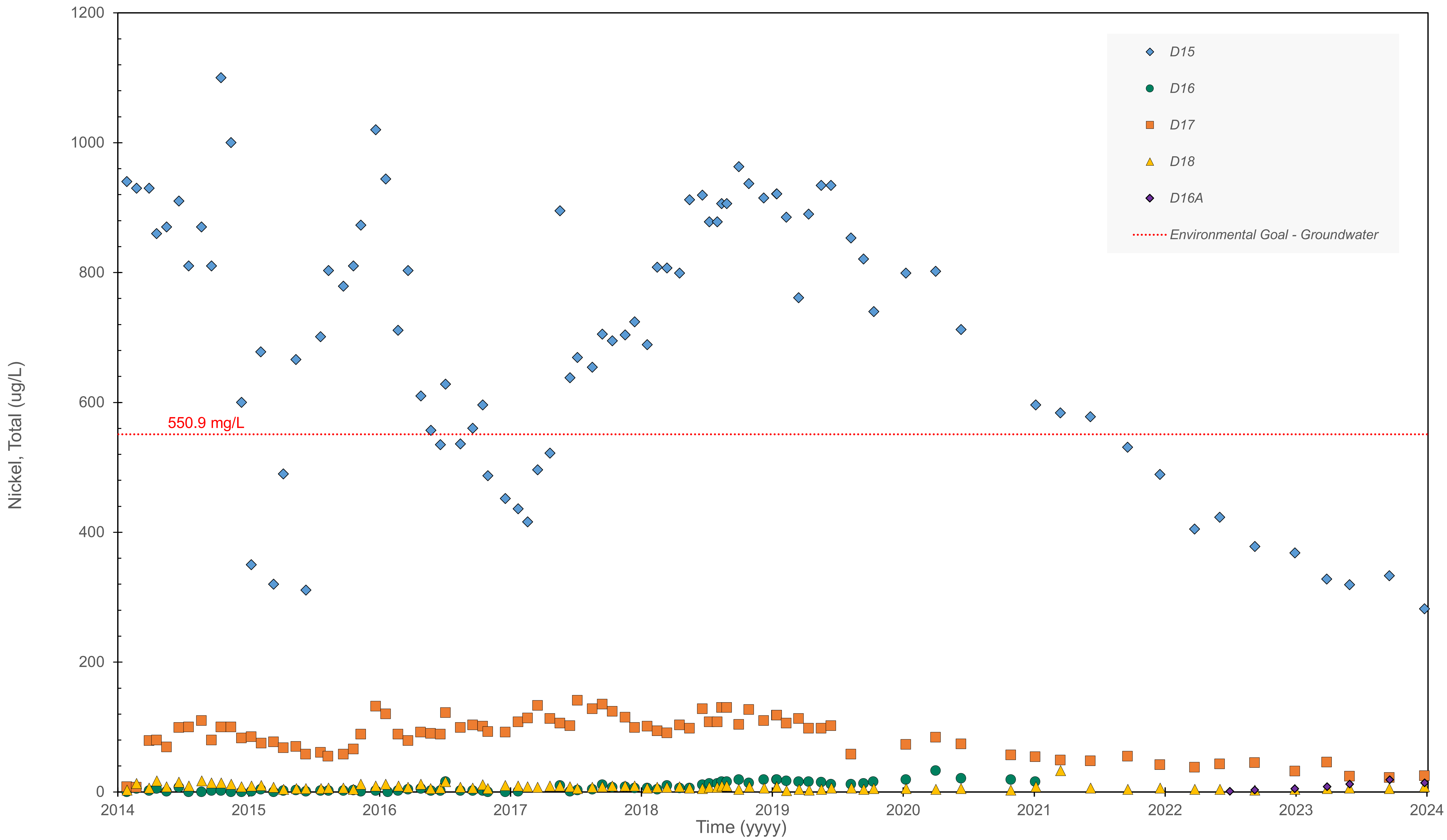

D15
D16
D17
D18
D16A
Environmental Goal - Groundwater
1000 mg/L
Sulfate (as SO4) (mg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
3500
4000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

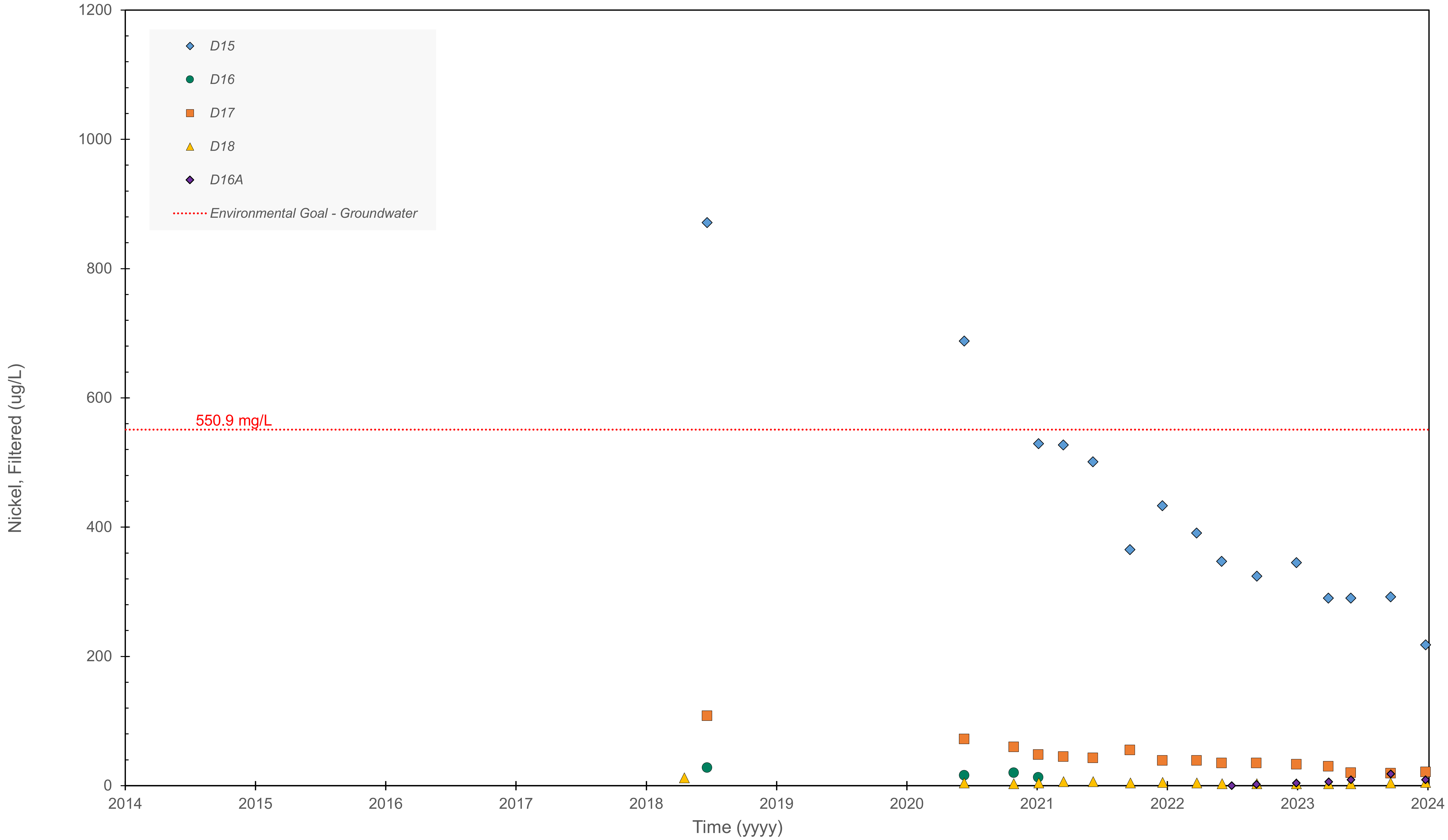

3000
2500
2000
1500
1000
500
0
Boron, Total (µg/L)
D15
D16
D17
D18
D16A
Environmental Goal - Groundwater
370 ug/L
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

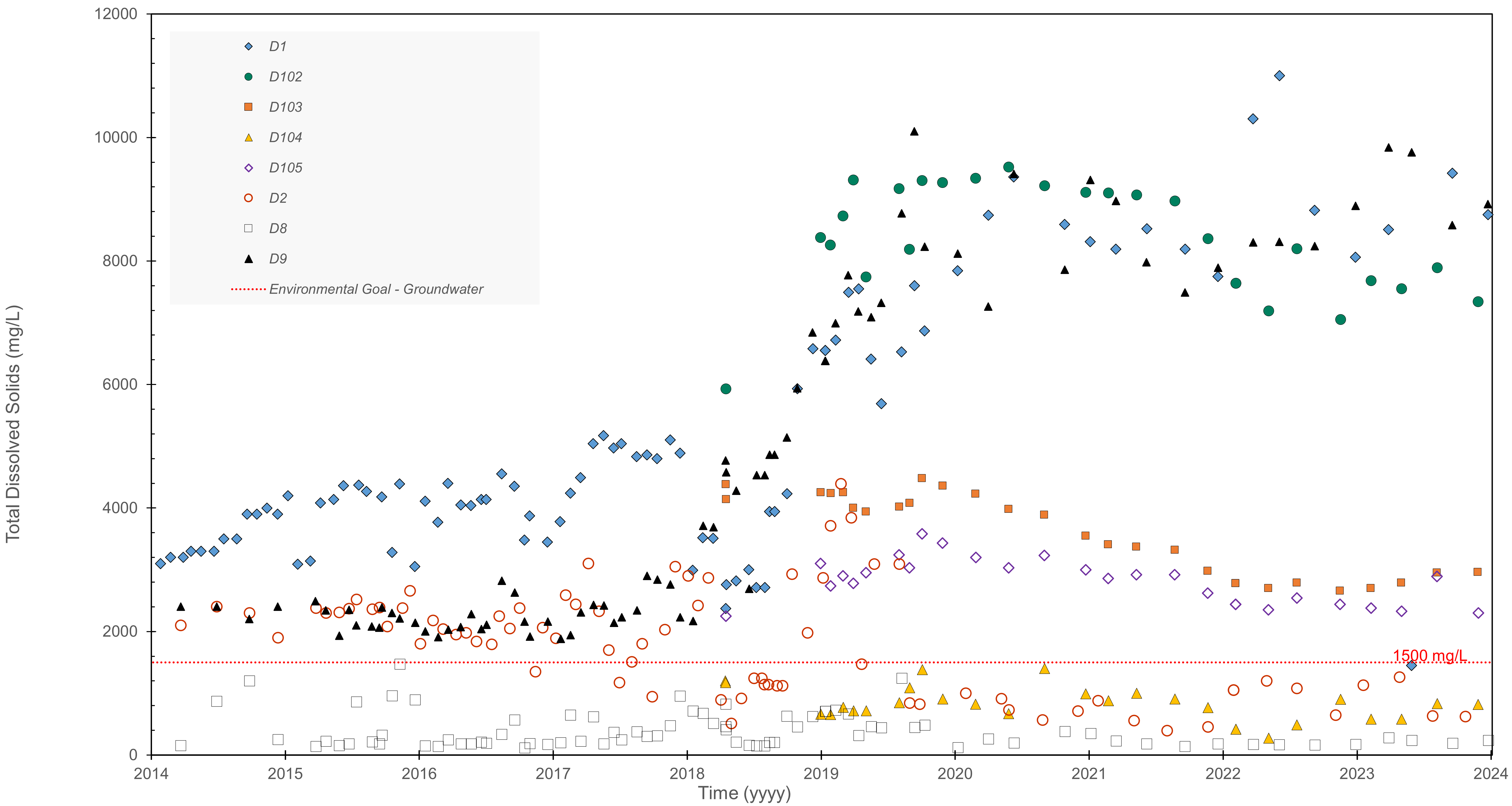

3000
2500
2000
1500
1000
500
0
Boron, Filtered (µg/L)
D15
D16
D17
D18
D16A
Environmental Goal - Groundwater
370 ug/L
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

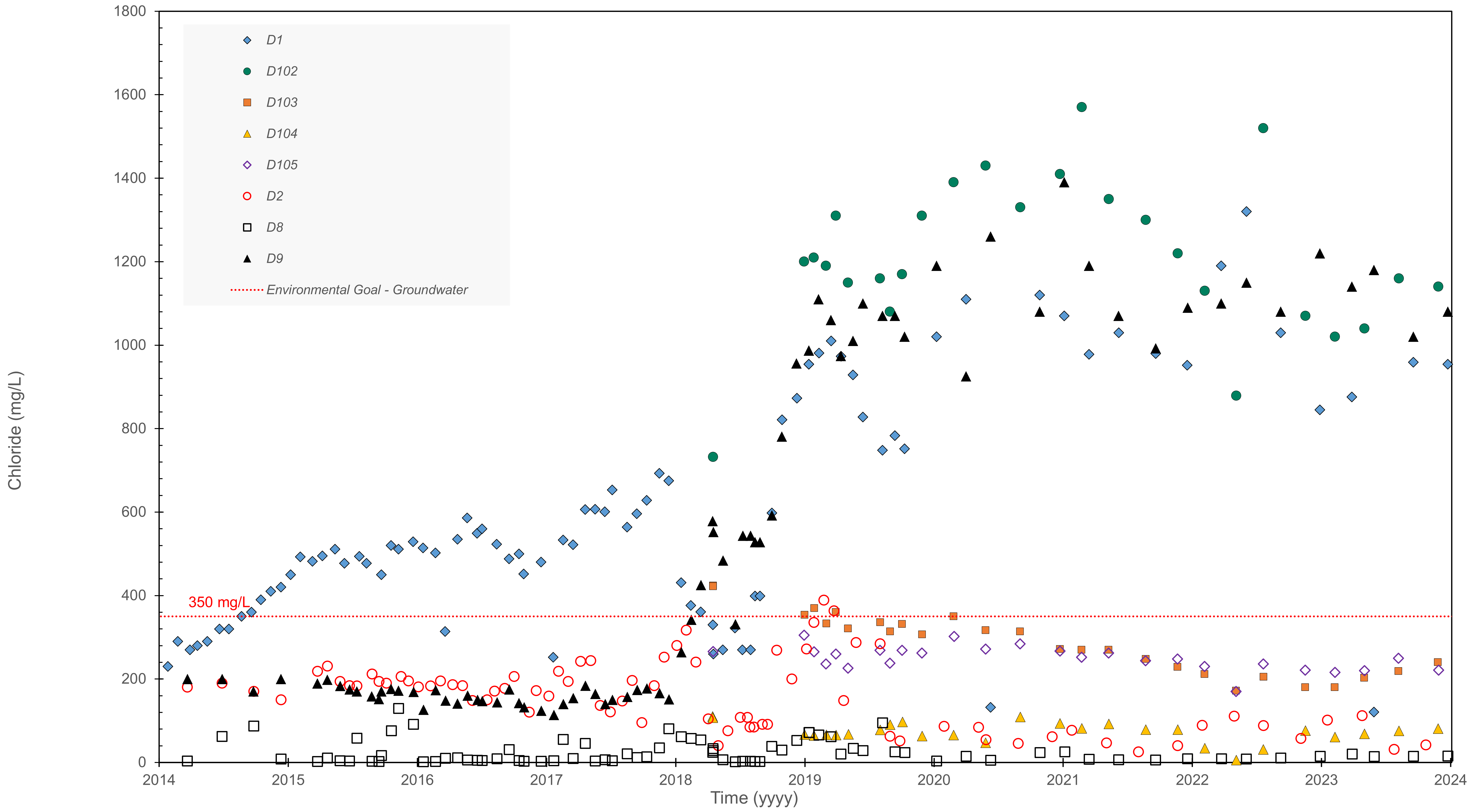

5,704 ug/L
D15
D16
D17
D18
D16A
Environmental Goal - Groundwater
Manganese, Total (µg/L)
0
1000
2000
3000
4000
5000
6000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

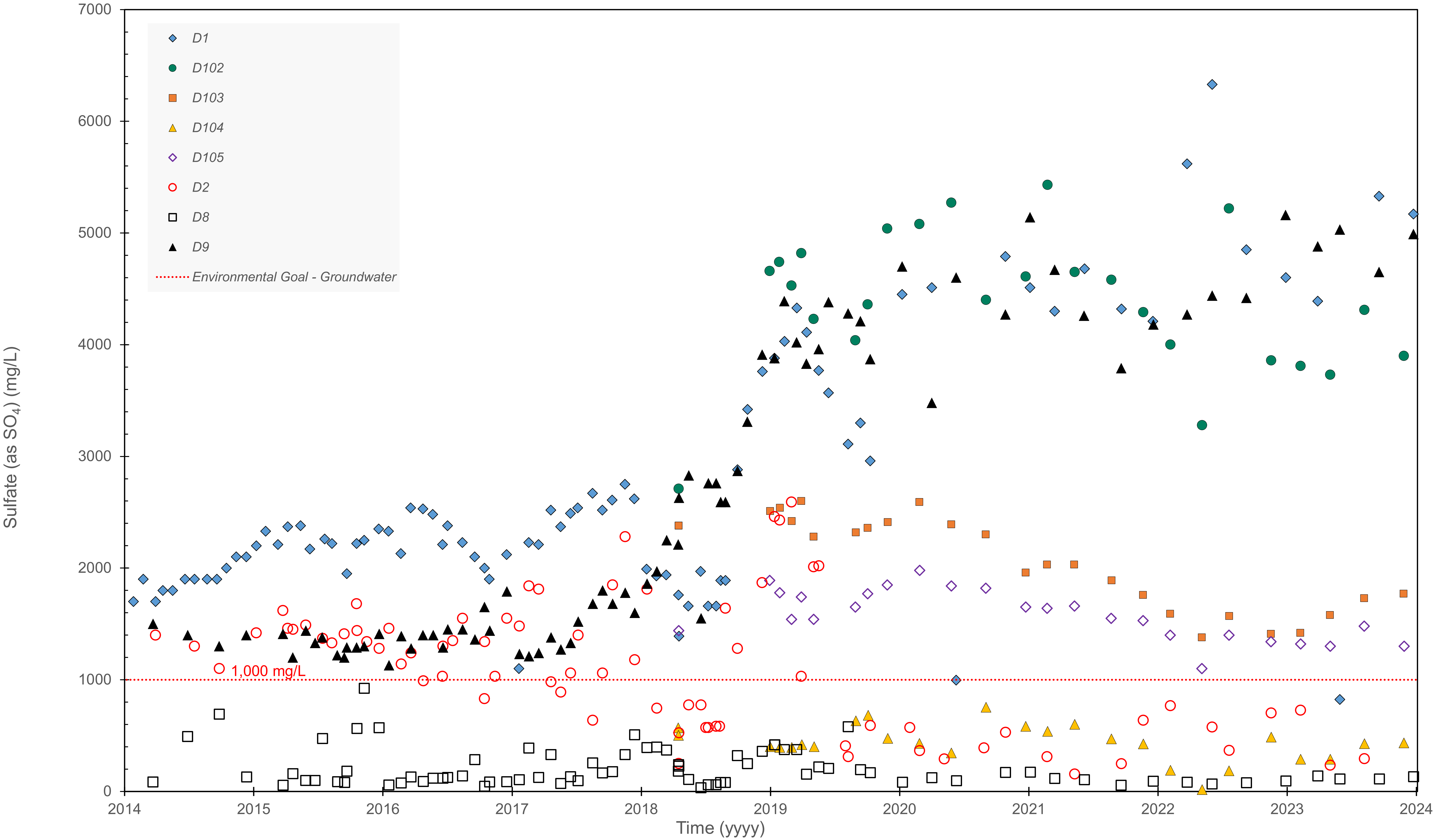

6000
5000
4000
3000
2000
1000
0
5,704 ug/L
Manganese, Filtered (µg/L)
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)
D15
D16
D17
D18
D16A
Environmental Goal - Groundwater

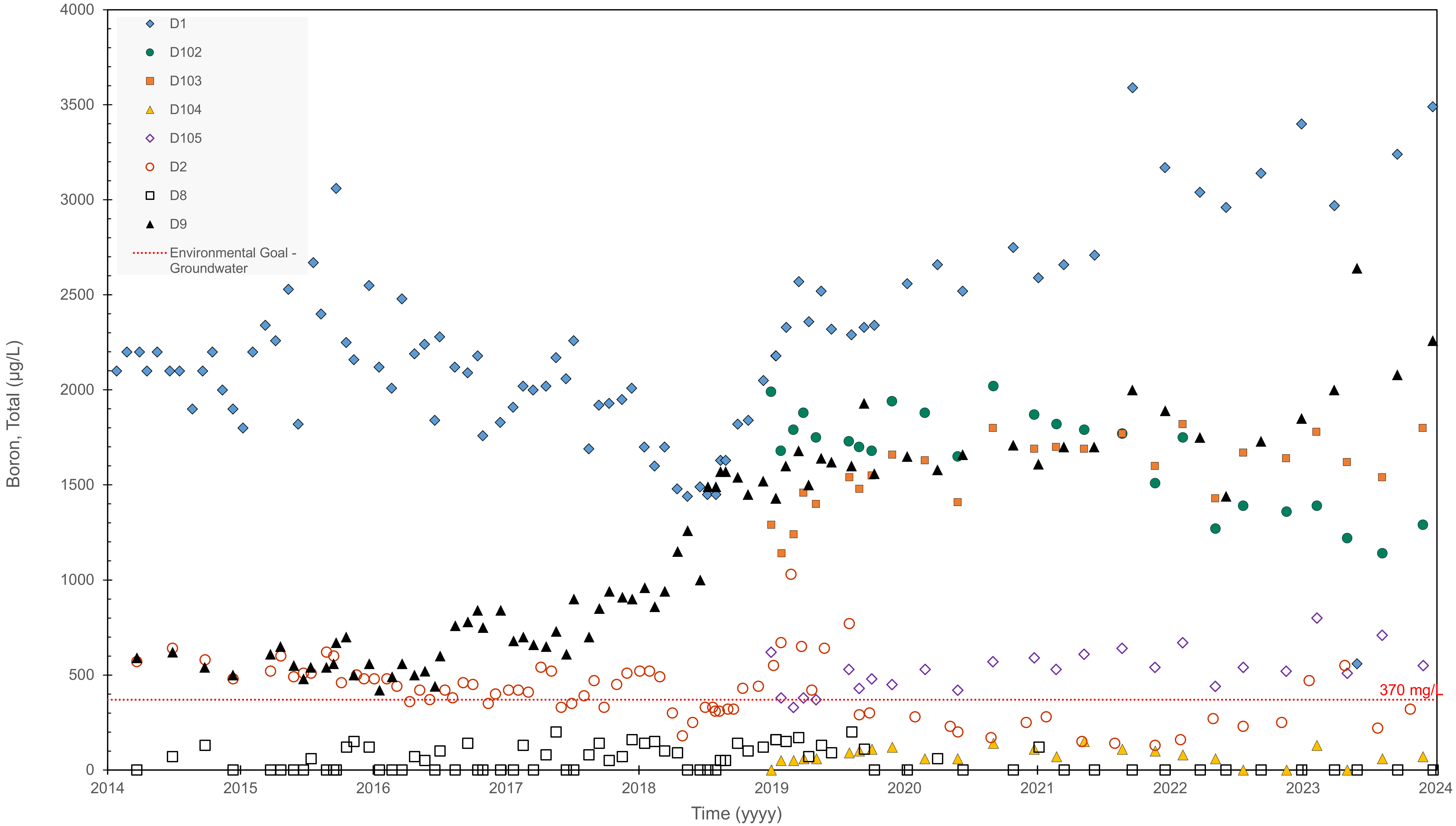

1200
1000
800
600
400
200
0
Nickel, Total (ug/L)
550.9 mg/L
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)
D15
D16
D17
D18
D16A
Environmental Goal - Groundwater

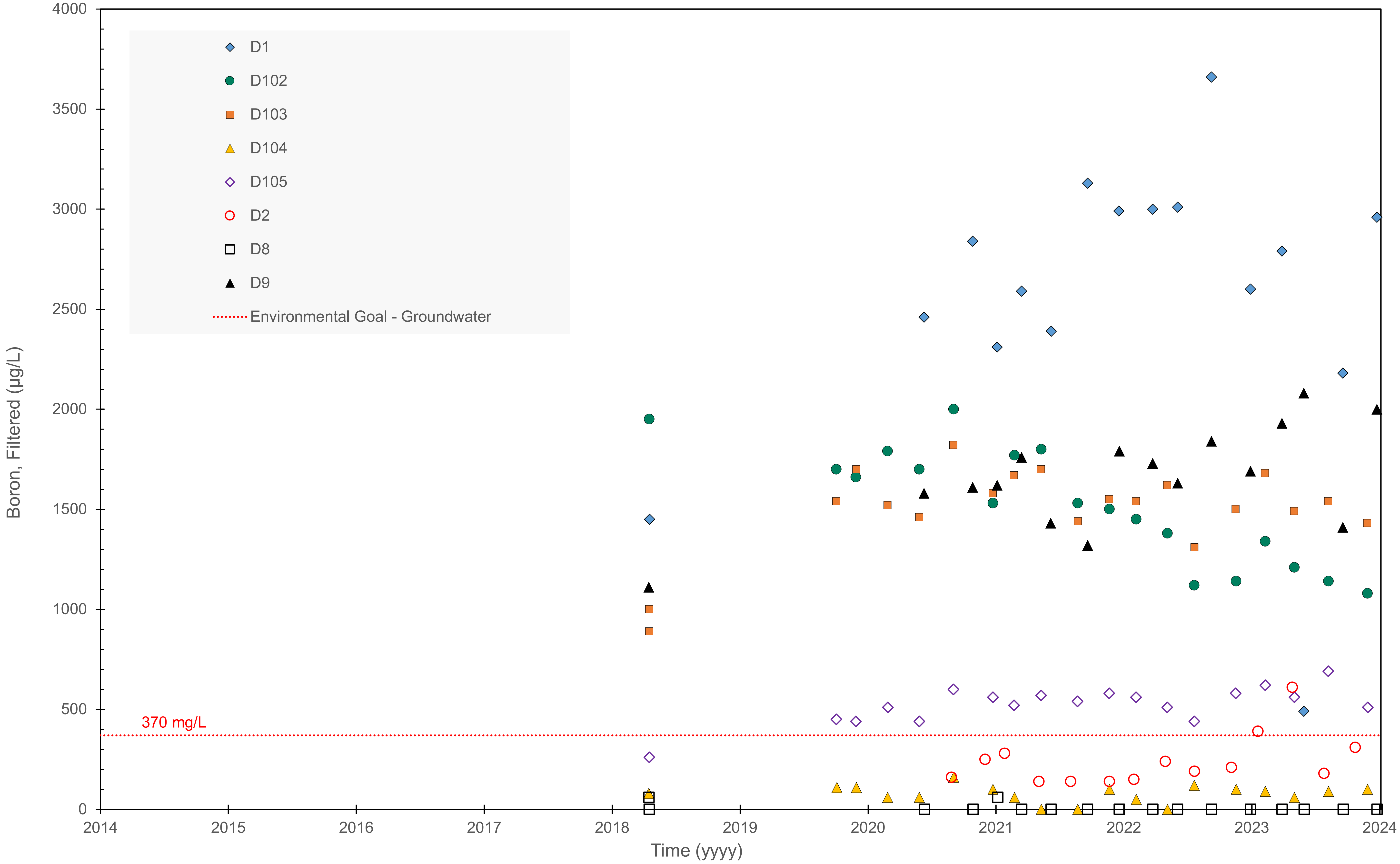

D15
D16
D17
D18
D16A
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Filtered (ug/L)
Time (yyyy)
0
200
400
600
800
1000
1200
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

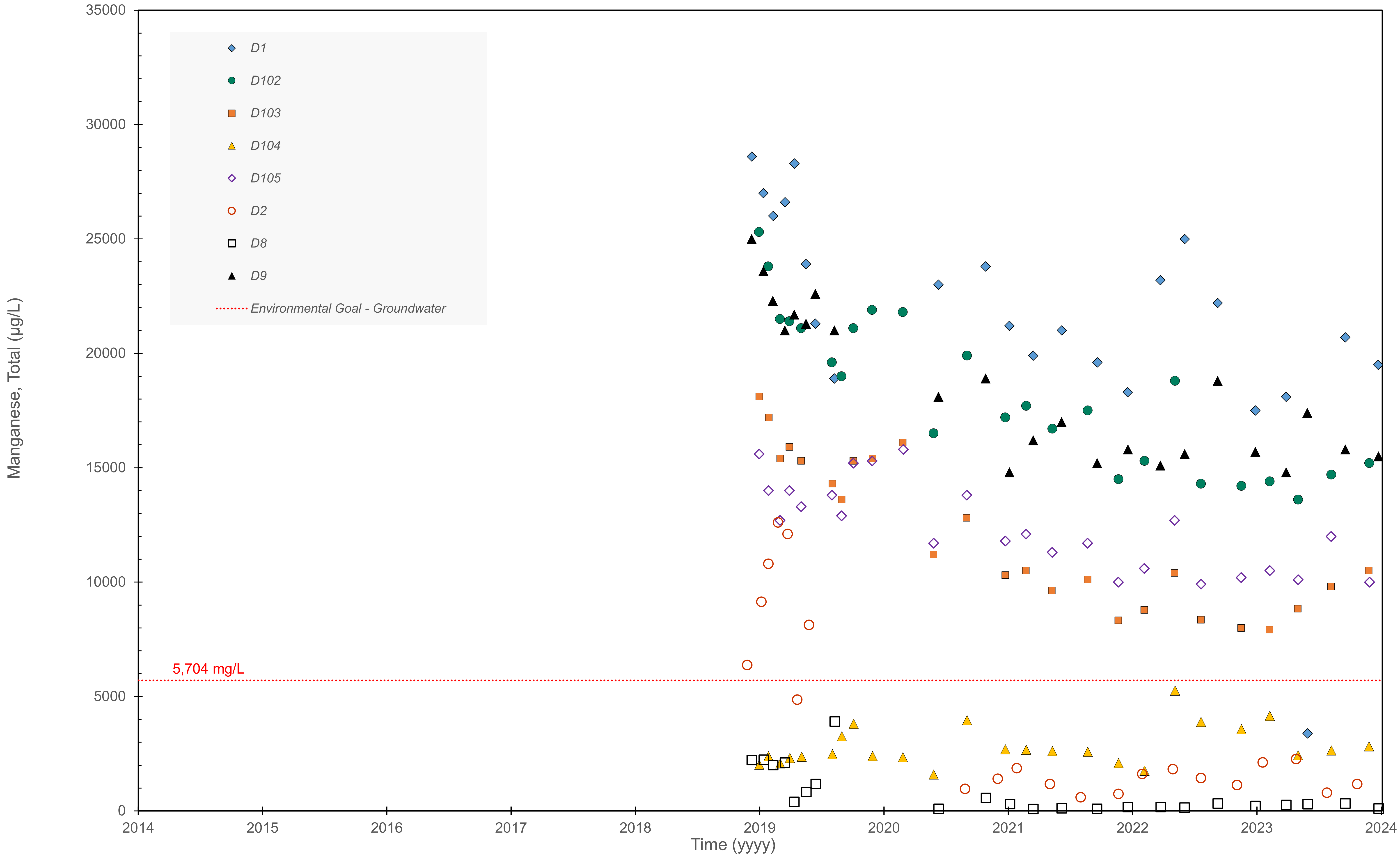

Total Dissolved Solids (mg/L)
Time (yyyy)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
1500 mg/L
0
2000
4000
6000
8000
10000
12000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

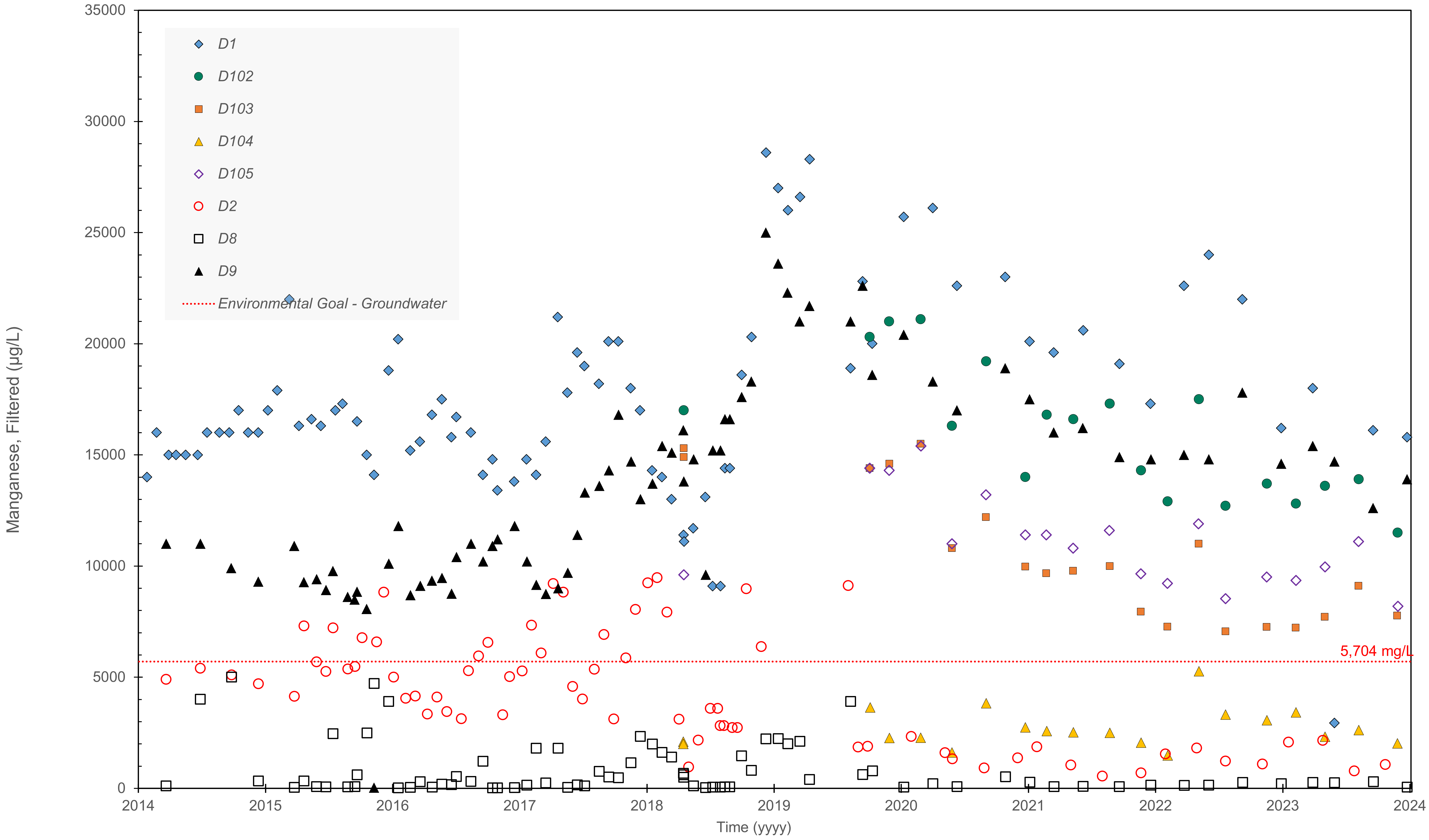

1800
1600
1400
1200
1000
800
600
400
200
0
Chloride (mg/L)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
350 mg/L
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

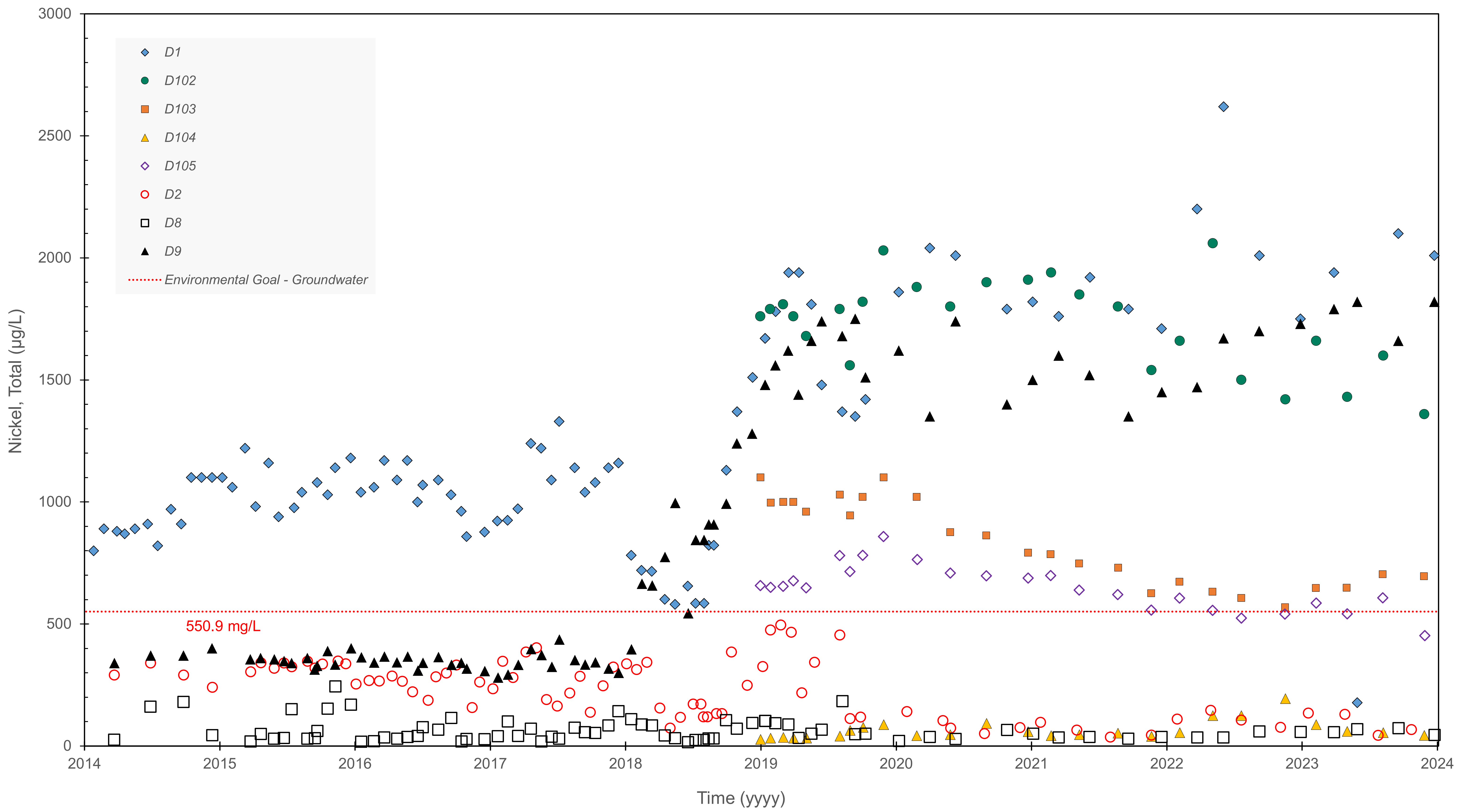

D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
1,000 mg/L
Sulfate (as SO4) (mg/L)
Time (yyyy)
0
1000
2000
3000
4000
5000
6000
7000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

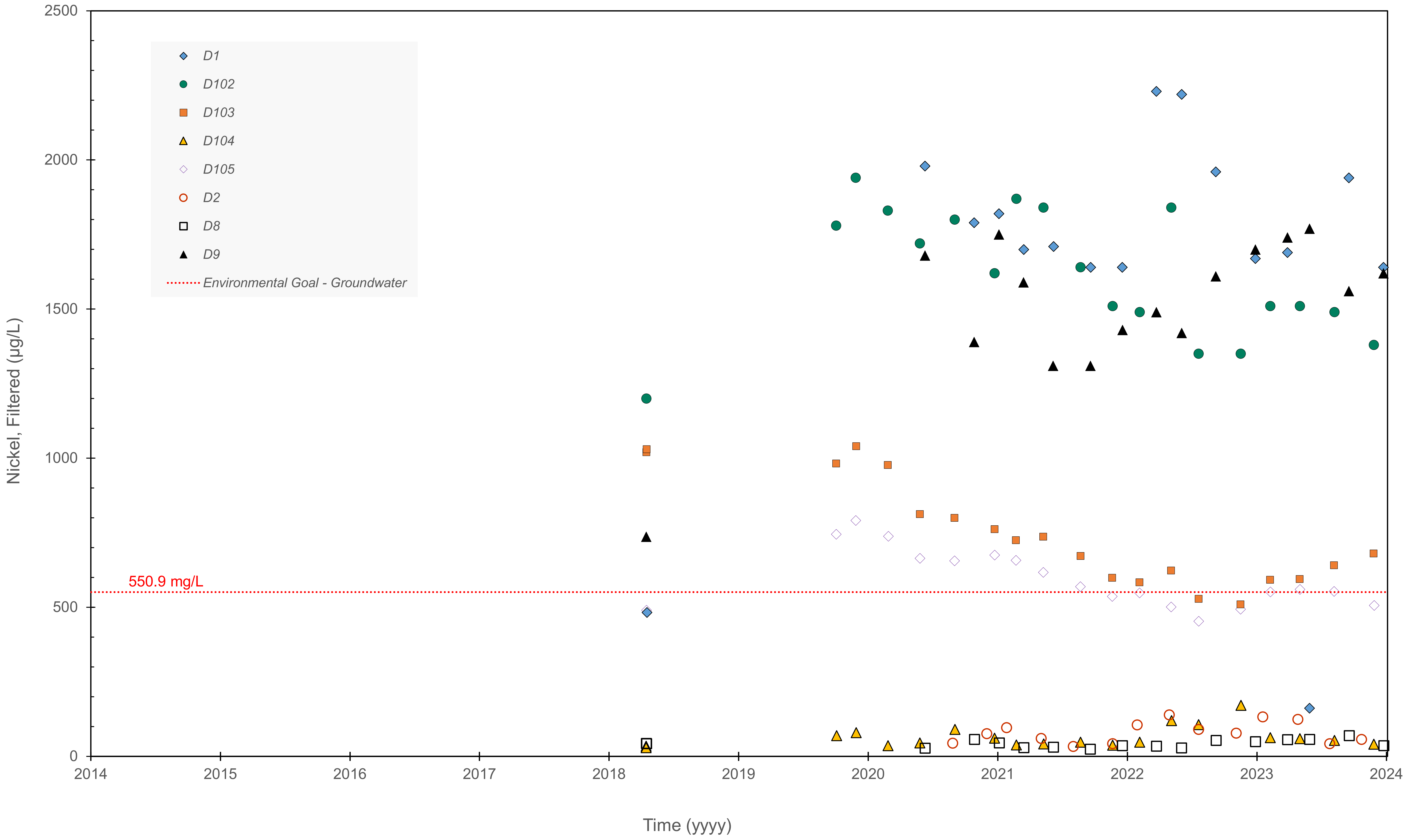

D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
370 mg/L
Boron, Total (µg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
3500
4000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

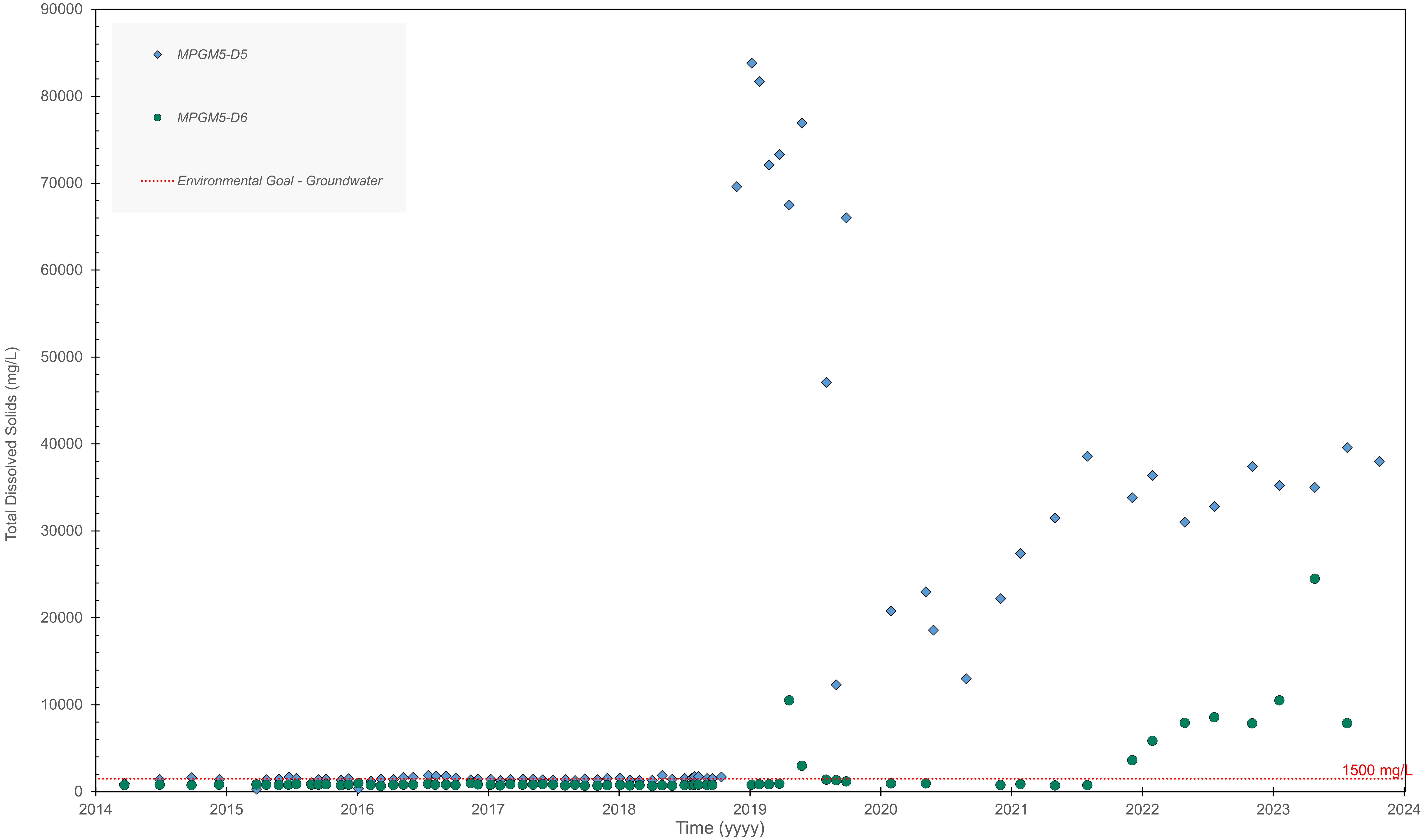

D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
370 mg/L
Boron, Filtered (µg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
3500
4000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

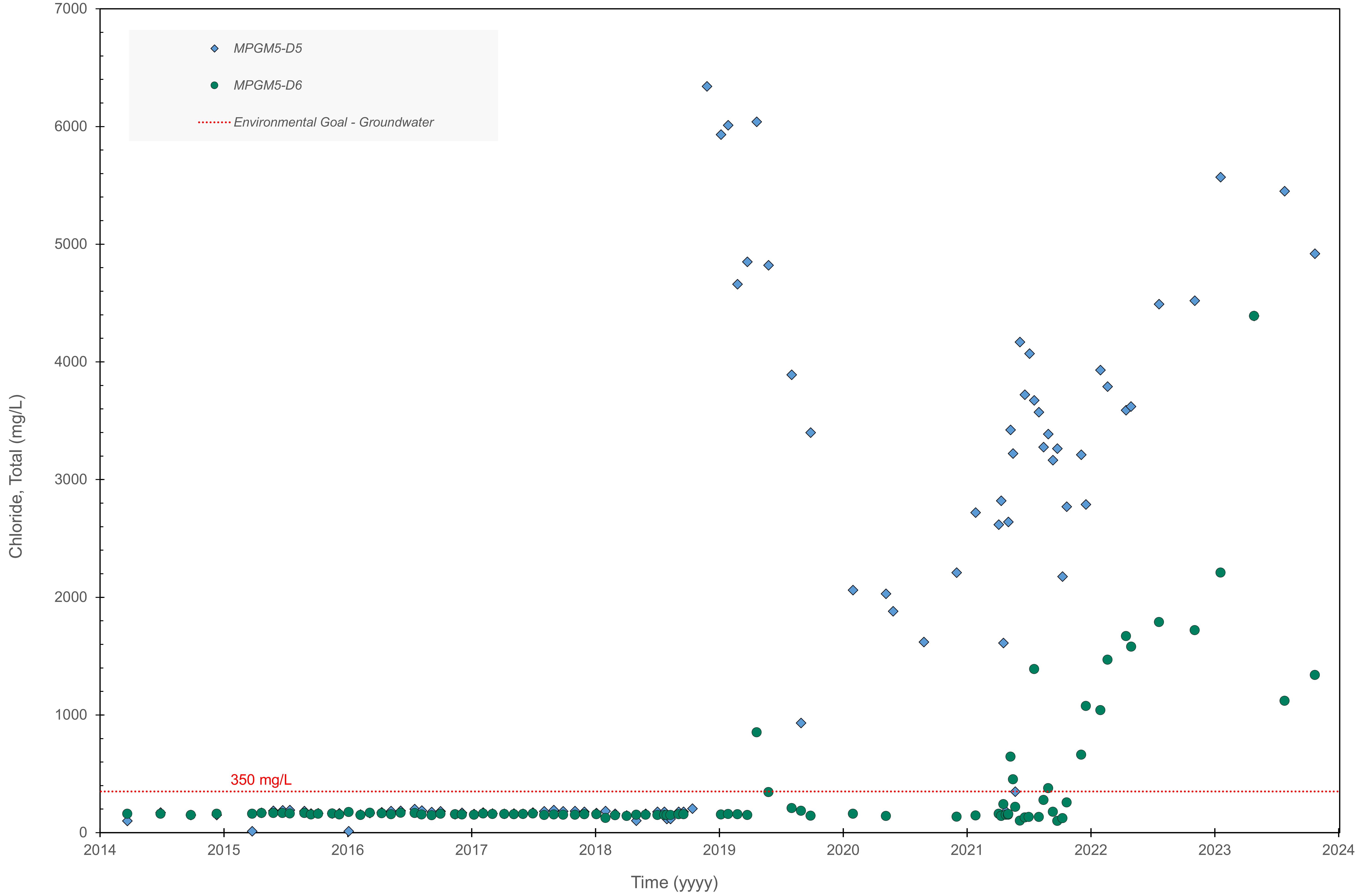

D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
5,704 mg/L
Manganese, Total (µg/L)
35000
30000
25000
20000
15000
10000
5000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

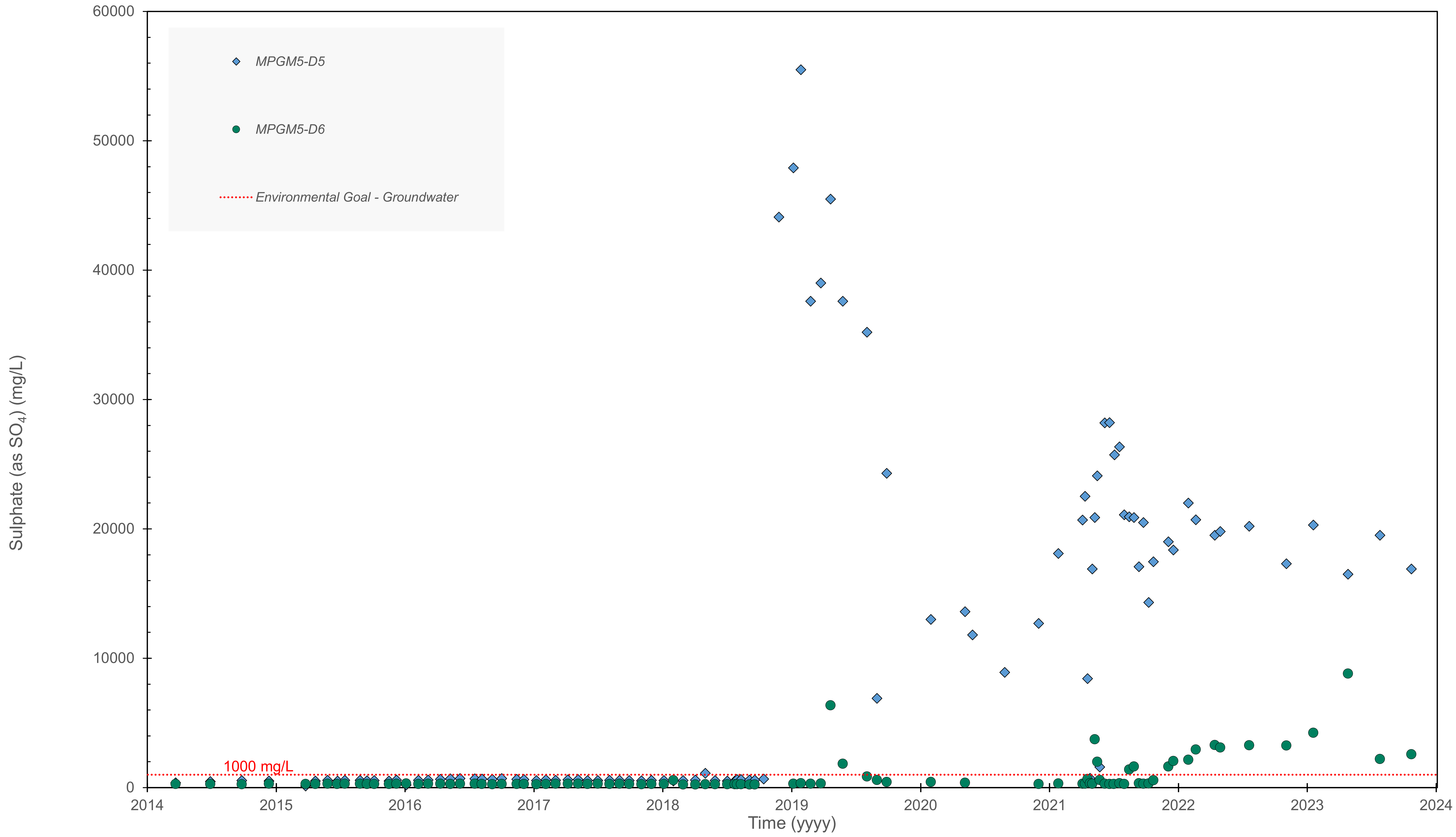

Manganese, Filtered (µg/L)
35000
30000
25000
20000
15000
10000
5000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
5,704 mg/L

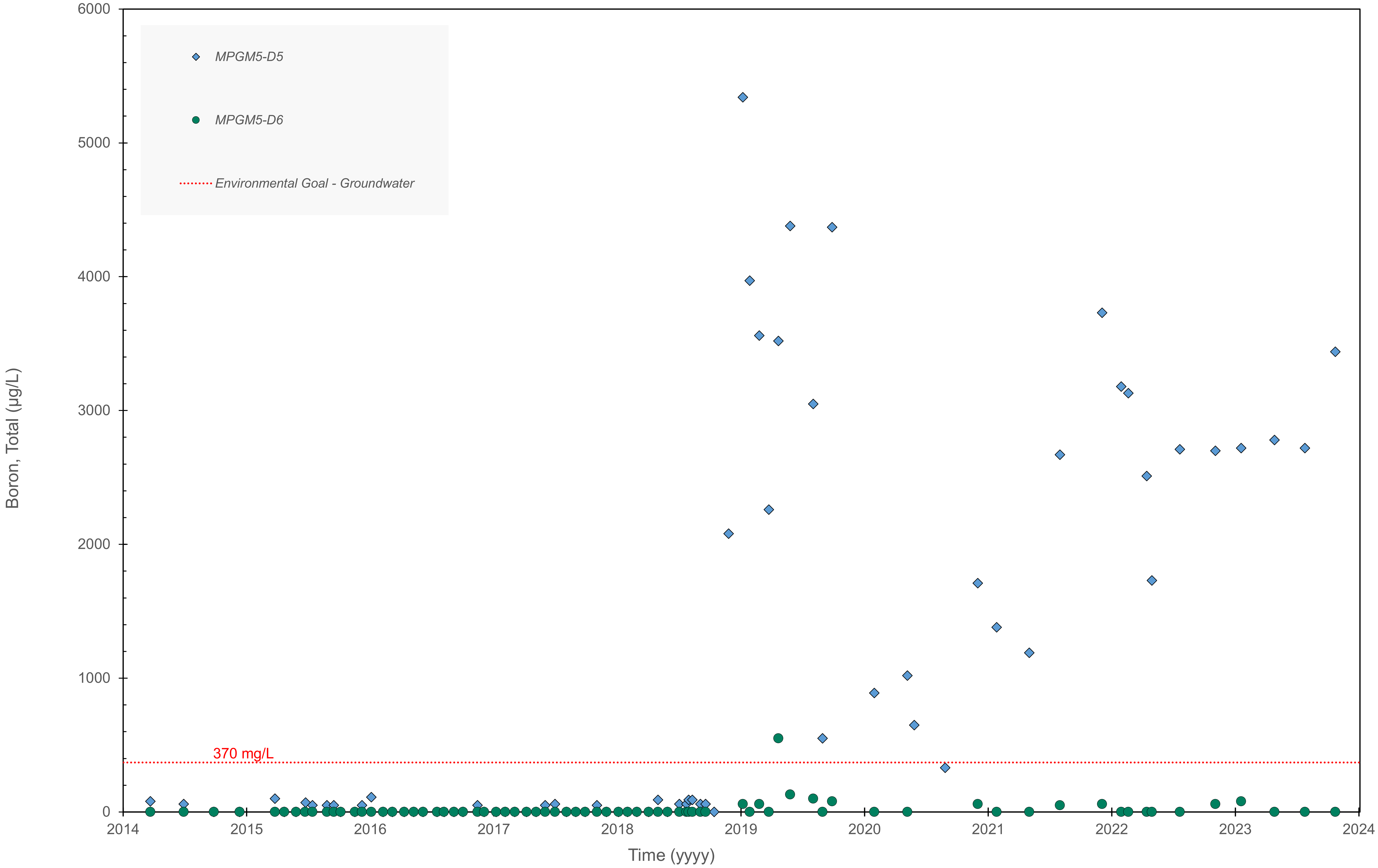

3000
2500
2000
1500
1000
500
0
Nickel, Total (µg/L)
D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
550.9 mg/L
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

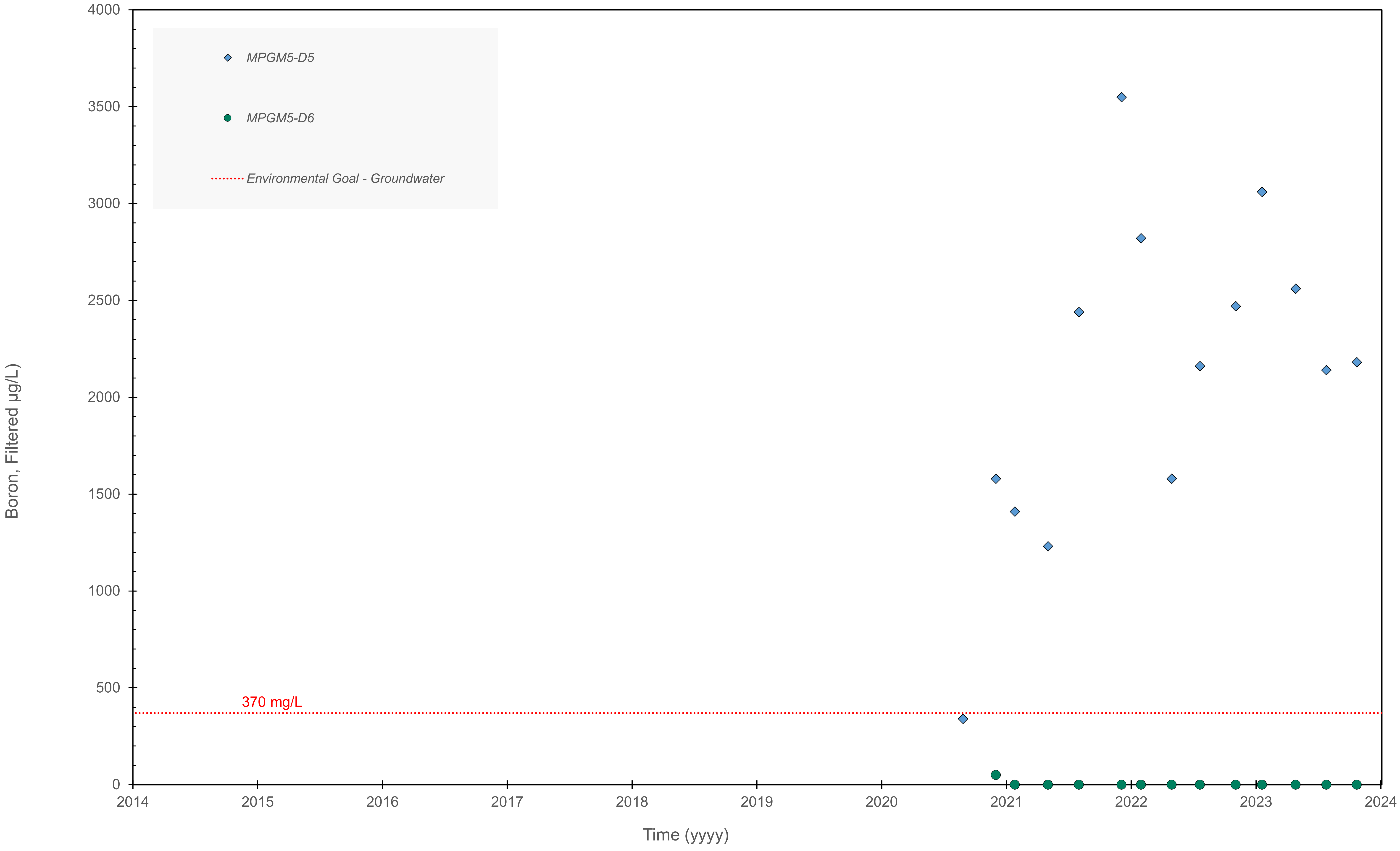

D1
D102
D103
D104
D105
D2
D8
D9
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Filtered (µg/L)
0
500
1000
1500
2000
2500
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

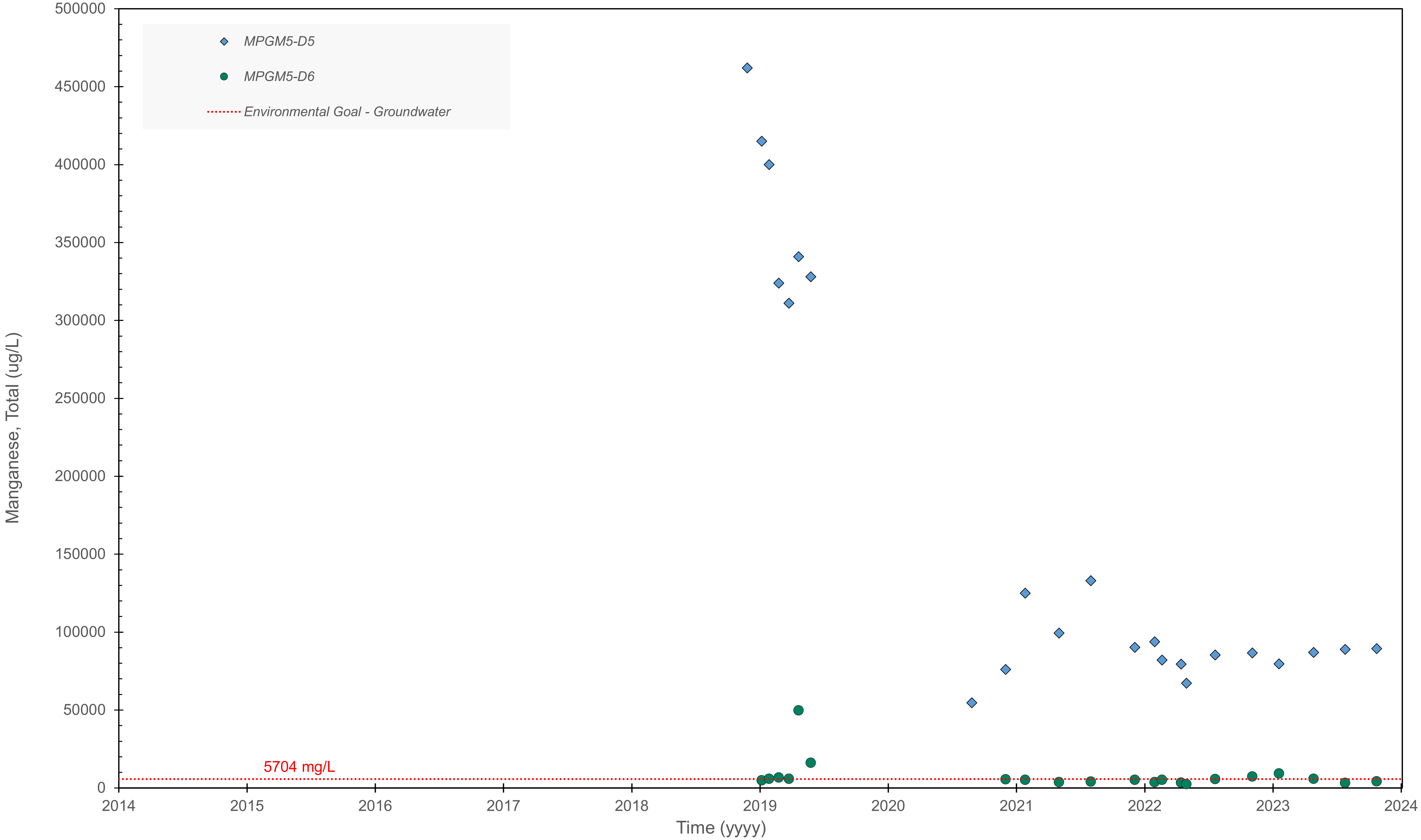

MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
1500 mg/L
Total Dissolved Solids (mg/L)
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)

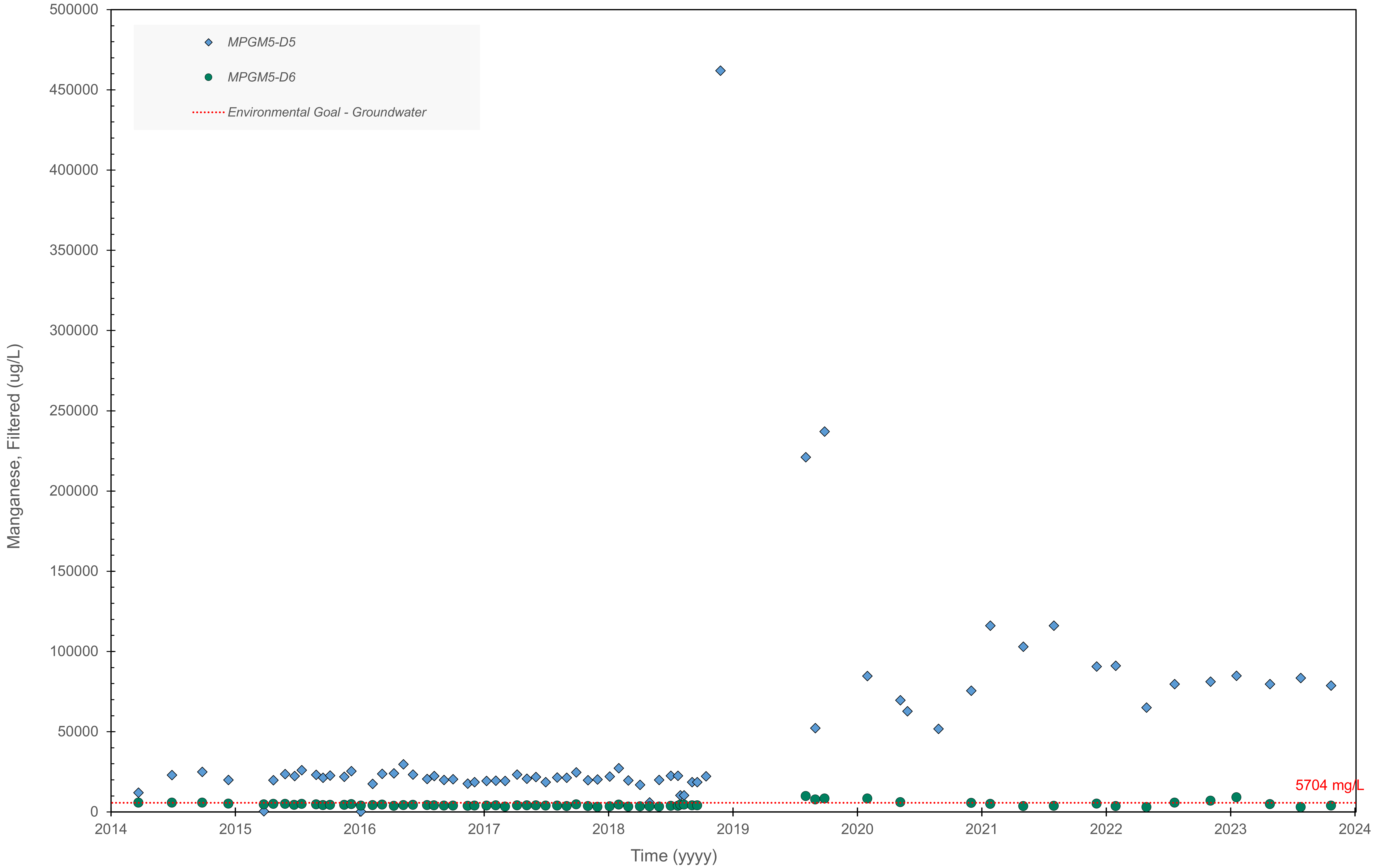

MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
350 mg/L
Chloride, Total (mg/L)
Time (yyyy)
0
1000
2000
3000
4000
5000
6000
7000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

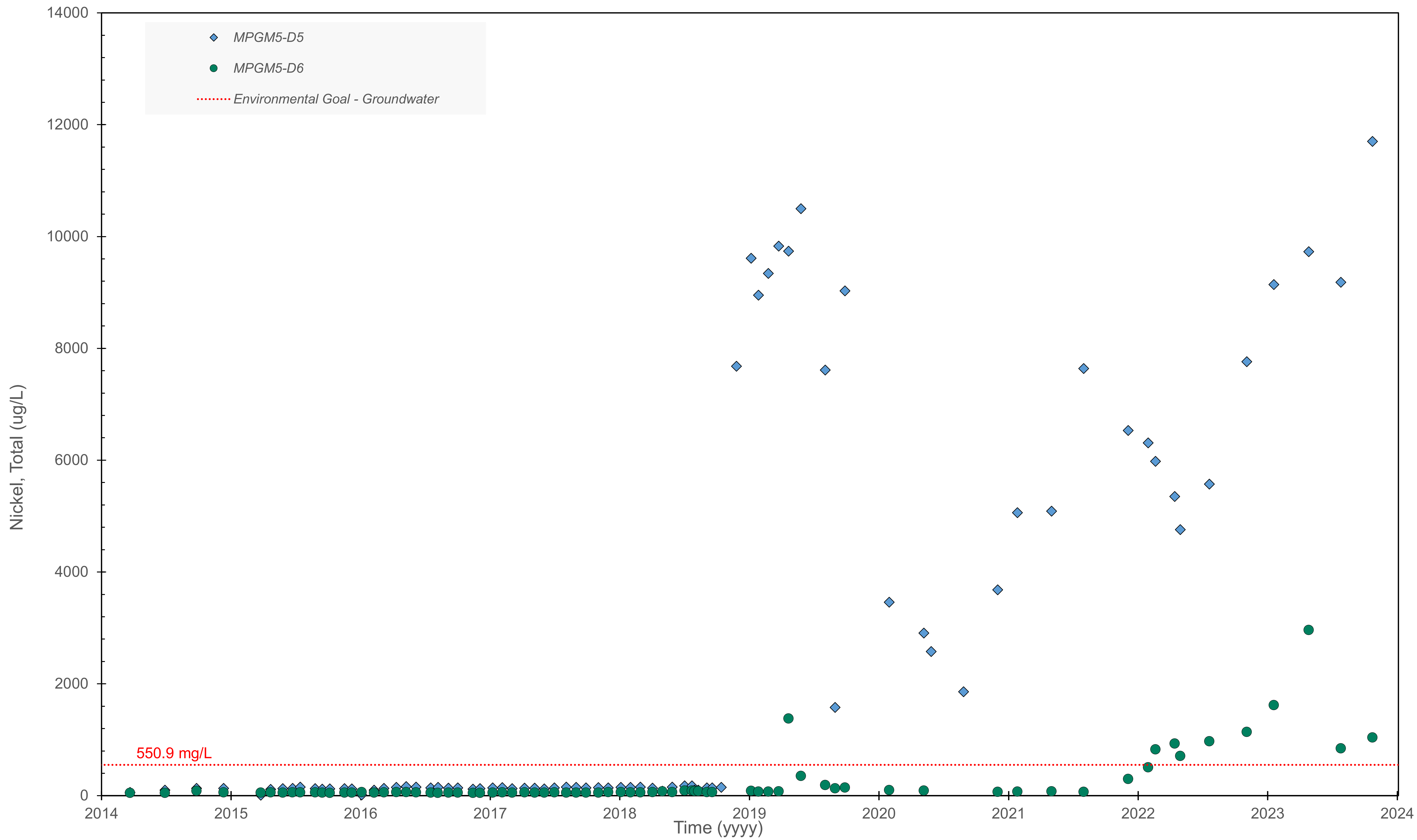

MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
1000 mg/L
Sulphate (as SO4) (mg/L)
Time (yyyy)
60000
50000
40000
30000
20000
10000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

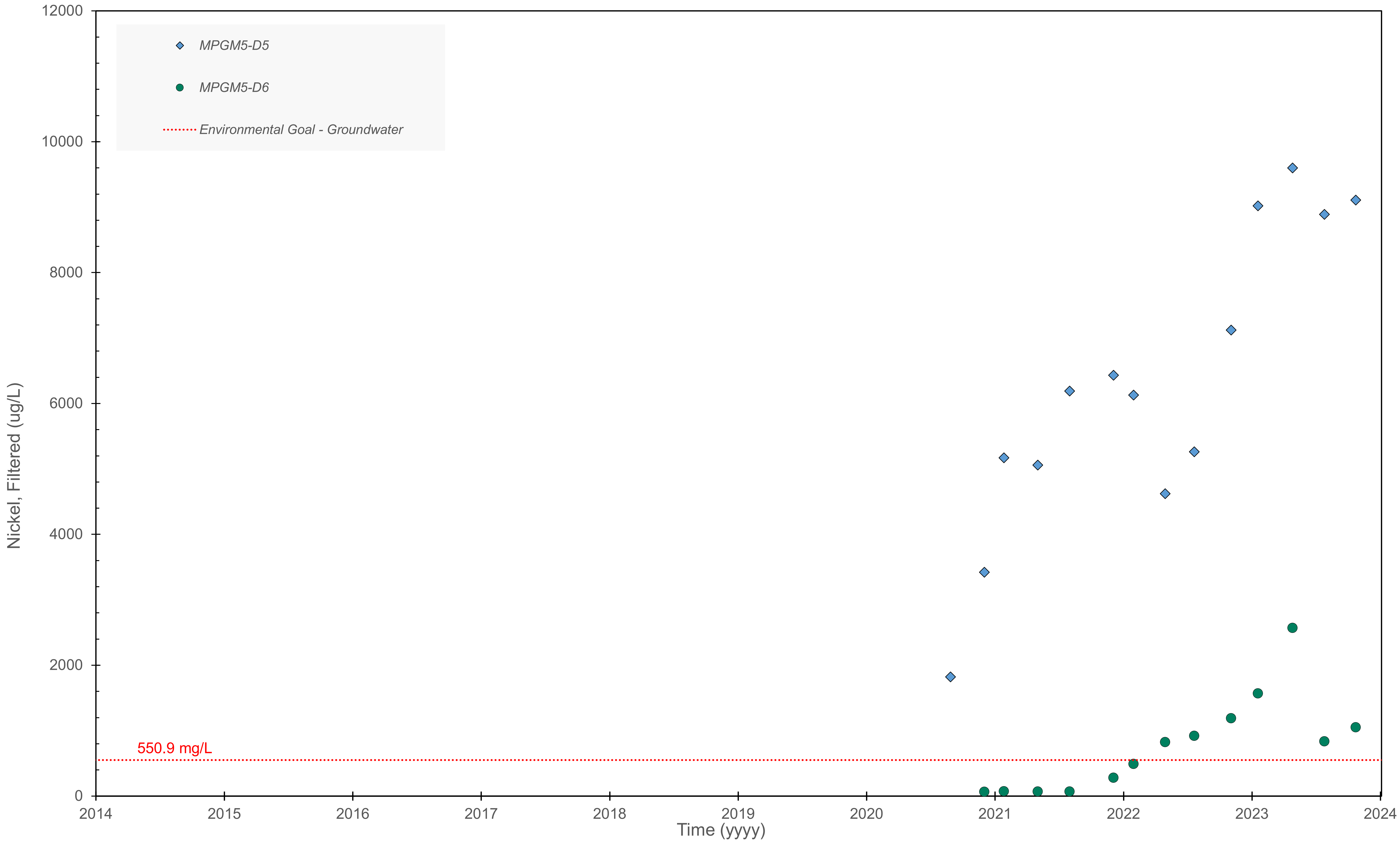

MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
370 mg/L
Boron, Total (µg/L)
Time (yyyy)
0
1000
2000
3000
4000
5000
6000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024


MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
370 mg/L
Boron, Filtered µg/L)
Time (yyyy)
0
500
1000
1500
2000
2500
3000
3500
4000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024


MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
5704 mg/L
Manganese, Total (ug/L)
0
50000
100000
150000
200000
250000
300000
350000
400000
450000
500000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Time (yyyy)


MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
5704 mg/L
Manganese, Filtered (ug/L)
Time (yyyy)
0
50000
100000
150000
200000
250000
300000
350000
400000
450000
500000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

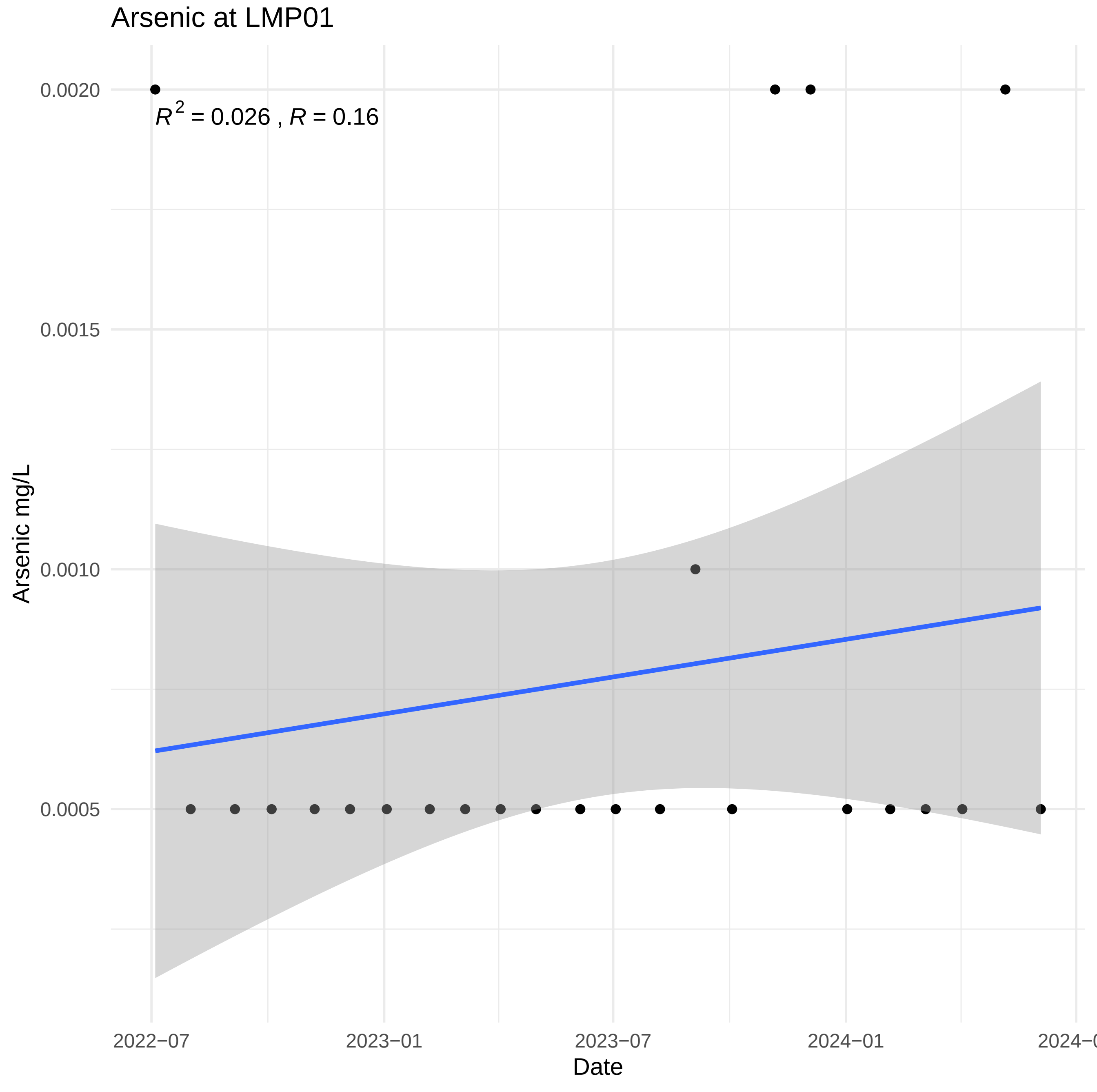

MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Total (ug/L)
Time (yyyy)
0
2000
4000
6000
8000
10000
12000
14000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024


MPGM5-D5
MPGM5-D6
Environmental Goal - Groundwater
550.9 mg/L
Nickel, Filtered (ug/L)
Time (yyyy)
0
2000
4000
6000
8000
10000
12000
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

ERM

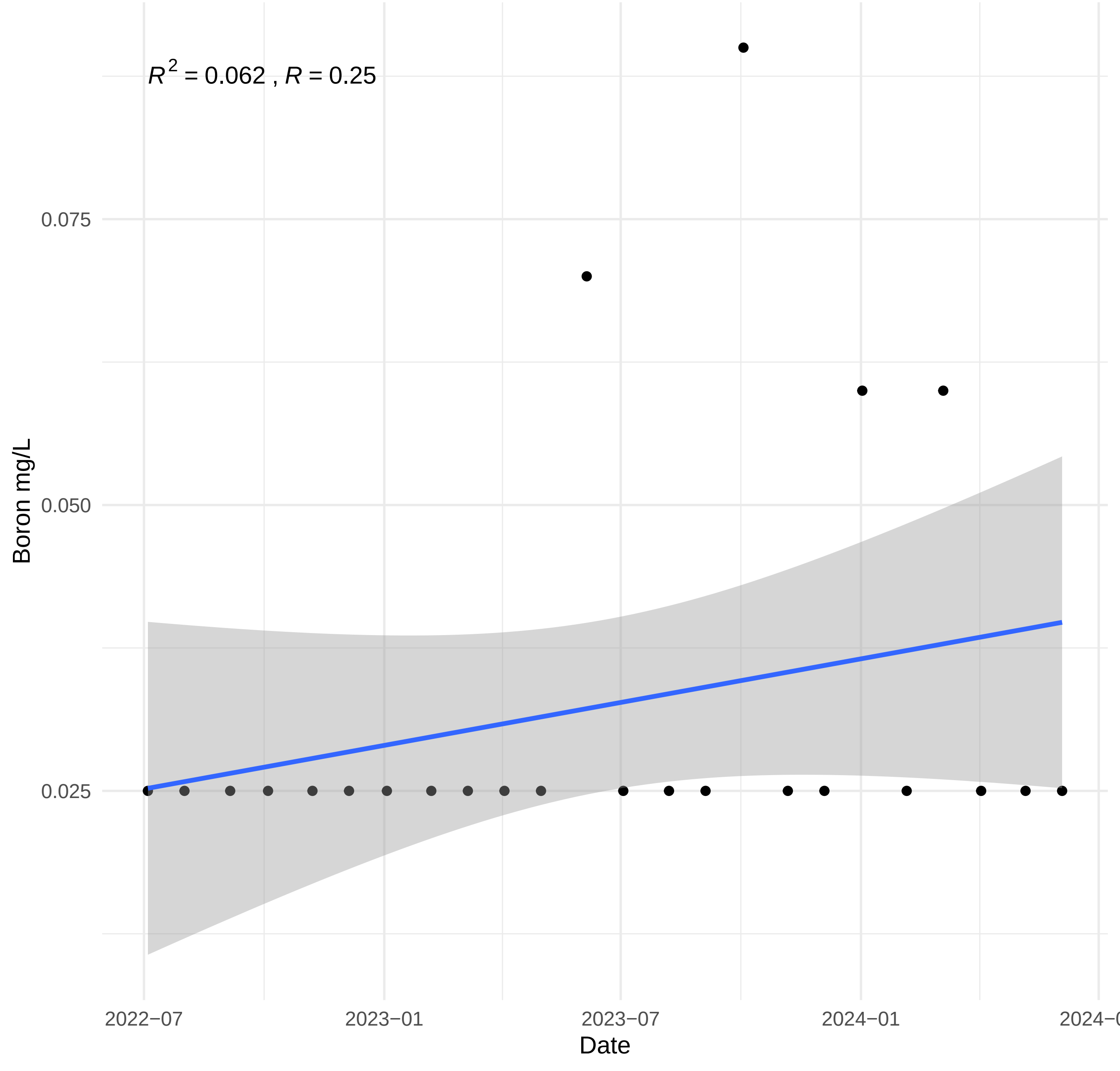
APPENDIX L SURFACE WATER STATISTICAL ANALYSIS

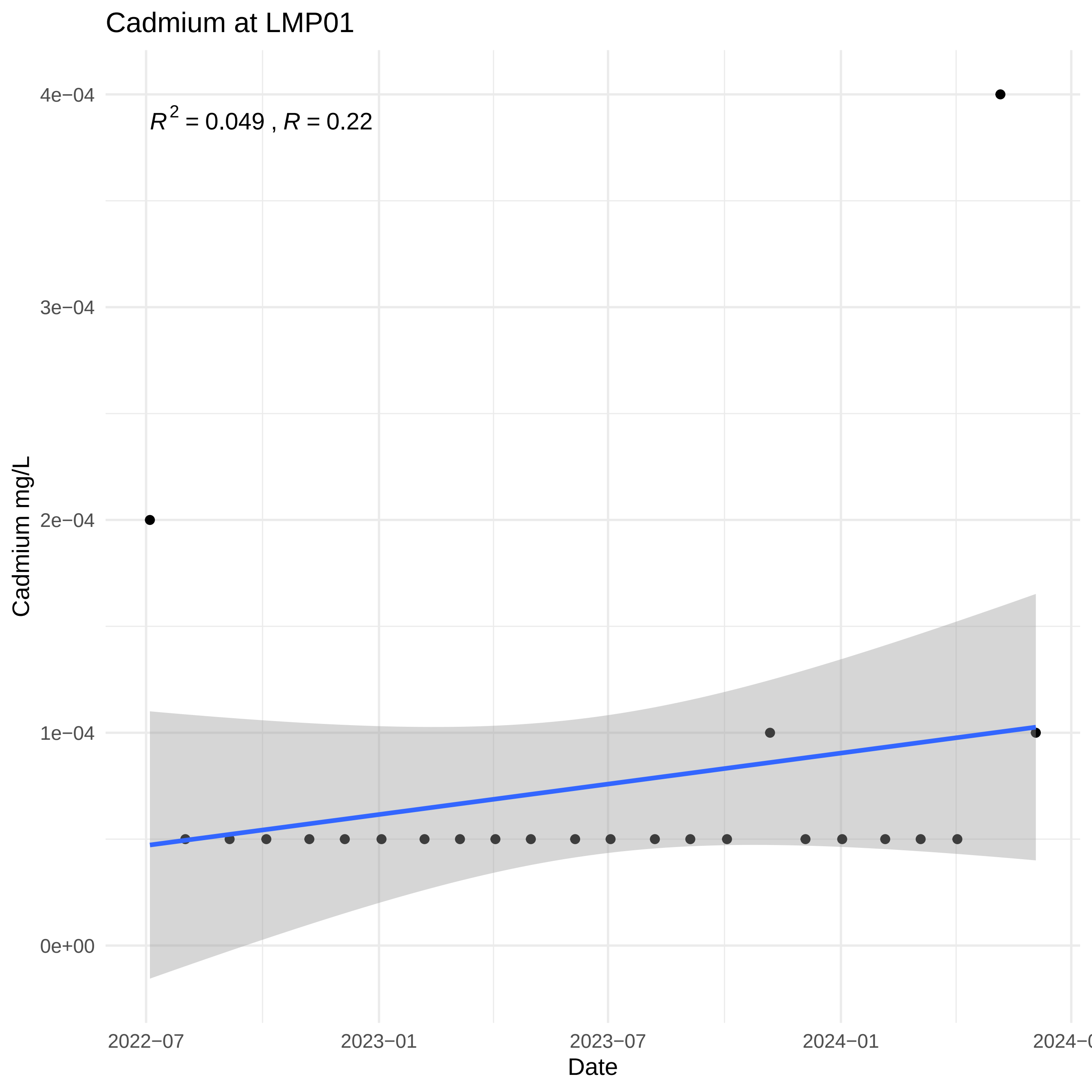
Purpose	Monitoring Location	Stats	Electrical Conductivity (Field)	Chloride	Fluoride	Sulfate (as SO4)	Total Dissolved Solids	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc
Upstream	LMP01	R	0.17	0.029	0.51	0.027	0.04	0.16	0.25	0.22	0.11	0.22	0.08	-0.13	0.19	0.13	0.23	-0.041	0.32	0.29
		R2	0.027	0.0008	0.26	0.0007	0.0016	0.026	0.062	0.049	0.012	0.047	0.007	0.018	0.03	0.018	0.051	0.0017	0.10	0.082
Midstream	NC01	R	0.33	0.29	0.61	0.17	0.24	0.044	0.43	-0.28	-0.49	-0.10	-0.14	-0.27	0.13	-0.09	0.40	-0.17	-0.29	-0.11
		R2	0.11	0.083	0.38	0.028	0.06	0.002	0.18	0.076	0.24	0.011	0.018	0.072	0.016	0.008	0.16	0.029	0.083	0.012
	C	R	0.8	0.34	0.84	0.64	0.72	-0.28	0.35	-0.28	0.24	0.066	-0.01	-0.30	0.61	0.00	0.47	-0.017	-0.28	0.11
		R2	0.63	0.11	0.70	0.41	0.52	0.081	0.12	0.076	0.0595	0.0043	0.00	0.092	0.37	0.00	0.22	0.00	0.077	0.012
	E	R	0.51	0.46	0.38	0.46	0.48	-0.28	0.48	0.00	-0.37	0.17	0.49	-0.28	0.48	-0.09	0.34	0.46	-0.56	0.43
		R2	0.26	0.21	0.17	0.21	0.23	0.076	0.23	0.00	0.13	0.03	0.24	0.076	0.23	0.008	0.12	0.21	0.32	0.18
Downstream	WX22	R	0.41	0.32	0.60	0.35	0.37	0.074	0.56	-0.34	-0.37	0.27	-0.30	-0.31	0.22	0.09	0.37	0.38	-0.38	-0.084
		R2	0.17	0.10	0.36	0.13	0.14	0.0055	0.31	0.11	0.13	0.073	0.088	0.098	0.048	0.0081	0.14	0.14	0.14	0.0071
	G	R	0.41	0.30	0.25	0.33	0.37	-0.28	0.48	0.00	-0.28	-0.31	-0.27	-0.28	0.26	0.00	0.50	0.39	-0.34	-0.40
		R2	0.17	0.091	0.063	0.11	0.14	0.076	0.23	0.00	0.076	0.097	0.075	0.076	0.067	0.00	0.25	0.15	0.12	0.16



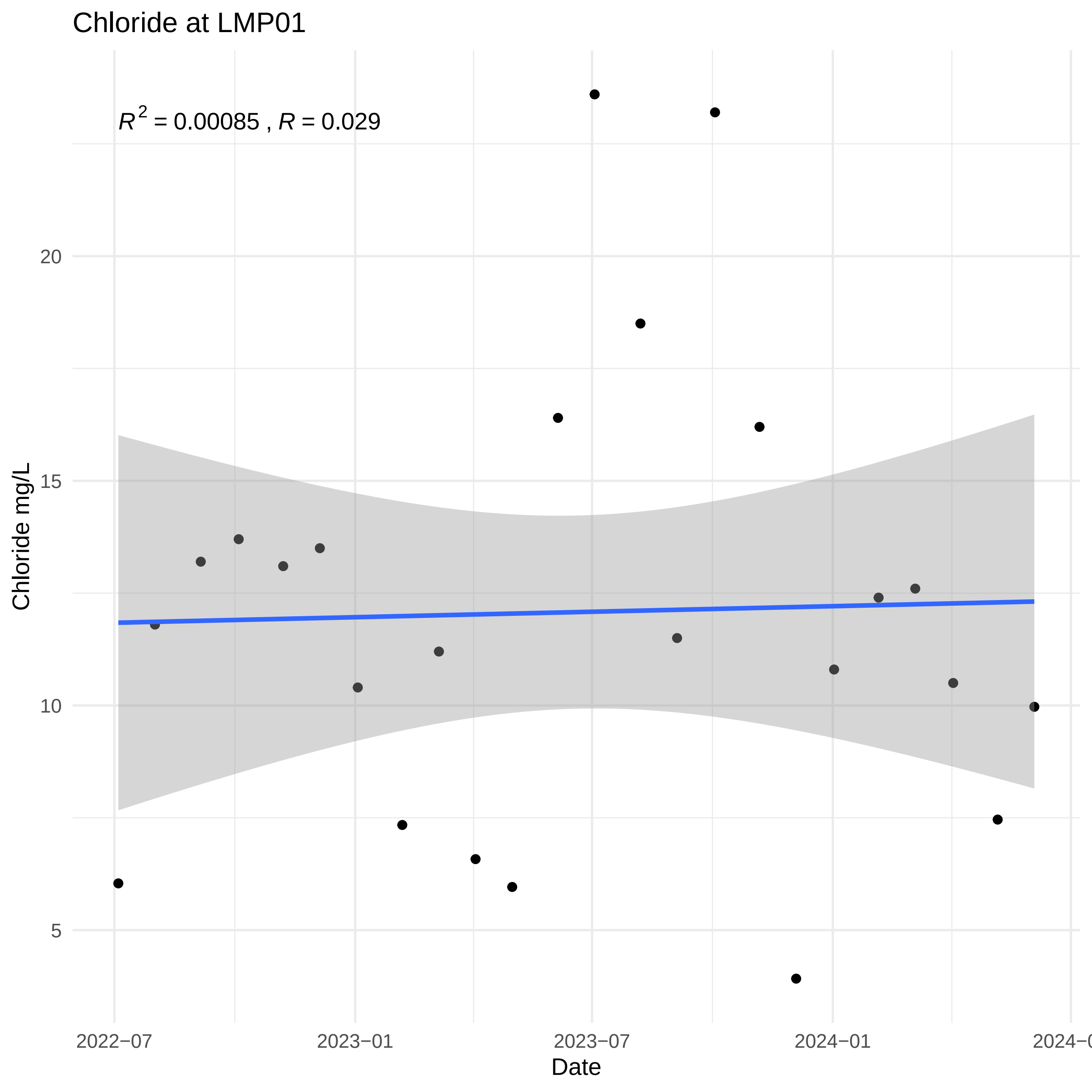
Arsenic at LMP01
R^2 = 0.026 , R = 0.16
0.0020
0.0015
0.0010
0.0005
Arsenic mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date

Boron at LMP01

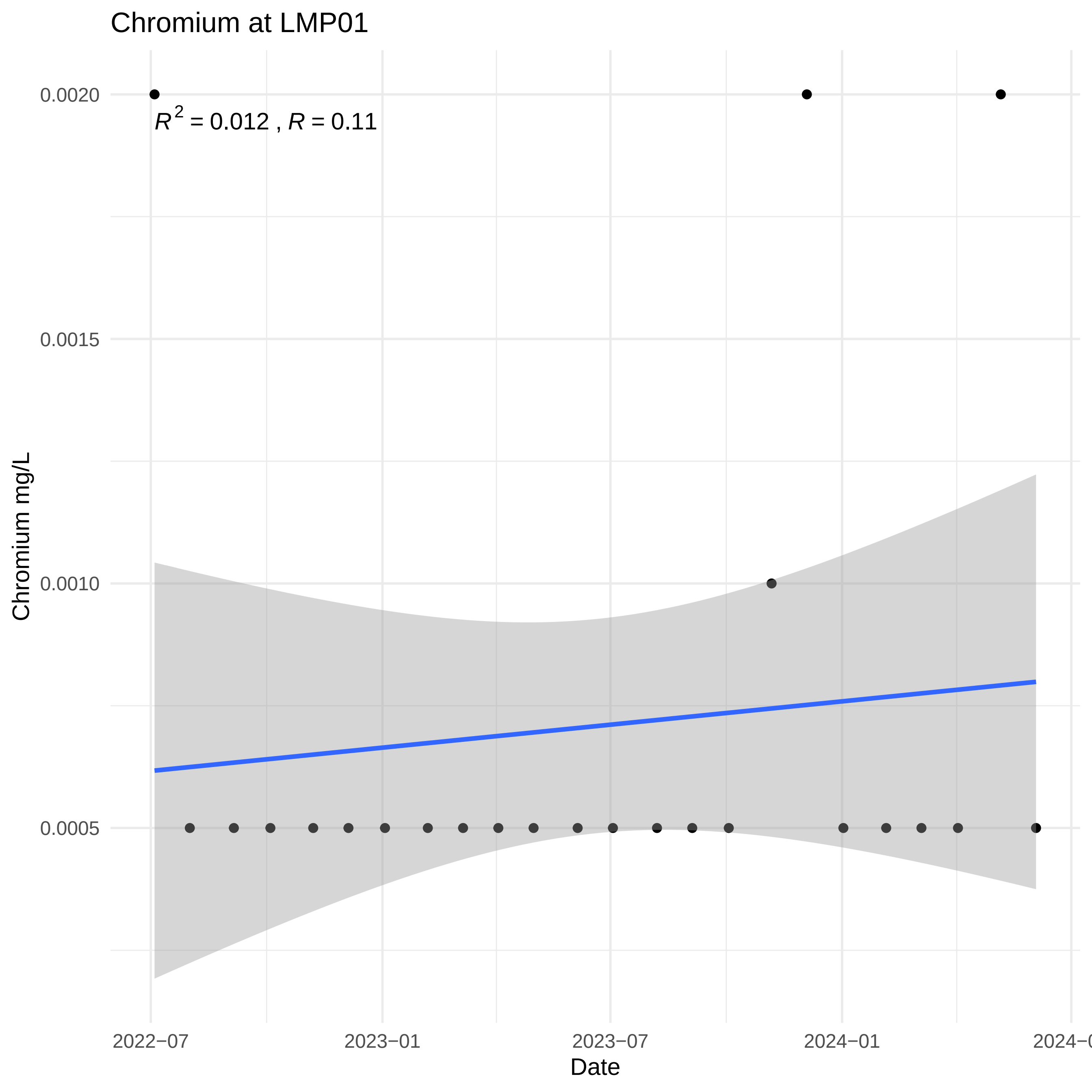




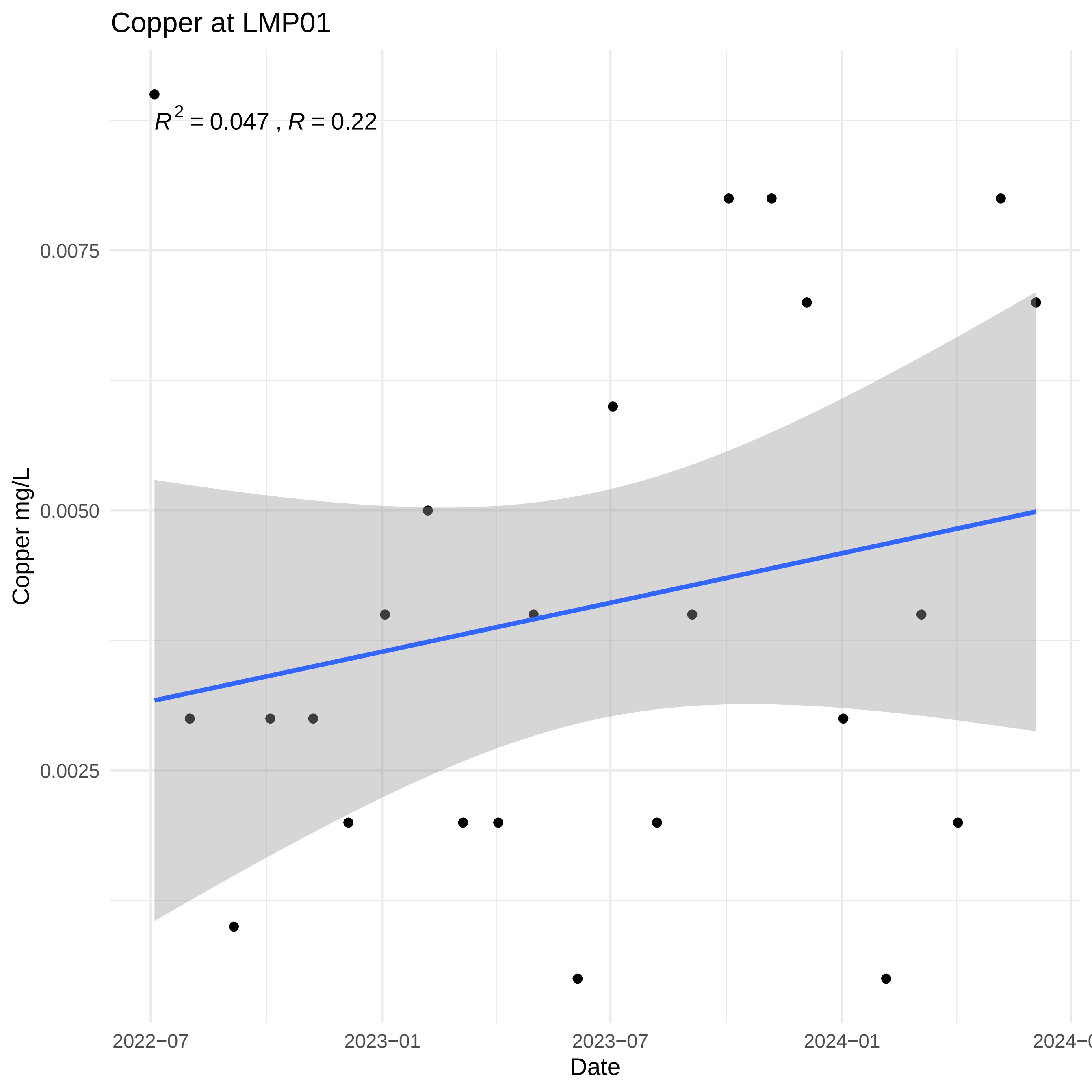
Cadmium at LMP01
R^2 = 0.049 , R = 0.22
Cadmium mg/L
4e−04
3e−04
2e−04
1e−04
0e+00
2022−07
2023−01
2023−07
2024−01
Date

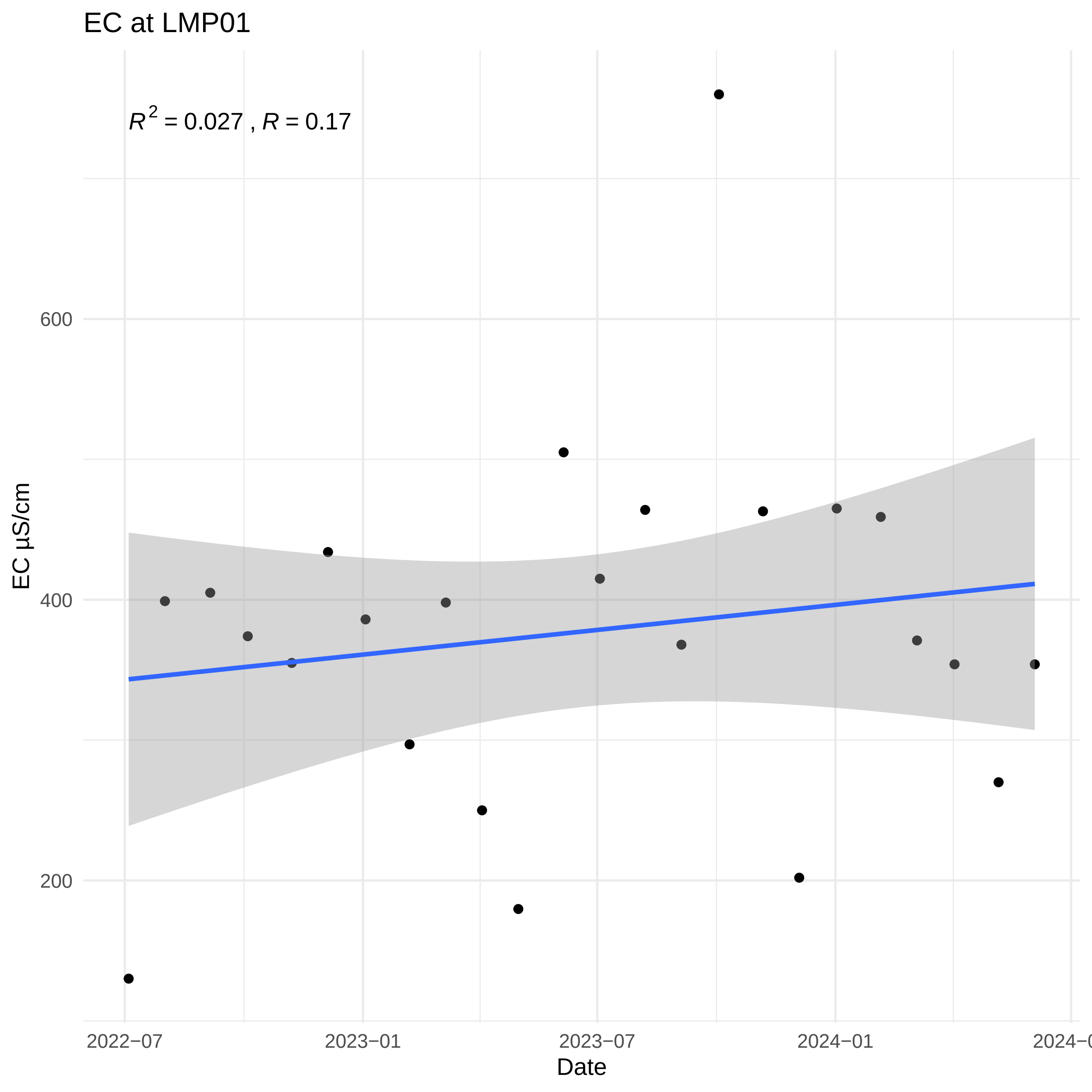


Chloride at LMP01
R^2 = 0.00085 , R = 0.029
20
15
10
5
Chloride mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date

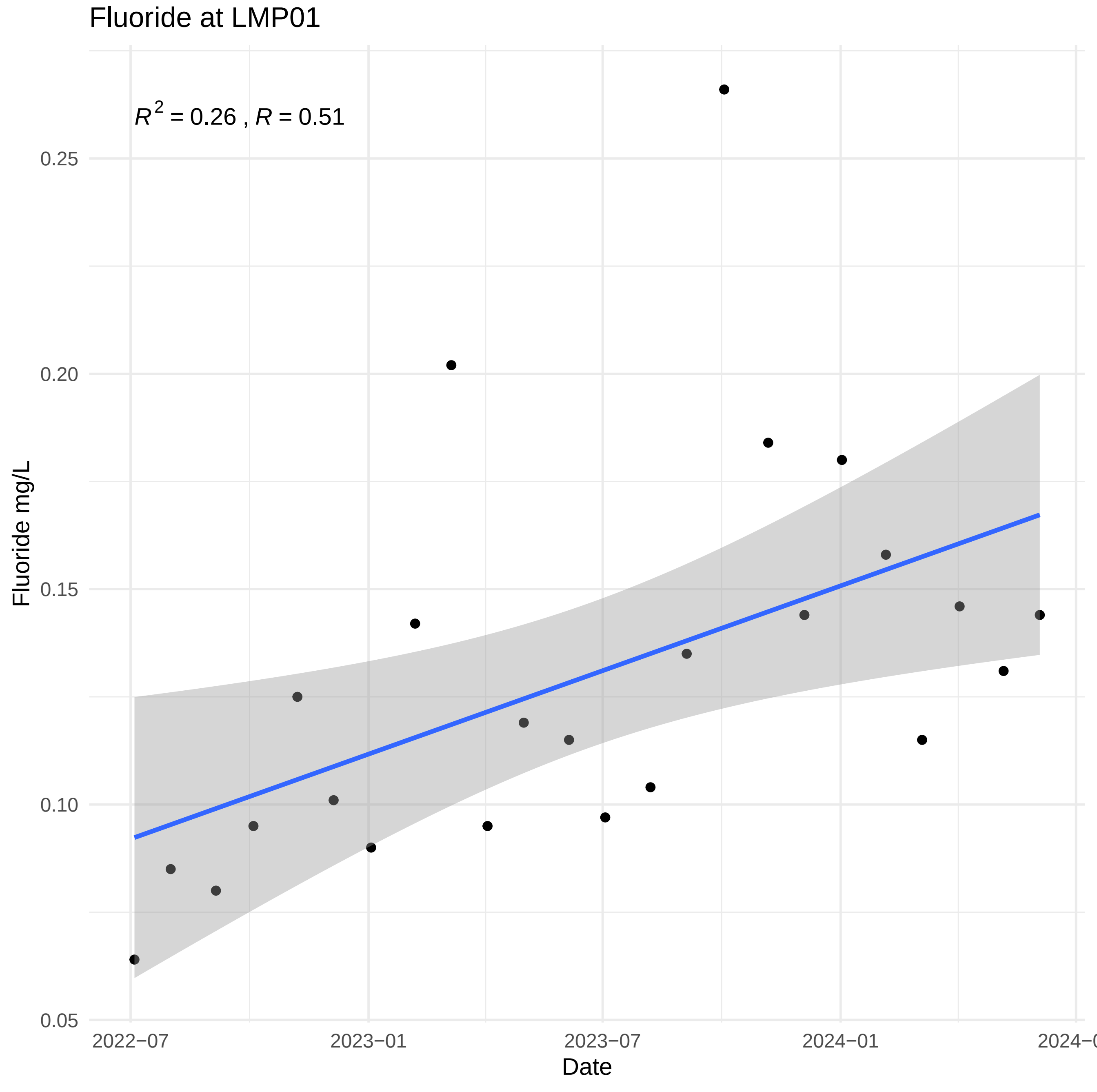


Chromium at LMP01
$R^2 = 0.012$, $R = 0.11$
0.0020
0.0015
0.0010
0.0005
Chromium mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date

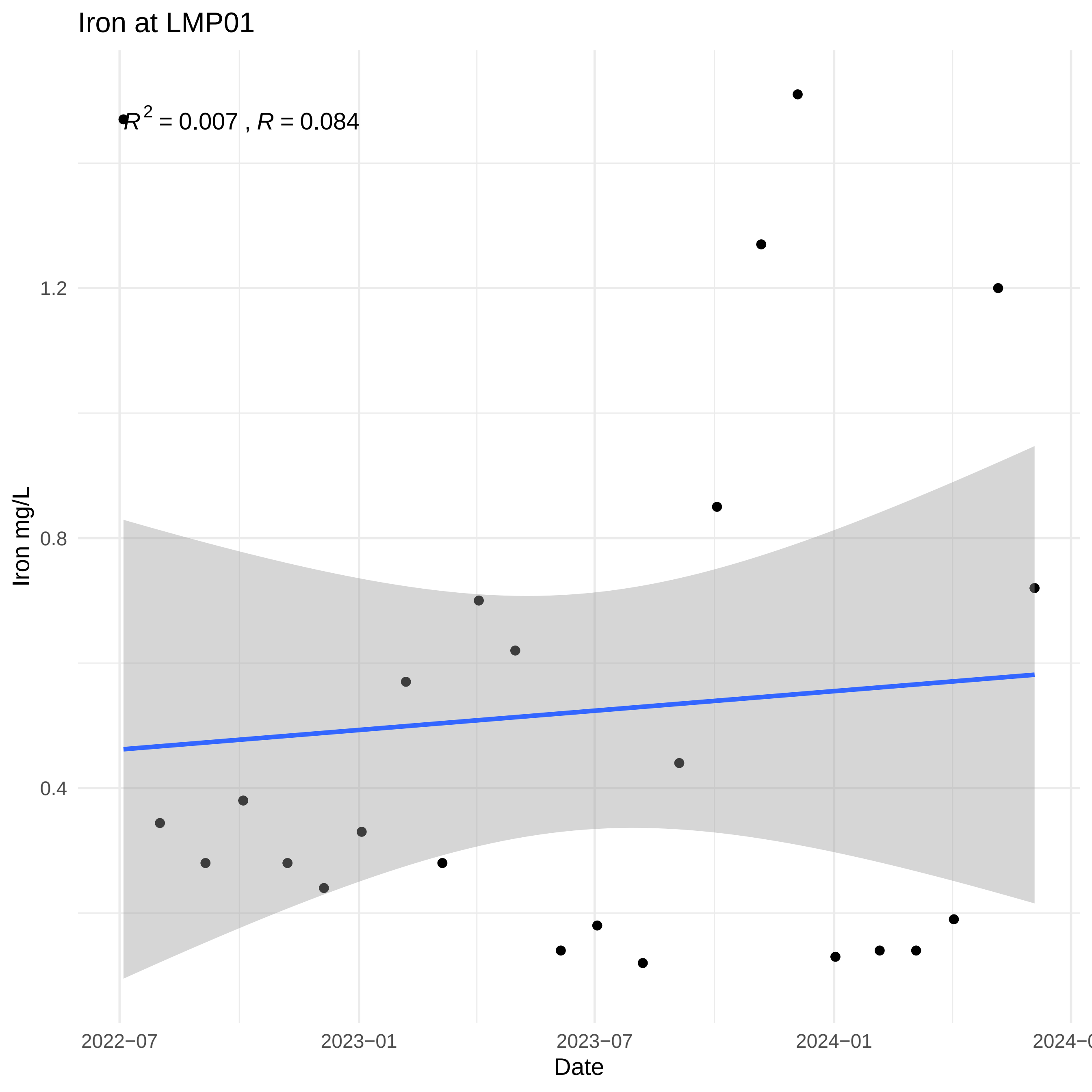

Copper at LMP01
$R^2 = 0.047$, $R = 0.22$
0.0075
0.0050
0.0025
Copper mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



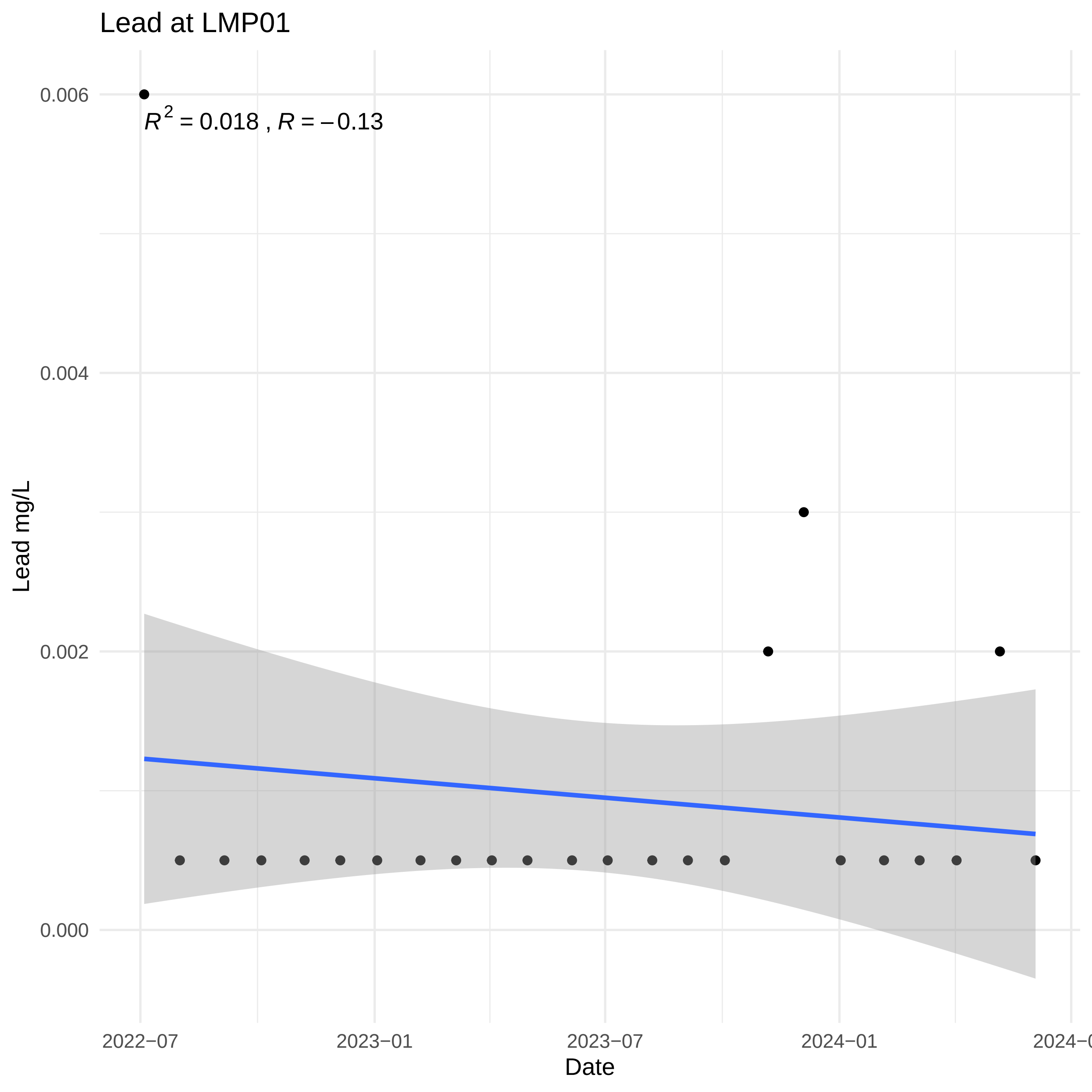
EC at LMP01
R^2 = 0.027 , R = 0.17
600
400
200
EC µS/cm
2022−07
2023−01
2023−07
2024−01
2024−0
Date



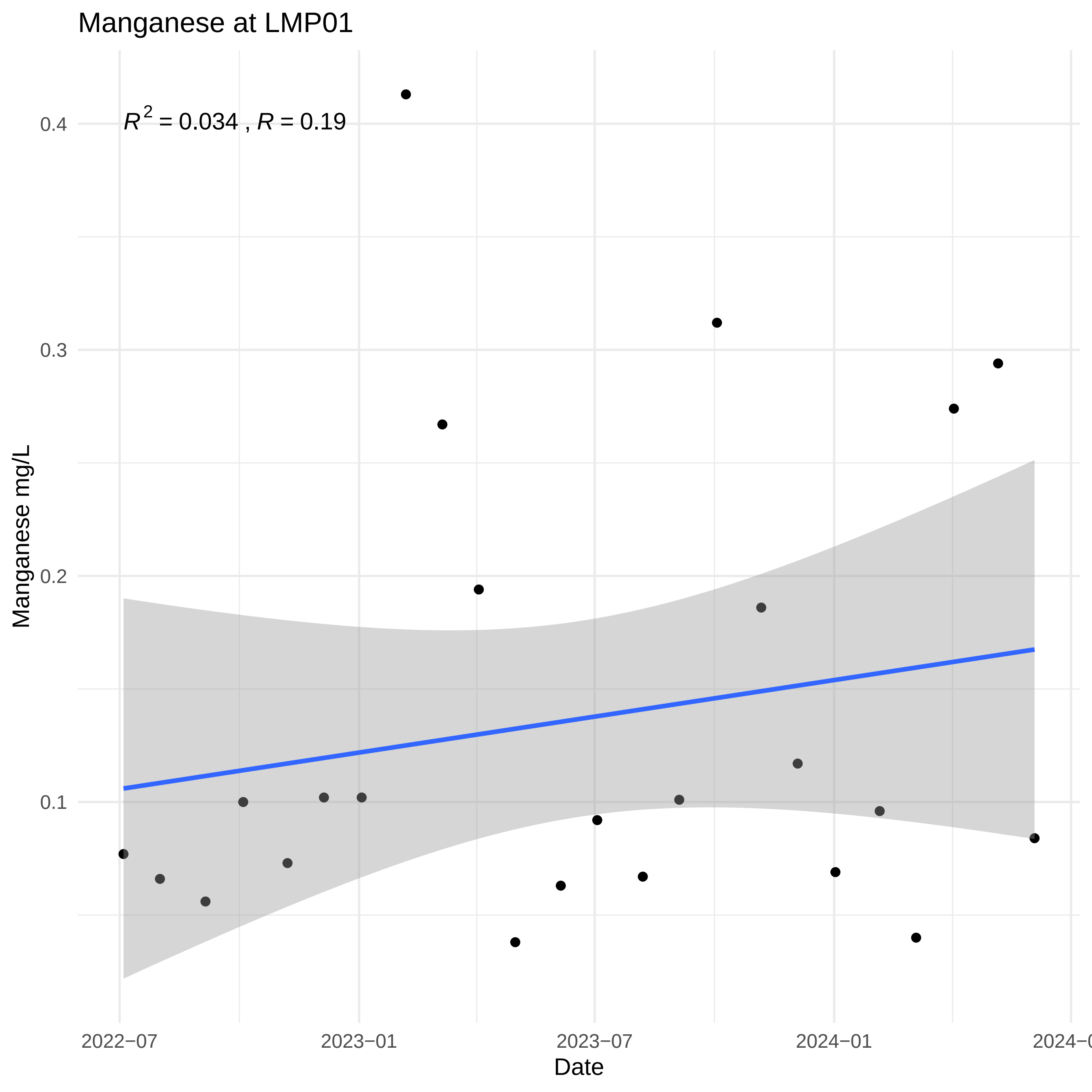
Fluoride at LMP01
R^2 = 0.26 , R = 0.51
0.25
0.20
0.15
0.10
0.05
Fluoride mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



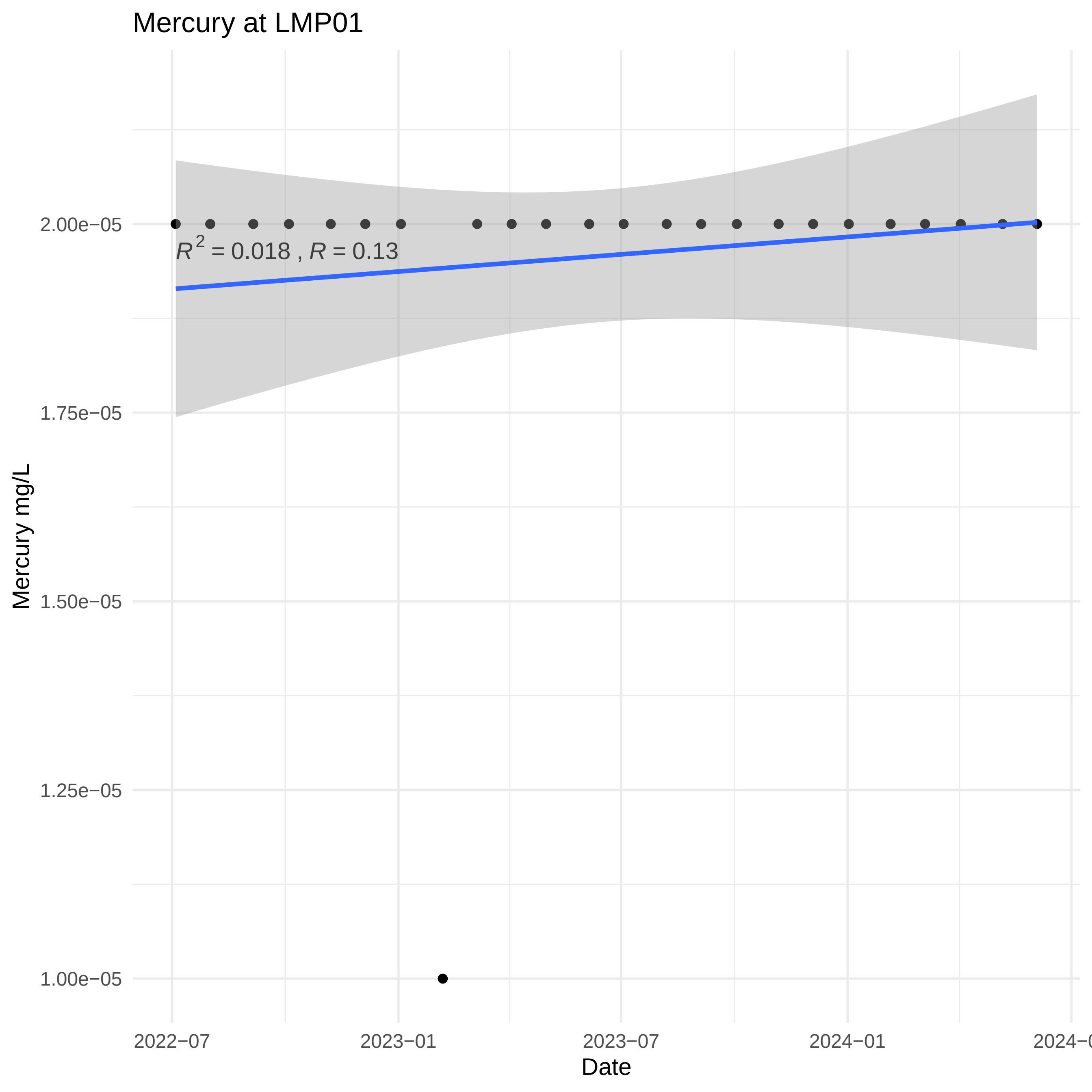
Iron at LMP01
R^2 = 0.007 , R = 0.084
1.2
0.8
0.4
Iron mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



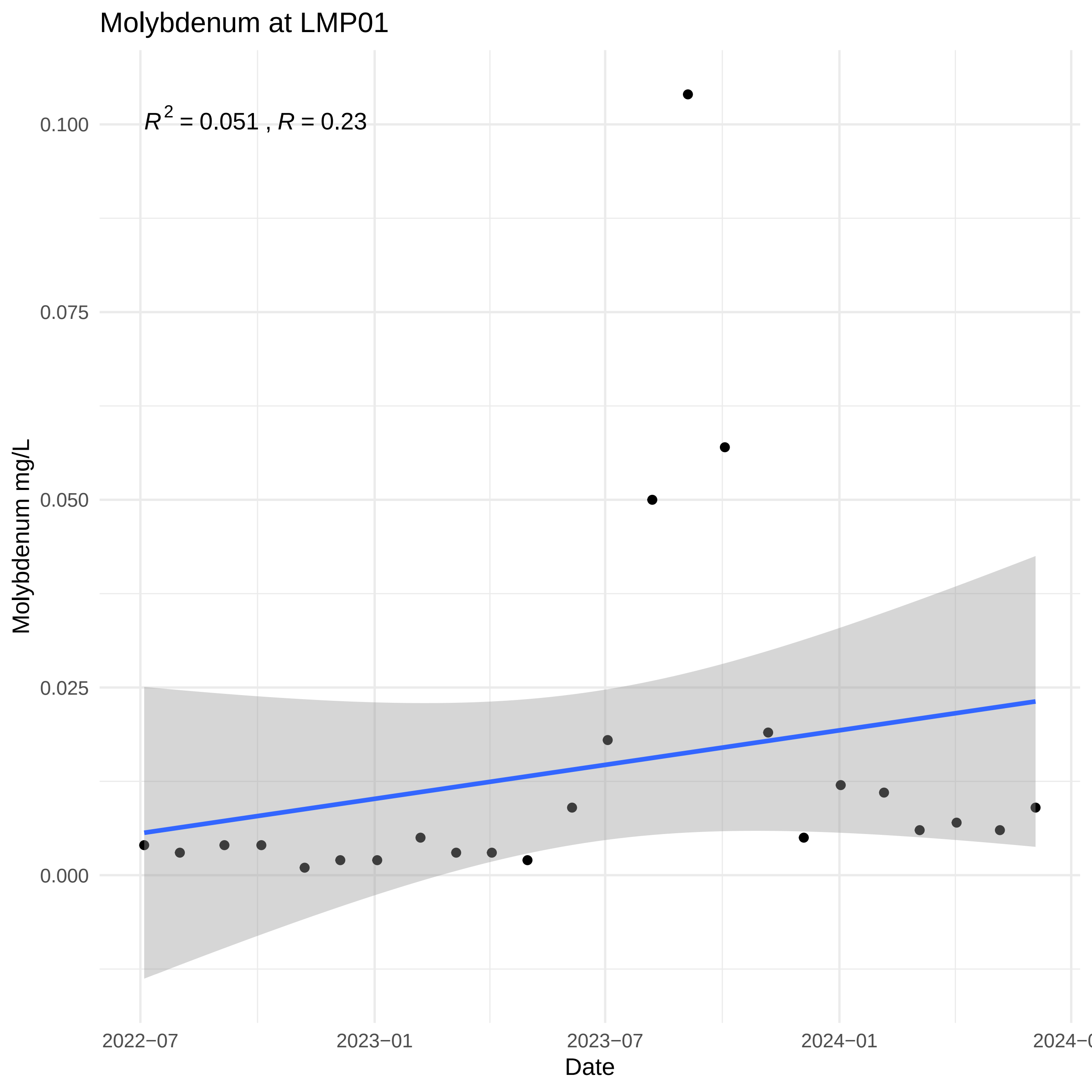
Lead at LMP01
$R^2 = 0.018$, $R = -0.13$
0.006
0.004
0.002
0.000
Lead mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



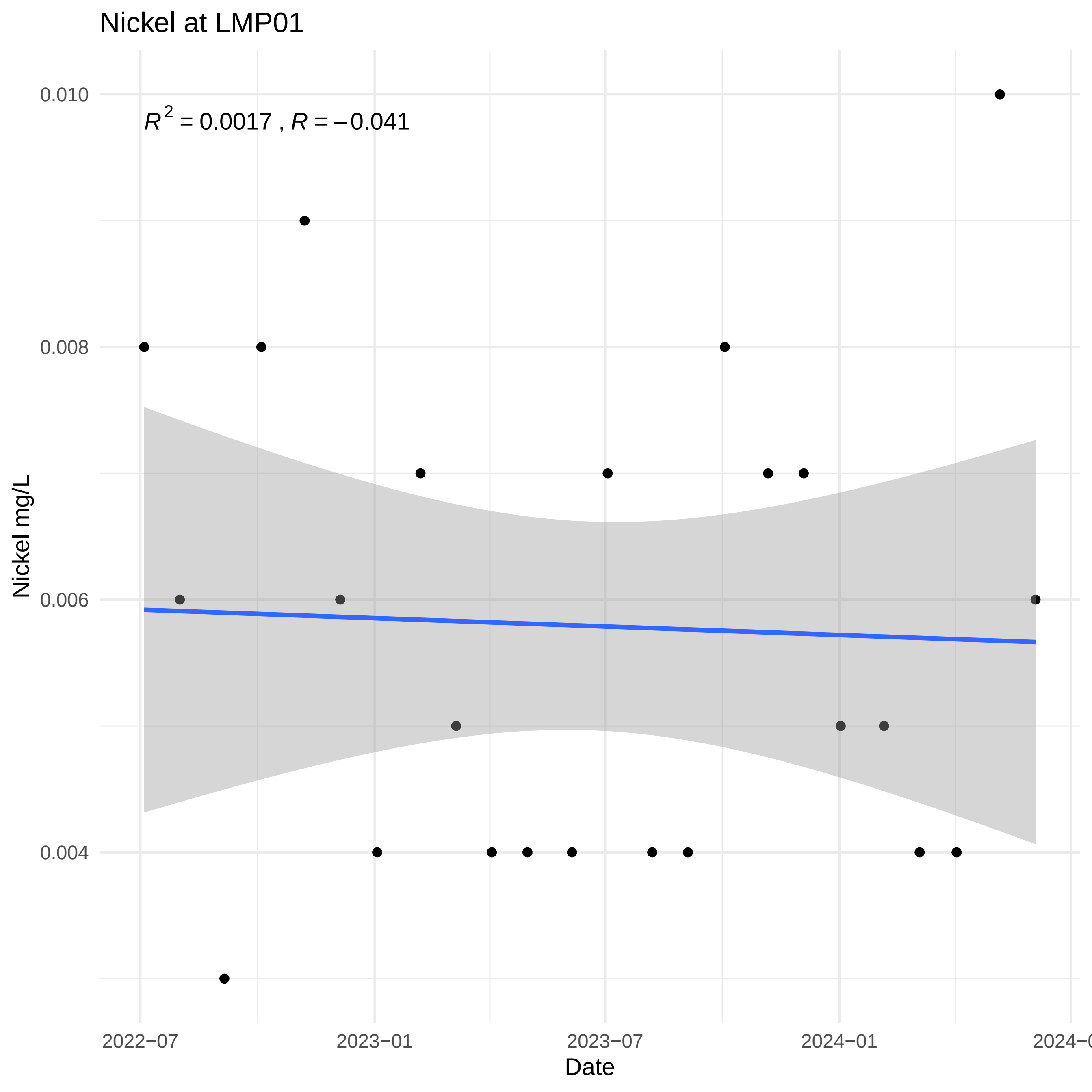
Manganese at LMP01
$R^2 = 0.034$, $R = 0.19$
0.4
0.3
0.2
0.1
Manganese mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



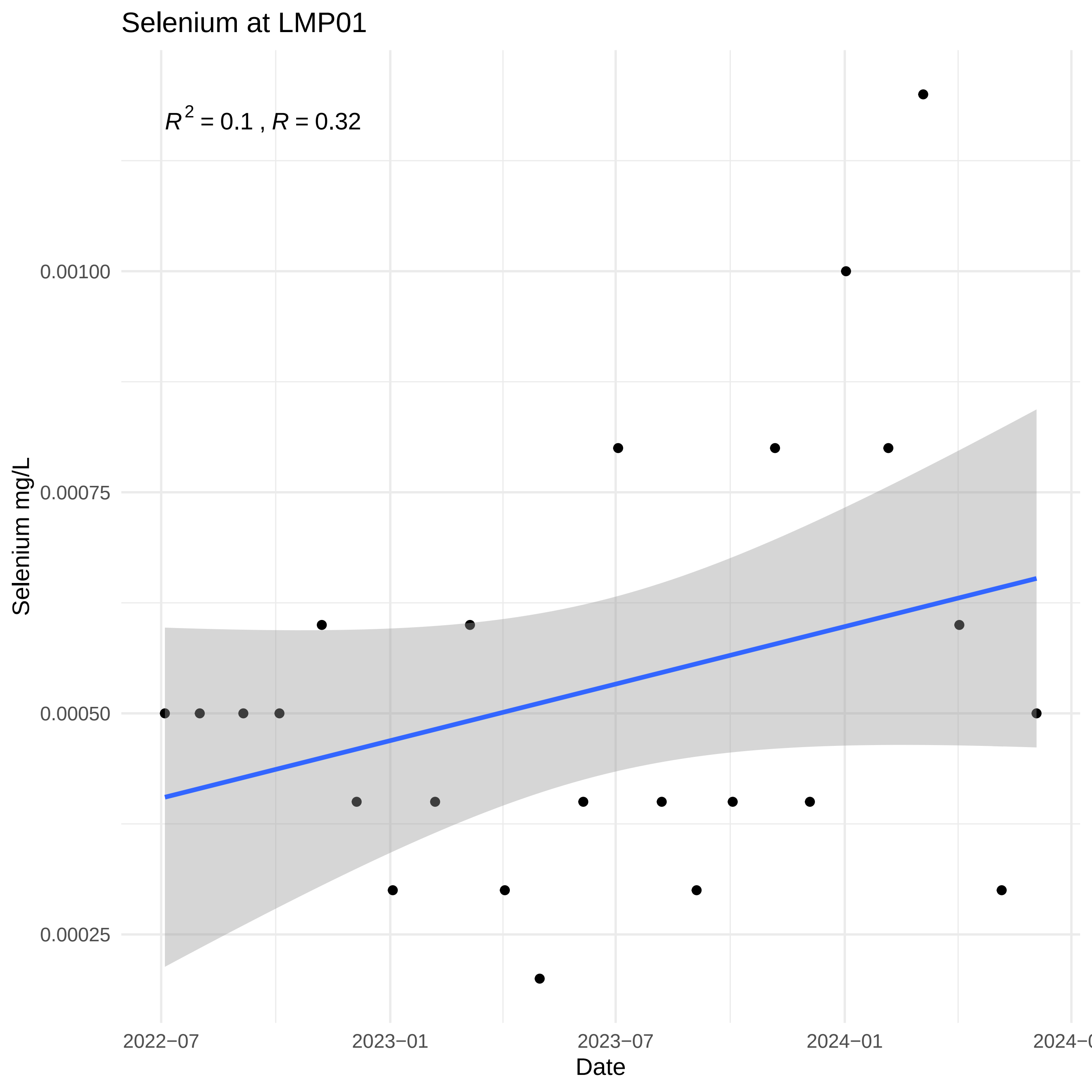
Mercury at LMP01
R^2 = 0.018 , R = 0.13
2.00e−05
1.75e−05
1.50e−05
1.25e−05
1.00e−05
Mercury mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



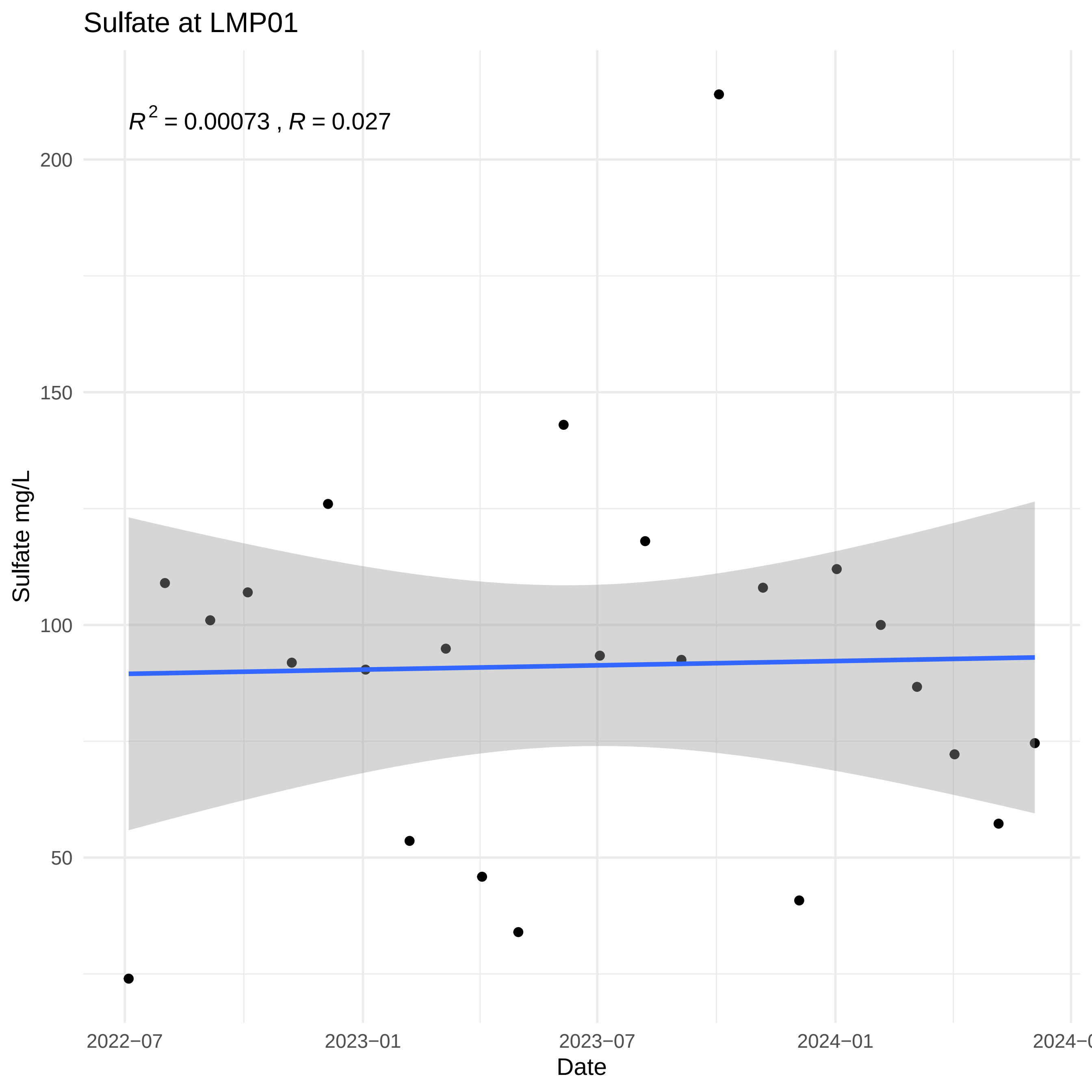
Molybdenum at LMP01
R^2 = 0.051 , R = 0.23
0.100
0.075
0.050
0.025
0.000
Molybdenum mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



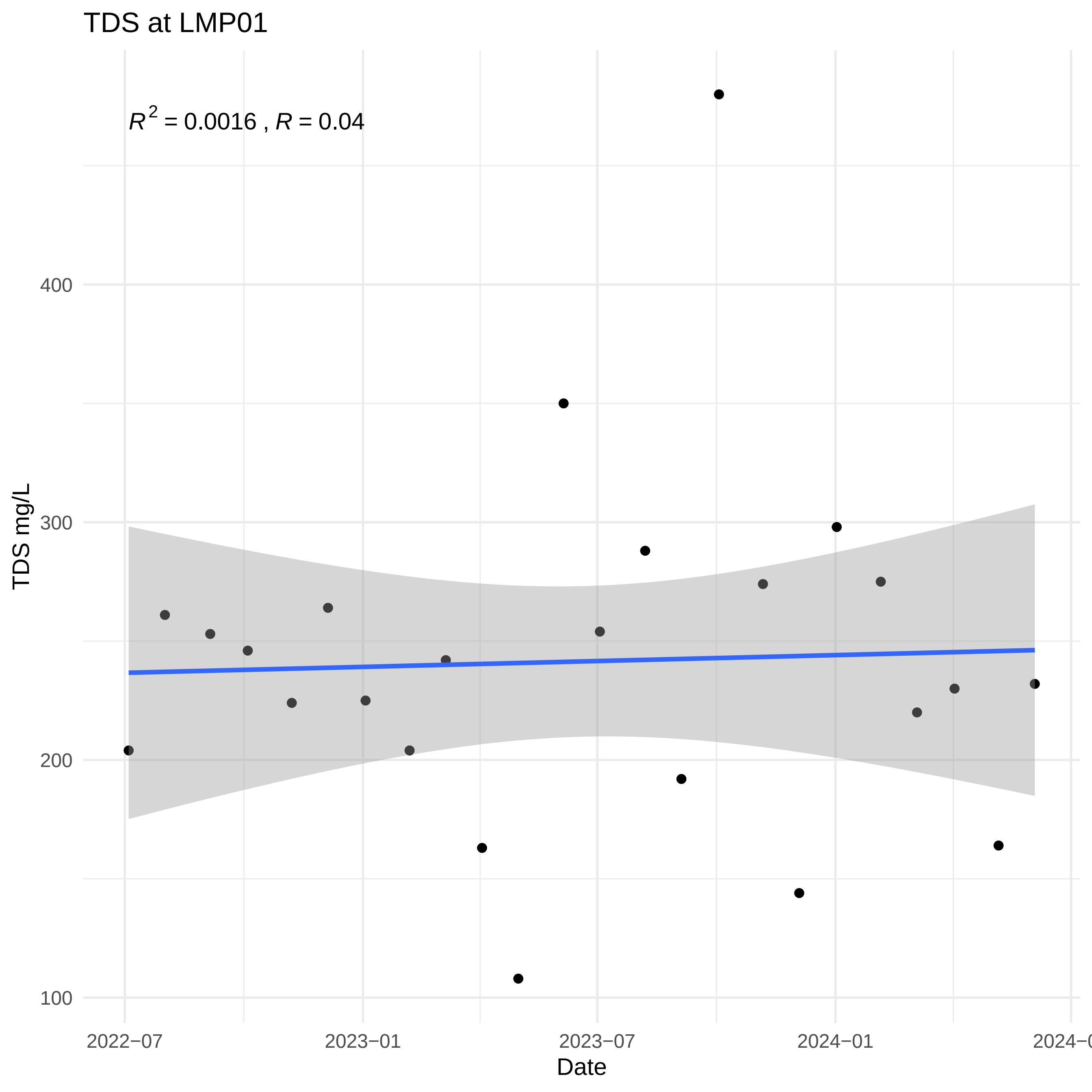
Nickel at LMP01
$R^2 = 0.0017$, $R = -0.041$
0.010
0.008
0.006
0.004
Nickel mg/L
2022−07
2023−01
2023−07
2024−01
Date



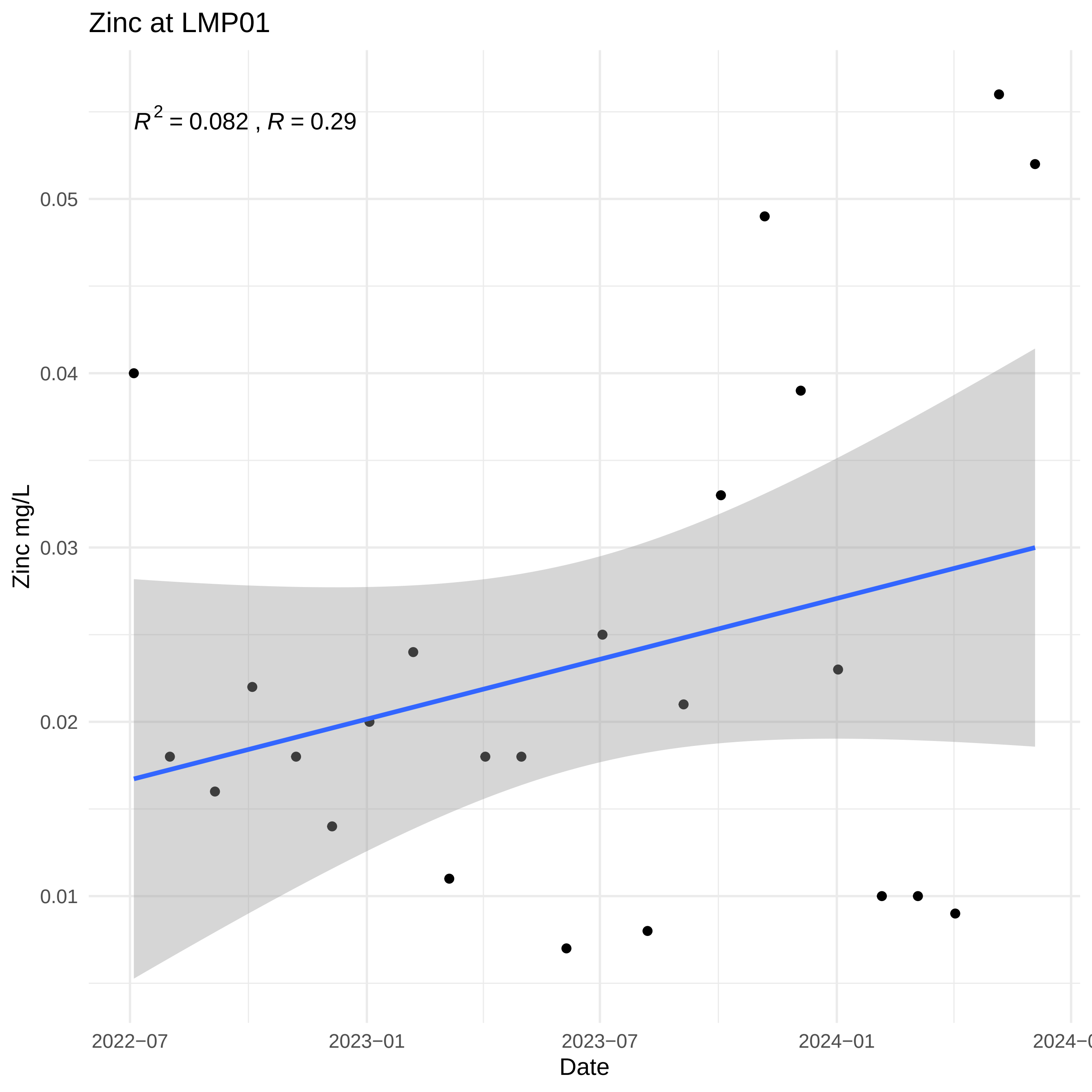
Selenium at LMP01
R^2 = 0.1 , R = 0.32
0.00100
0.00075
0.00050
0.00025
Selenium mg/L
2022−07
2023−01
2023−07
2024−01
Date



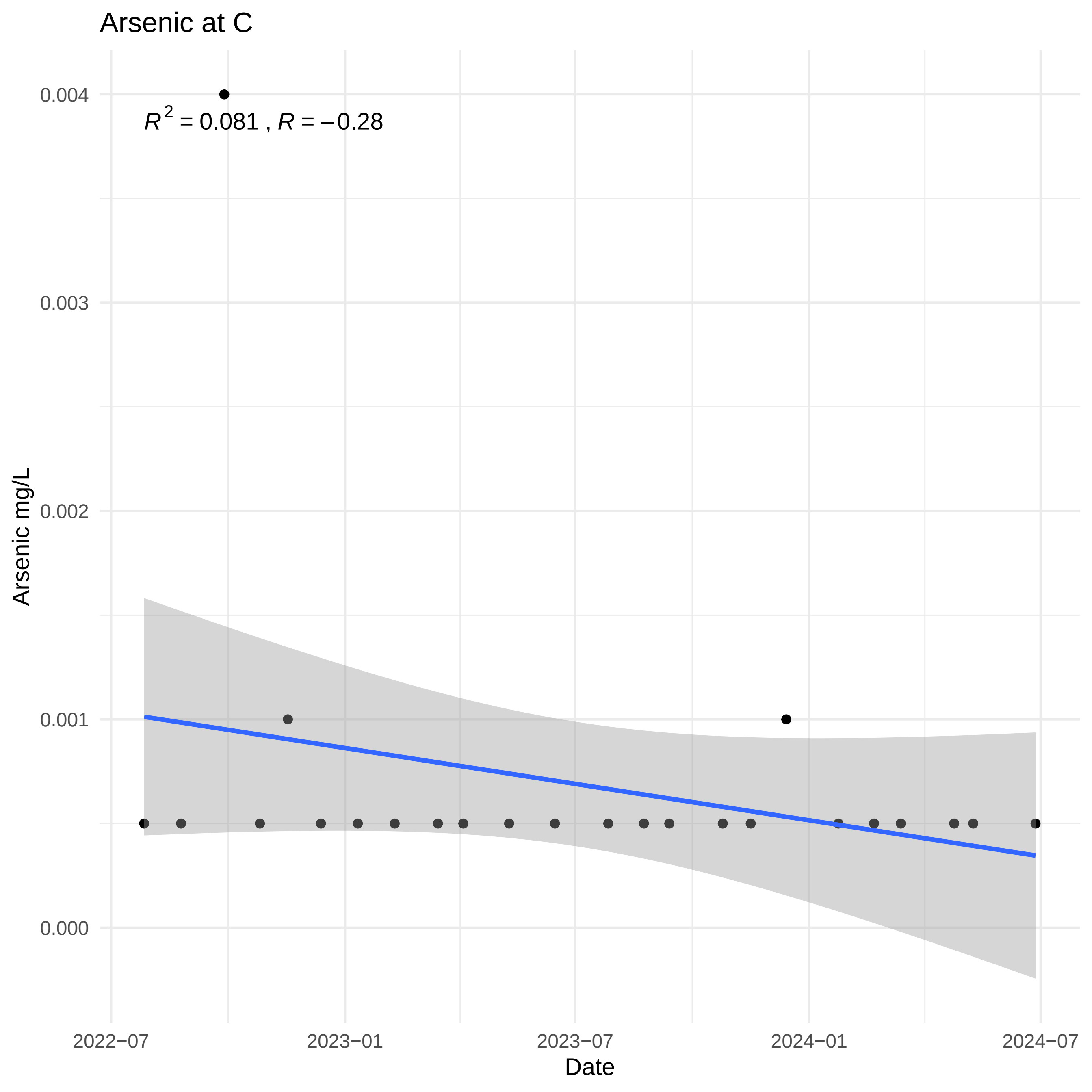
Sulfate at LMP01
R^2 = 0.00073 , R = 0.027
200
150
100
50
Sulfate mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



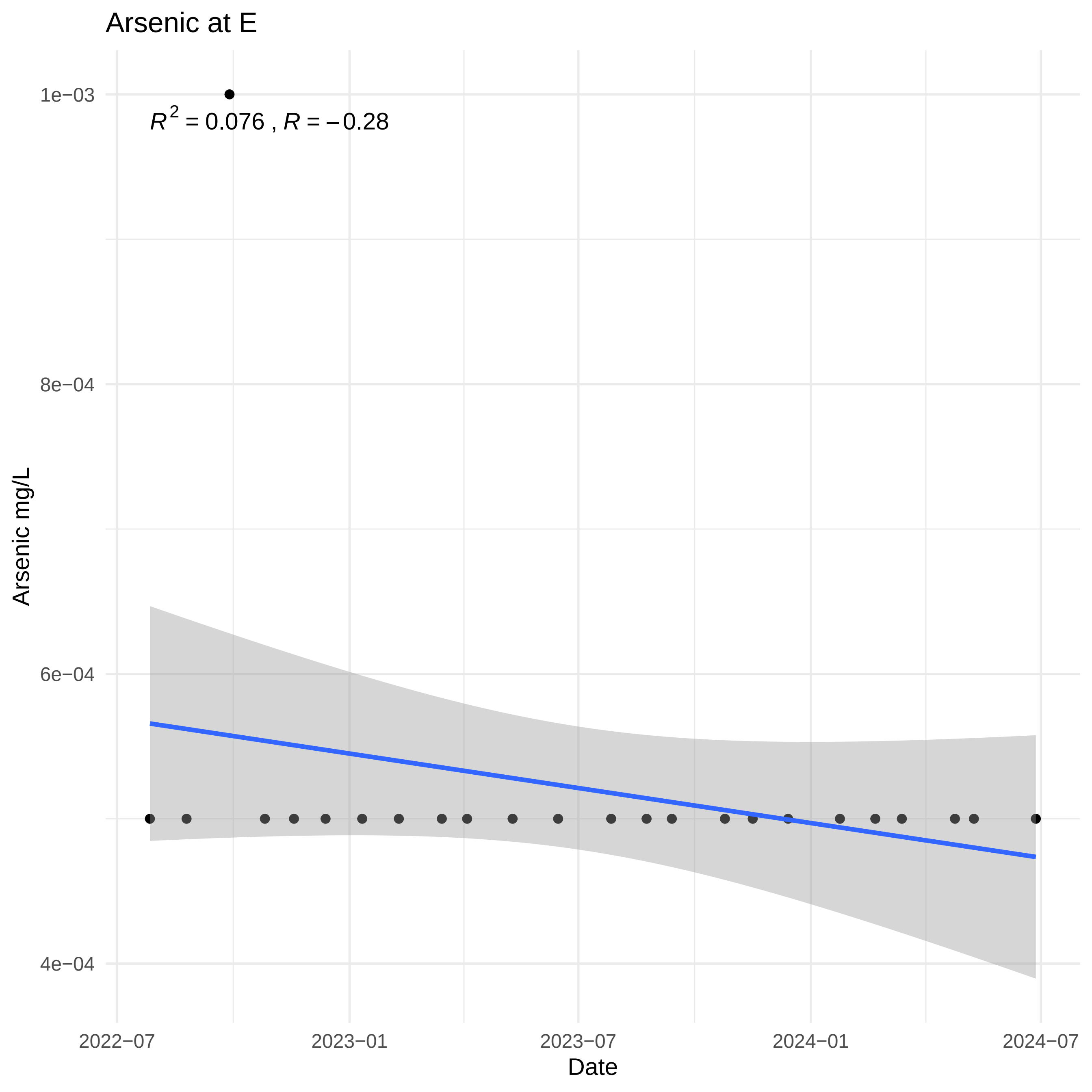
TDS at LMP01
$R^2 = 0.0016$, $R = 0.04$
400
300
200
100
TDS mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



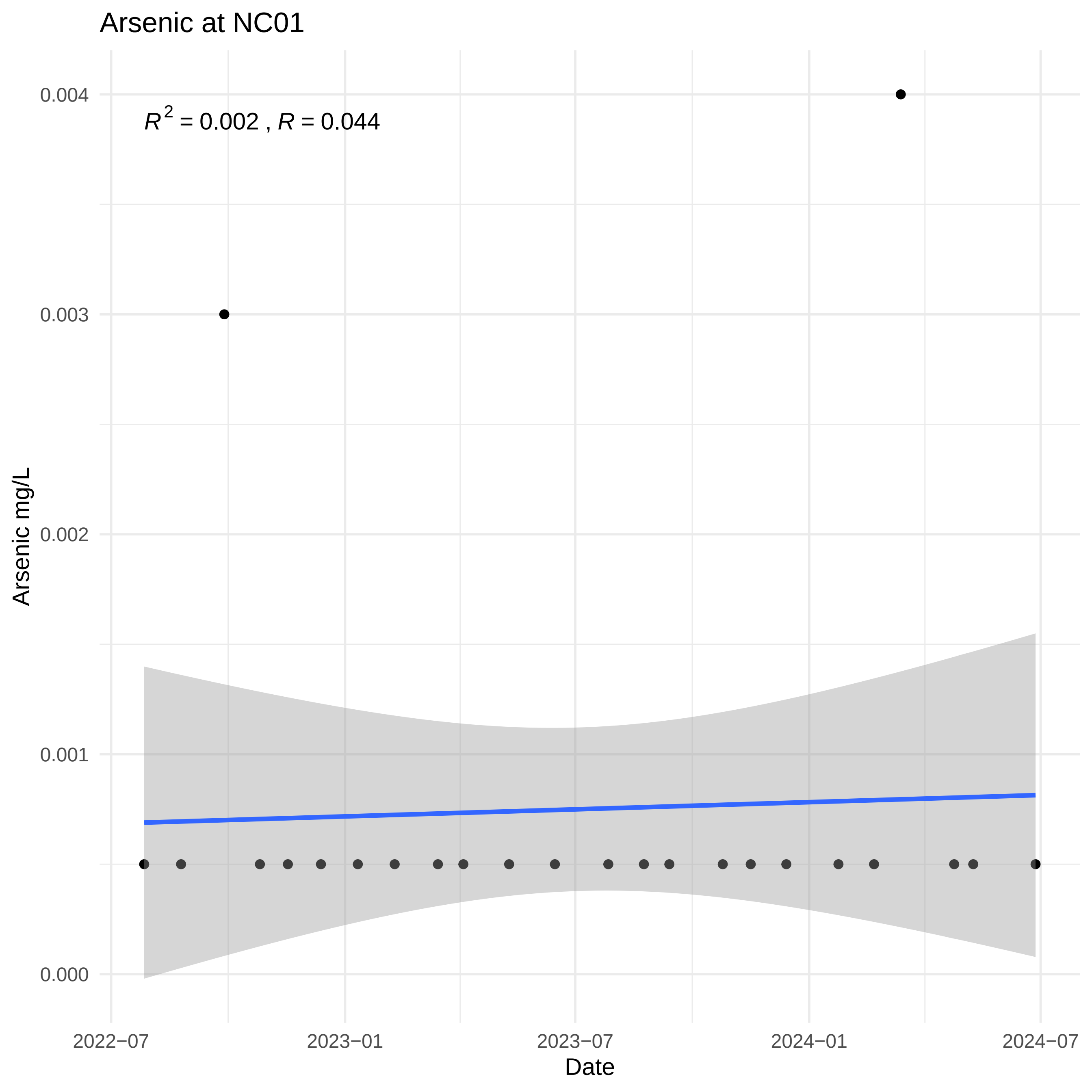
Zinc at LMP01
$R^2 = 0.082$, $R = 0.29$
0.05
0.04
0.03
0.02
0.01
Zinc mg/L
2022−07
2023−01
2023−07
2024−01
2024−0
Date



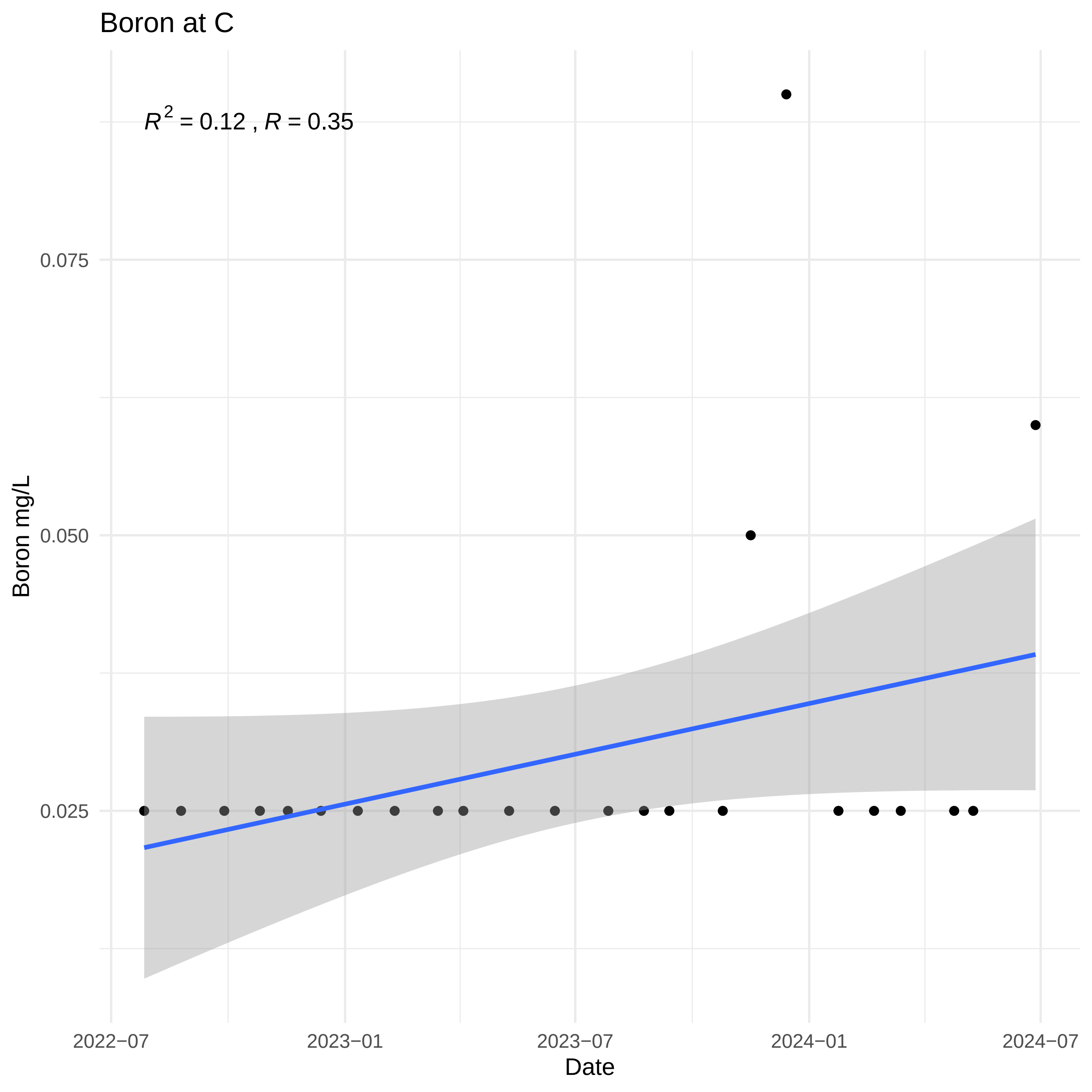
Arsenic at C
$R^2 = 0.081$, $R = -0.28$
0.004
0.003
0.002
0.001
0.000
Arsenic mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

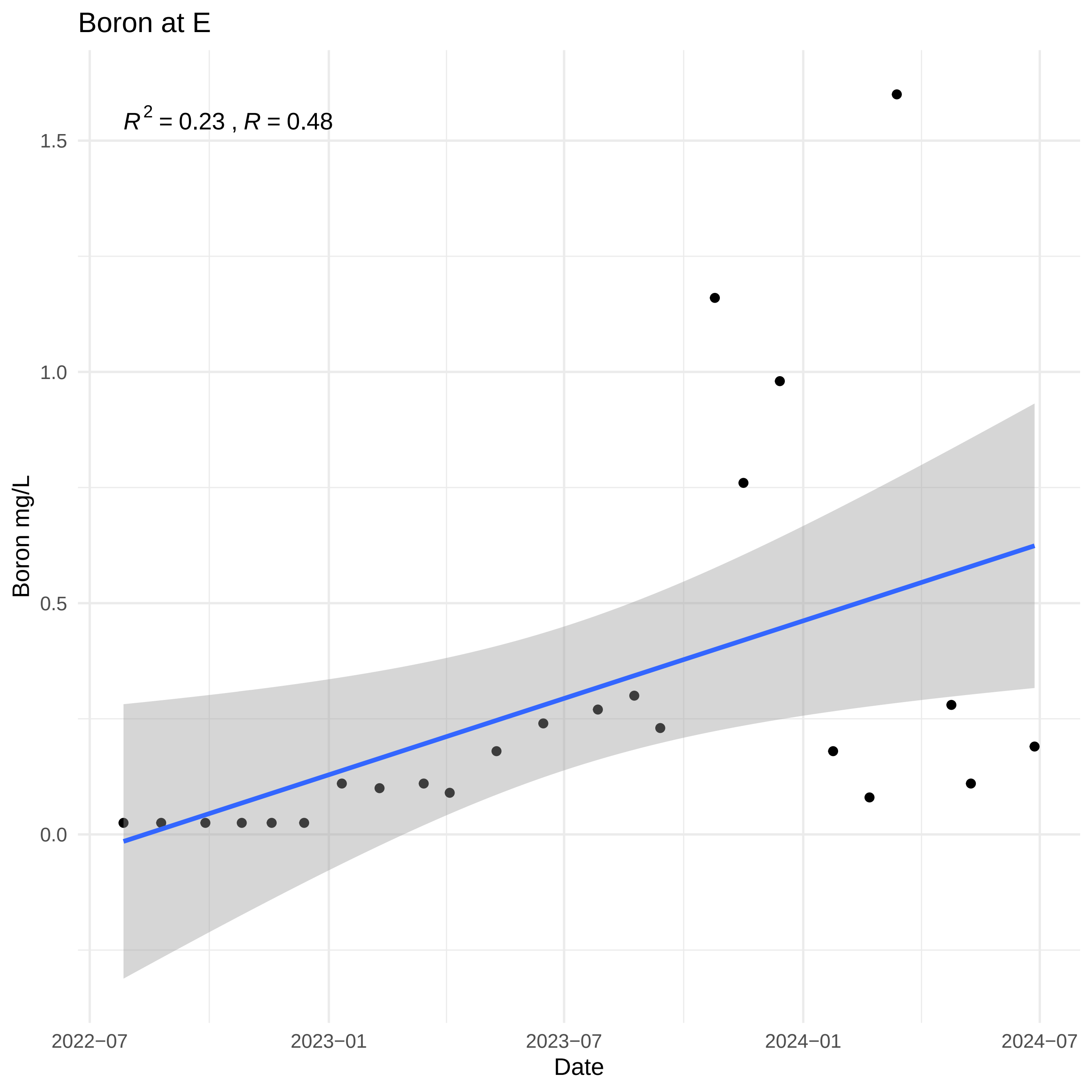


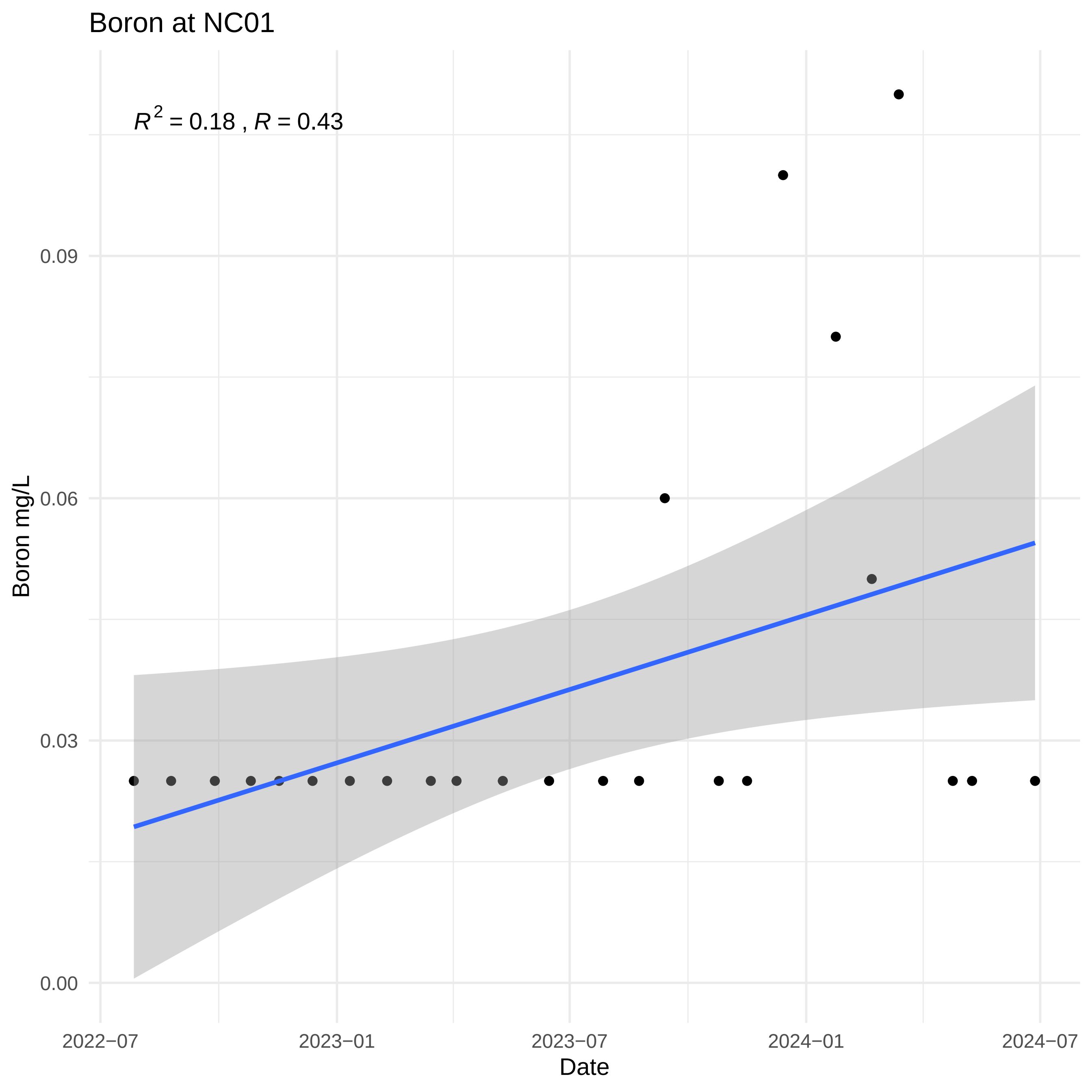
Arsenic at E
$R^2 = 0.076$, $R = -0.28$
1e−03
8e−04
6e−04
4e−04
Arsenic mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



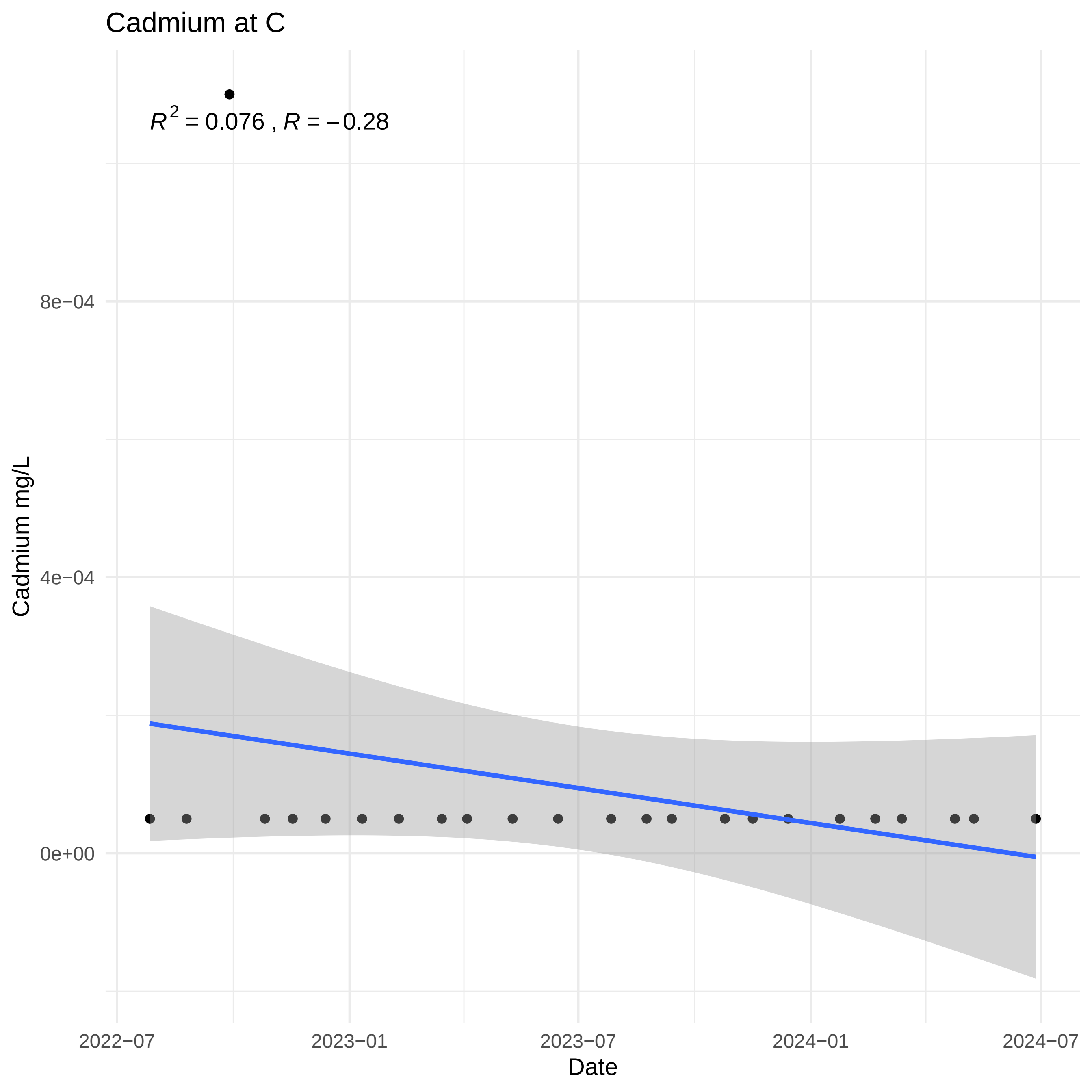
Arsenic at NC01
$R^2 = 0.002$, $R = 0.044$
0.004
0.003
0.002
0.001
0.000
Arsenic mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date


Boron at C
R^2 = 0.12 , R = 0.35
0.075
0.050
0.025
Boron mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

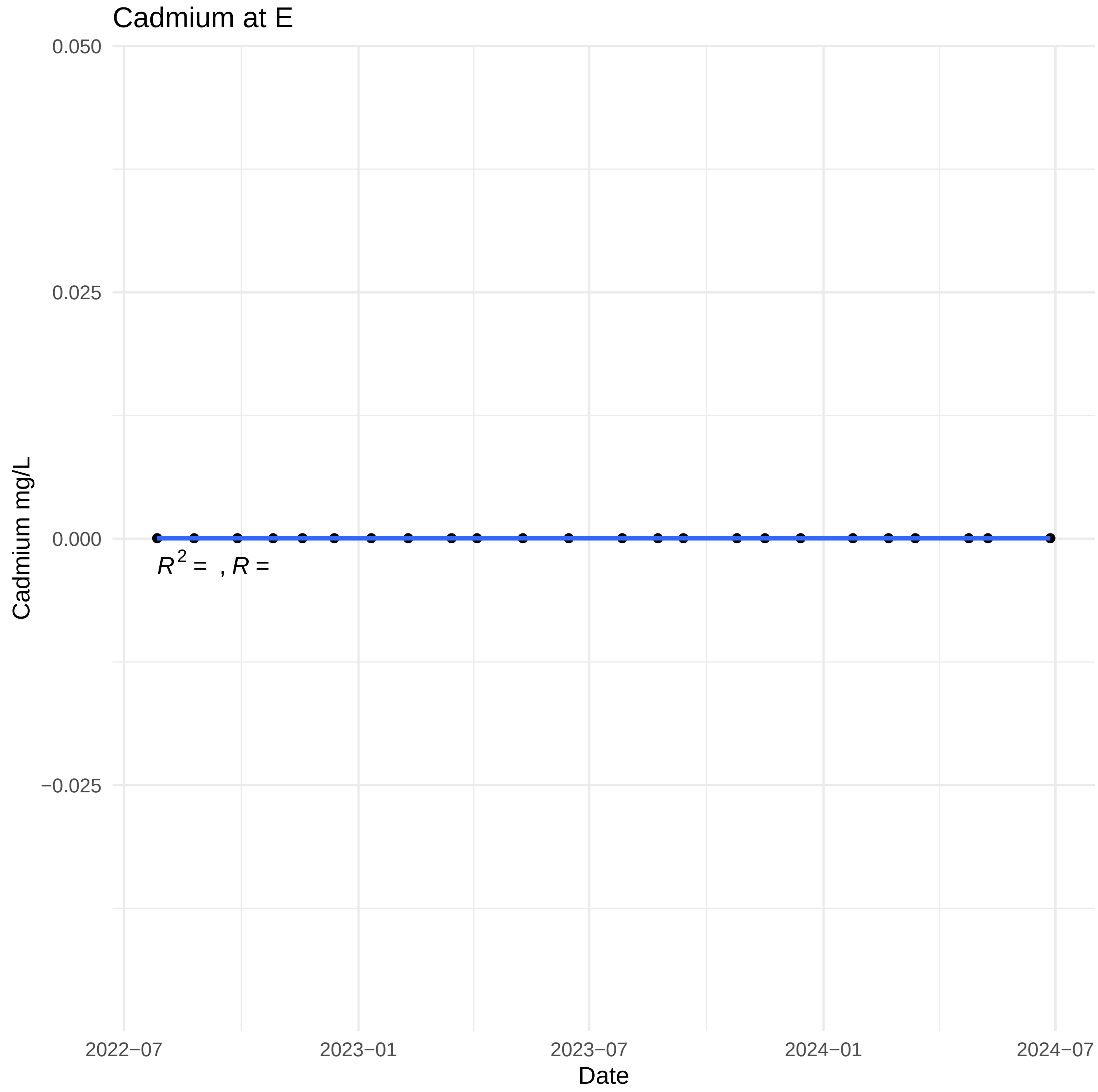

Boron at E
$R^2 = 0.23$, $R = 0.48$
Boron mg/L
1.5
1.0
0.5
0.0
2022−07
2023−01
2023−07
2024−01
2024−07
Date

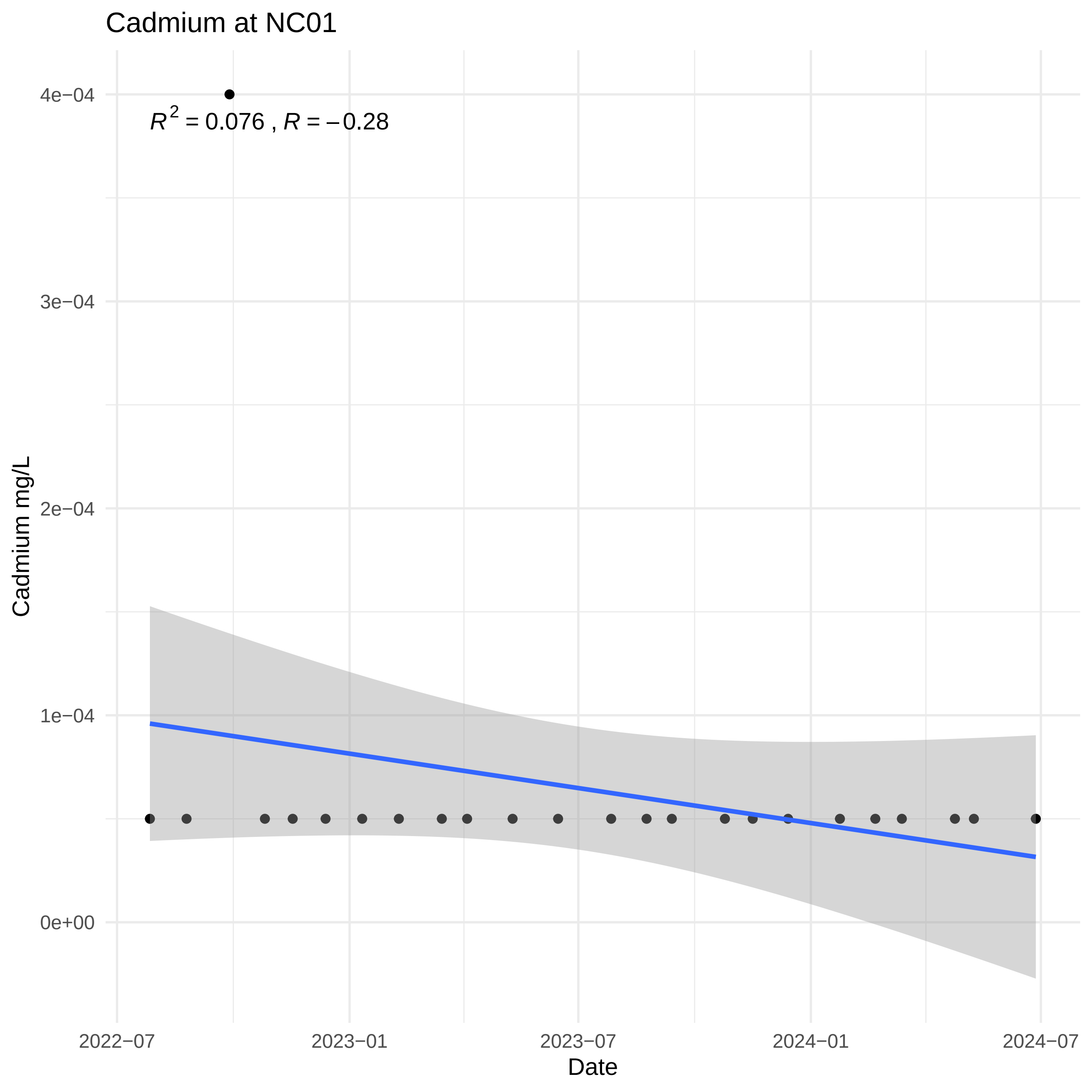


Boron at NC01
$R^2 = 0.18$, $R = 0.43$
Boron mg/L
0.09
0.06
0.03
0.00
2022−07
2023−01
2023−07
2024−01
2024−07
Date

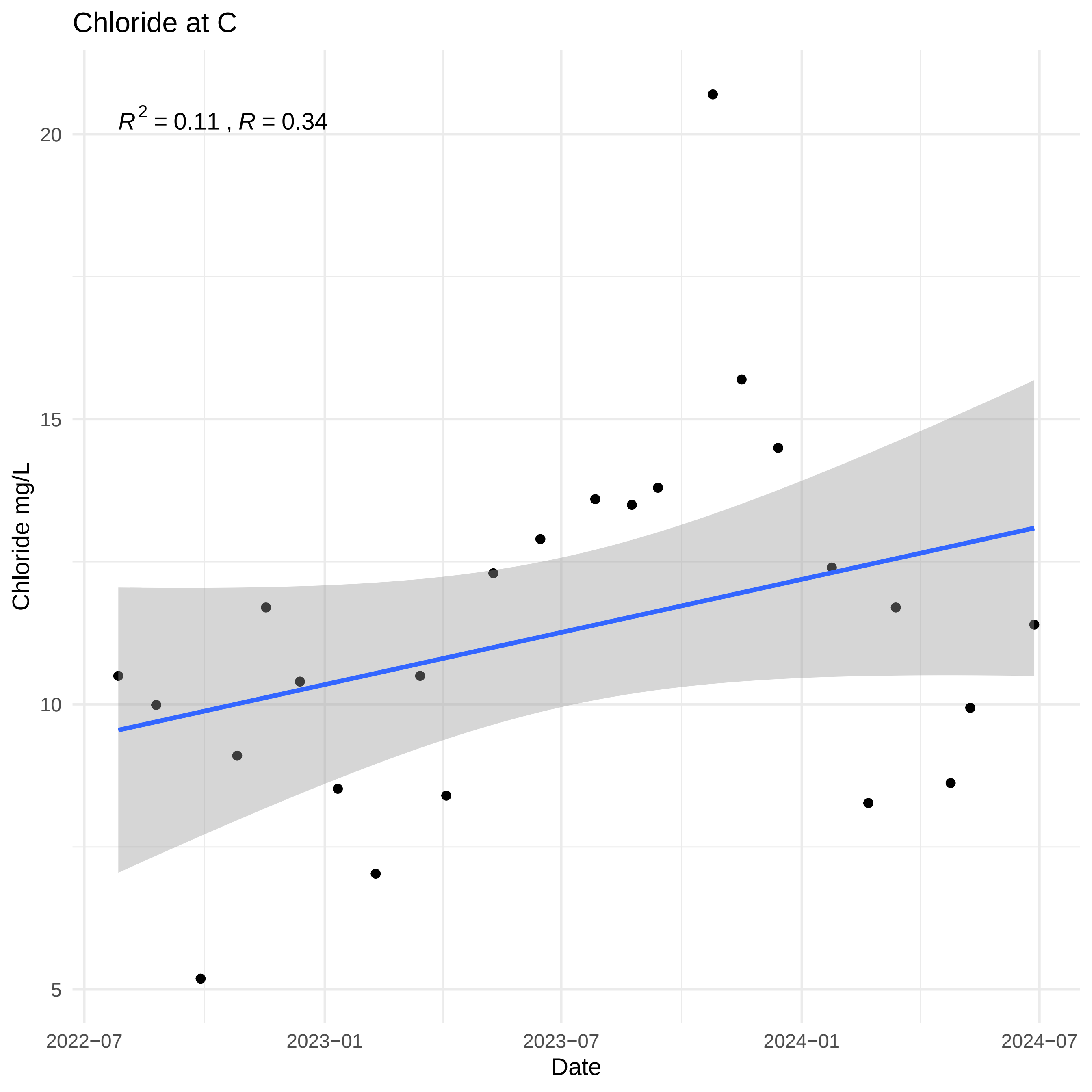


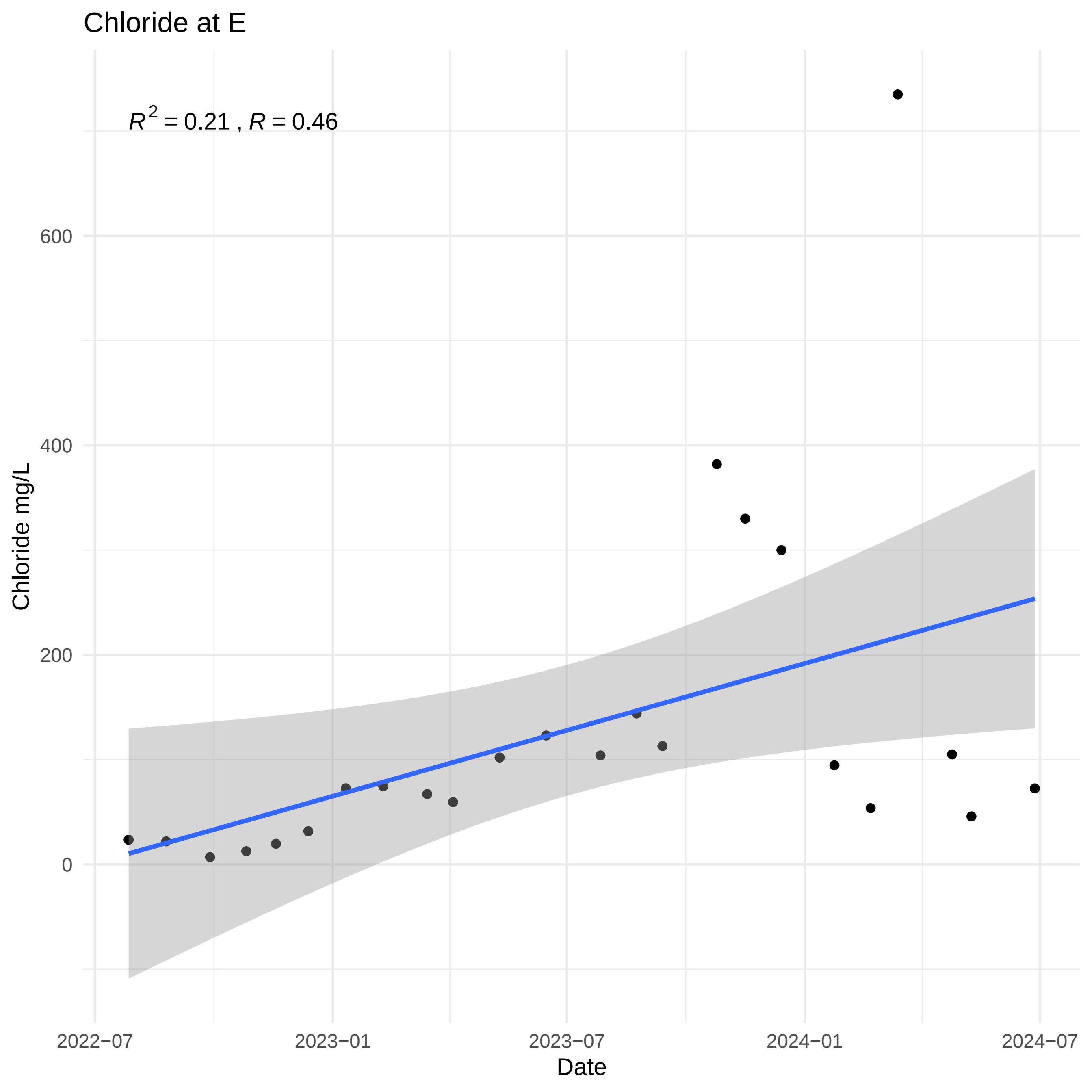
Cadmium at C
$R^2 = 0.076$, $R = -0.28$
8e−04
4e−04
0e+00
Cadmium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date


Cadmium at E
0.050
0.025
0.000
−0.025
Cadmium mg/L
R^2 = , R =
2022−07
2023−01
2023−07
2024−01
2024−07
Date

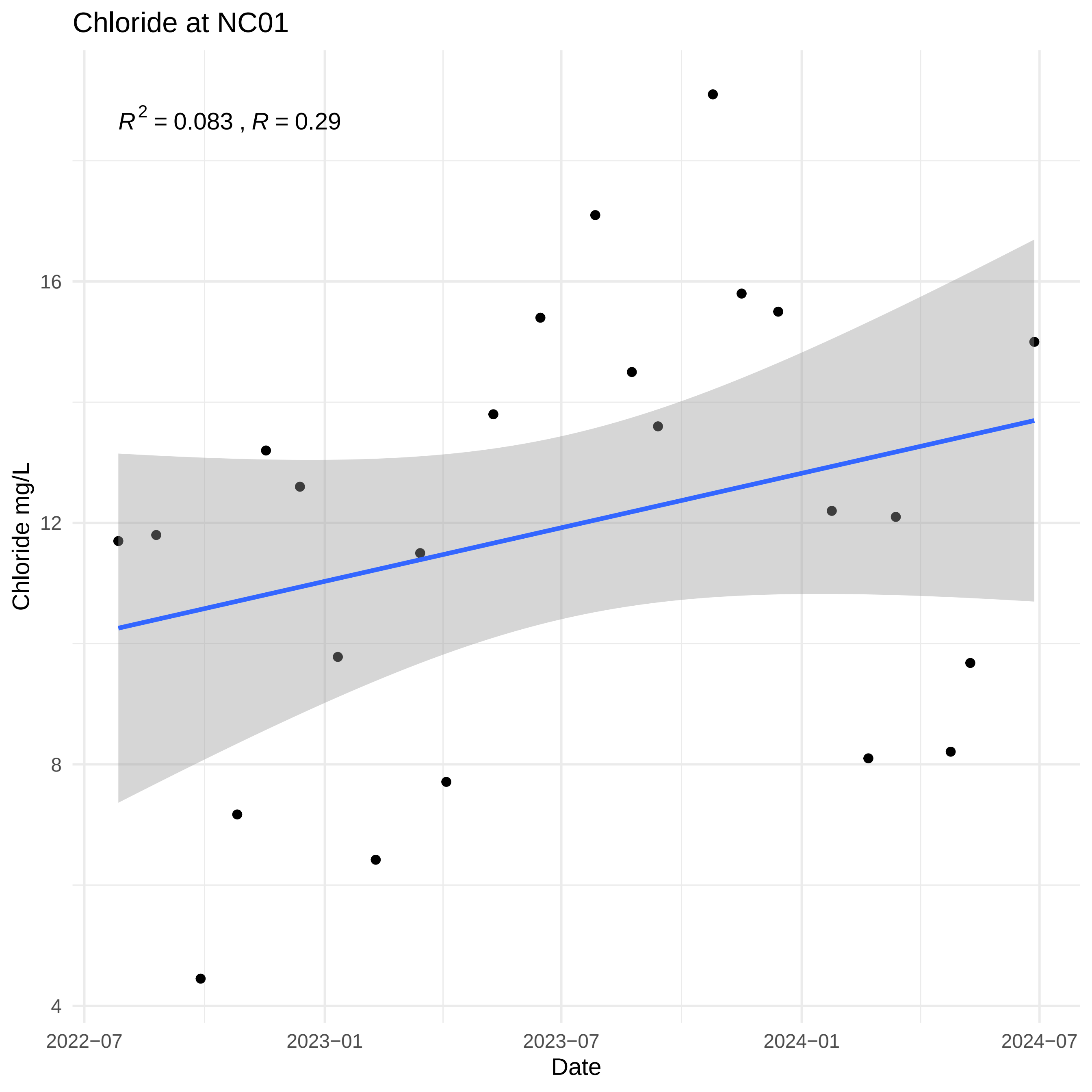


Cadmium at NC01
$R^2 = 0.076$, $R = -0.28$
Cadmium mg/L
4e−04
3e−04
2e−04
1e−04
0e+00
2022−07
2023−01
2023−07
2024−01
2024−07
Date

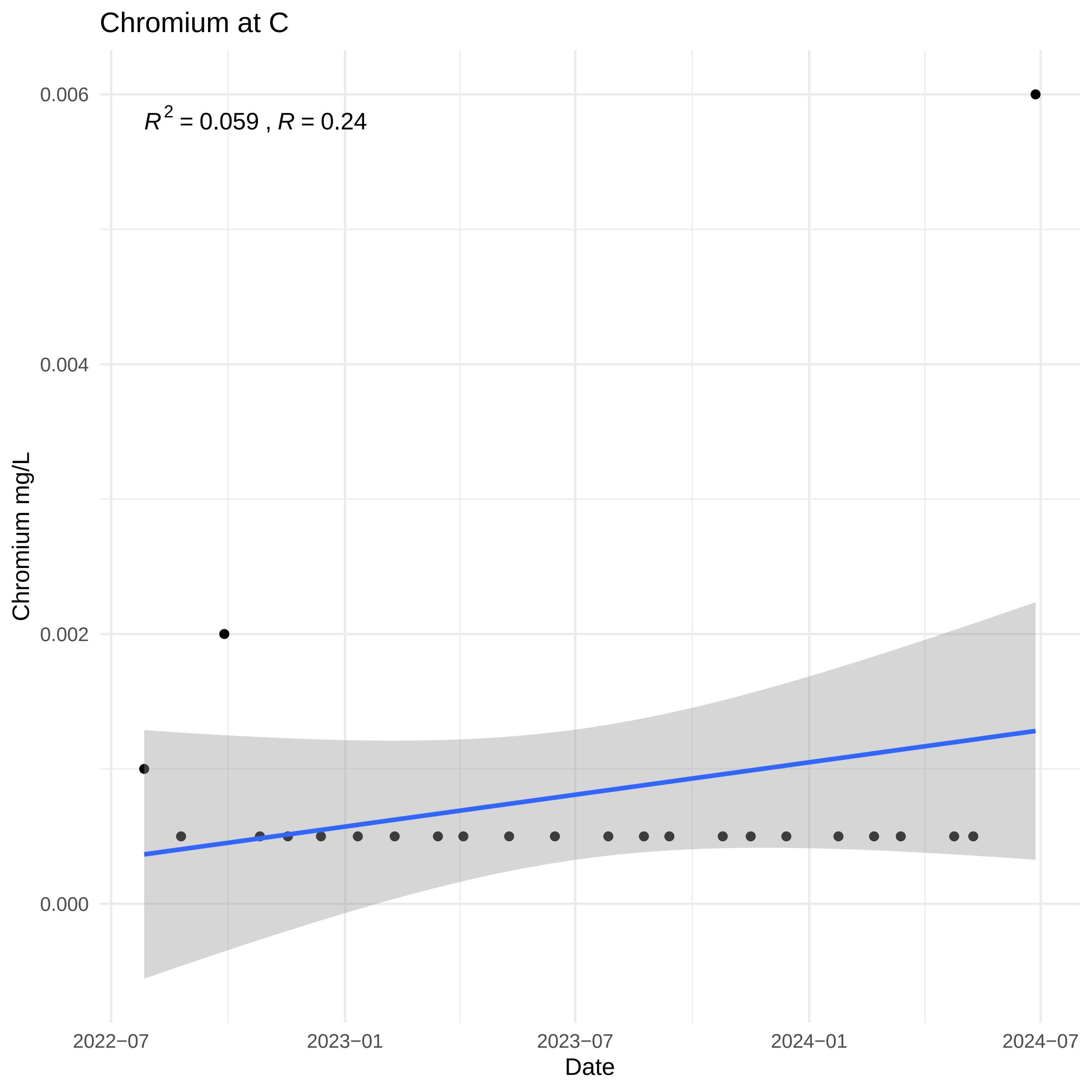

Chloride at C
$R^2 = 0.11$, $R = 0.34$
20
15
10
5
Chloride mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

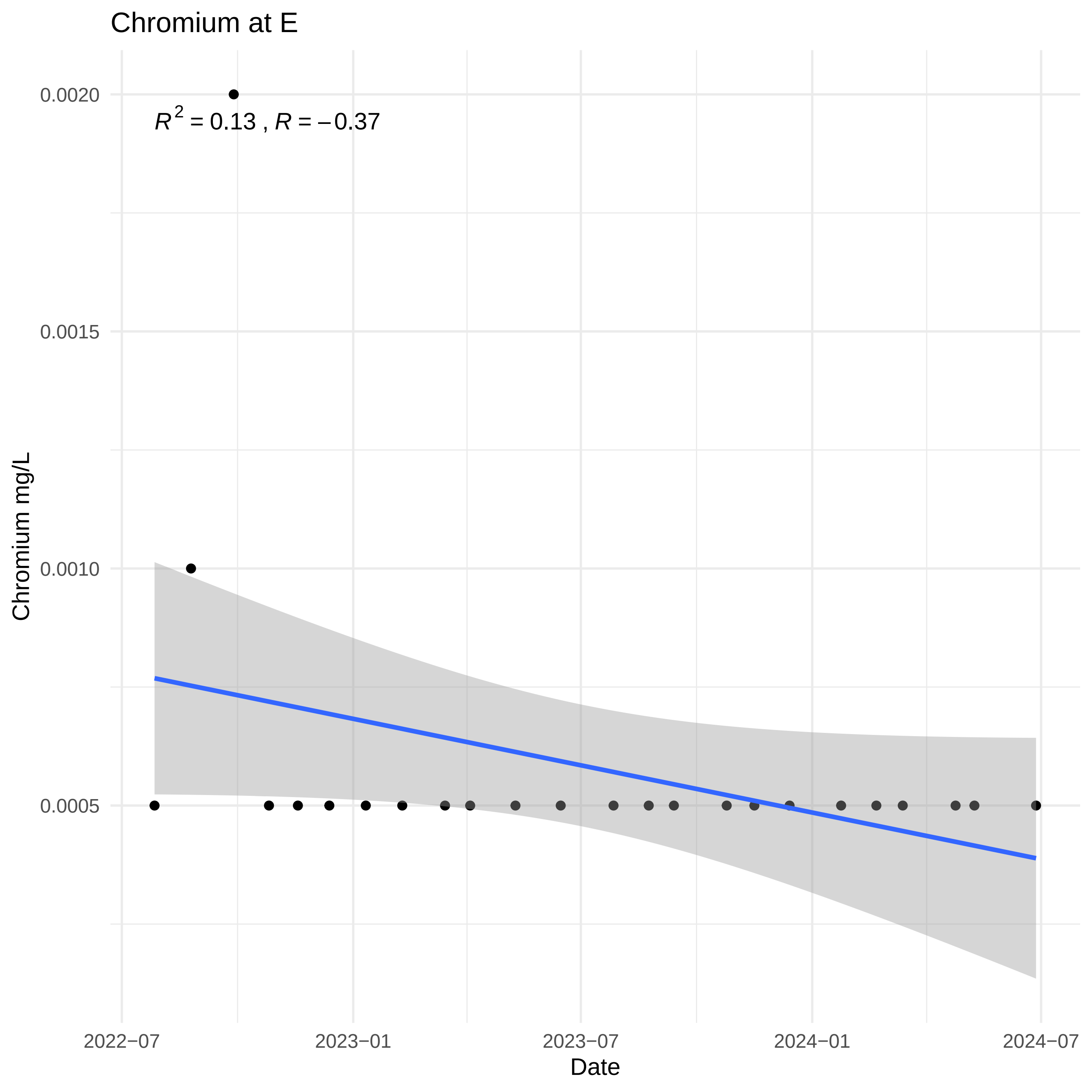


Chloride at E
$R^2 = 0.21$, $R = 0.46$
600
400
200
0
Chloride mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

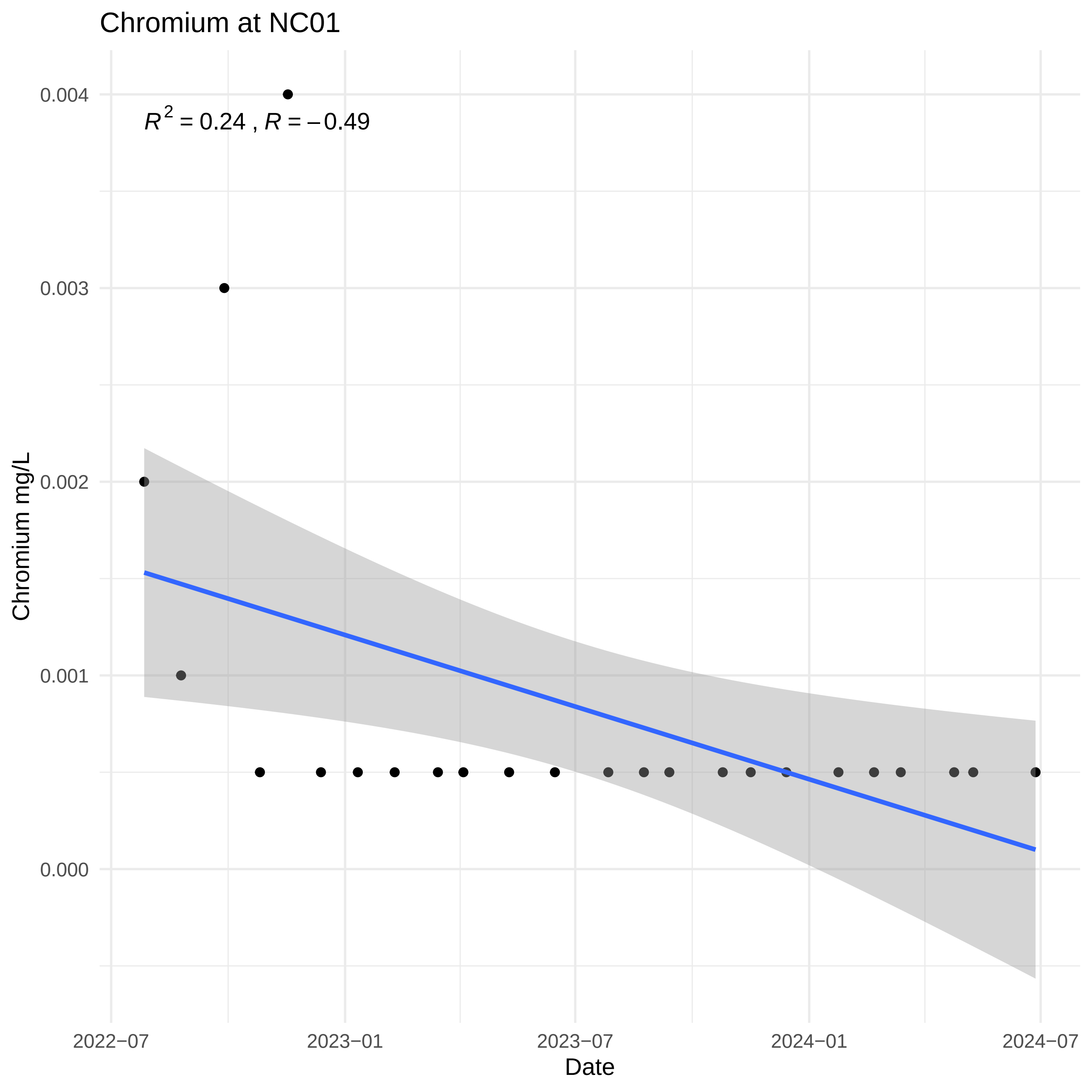


Chloride at NC01
R^2 = 0.083 , R = 0.29
Chloride mg/L
16
12
8
4
2022−07
2023−01
2023−07
2024−01
2024−07
Date

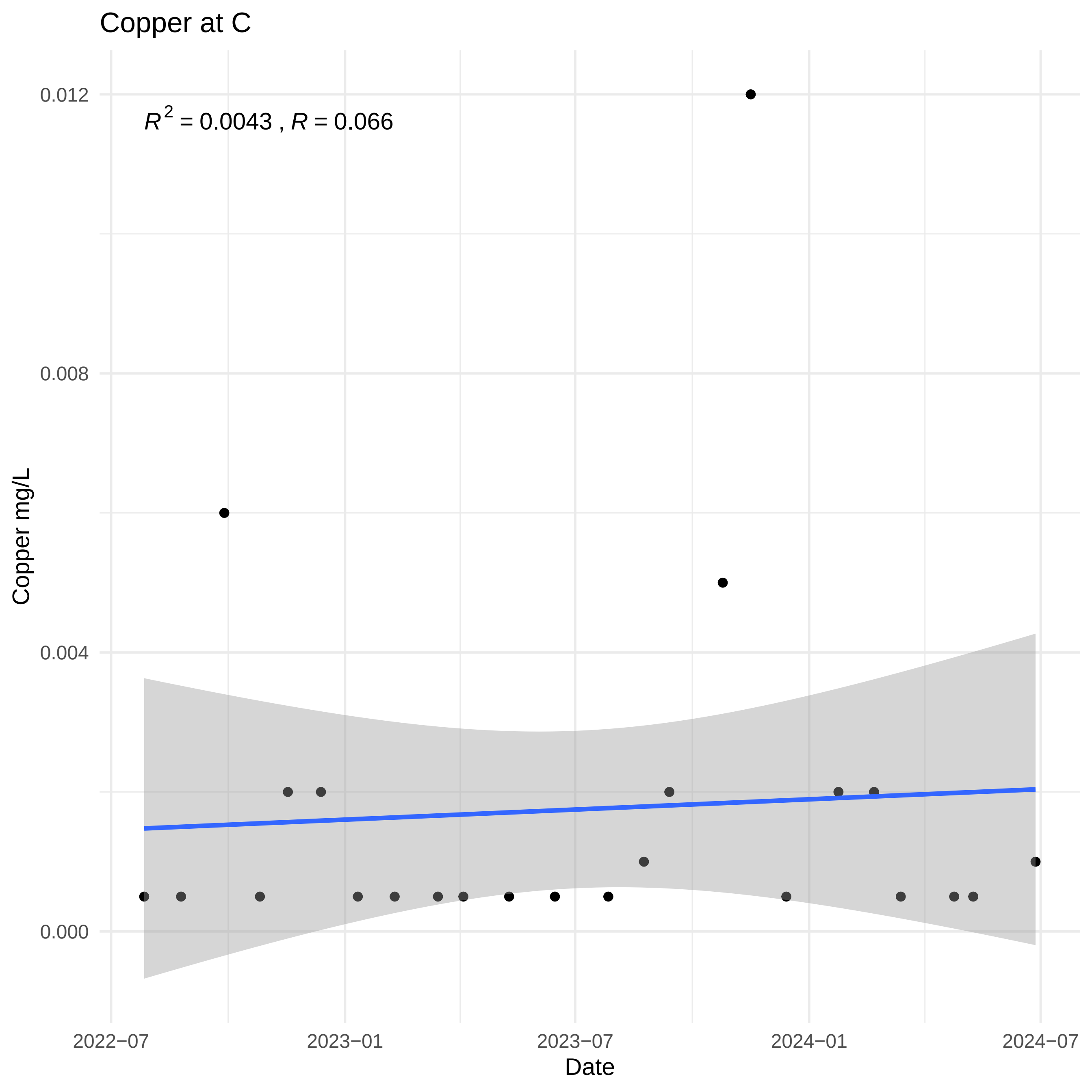

Chromium at C
$R^2 = 0.059$, $R = 0.24$
0.006
0.004
0.002
0.000
Chromium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



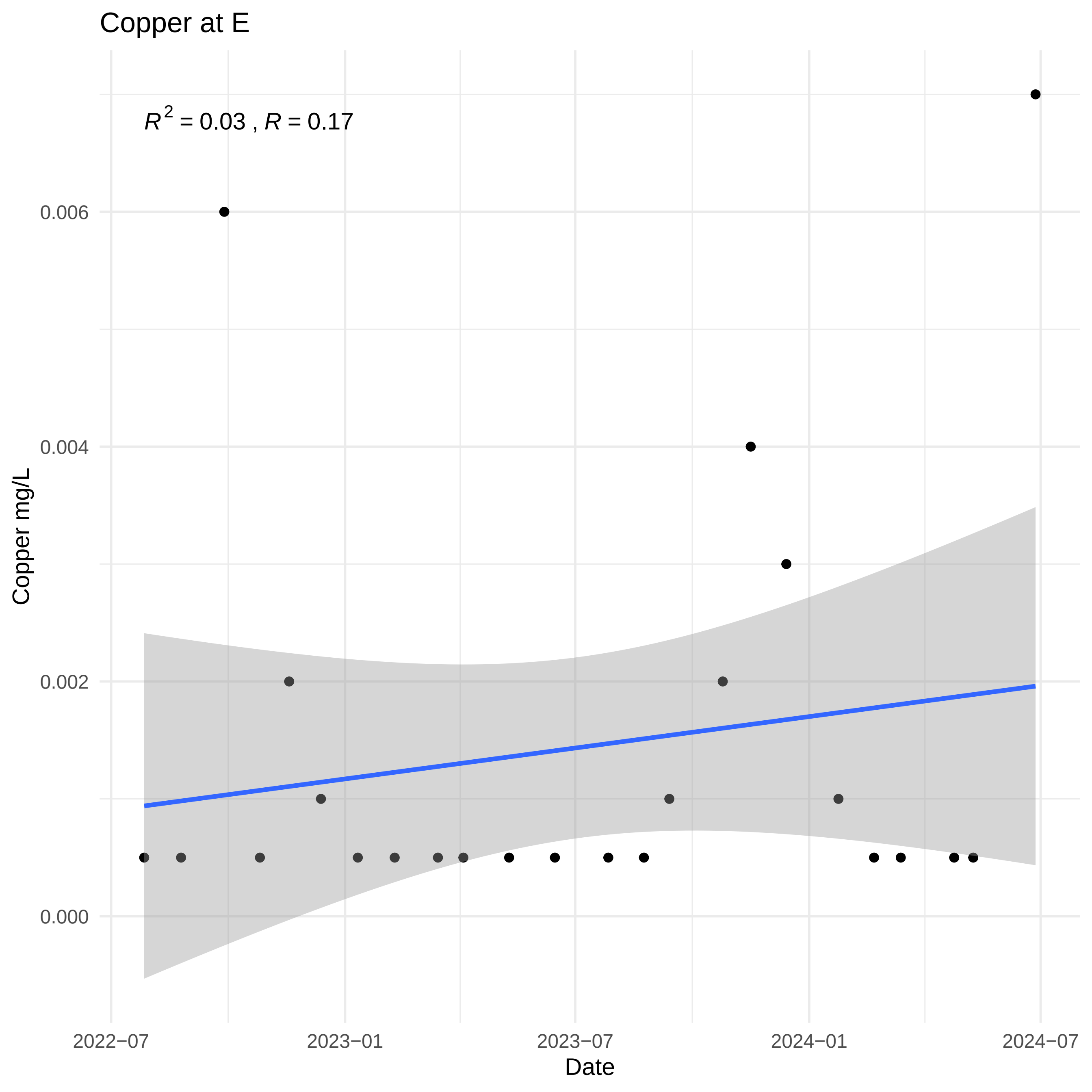
Chromium at E
$R^2 = 0.13$, $R = -0.37$
Chromium mg/L
0.0020
0.0015
0.0010
0.0005
2022−07
2023−01
2023−07
2024−01
2024−07
Date

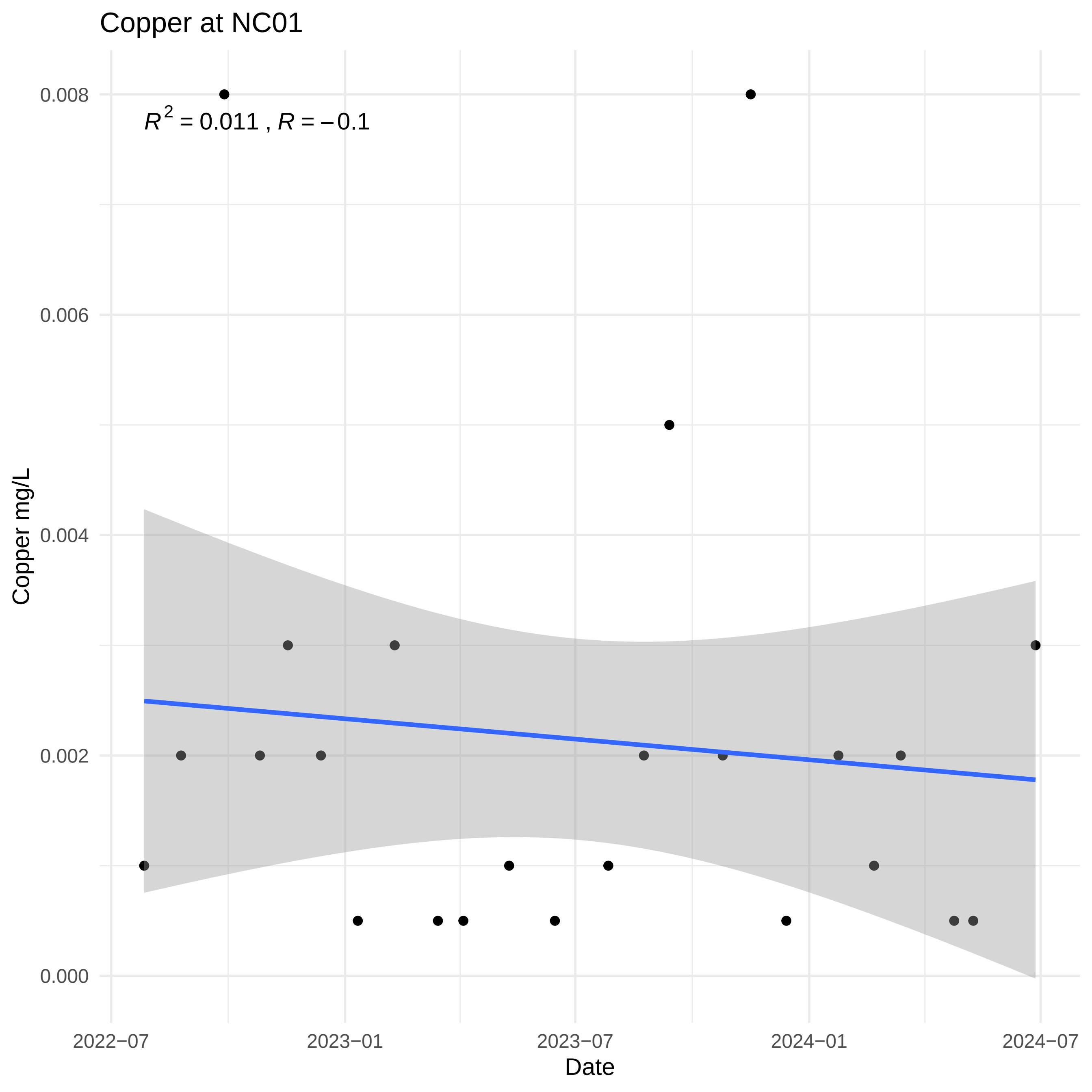


Chromium at NC01
$R^2 = 0.24$, $R = -0.49$
0.004
0.003
0.002
0.001
0.000
Chromium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

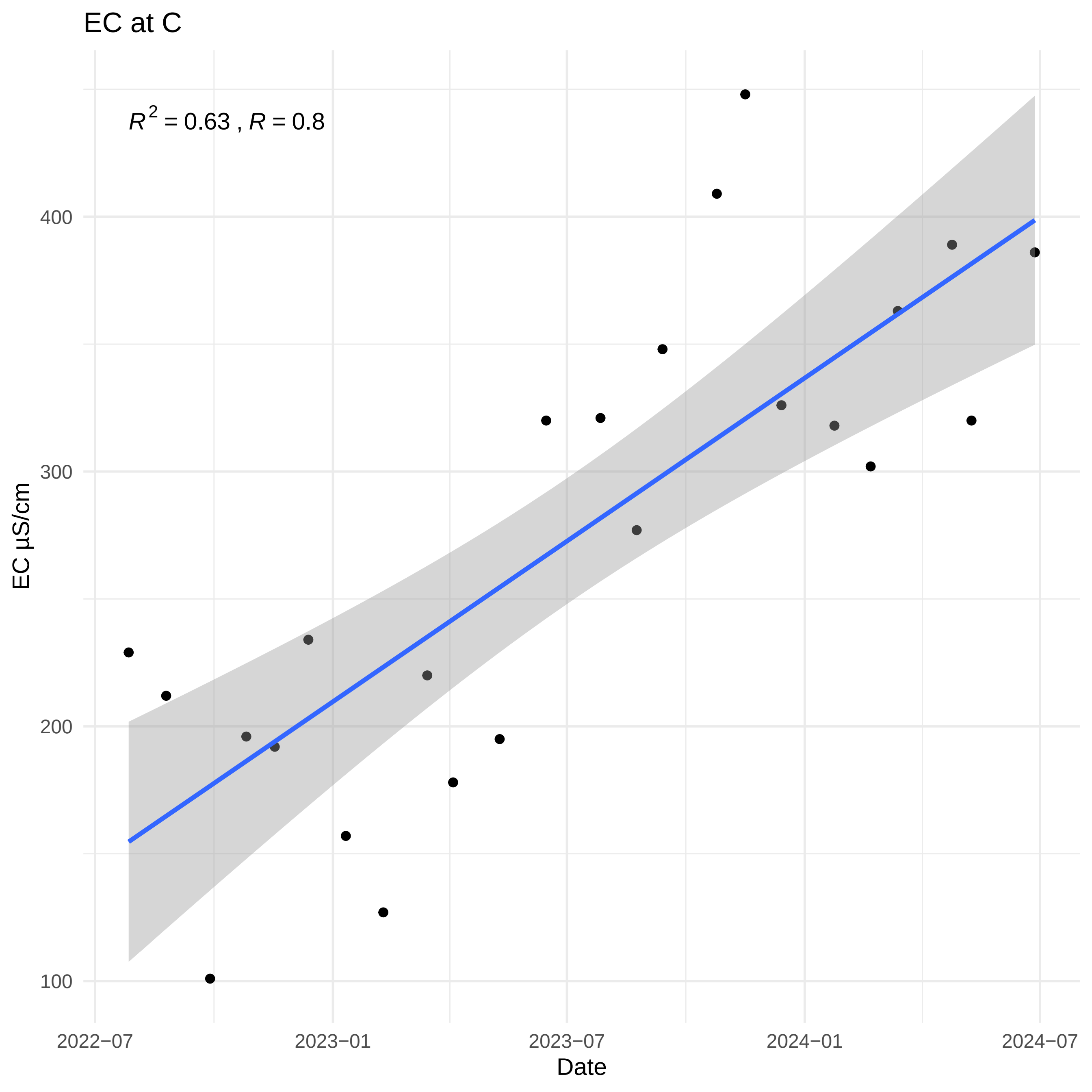


Copper at C
$R^2 = 0.0043$, $R = 0.066$
0.012
0.008
0.004
0.000
Copper mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

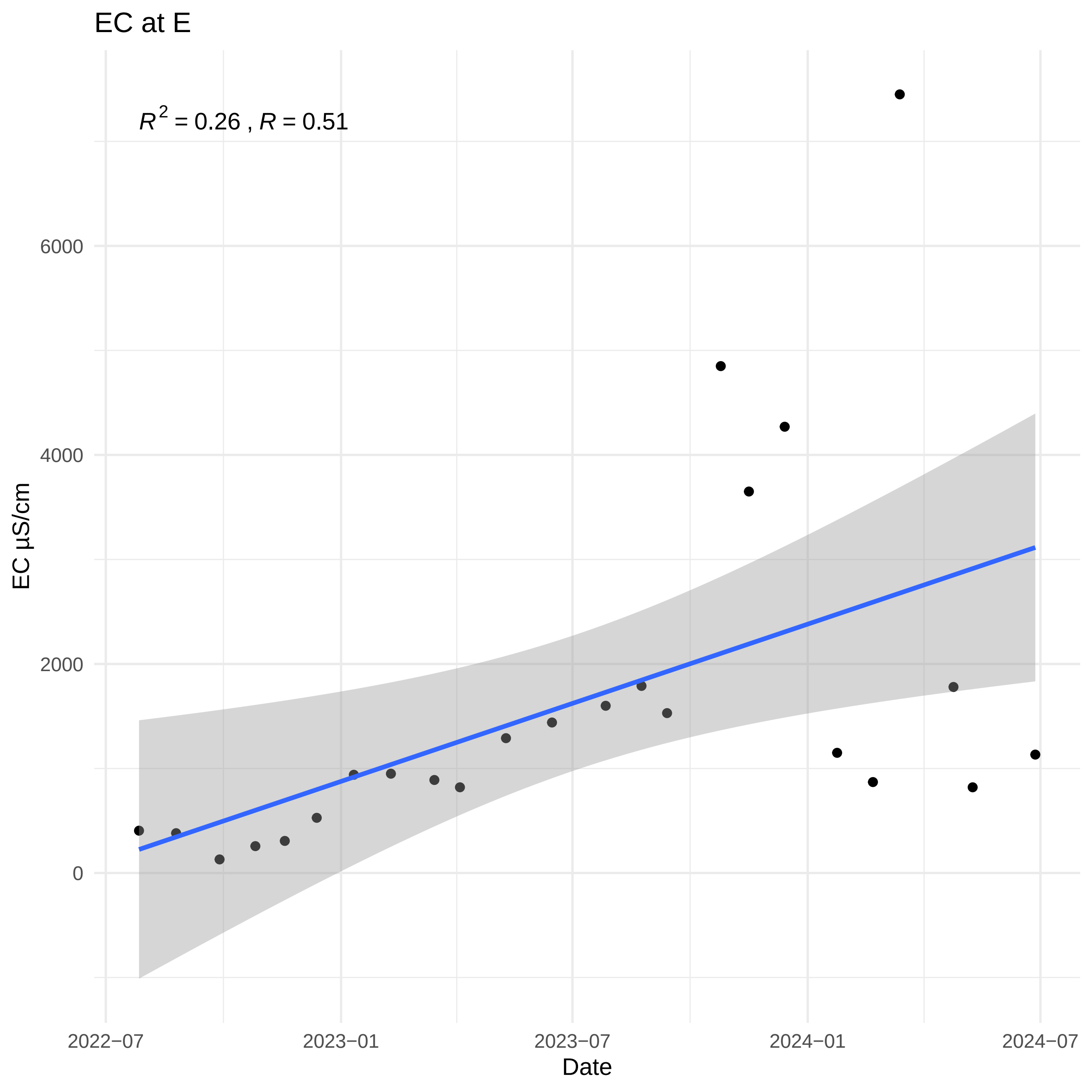

Copper at E
$R^2 = 0.03$, $R = 0.17$
0.006
0.004
0.002
0.000
Copper mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

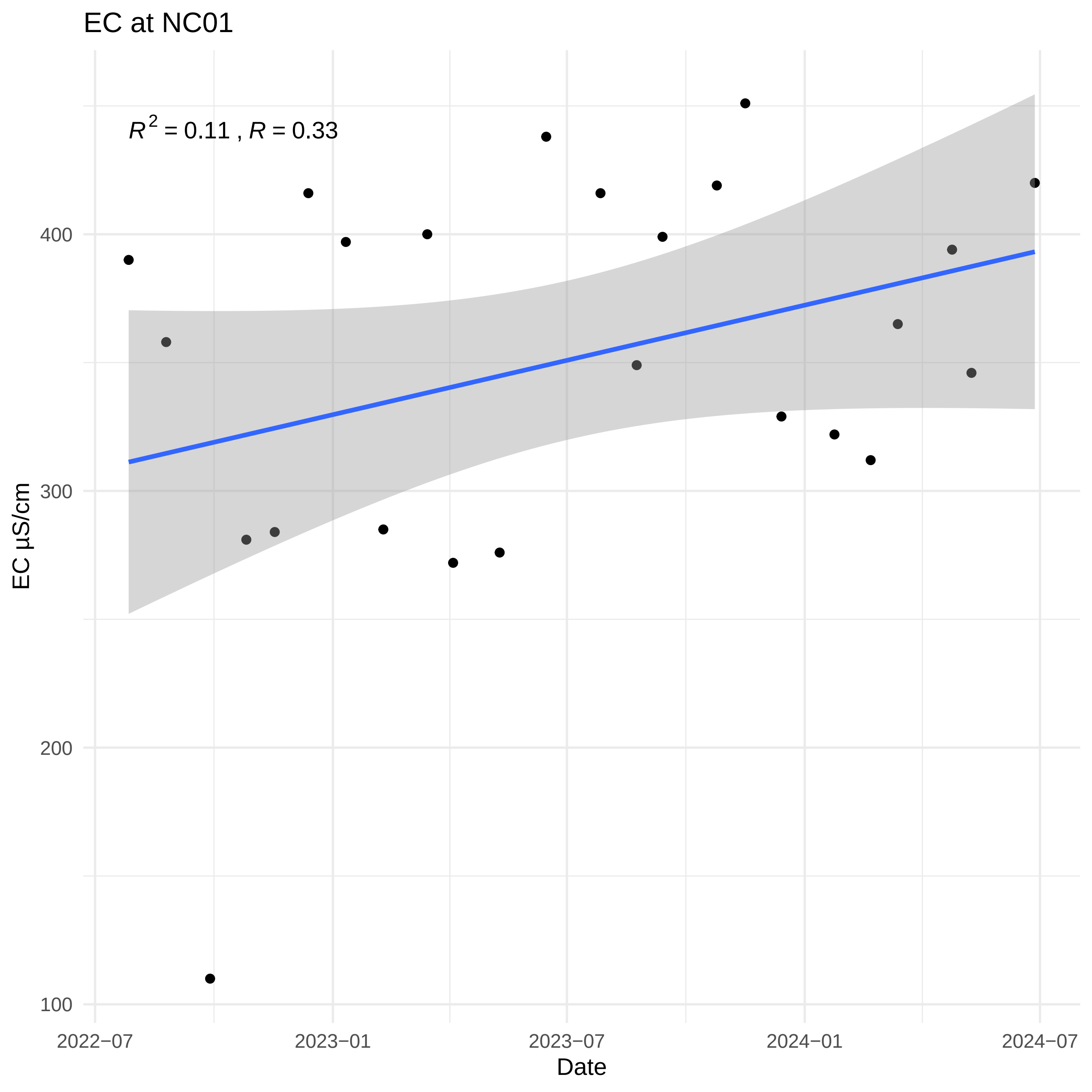


Copper at NC01
$R^2 = 0.011$, $R = -0.1$
0.008
0.006
0.004
0.002
0.000
Copper mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

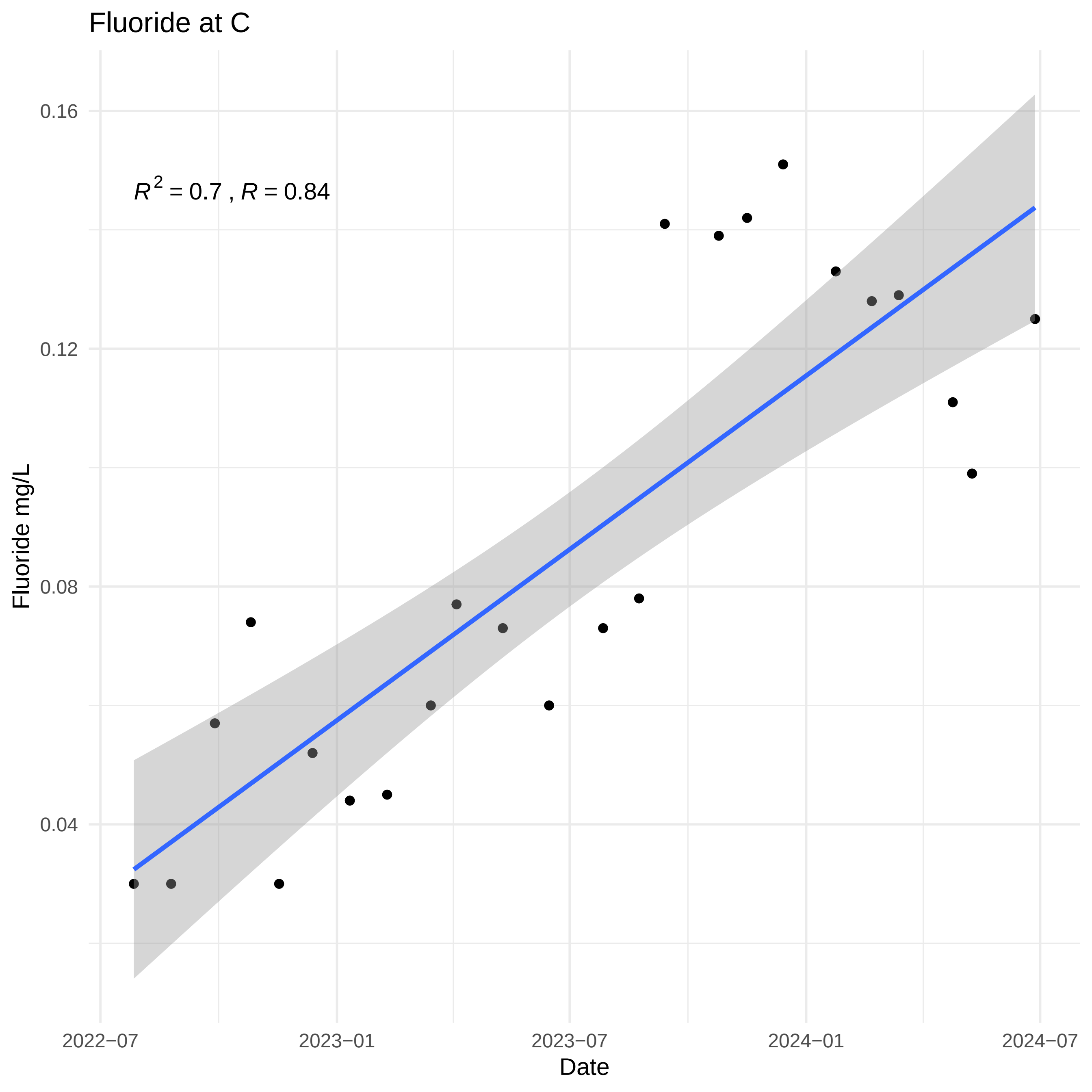


EC at C
R^2 = 0.63 , R = 0.8
EC µS/cm
400
300
200
100
2022−07
2023−01
2023−07
2024−01
2024−07
Date

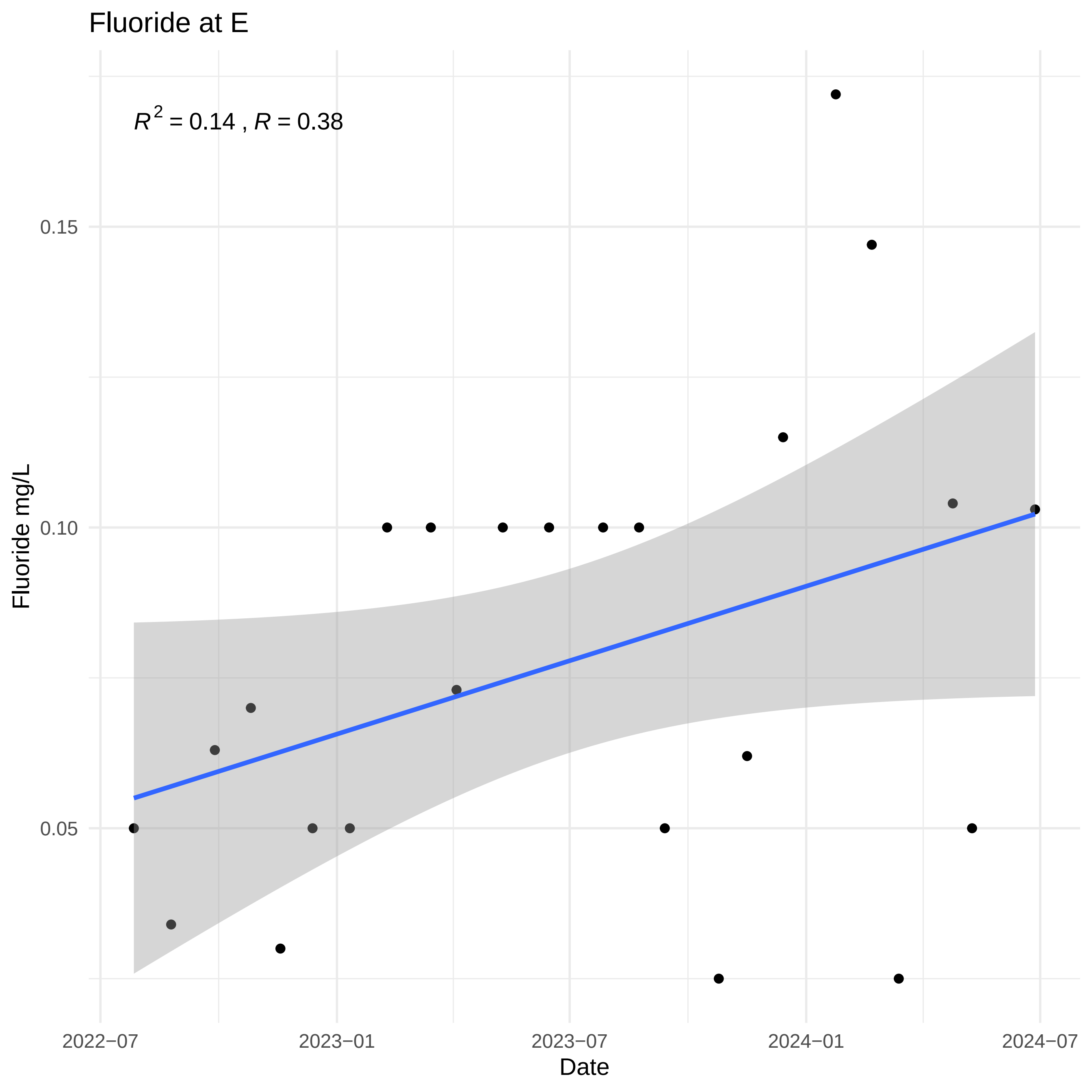

EC at E
$R^2 = 0.26$, $R = 0.51$
6000
4000
2000
0
EC µS/cm
2022−07
2023−01
2023−07
2024−01
2024−07
Date



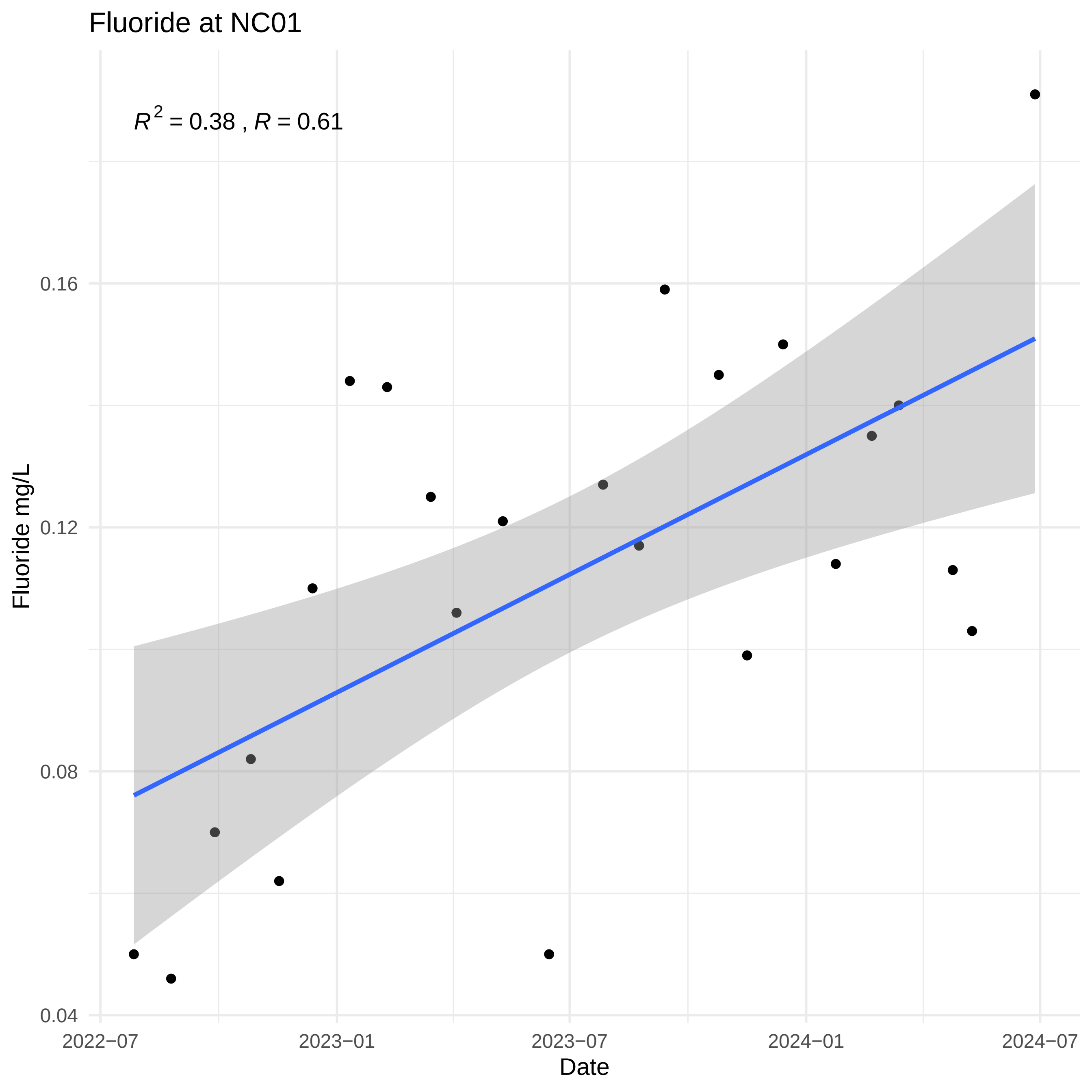
EC at NC01
$R^2 = 0.11$, $R = 0.33$
EC µS/cm
100
200
300
400
2022−07
2023−01
2023−07
2024−01
2024−07
Date

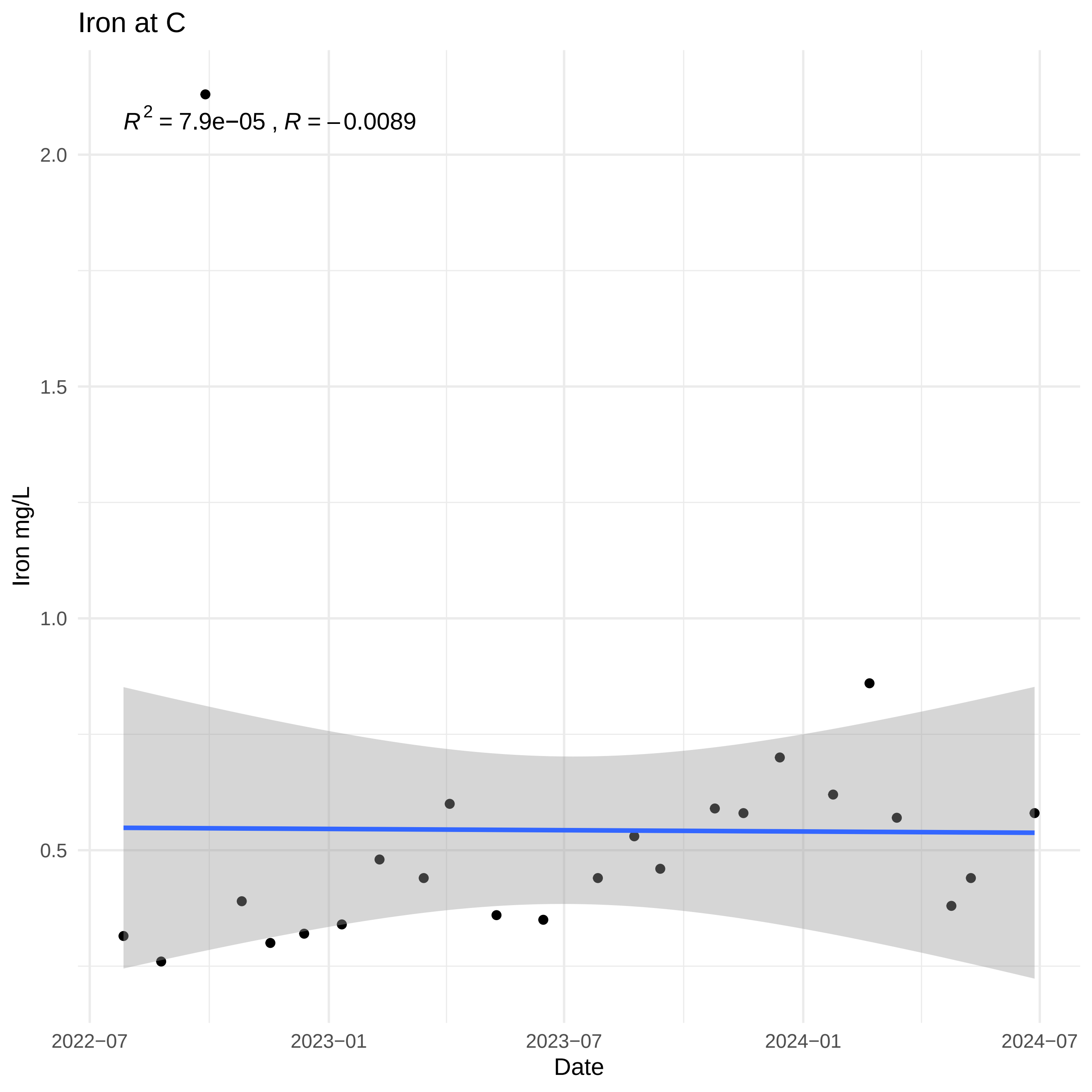


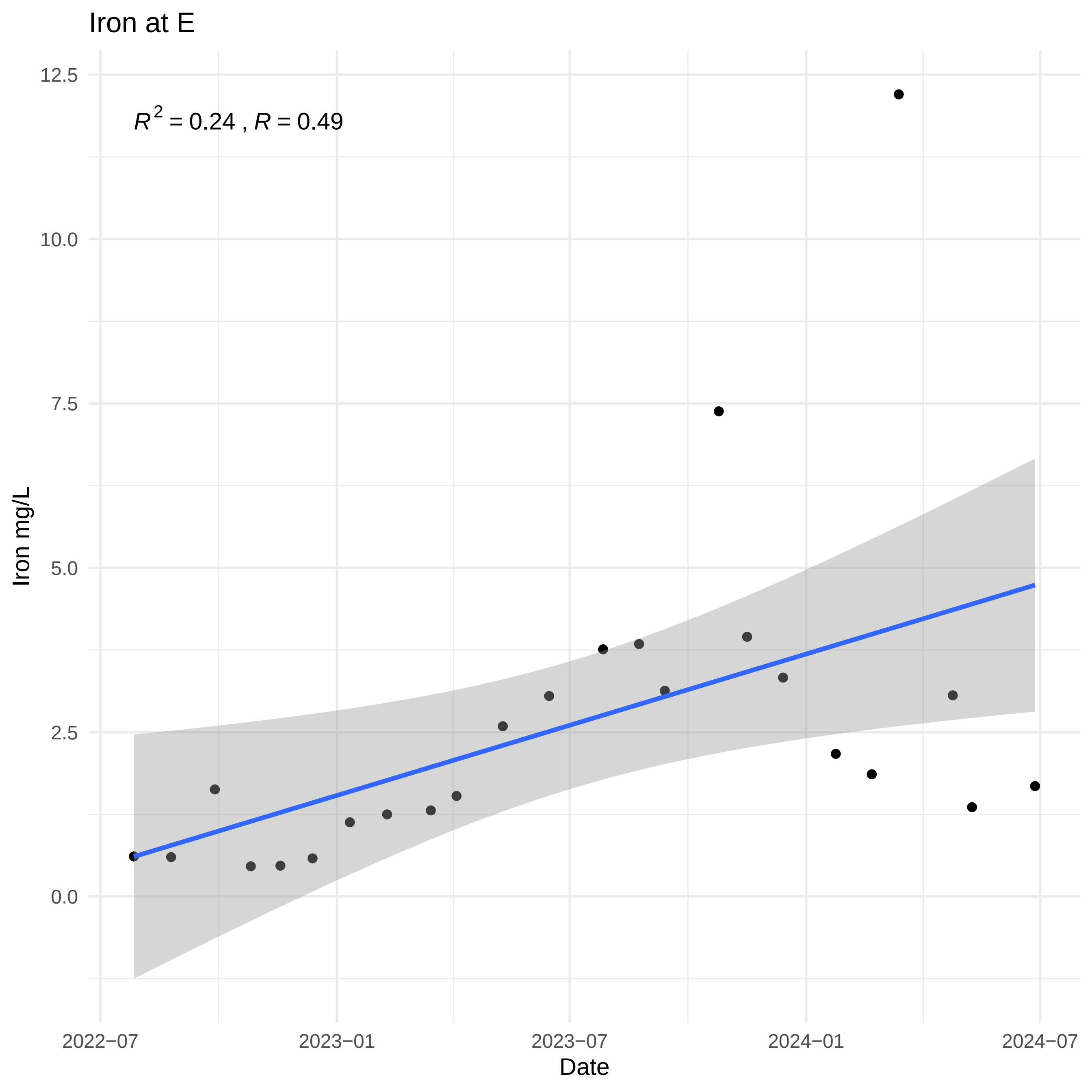
Fluoride at C
$R^2 = 0.7$, $R = 0.84$
0.16
0.12
0.08
0.04
Fluoride mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



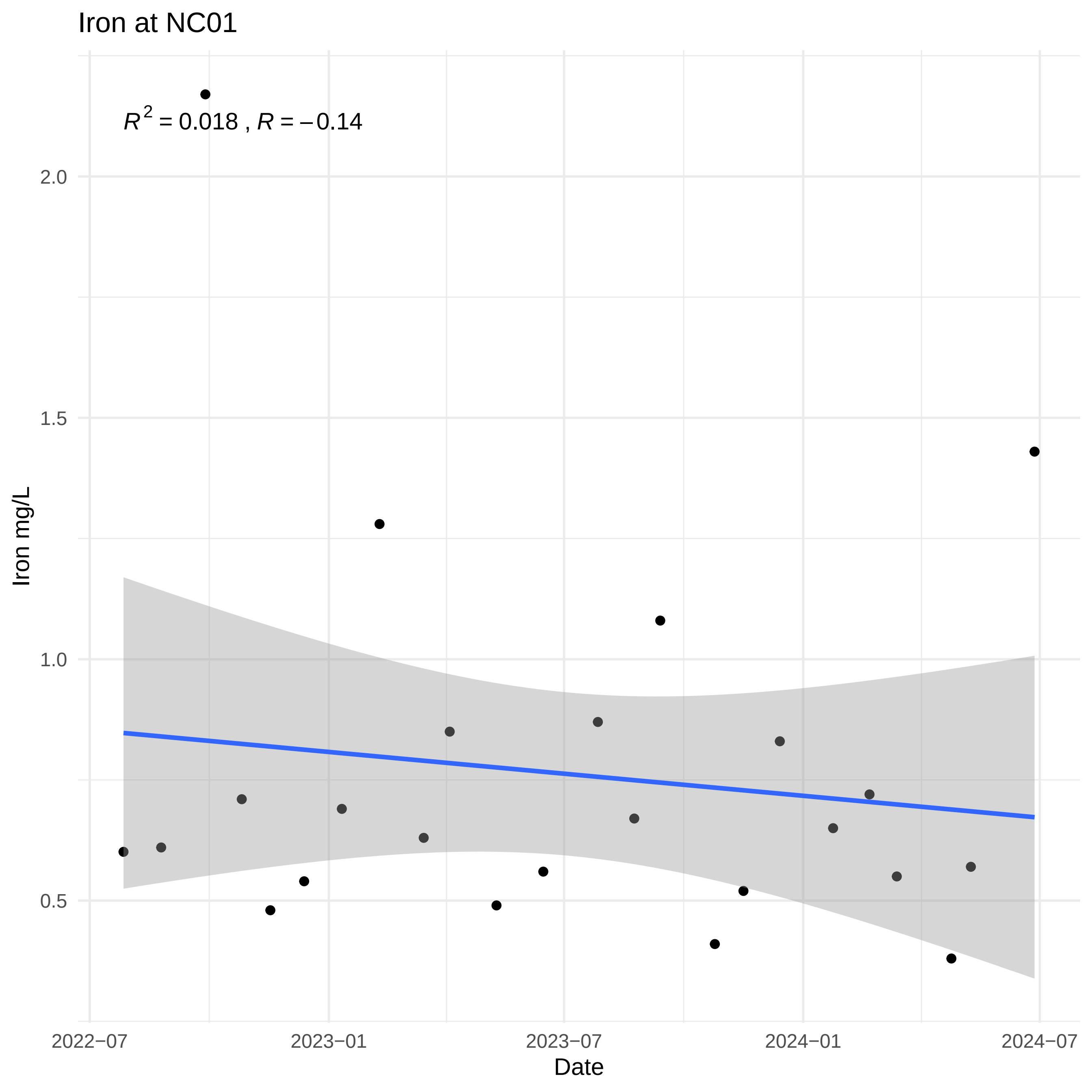
Fluoride at E
$R^2 = 0.14$, $R = 0.38$
0.15
0.10
0.05
Fluoride mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date


Fluoride at NC01
$R^2 = 0.38$, $R = 0.61$
Fluoride mg/L
0.16
0.12
0.08
0.04
2022−07
2023−01
2023−07
2024−01
2024−07
Date

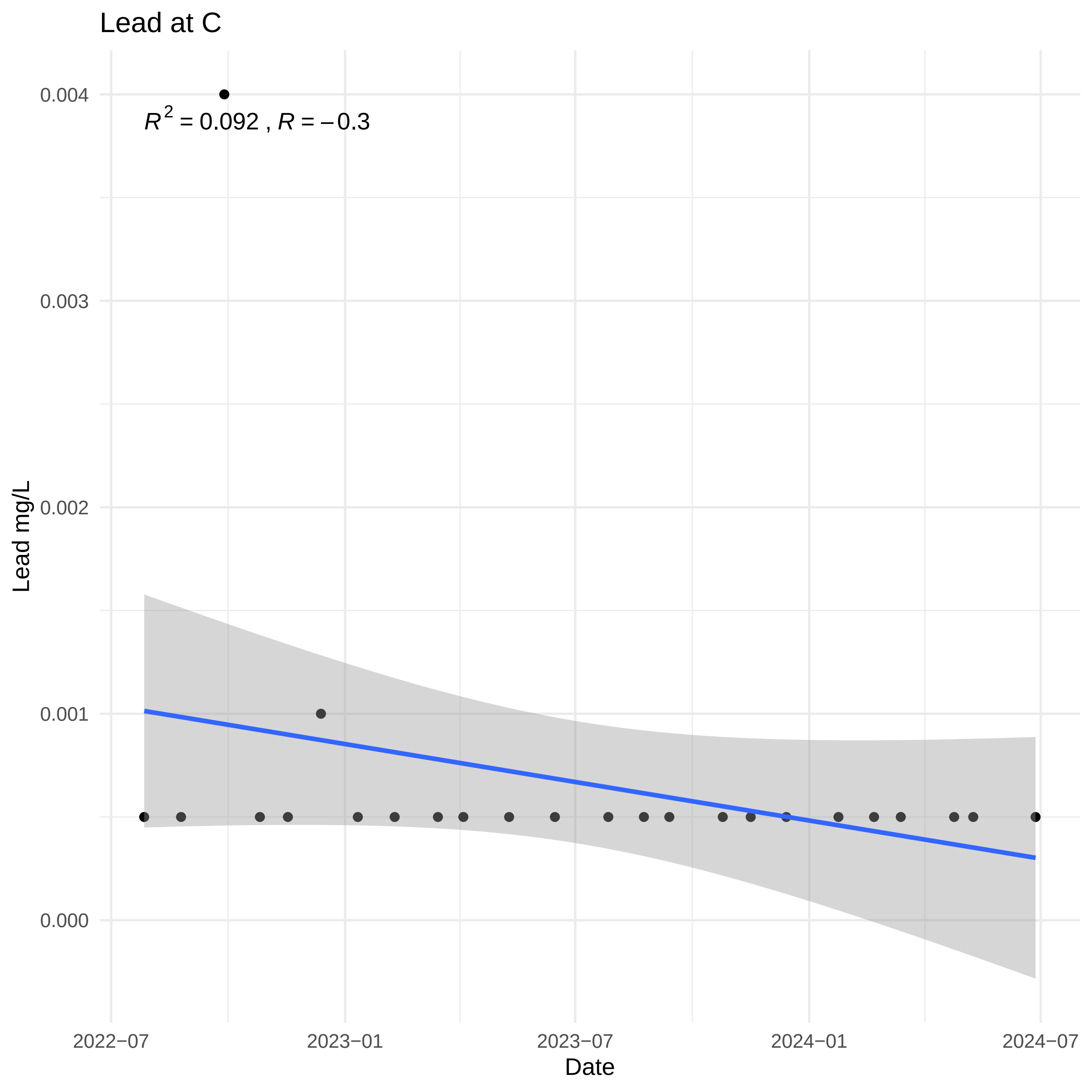

Iron at C
$R^2 = 7.9e-05$, $R = -0.0089$
2.0
1.5
1.0
0.5
Iron mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



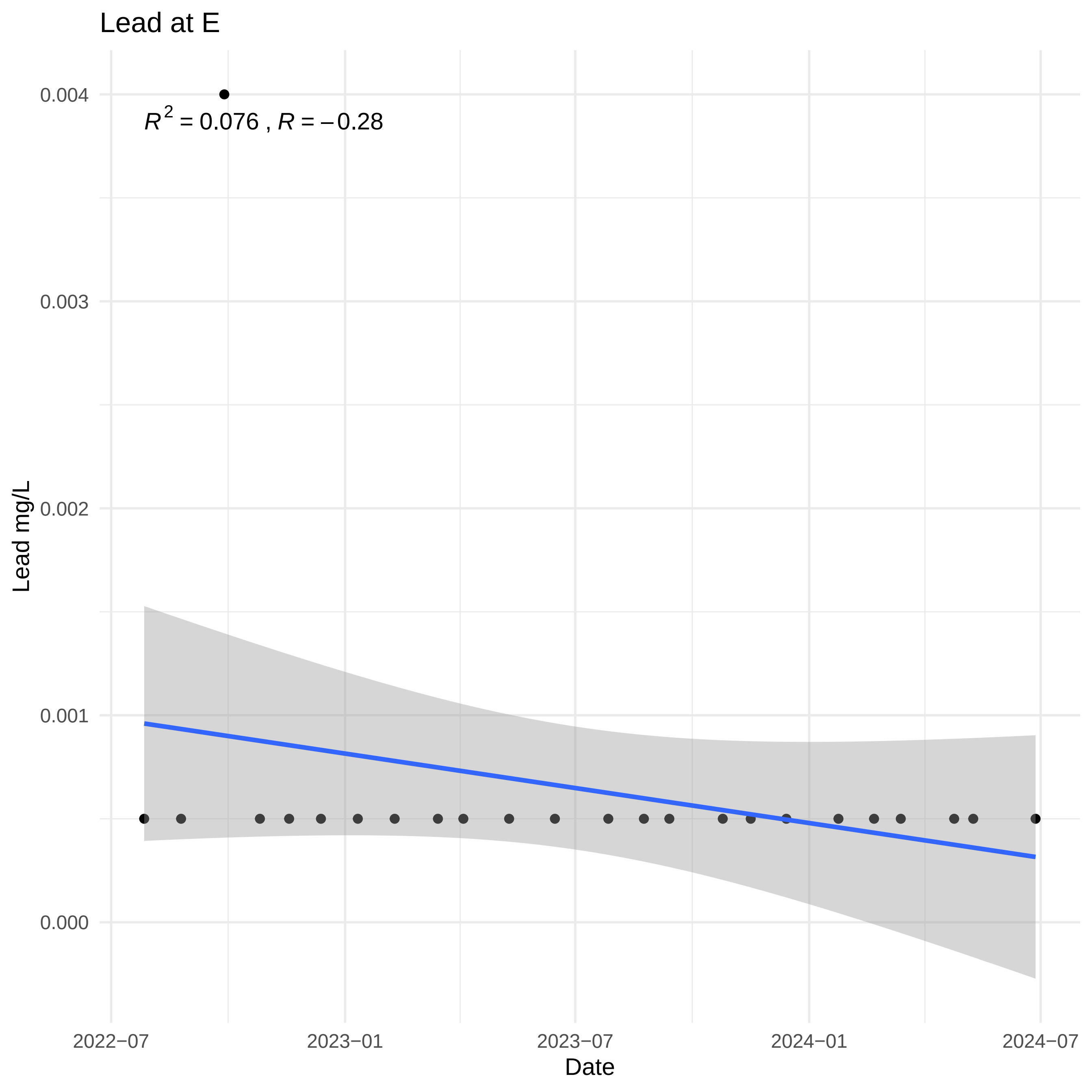
Iron at E
$R^2 = 0.24$, $R = 0.49$
12.5
10.0
7.5
5.0
2.5
0.0
Iron mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



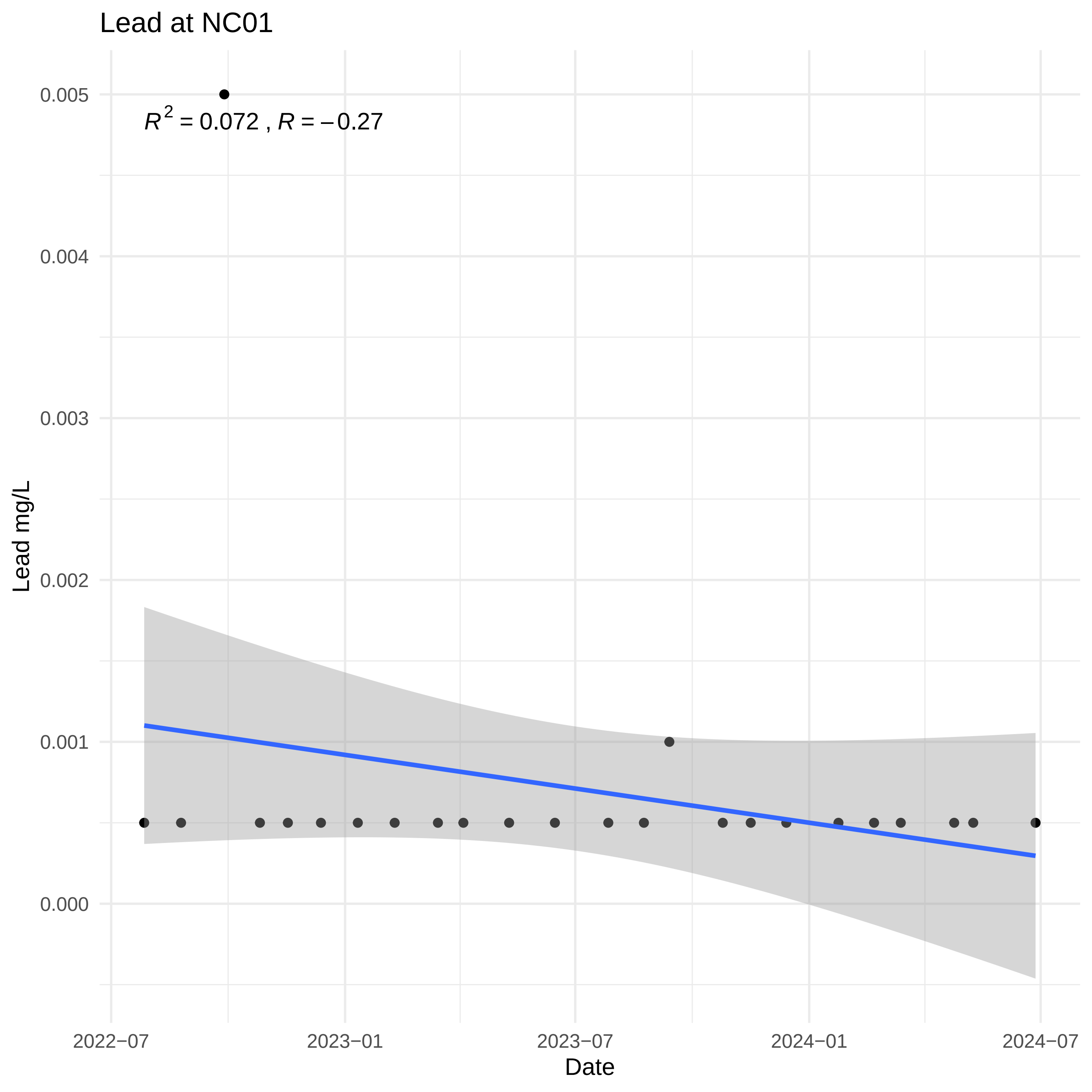
Iron at NC01
$R^2 = 0.018$, $R = -0.14$
2.0
1.5
1.0
0.5
Iron mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

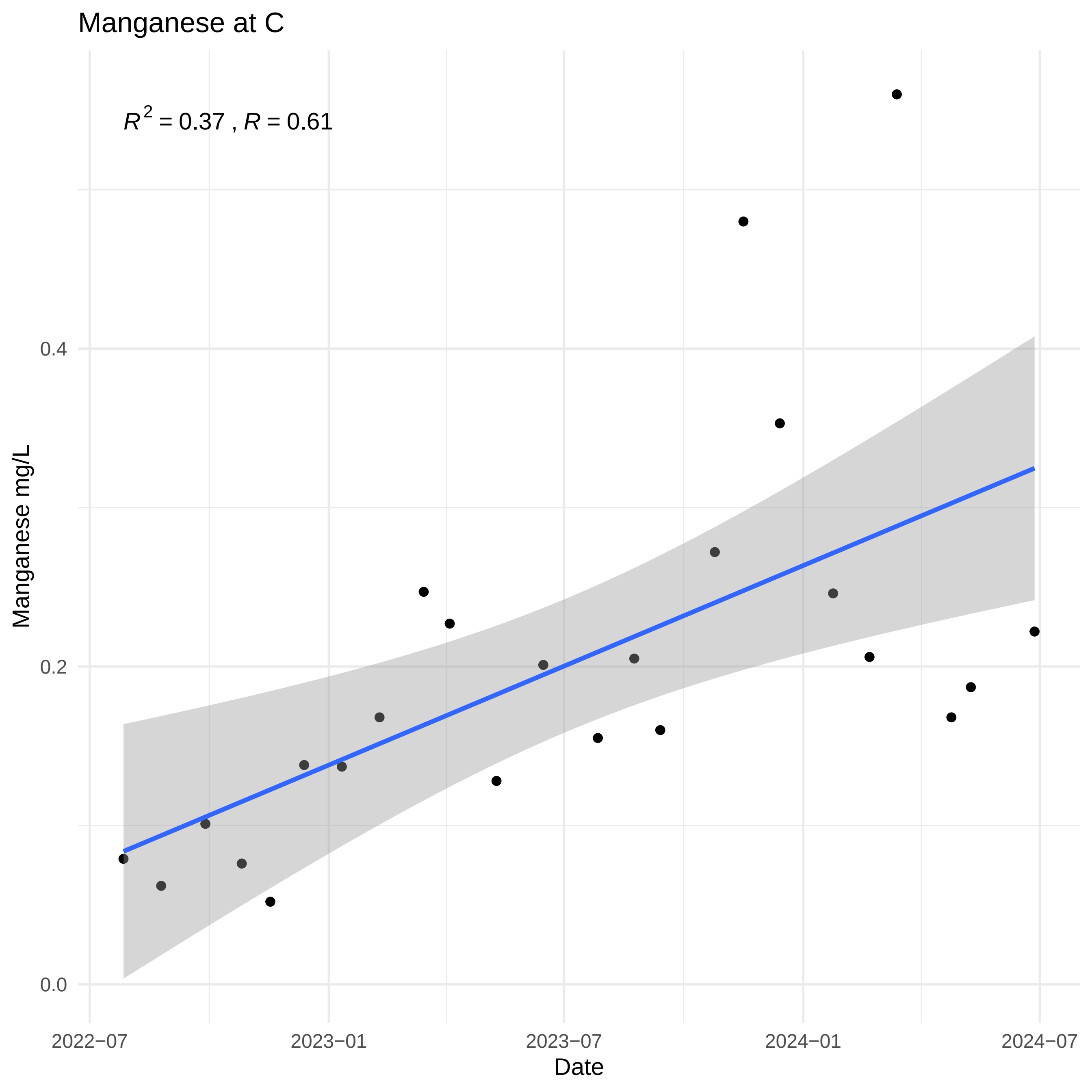


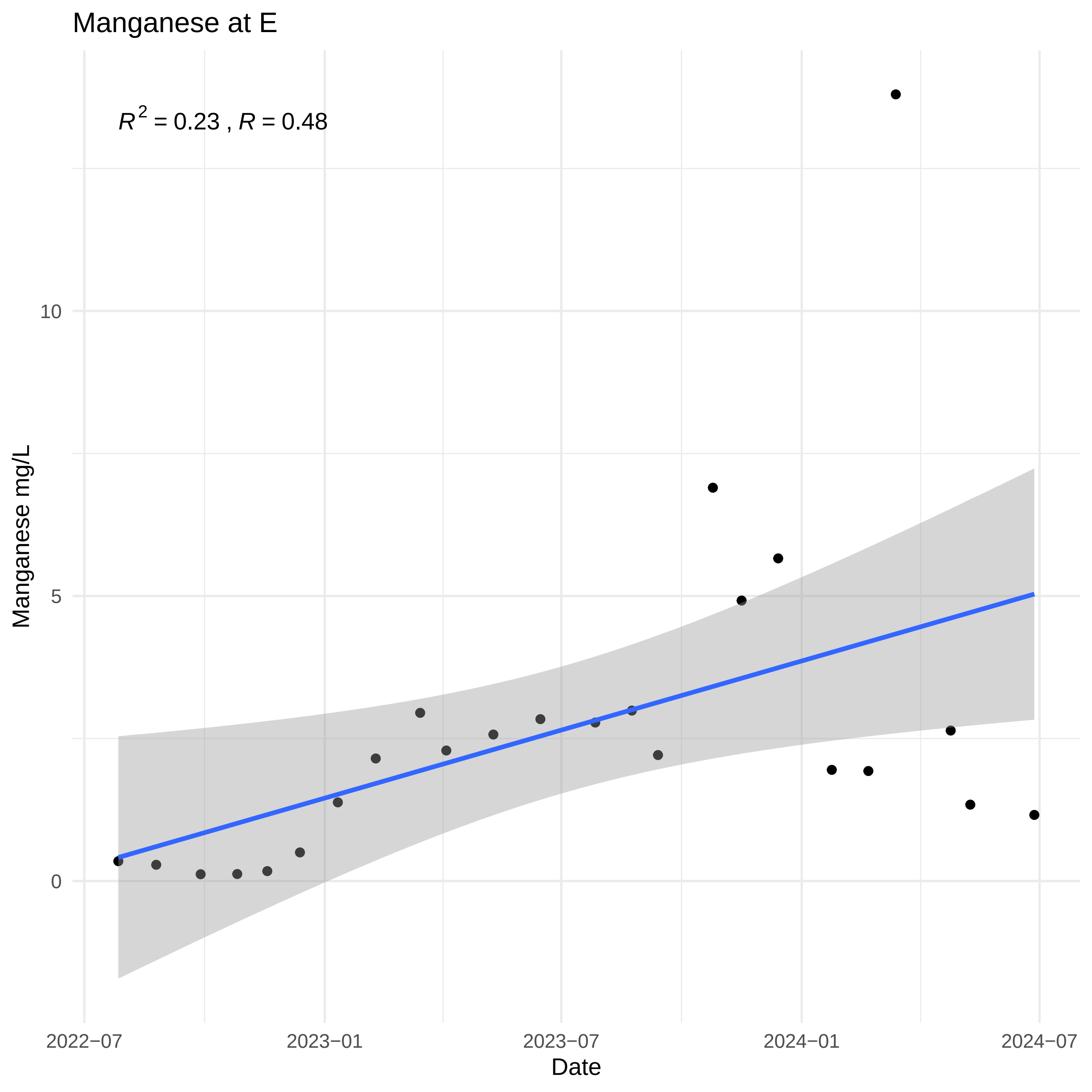
Lead at C
$R^2 = 0.092$, $R = -0.3$
0.004
0.003
0.002
0.001
0.000
Lead mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



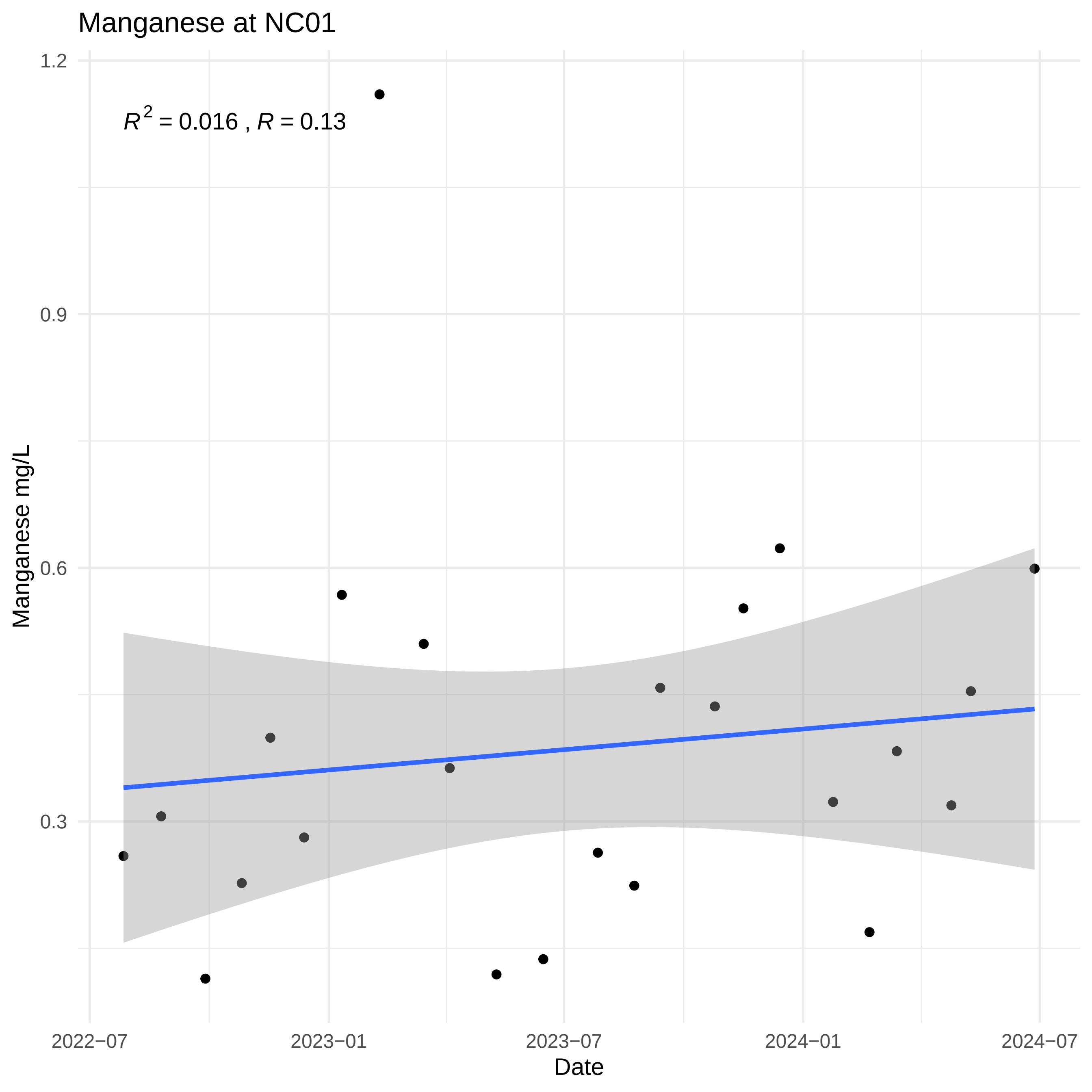
Lead at E
$R^2 = 0.076$, $R = -0.28$
0.004
0.003
0.002
0.001
0.000
Lead mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date


Lead at NC01
$R^2 = 0.072$, $R = -0.27$
0.005
0.004
0.003
0.002
0.001
0.000
Lead mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

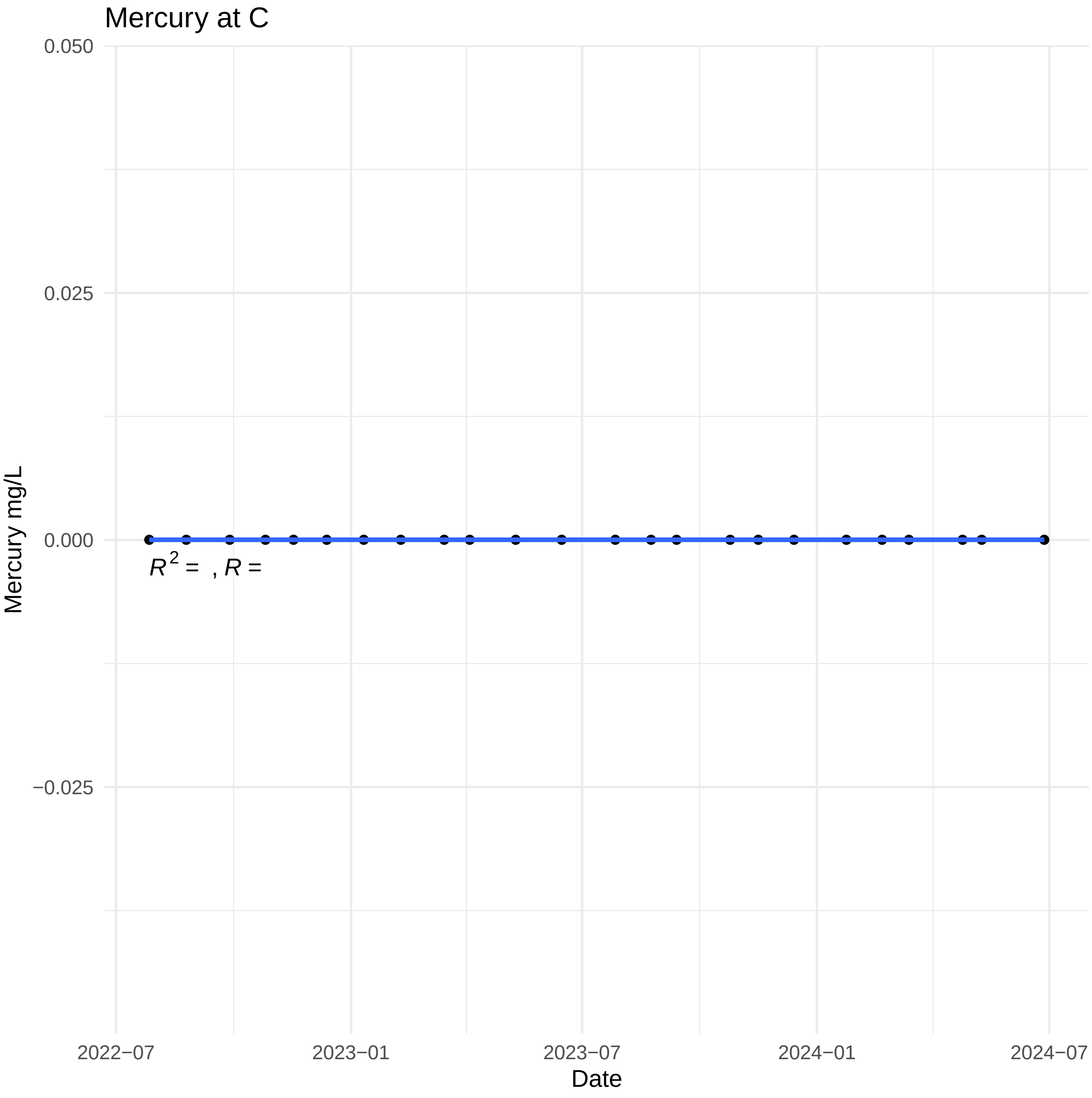

Manganese at C
R^2 = 0.37 , R = 0.61
Manganese mg/L
0.0
0.2
0.4
2022−07
2023−01
2023−07
2024−01
2024−07
Date



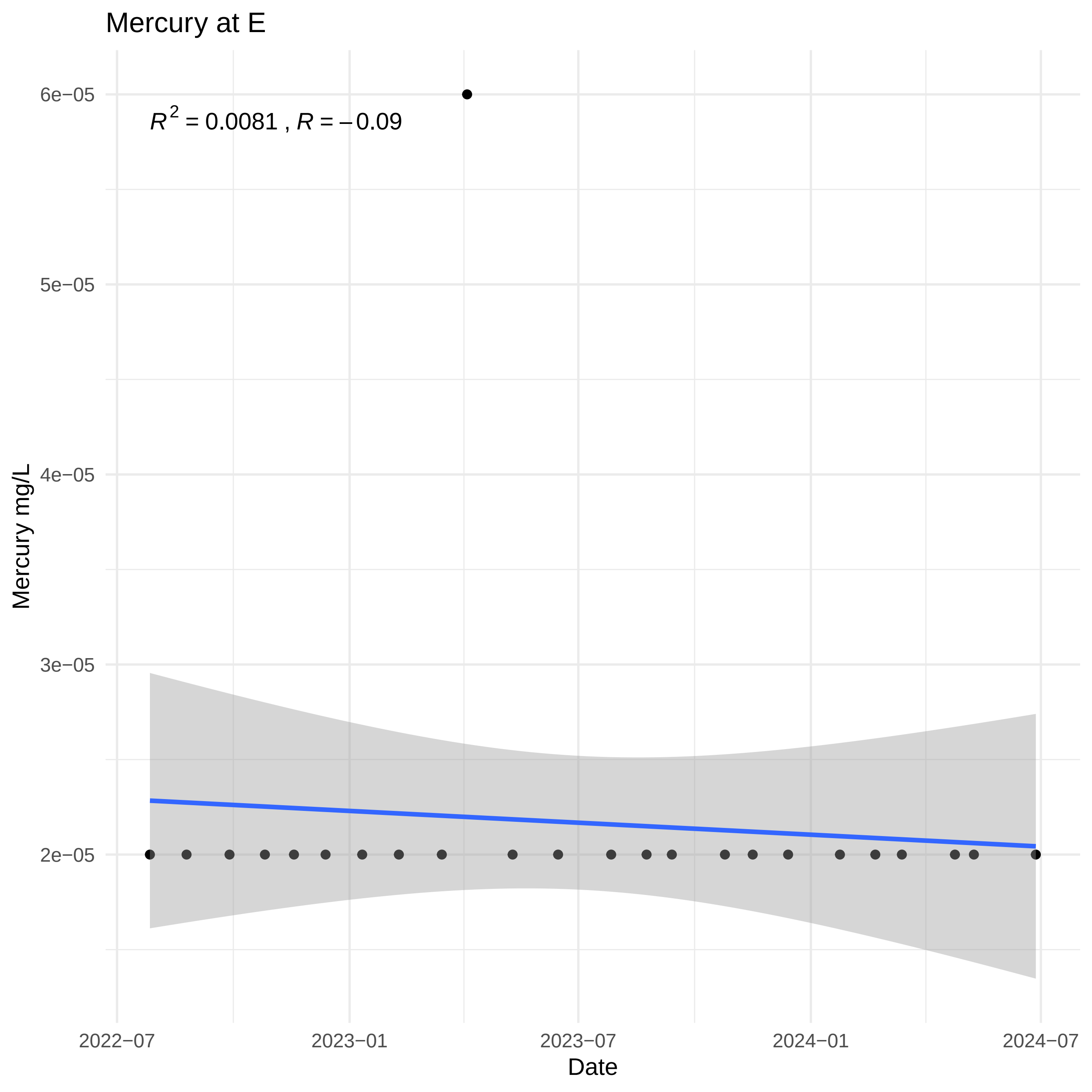
Manganese at E
$R^2 = 0.23$, $R = 0.48$
Manganese mg/L
10
5
0
2022−07
2023−01
2023−07
2024−01
2024−07
Date



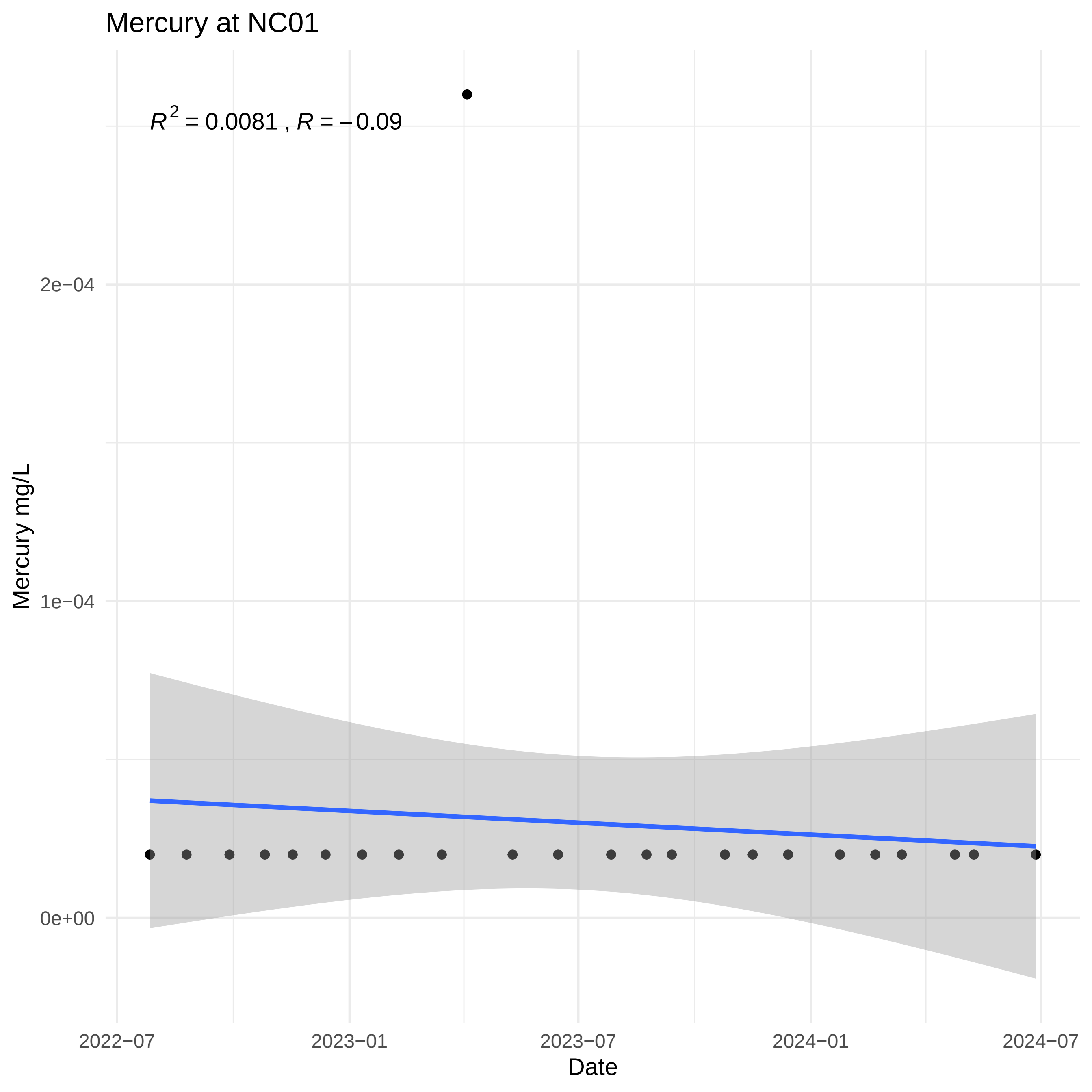
Manganese at NC01
R^2 = 0.016 , R = 0.13
Manganese mg/L
1.2
0.9
0.6
0.3
2022−07
2023−01
2023−07
2024−01
2024−07
Date

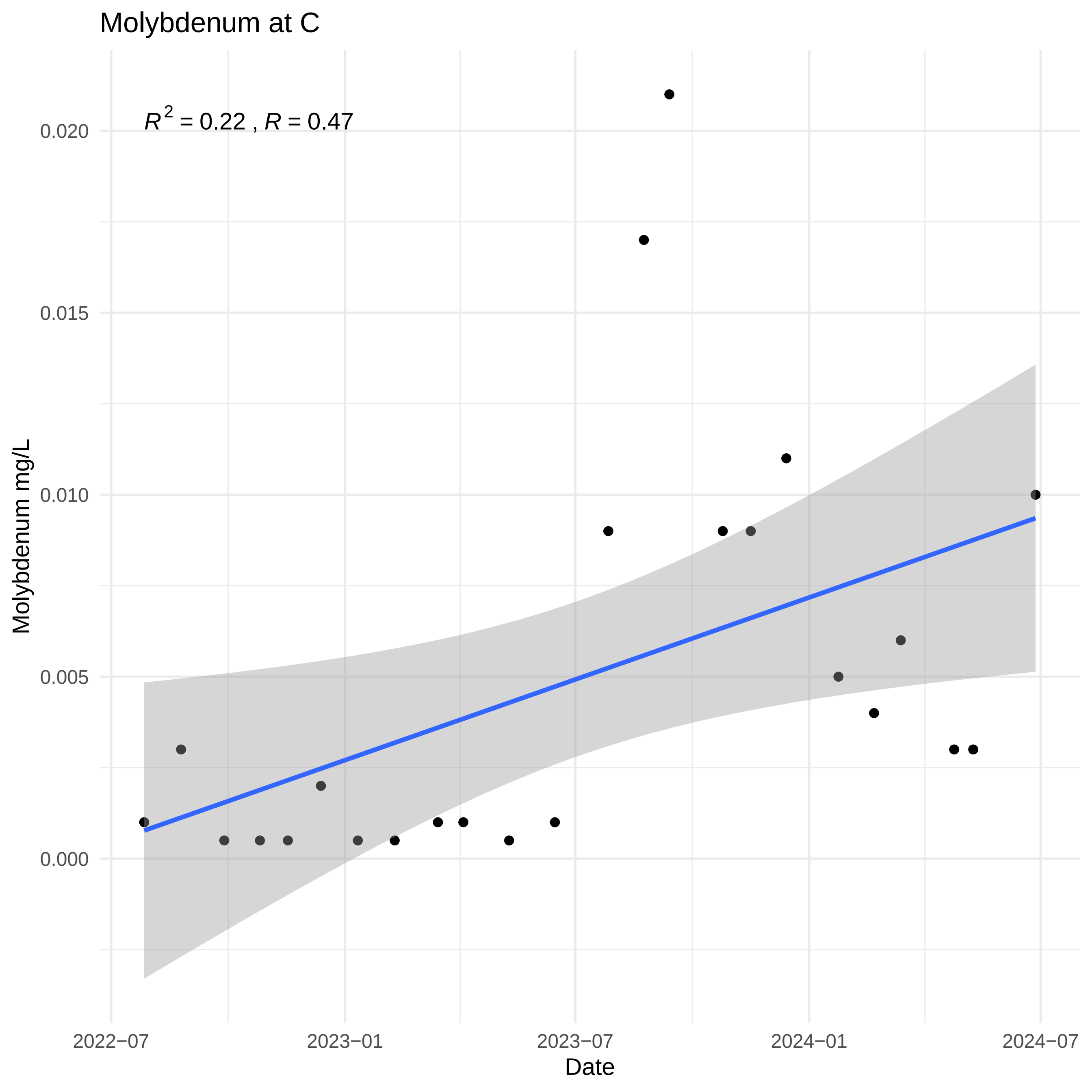


Mercury at C
0.050
0.025
0.000
−0.025
Mercury mg/L
R 2 = , R =
2022−07
2023−01
2023−07
2024−01
2024−07
Date

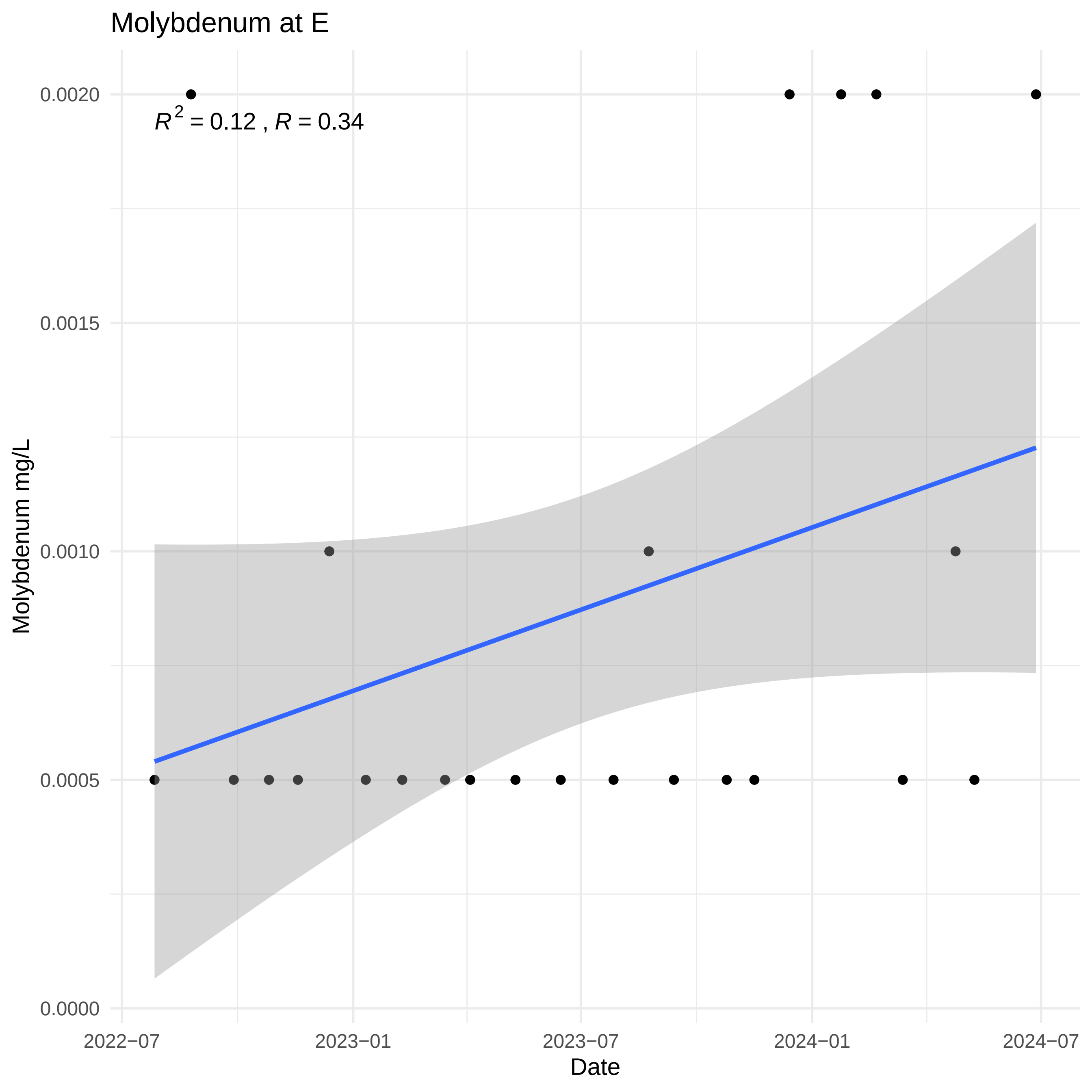


Mercury at E
$R^2 = 0.0081$, $R = -0.09$
6e−05
5e−05
4e−05
3e−05
2e−05
Mercury mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

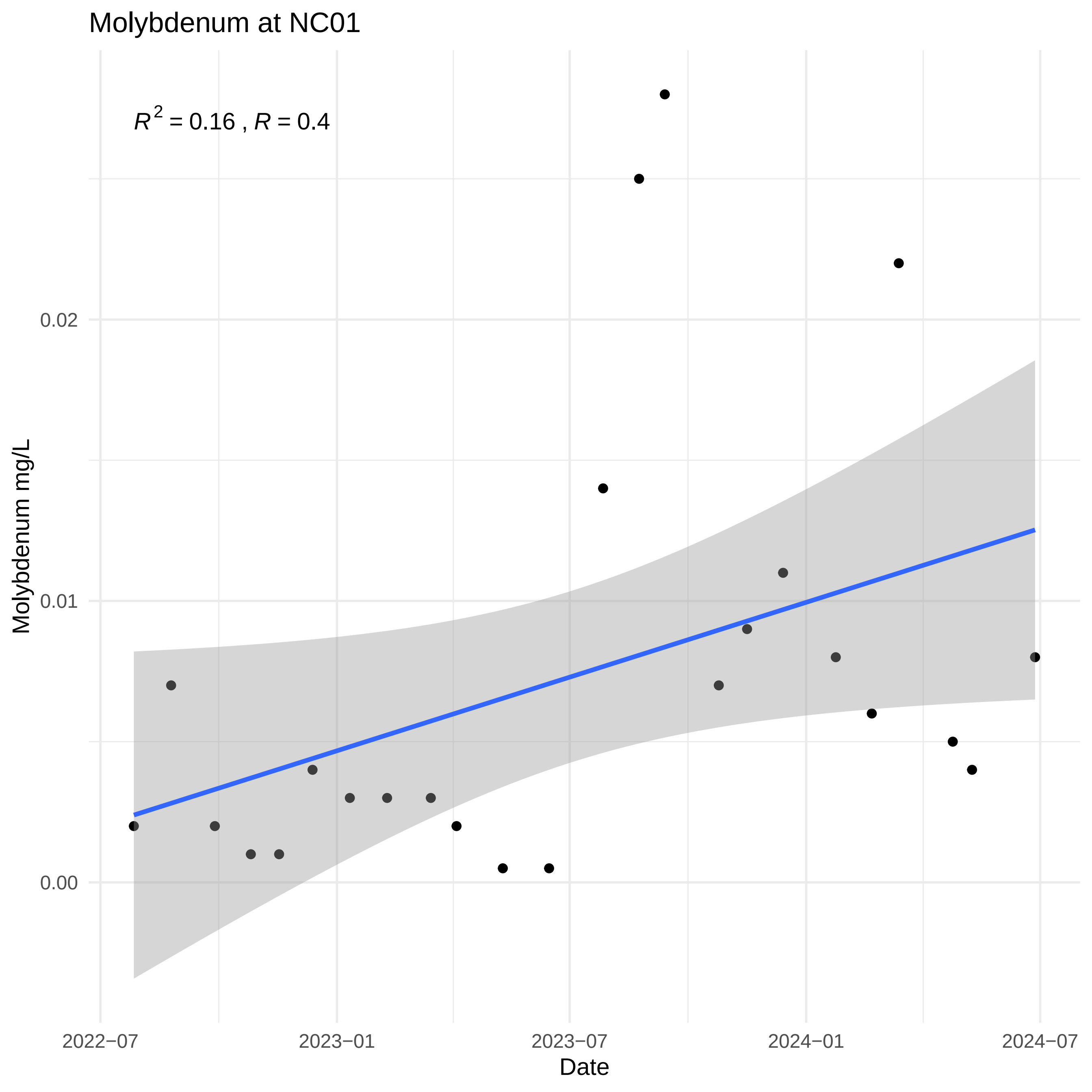

Mercury at NC01
$R^2 = 0.0081$, $R = -0.09$
2e−04
1e−04
0e+00
Mercury mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



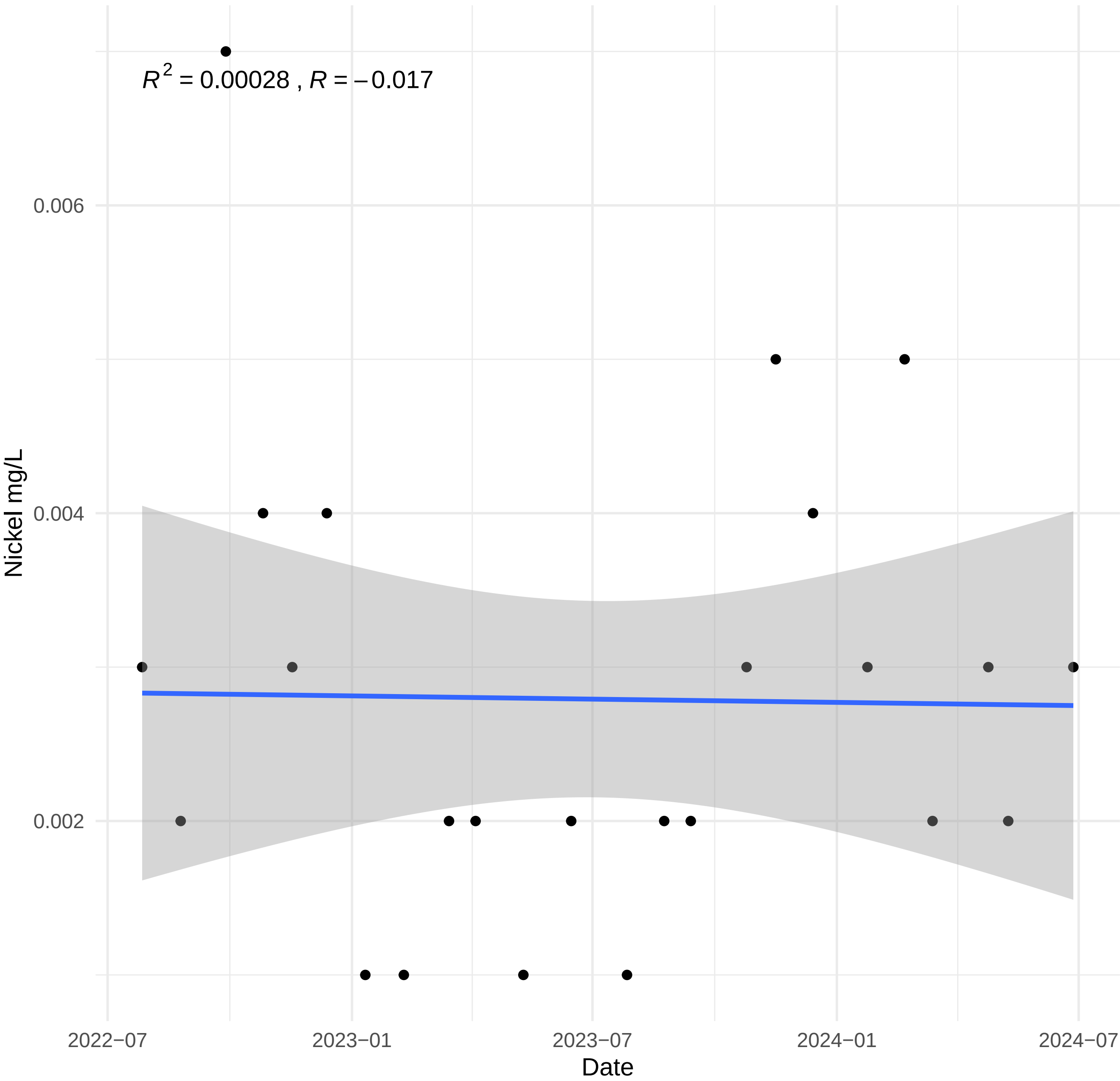
Molybdenum at C
$R^2 = 0.22$, $R = 0.47$
0.020
0.015
0.010
0.005
0.000
Molybdenum mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



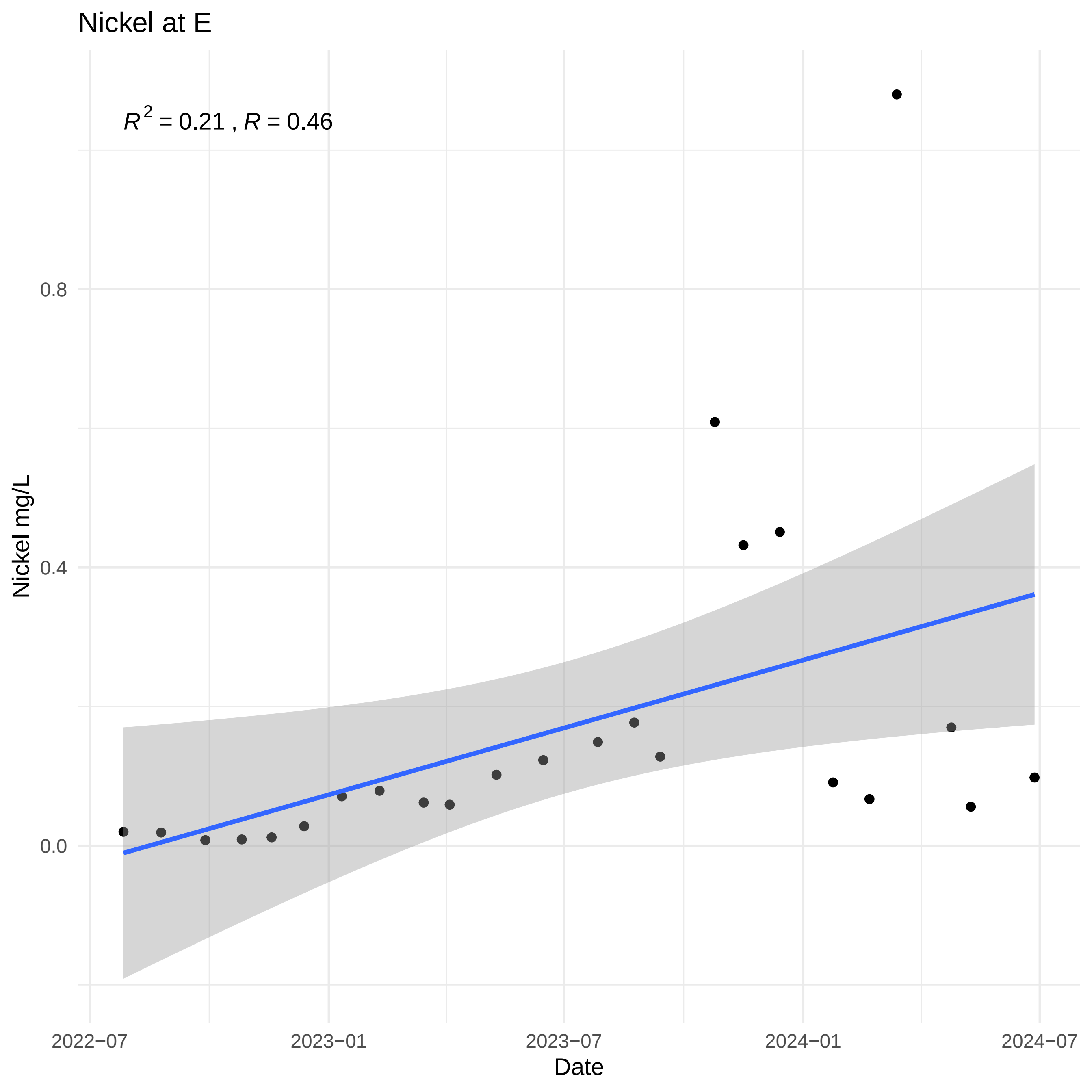
Molybdenum at E
R^2 = 0.12 , R = 0.34
0.0020
0.0015
0.0010
0.0005
0.0000
Molybdenum mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date


Molybdenum at NC01
$R^2 = 0.16$, $R = 0.4$
0.02
0.01
0.00
Molybdenum mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

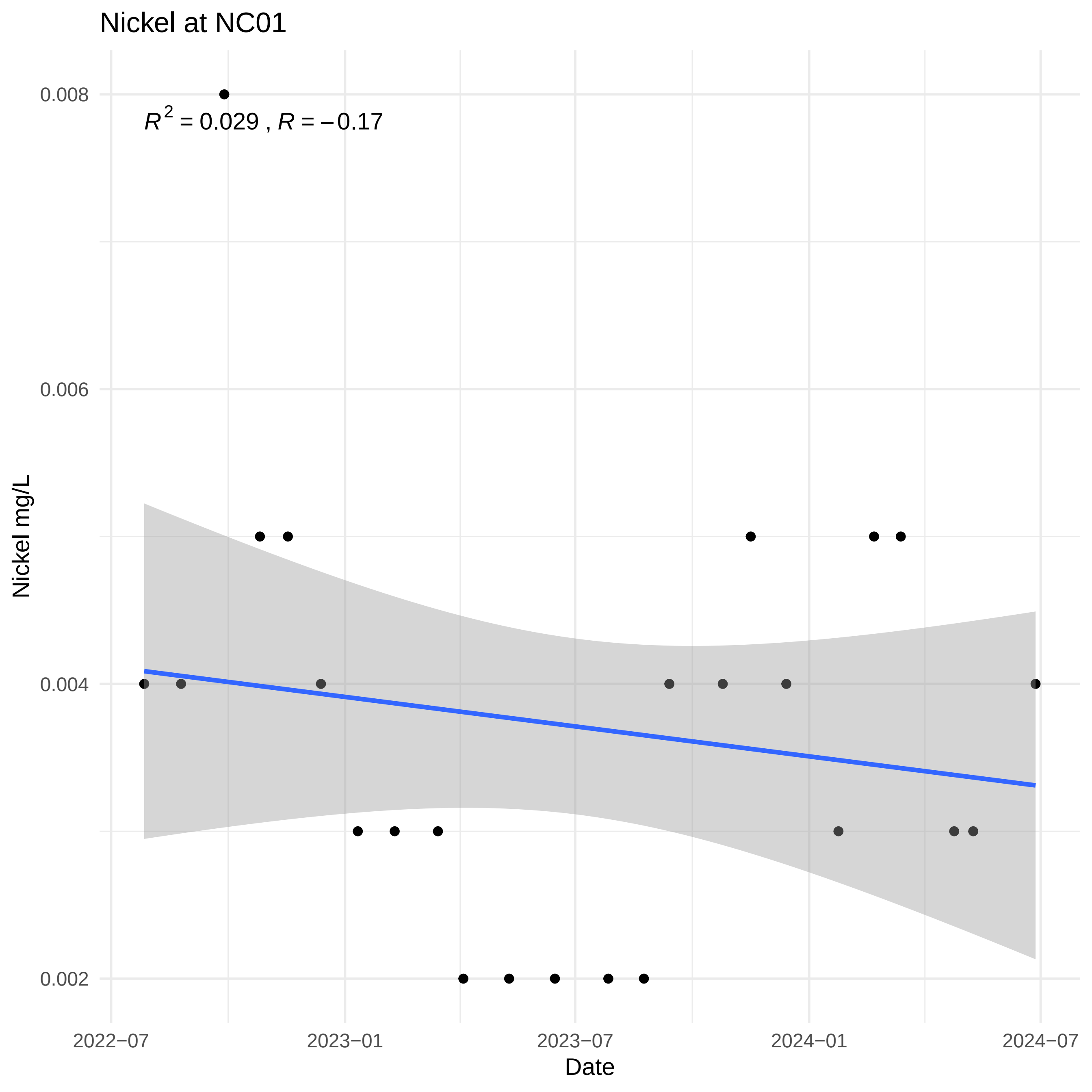
Nickel at C

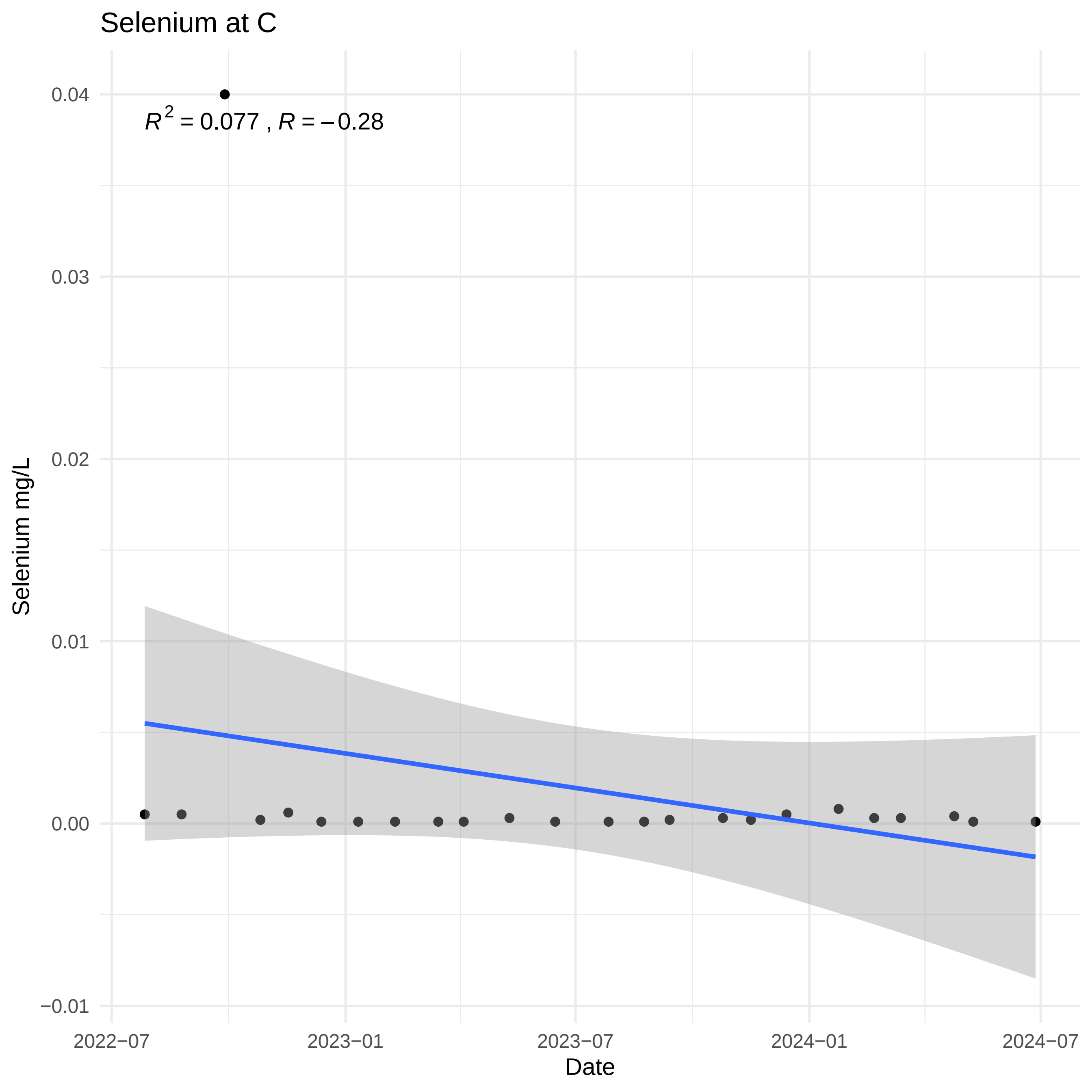


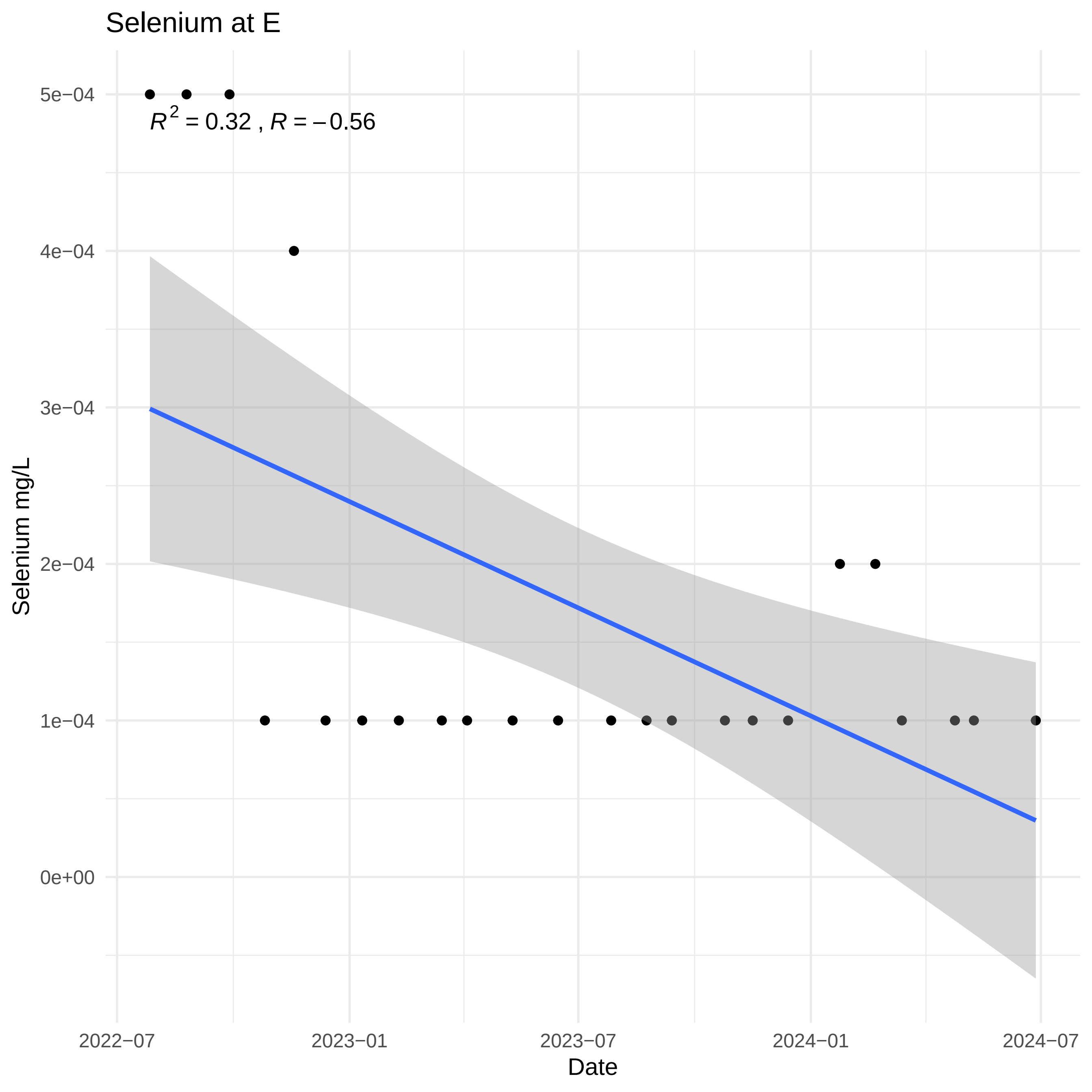
$R^2 = 0.00028$, $R = -0.017$
0.006
0.004
0.002
Nickel mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



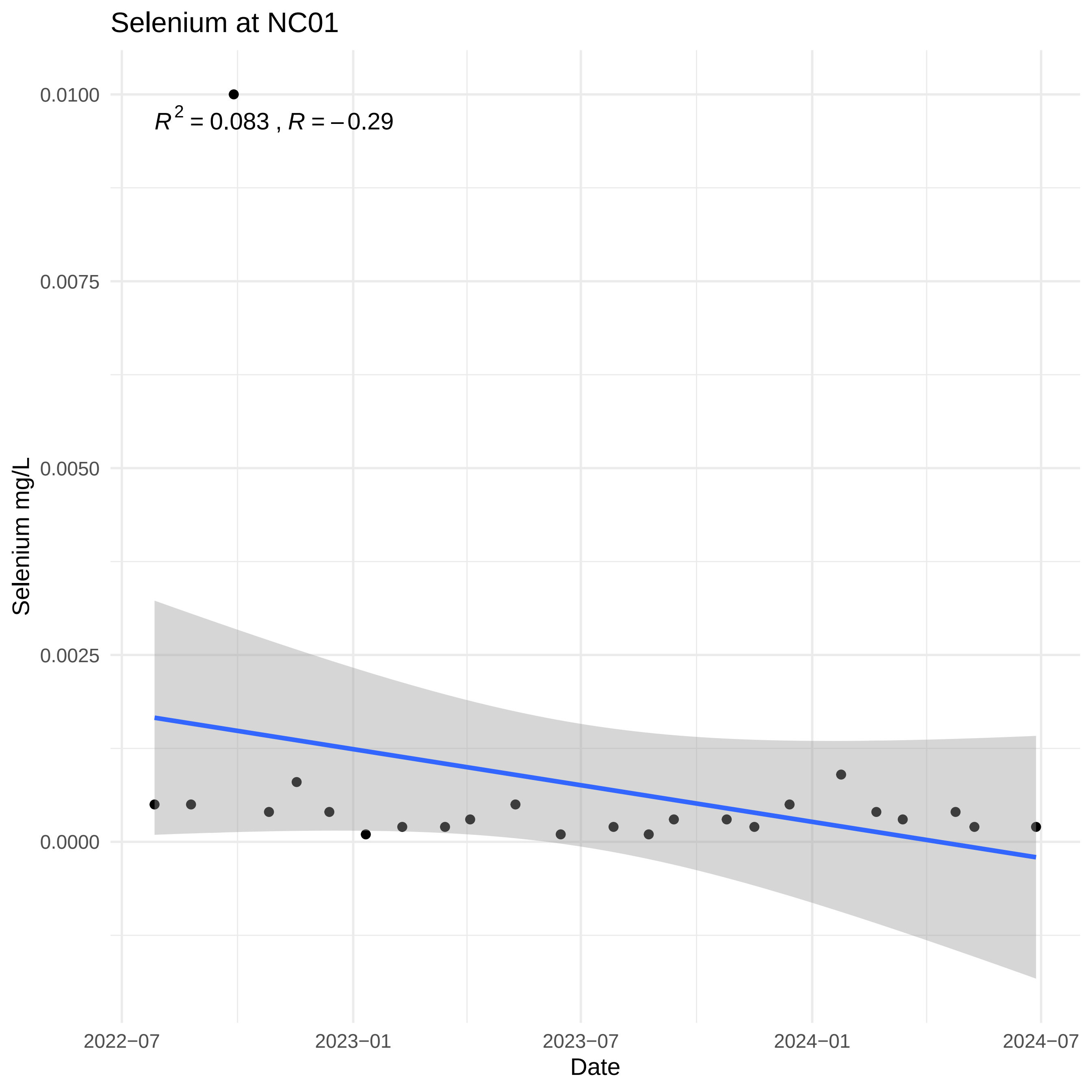
Nickel at E
$R^2 = 0.21$, $R = 0.46$
0.8
0.4
0.0
Nickel mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date


Nickel at NC01
$R^2 = 0.029$, $R = -0.17$
0.008
0.006
0.004
0.002
Nickel mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

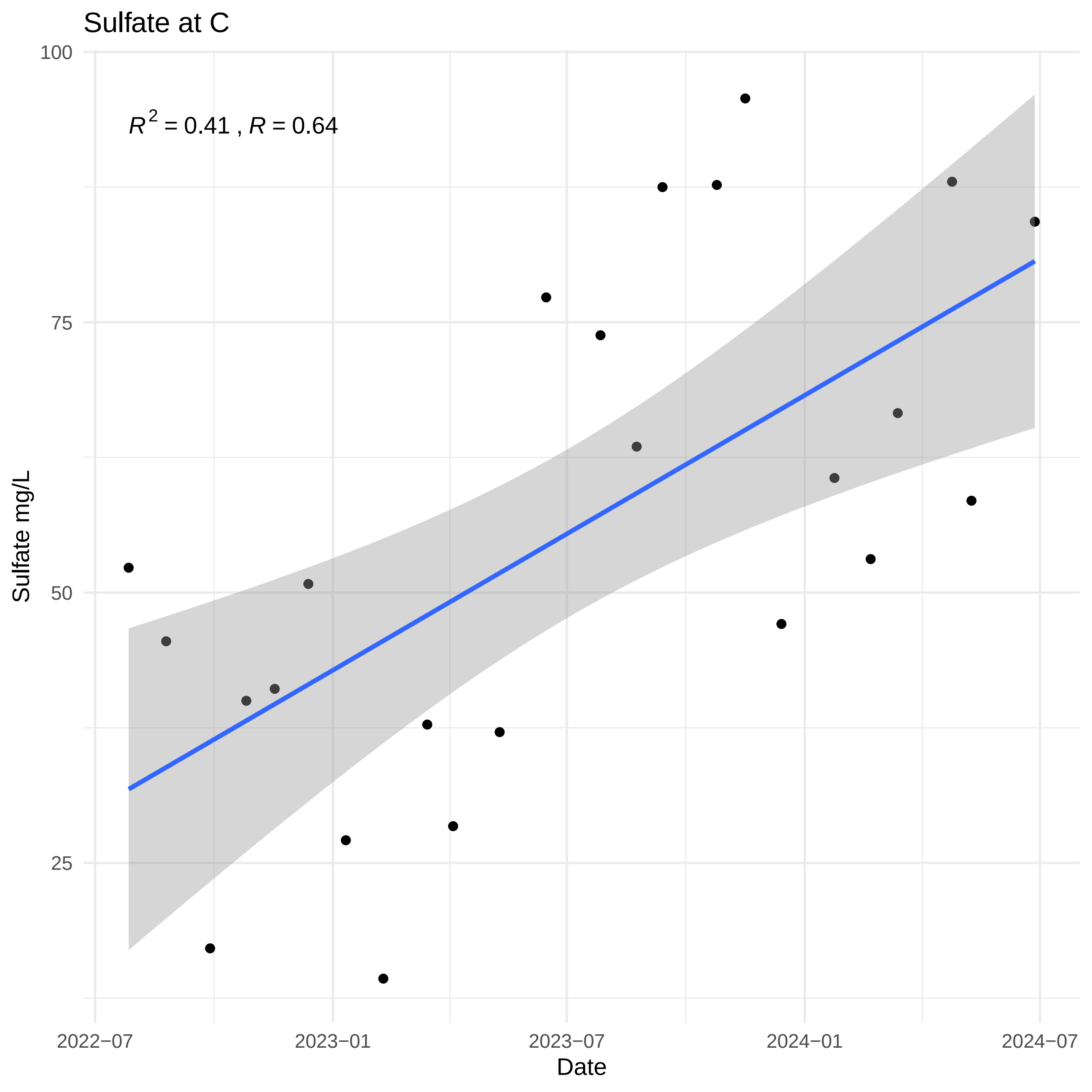

Selenium at C
$R^2 = 0.077$, $R = -0.28$
0.04
0.03
0.02
0.01
0.00
−0.01
Selenium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



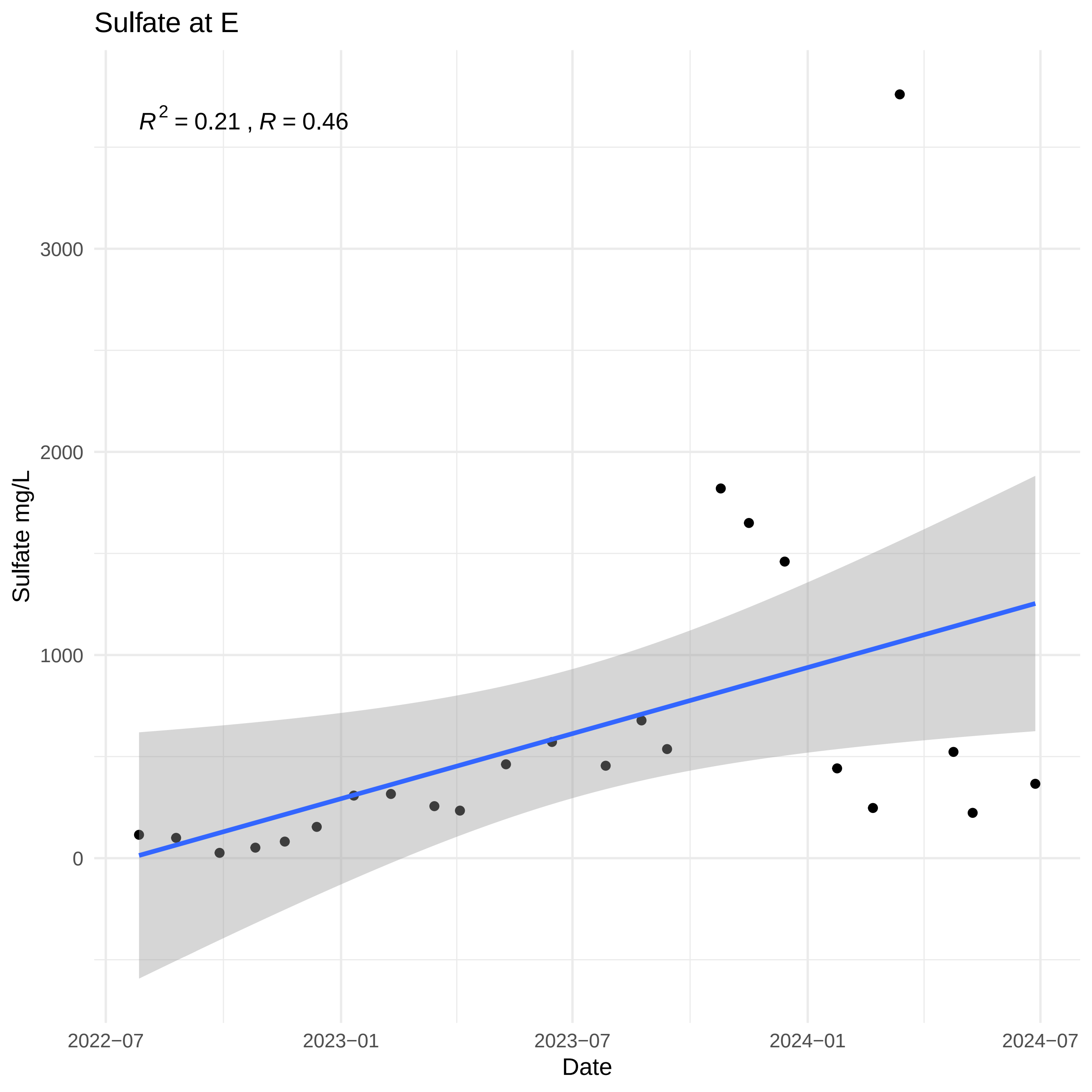
Selenium at E
$R^2 = 0.32$, $R = -0.56$
5e−04
4e−04
3e−04
2e−04
1e−04
0e+00
Selenium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



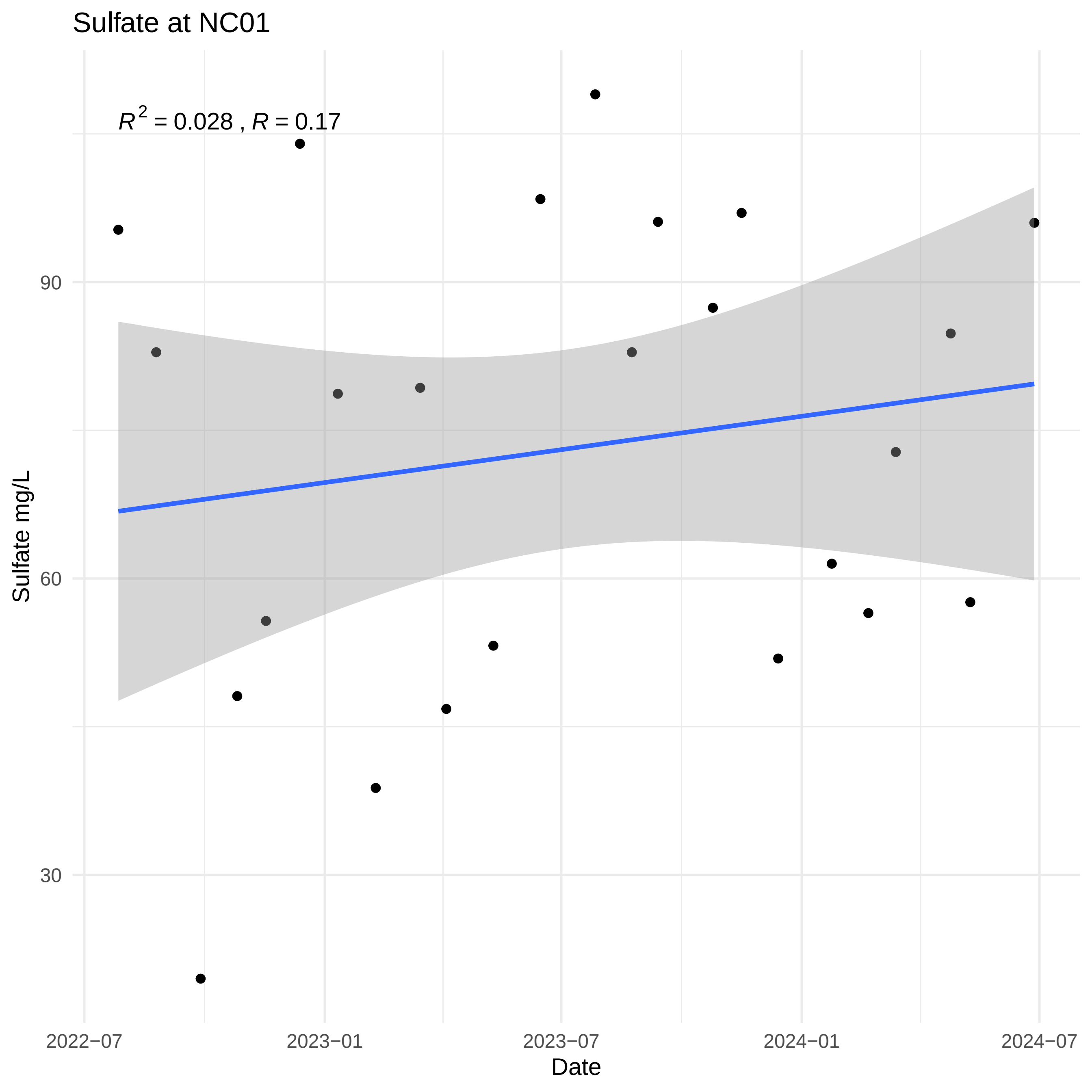
Selenium at NC01
$R^2 = 0.083$, $R = -0.29$
0.0100
0.0075
0.0050
0.0025
0.0000
Selenium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

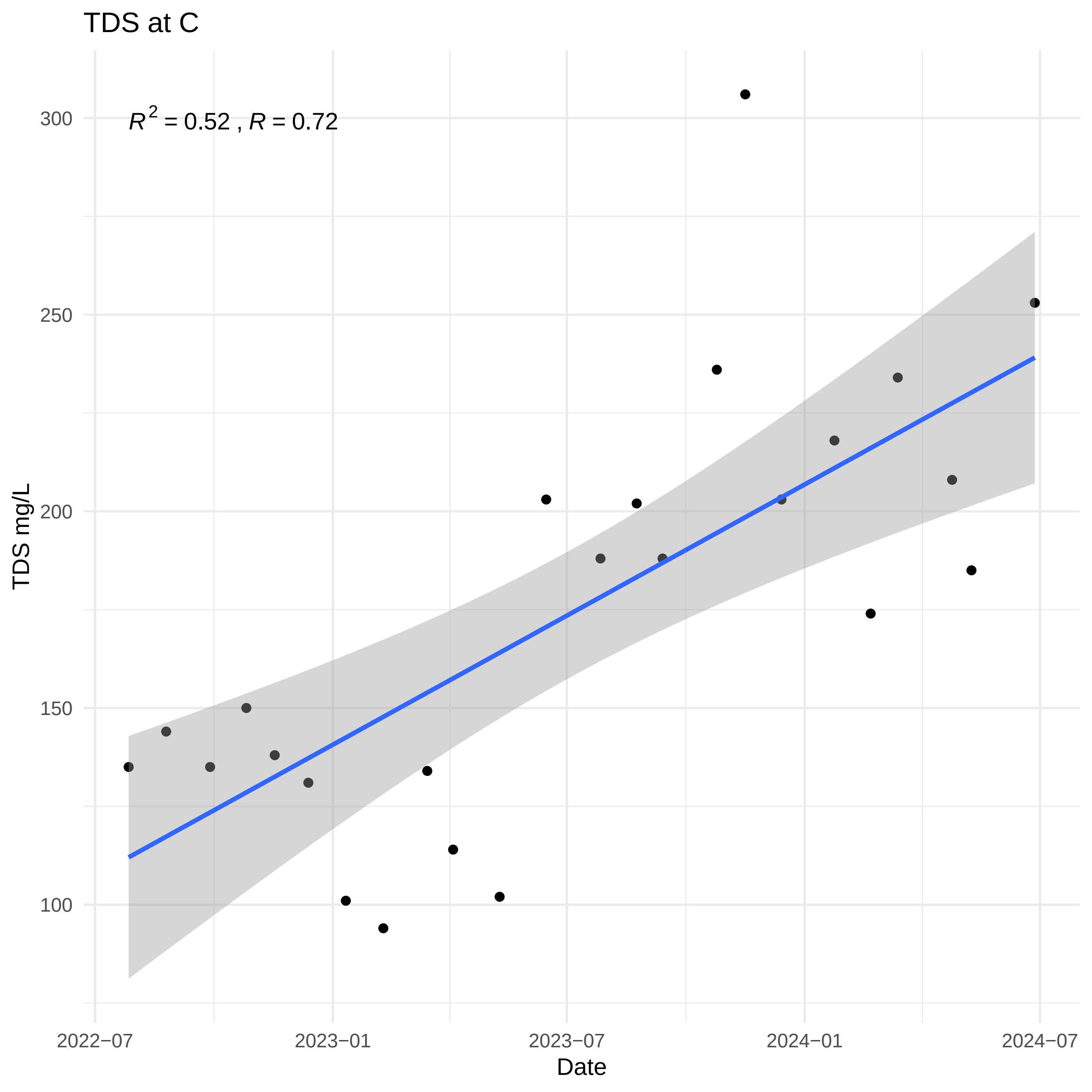


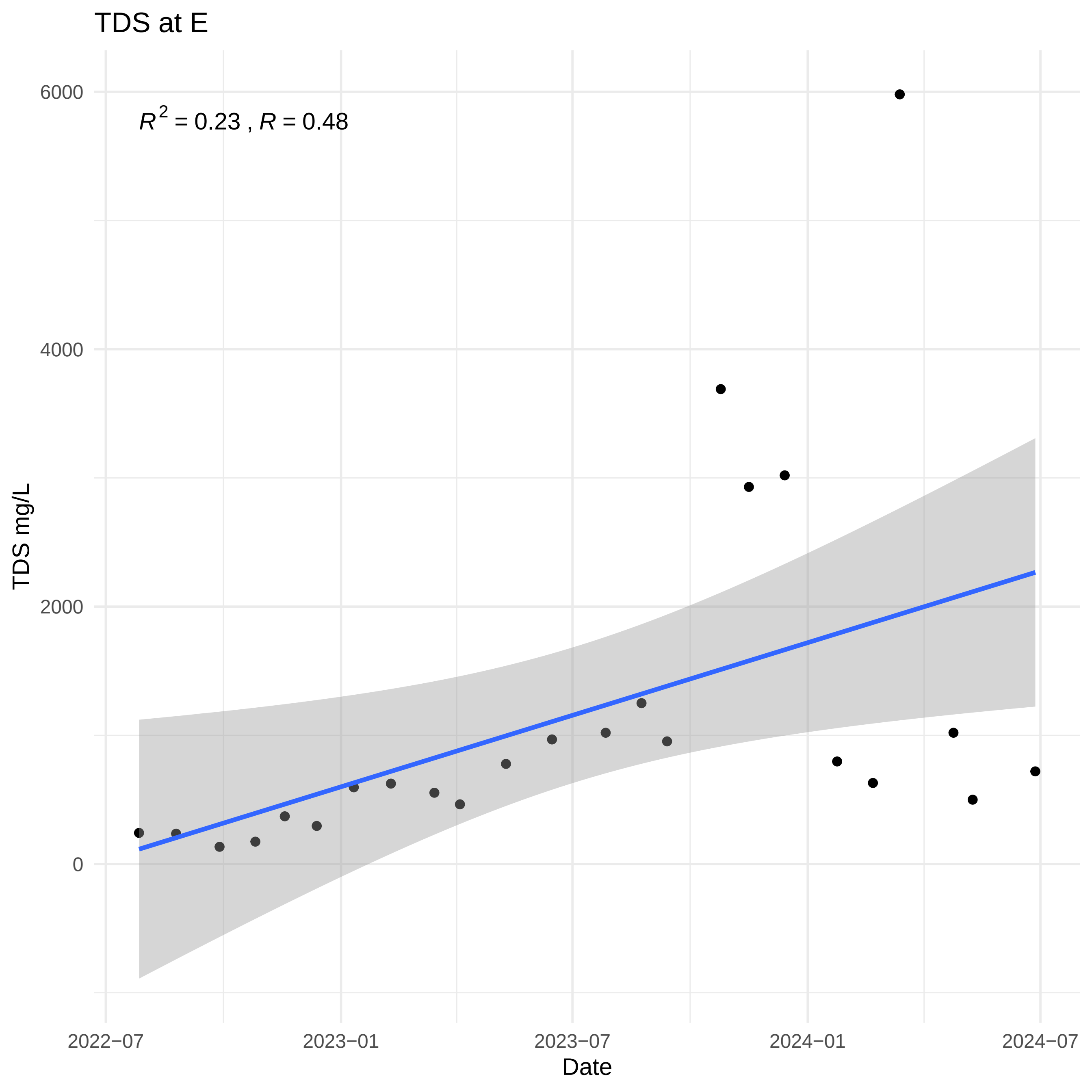
Sulfate at C
$R^2 = 0.41$, $R = 0.64$
100
75
50
25
Sulfate mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



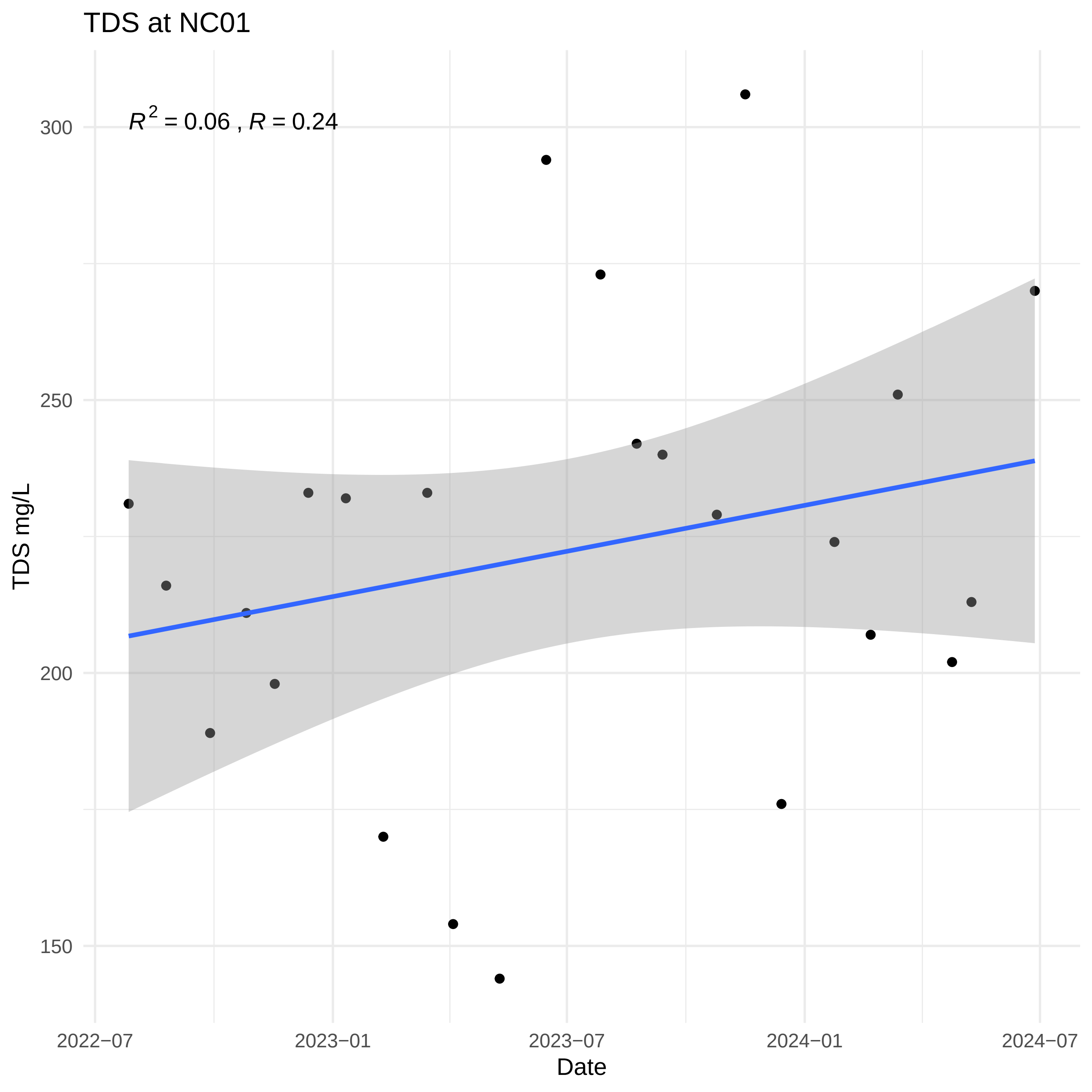
Sulfate at E
$R^2 = 0.21$, $R = 0.46$
3000
2000
1000
0
Sulfate mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date


Sulfate at NC01
R2 = 0.028 , R = 0.17
90
60
30
Sulfate mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

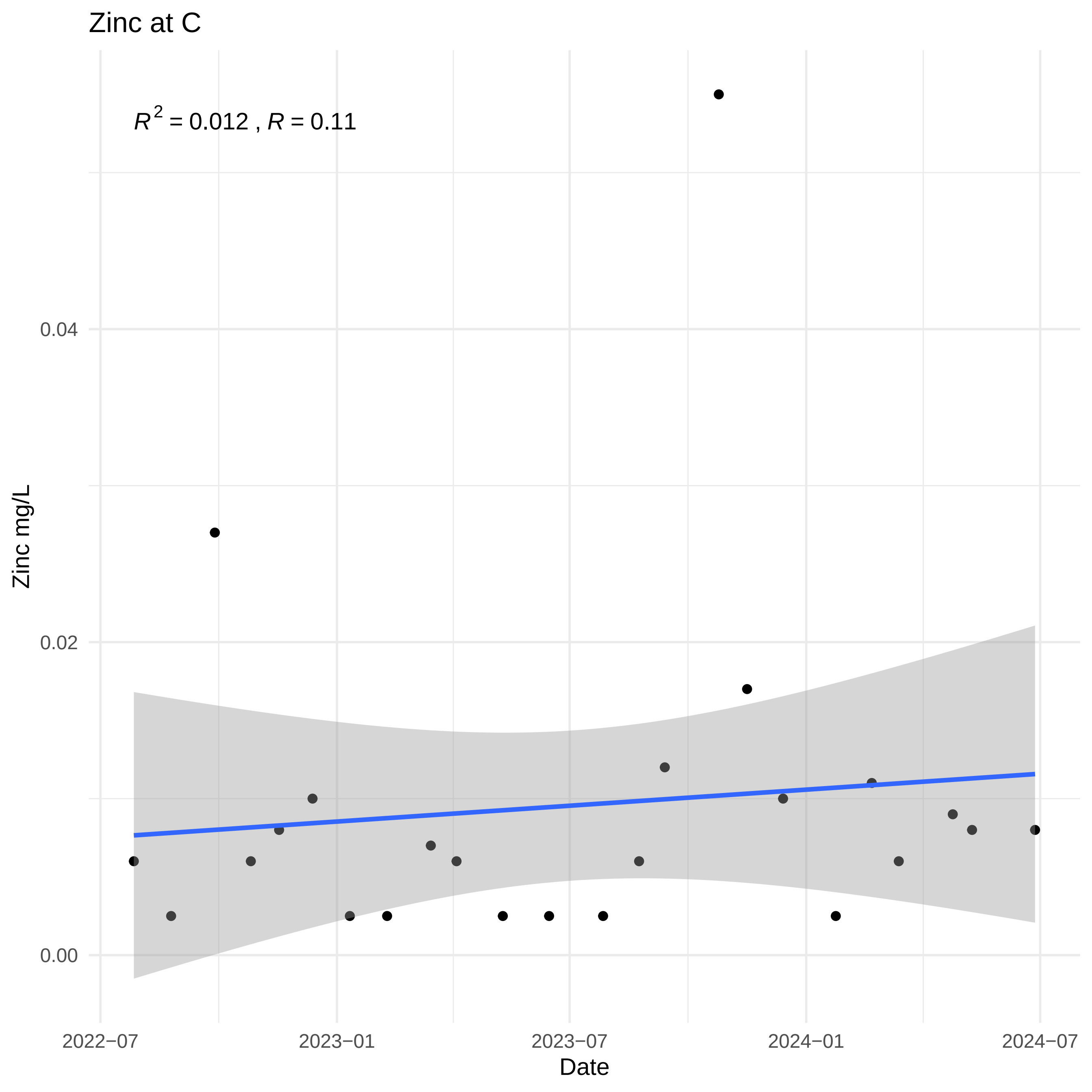

TDS at C
R^2 = 0.52 , R = 0.72
300
250
200
150
100
TDS mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



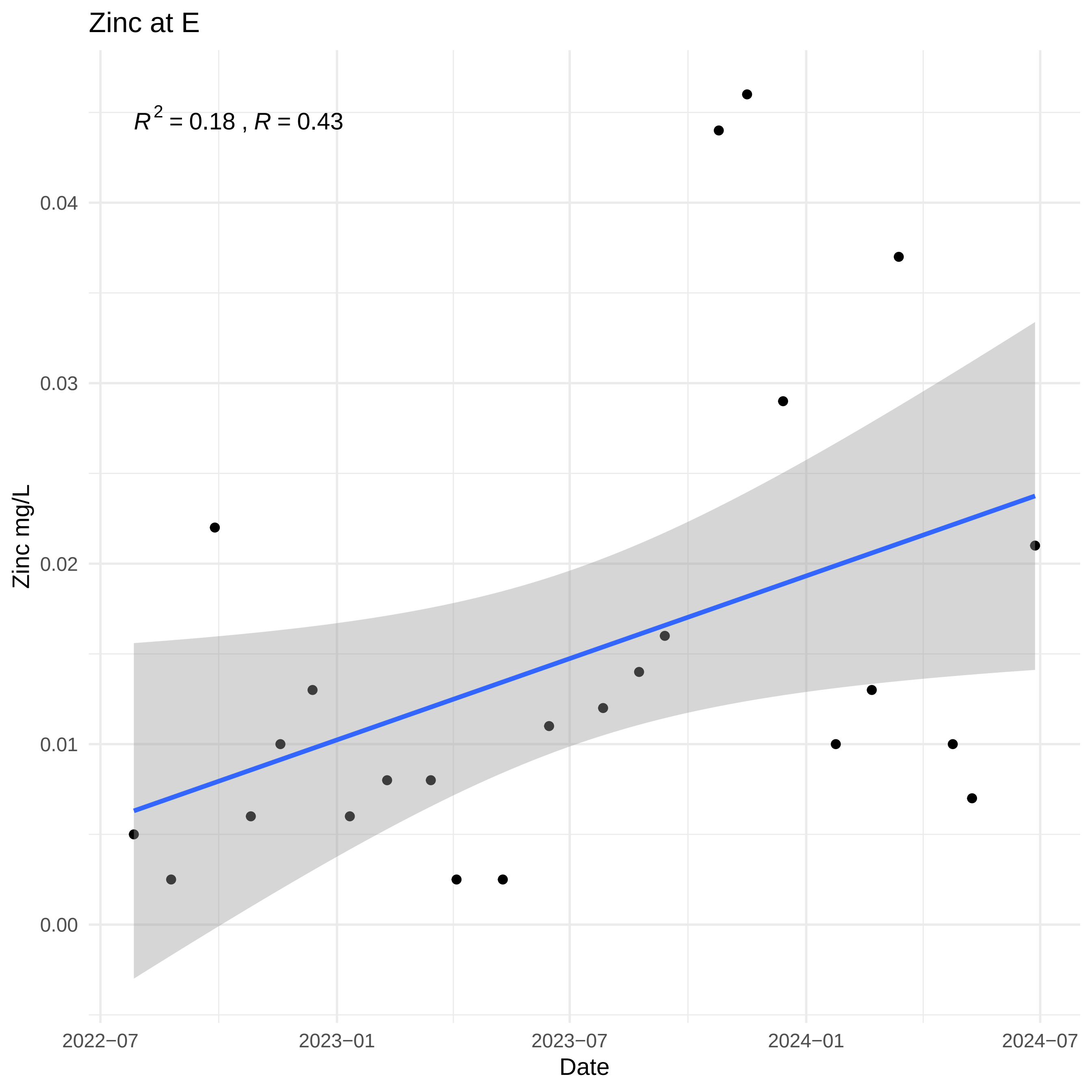
TDS at E
R^2 = 0.23 , R = 0.48
6000
4000
2000
0
TDS mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



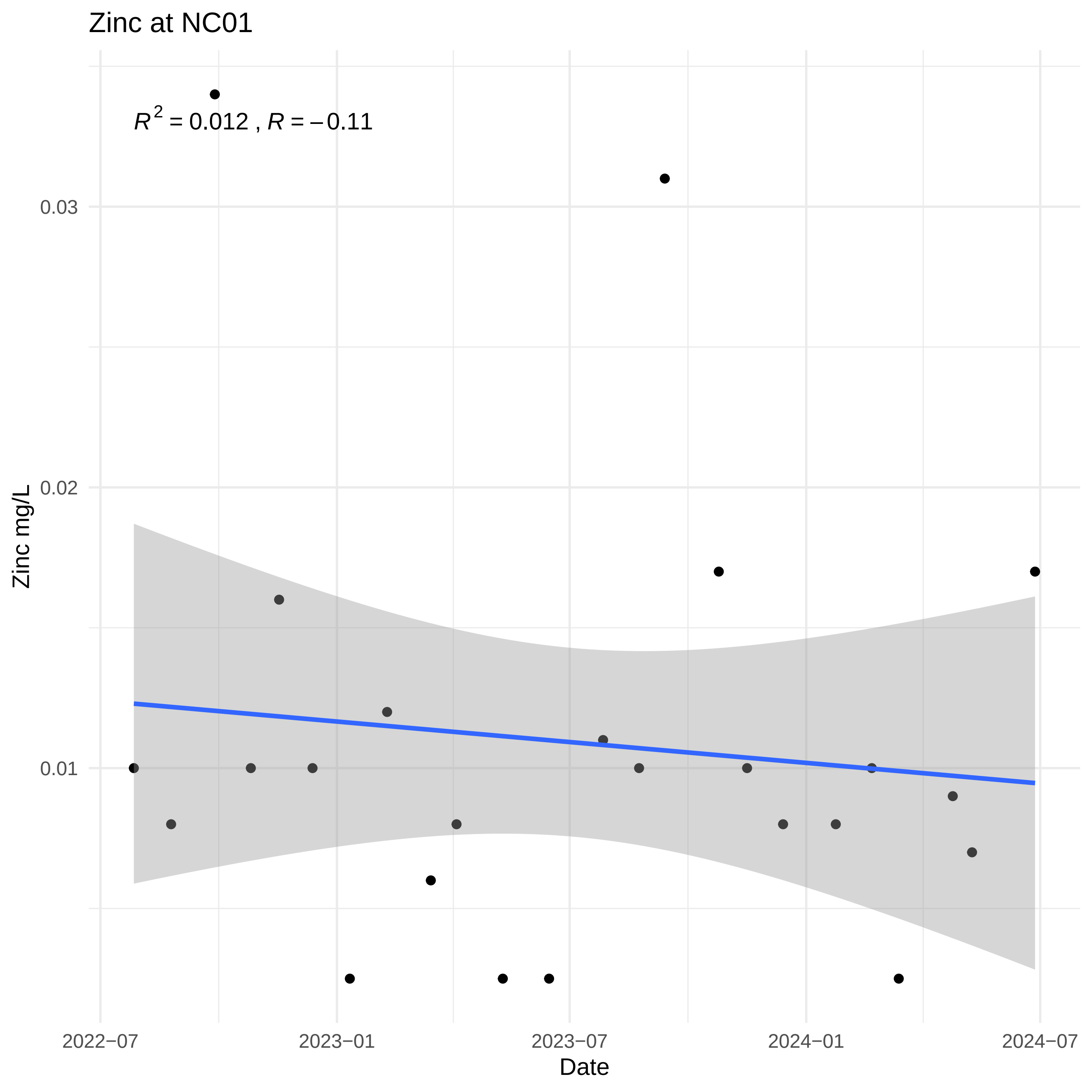
TDS at NC01
$R^2 = 0.06$, $R = 0.24$
300
250
200
150
TDS mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



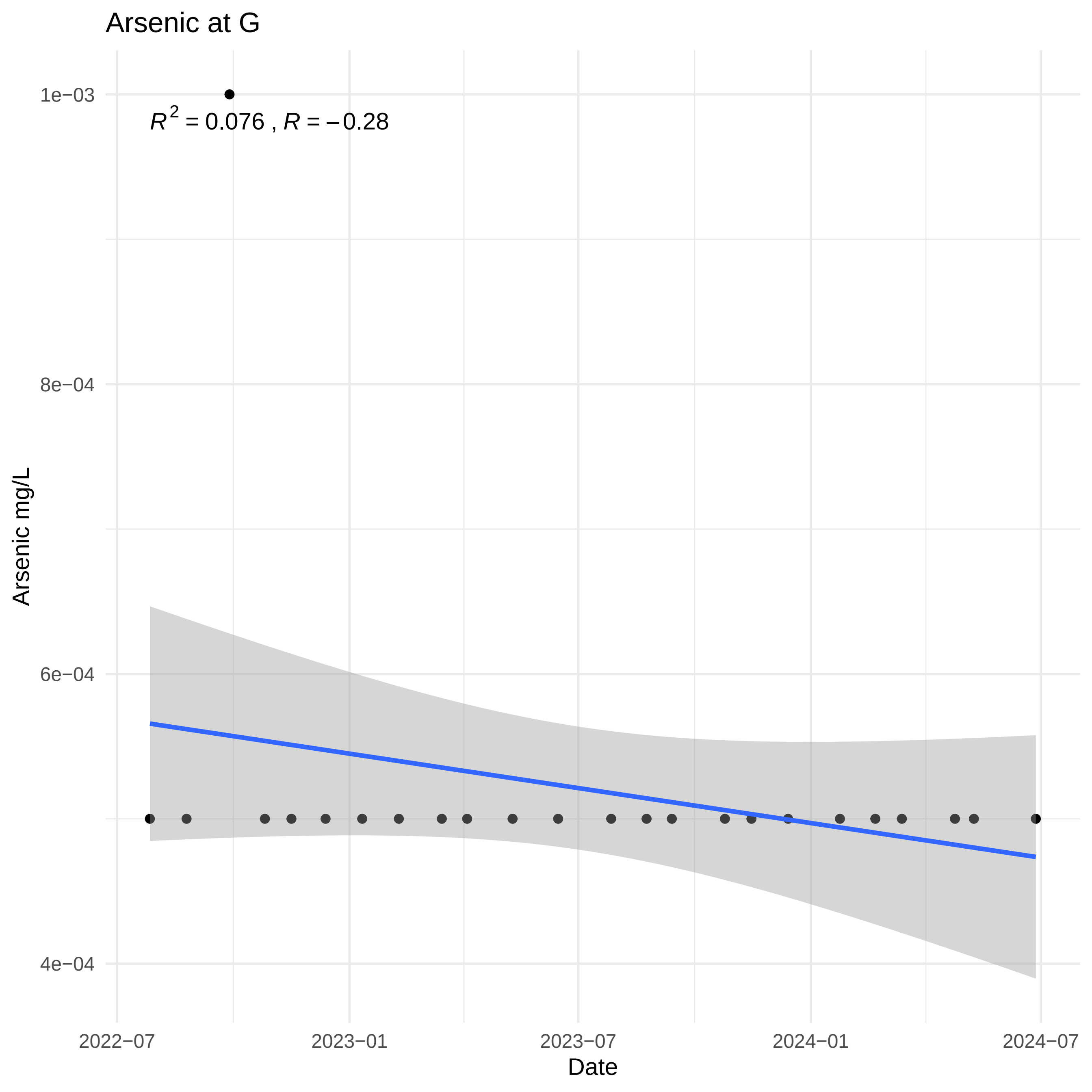
Zinc at C
R^2 = 0.012 , R = 0.11
Zinc mg/L
0.04
0.02
0.00
2022−07
2023−01
2023−07
2024−01
2024−07
Date



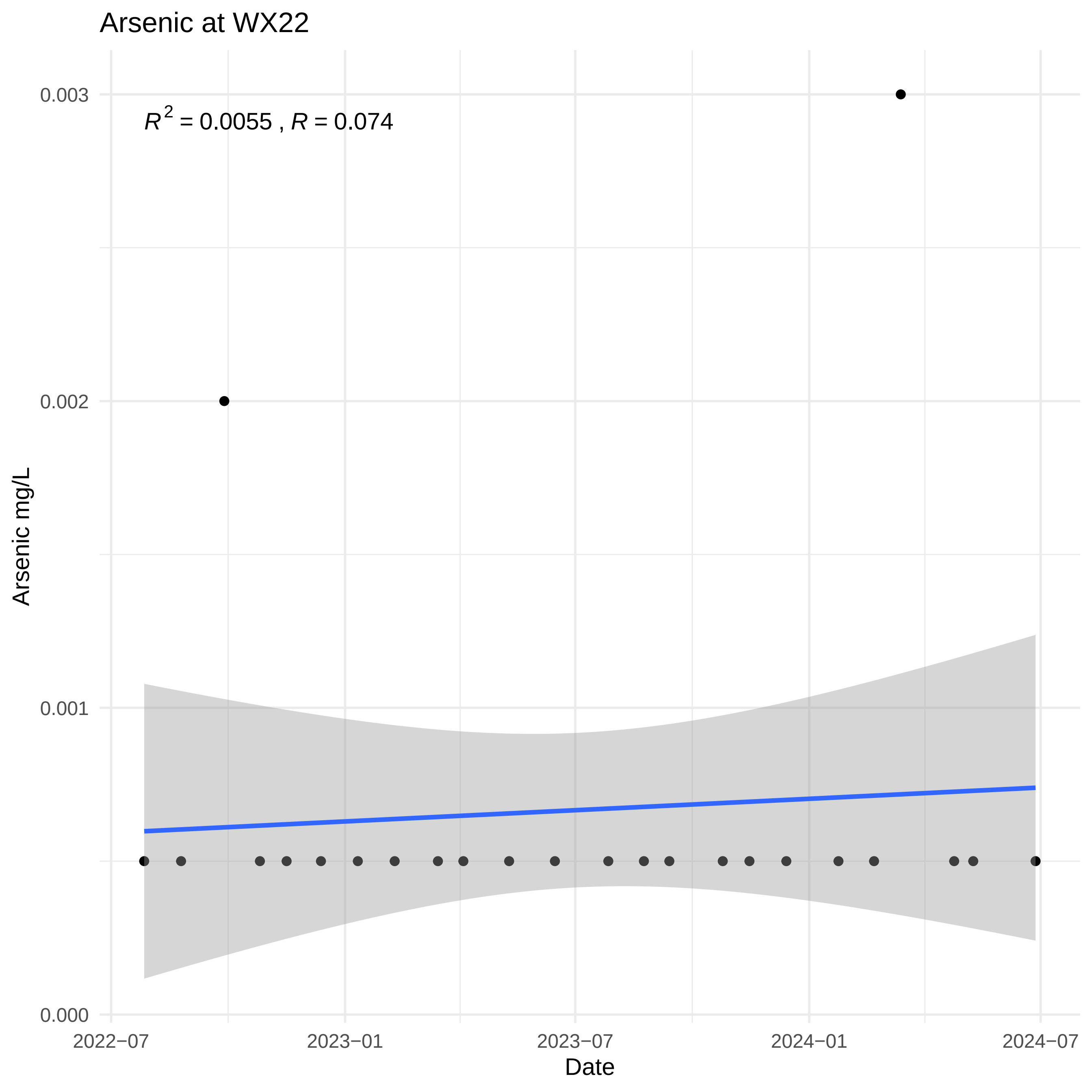
Zinc at E
R^2 = 0.18 , R = 0.43
Zinc mg/L
0.00
0.01
0.02
0.03
0.04
2022−07
2023−01
2023−07
2024−01
2024−07
Date



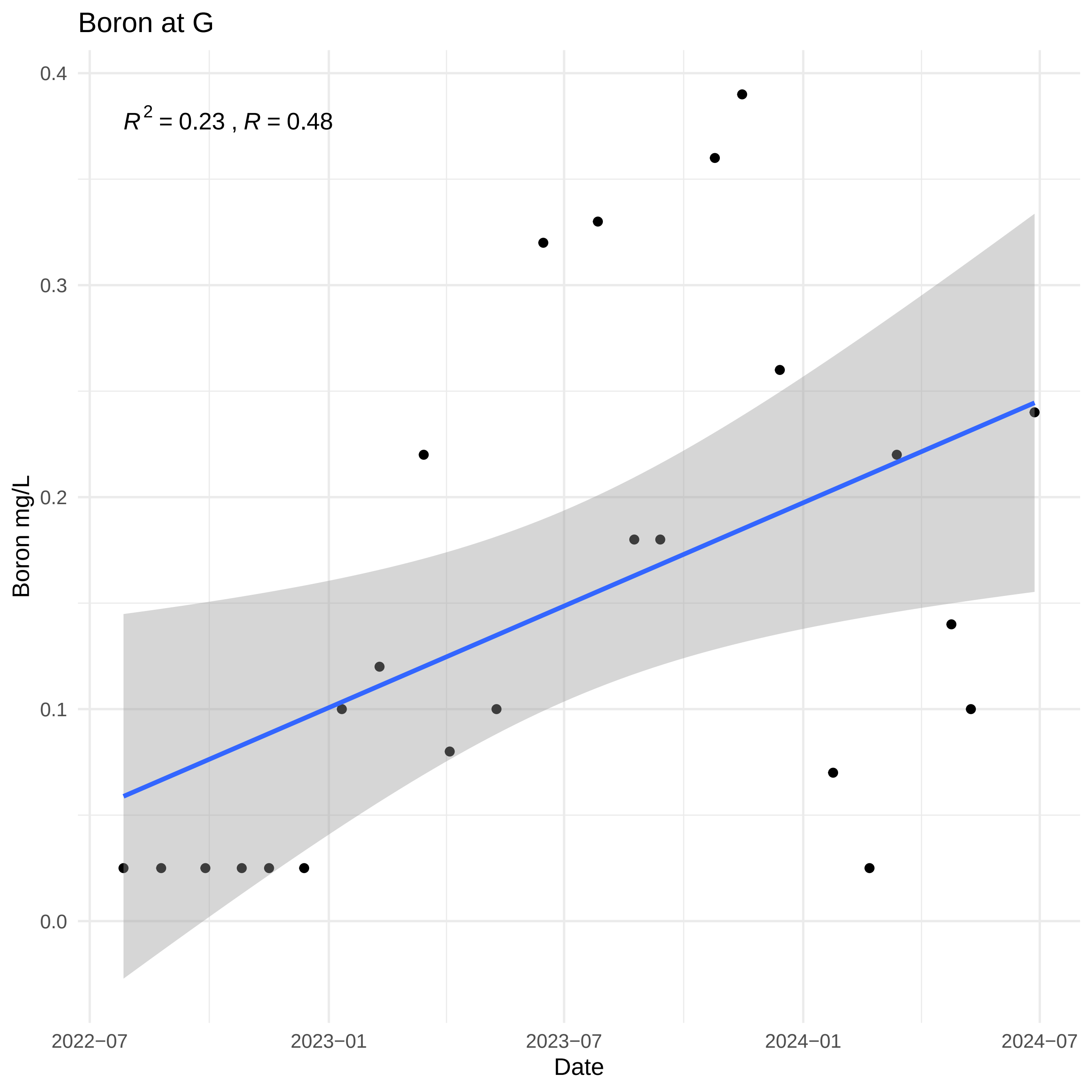
Zinc at NC01
$R^2 = 0.012$, $R = -0.11$
0.03
0.02
0.01
Zinc mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



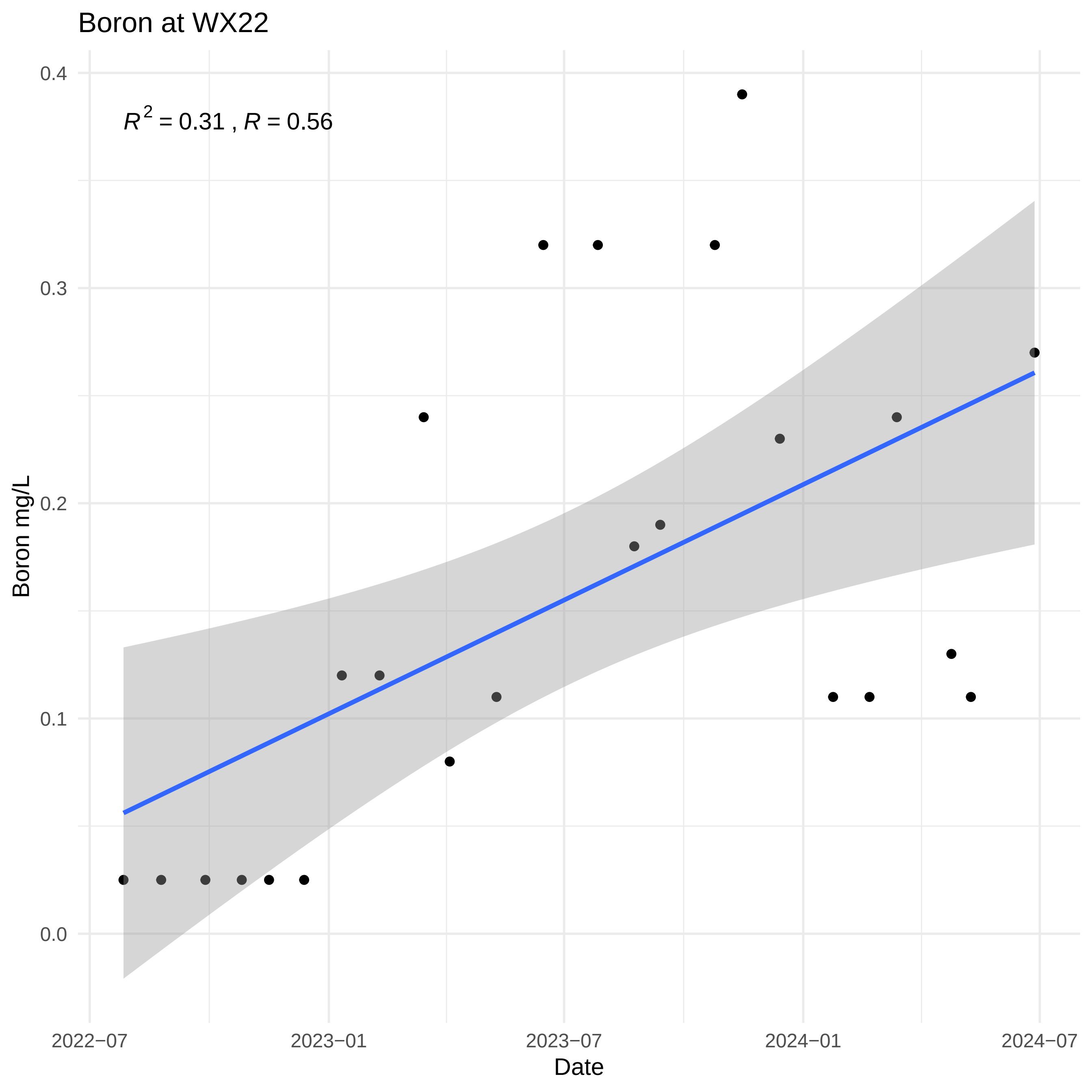
Arsenic at G
$R^2 = 0.076$, $R = -0.28$
1e−03
8e−04
6e−04
4e−04
Arsenic mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



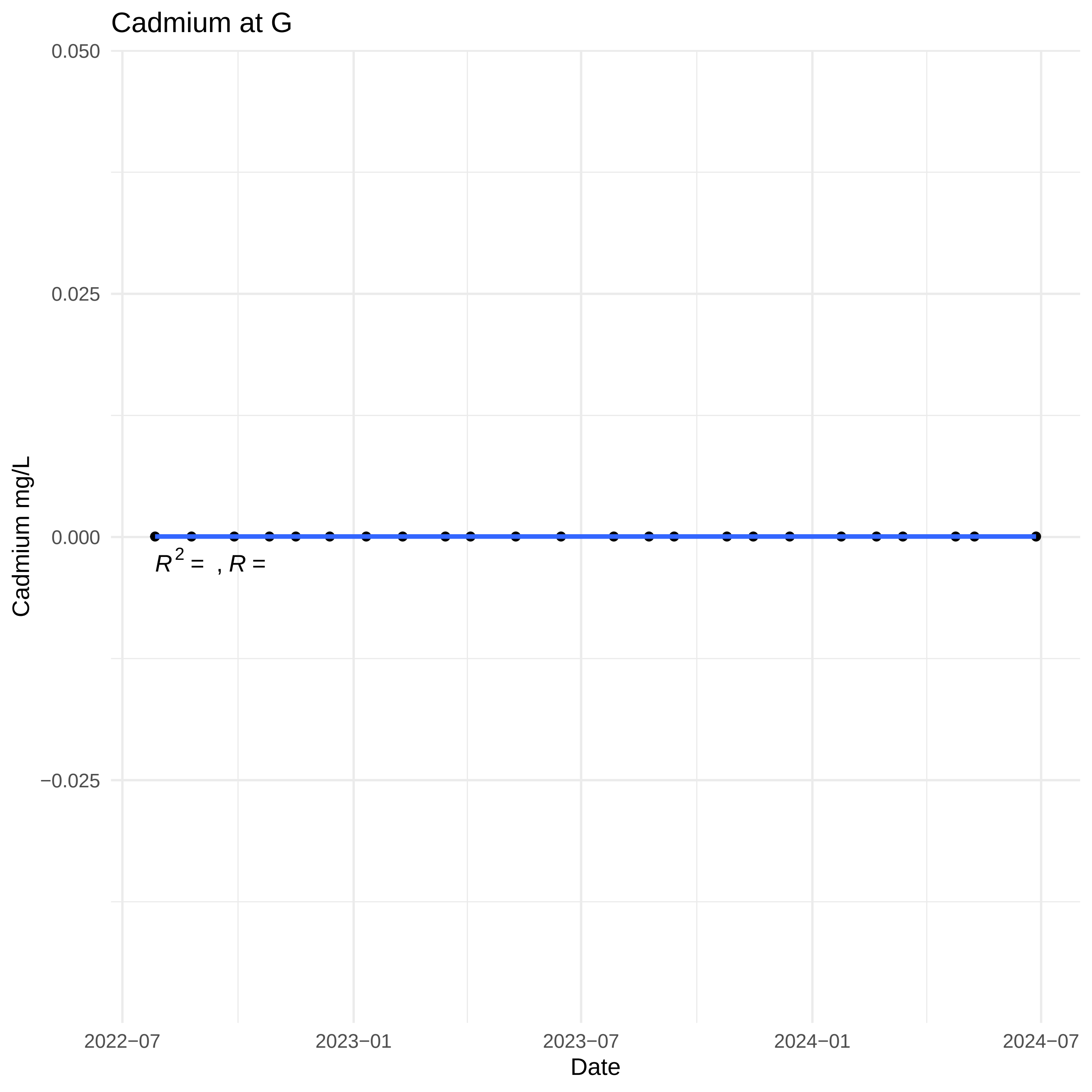
Arsenic at WX22
R^2 = 0.0055 , R = 0.074
0.003
0.002
0.001
0.000
Arsenic mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



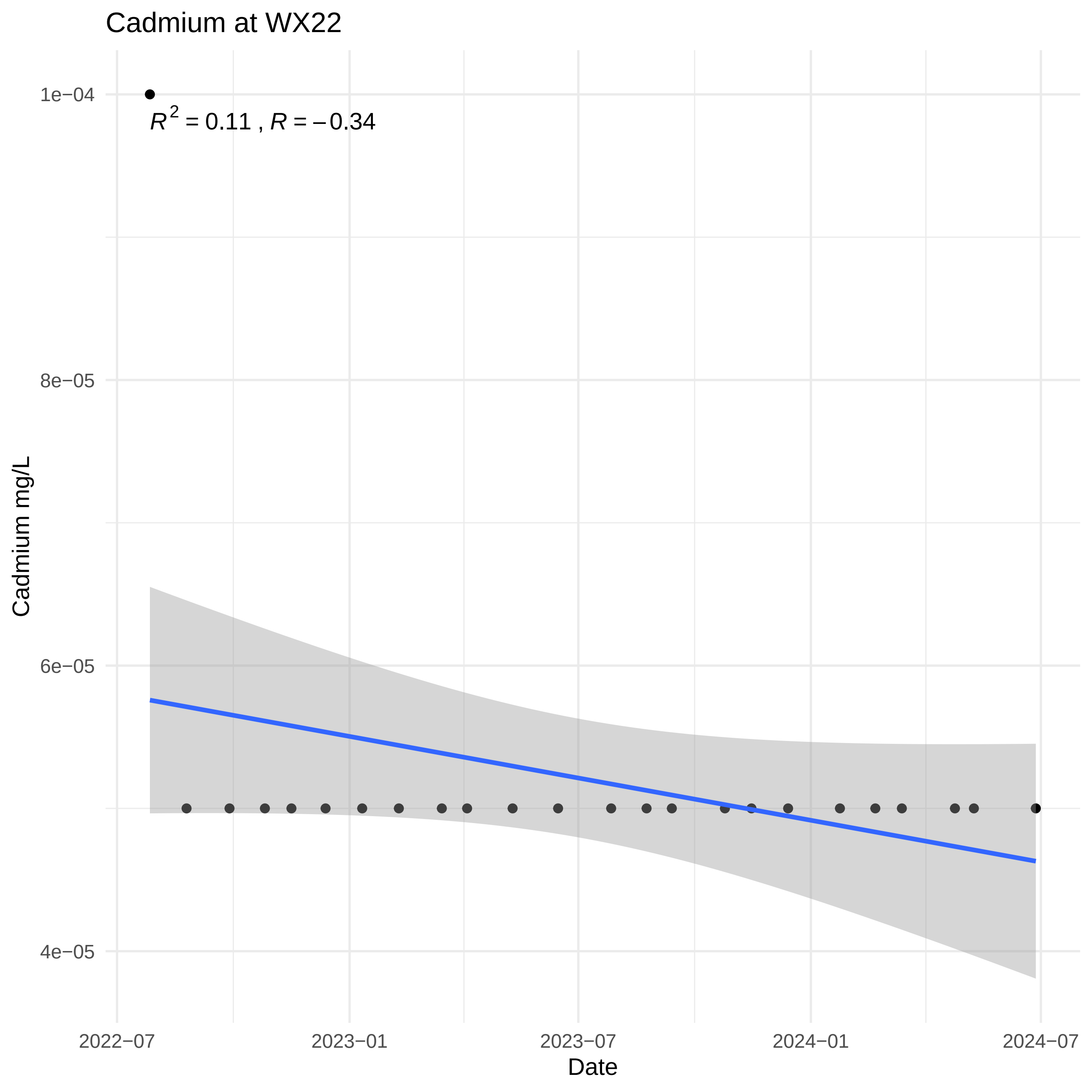
Boron at G
$R^2 = 0.23$, $R = 0.48$
0.4
0.3
0.2
0.1
0.0
Boron mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



Boron at WX22
R^2 = 0.31 , R = 0.56
Boron mg/L
0.0
0.1
0.2
0.3
0.4
2022−07
2023−01
2023−07
2024−01
2024−07
Date

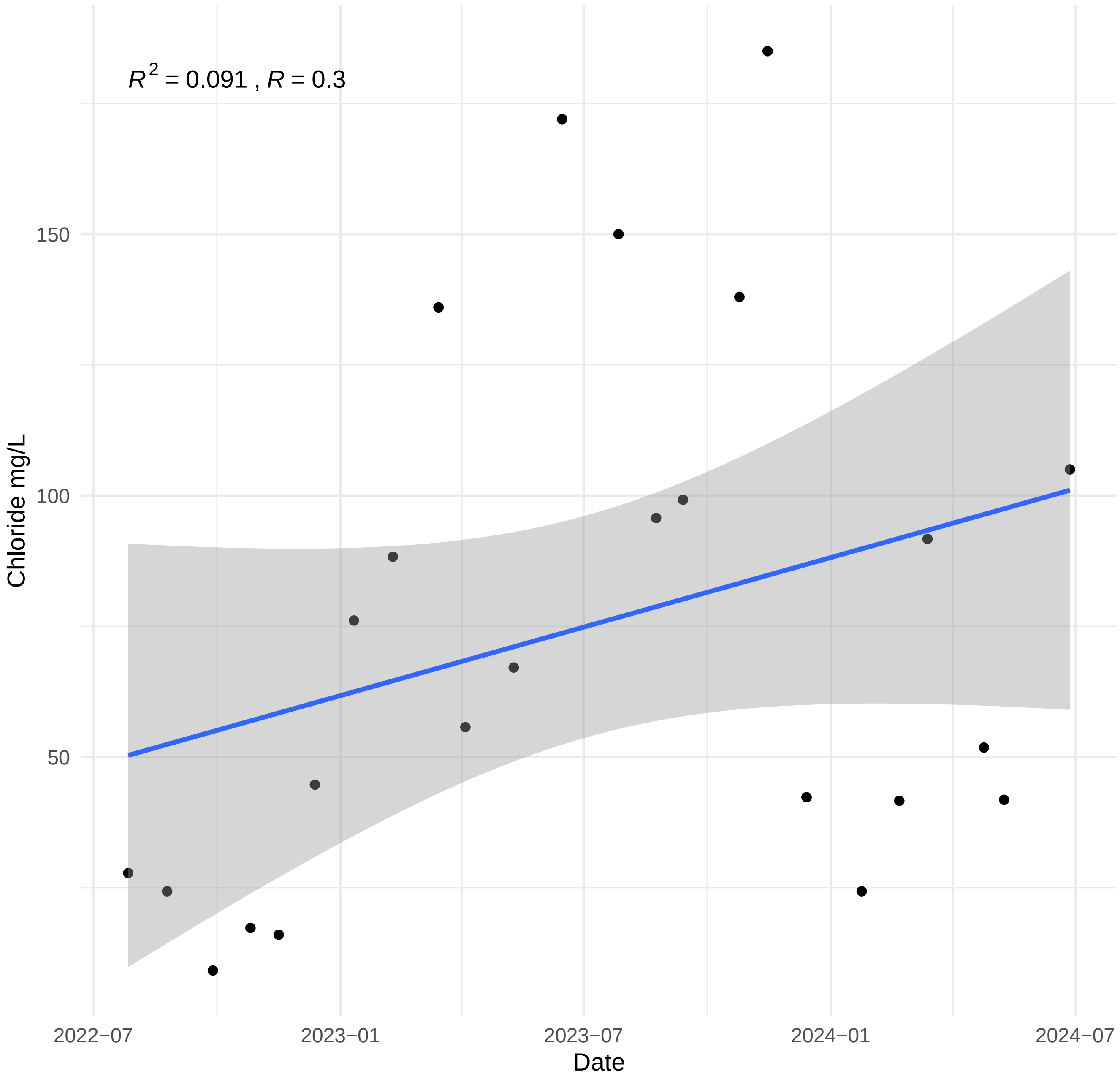


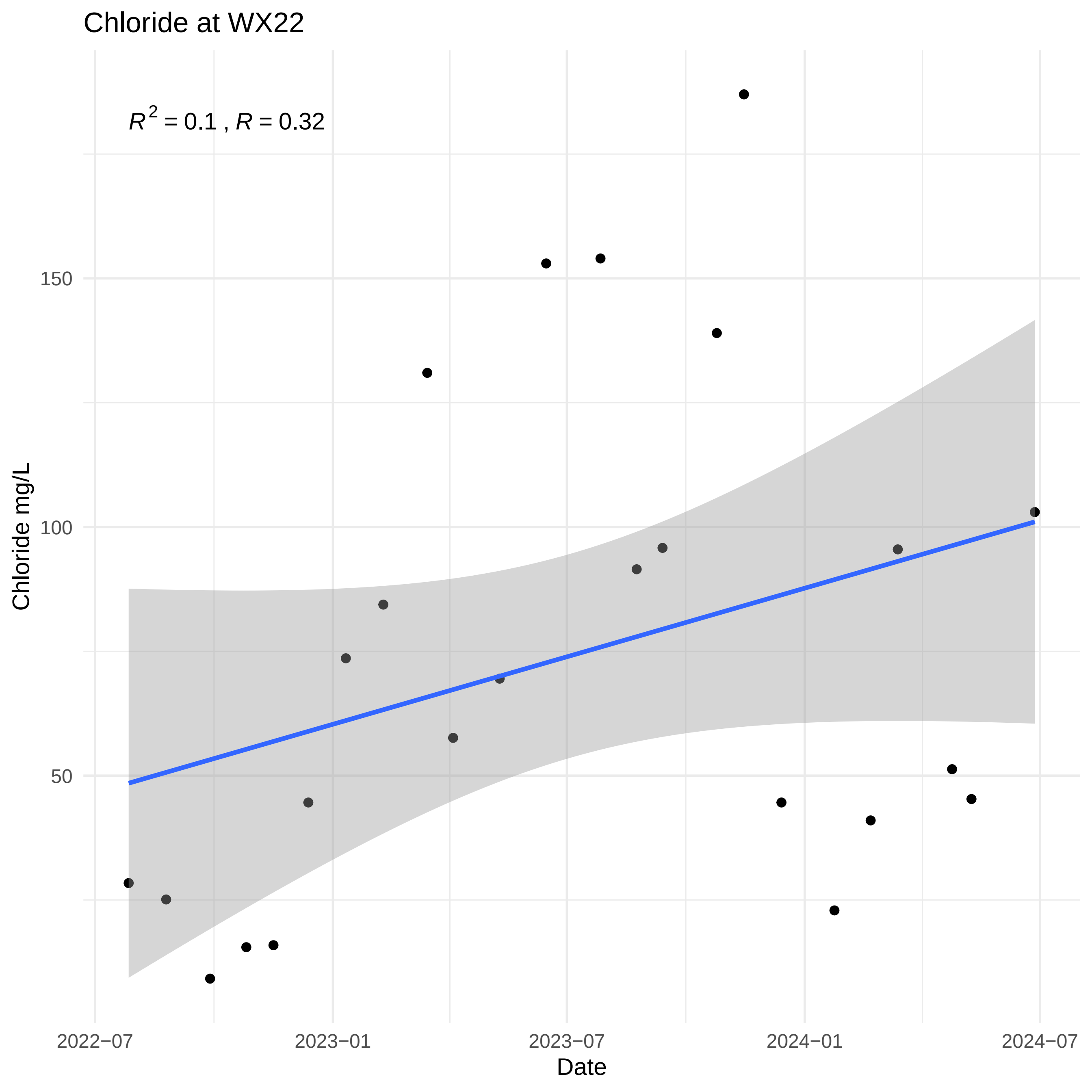
Cadmium at G
0.050
0.025
0.000
−0.025
Cadmium mg/L
R^2 = , R =
2022−07
2023−01
2023−07
2024−01
2024−07
Date



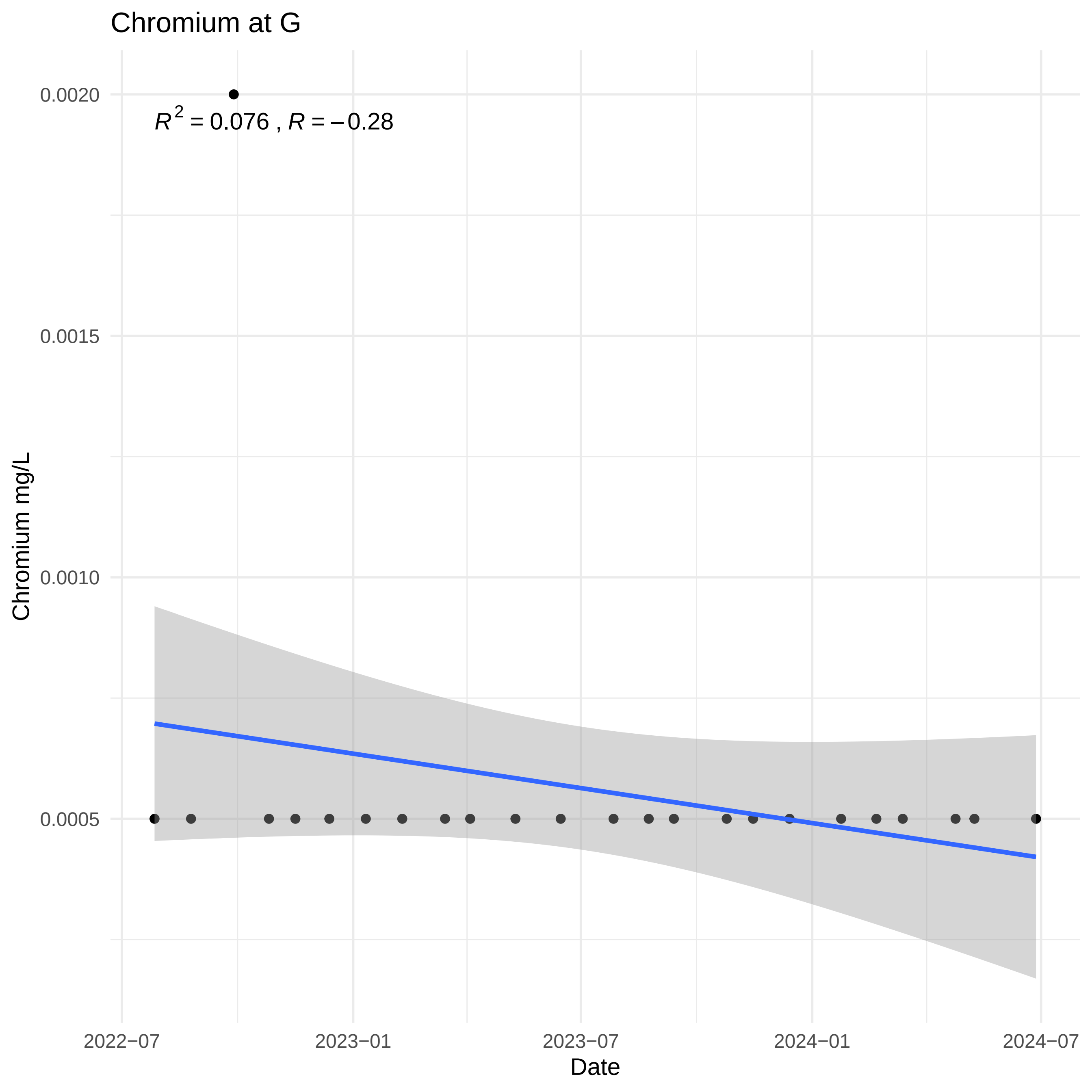
Cadmium at WX22
$R^2 = 0.11$, $R = -0.34$
1e−04
8e−05
6e−05
4e−05
Cadmium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

Chloride at G

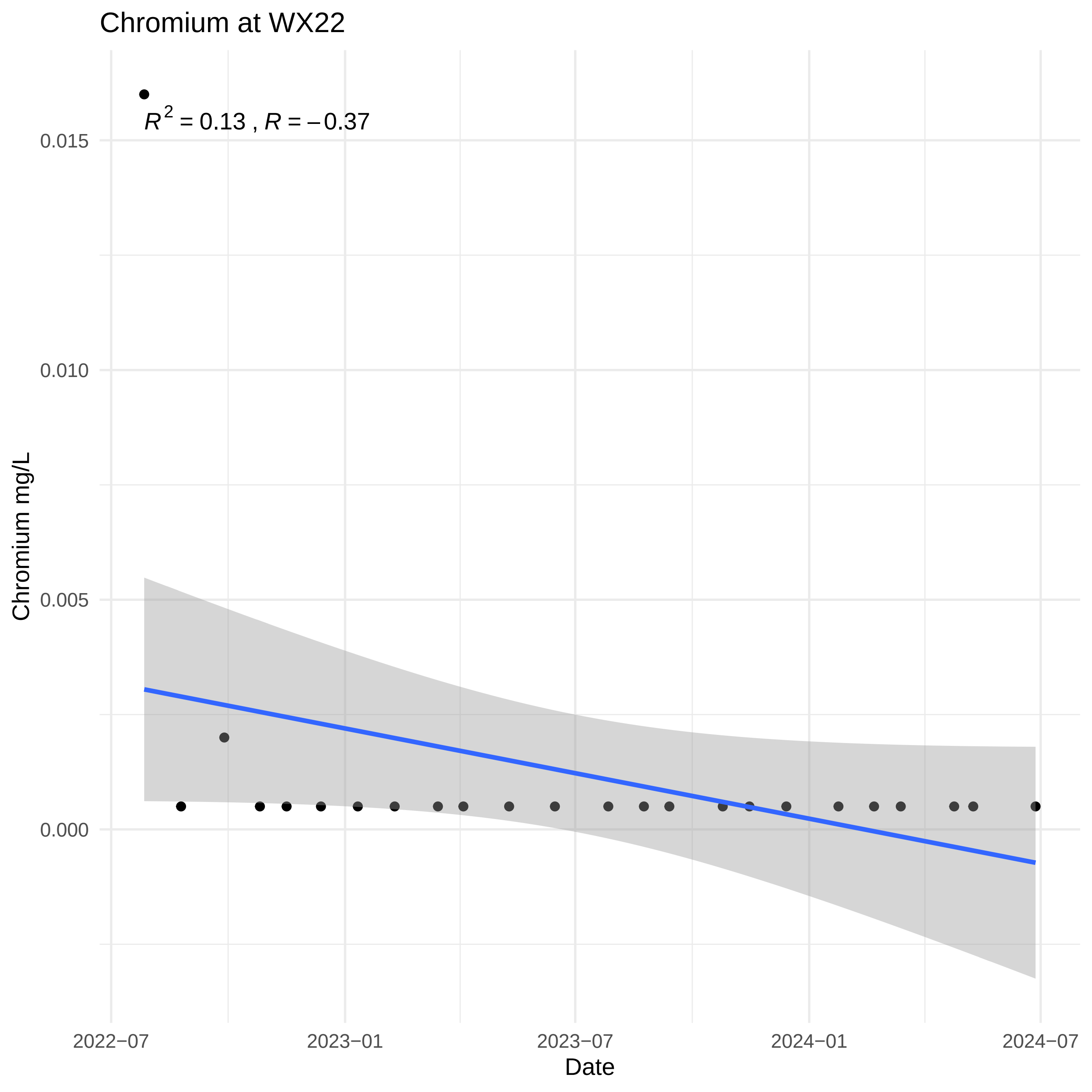


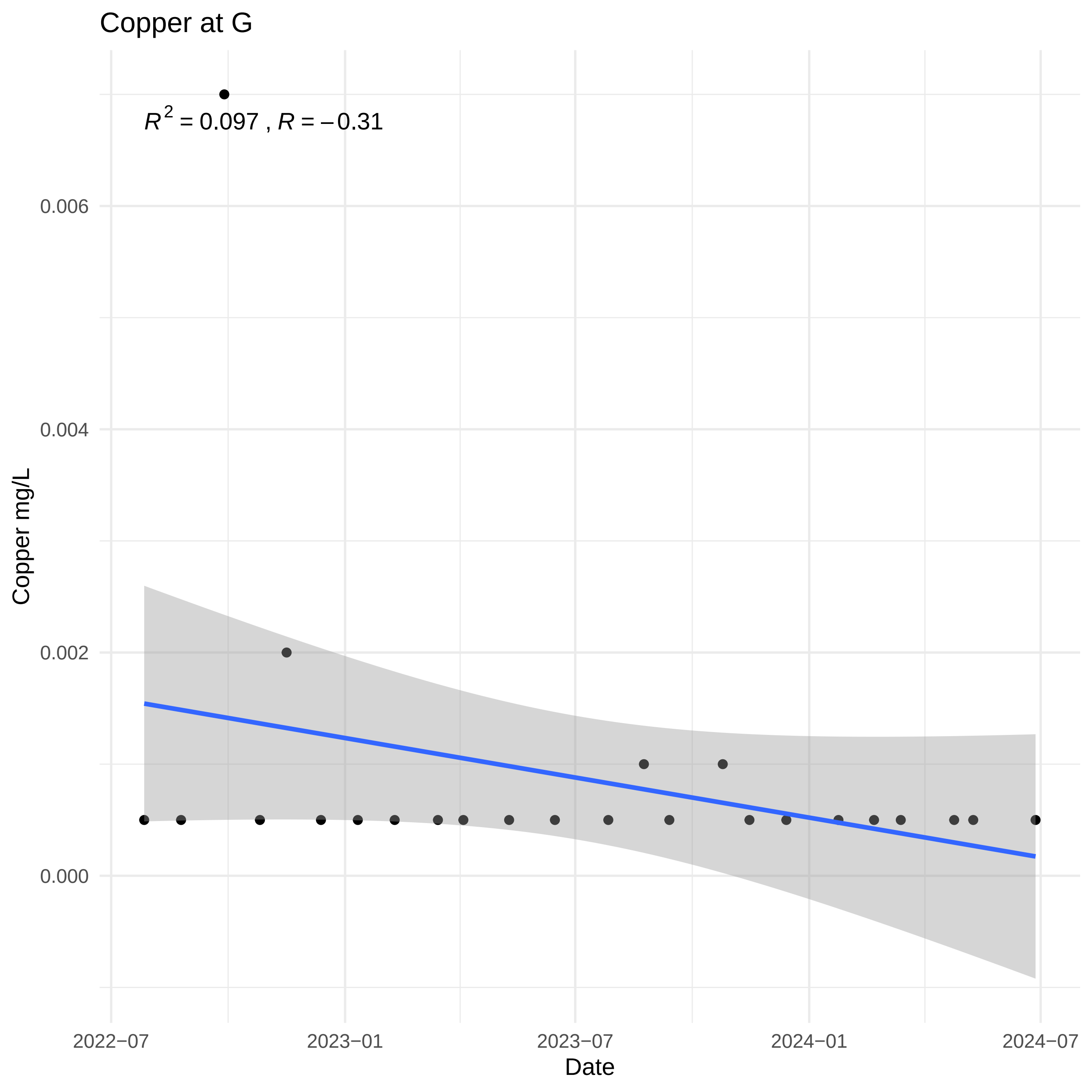


Chloride at WX22
R^2 = 0.1 , R = 0.32
150
100
50
Chloride mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

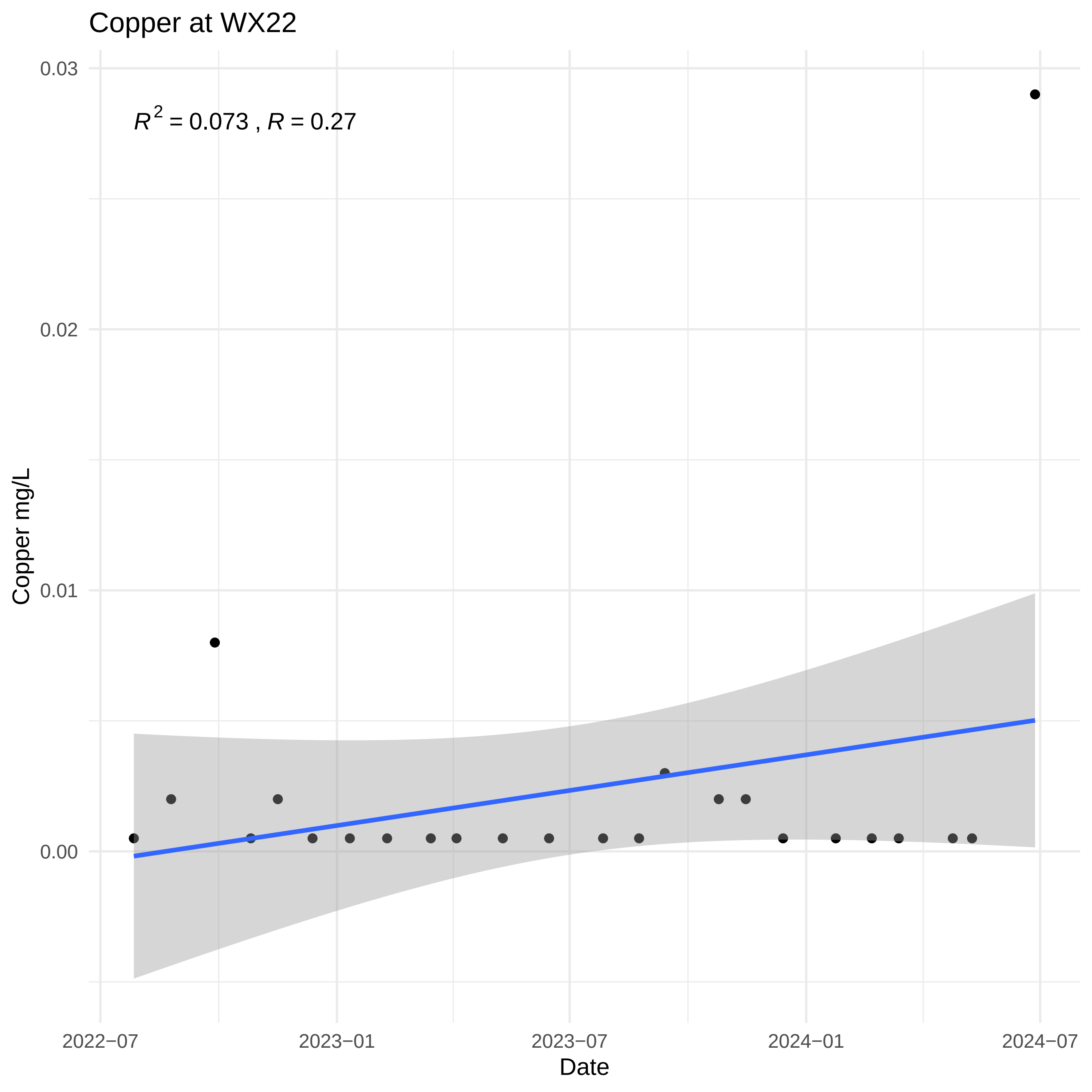


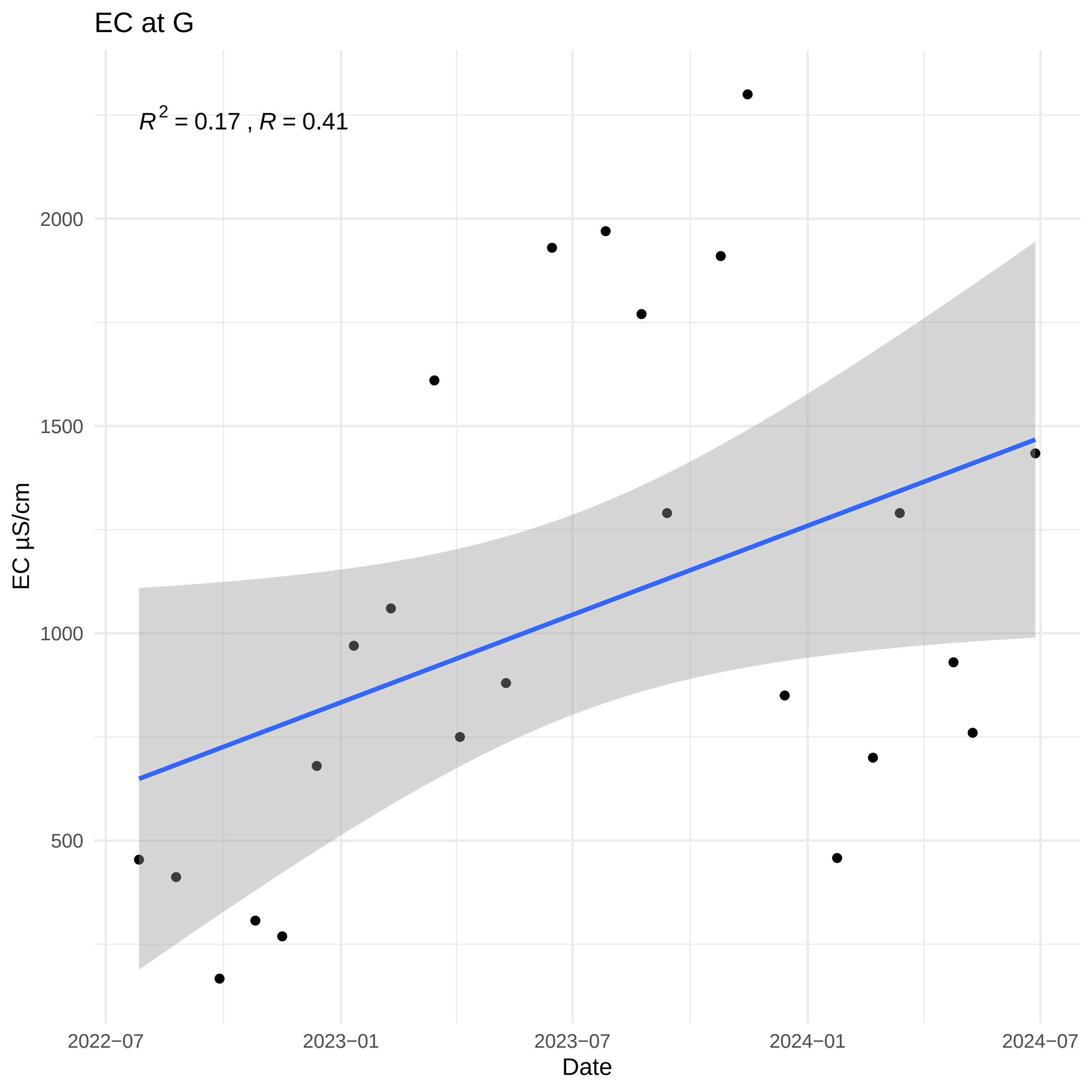
Chromium at G
$R^2 = 0.076$, $R = -0.28$
0.0020
0.0015
0.0010
0.0005
Chromium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

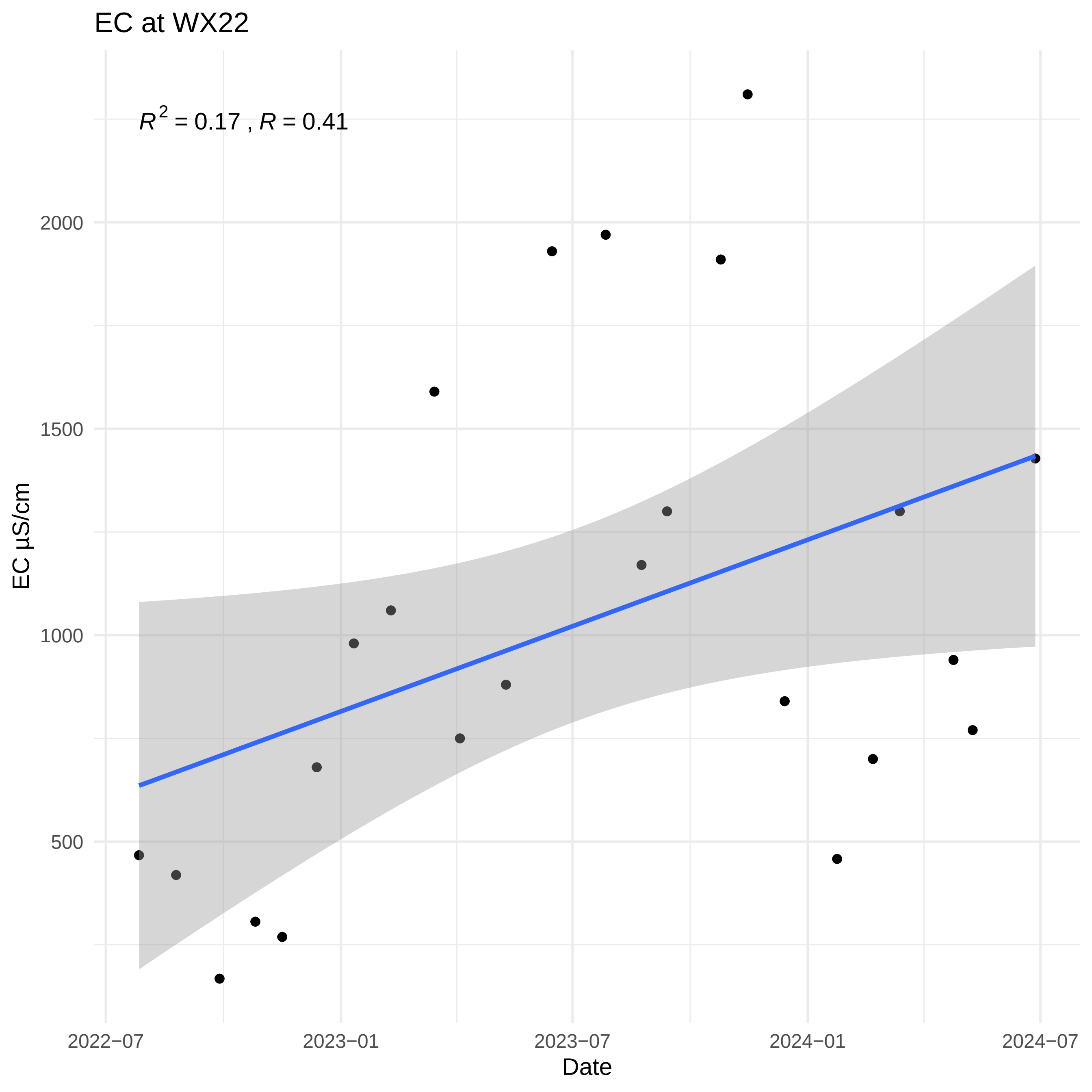

Chromium at WX22
$R^2 = 0.13$, $R = -0.37$
0.015
0.010
0.005
0.000
Chromium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



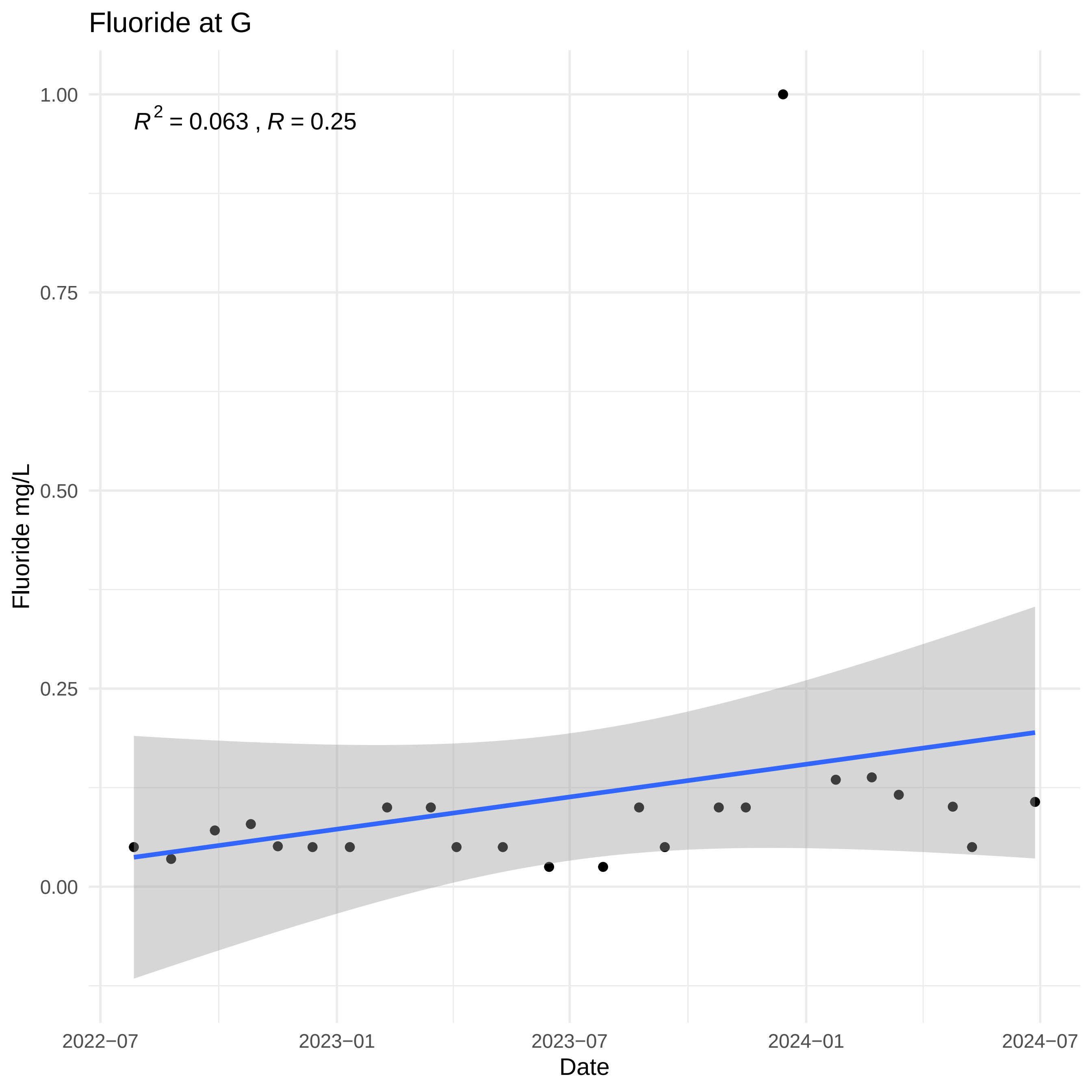
Copper at G
$R^2 = 0.097$, $R = -0.31$
0.006
0.004
0.002
0.000
Copper mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date


Copper at WX22
$R^2 = 0.073$, $R = 0.27$
0.03
0.02
0.01
0.00
Copper mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

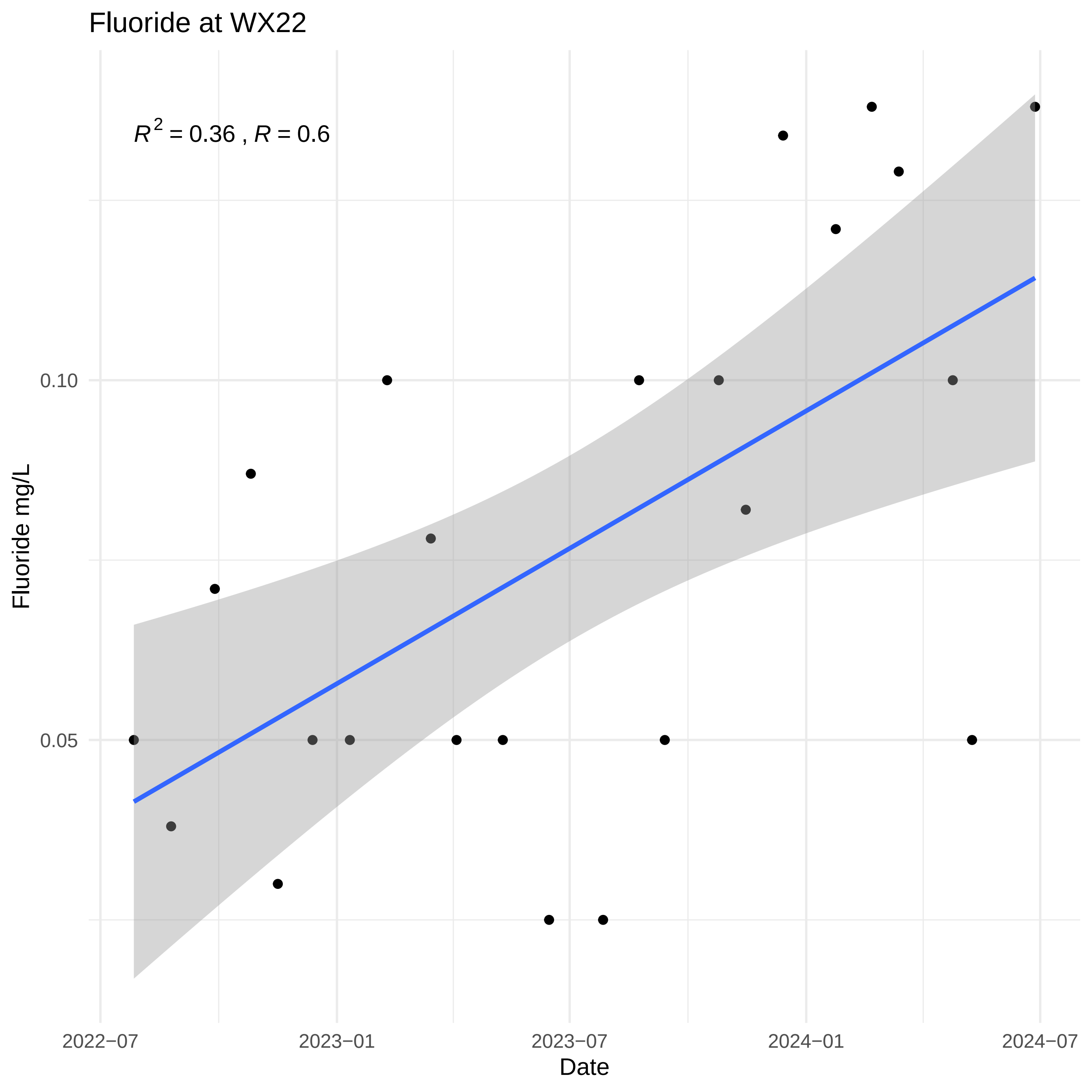

EC at G
R^2 = 0.17 , R = 0.41
2000
1500
1000
500
EC µS/cm
2022−07
2023−01
2023−07
2024−01
2024−07
Date



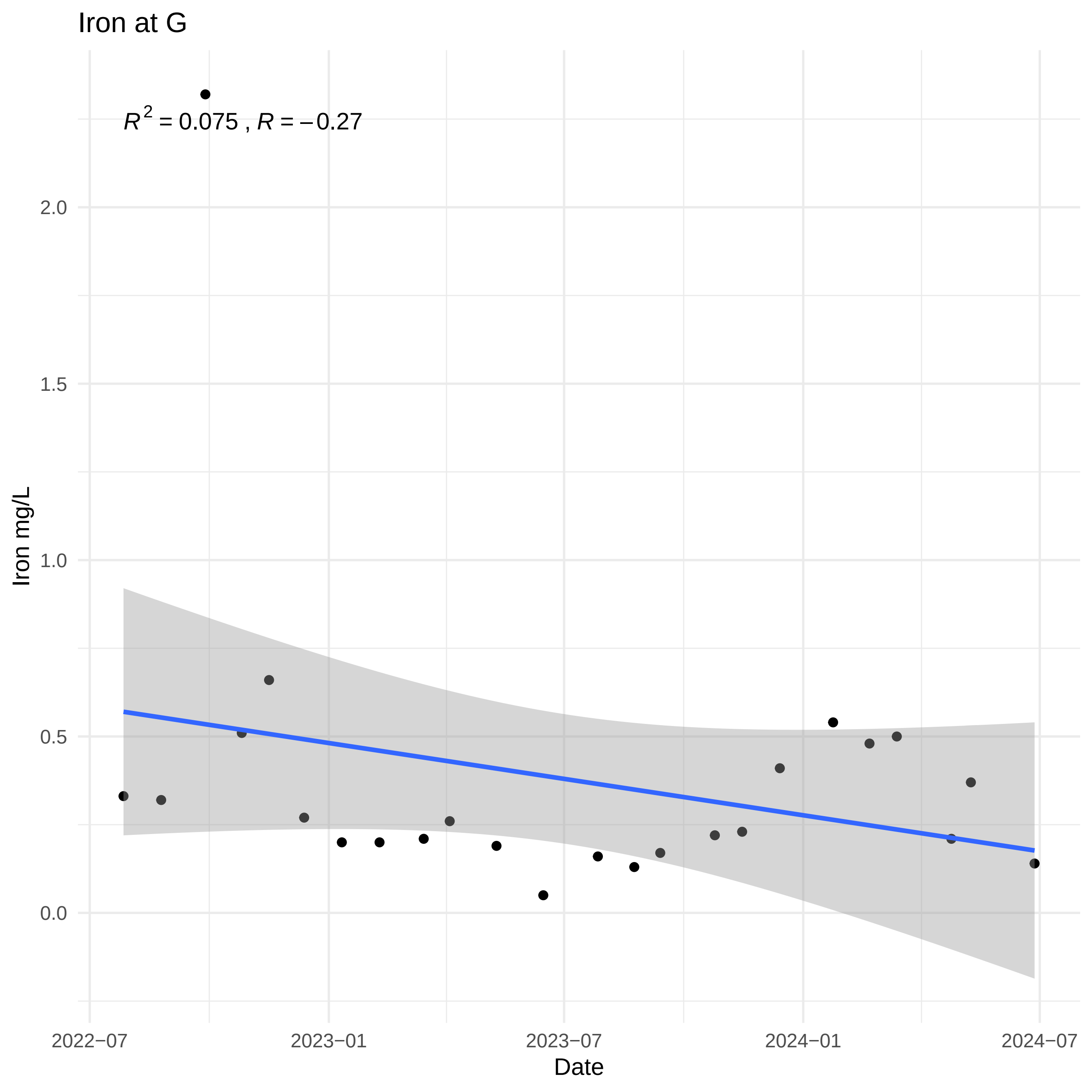
EC at WX22
$R^2 = 0.17$, $R = 0.41$
2000
1500
1000
500
EC µS/cm
2022−07
2023−01
2023−07
2024−01
2024−07
Date



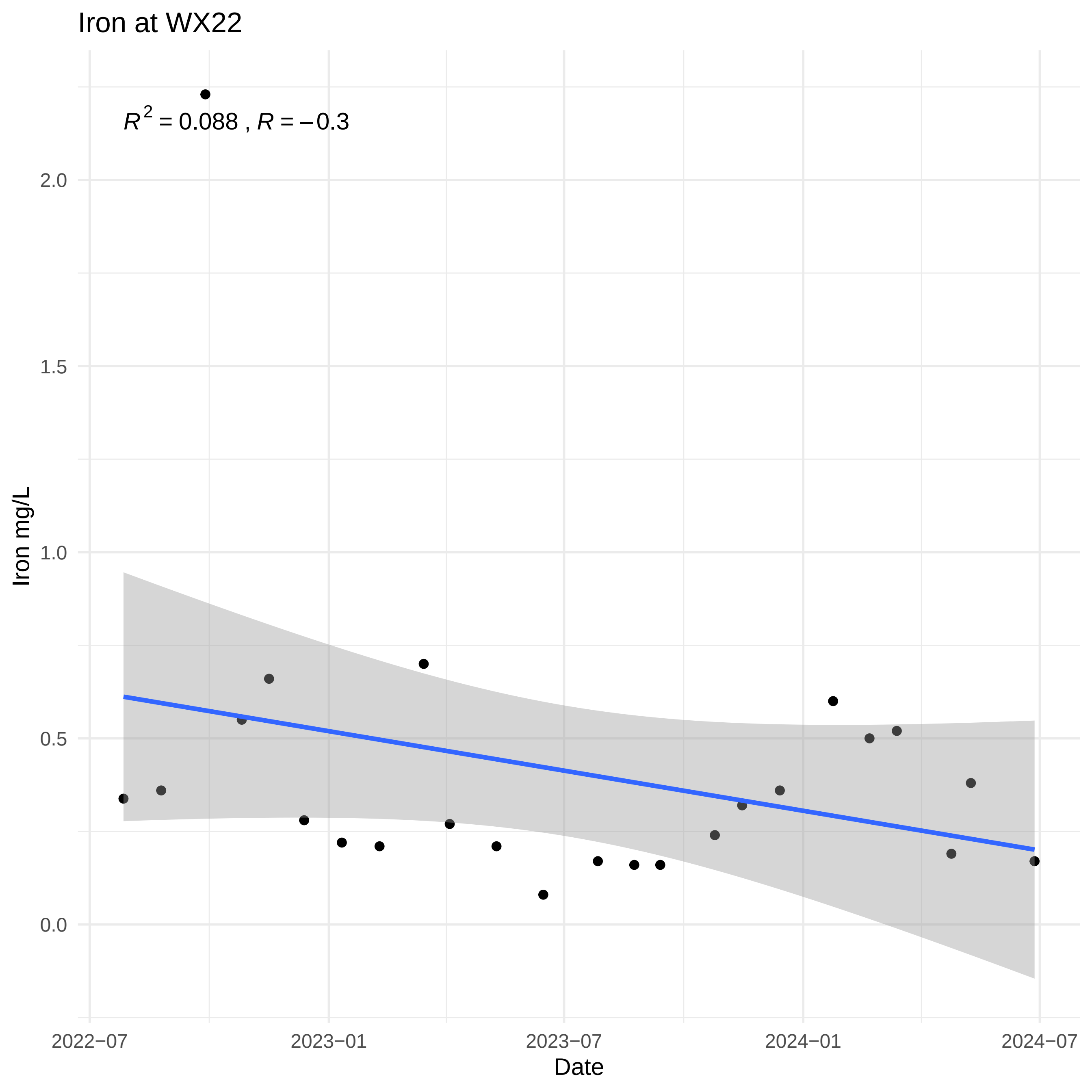
Fluoride at G
R^2 = 0.063 , R = 0.25
1.00
0.75
0.50
0.25
0.00
Fluoride mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



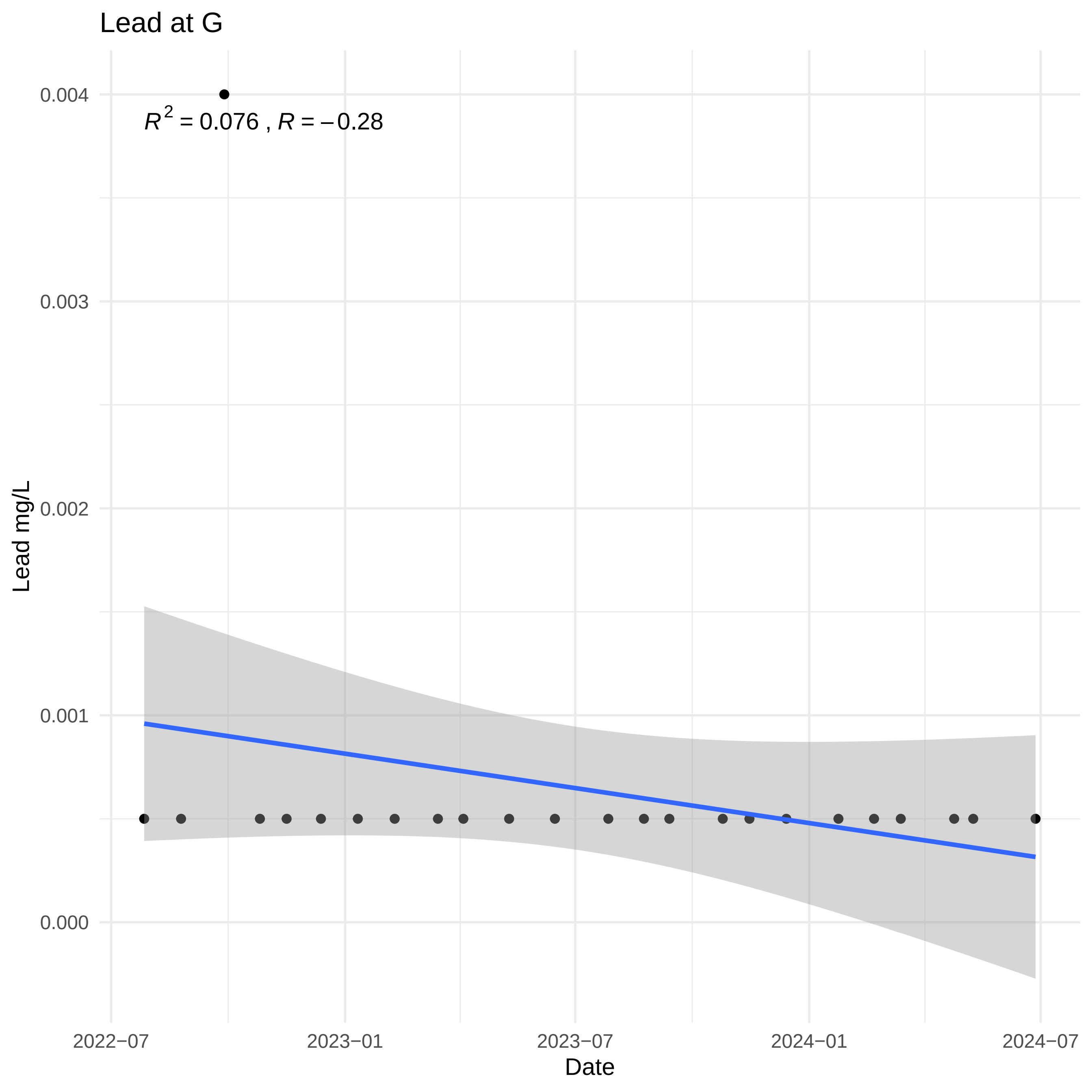
Fluoride at WX22
$R^2 = 0.36$, $R = 0.6$
0.10
0.05
Fluoride mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

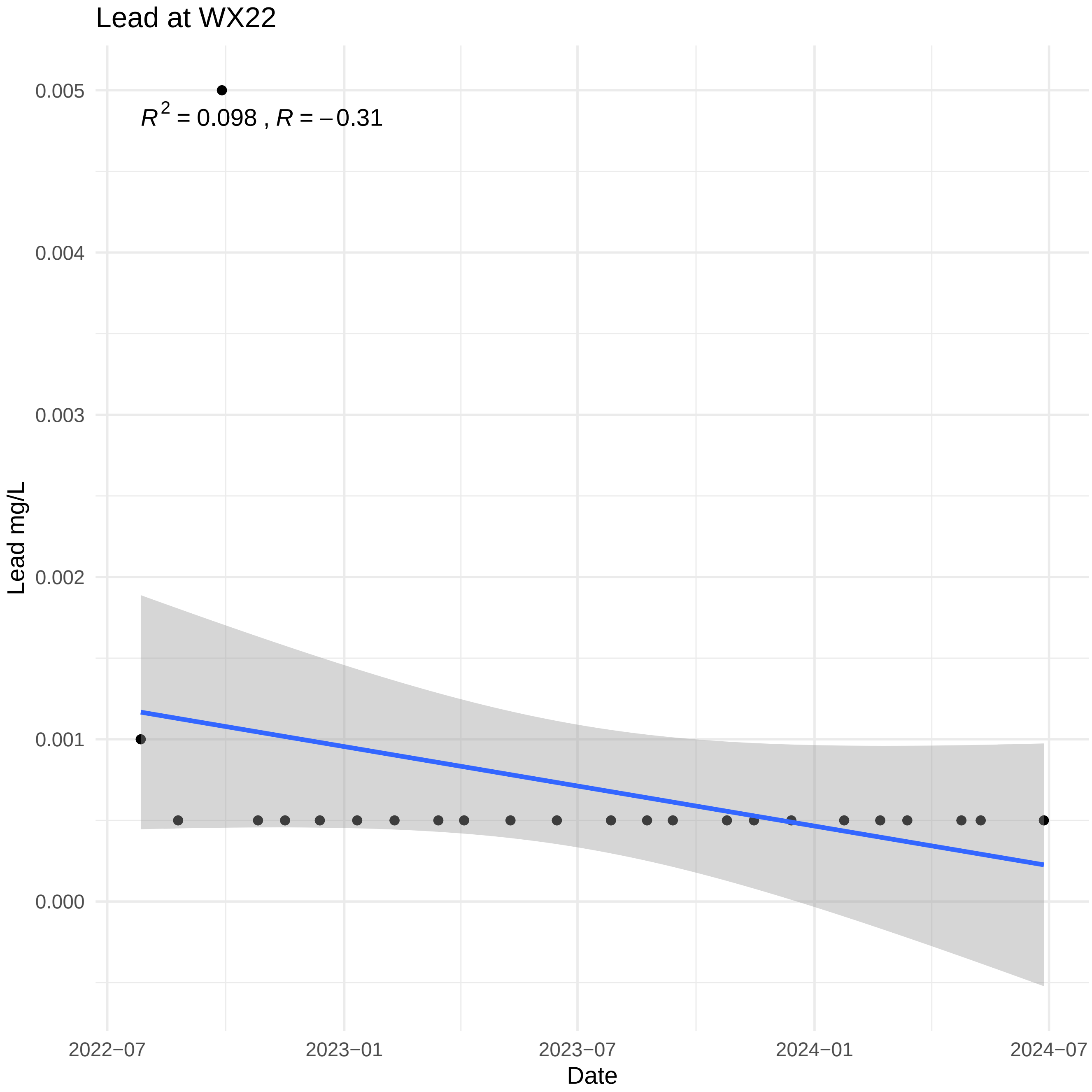


Iron at G
$R^2 = 0.075$, $R = -0.27$
2.0
1.5
1.0
0.5
0.0
Iron mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

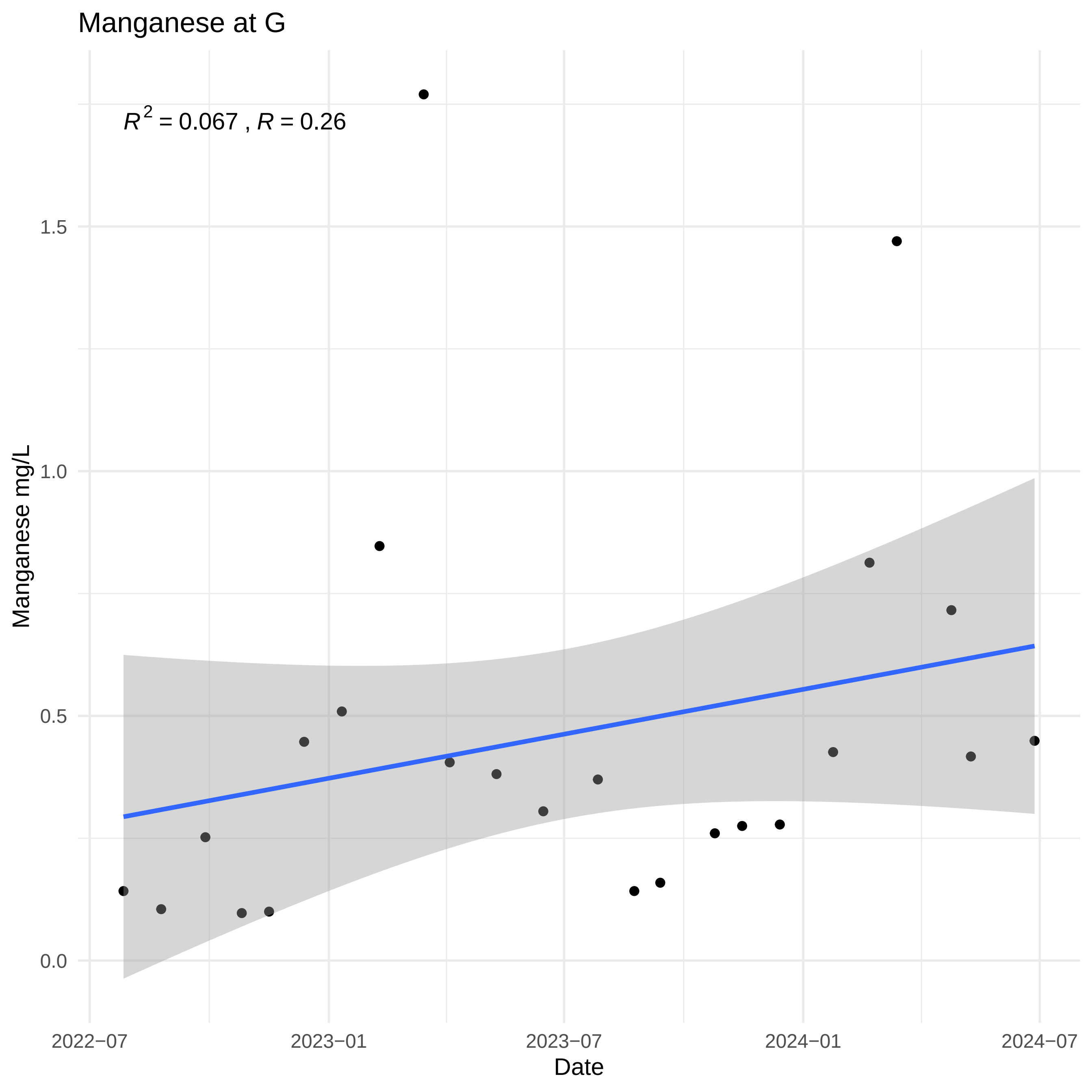


Iron at WX22
$R^2 = 0.088$, $R = -0.3$
Iron mg/L
0.0
0.5
1.0
1.5
2.0
2022−07
2023−01
2023−07
2024−01
2024−07
Date

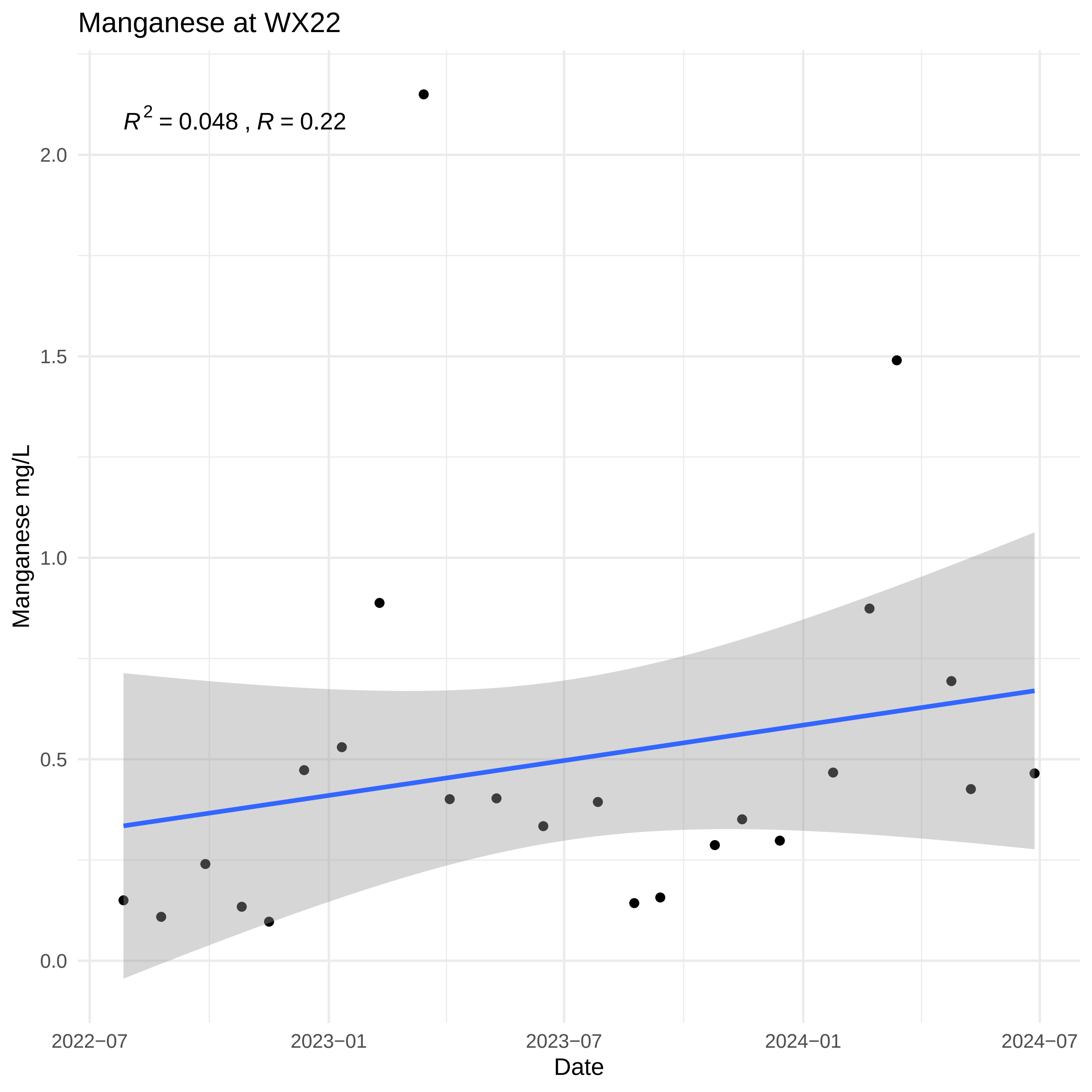

Lead at G
$R^2 = 0.076$, $R = -0.28$
0.004
0.003
0.002
0.001
0.000
Lead mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



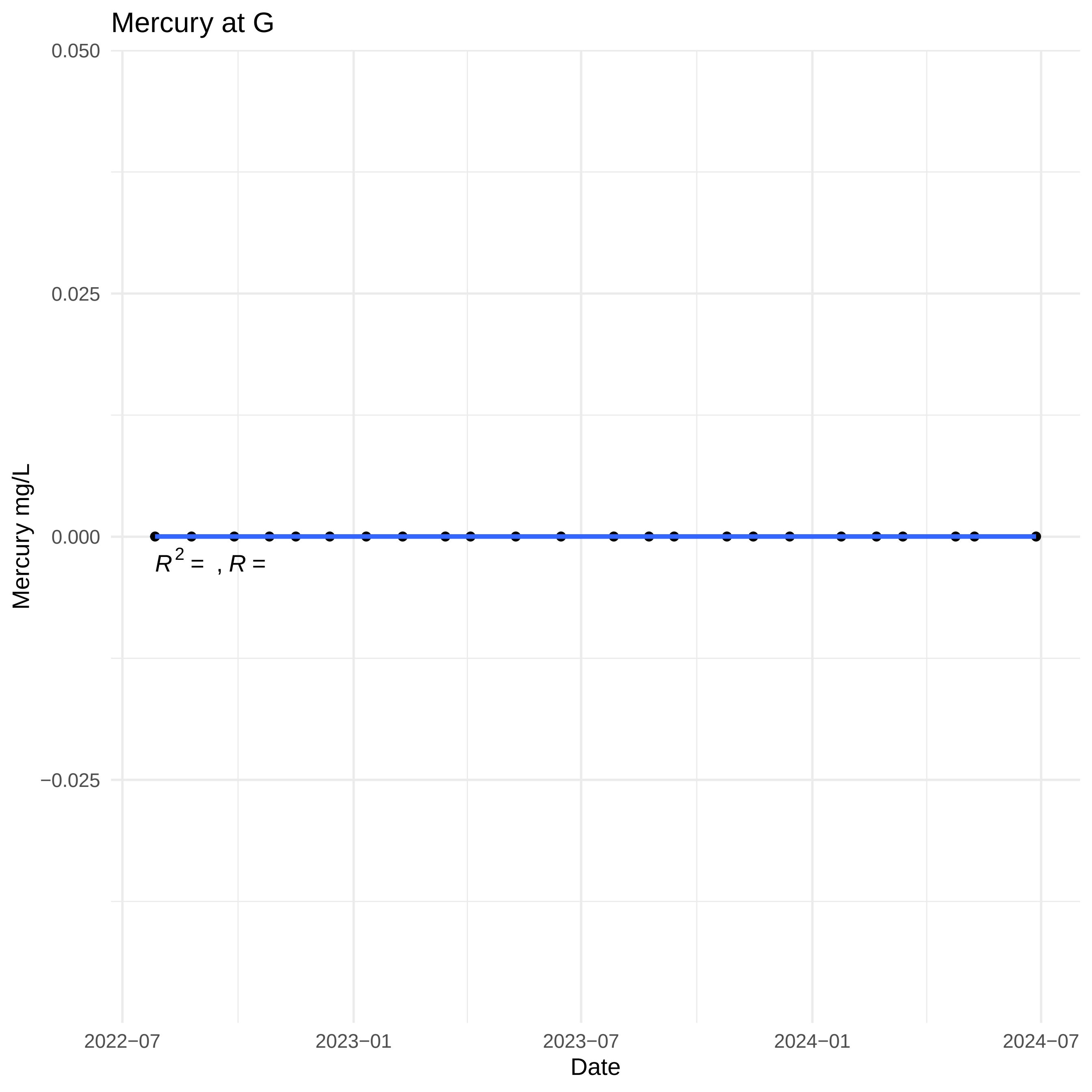
Lead at WX22
$R^2 = 0.098$, $R = -0.31$
0.005
0.004
0.003
0.002
0.001
0.000
Lead mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

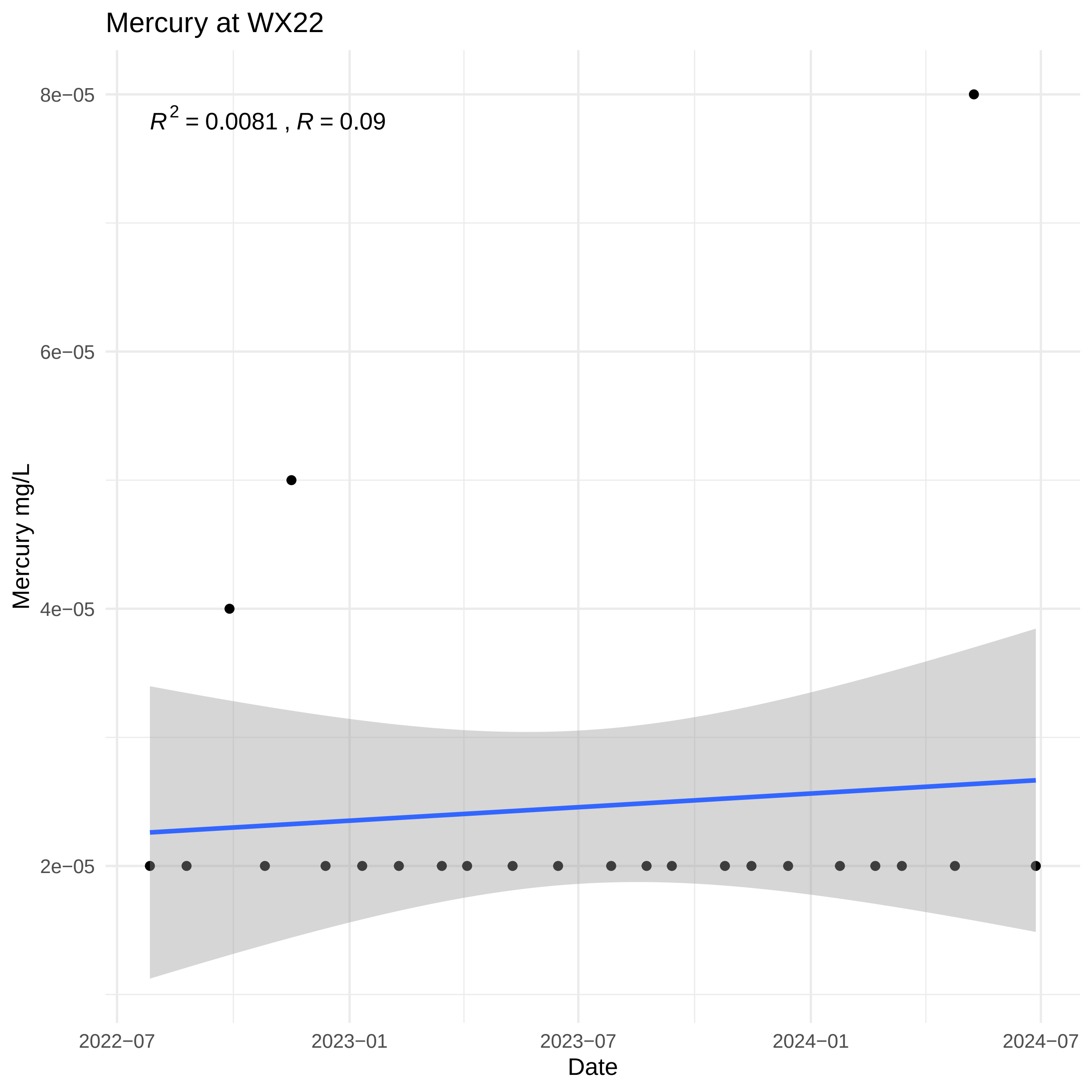


Manganese at G
$R^2 = 0.067$, $R = 0.26$
1.5
1.0
0.5
0.0
Manganese mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

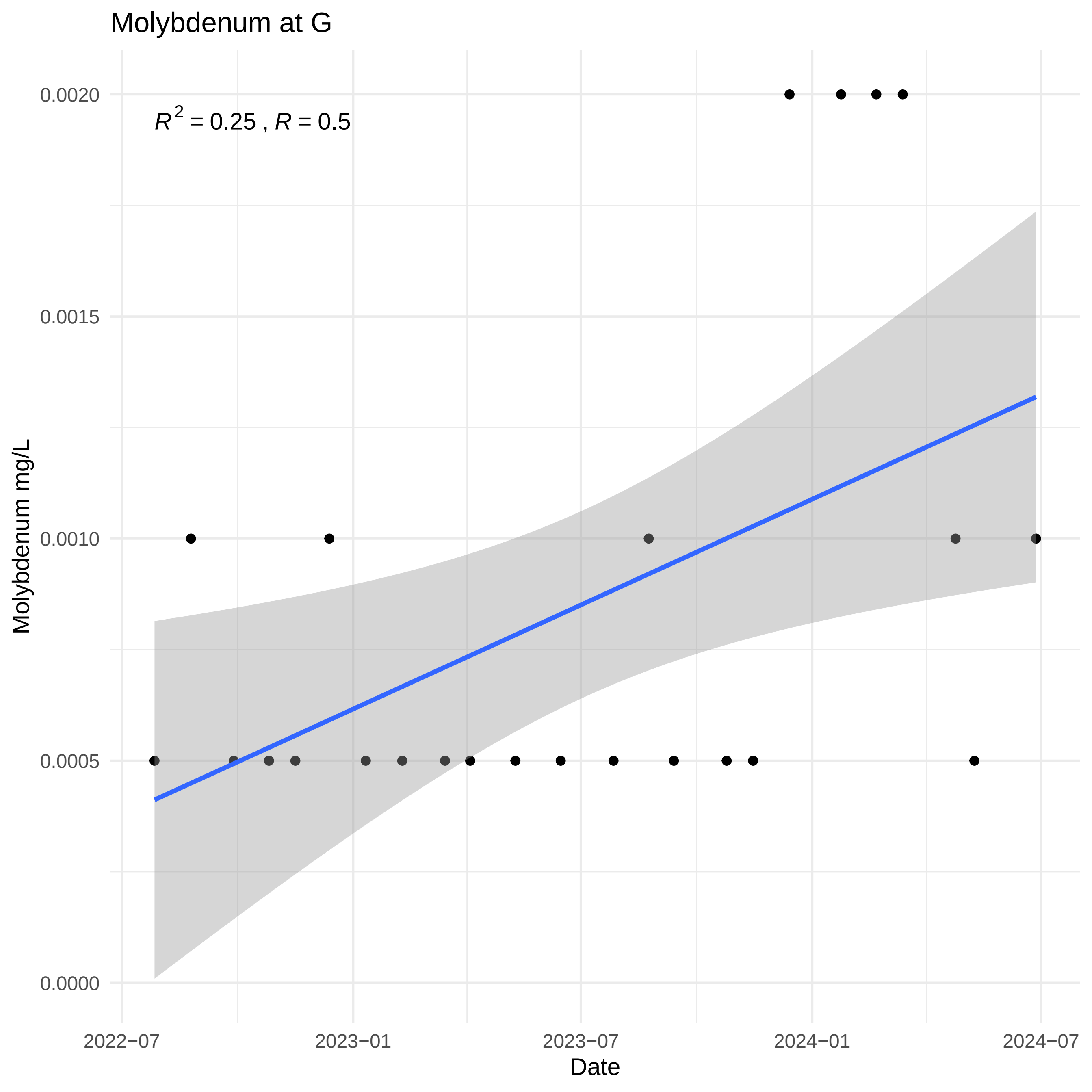


Manganese at WX22
R^2 = 0.048 , R = 0.22
Manganese mg/L
0.0
0.5
1.0
1.5
2.0
2022−07
2023−01
2023−07
2024−01
2024−07
Date

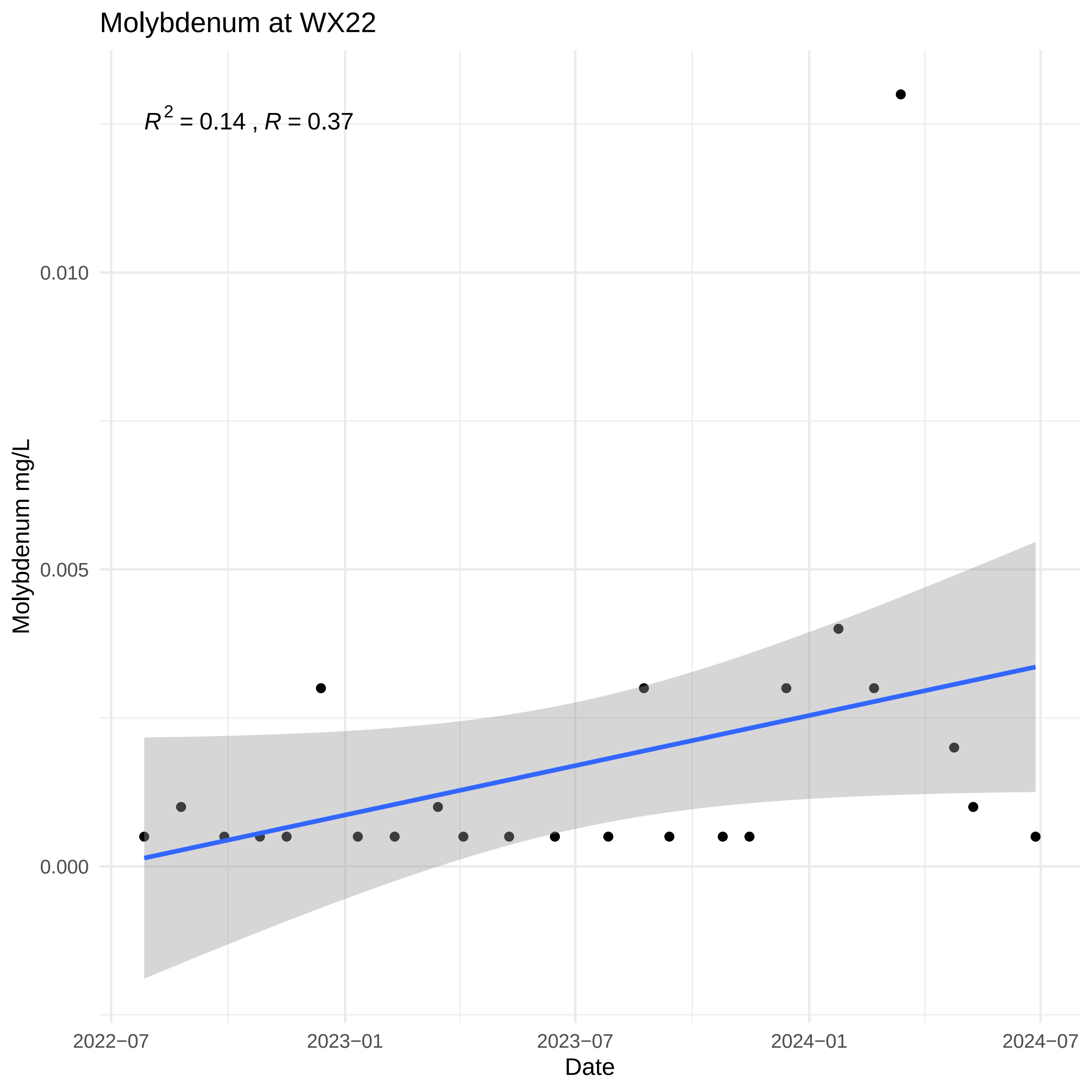

Mercury at G
0.050
0.025
0.000
−0.025
Mercury mg/L
R^2 = , R =
2022−07
2023−01
2023−07
2024−01
2024−07
Date

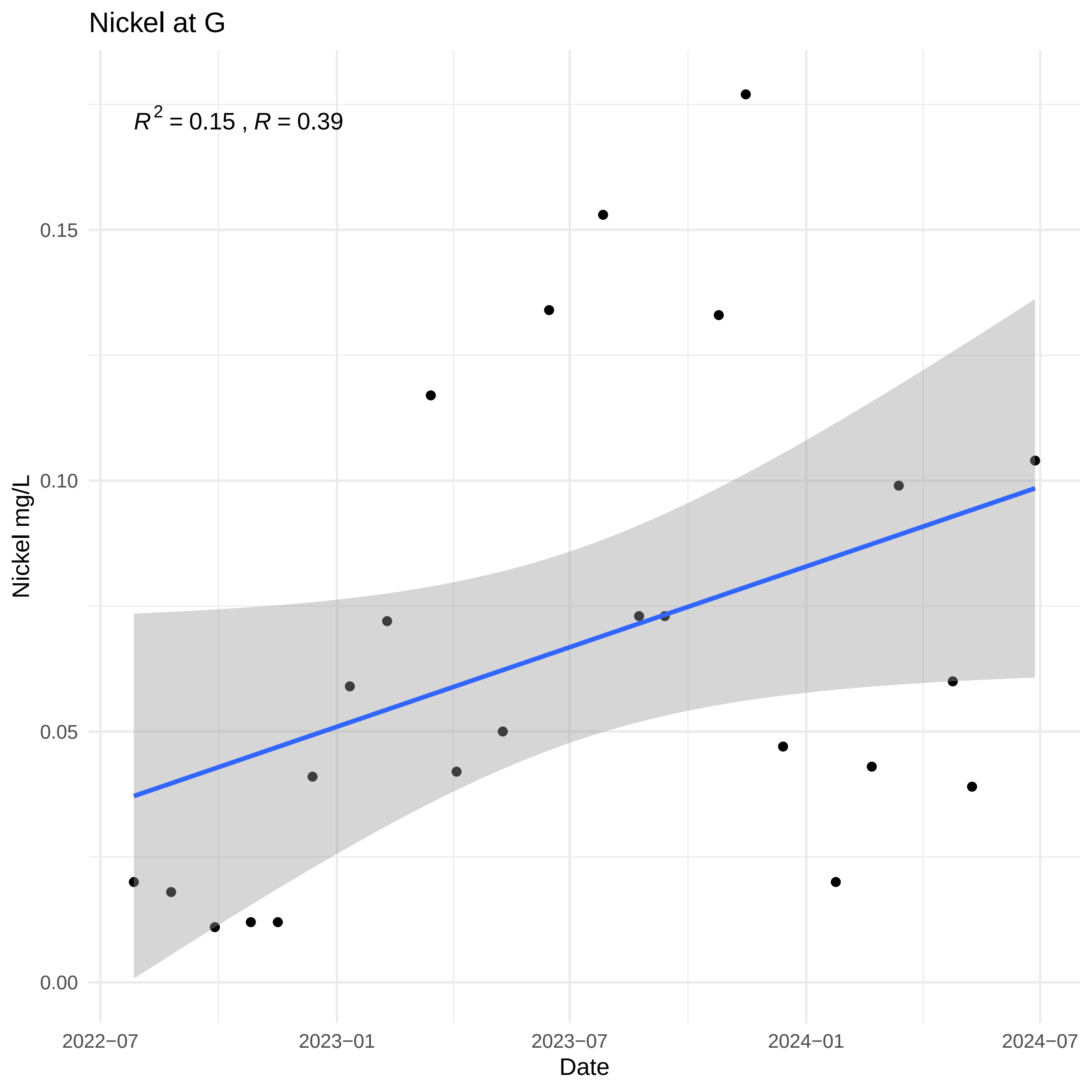


Mercury at WX22
R^2 = 0.0081 , R = 0.09
8e−05
6e−05
4e−05
2e−05
Mercury mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

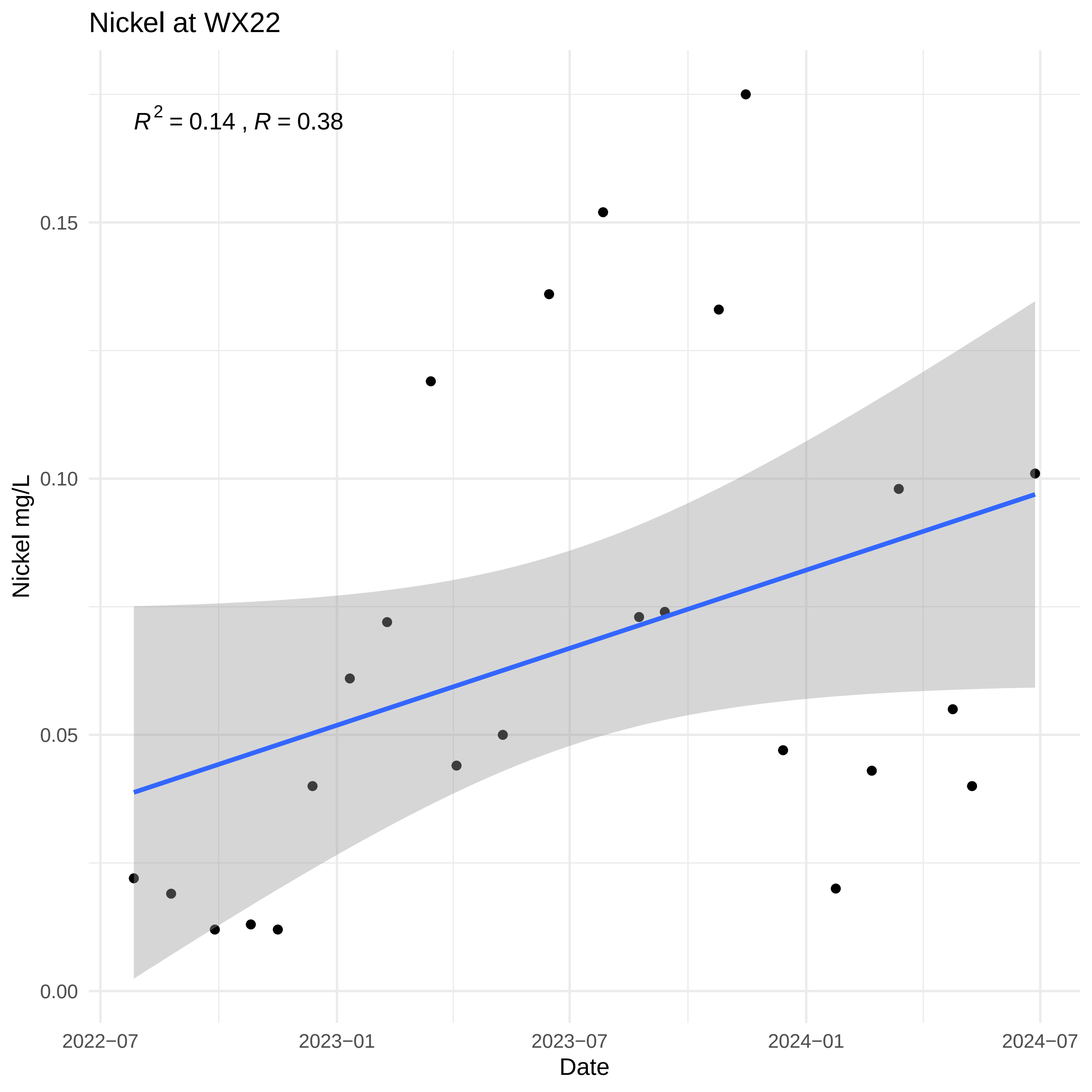


Molybdenum at G
$R^2 = 0.25$, $R = 0.5$
0.0020
0.0015
0.0010
0.0005
0.0000
Molybdenum mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

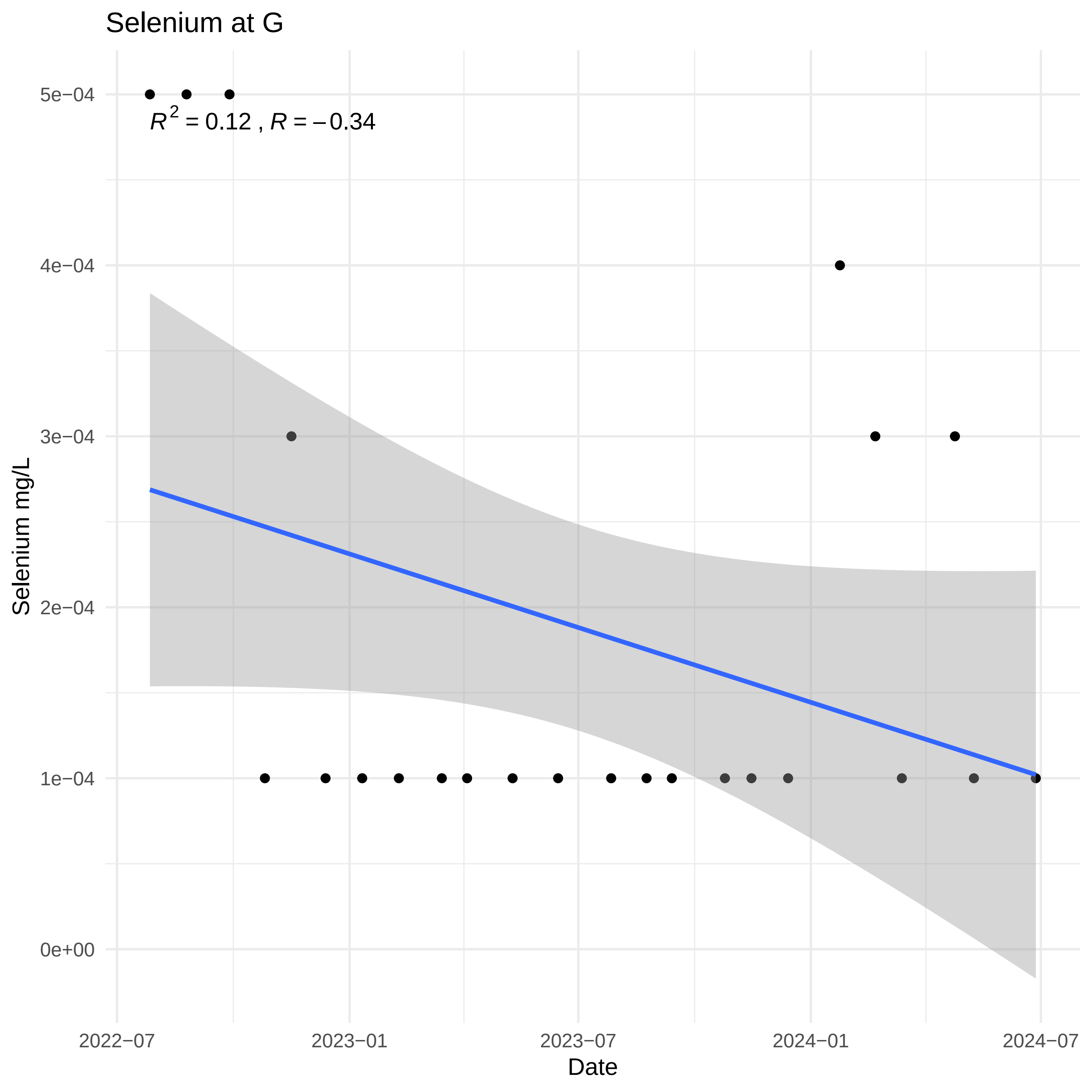

Molybdenum at WX22
$R^2 = 0.14$, $R = 0.37$
0.010
0.005
0.000
Molybdenum mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



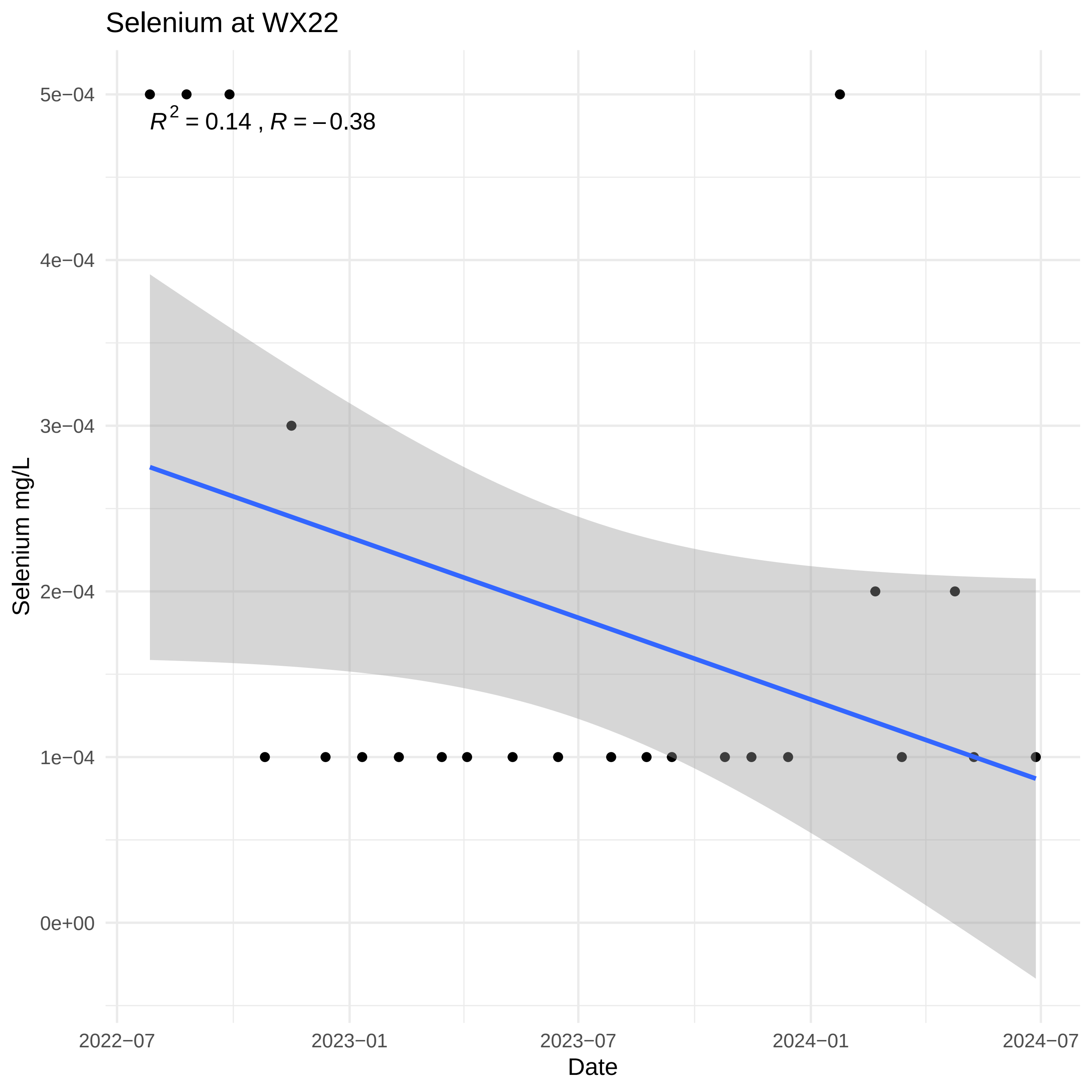
Nickel at G
$R^2 = 0.15$, $R = 0.39$
0.15
0.10
0.05
0.00
Nickel mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



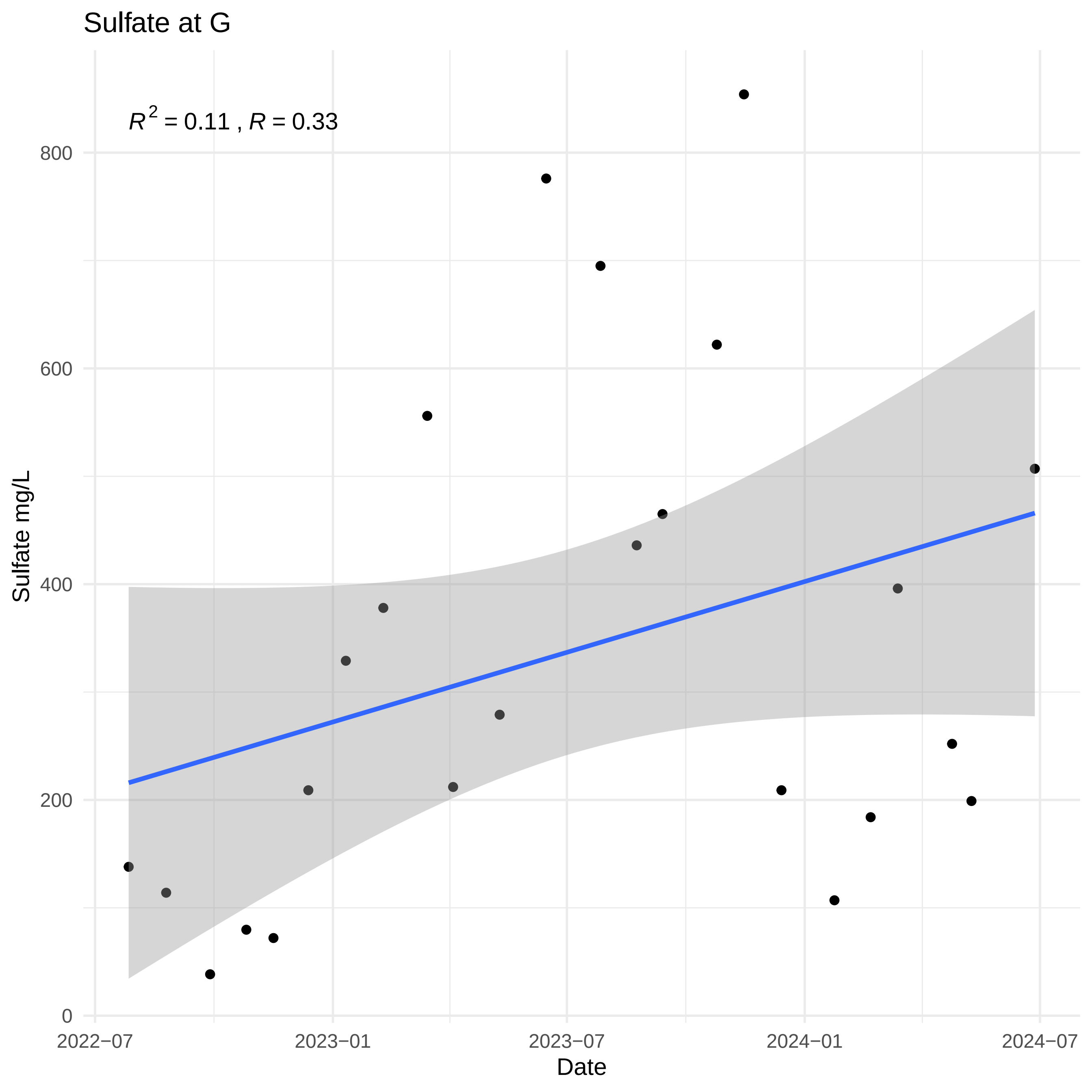
Nickel at WX22
$R^2 = 0.14$, $R = 0.38$
0.15
0.10
0.05
0.00
Nickel mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



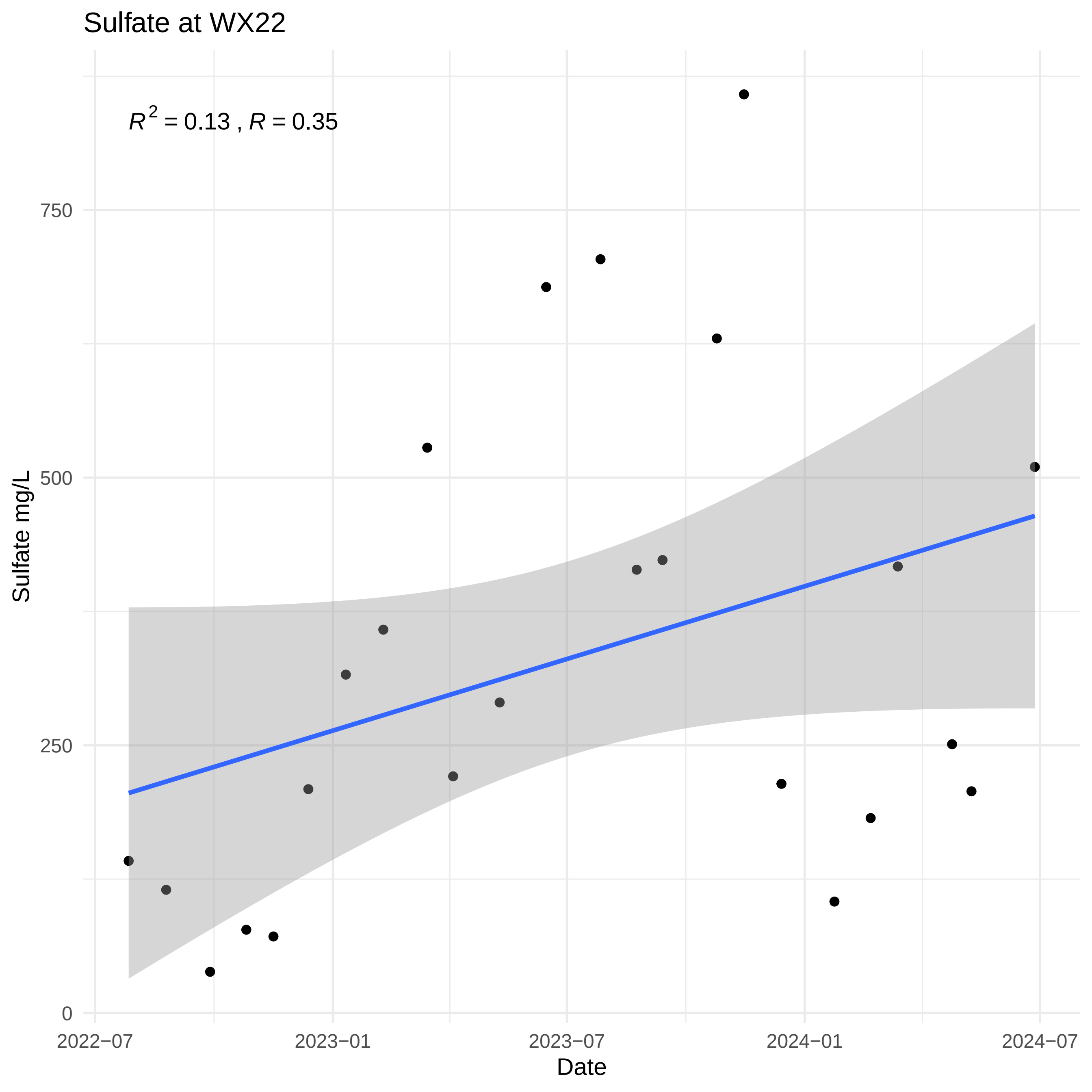
Selenium at G
$R^2 = 0.12$, $R = -0.34$
5e−04
4e−04
3e−04
2e−04
1e−04
0e+00
Selenium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

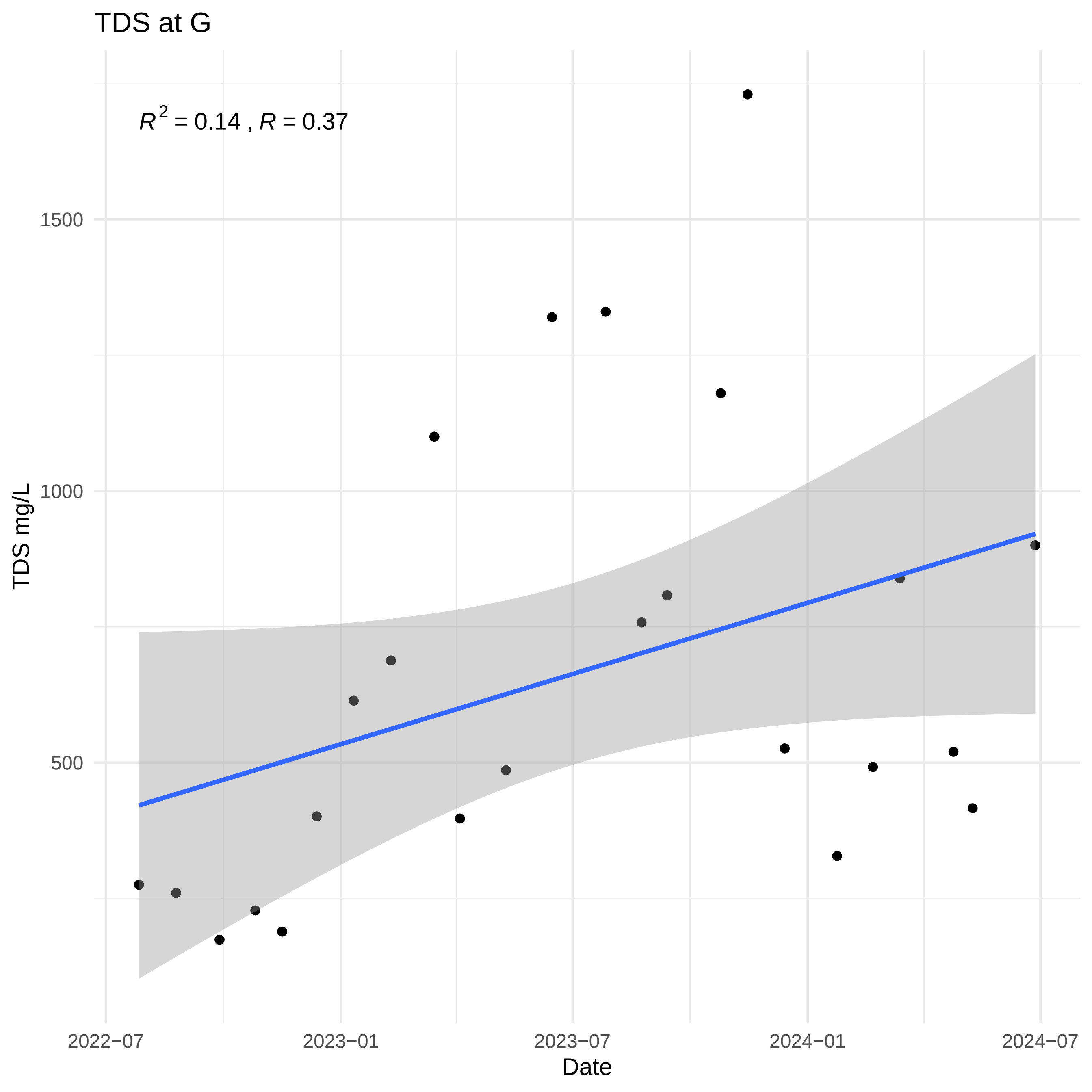


Selenium at WX22
$R^2 = 0.14$, $R = -0.38$
5e−04
4e−04
3e−04
2e−04
1e−04
0e+00
Selenium mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

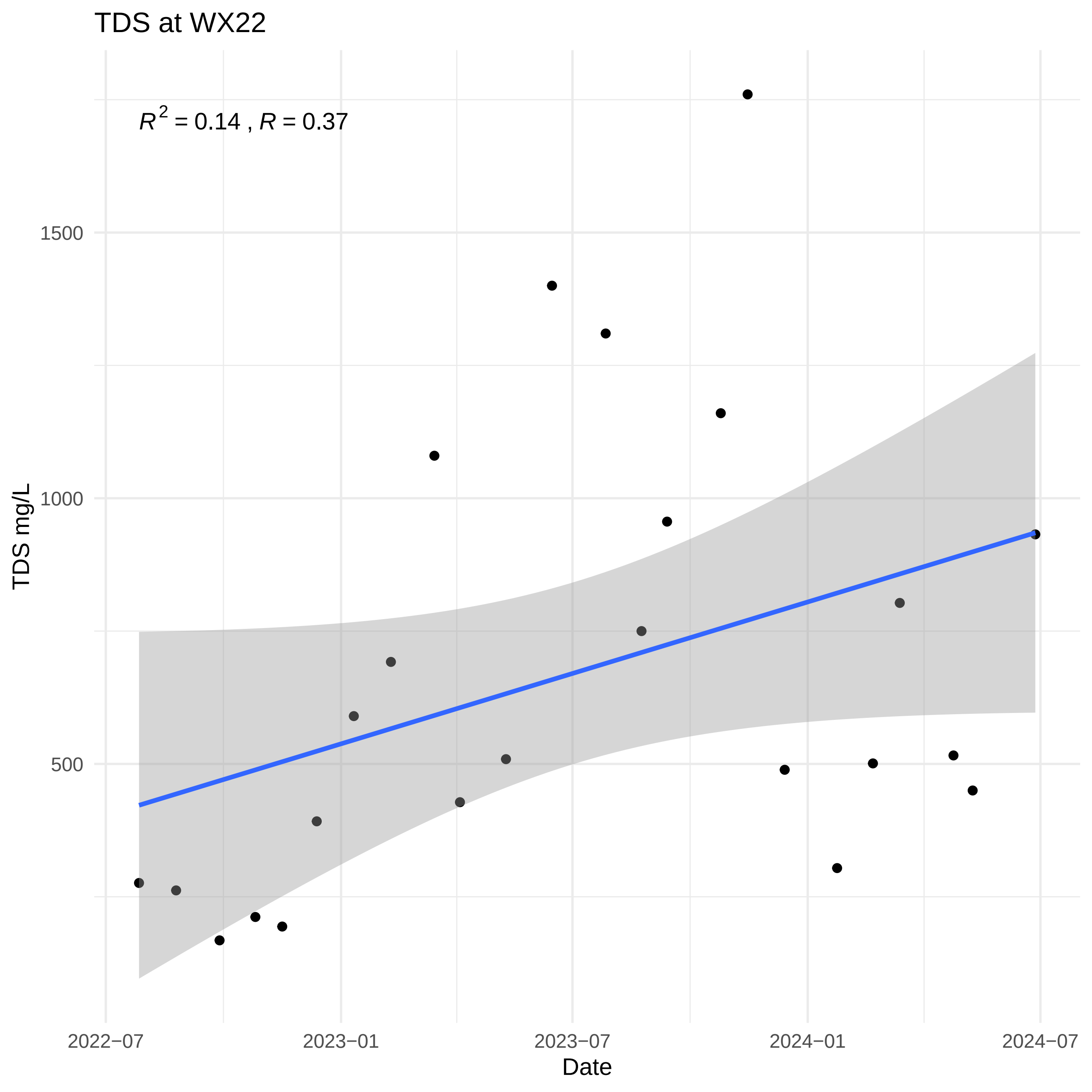


Sulfate at G
R^2 = 0.11 , R = 0.33
Sulfate mg/L
800
600
400
200
0
2022−07
2023−01
2023−07
2024−01
2024−07
Date

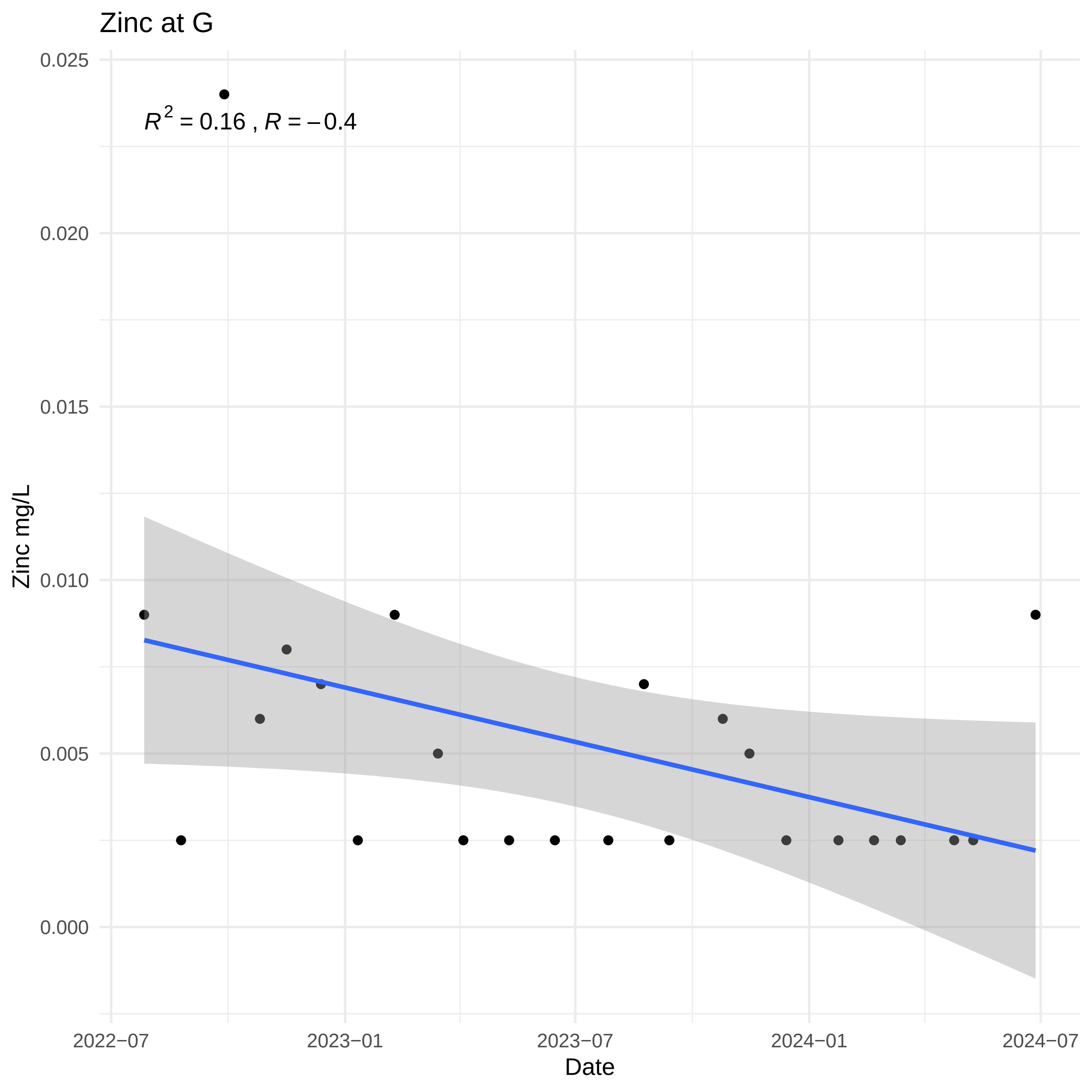

Sulfate at WX22
R^2 = 0.13 , R = 0.35
750
500
250
0
Sulfate mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



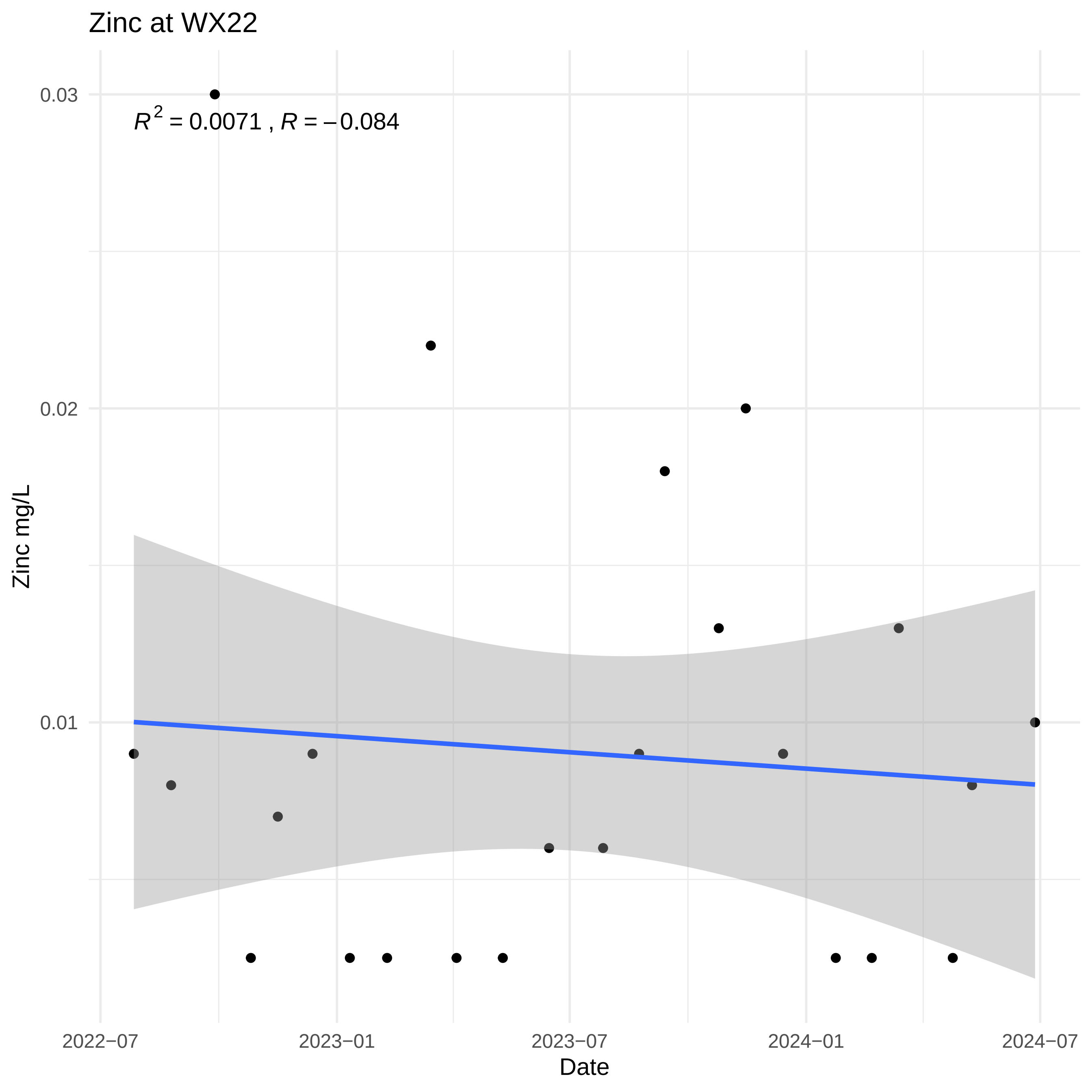
TDS at G
R^2 = 0.14 , R = 0.37
1500
1000
500
TDS mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



TDS at WX22
$R^2 = 0.14$, $R = 0.37$
1500
1000
500
TDS mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date



Zinc at G
$R^2 = 0.16$, $R = -0.4$
0.025
0.020
0.015
0.010
0.005
0.000
Zinc mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

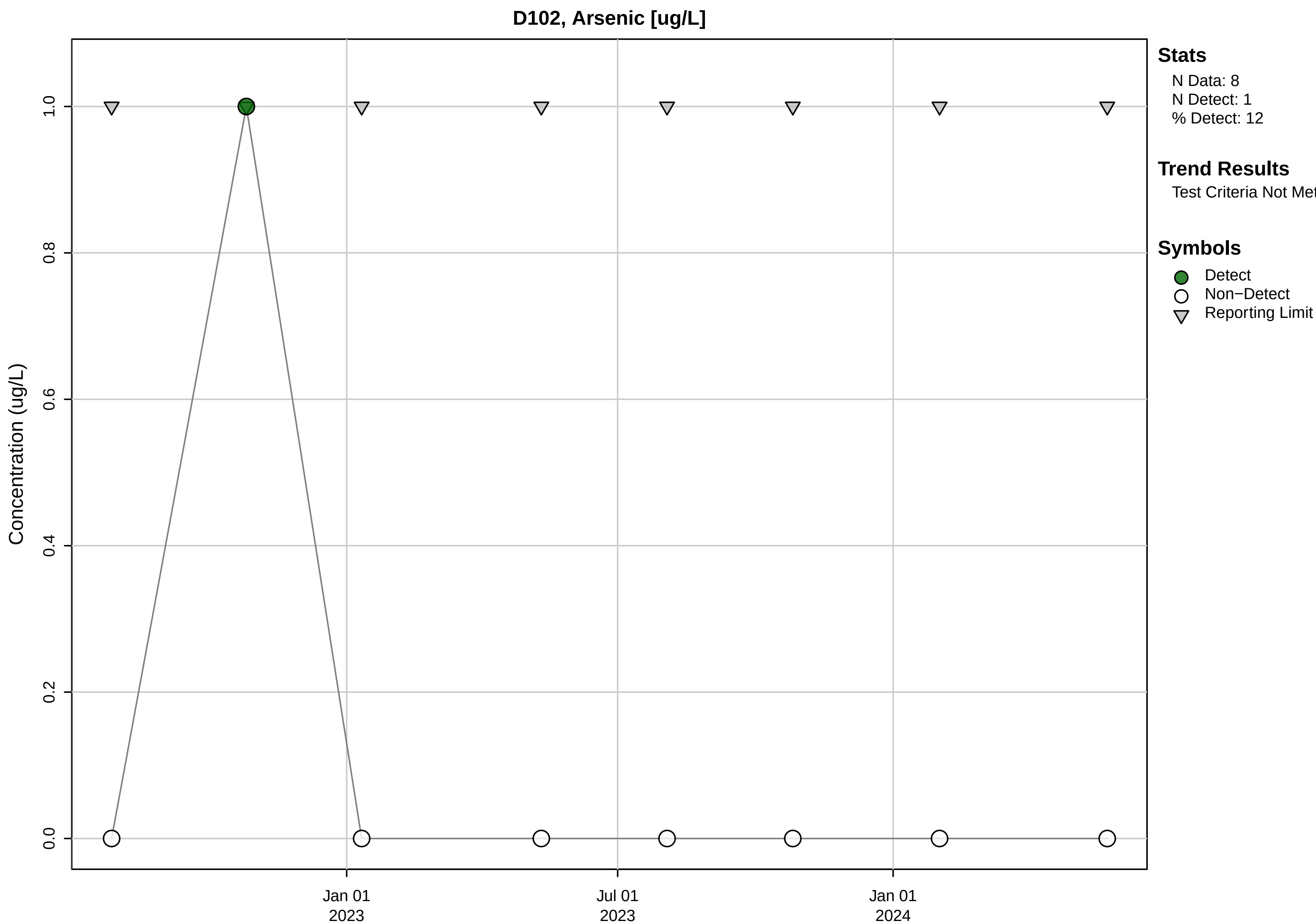


Zinc at WX22
$R^2 = 0.0071$, $R = -0.084$
0.03
0.02
0.01
Zinc mg/L
2022−07
2023−01
2023−07
2024−01
2024−07
Date

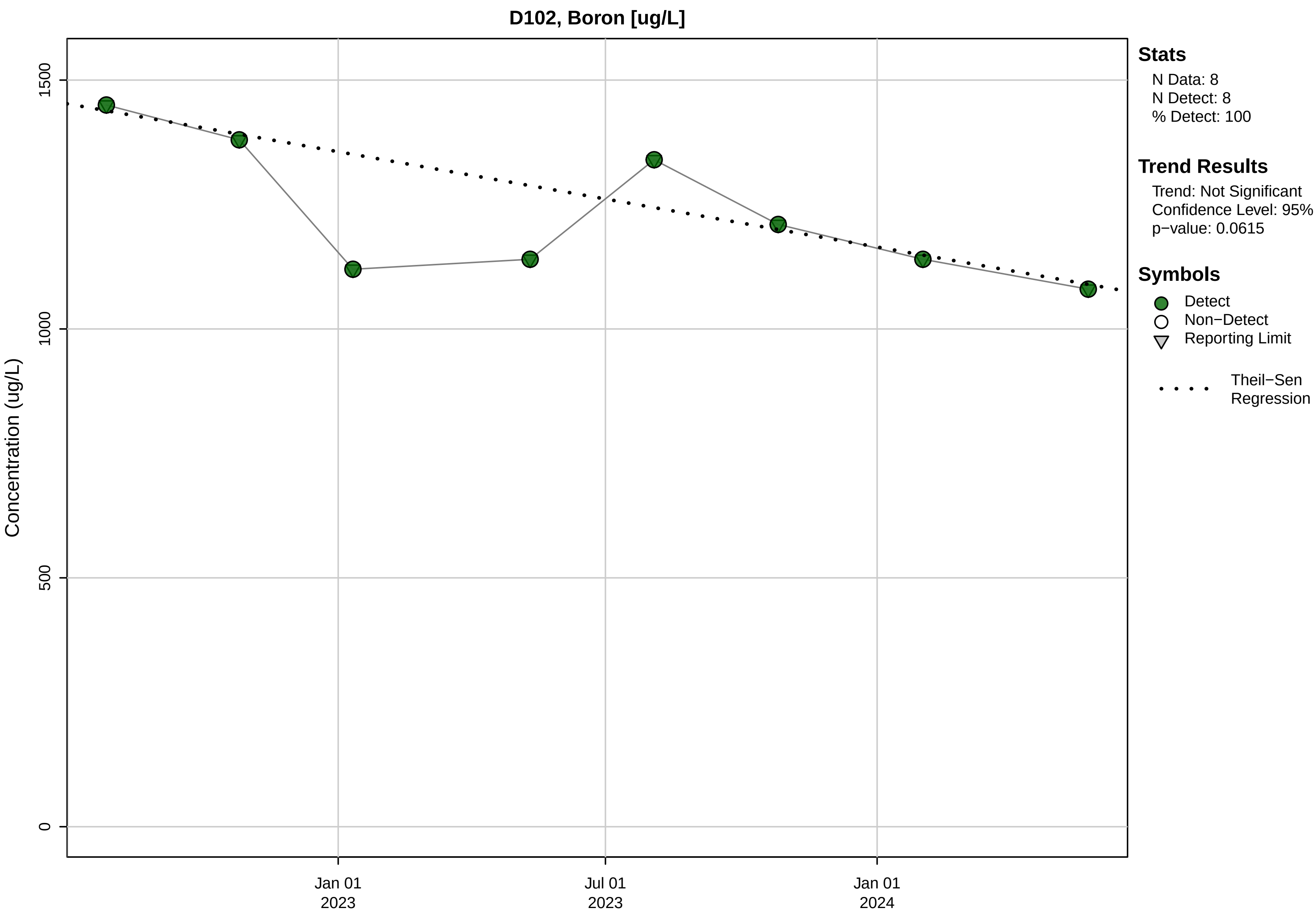
ERM

APPENDIX M MANN-KENDALL OUTPUTS

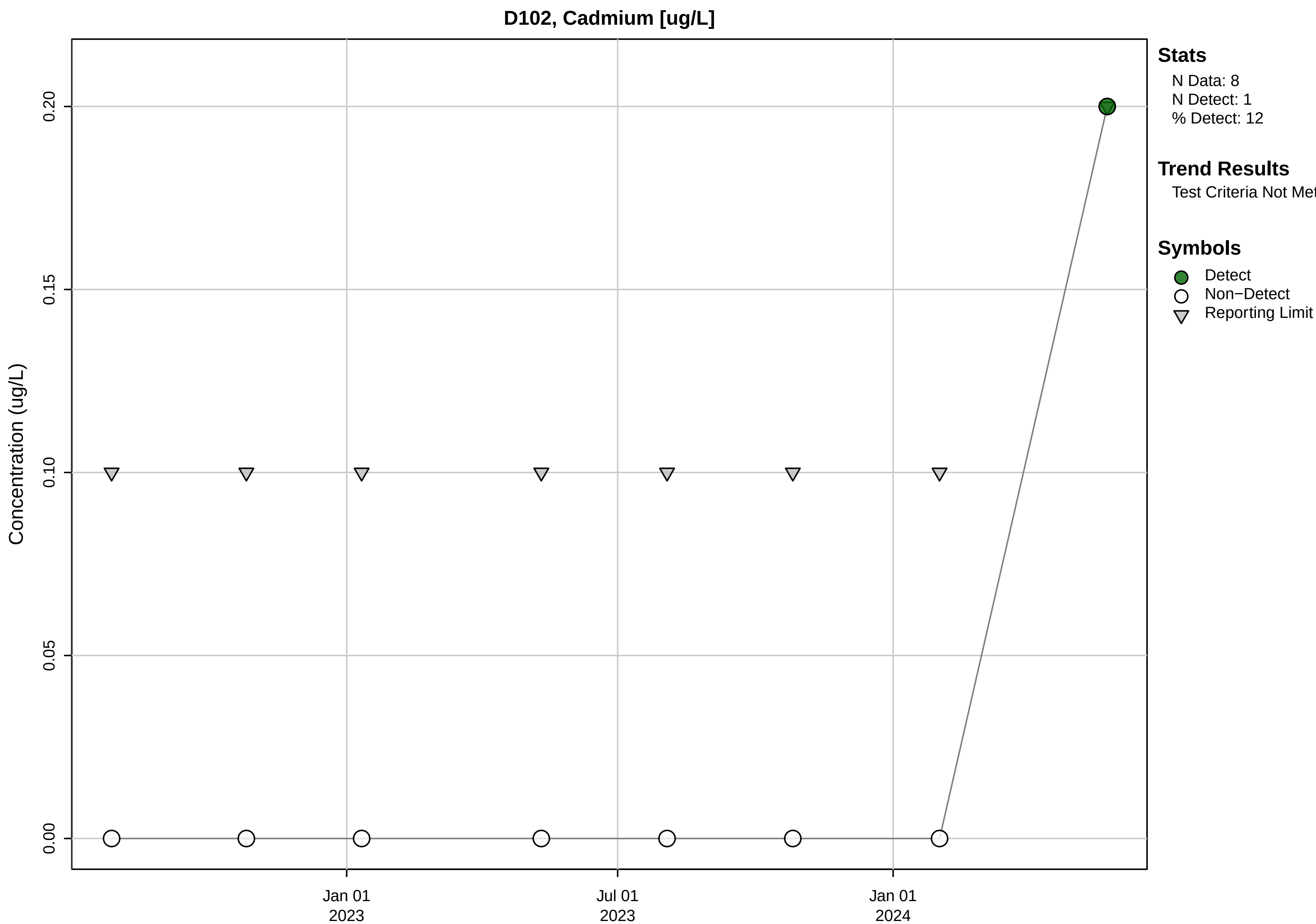
Time Series Figures

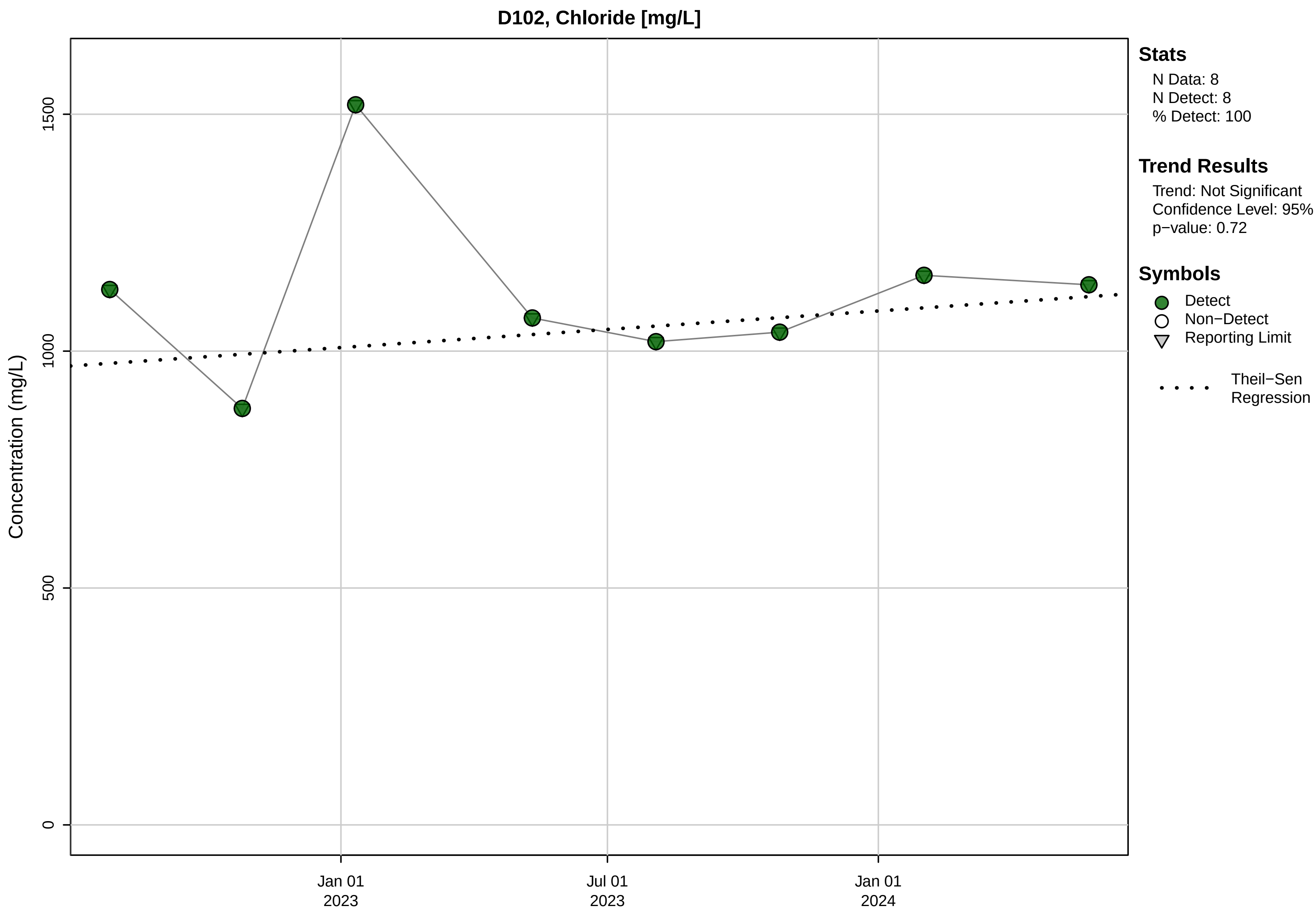


D102, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

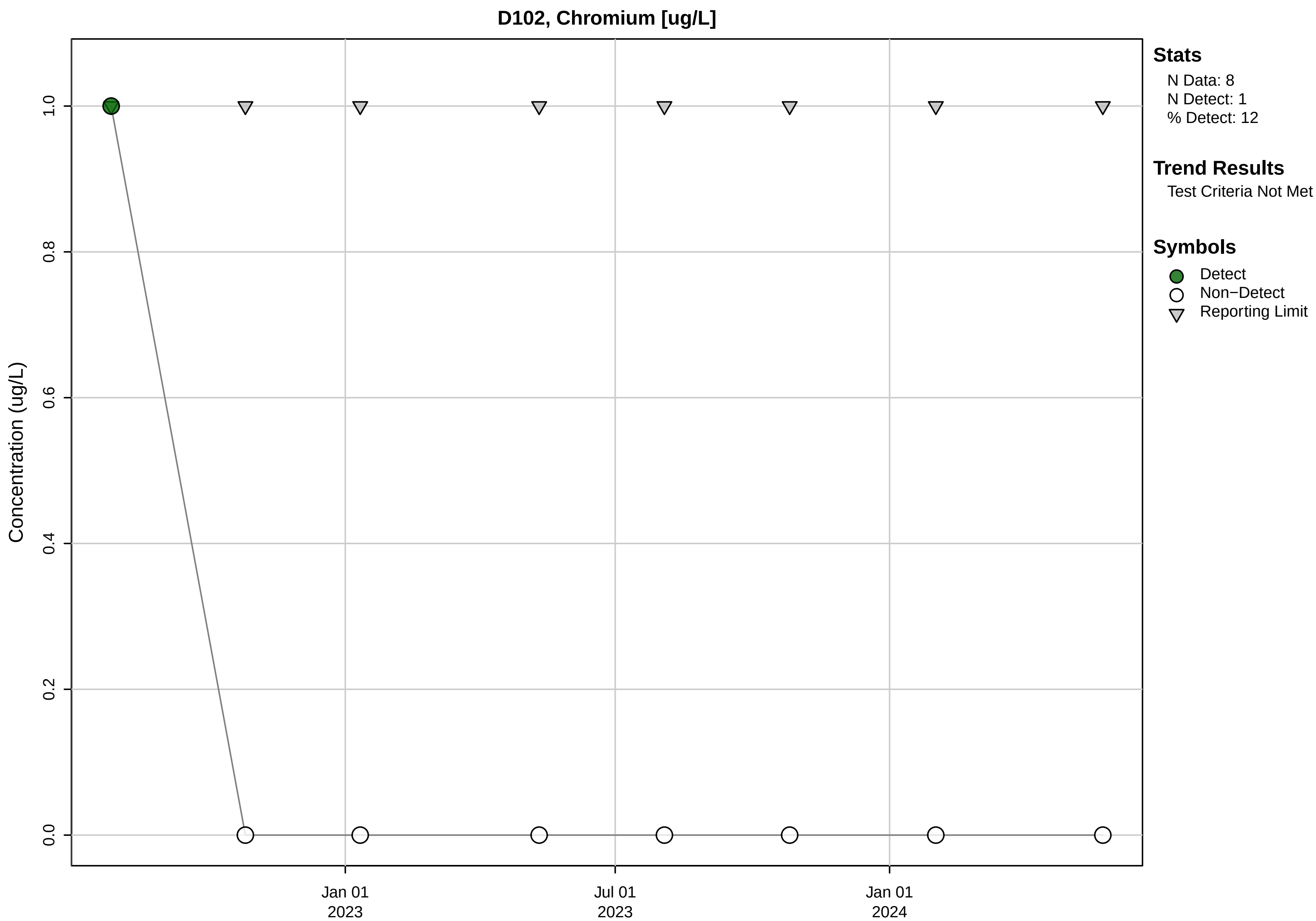


D102, Boron [ug/L]
Concentration (ug/L)
1500
1000
500
0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0615
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

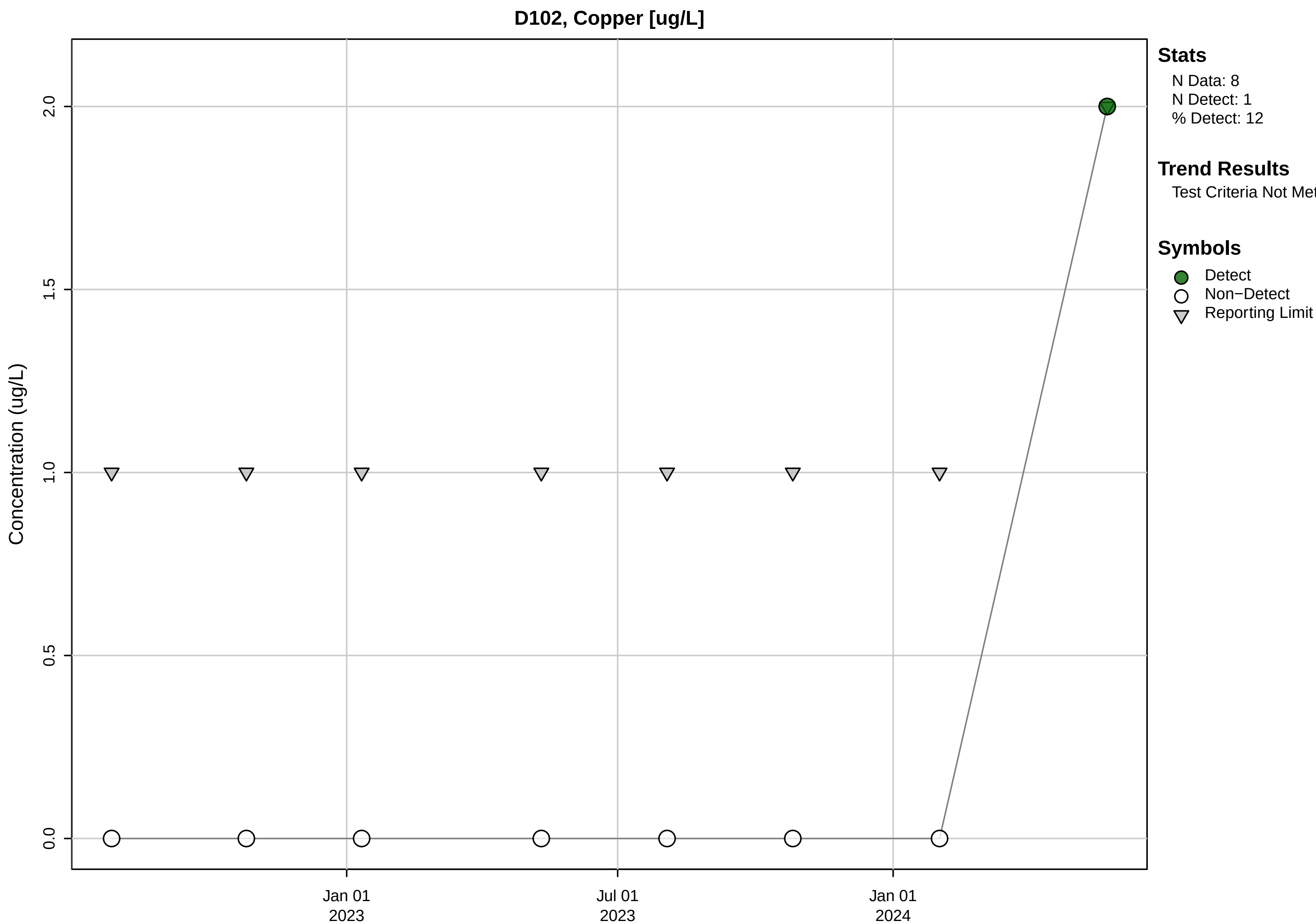

D102, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



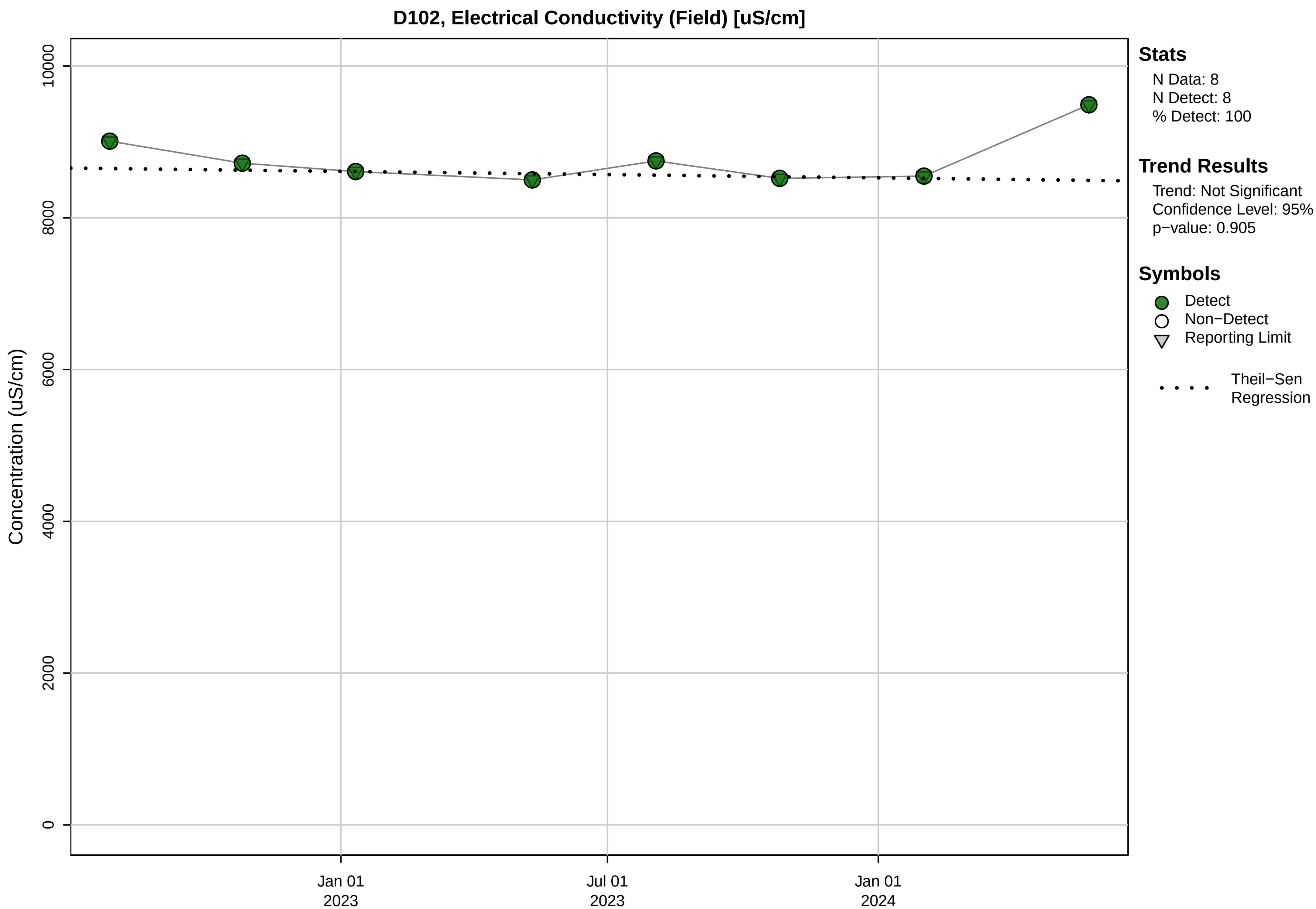
D102, Chloride [mg/L]
Concentration (mg/L)
0
500
1000
1500
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



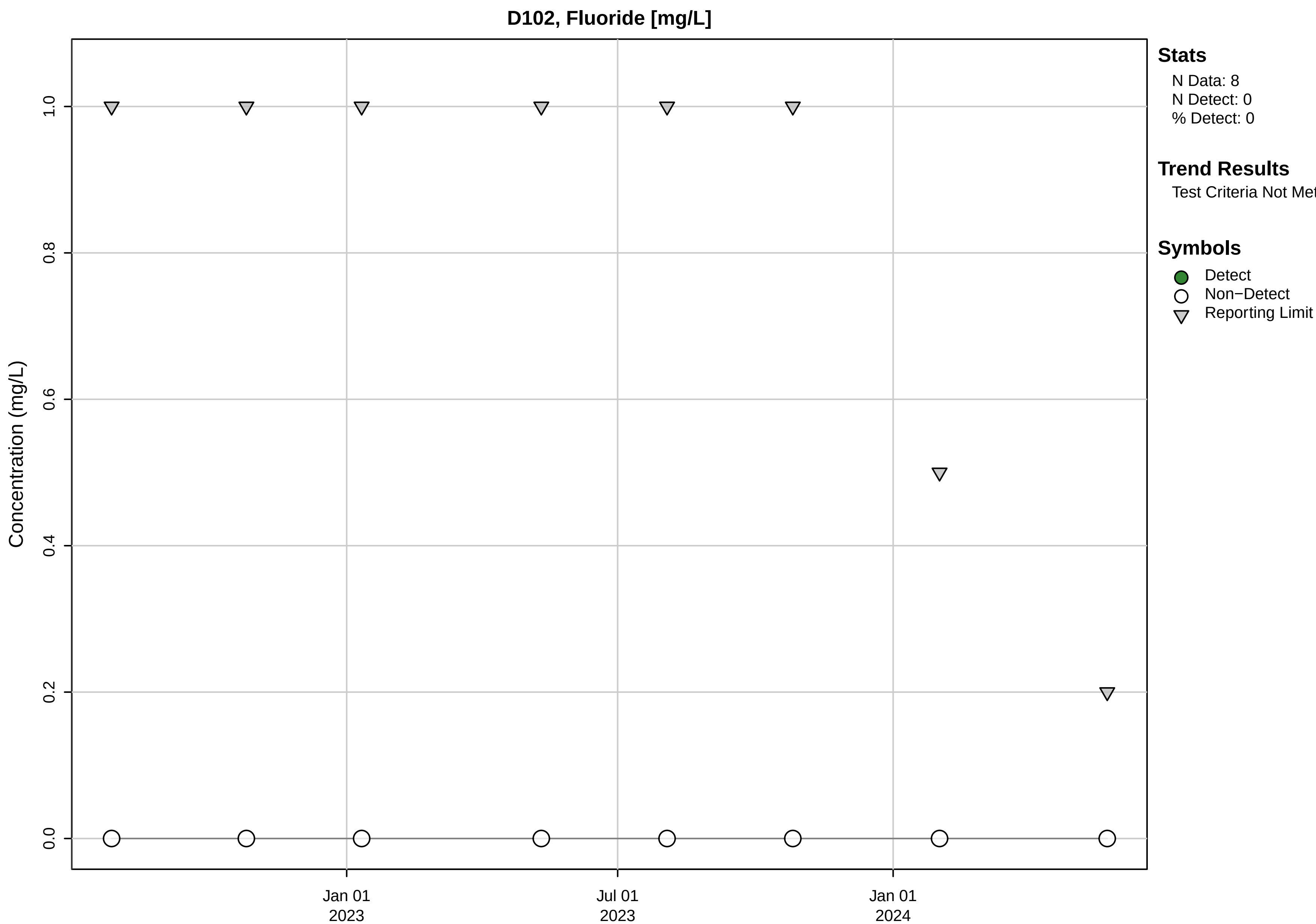
D102, Chromium [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

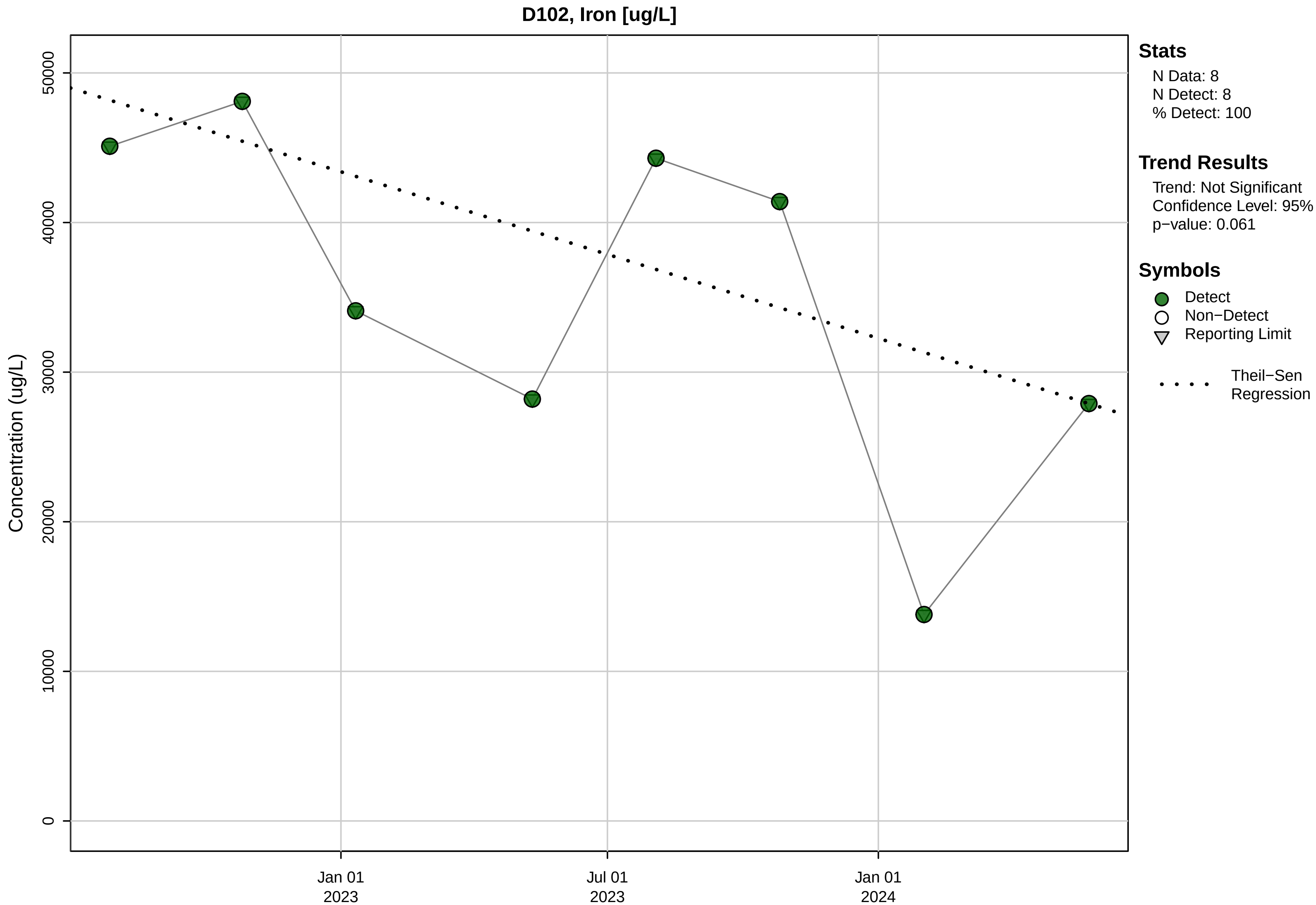


D102, Copper [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

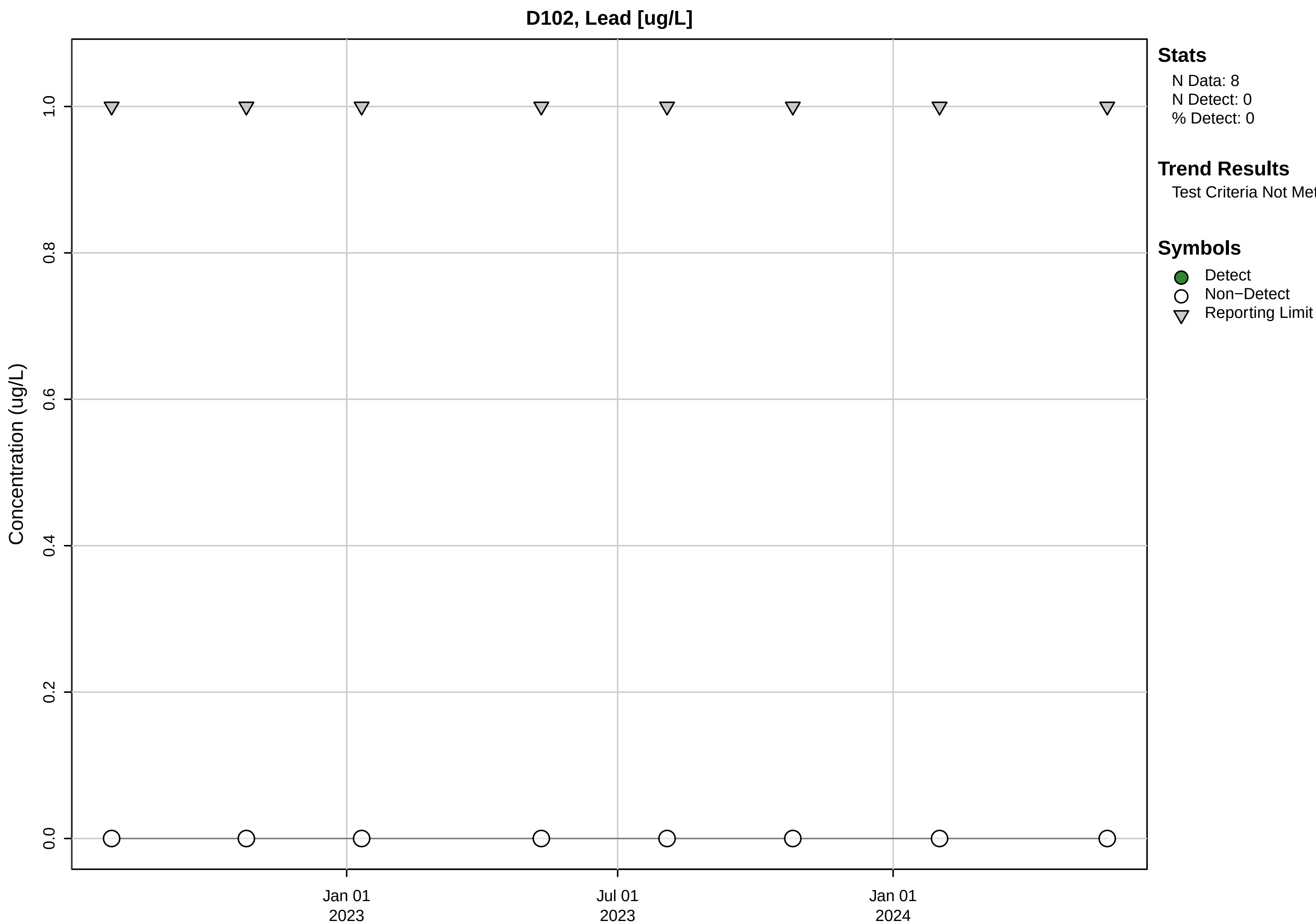


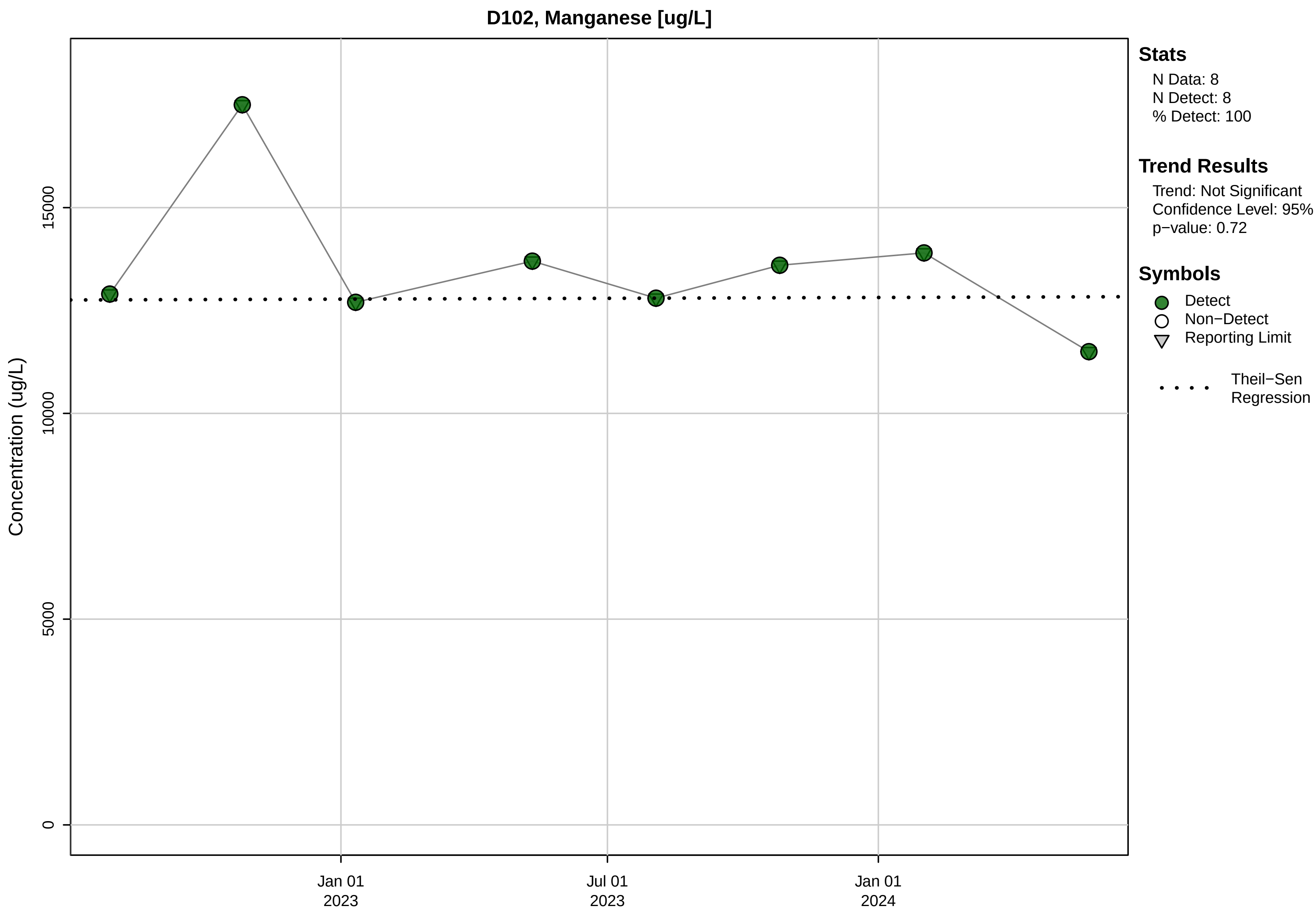
D102, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
2000
4000
6000
8000
10000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

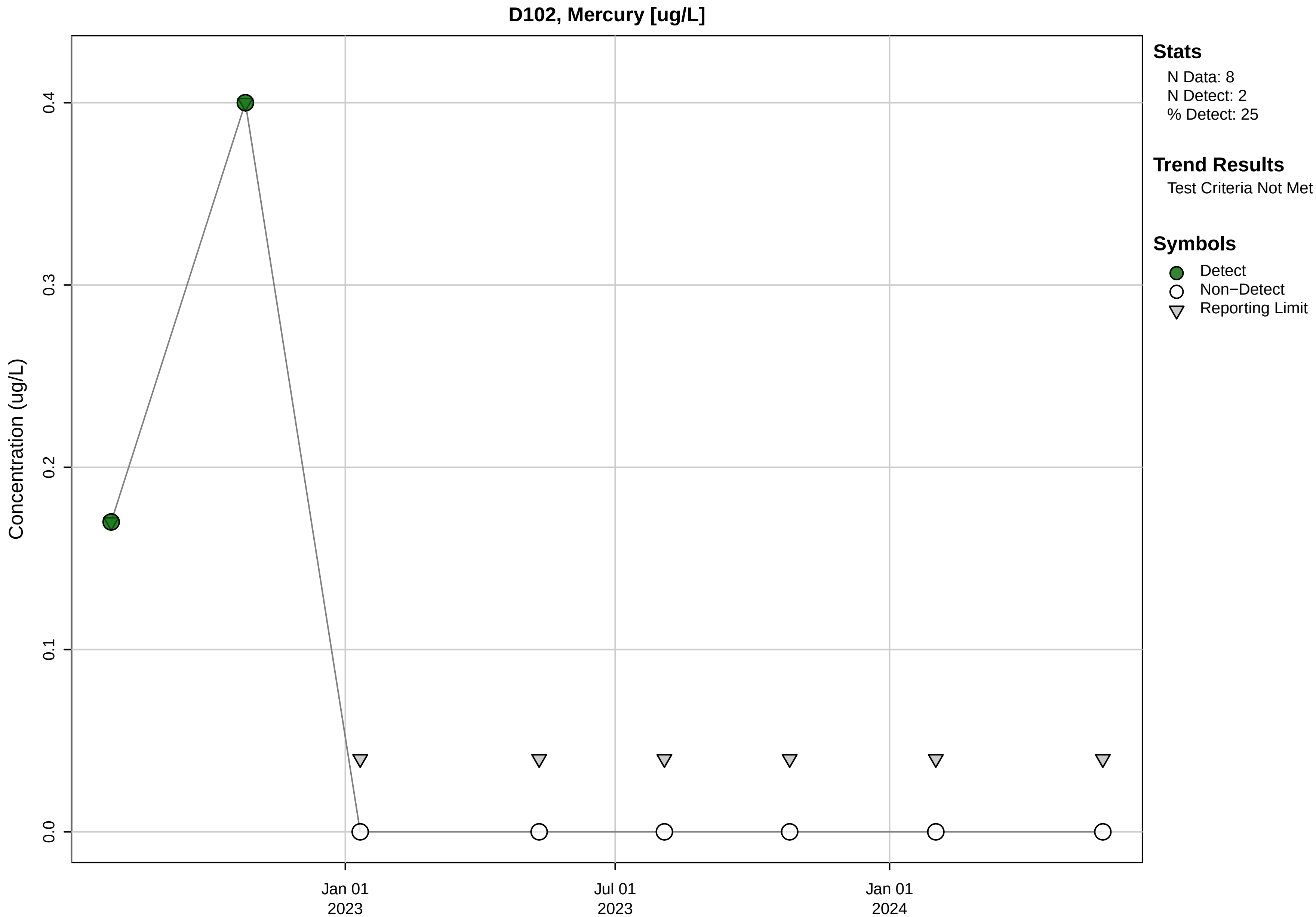

D102, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



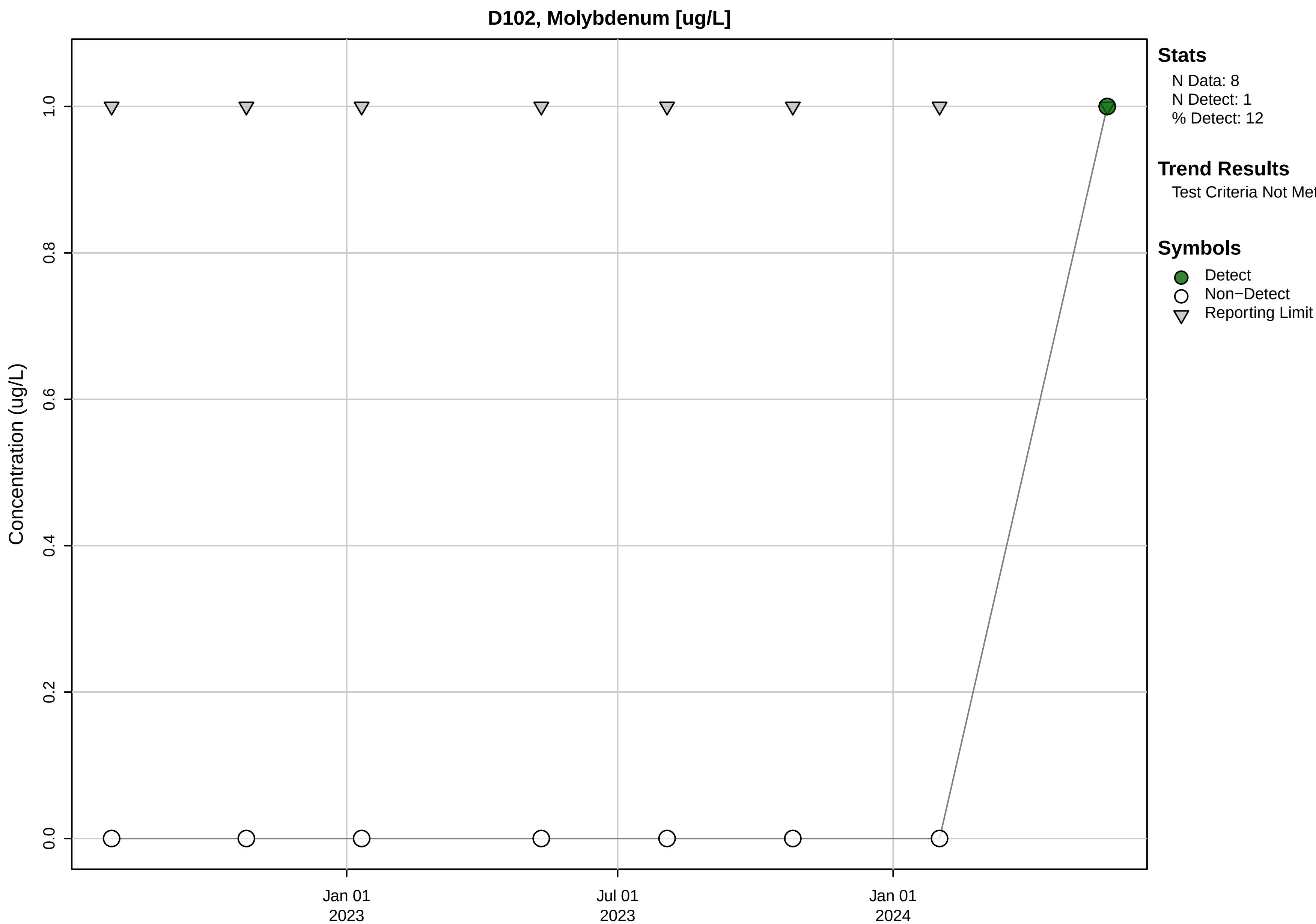
D102, Iron [ug/L]
Concentration (ug/L)
0
10000
20000
30000
40000
50000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.061
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D102, Lead [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

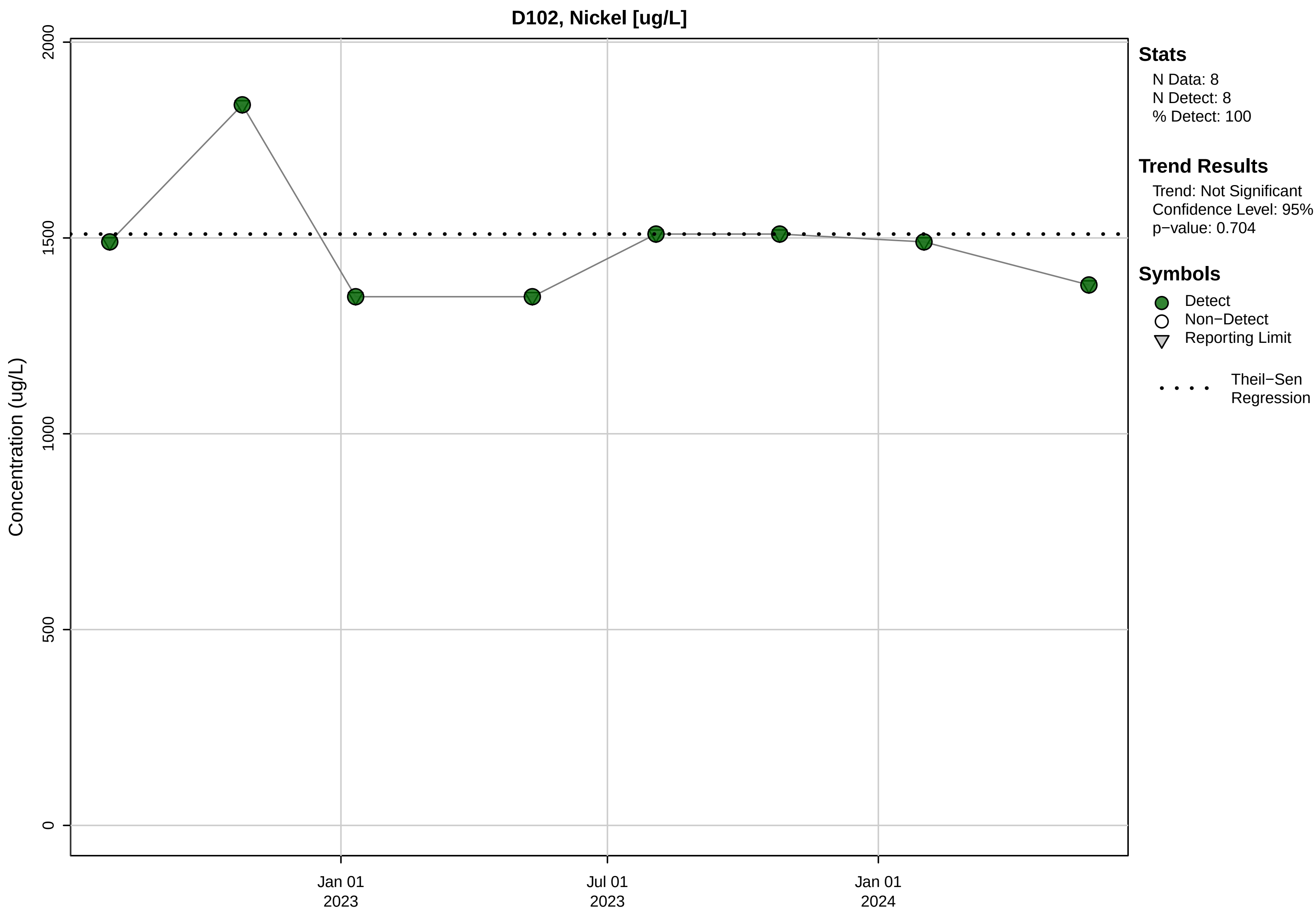

D102, Manganese [ug/L]
Concentration (ug/L)
0
5000
10000
15000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

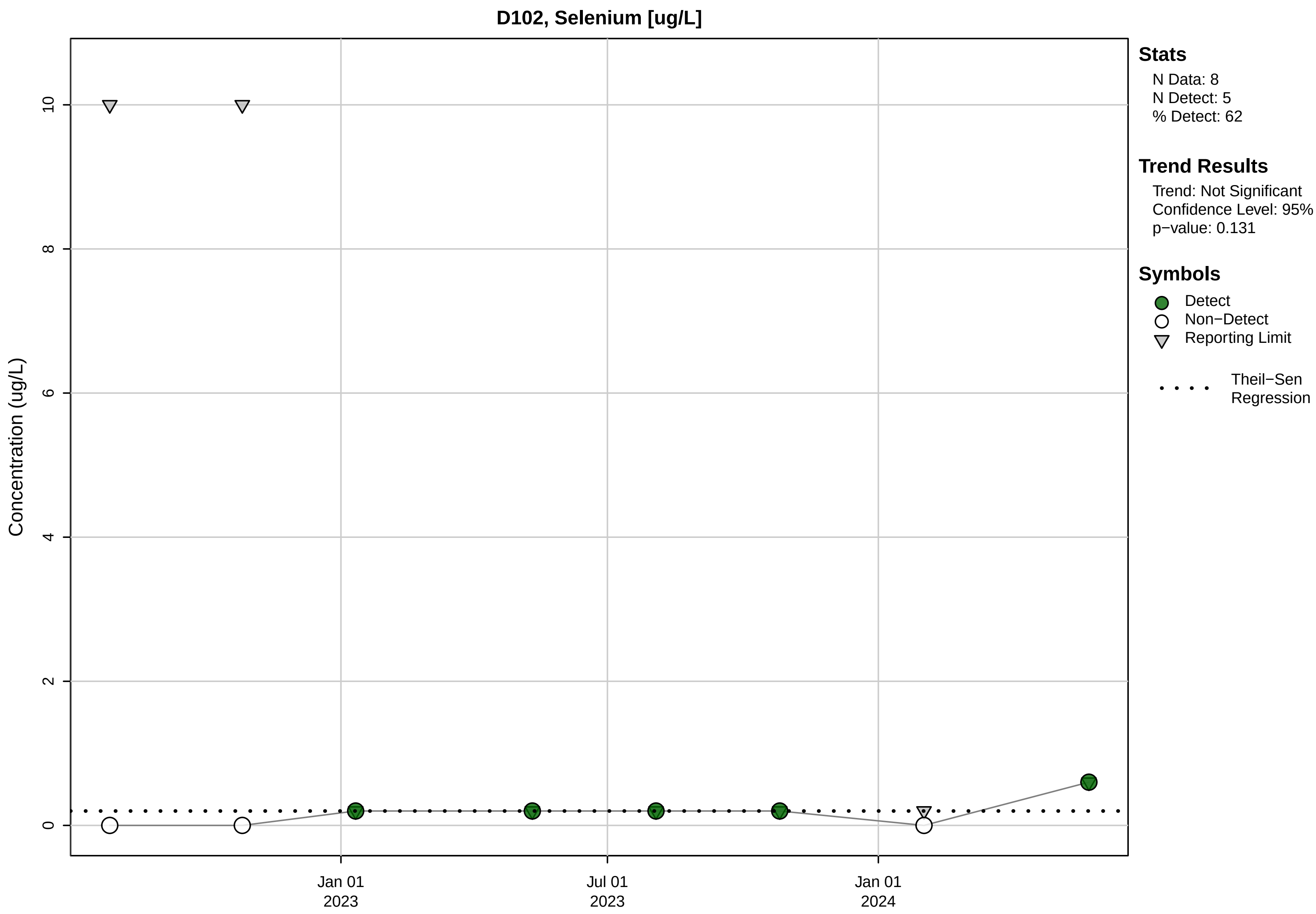


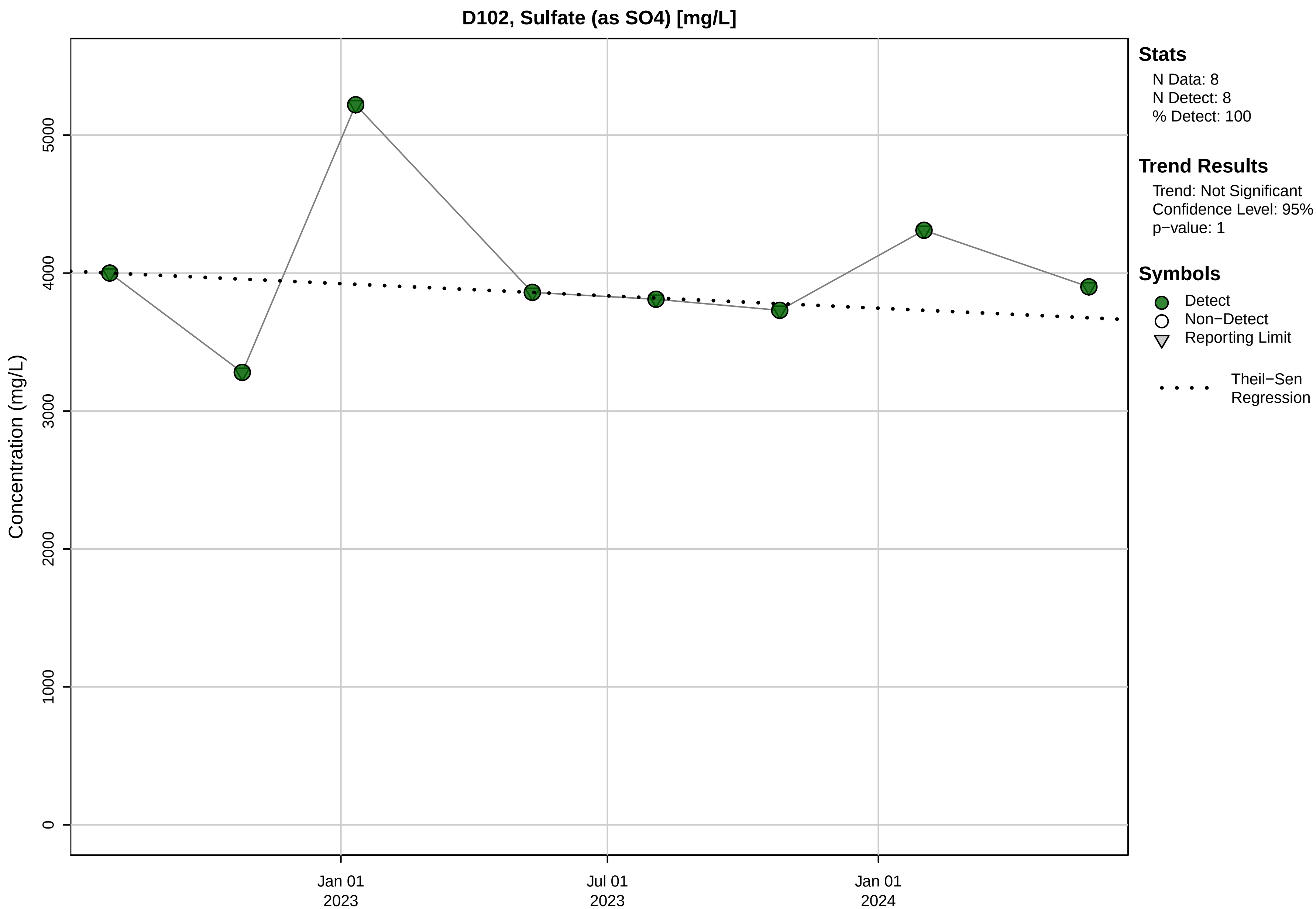
D102, Mercury [ug/L]
Concentration (ug/L)
0.0
0.1
0.2
0.3
0.4
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

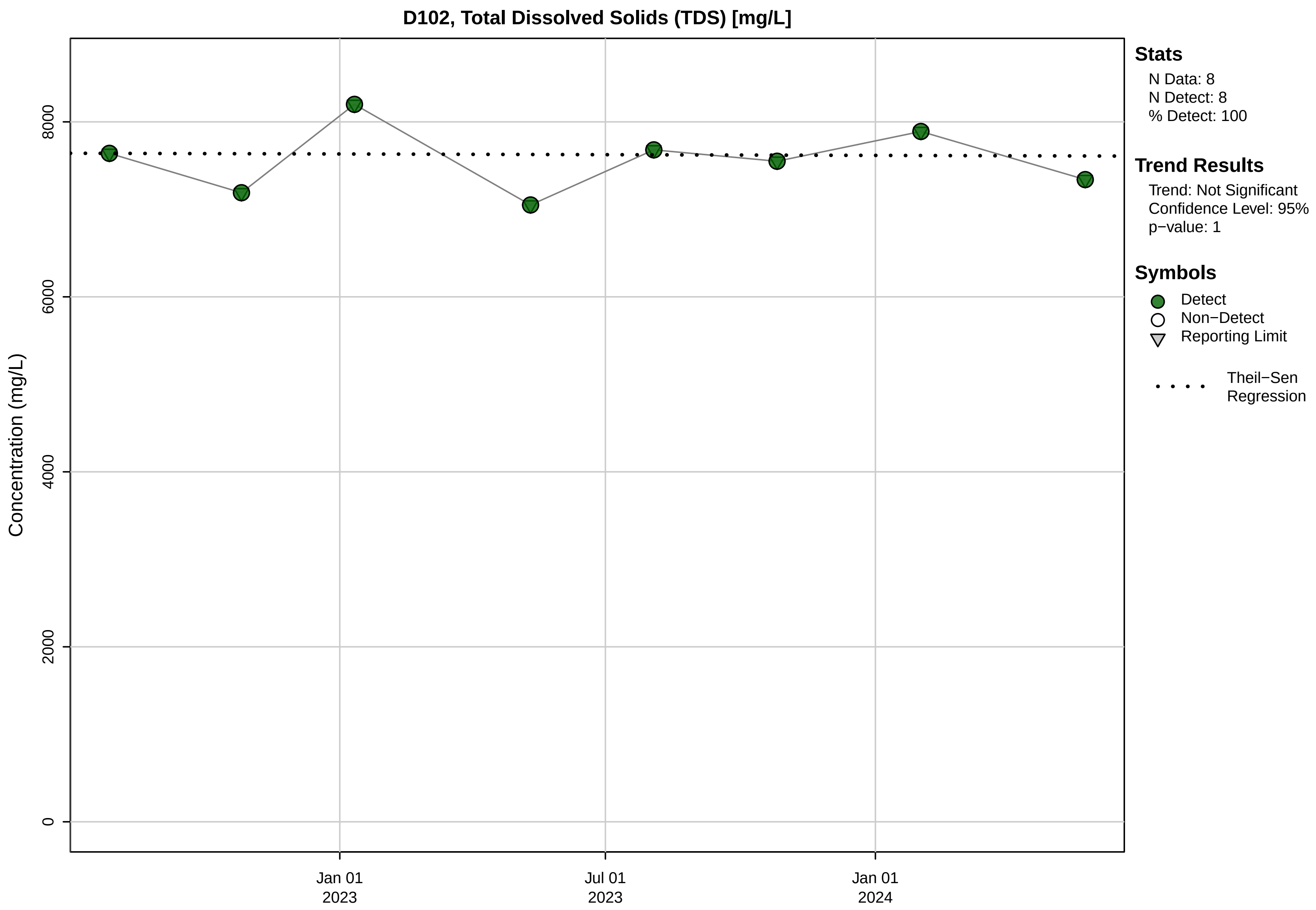


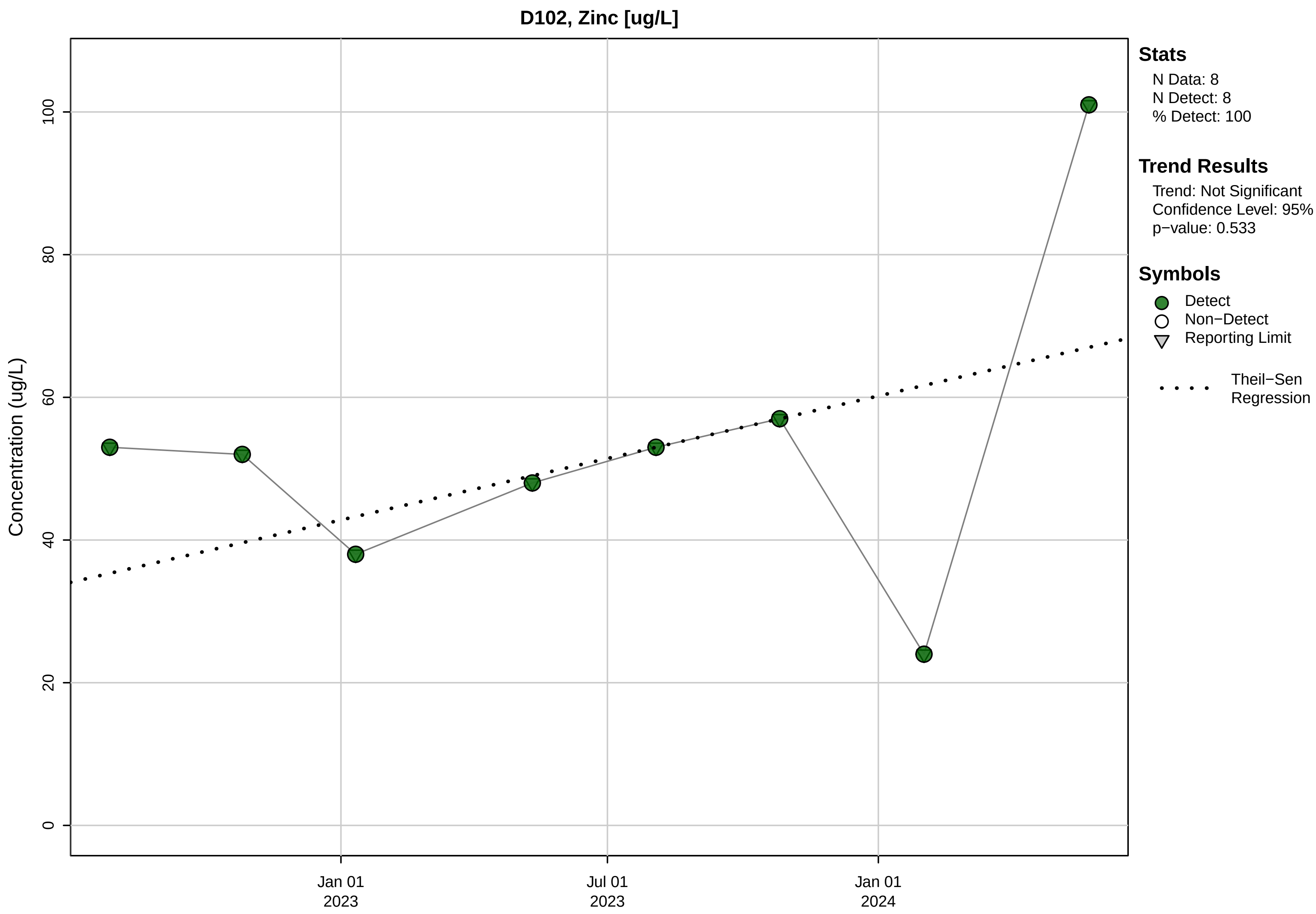
D102, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

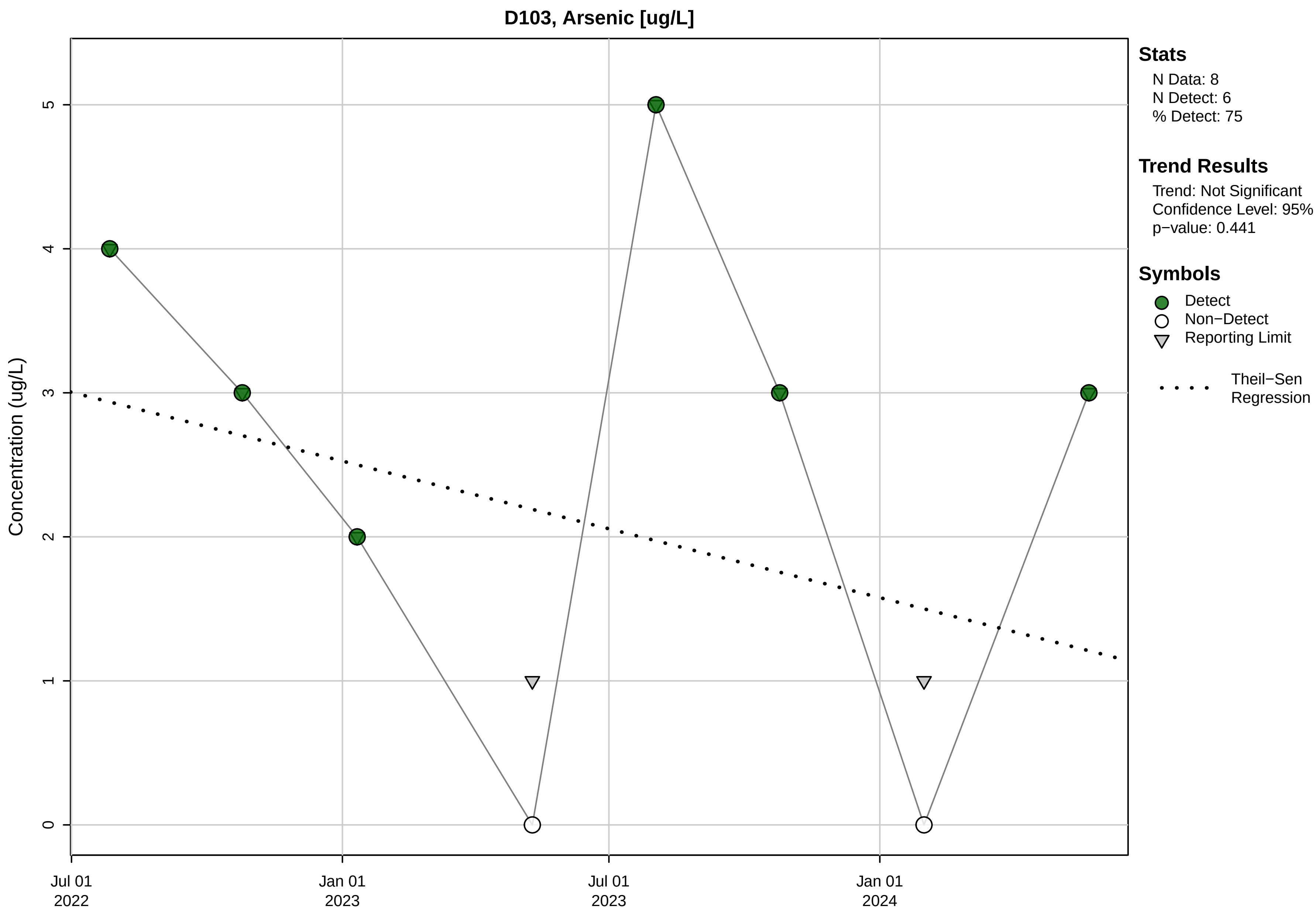

D102, Nickel [ug/L]
Concentration (ug/L)
2000
1500
1000
500
0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.704
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

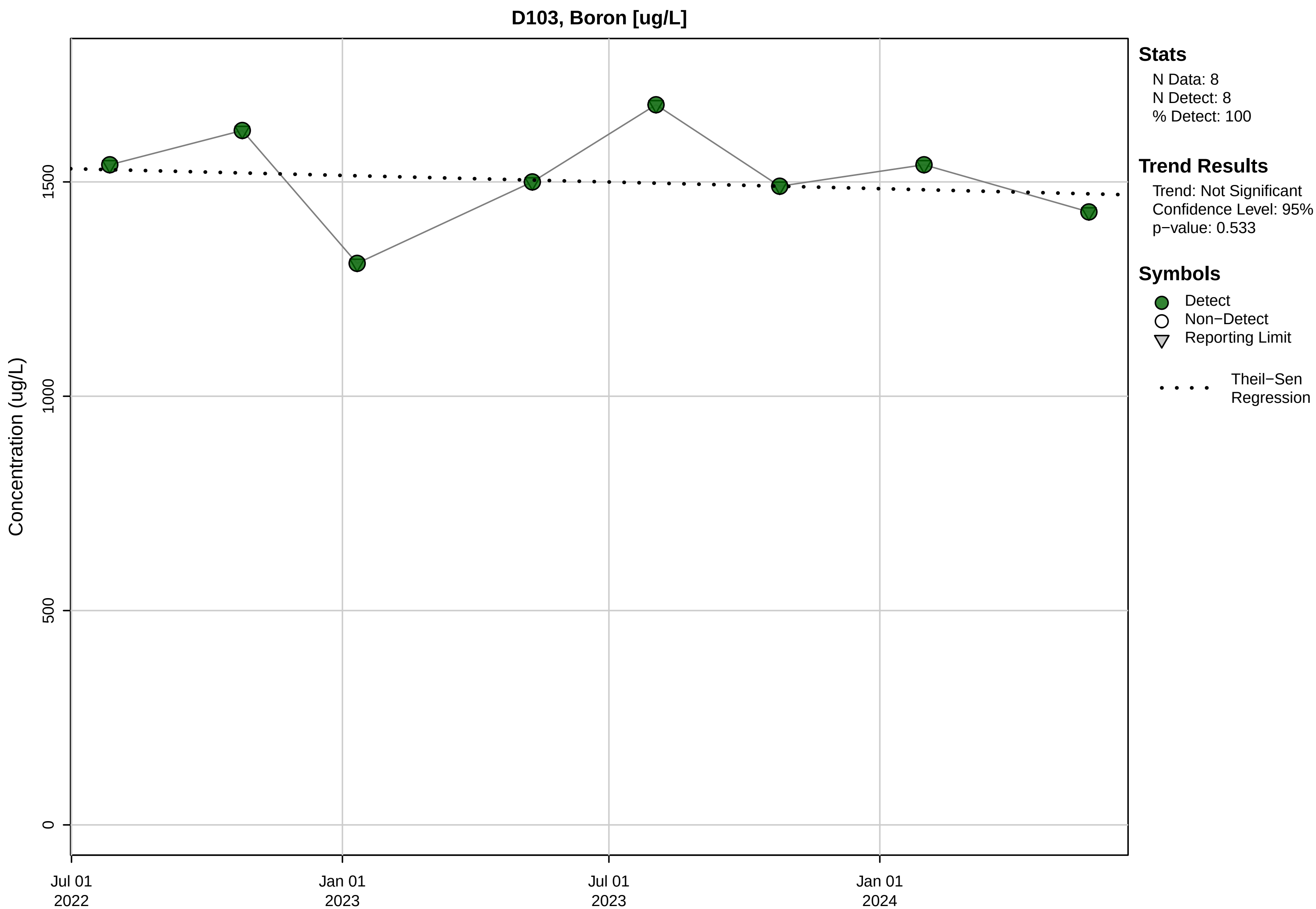

D102, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.131
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D102, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
1000
2000
3000
4000
5000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

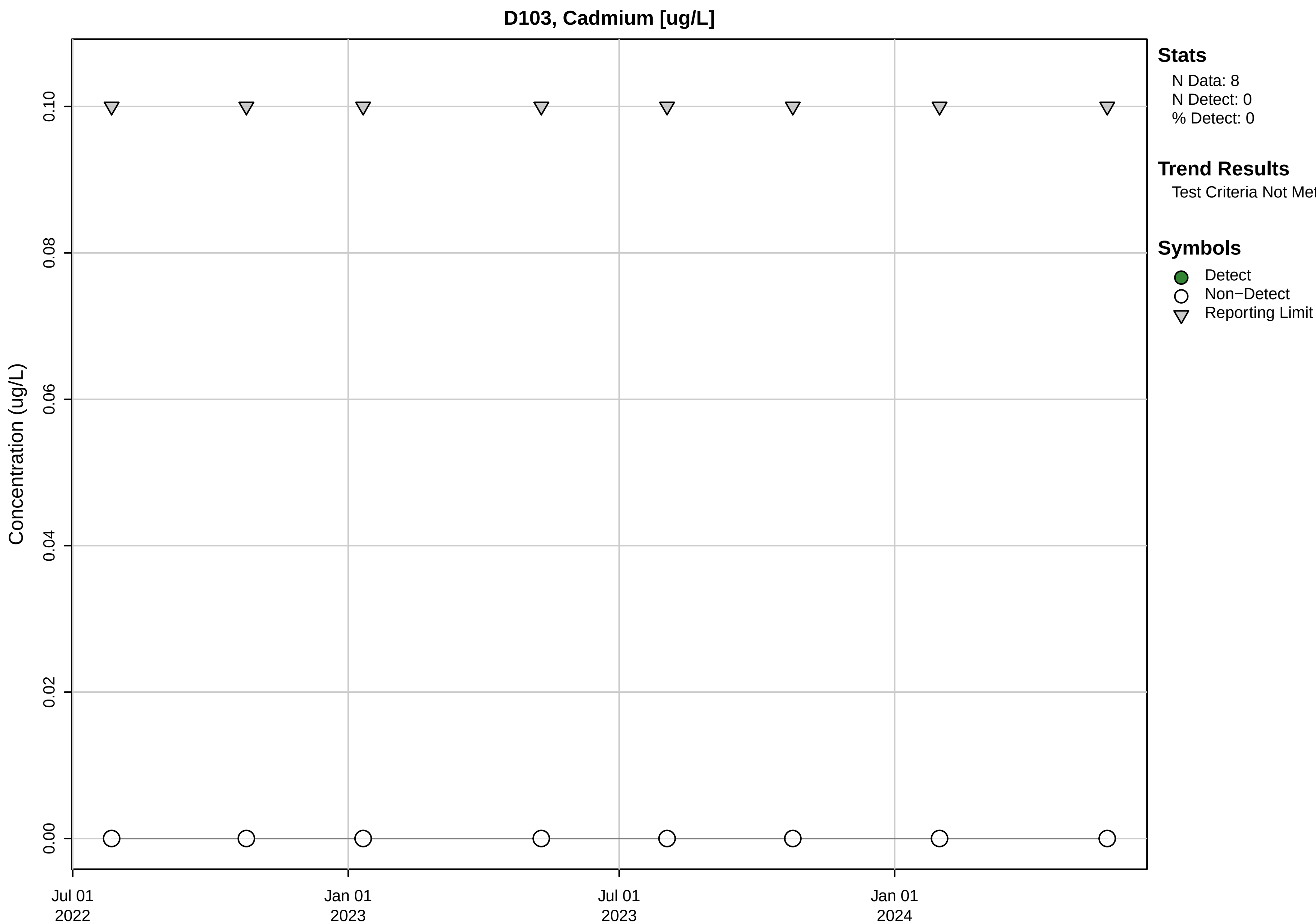

D102, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

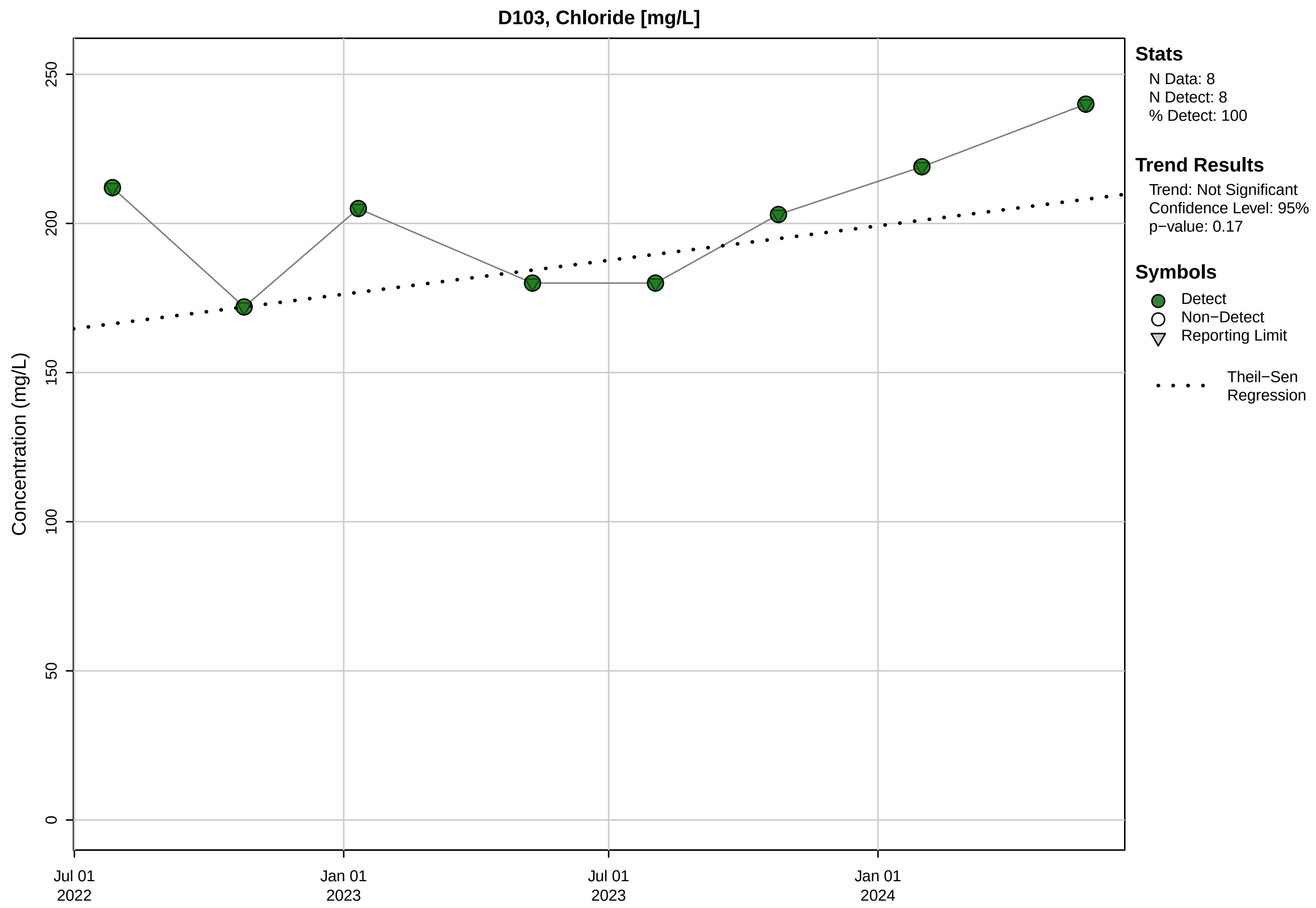

D102, Zinc [ug/L]
Concentration (ug/L)
0
20
40
60
80
100
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.533
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression


D103, Arsenic [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 6
% Detect: 75
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.441
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

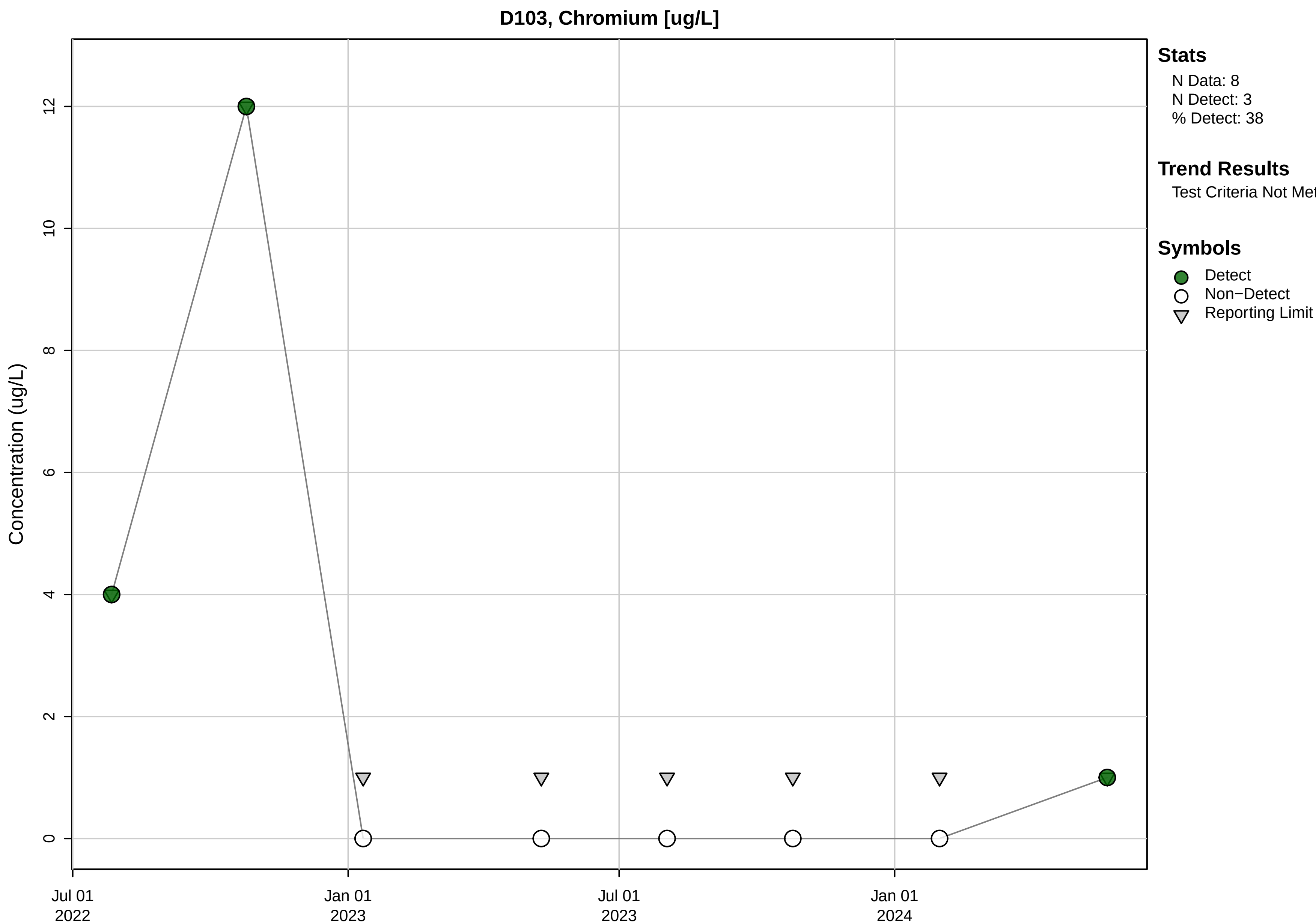


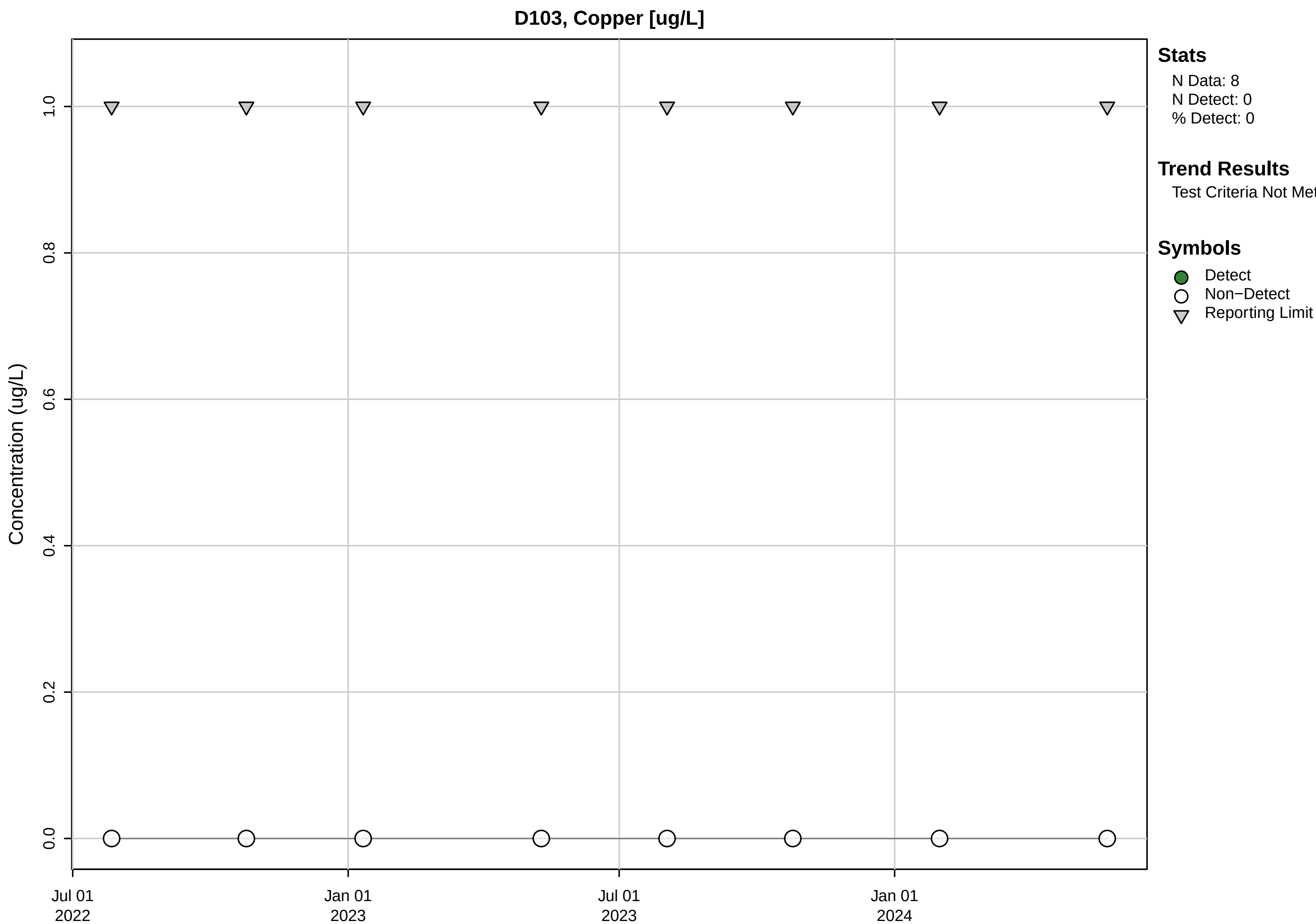
D103, Boron [ug/L]
Concentration (ug/L)
0
500
1000
1500
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.533
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

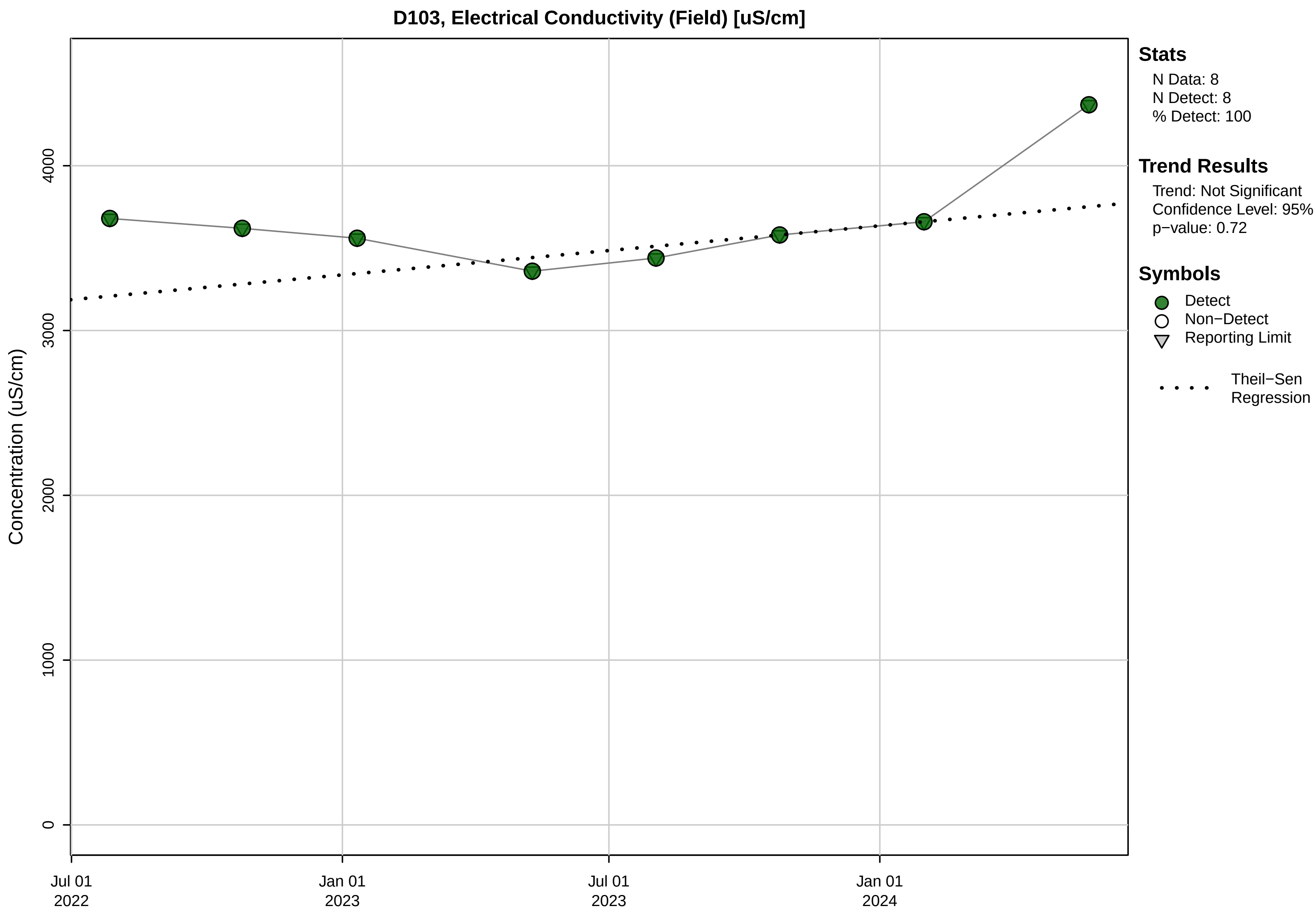

D103, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.02
0.04
0.06
0.08
0.10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

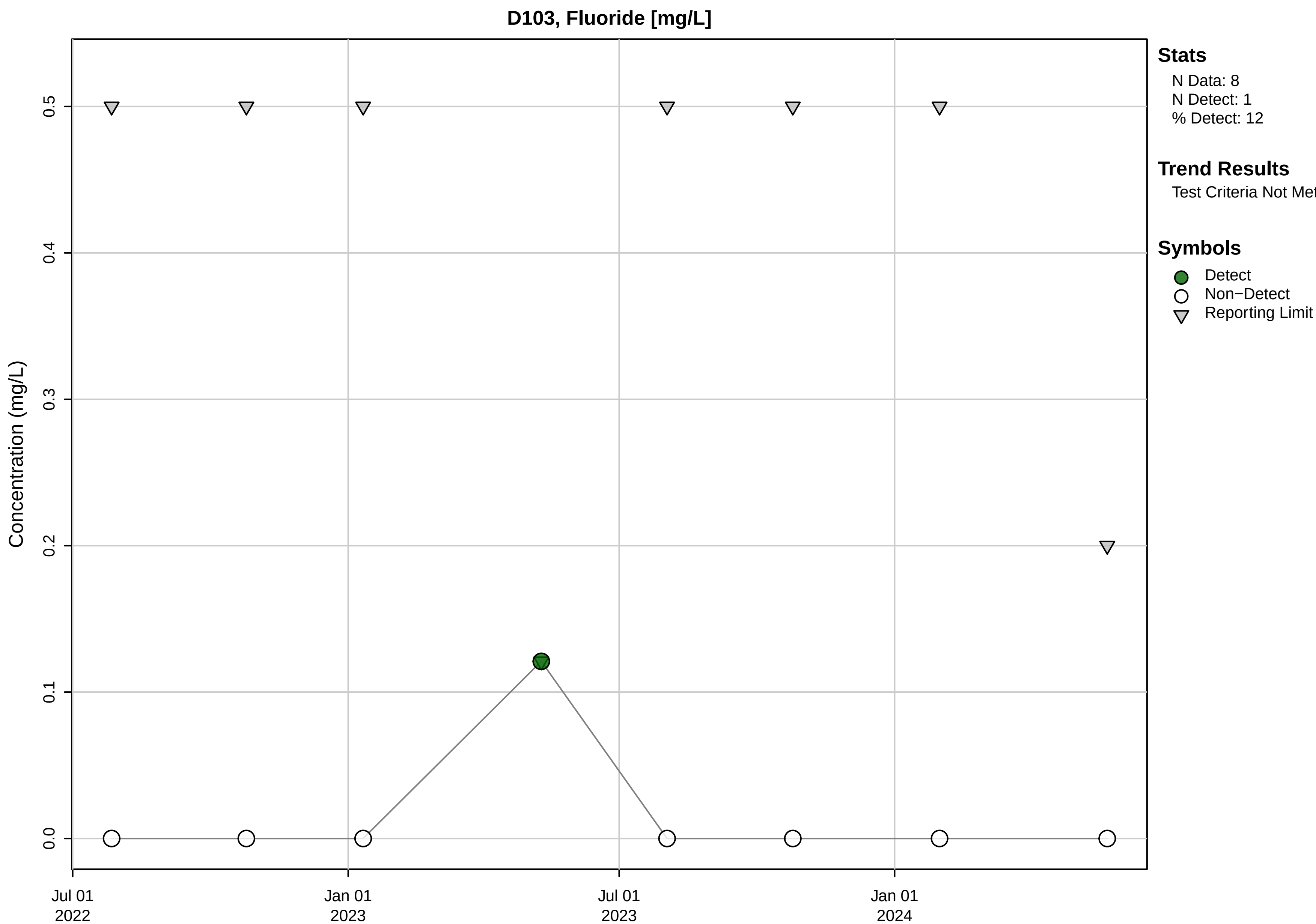


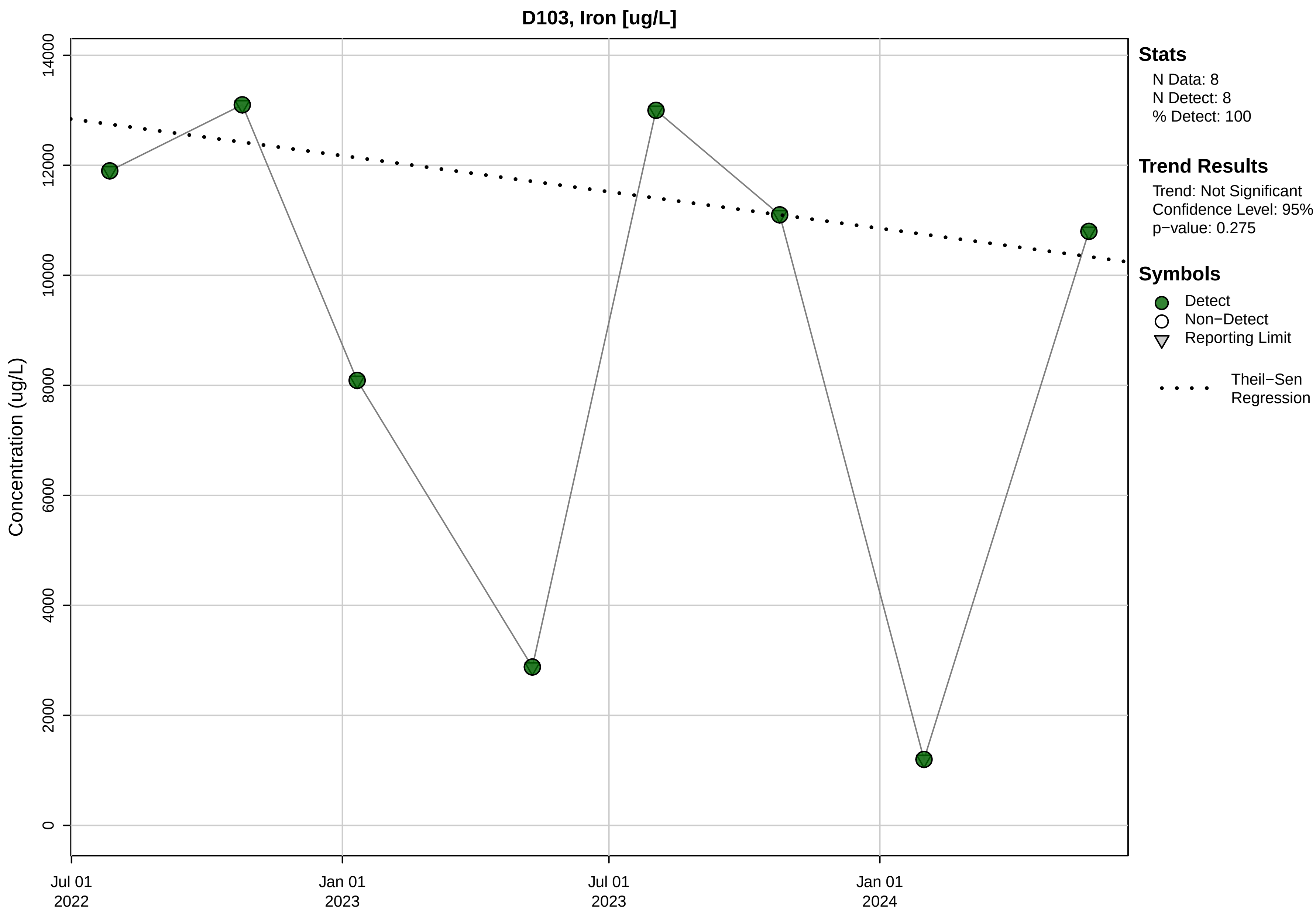
D103, Chloride [mg/L]
Concentration (mg/L)
0
50
100
150
200
250
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.17
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

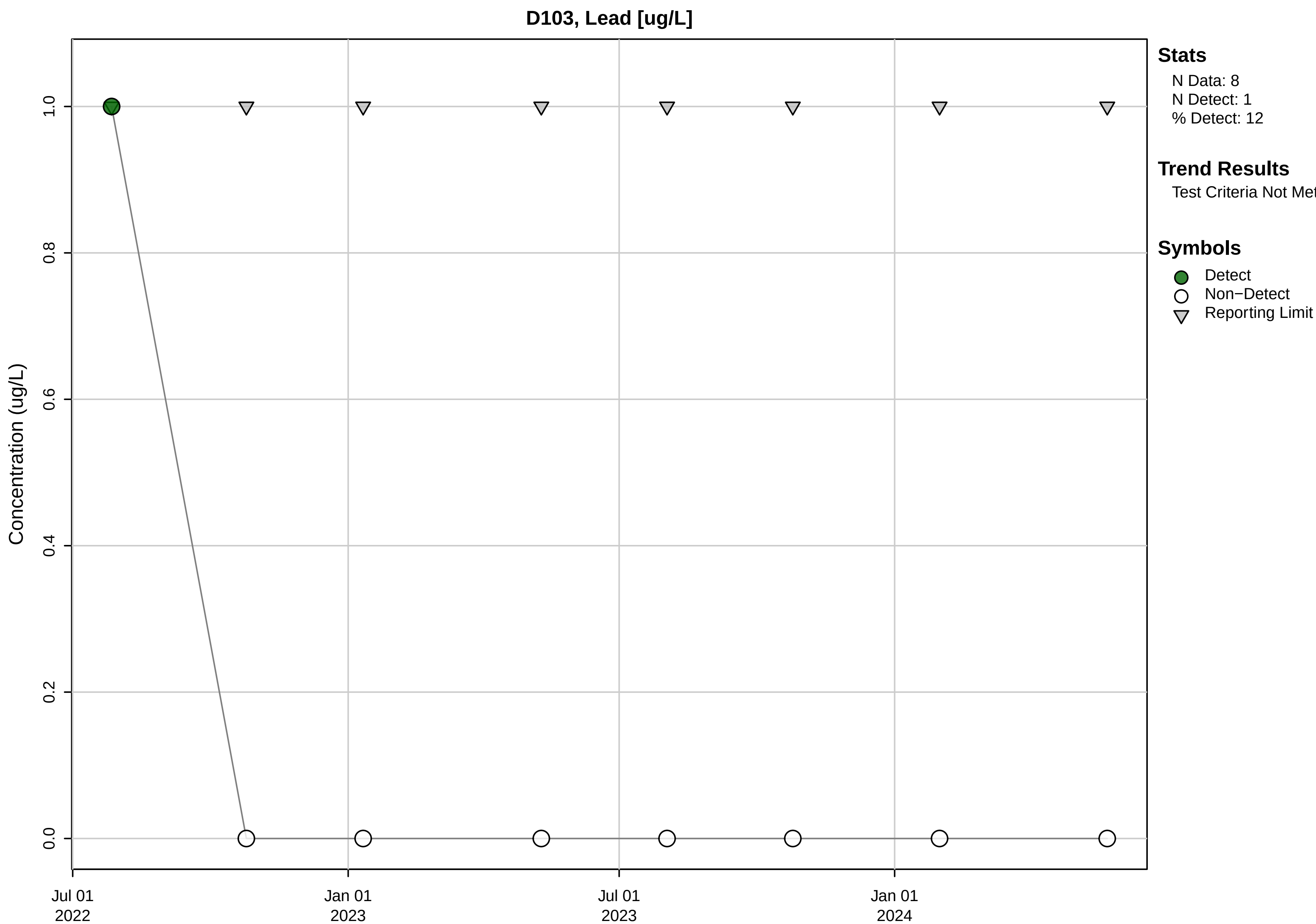

D103, Chromium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
12
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D103, Copper [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

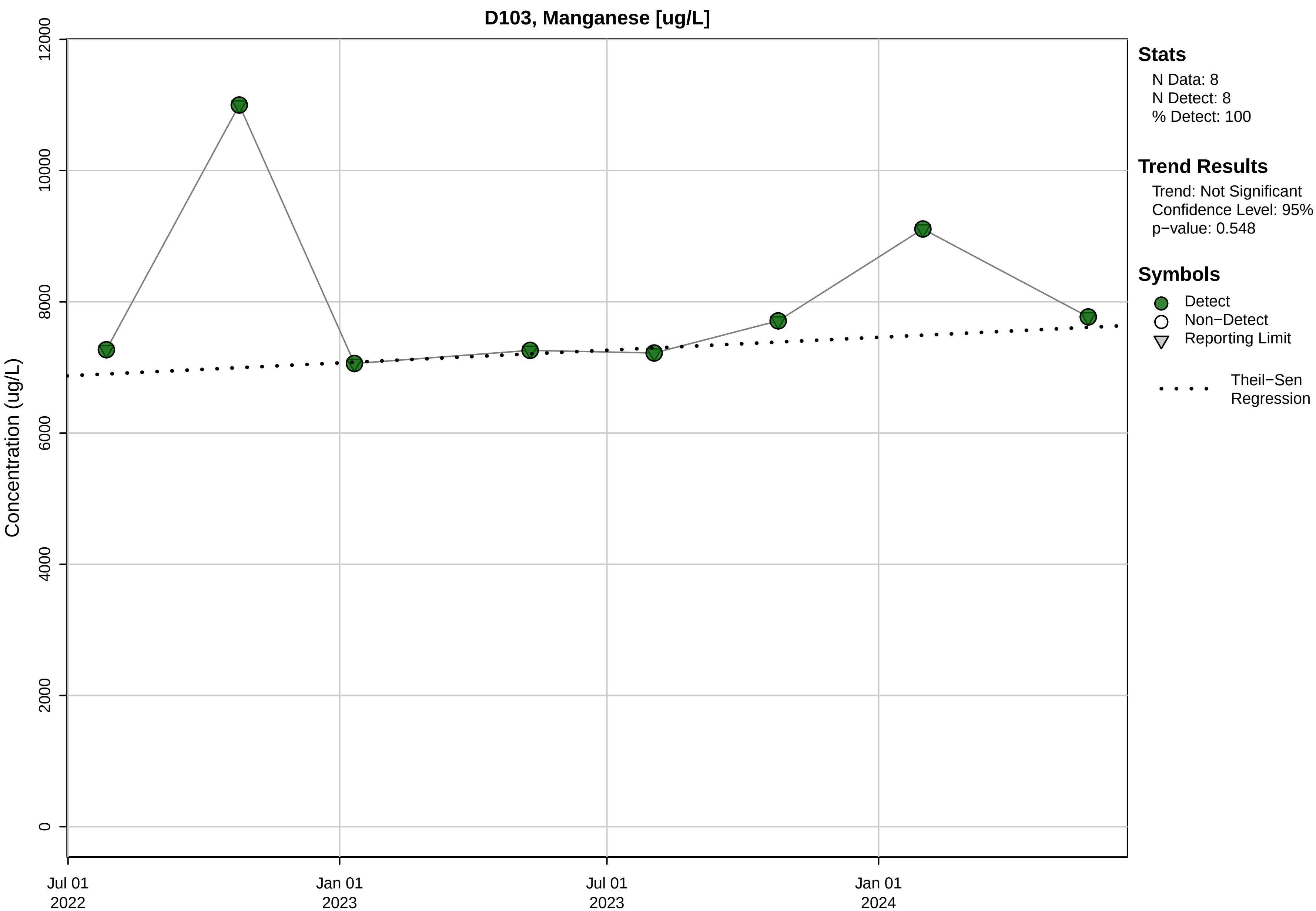

D103, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
1000
2000
3000
4000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

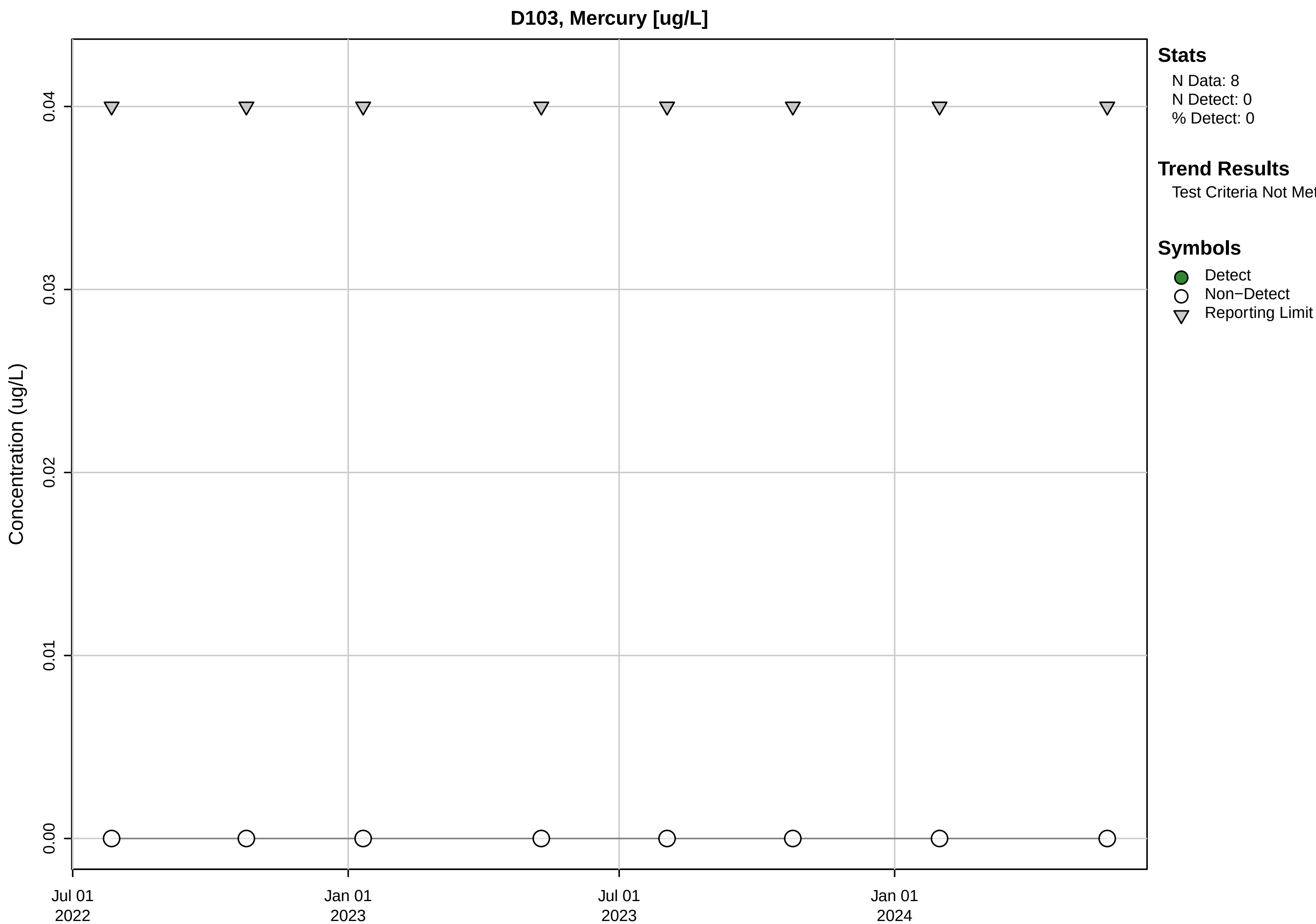

D103, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

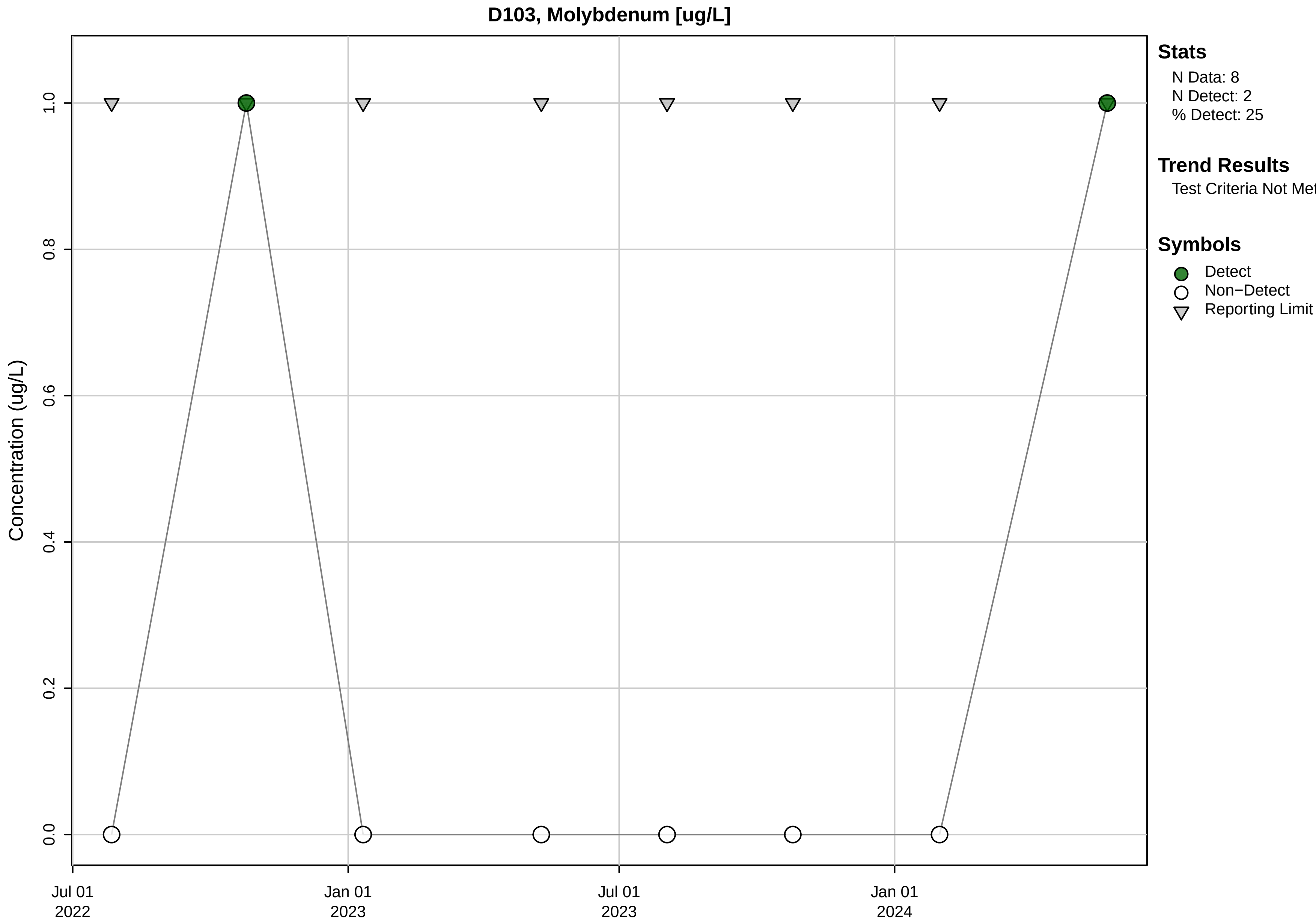

D103, Iron [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
10000
12000
14000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

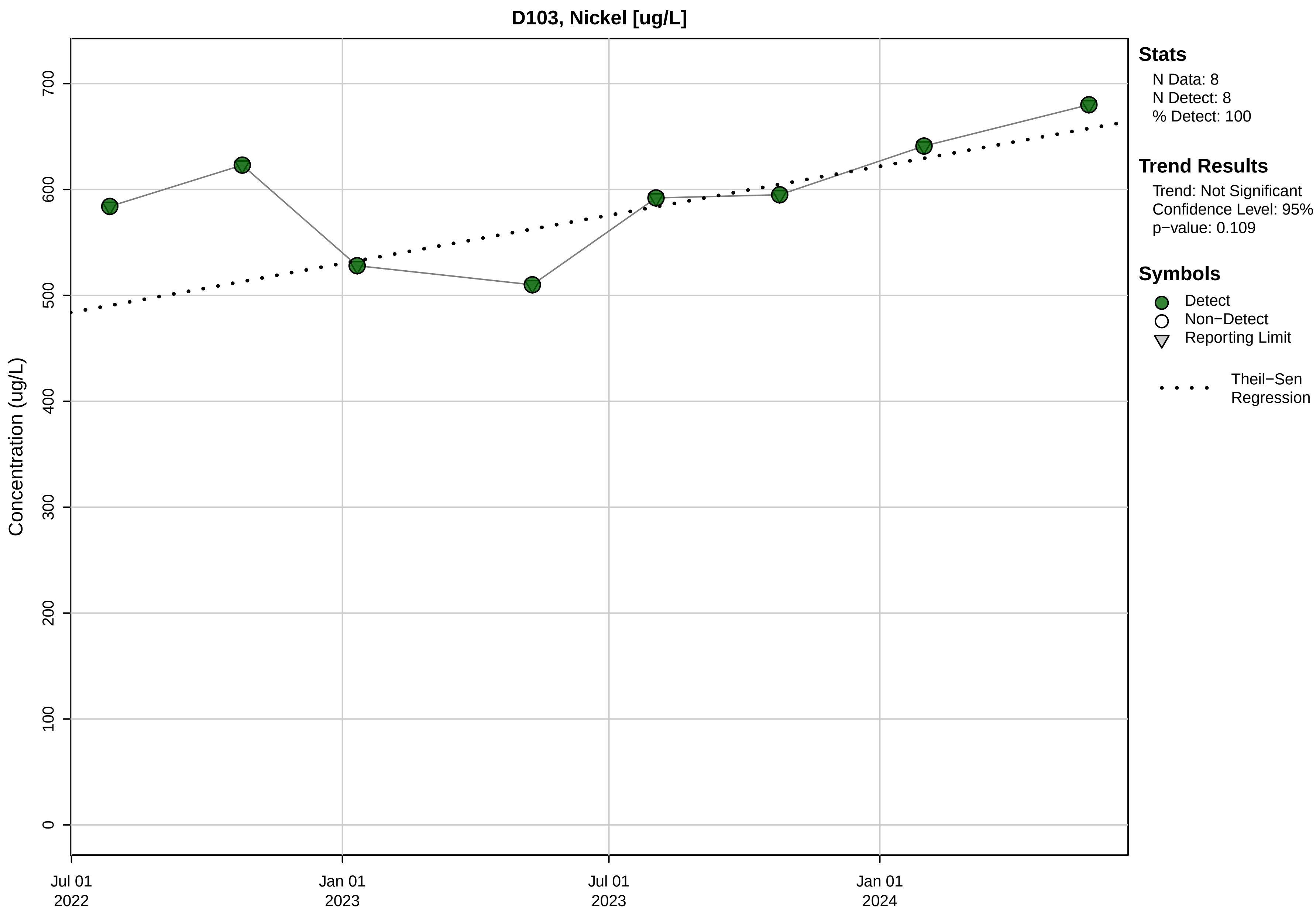


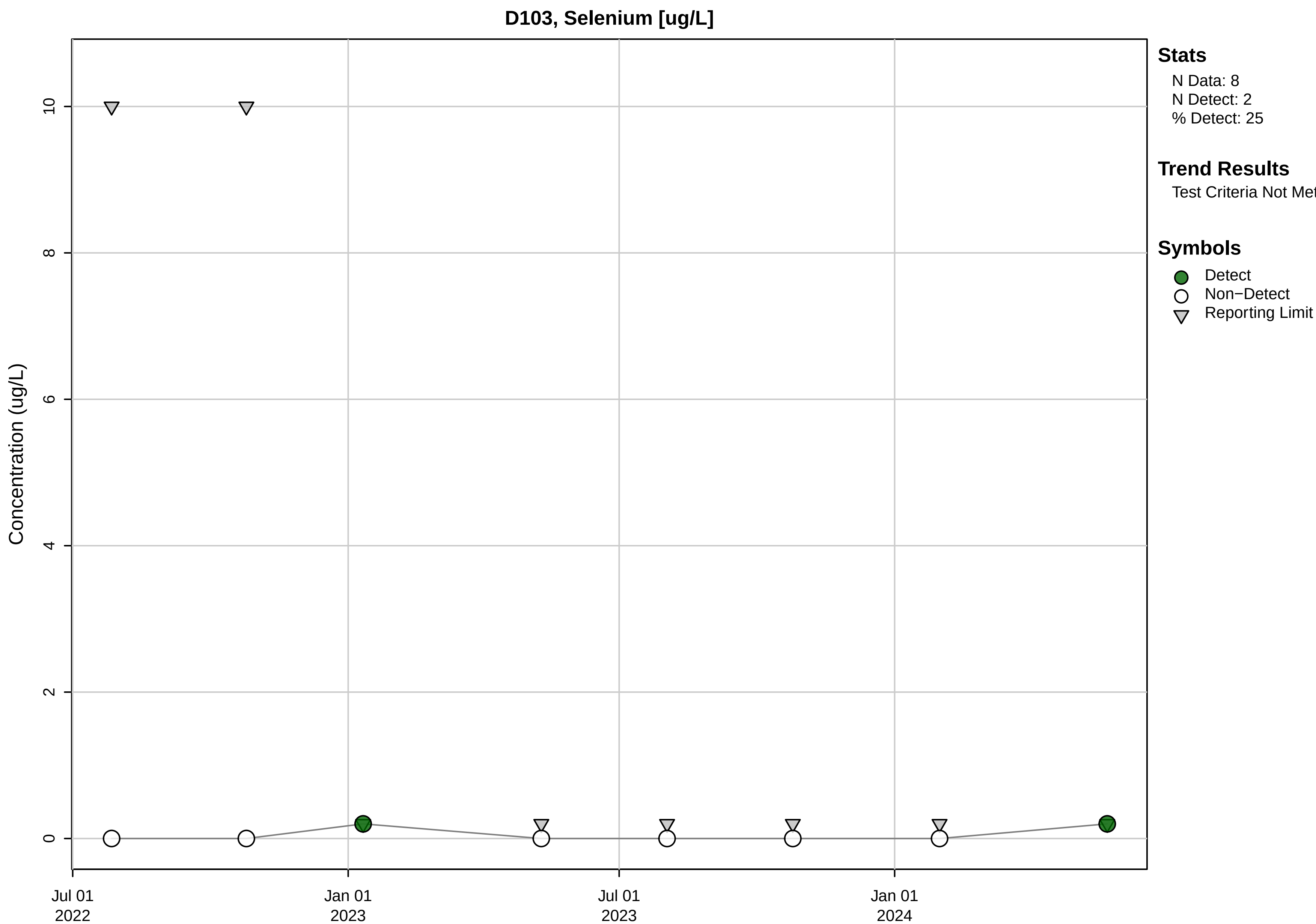
D103, Lead [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D103, Manganese [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
10000
12000
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.548
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

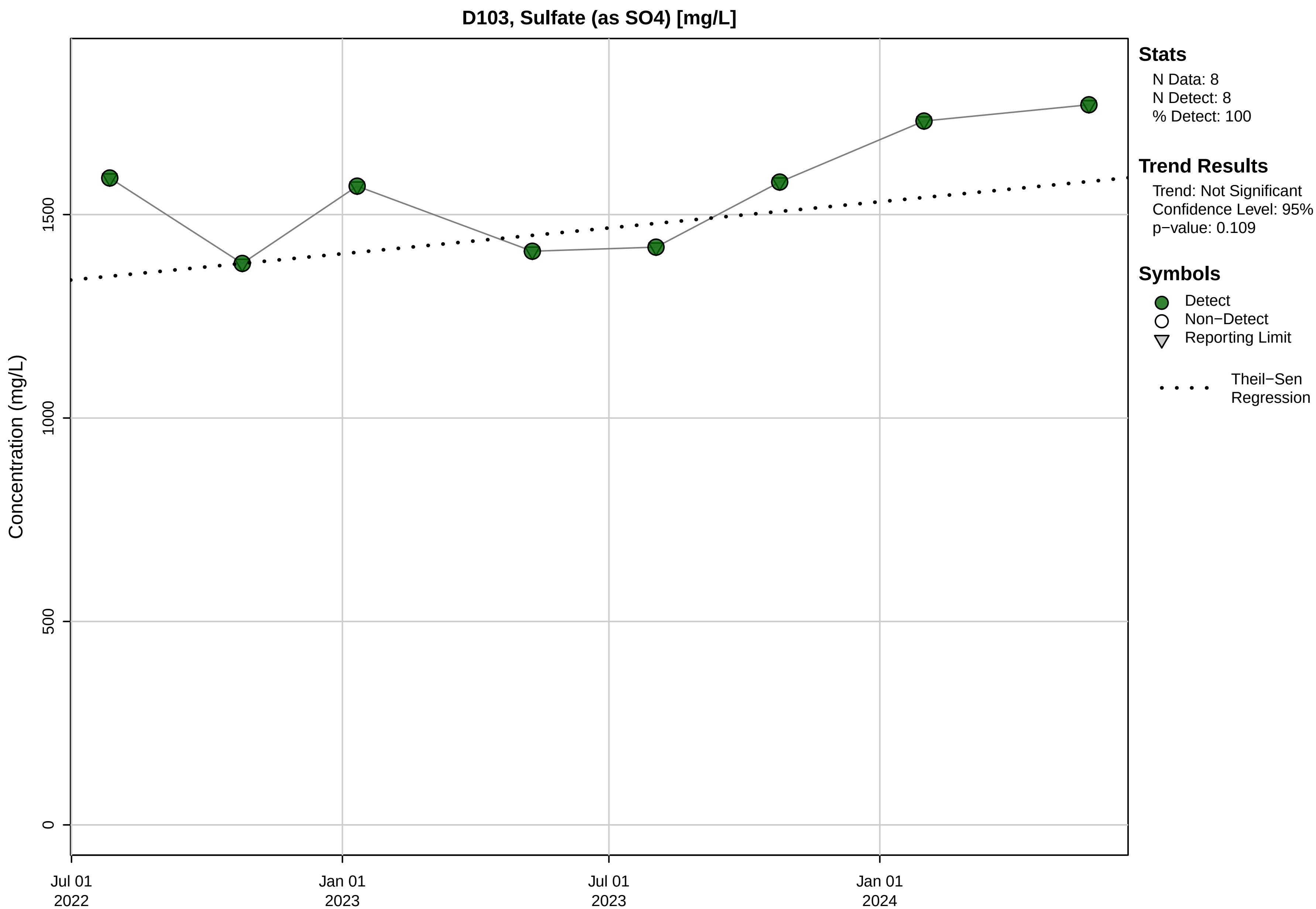

D103, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D103, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

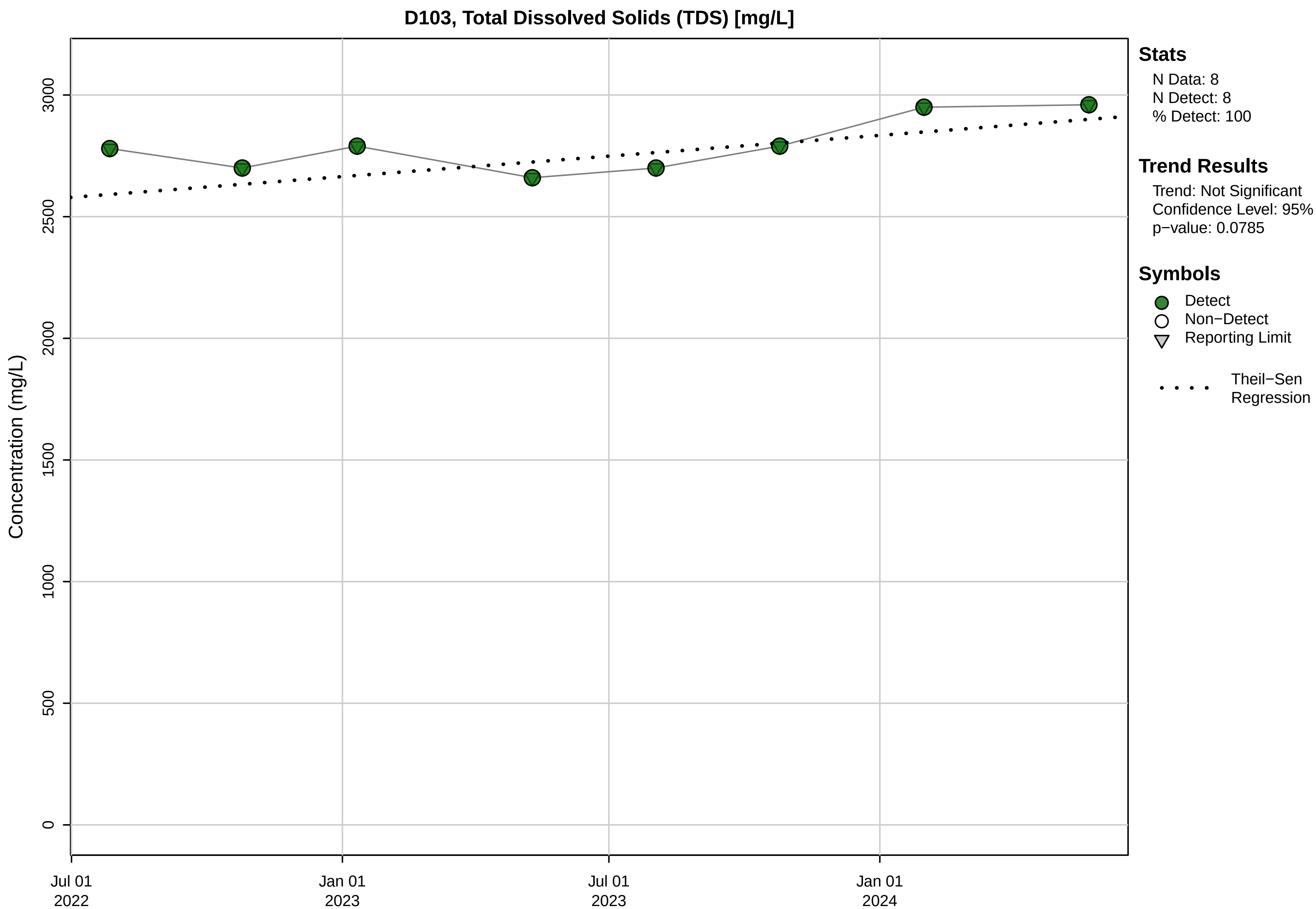

D103, Nickel [ug/L]
Concentration (ug/L)
0
100
200
300
400
500
600
700
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



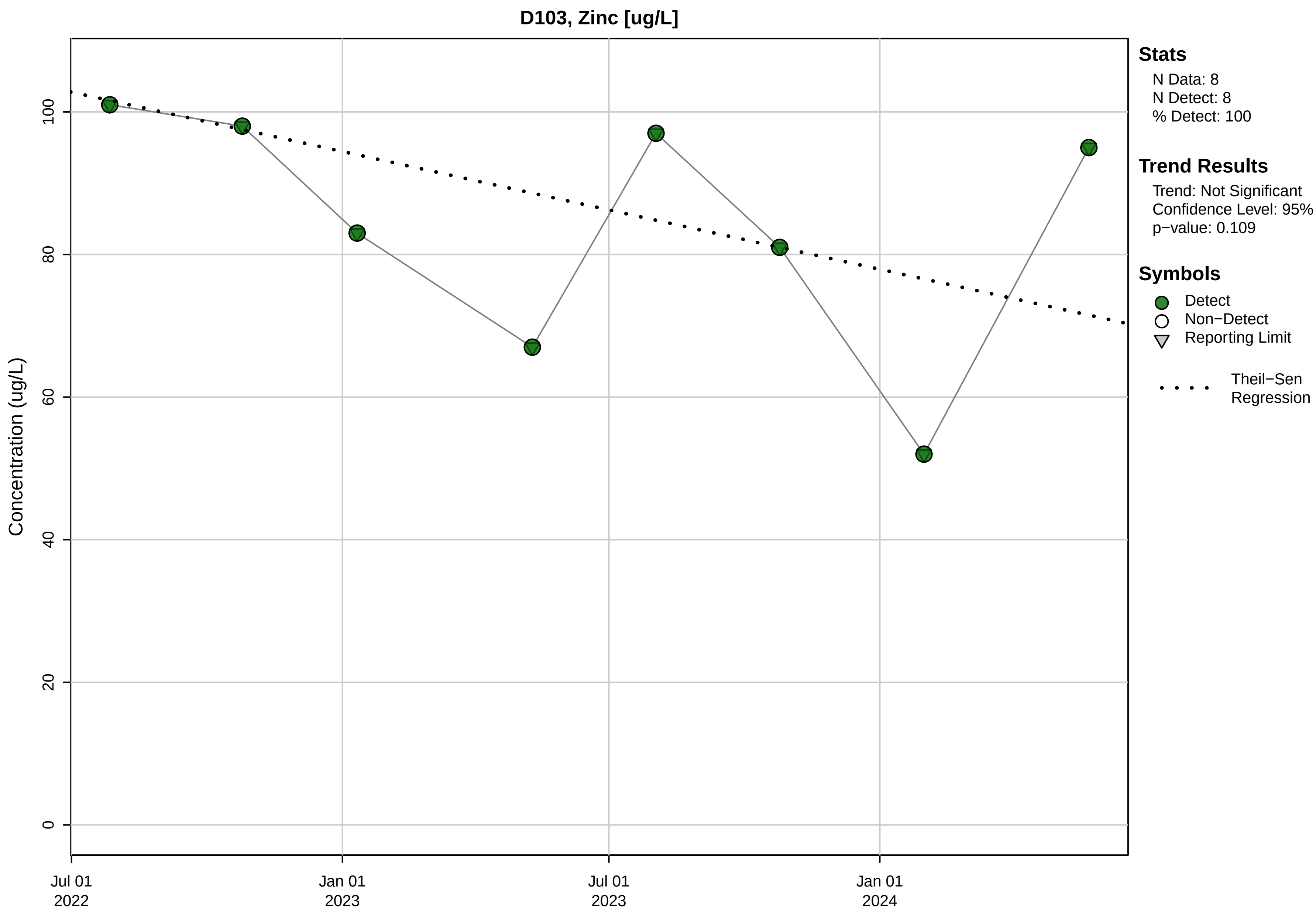
D103, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



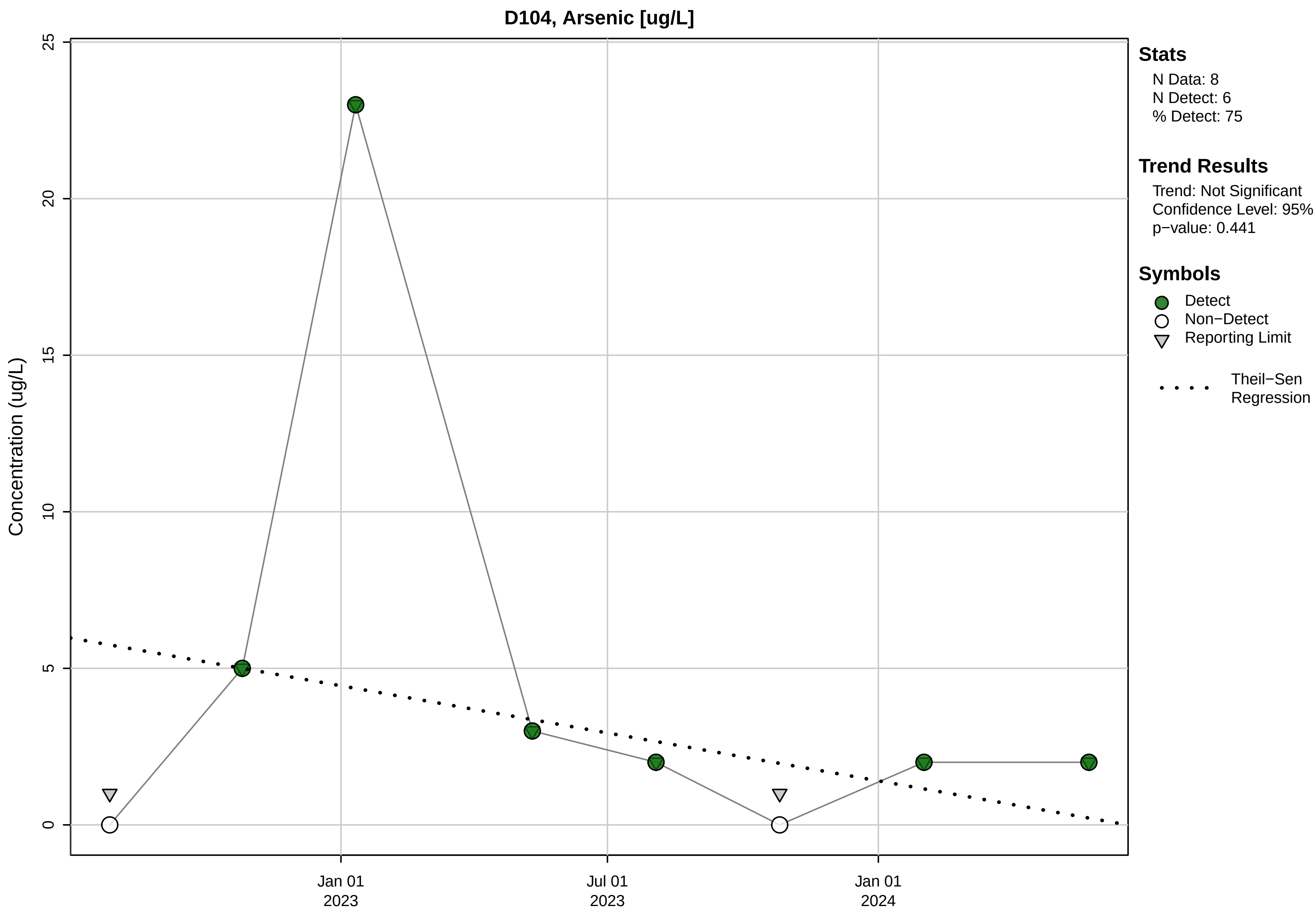
D103, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
500
1000
1500
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

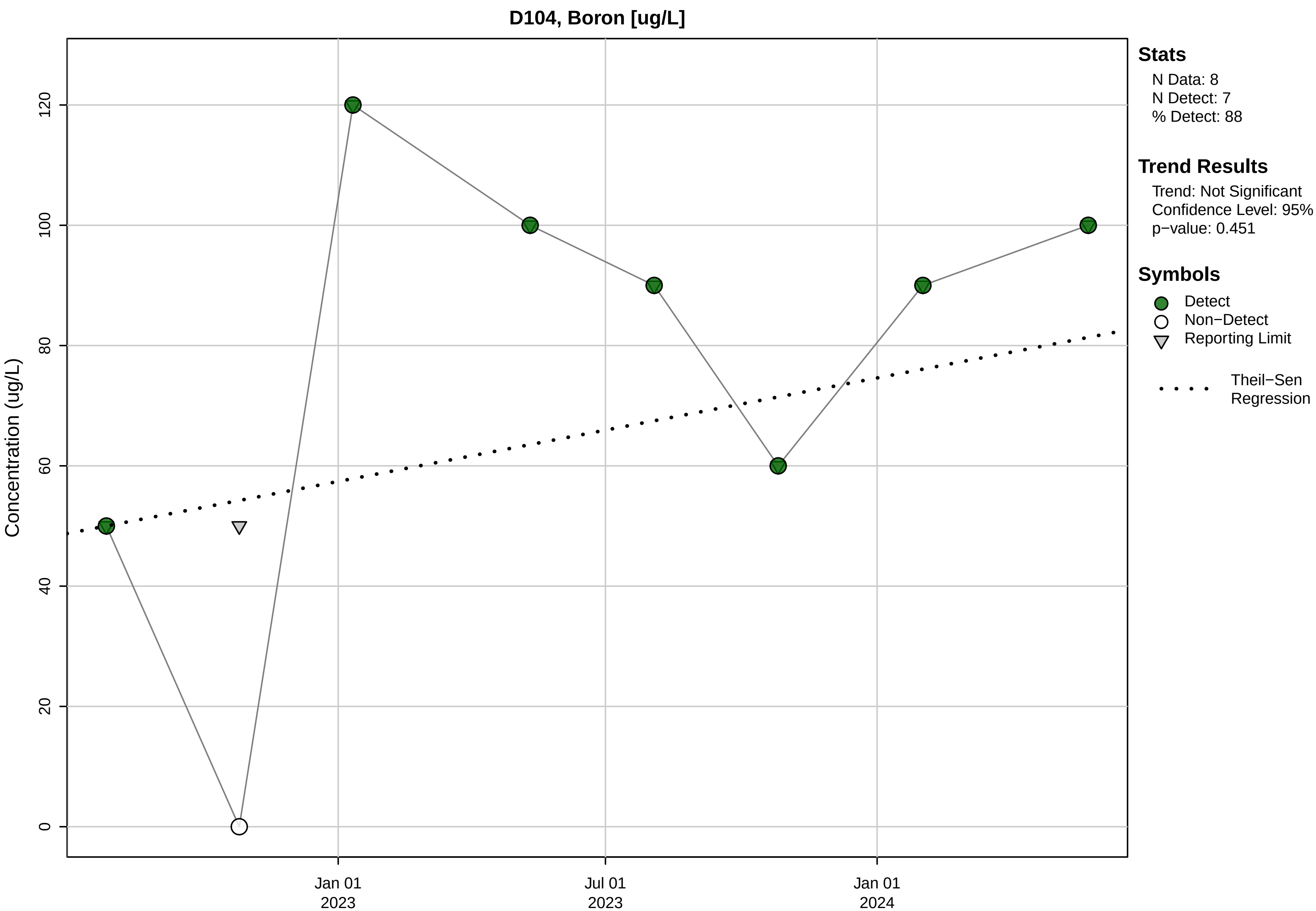


D103, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
500
1000
1500
2000
2500
3000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0785
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

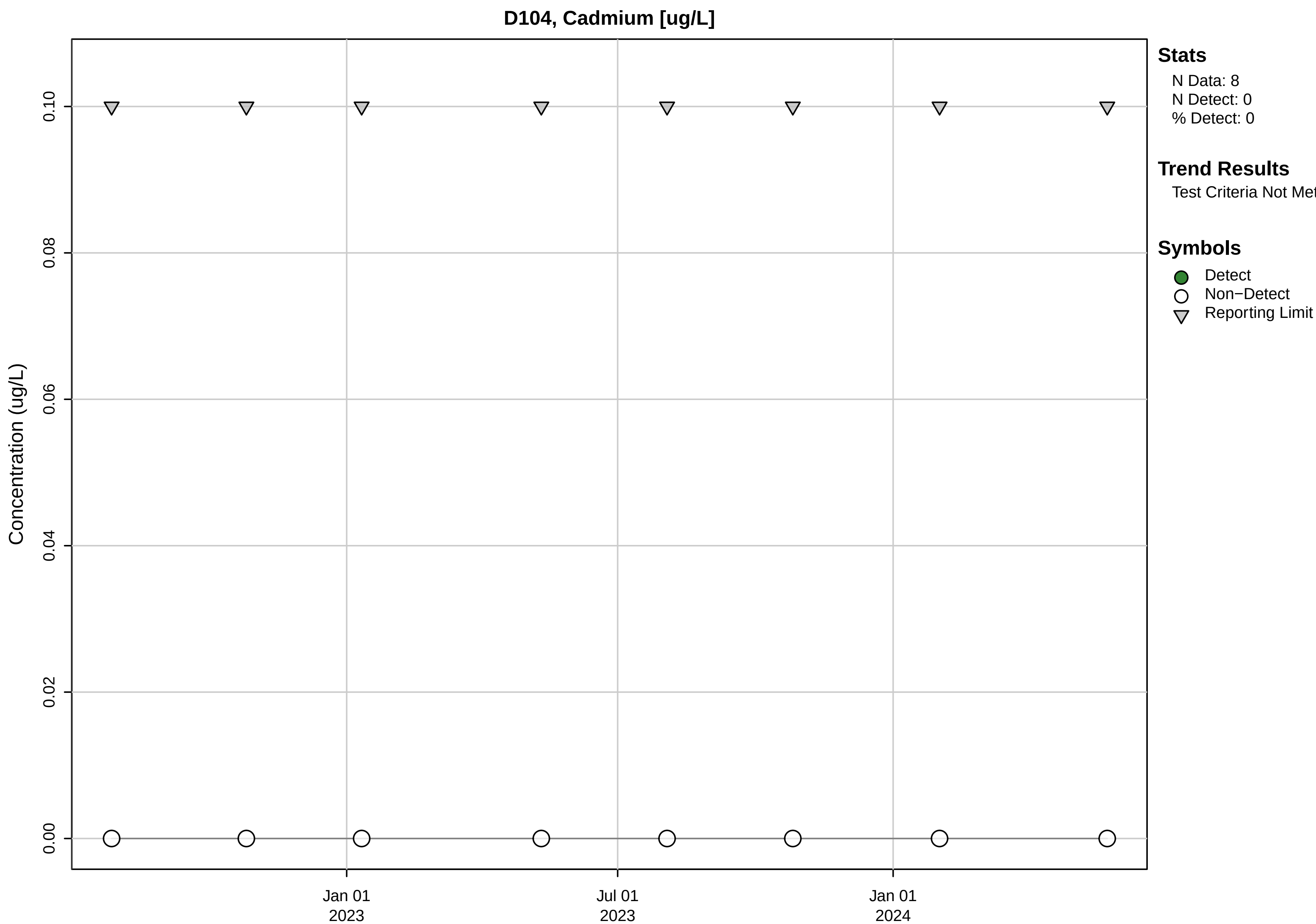


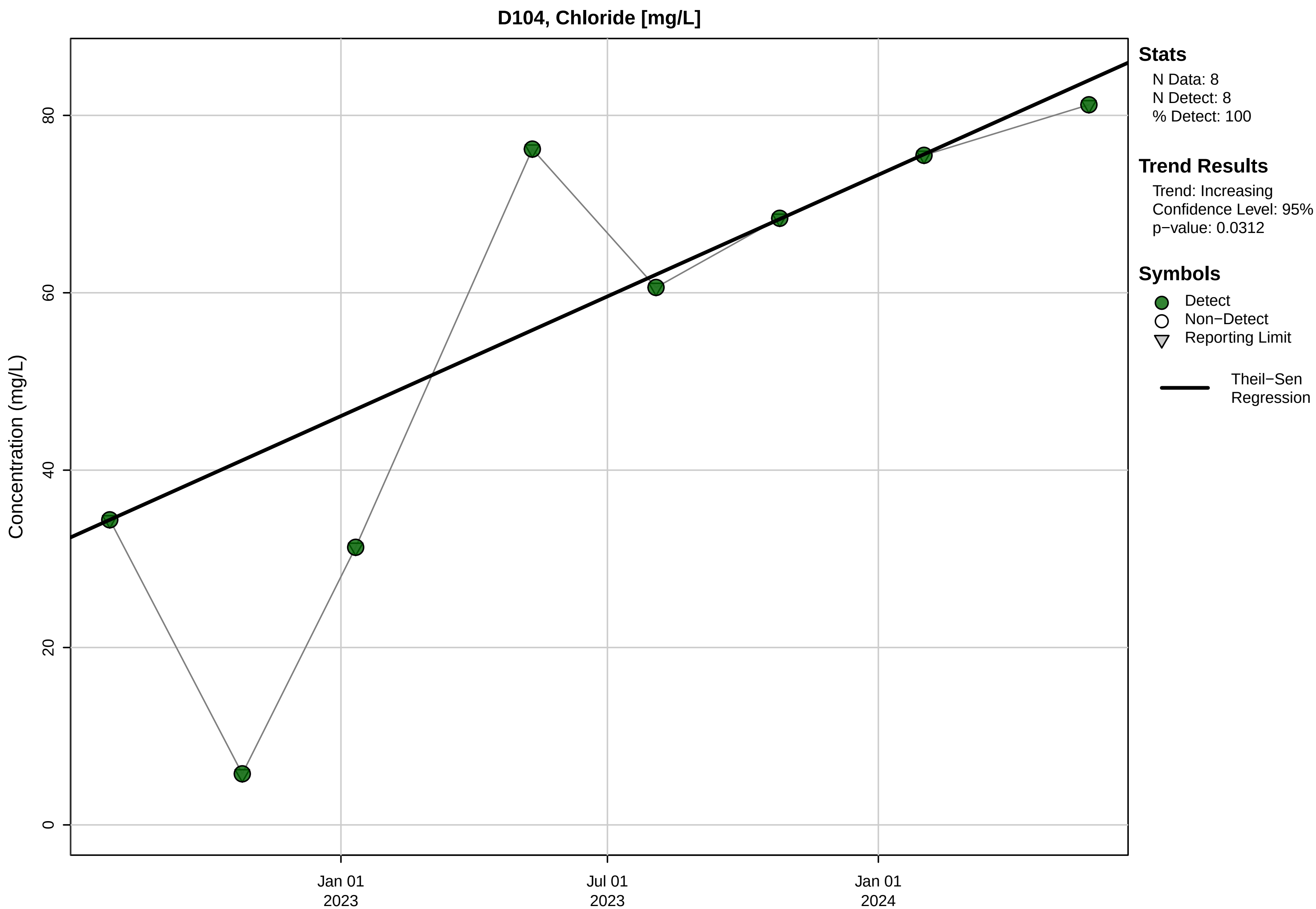
D103, Zinc [ug/L]
Concentration (ug/L)
0
20
40
60
80
100
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D104, Arsenic [ug/L]
Concentration (ug/L)
0
5
10
15
20
25
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 6
% Detect: 75
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.441
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

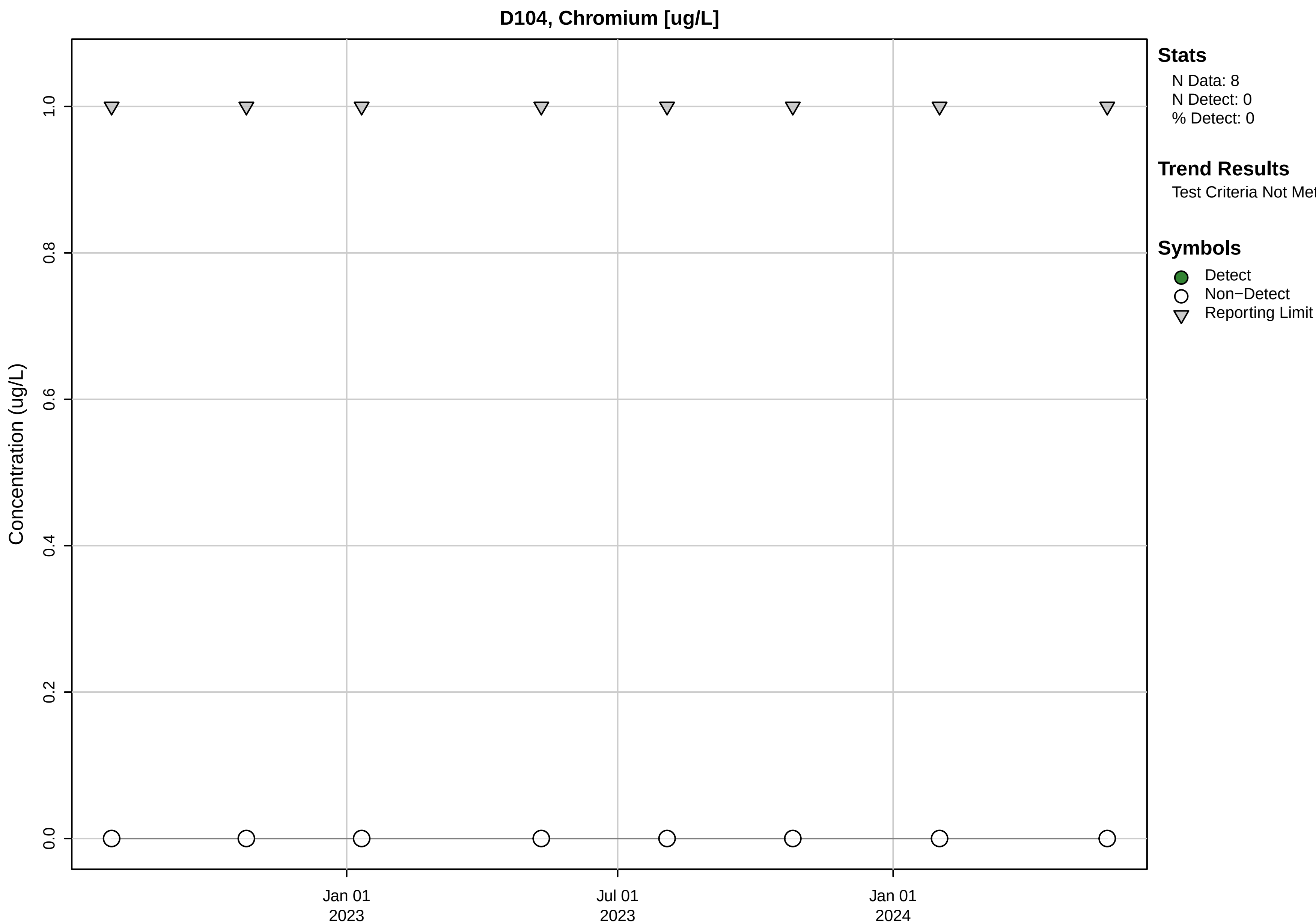


D104, Boron [ug/L]
Concentration (ug/L)
0
20
40
60
80
100
120
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.451
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

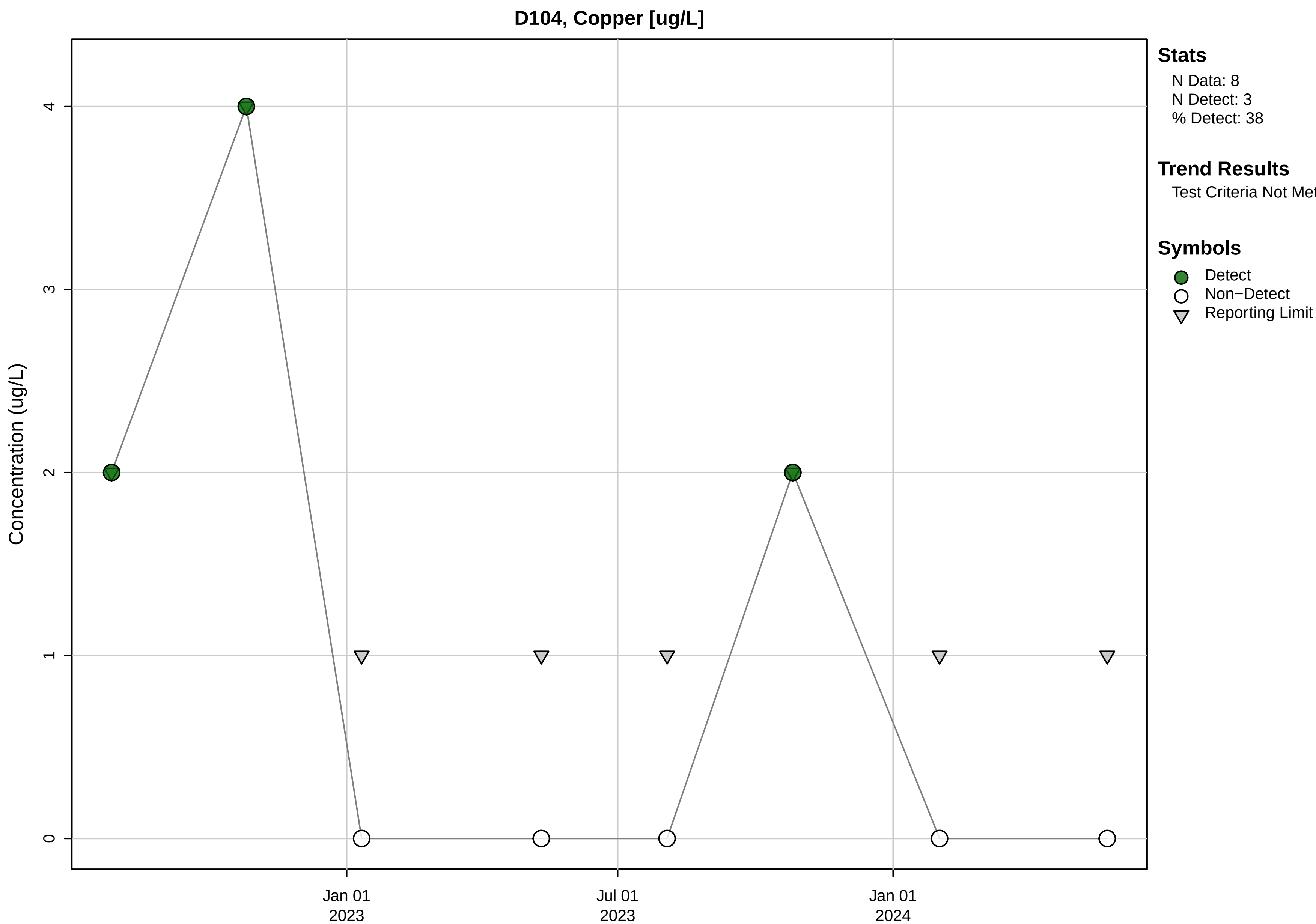

D104, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.02
0.04
0.06
0.08
0.10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



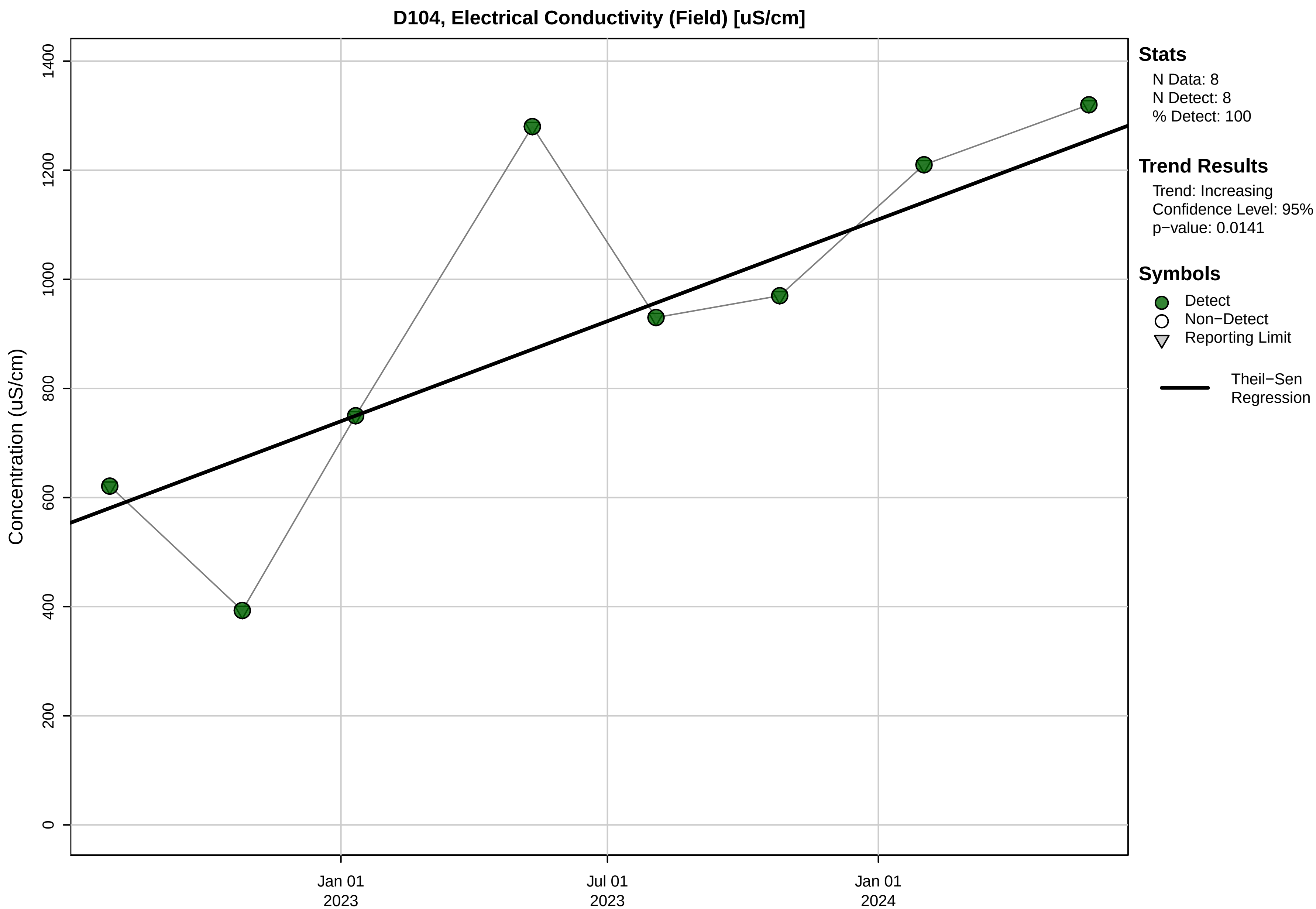
D104, Chloride [mg/L]
Concentration (mg/L)
0
20
40
60
80
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

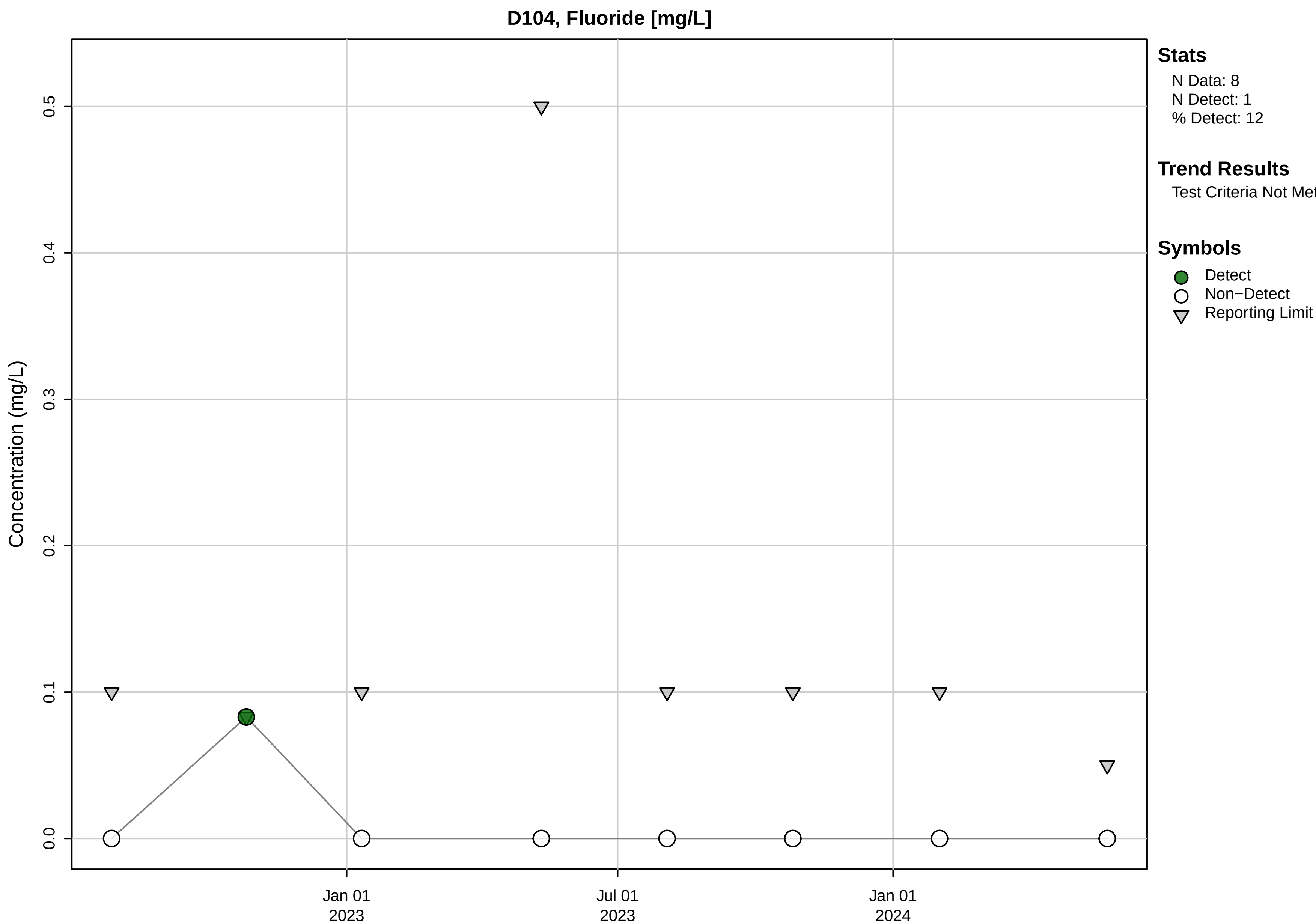


D104, Chromium [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

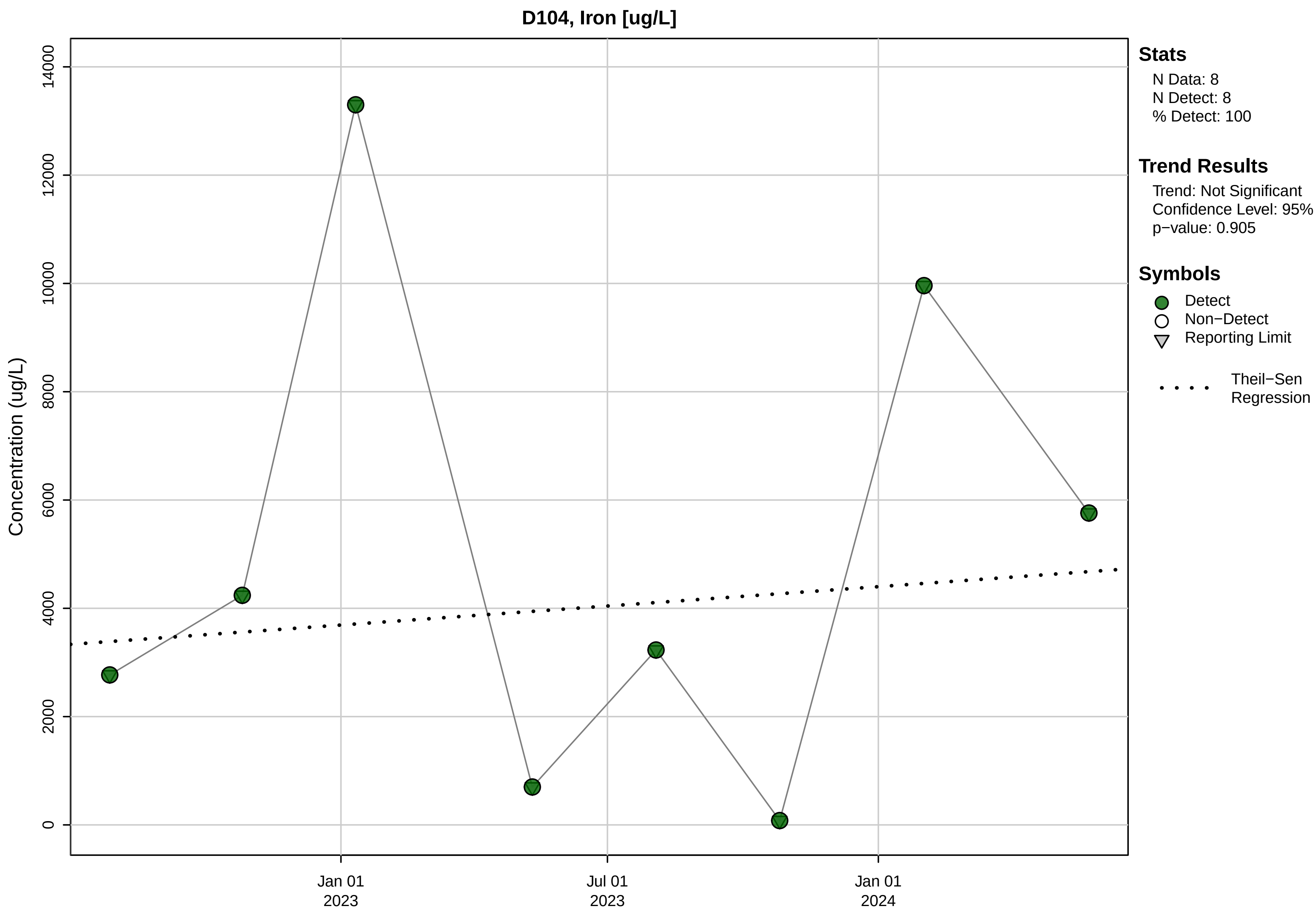


D104, Copper [ug/L]
Concentration (ug/L)
0
1
2
3
4
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

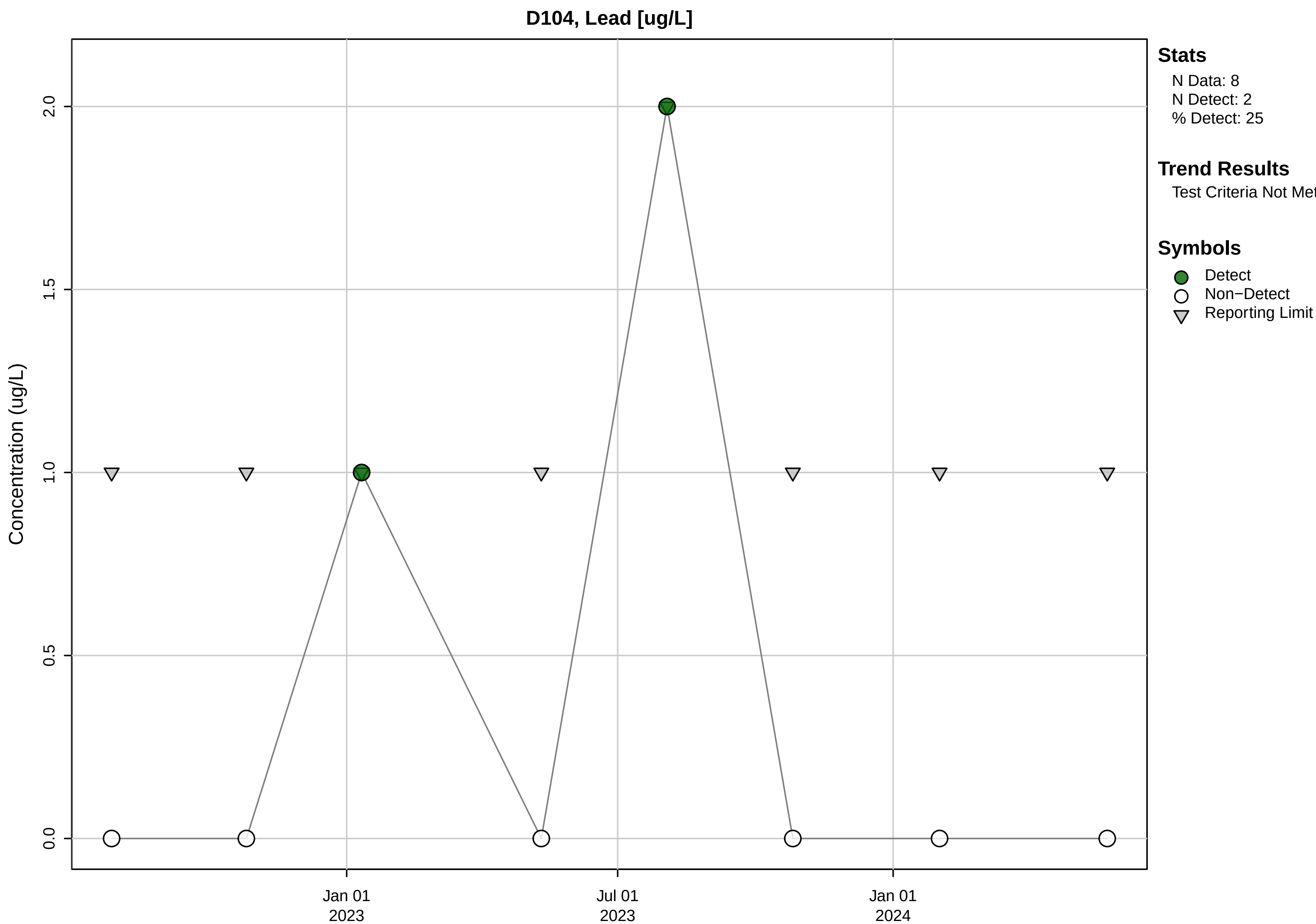

D104, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
200
400
600
800
1000
1200
1400
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0141
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



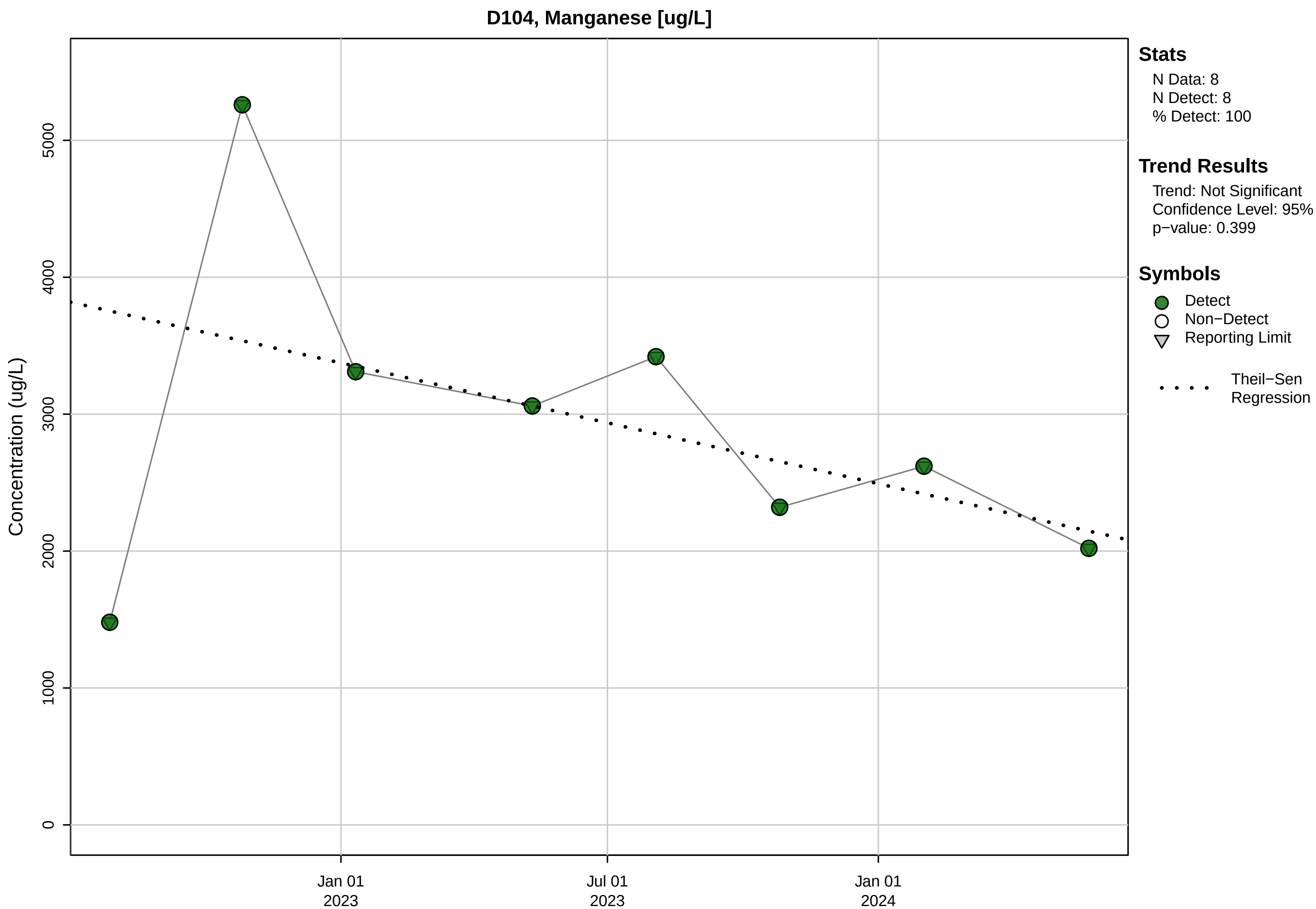
D104, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



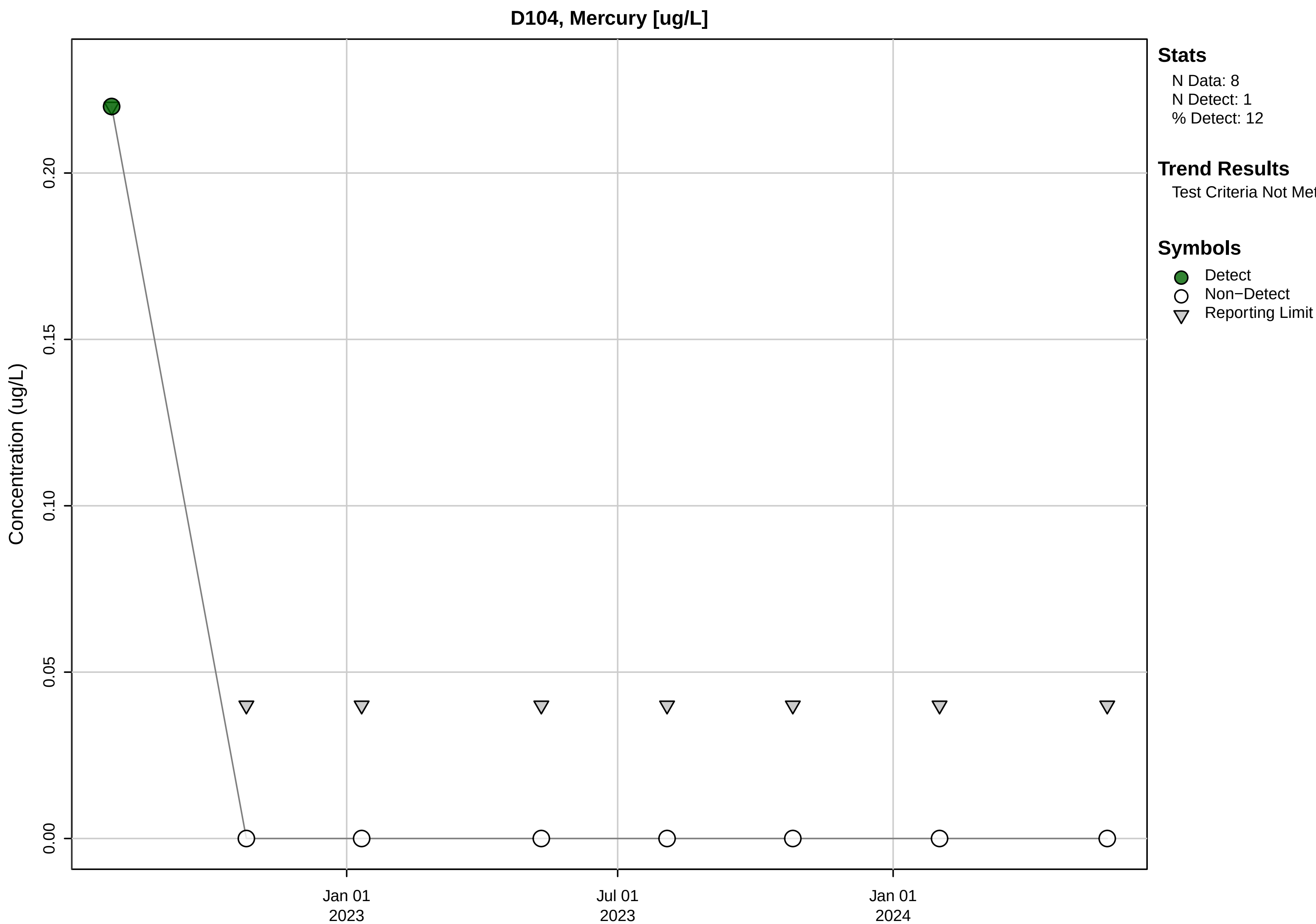
D104, Iron [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
10000
12000
14000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

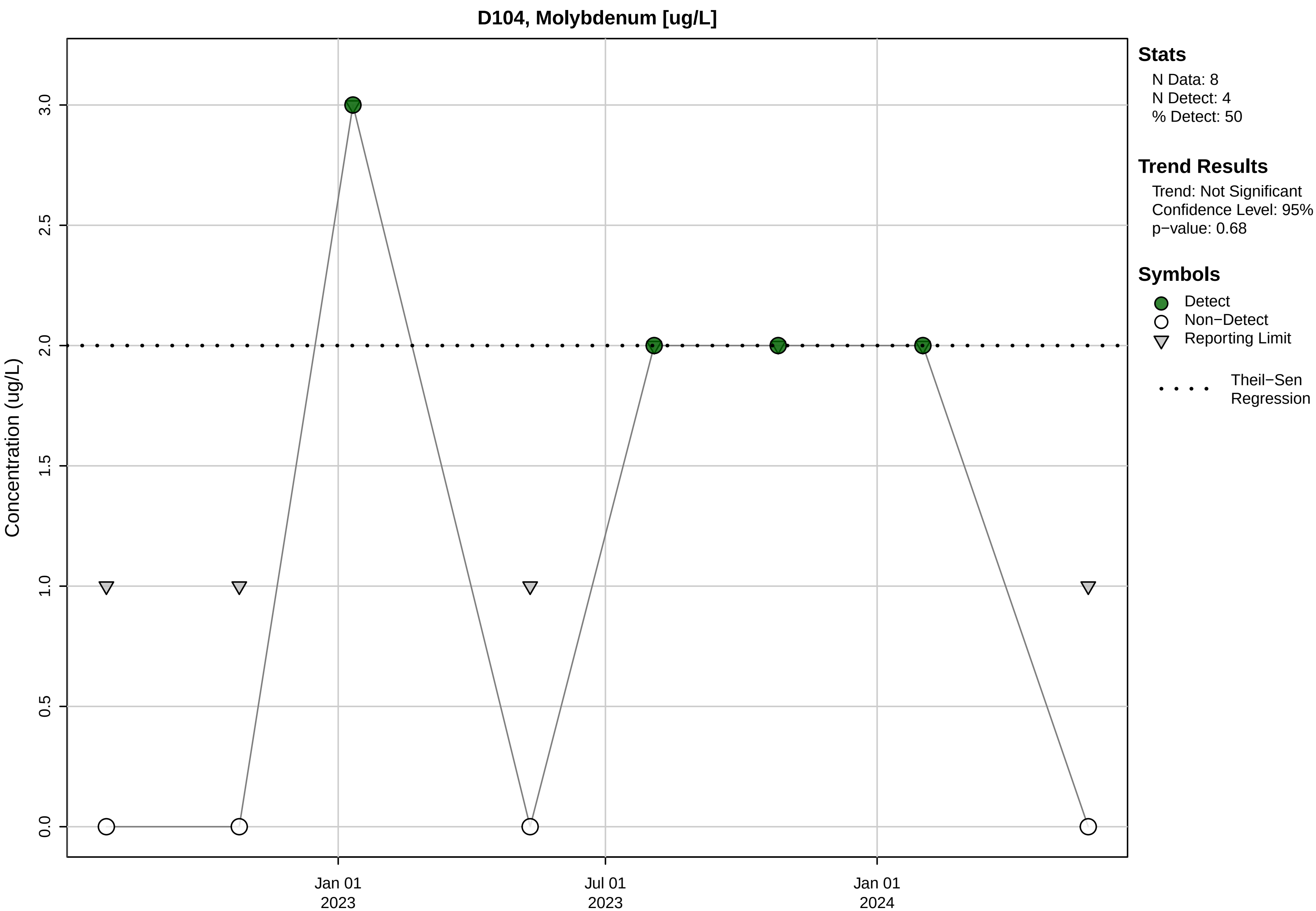


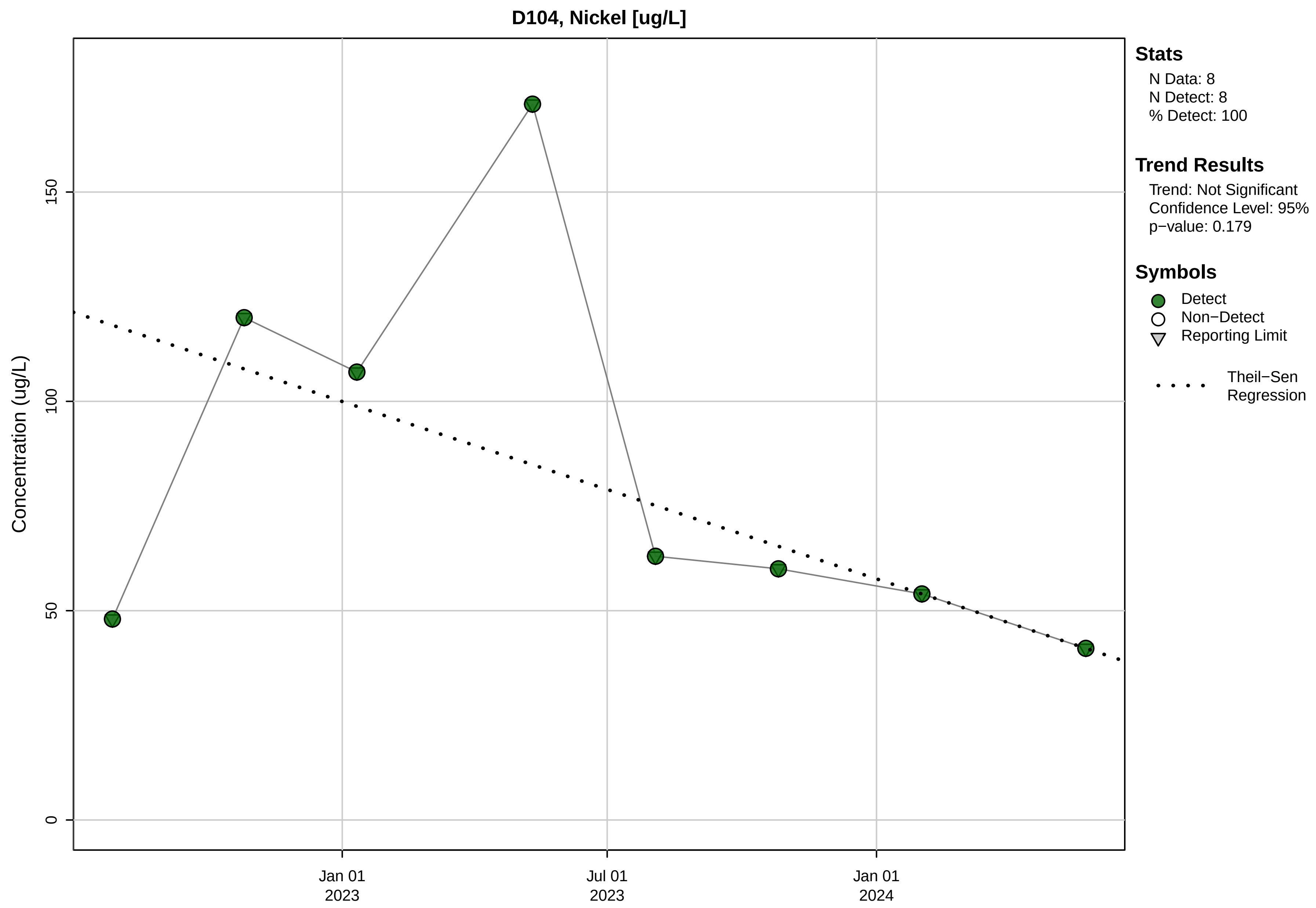
D104, Lead [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



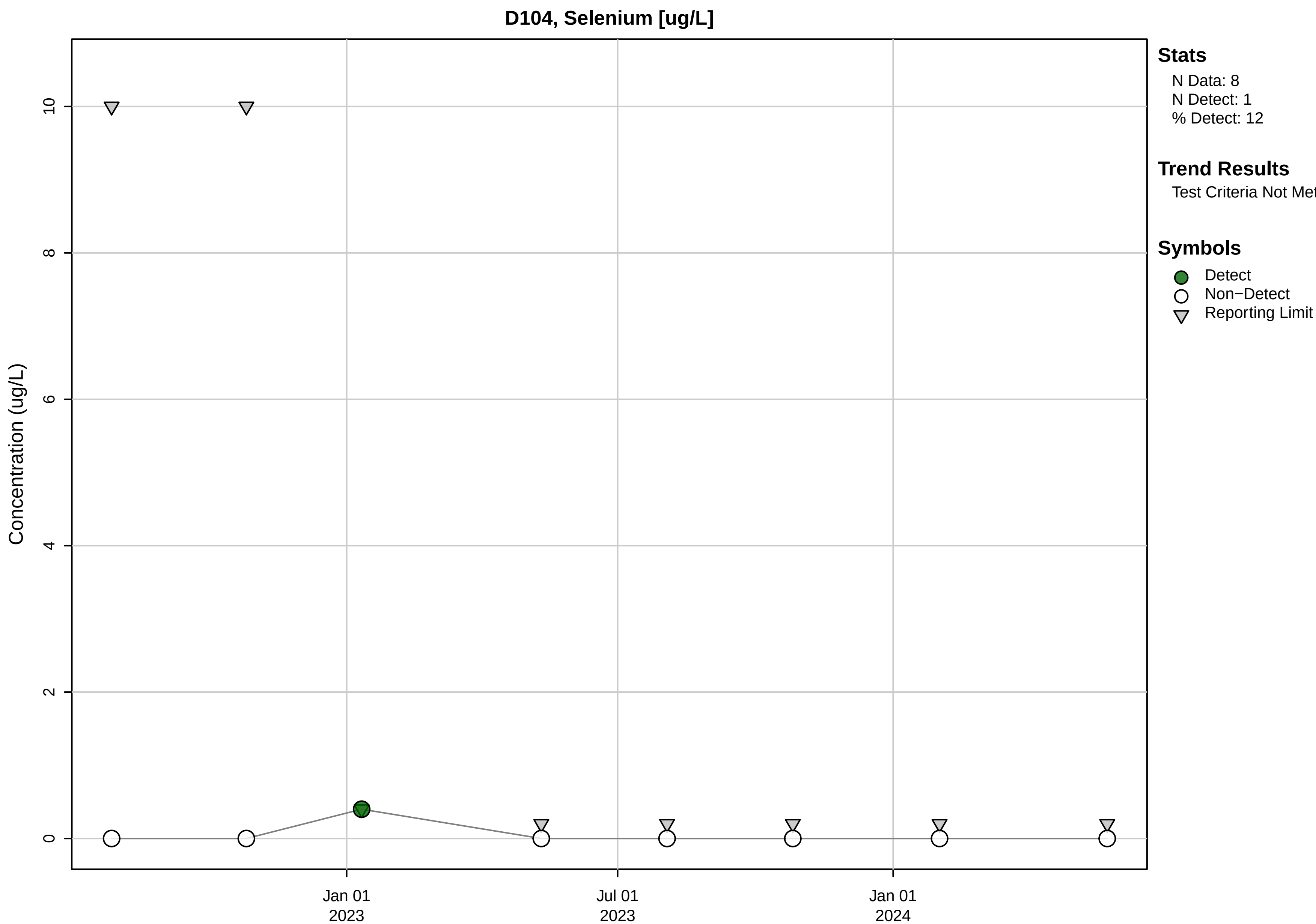
D104, Manganese [ug/L]
Concentration (ug/L)
0
1000
2000
3000
4000
5000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

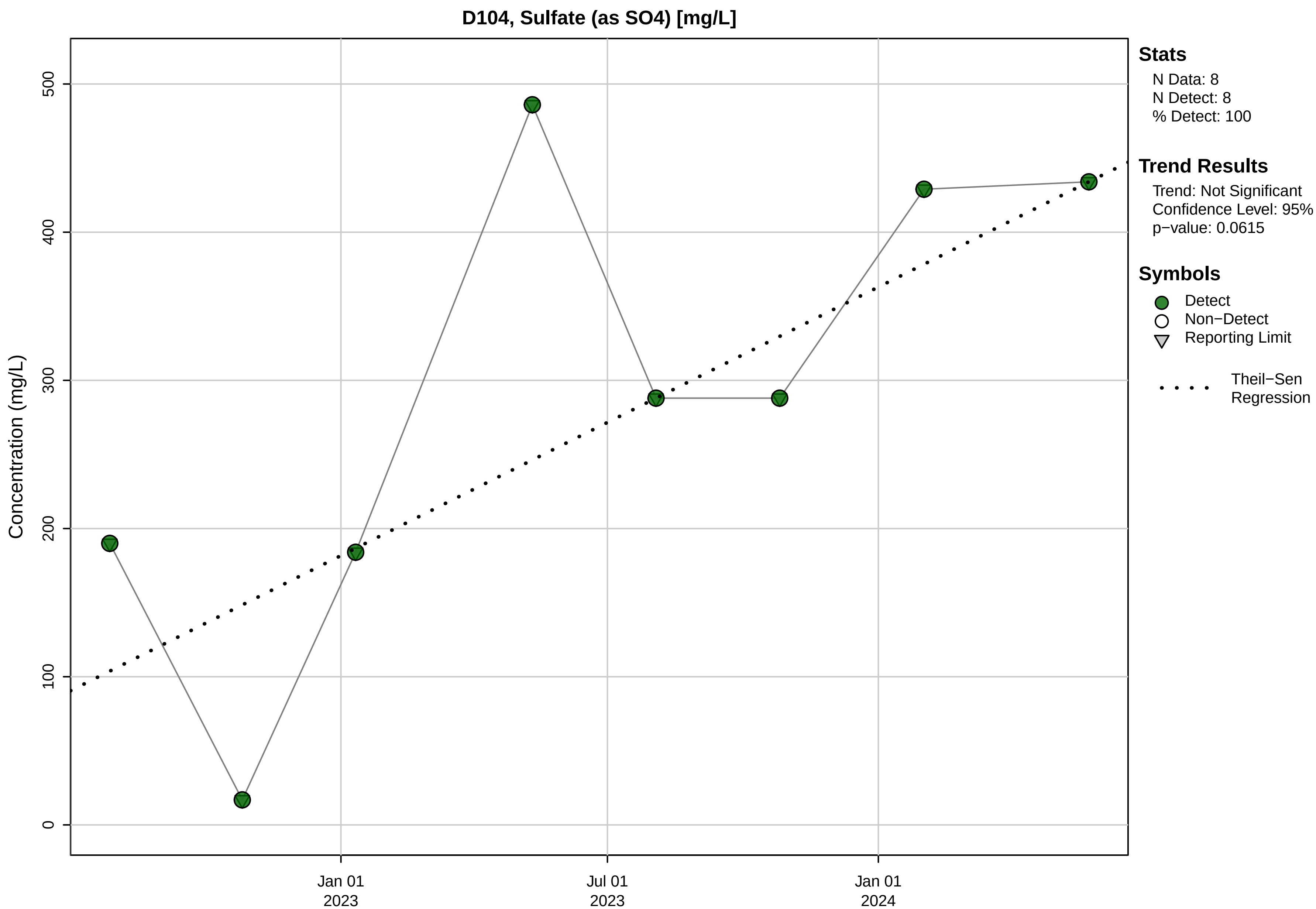

D104, Mercury [ug/L]
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D104, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.68
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

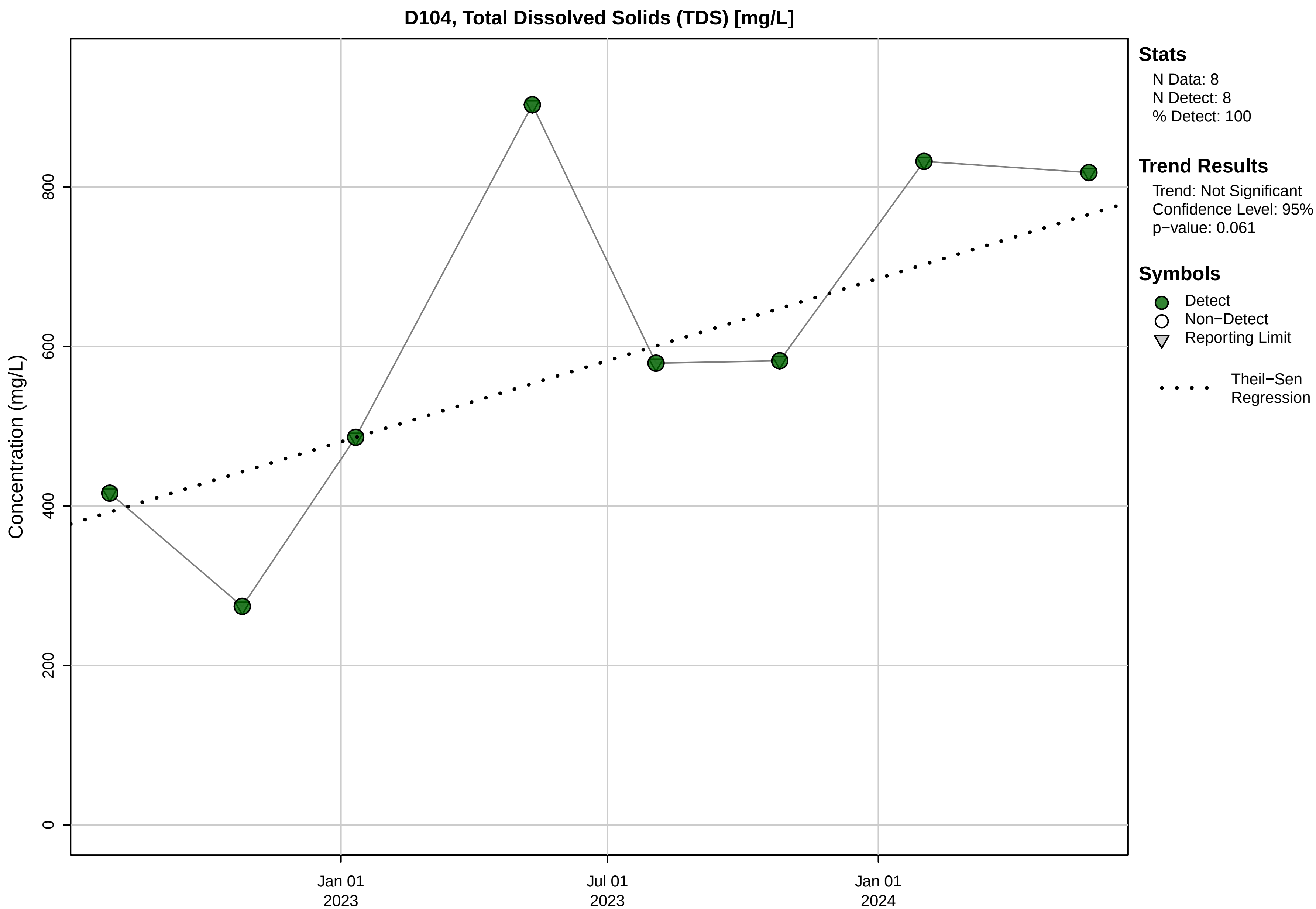


D104, Nickel [ug/L]
Concentration (ug/L)
0
50
100
150
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

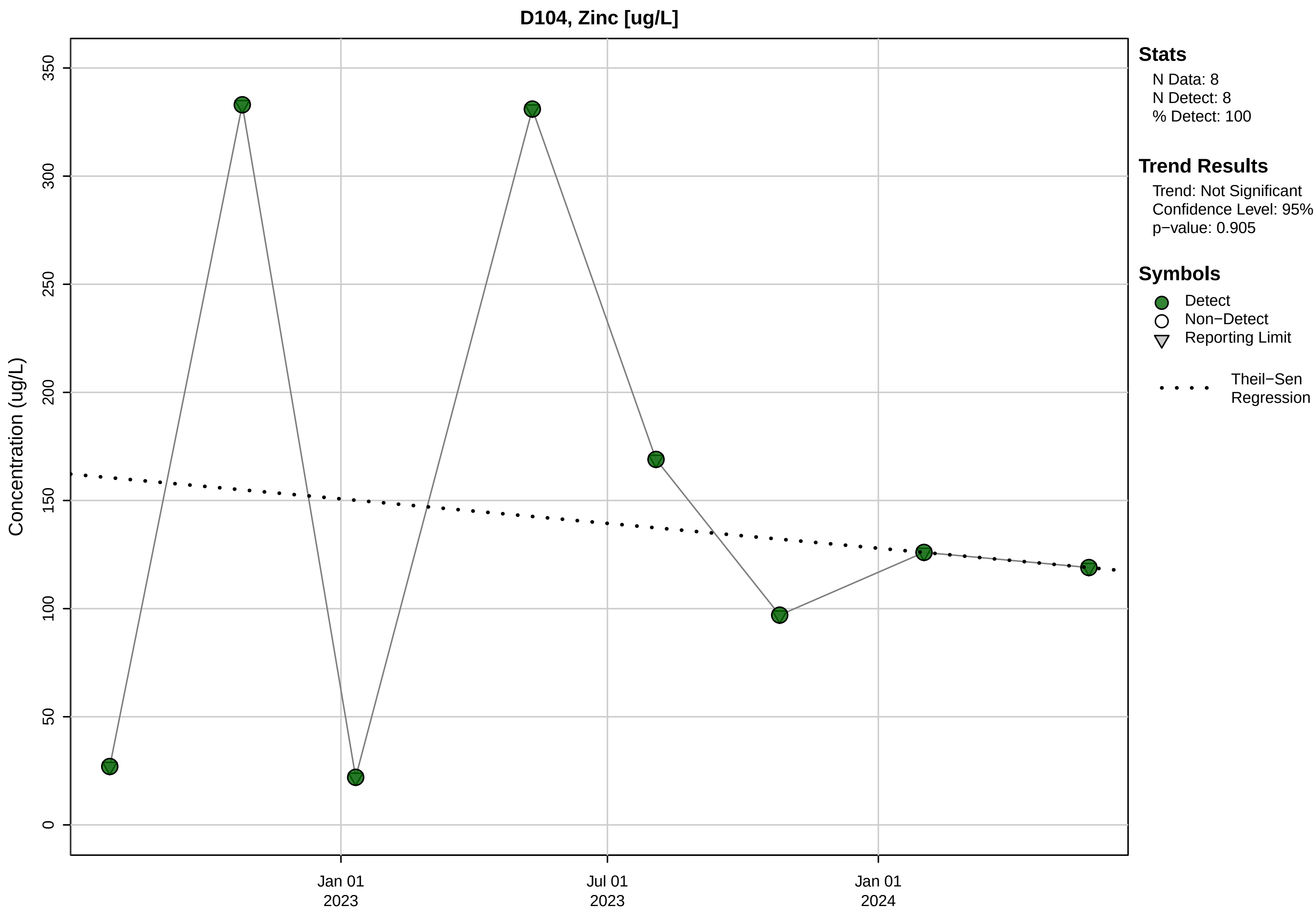

D104, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

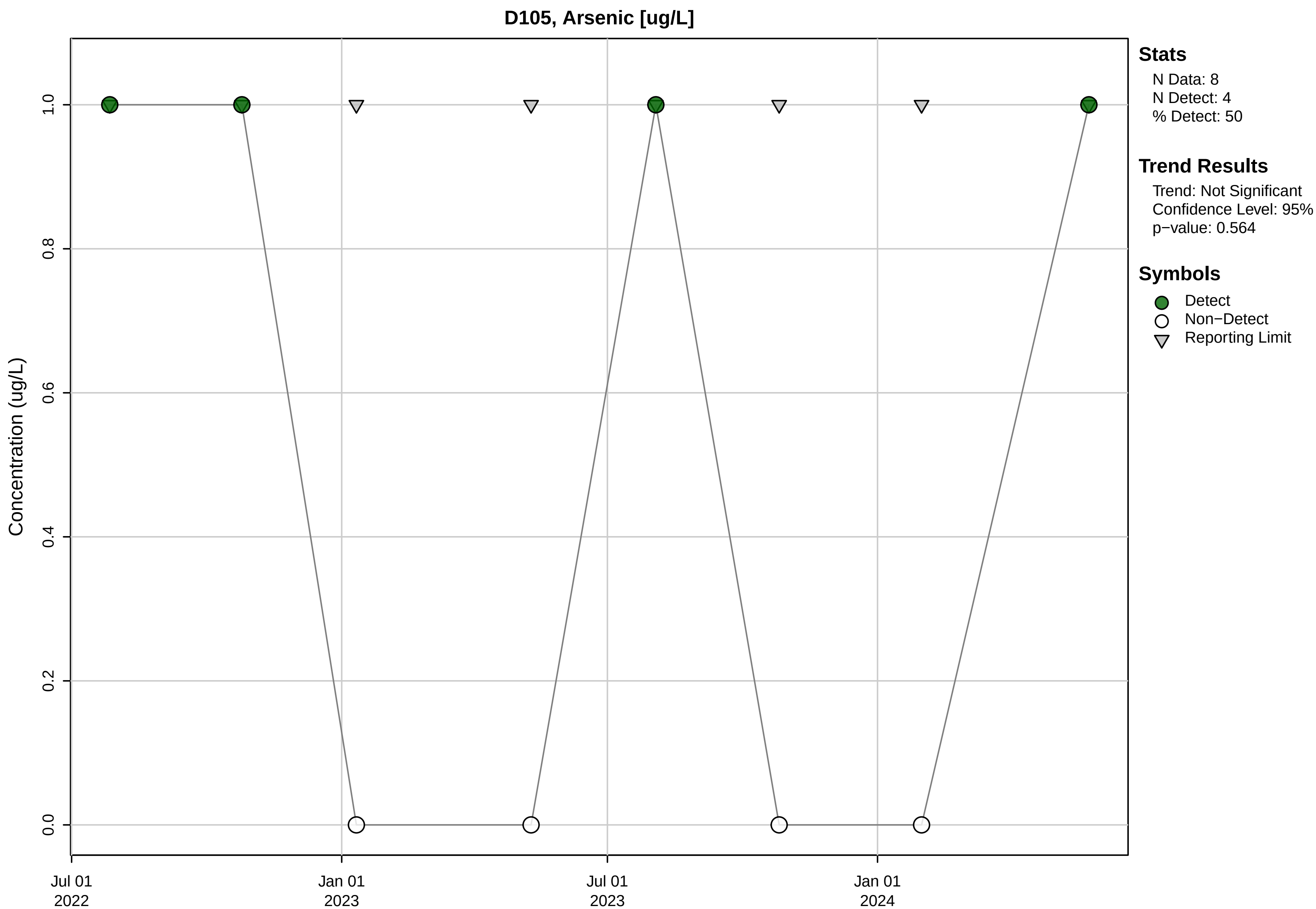


D104, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
100
200
300
400
500
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0615
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

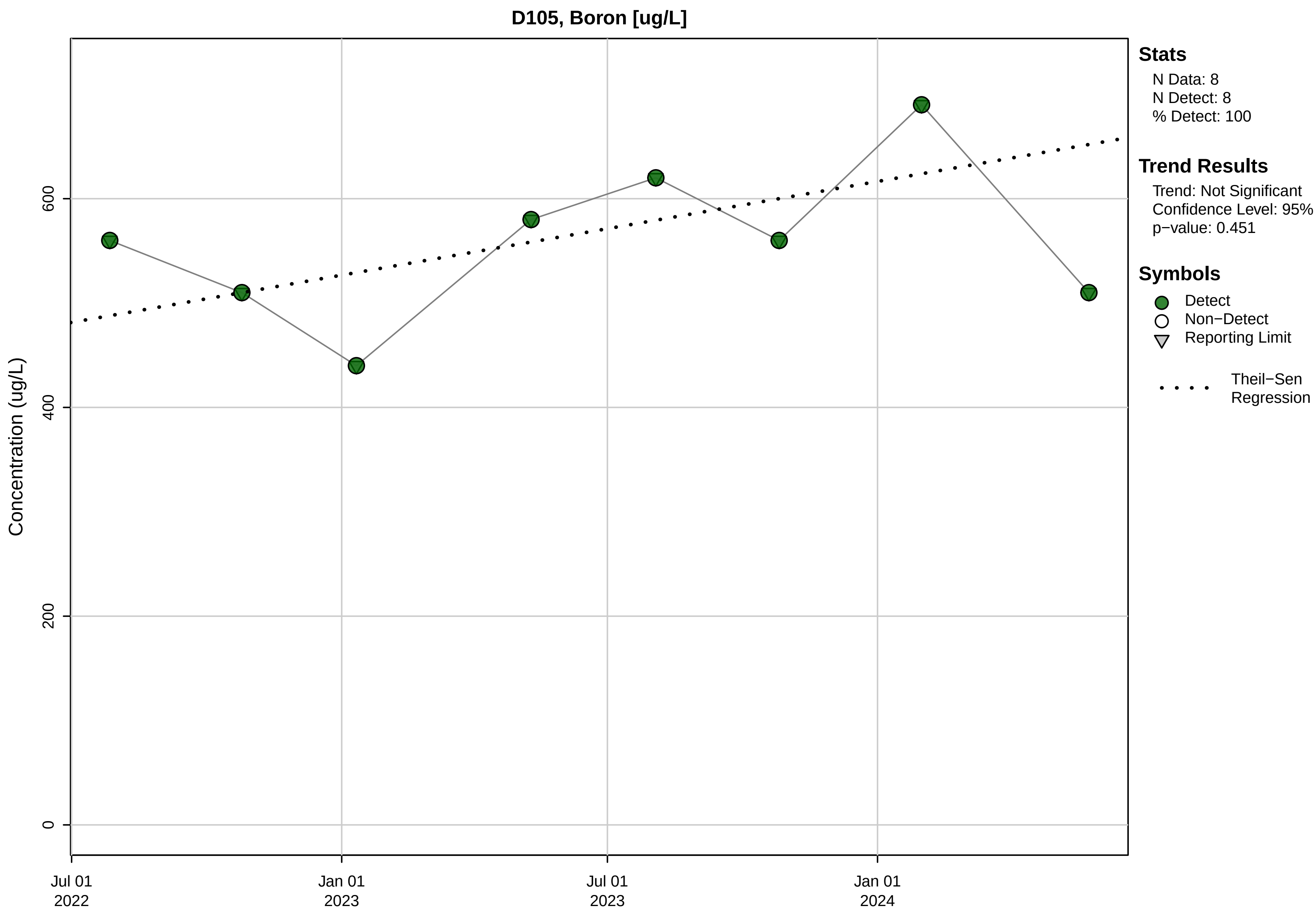


D104, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
200
400
600
800
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.061
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

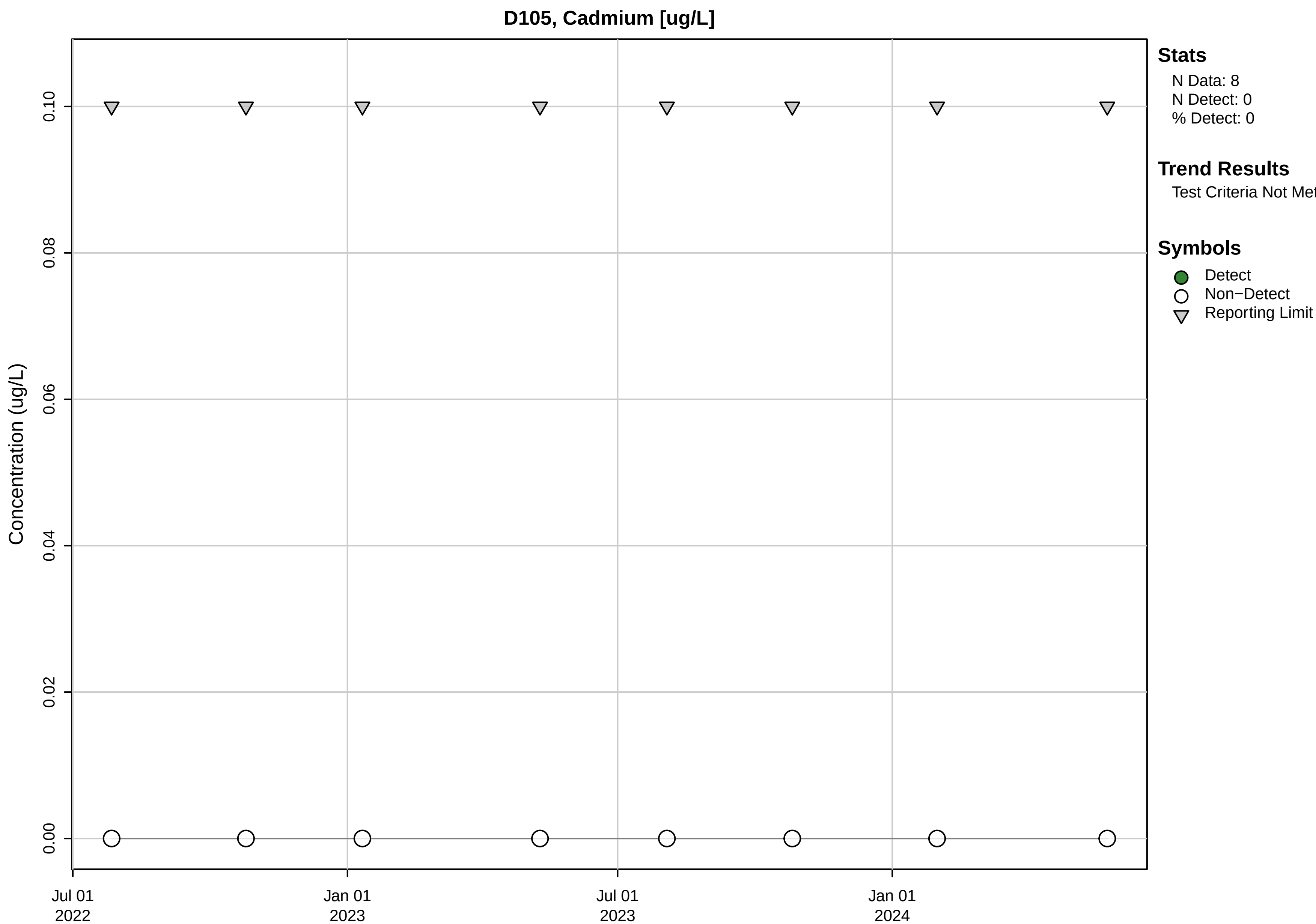

D104, Zinc [ug/L]
Concentration (ug/L)
0
50
100
150
200
250
300
350
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



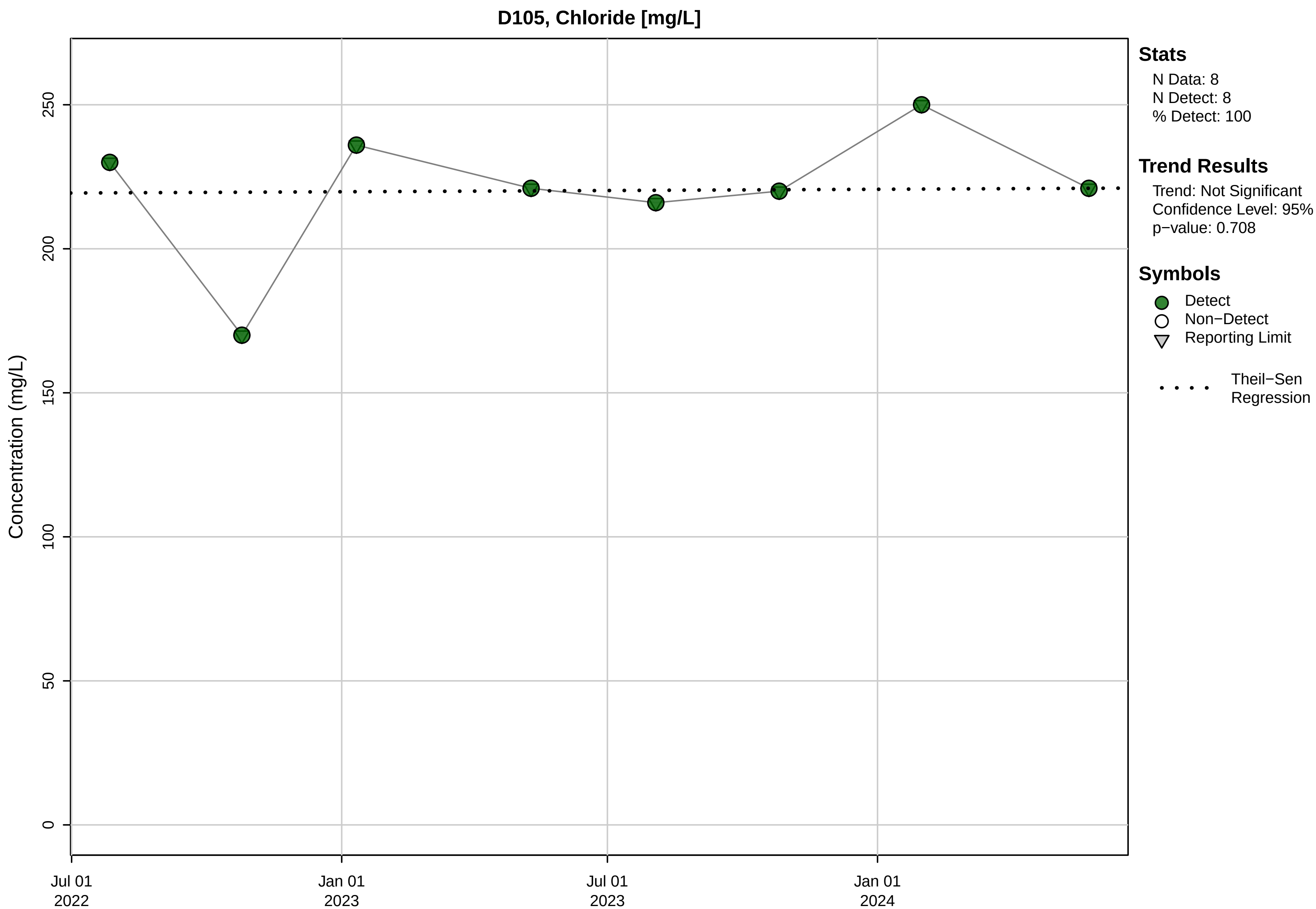
D105, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.564
Symbols
Detect
Non−Detect
Reporting Limit



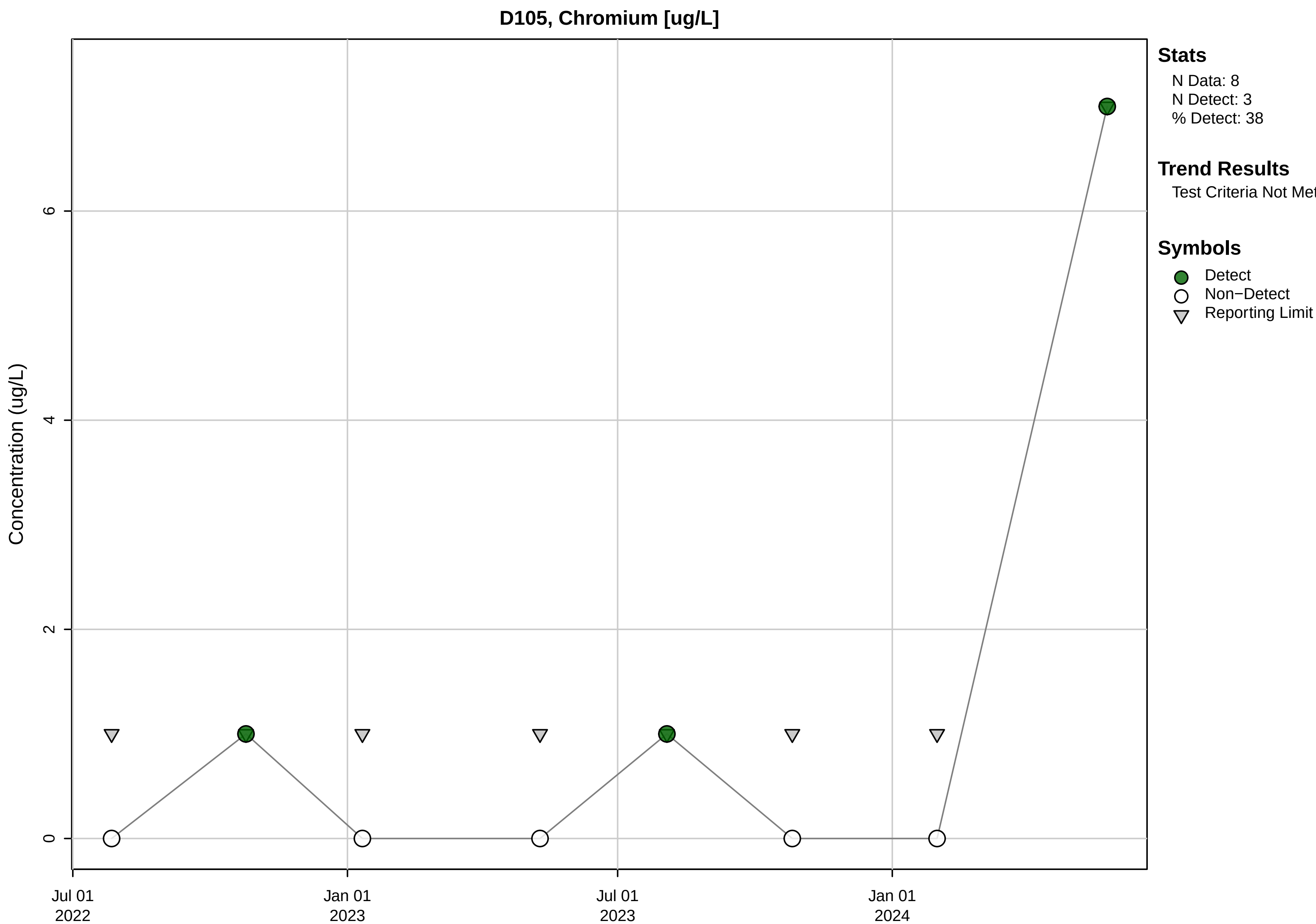
D105, Boron [ug/L]
Concentration (ug/L)
0
200
400
600
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.451
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



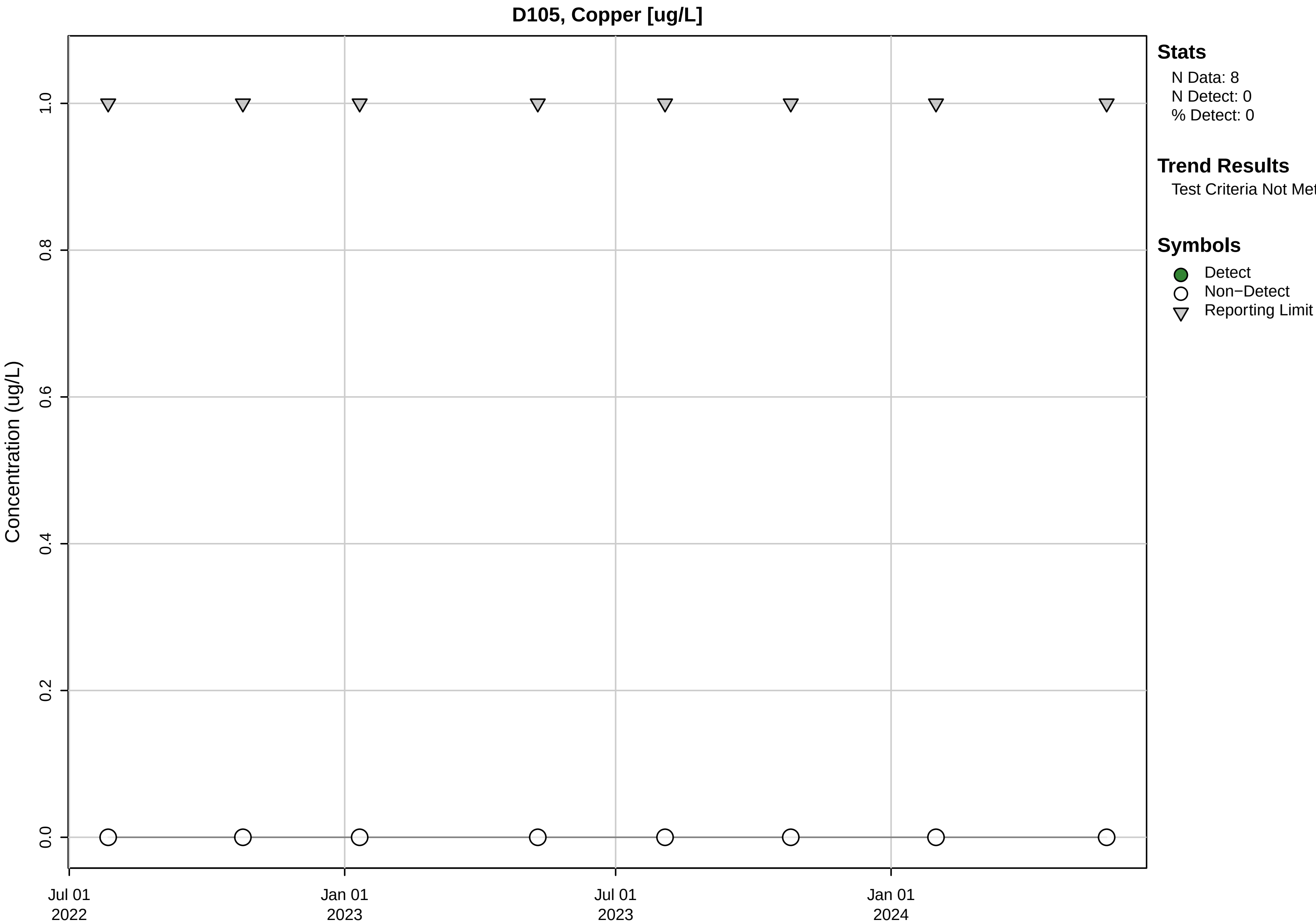
D105, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.02
0.04
0.06
0.08
0.10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



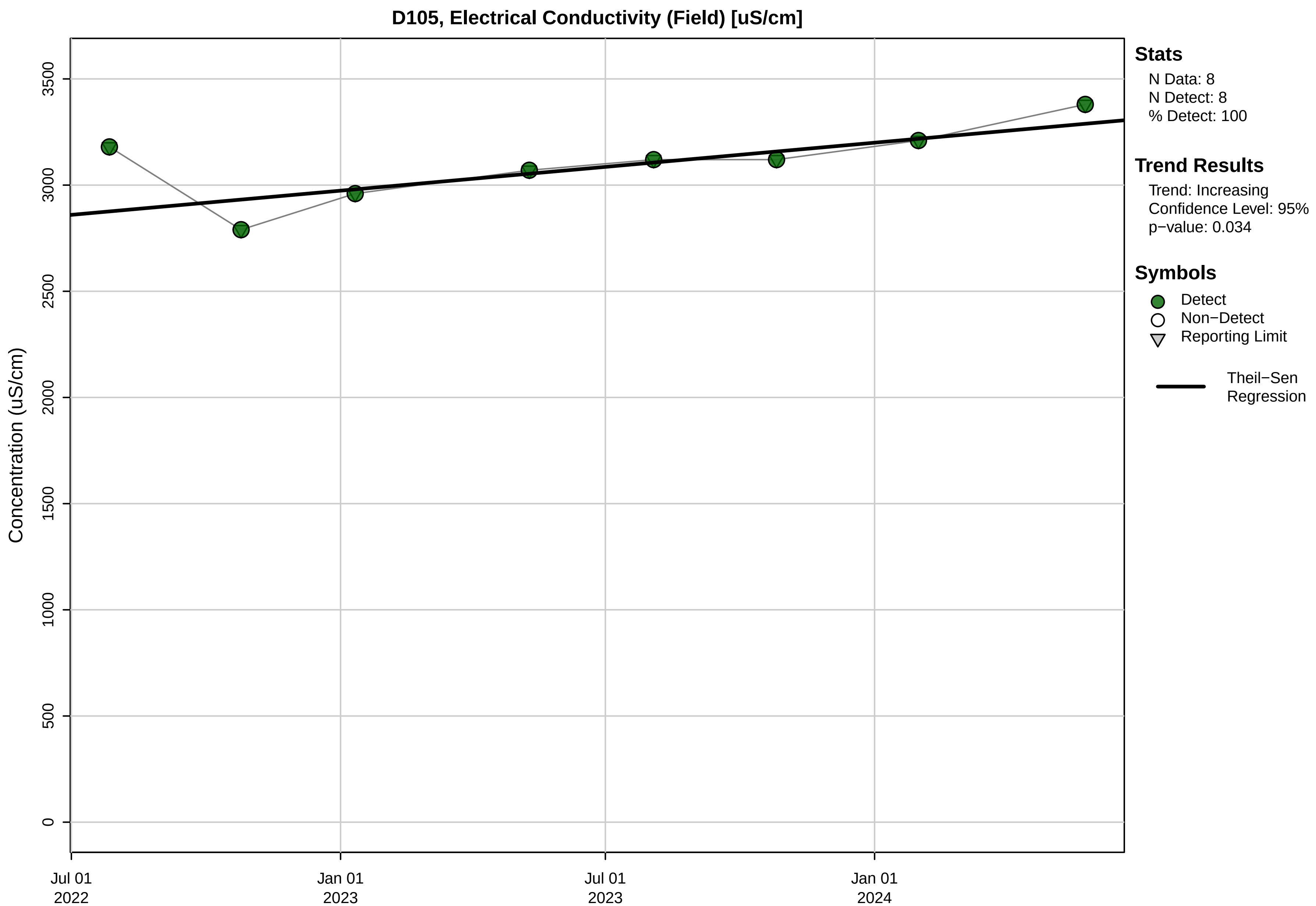
D105, Chloride [mg/L]
Concentration (mg/L)
0
50
100
150
200
250
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.708
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



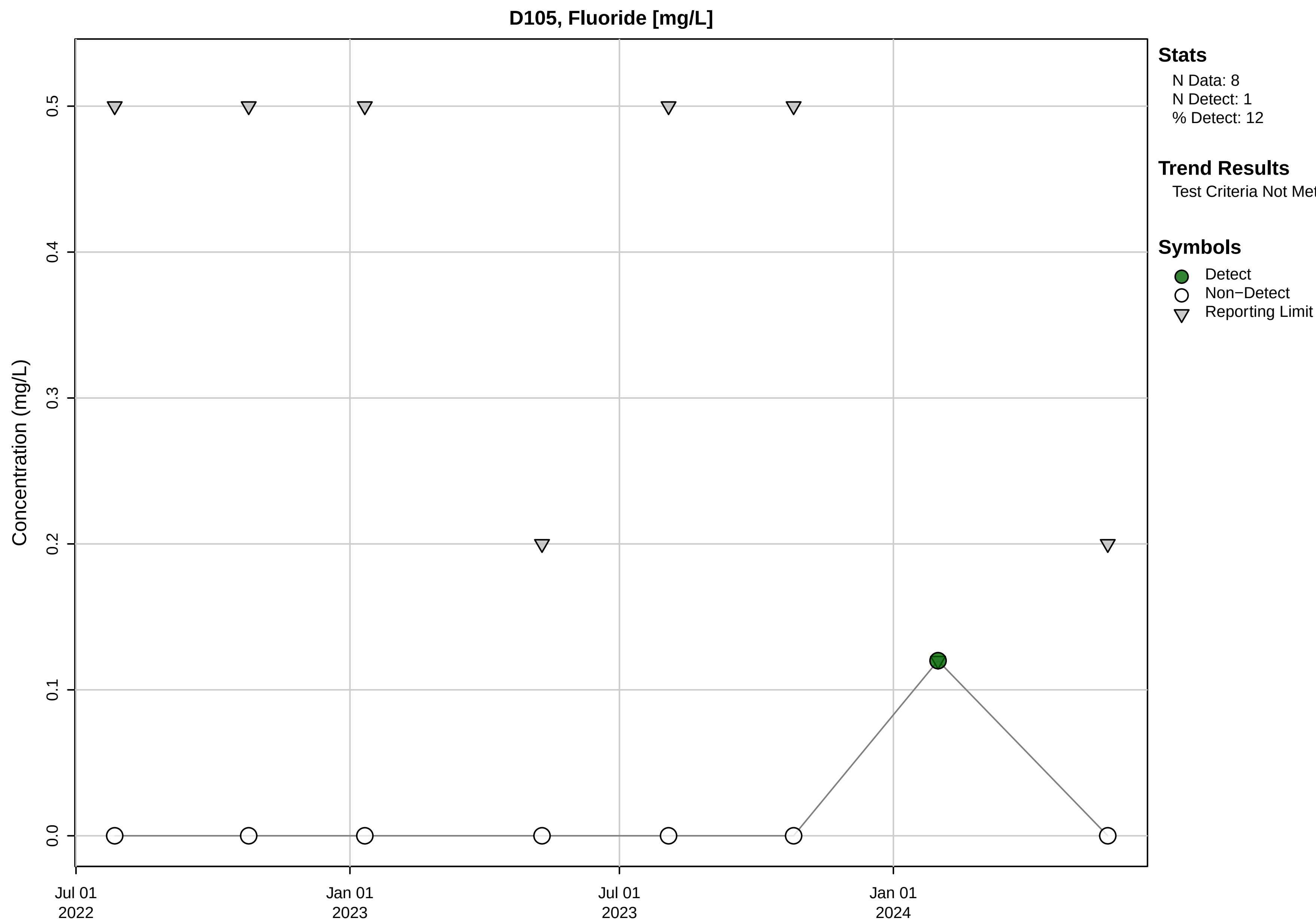
D105, Chromium [ug/L]
Concentration (ug/L)
0
2
4
6
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



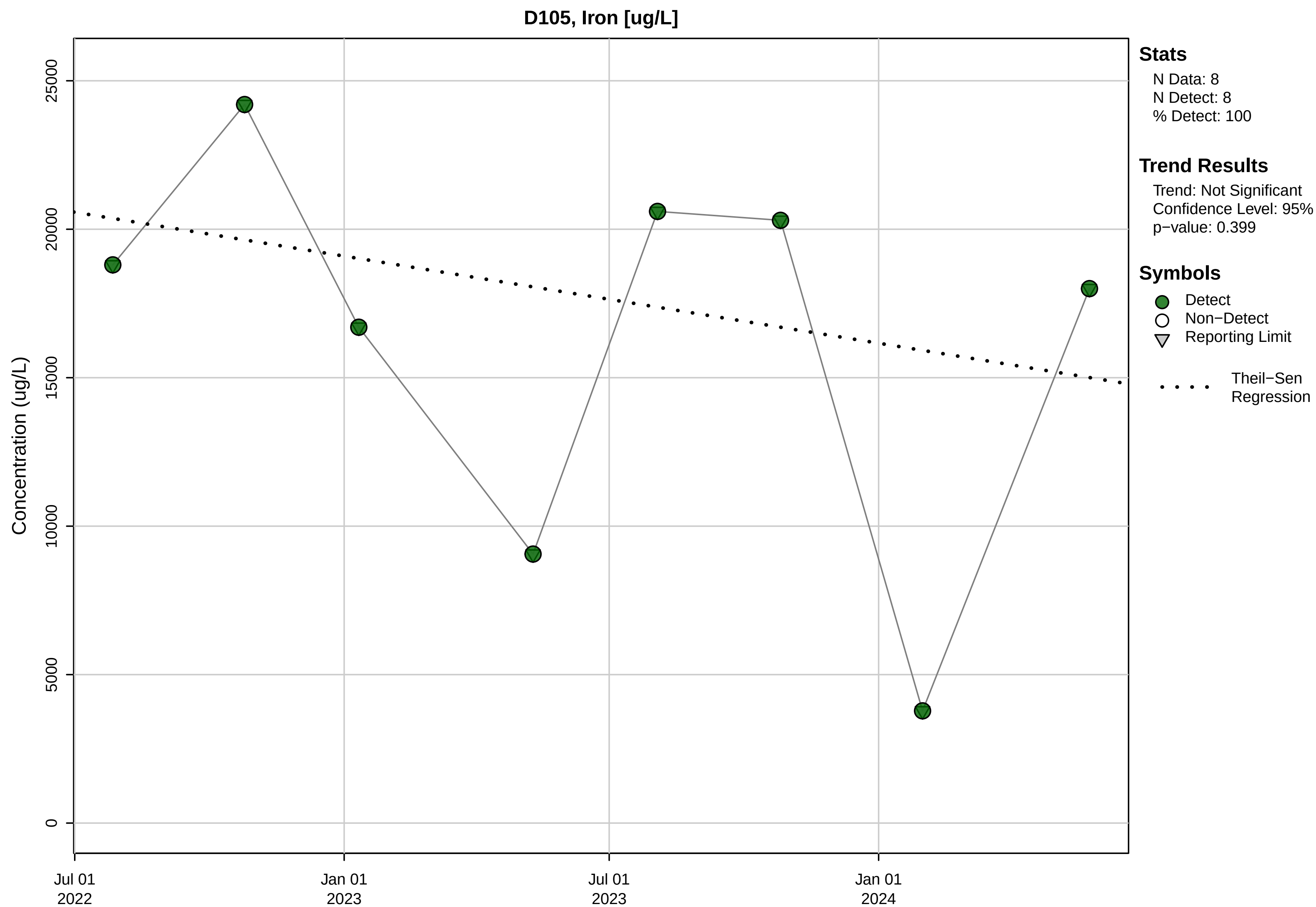
D105, Copper [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



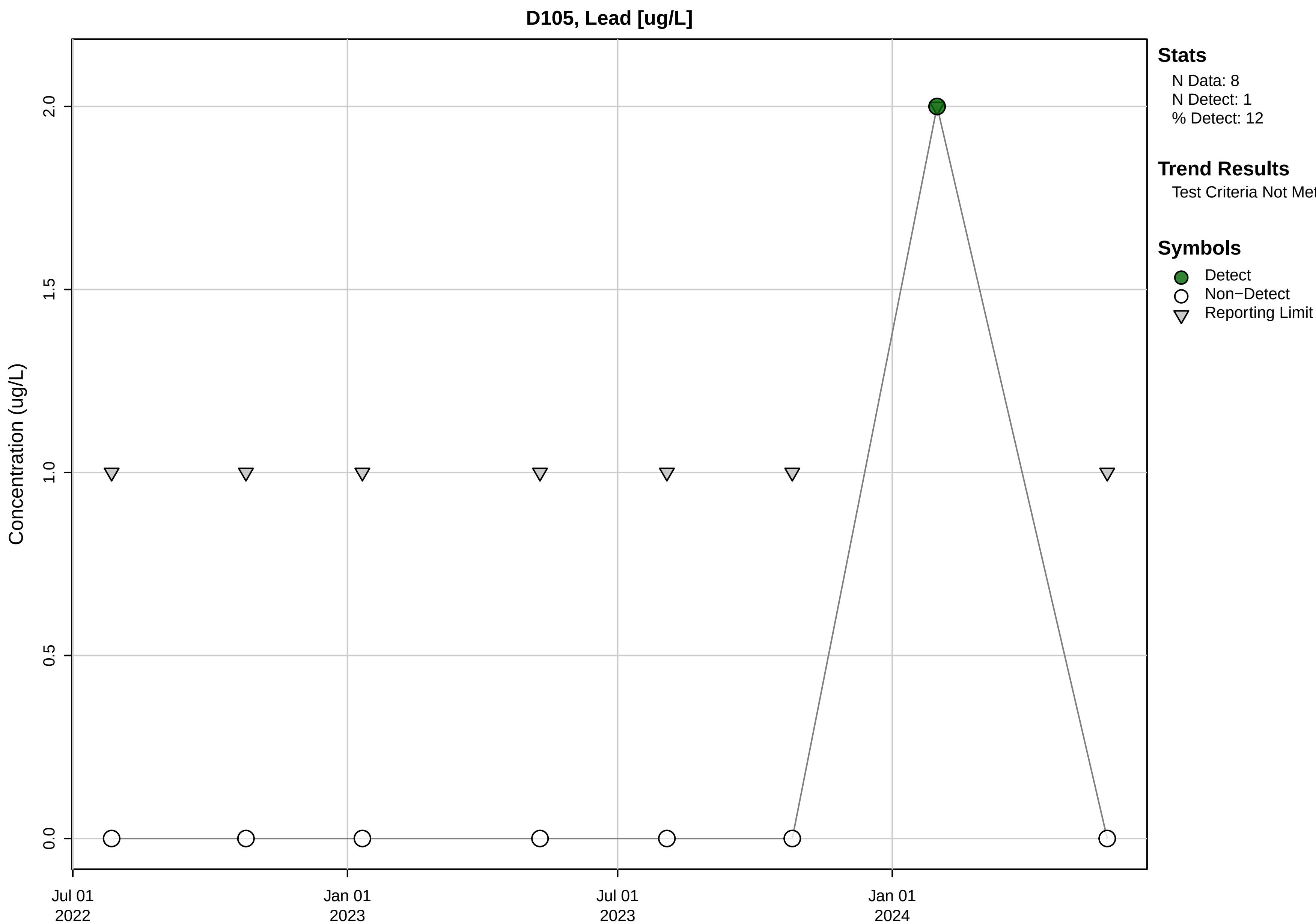
D105, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
500
1000
1500
2000
2500
3000
3500
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.034
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

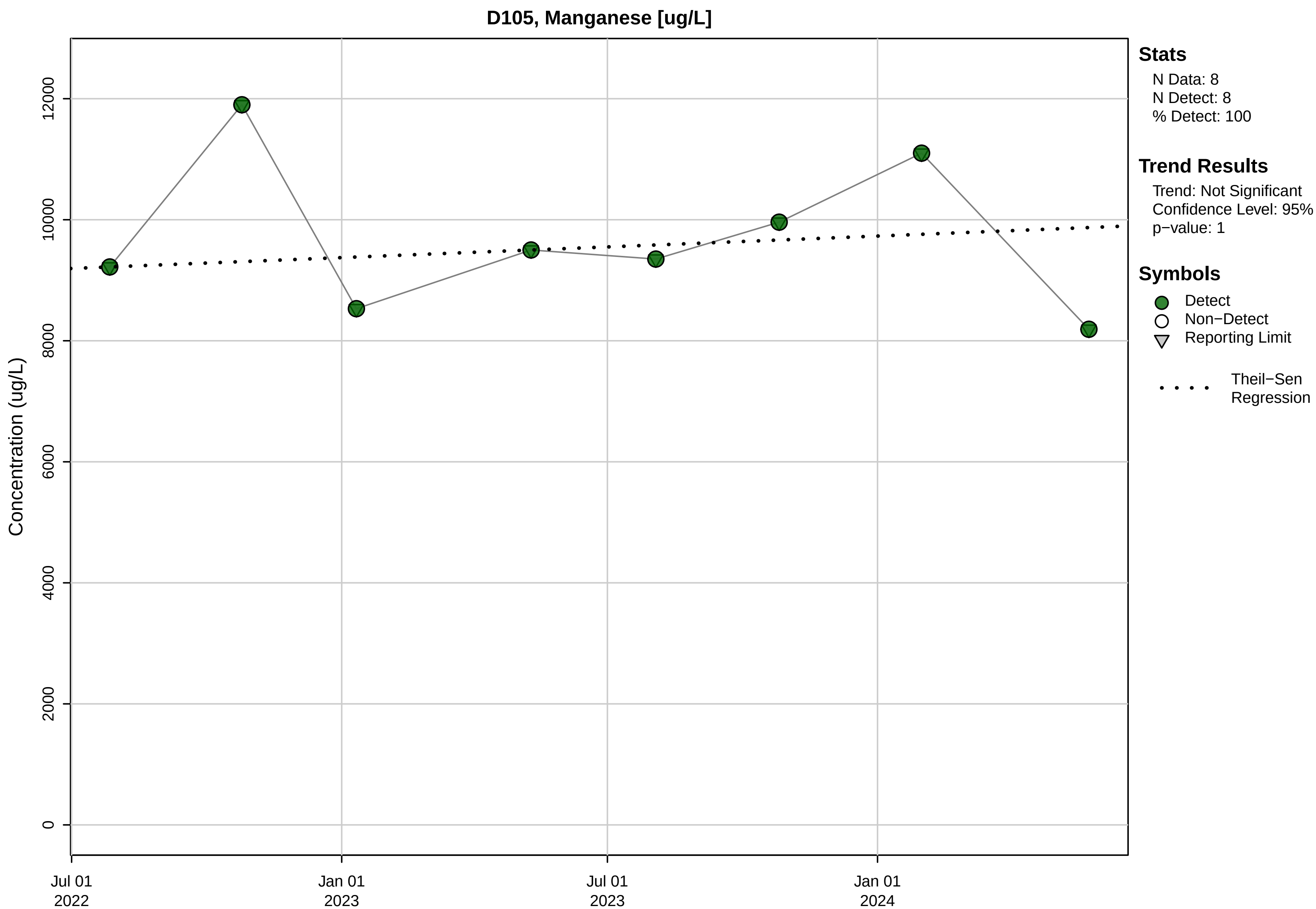


D105, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

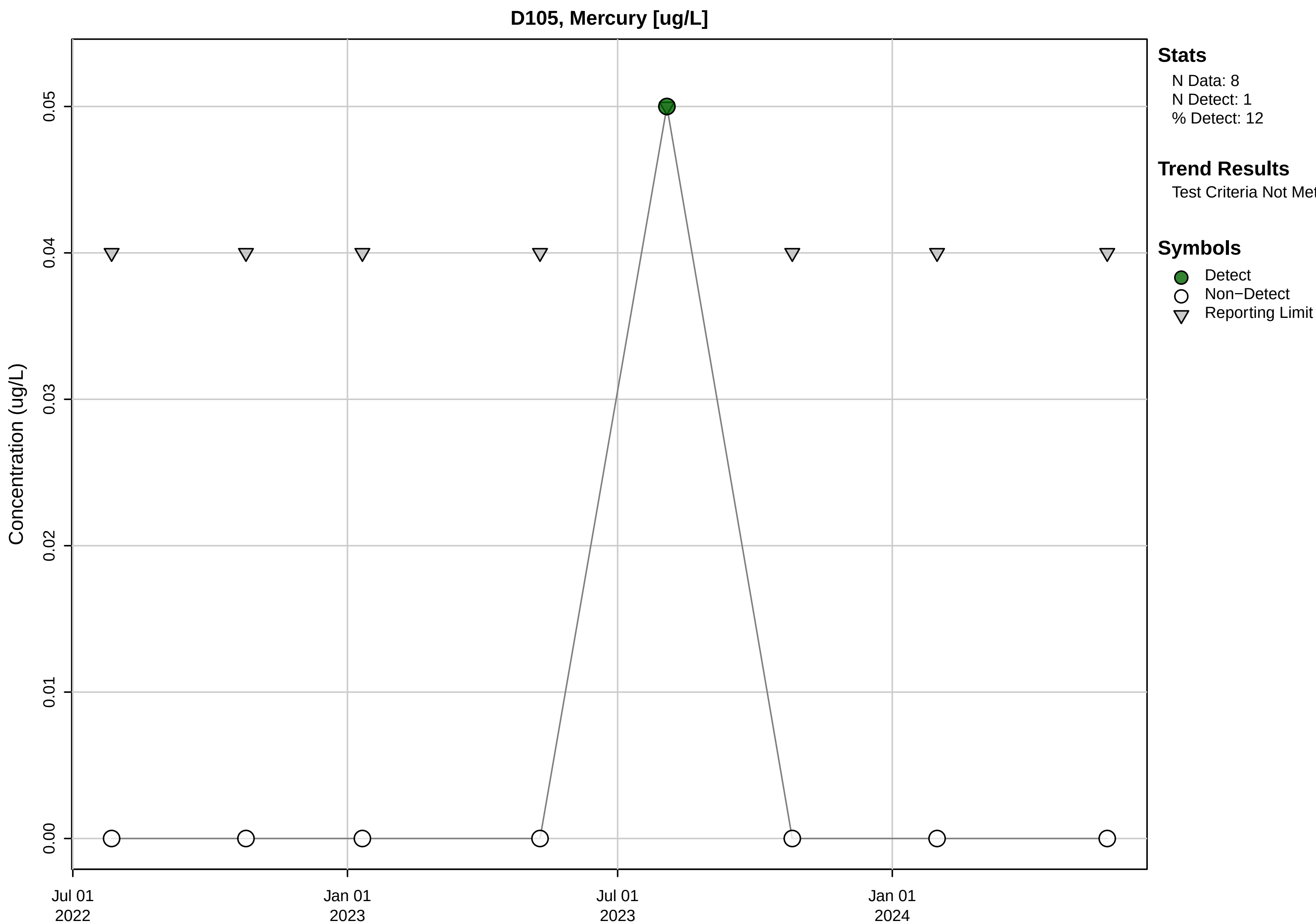


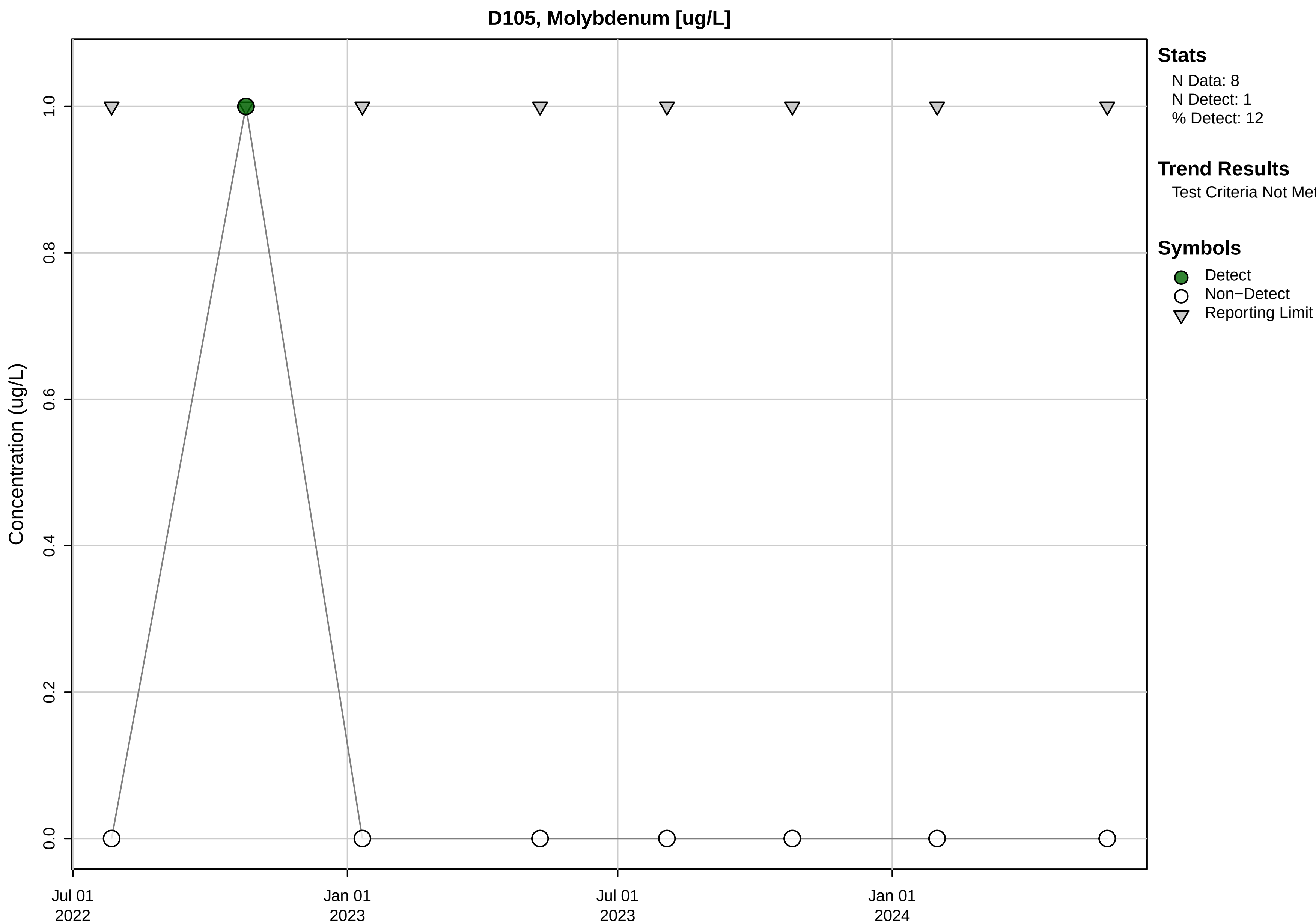
D105, Iron [ug/L]
Concentration (ug/L)
0
5000
10000
15000
20000
25000
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

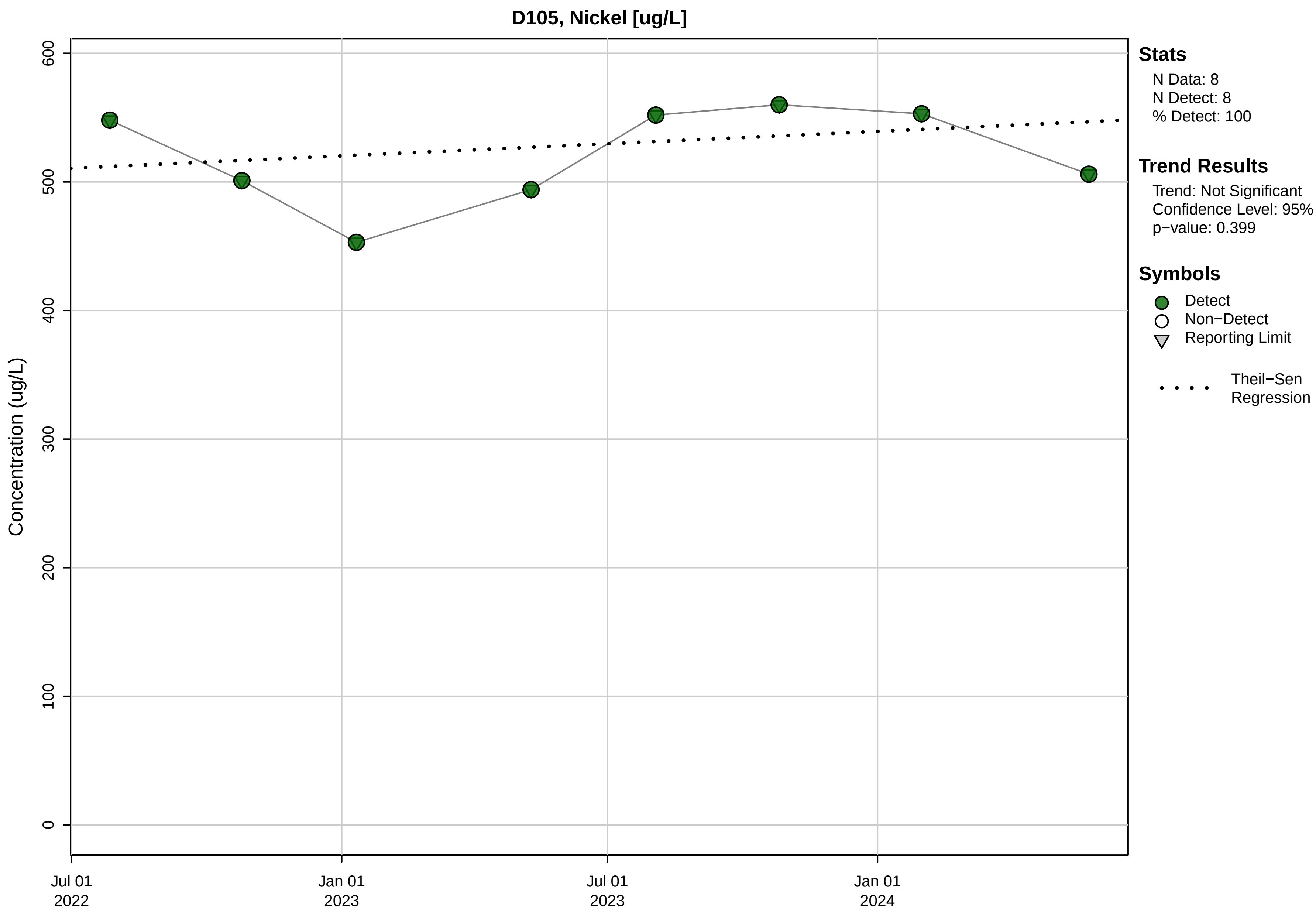

D105, Lead [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

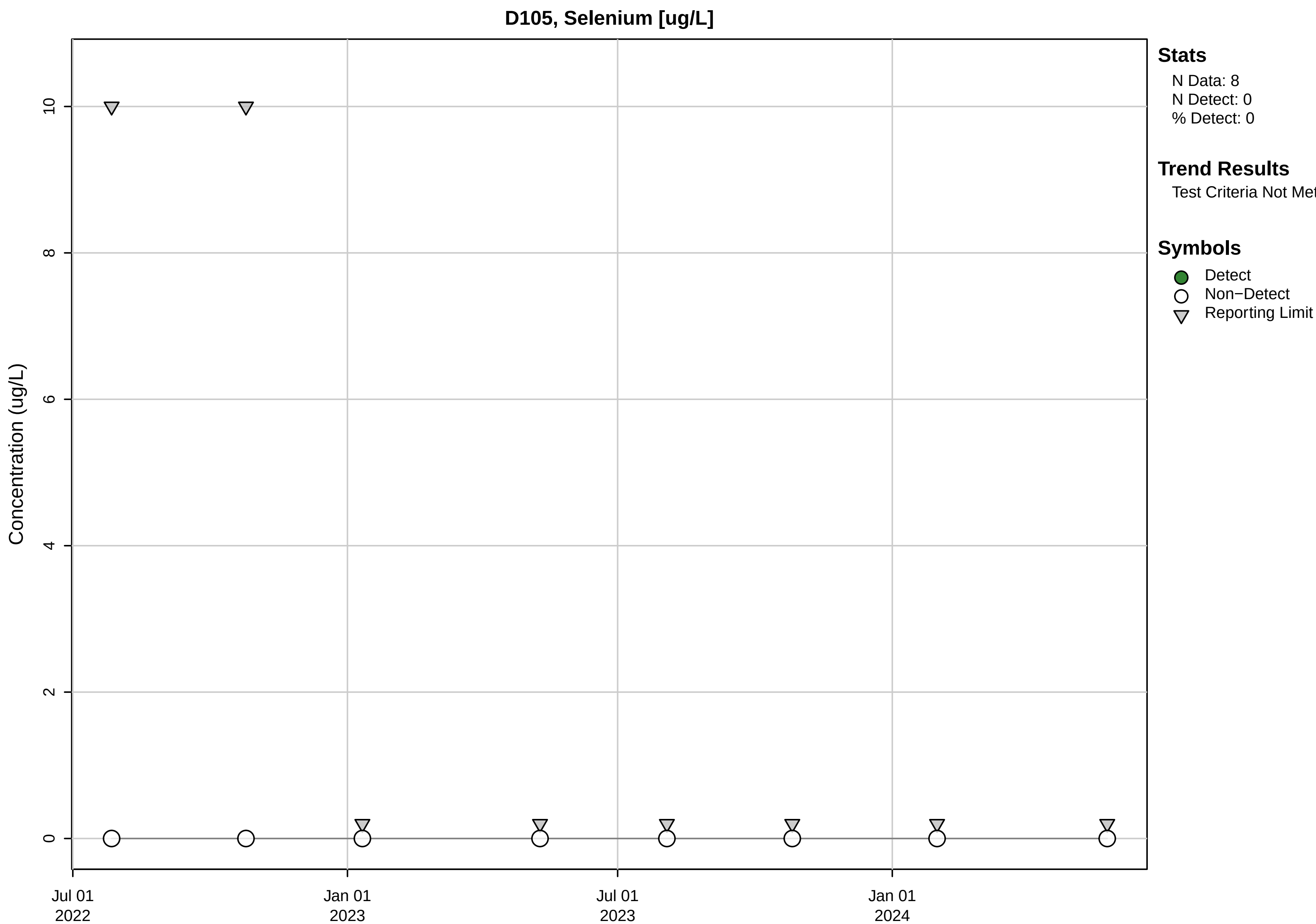


D105, Manganese [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
10000
12000
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

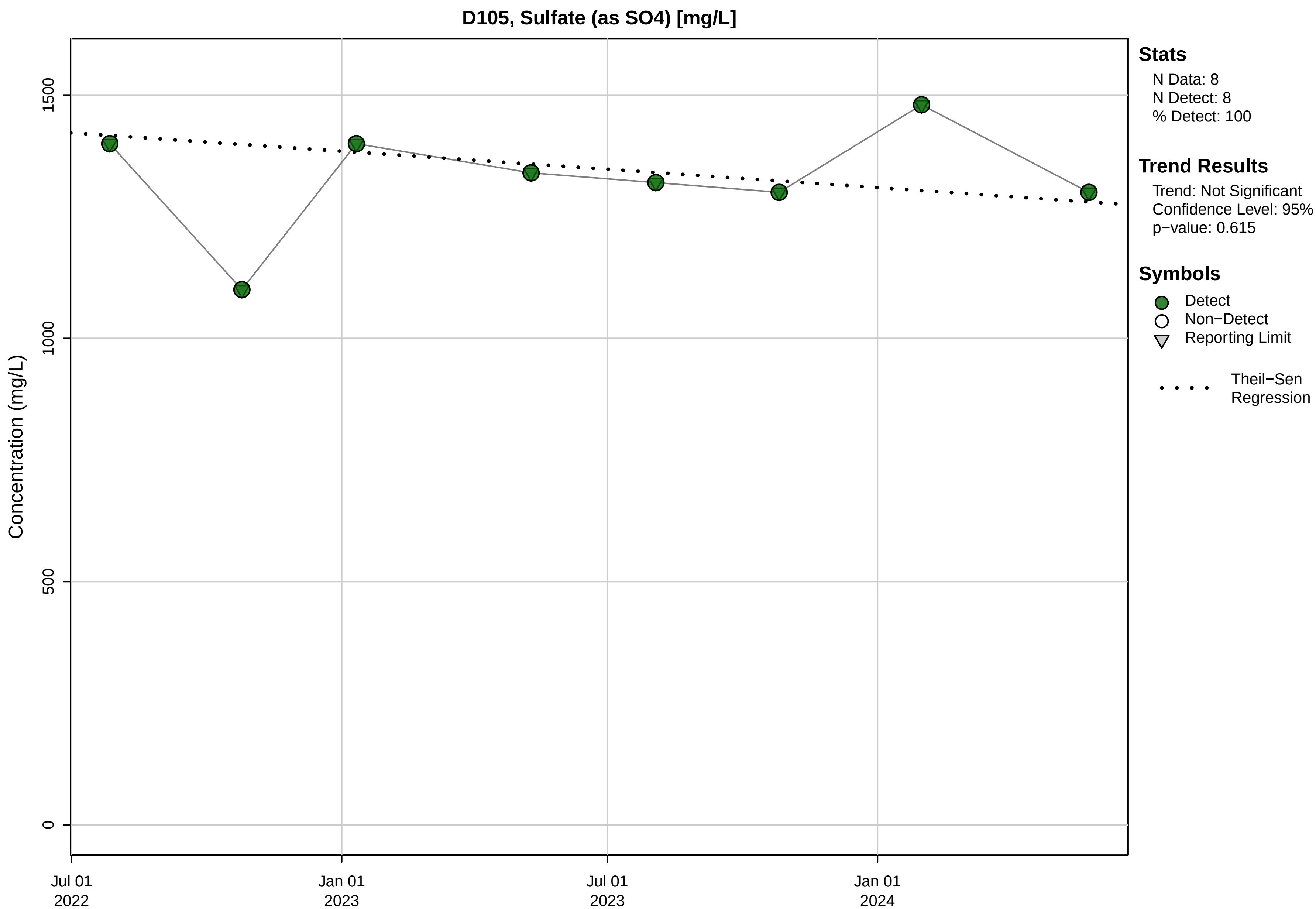

D105, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
0.05
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D105, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

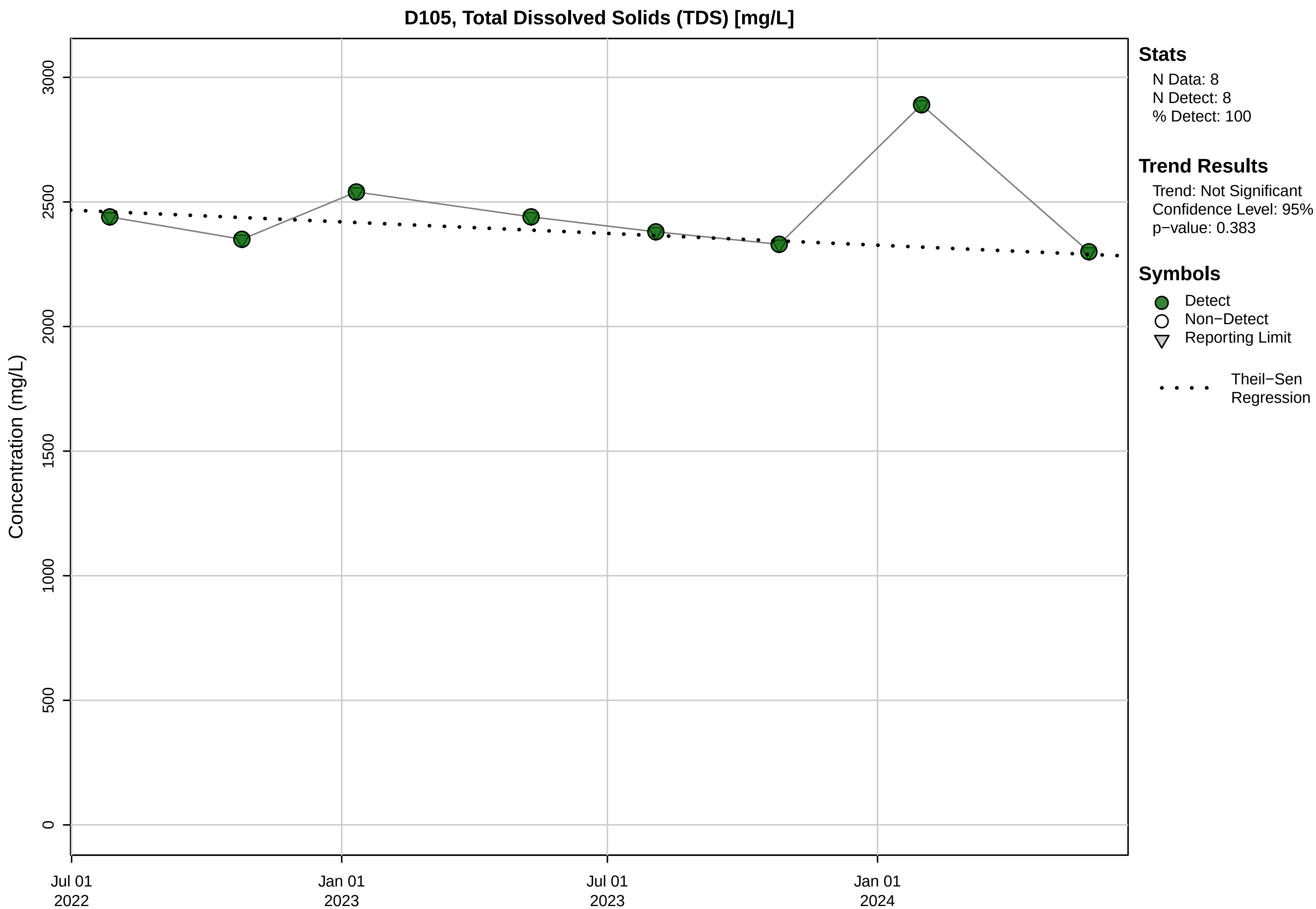

D105, Nickel [ug/L]
Concentration (ug/L)
0
100
200
300
400
500
600
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



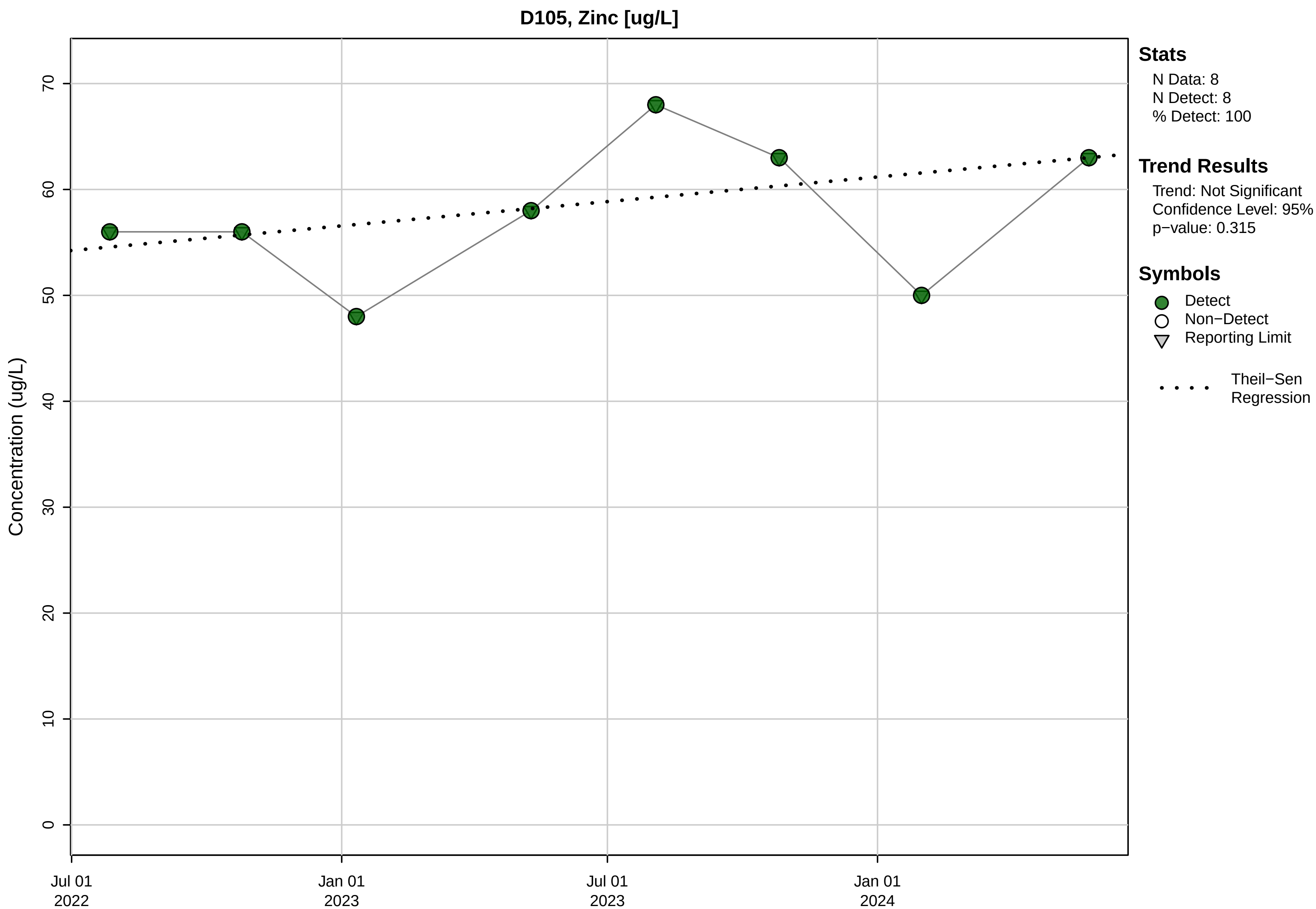
D105, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



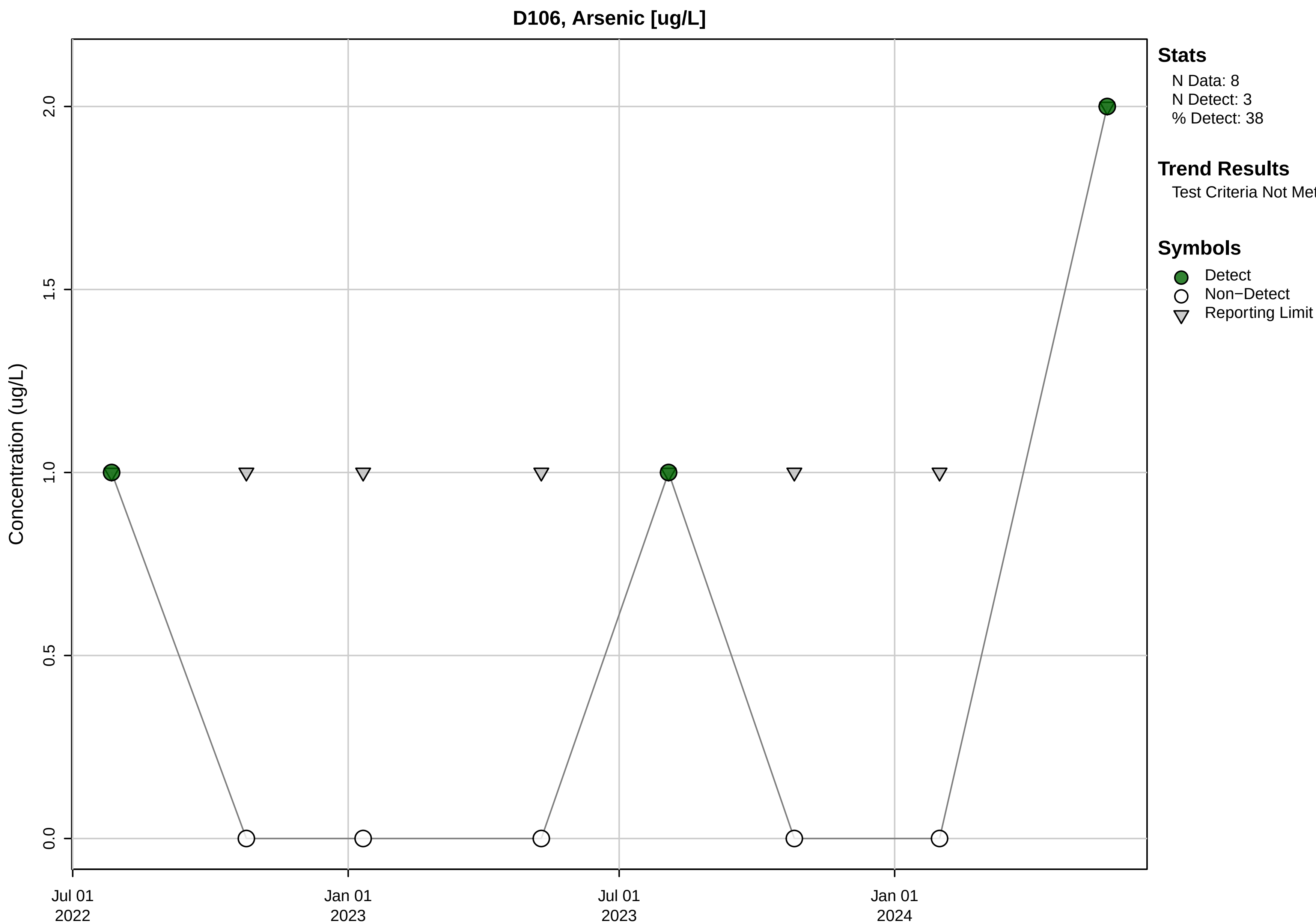
D105, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
500
1000
1500
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.615
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

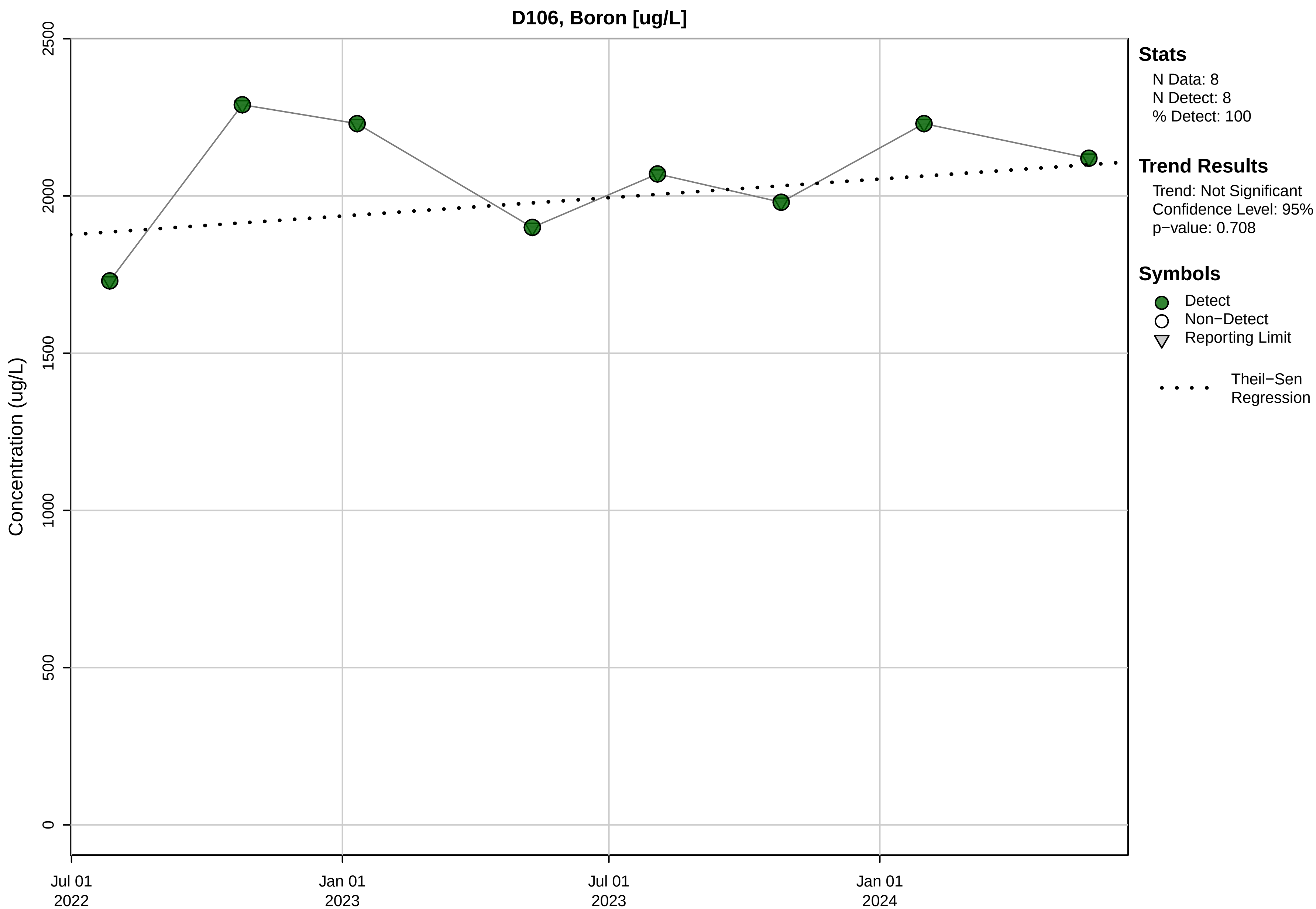


D105, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
500
1000
1500
2000
2500
3000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.383
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

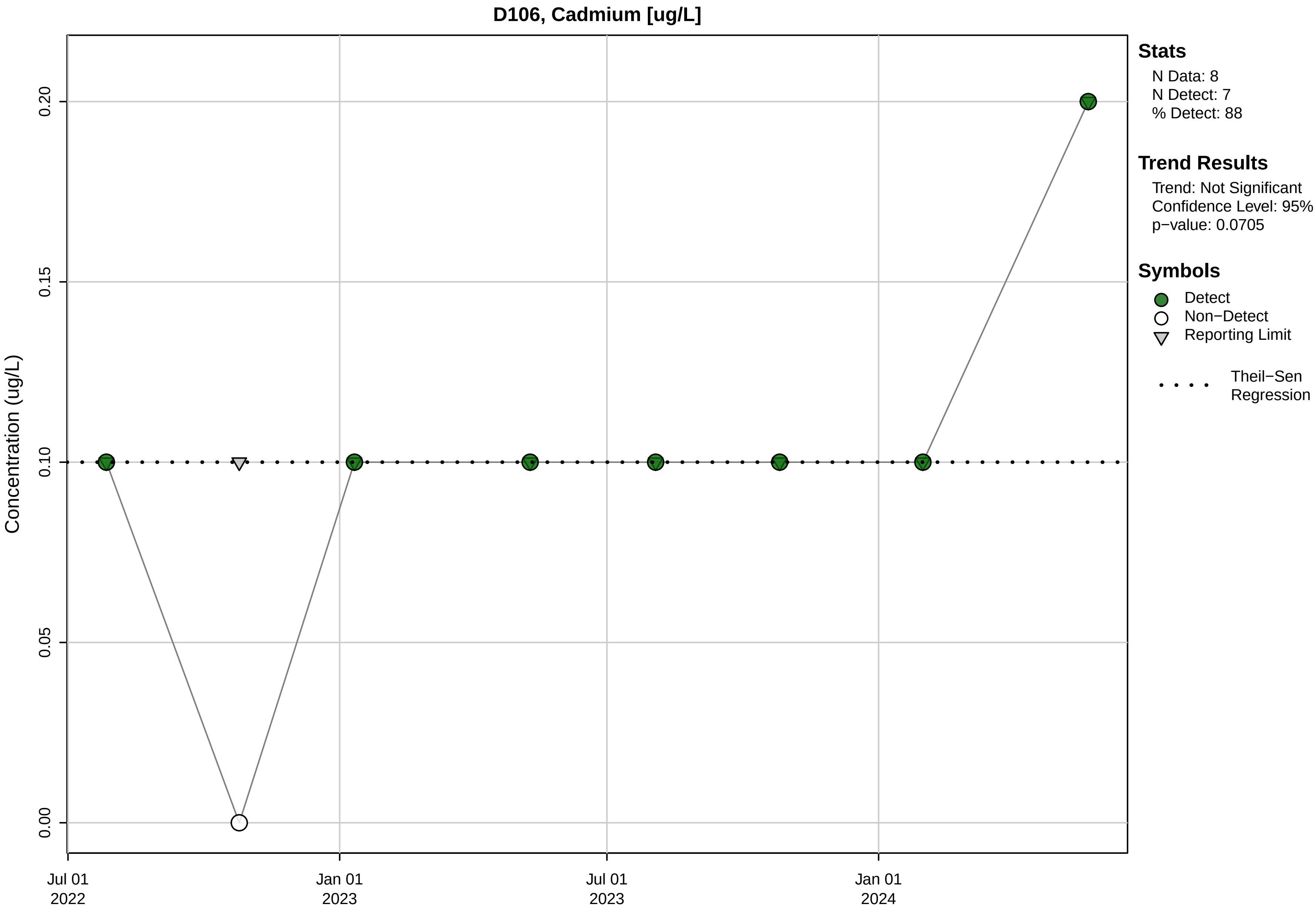


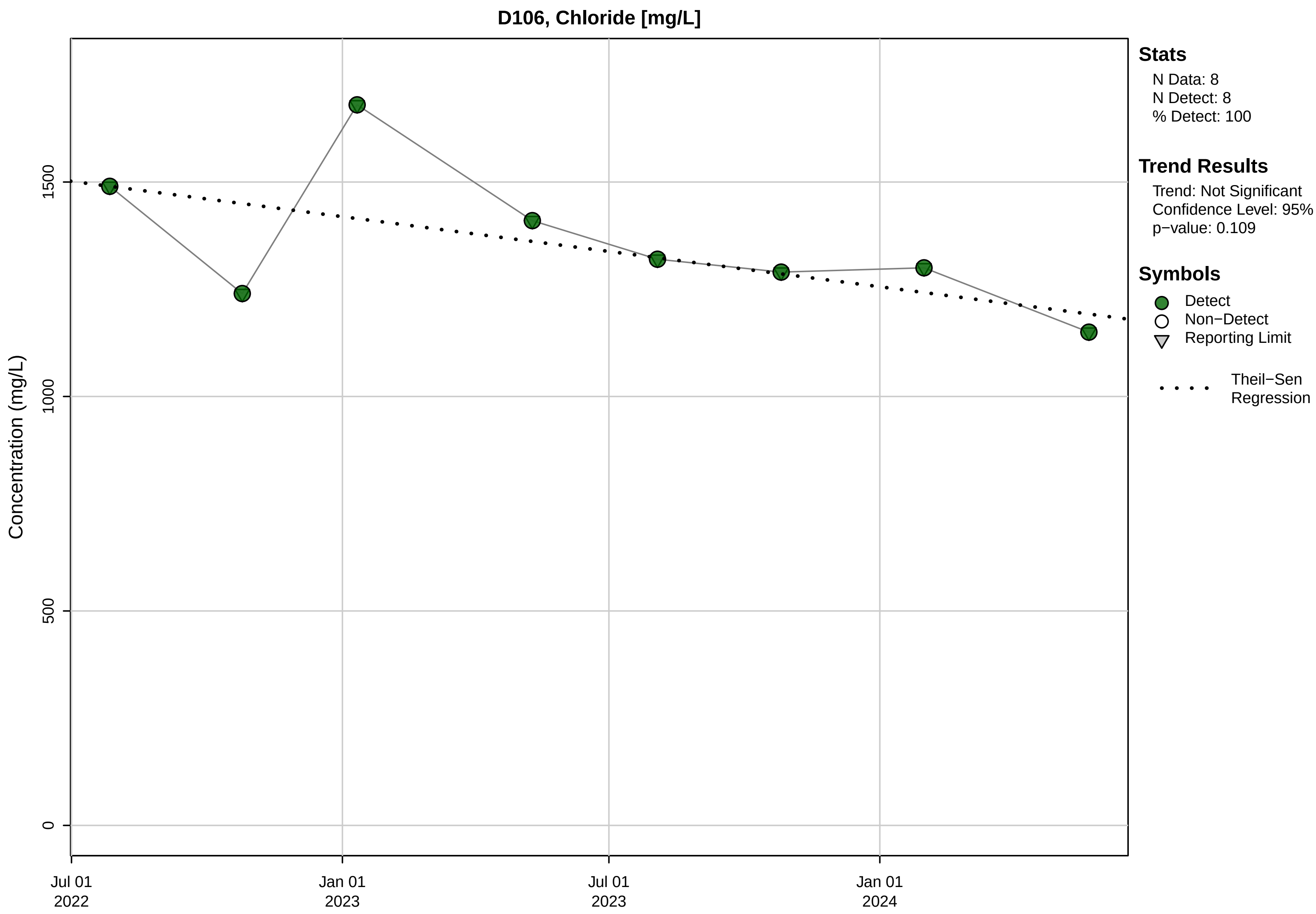
D105, Zinc [ug/L]
Concentration (ug/L)
0
10
20
30
40
50
60
70
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.315
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

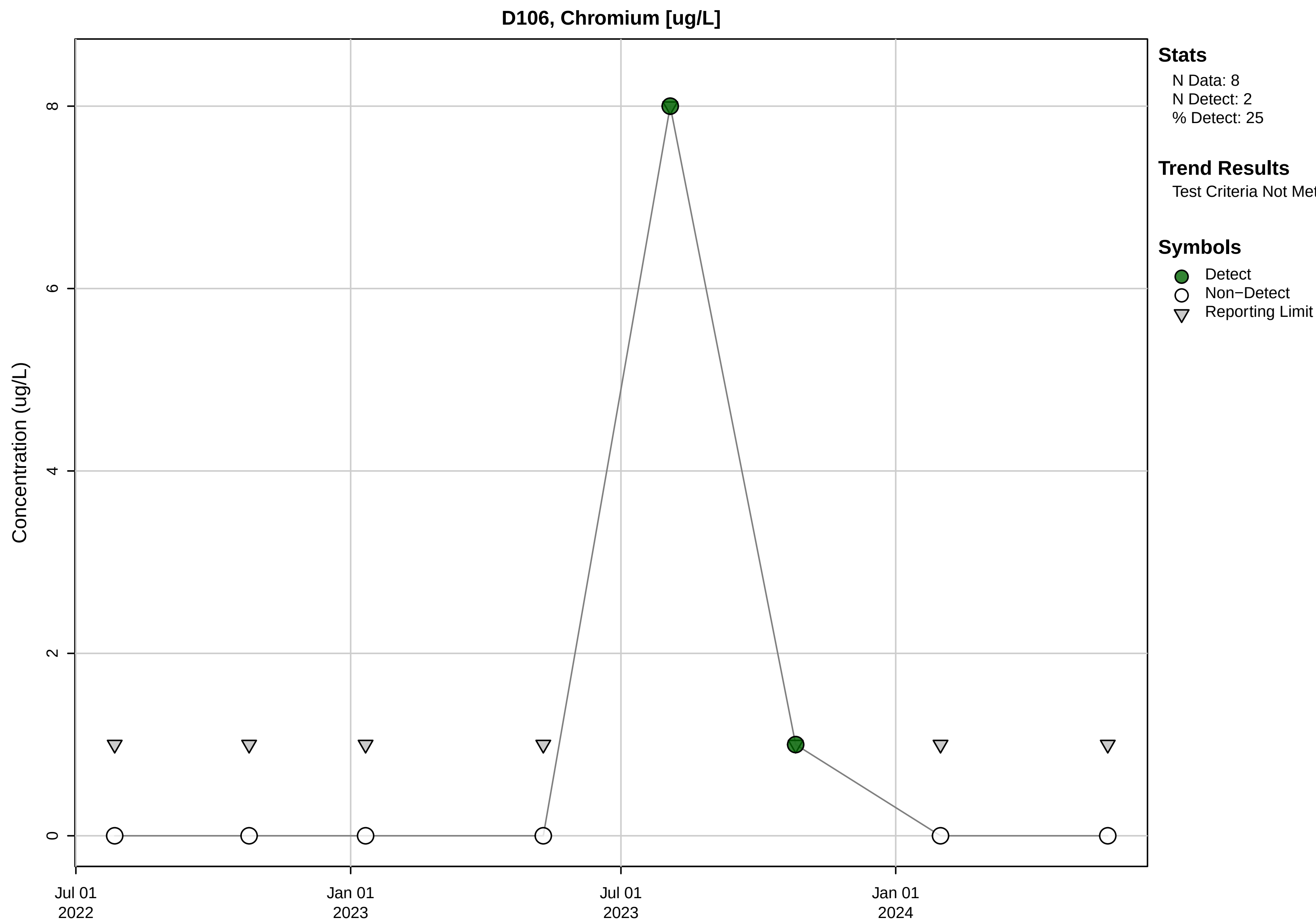

D106, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



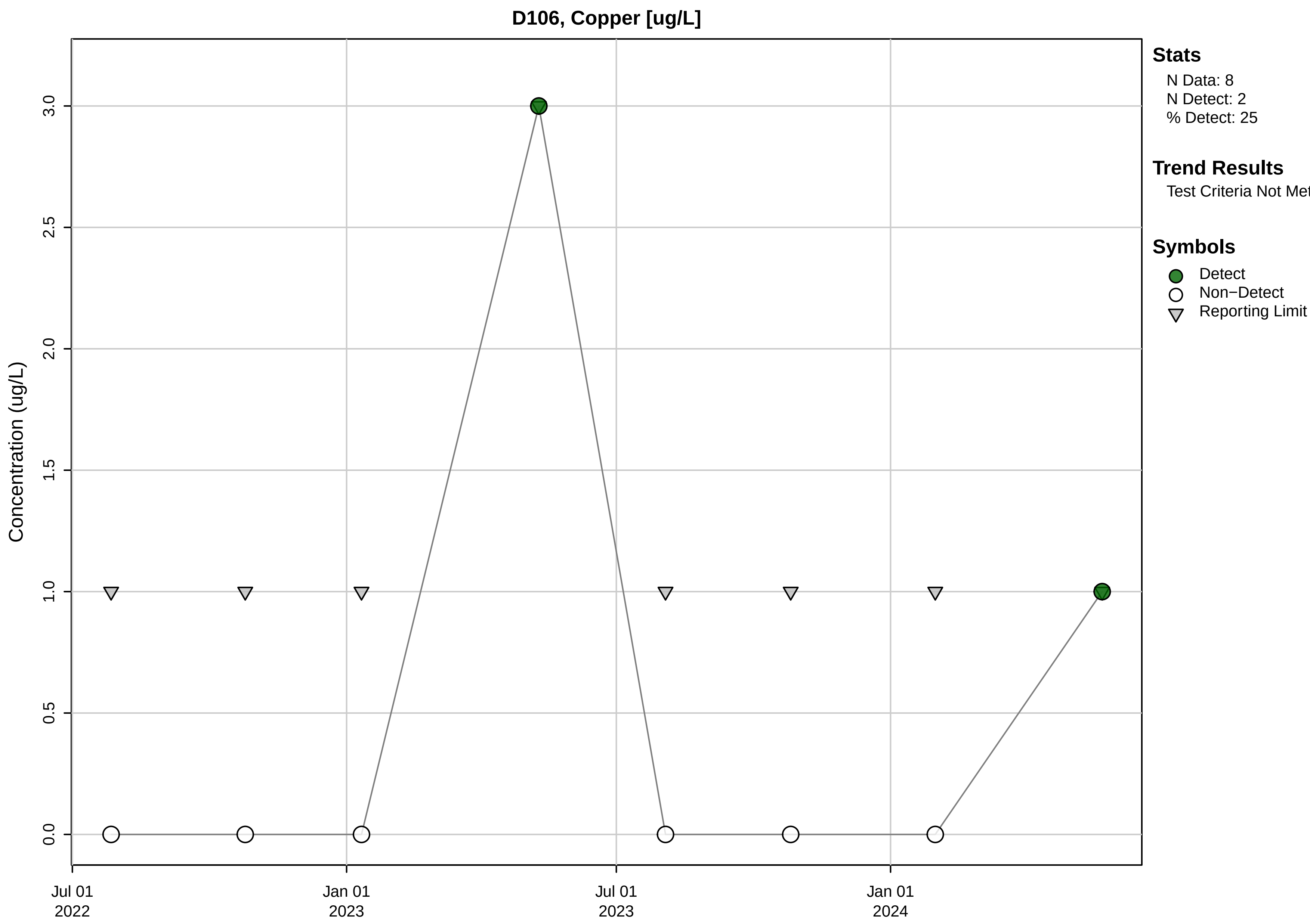
D106, Boron [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
2500
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.708
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

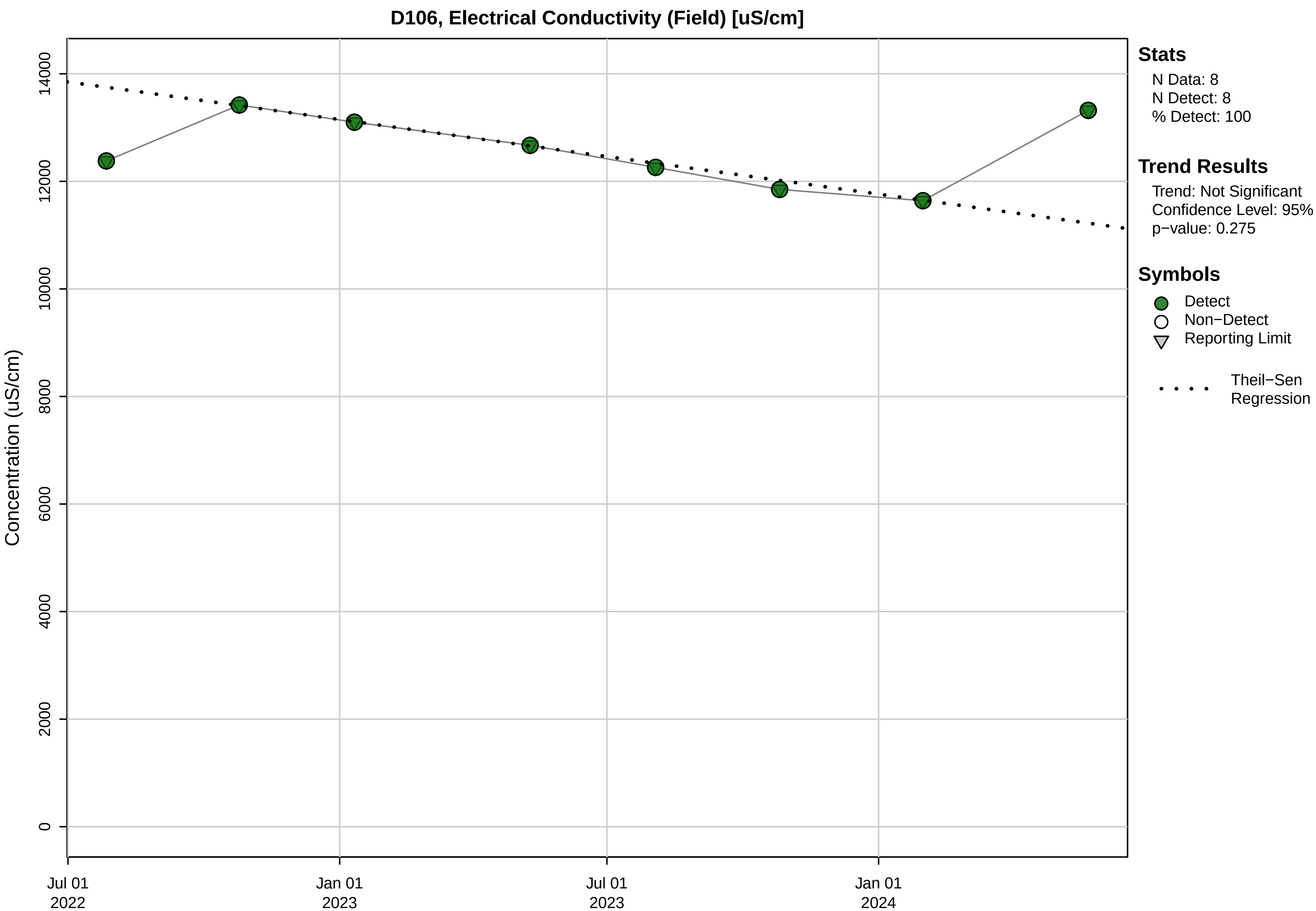

D106, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0705
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D106, Chloride [mg/L]
Concentration (mg/L)
0
500
1000
1500
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

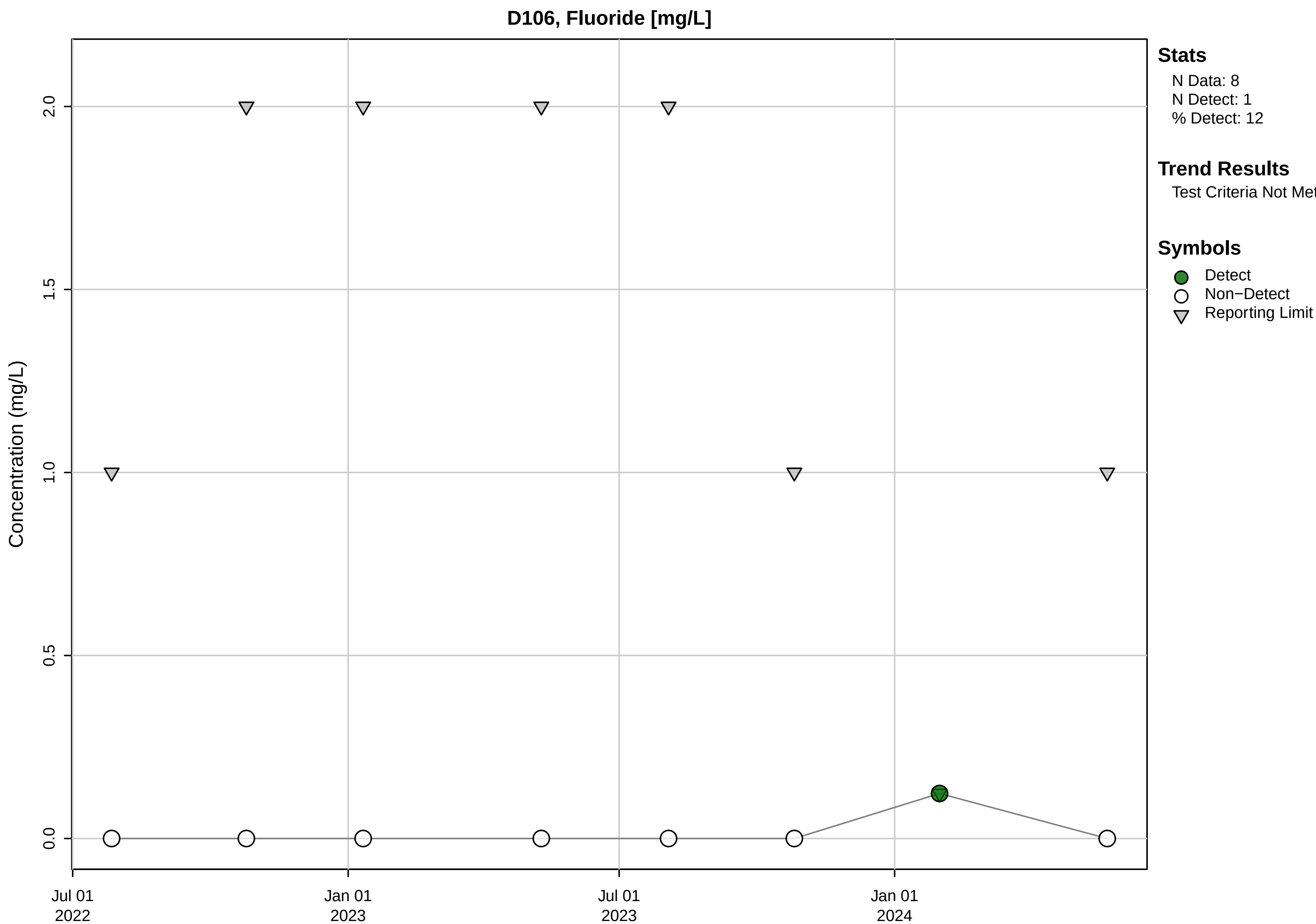


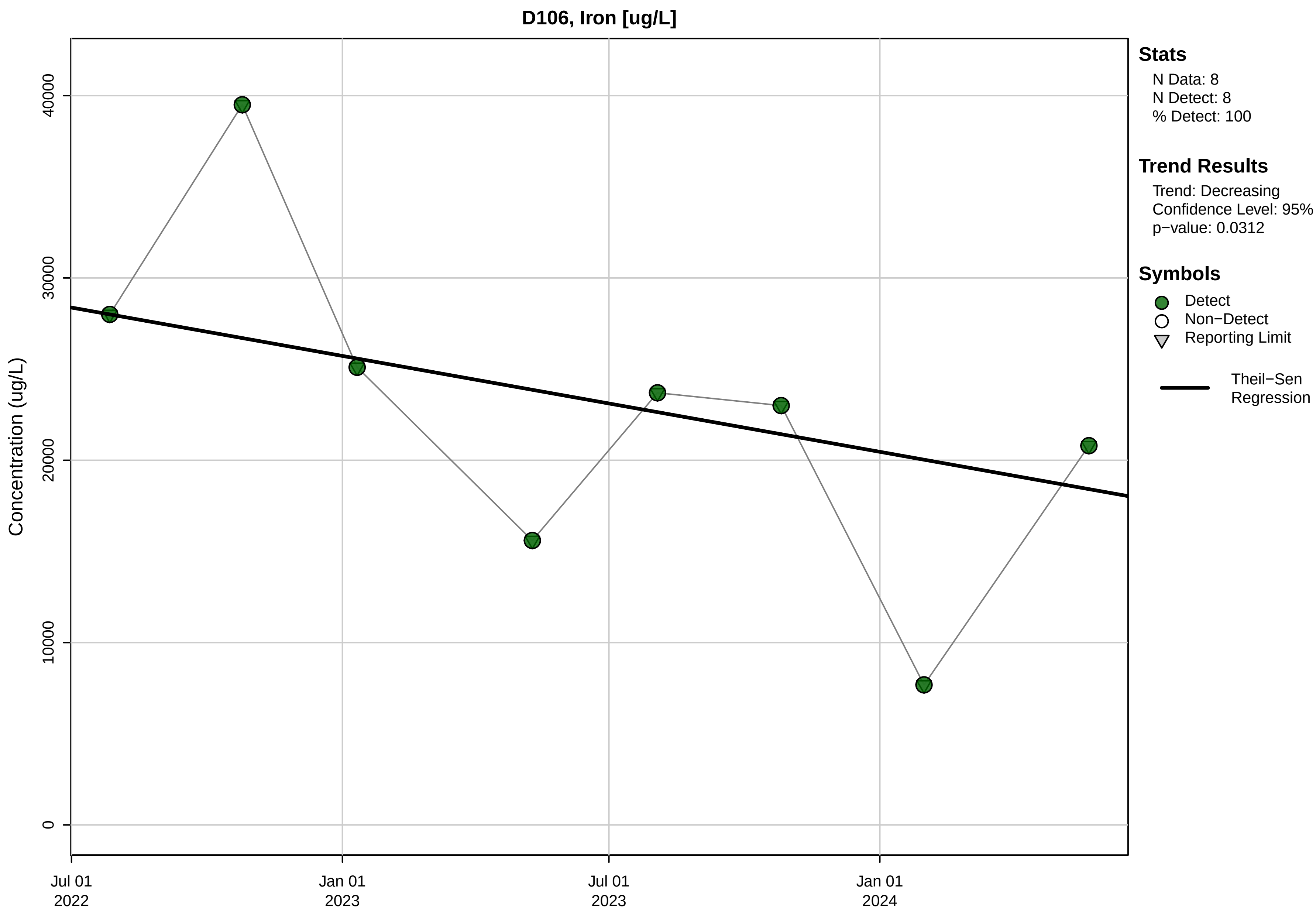
D106, Chromium [ug/L]
Concentration (ug/L)
0
2
4
6
8
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D106, Copper [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

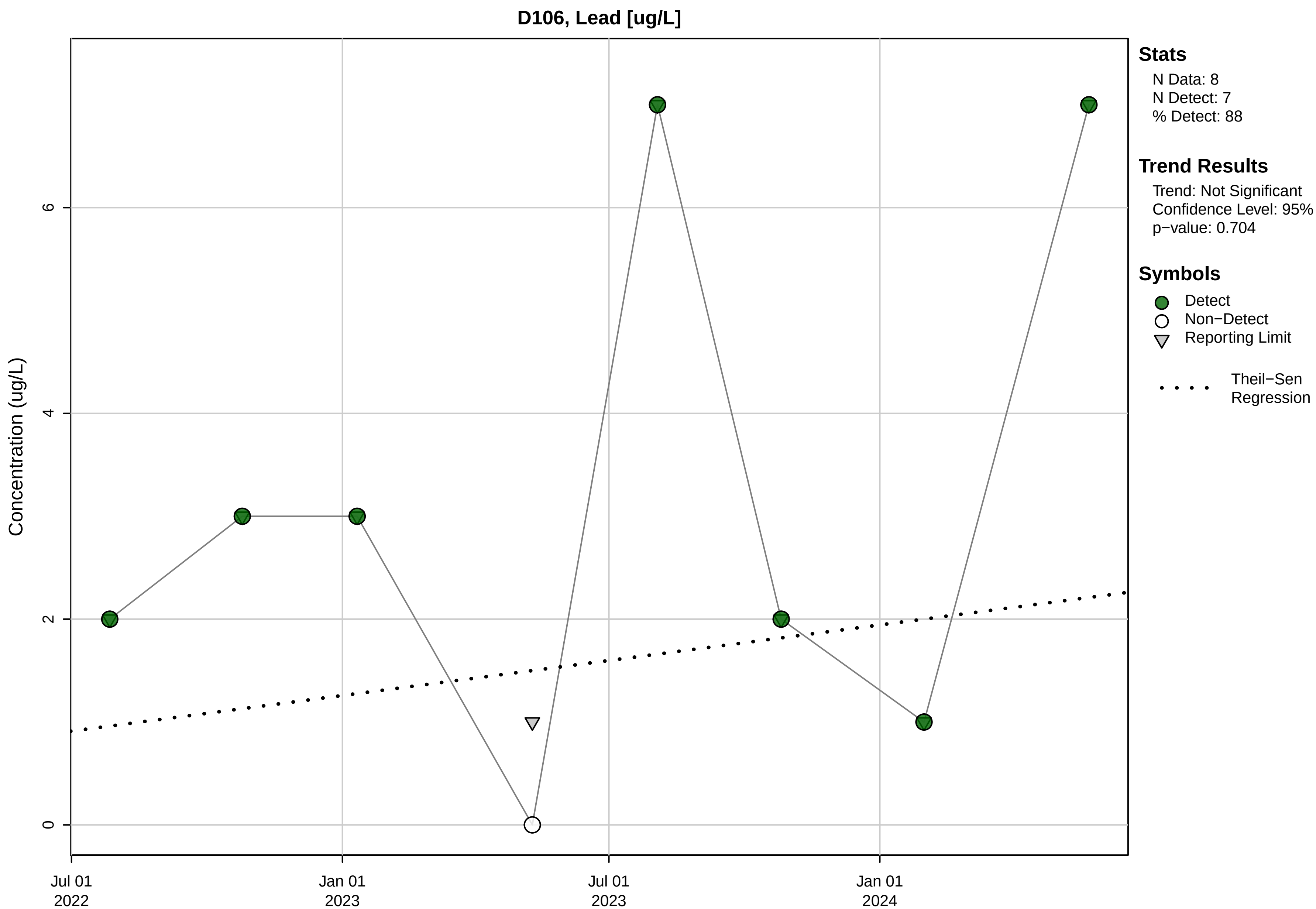


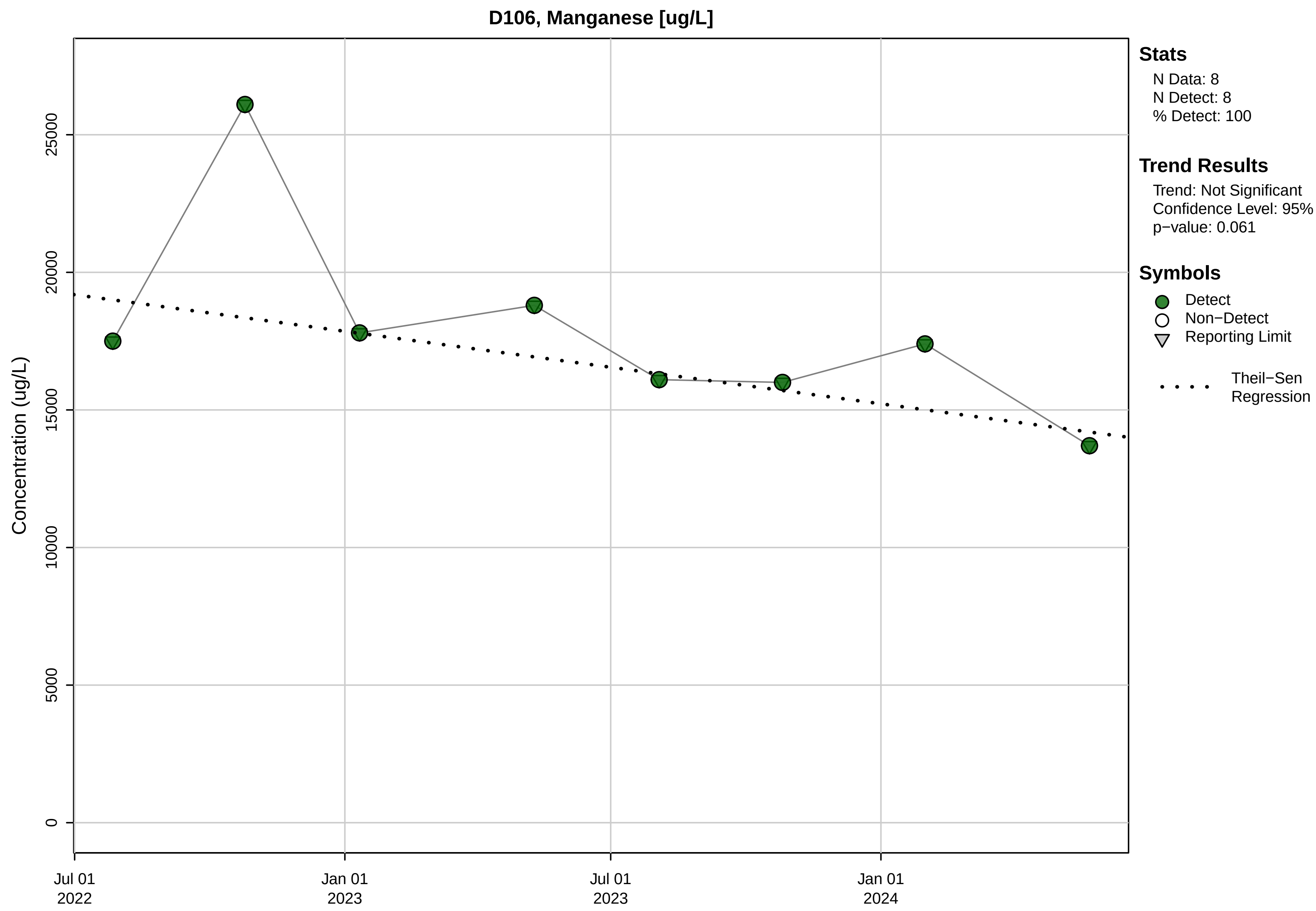
D106, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
2000
4000
6000
8000
10000
12000
14000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D106, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.5
1.0
1.5
2.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

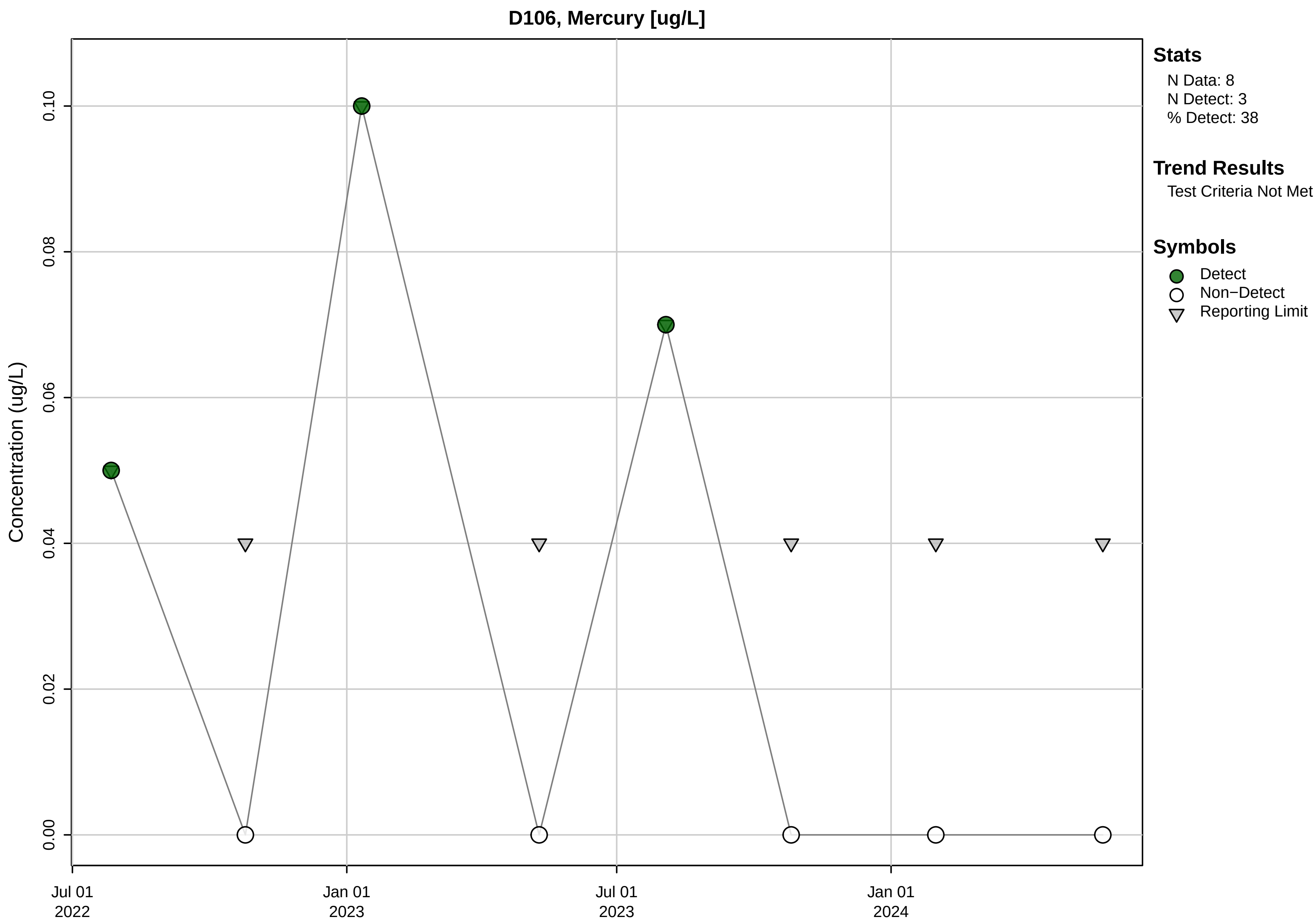


D106, Iron [ug/L]
Concentration (ug/L)
0
10000
20000
30000
40000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

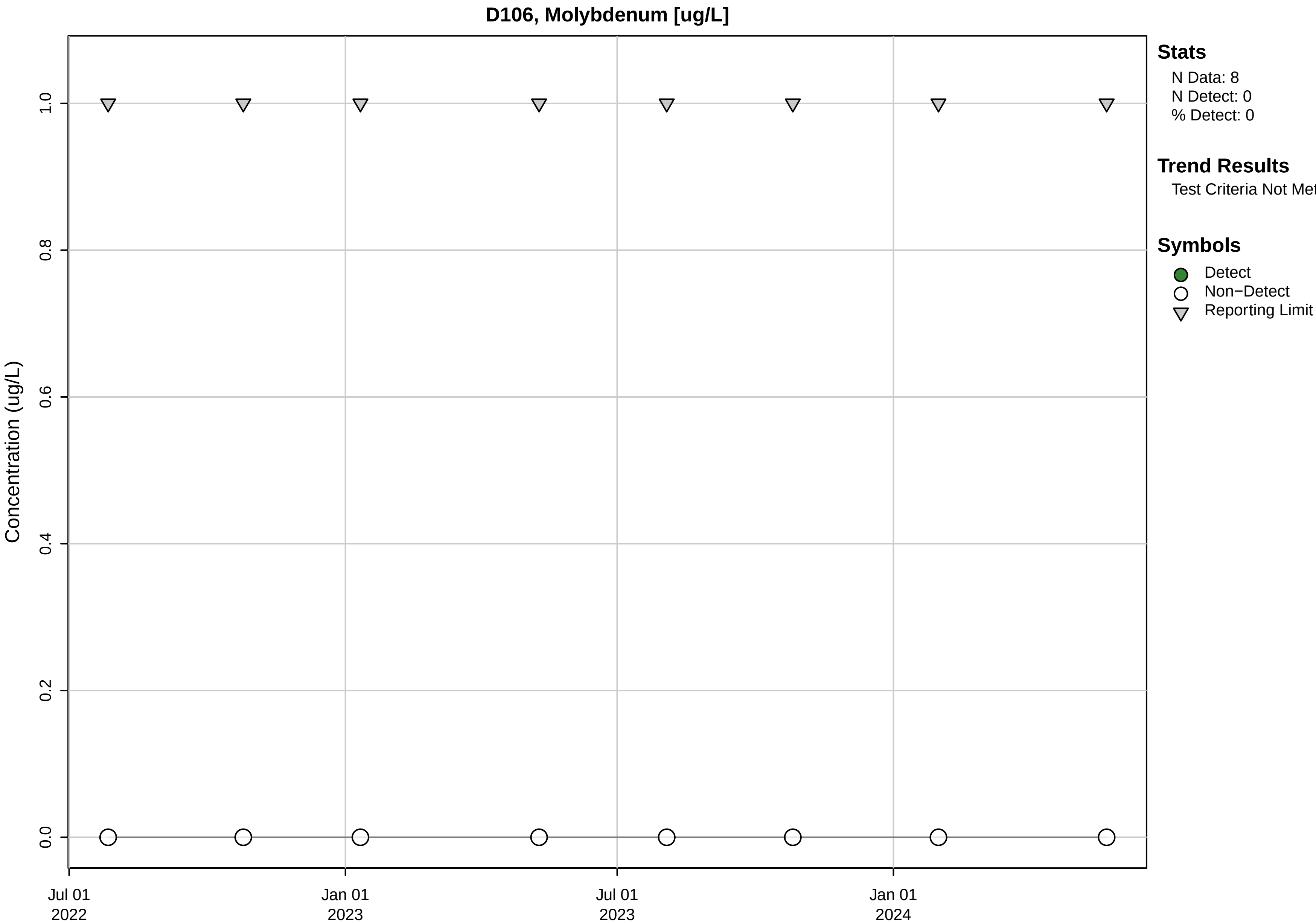

D106, Lead [ug/L]
Concentration (ug/L)
0
2
4
6
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.704
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

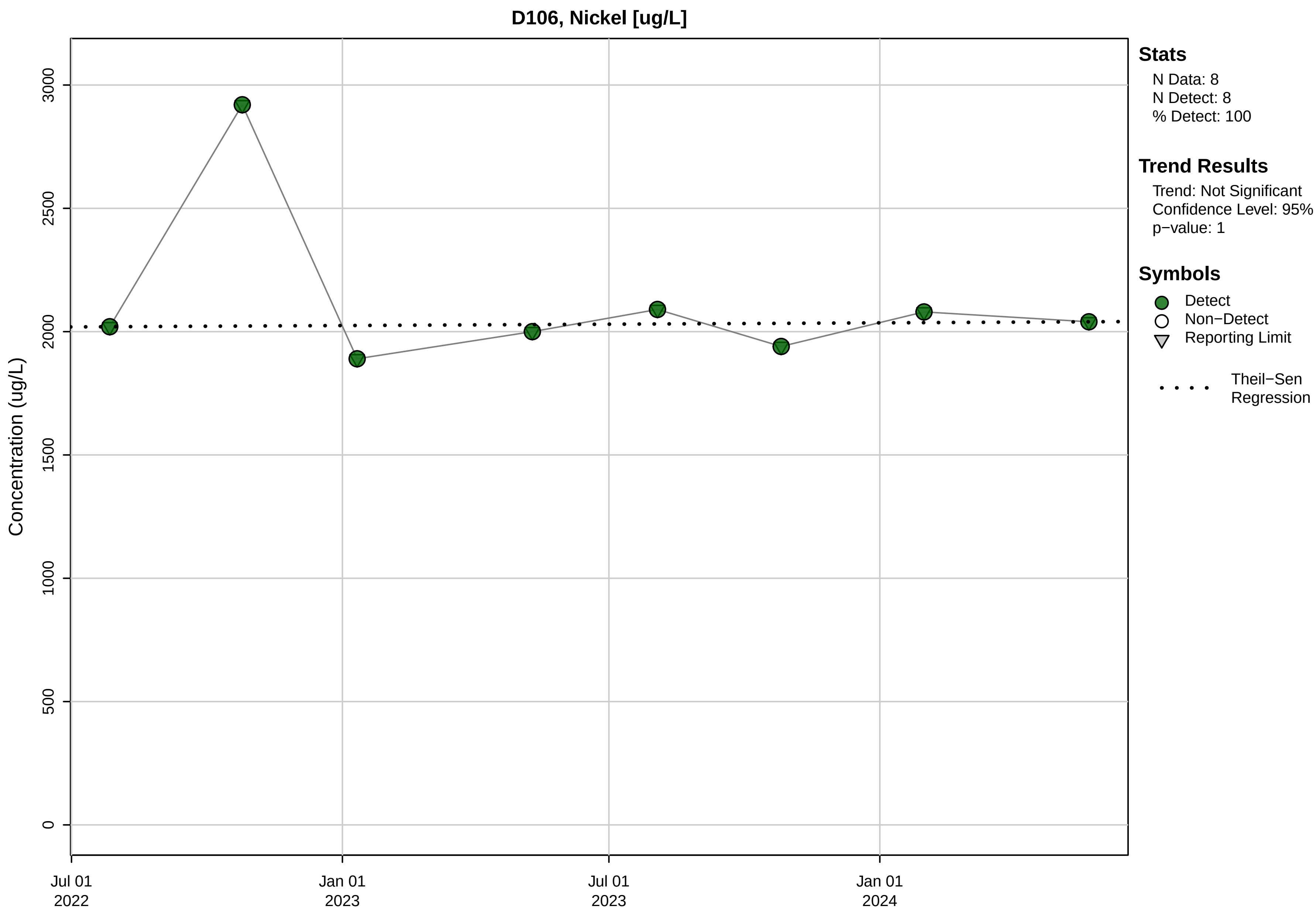


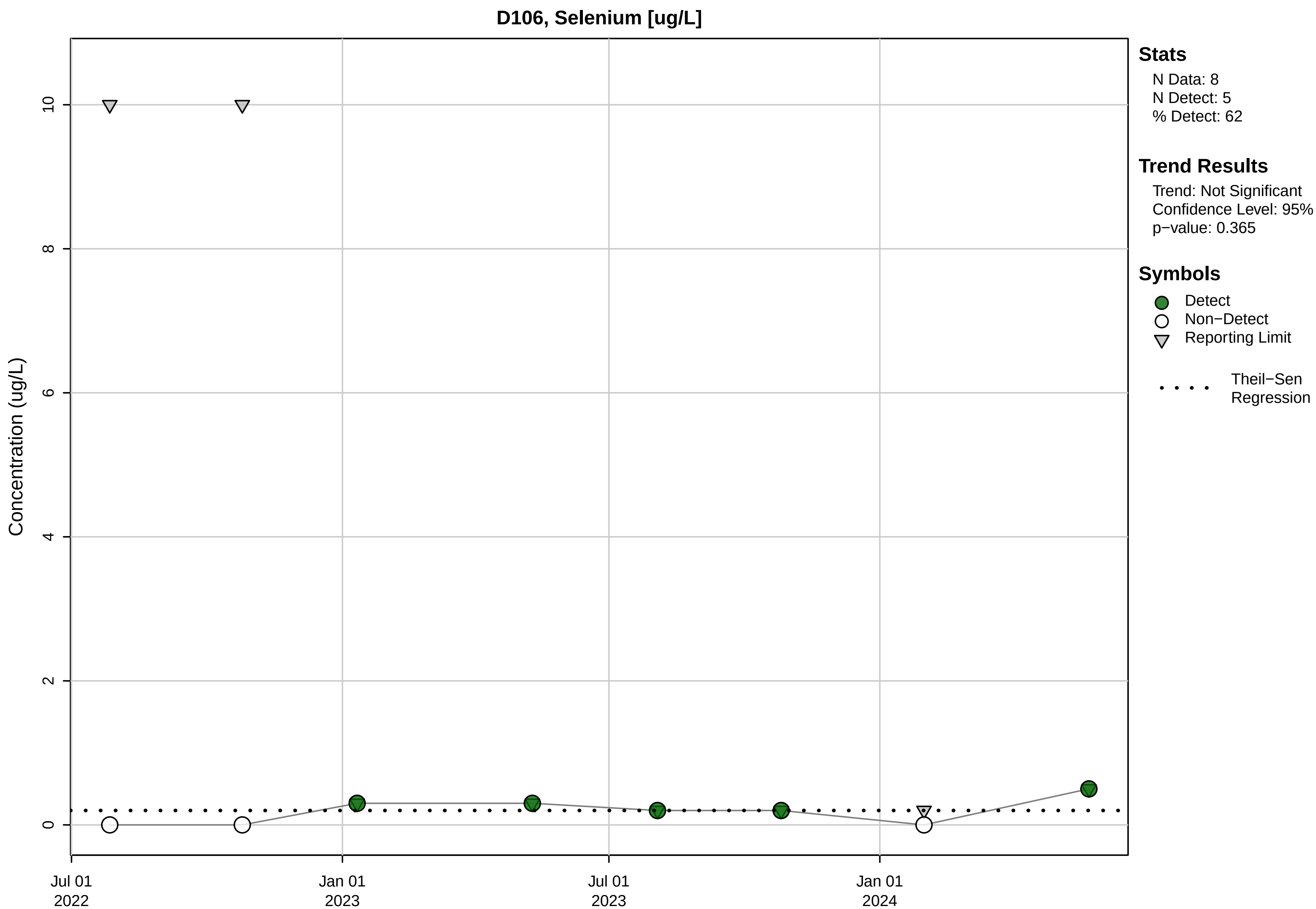
D106, Manganese [ug/L]
Concentration (ug/L)
0
5000
10000
15000
20000
25000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.061
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

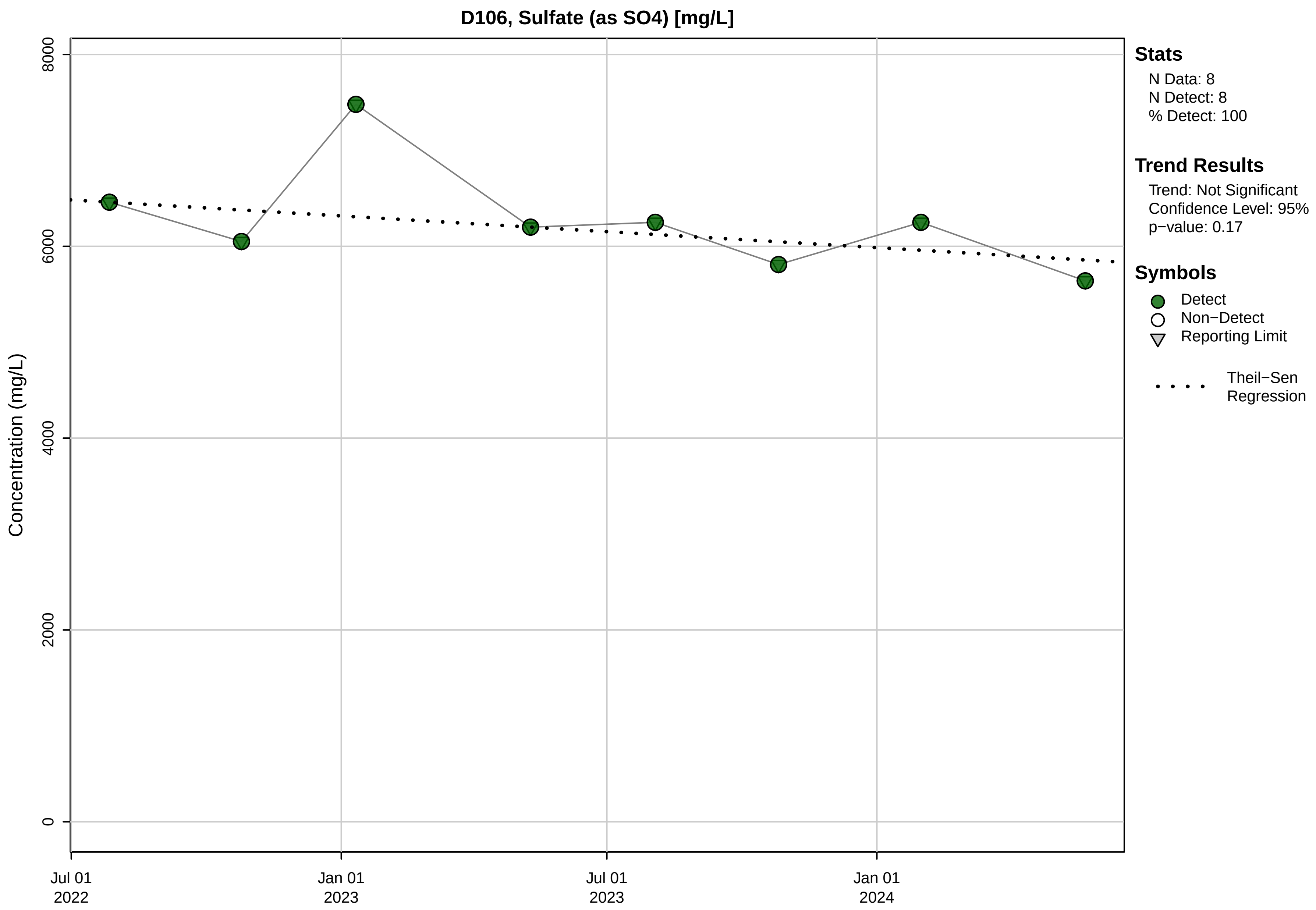


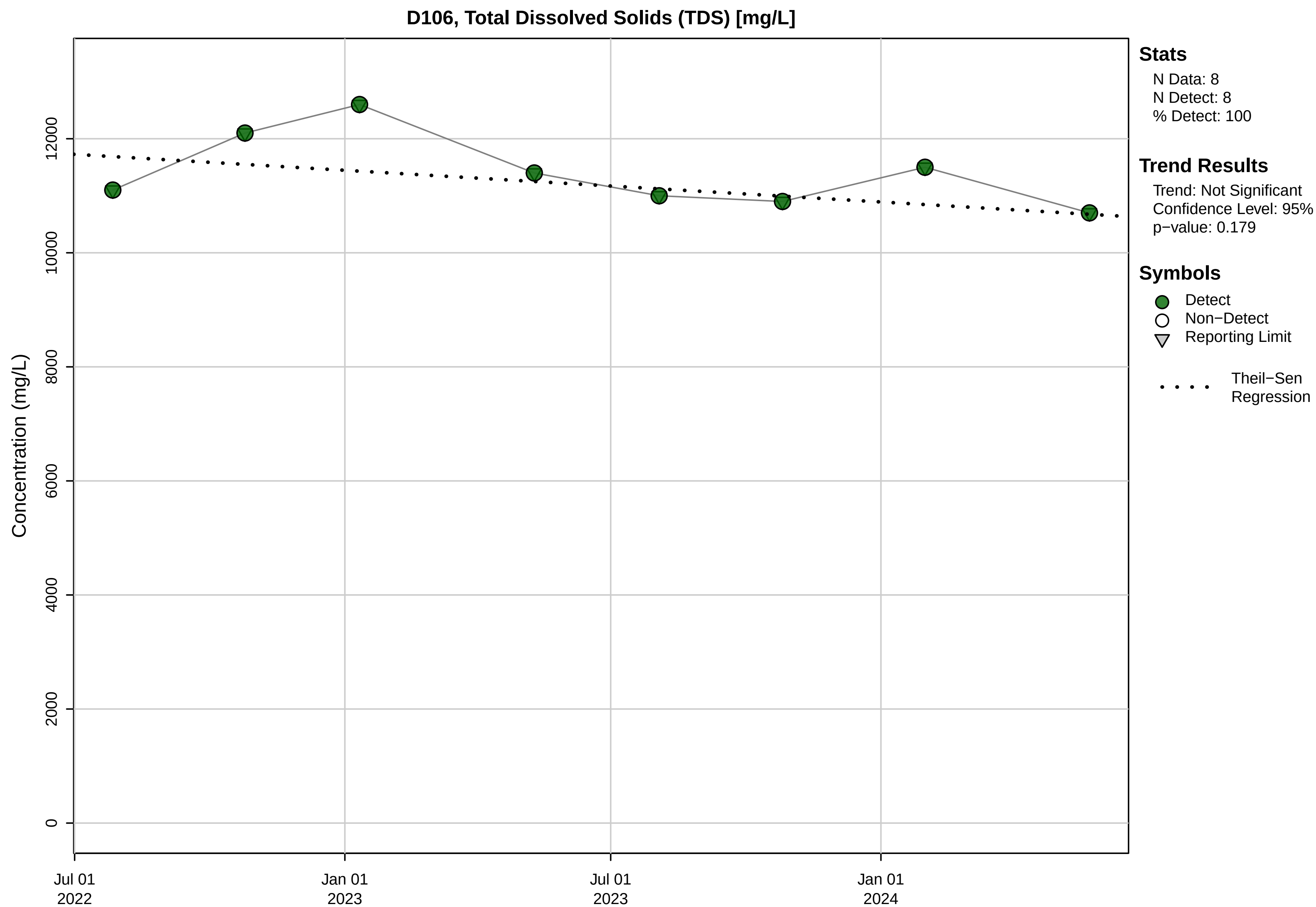
D106, Mercury [ug/L]
Concentration (ug/L)
0.00
0.02
0.04
0.06
0.08
0.10
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D106, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

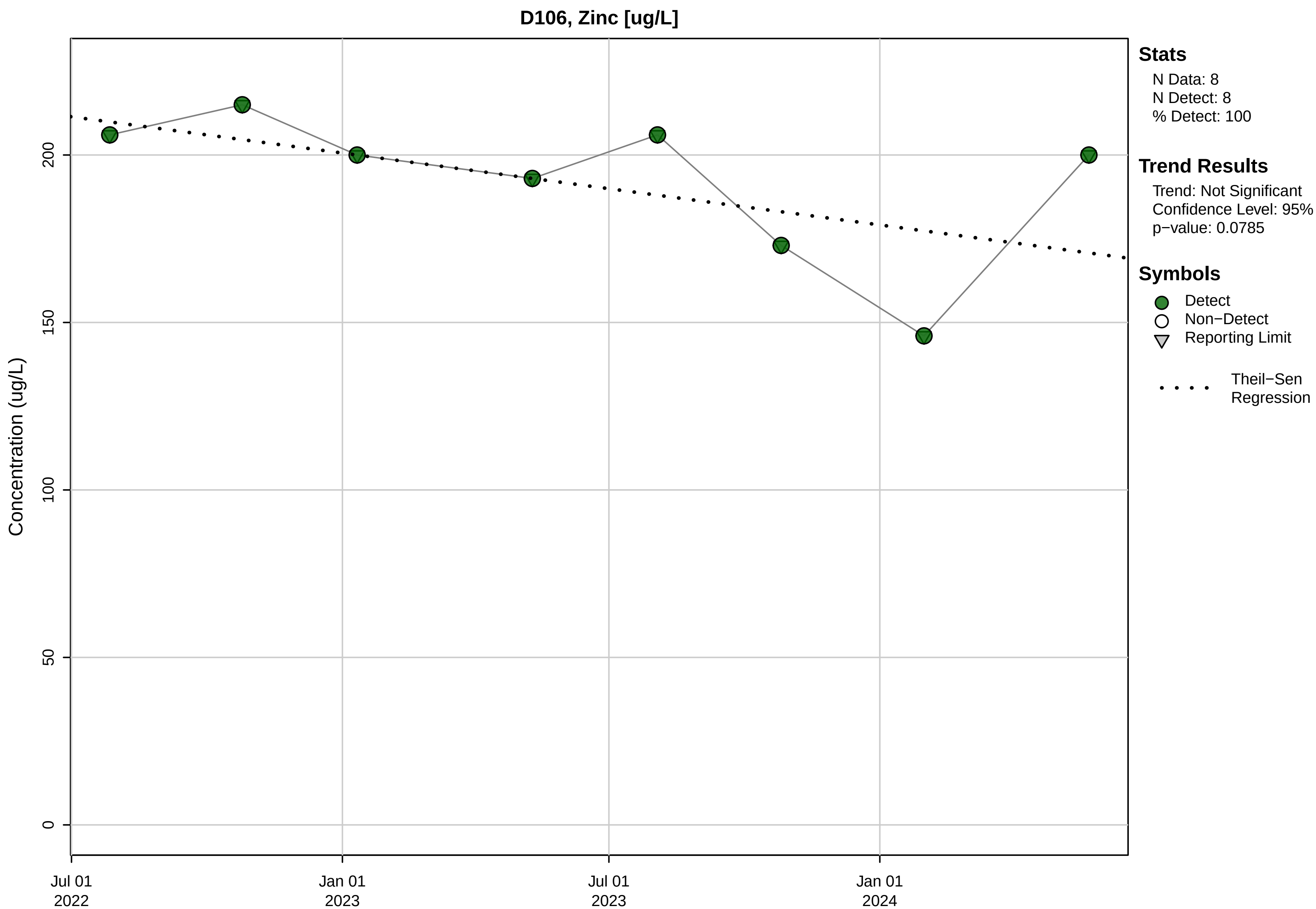

D106, Nickel [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
2500
3000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

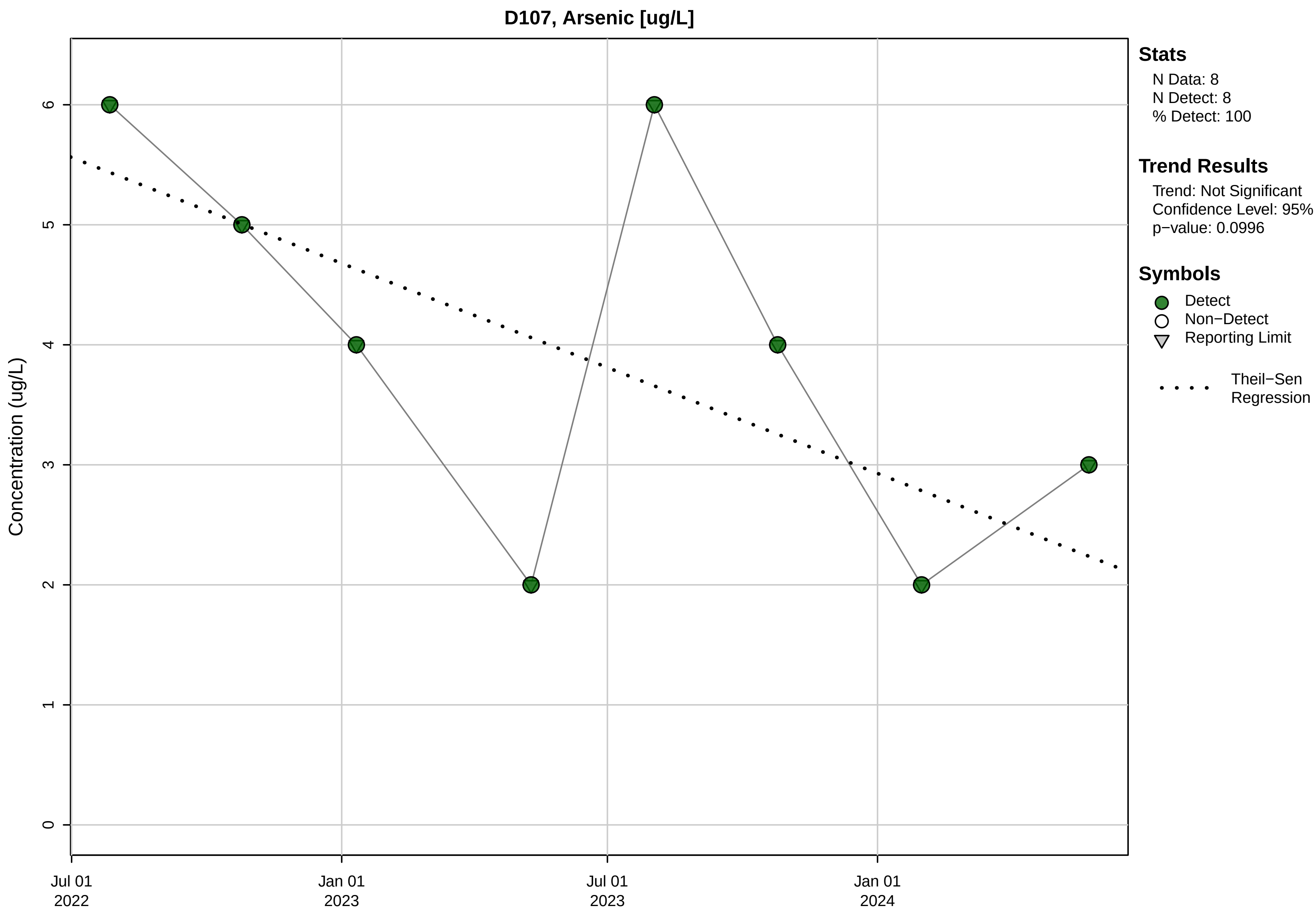

D106, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.365
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

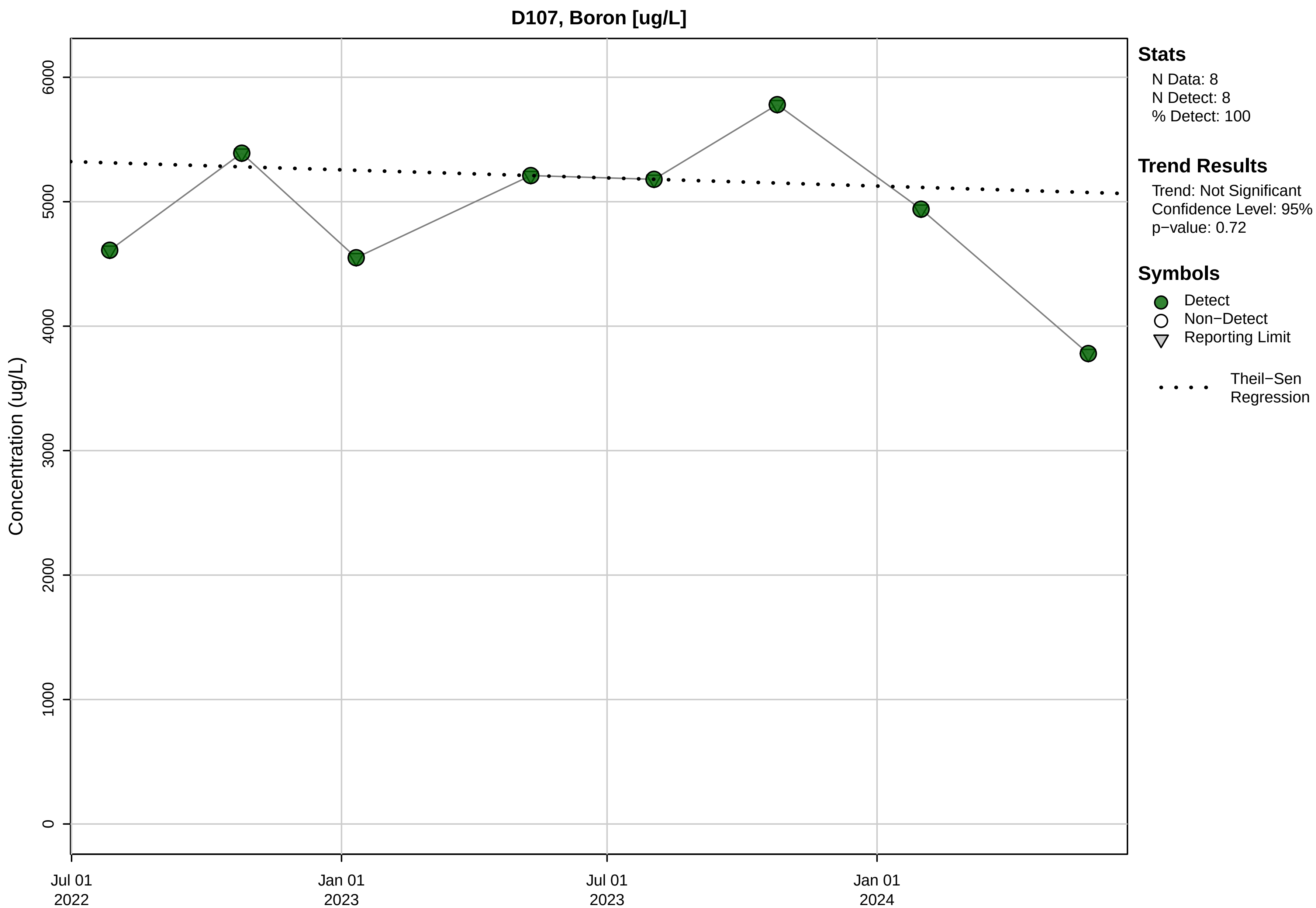

D106, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.17
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

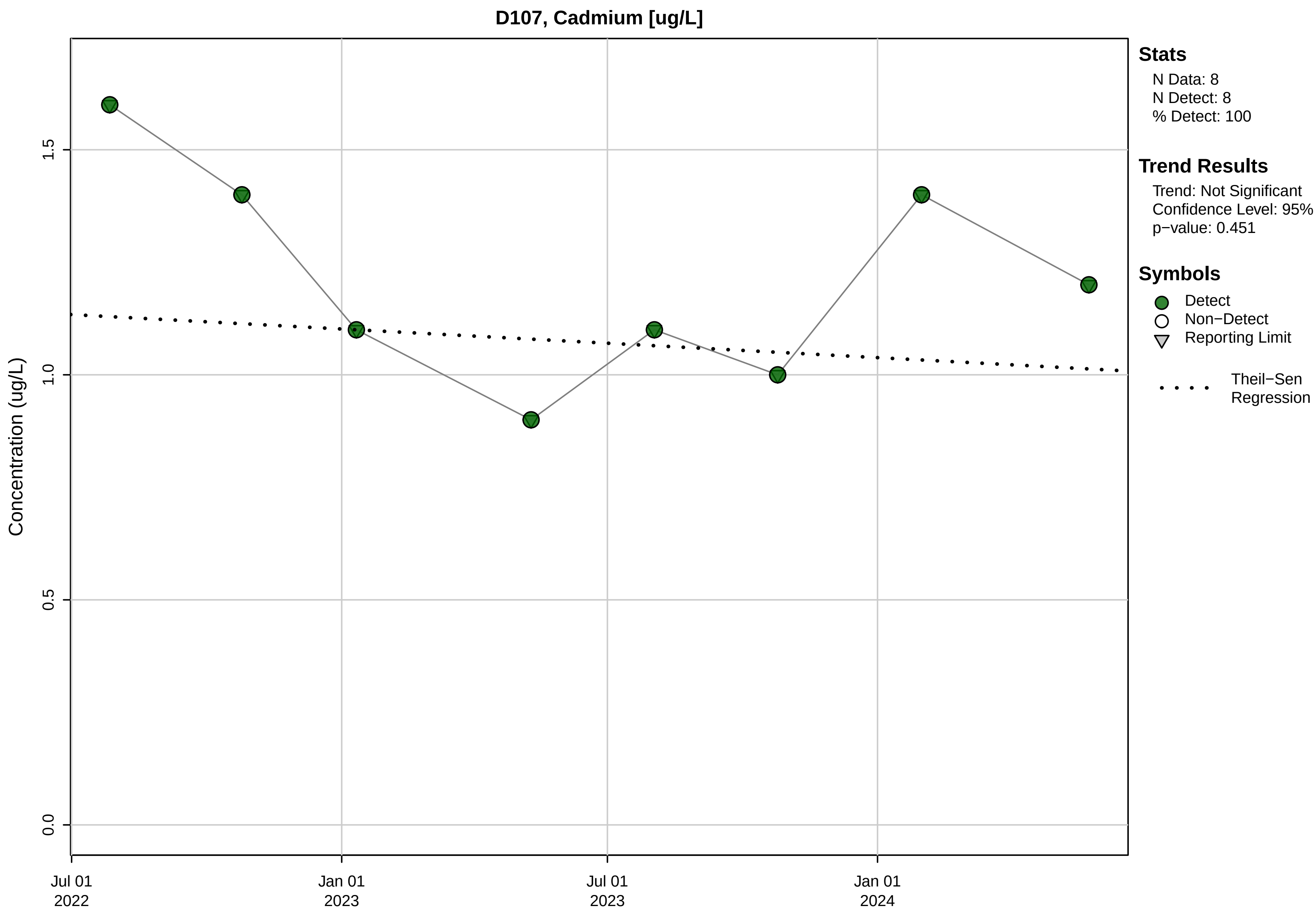


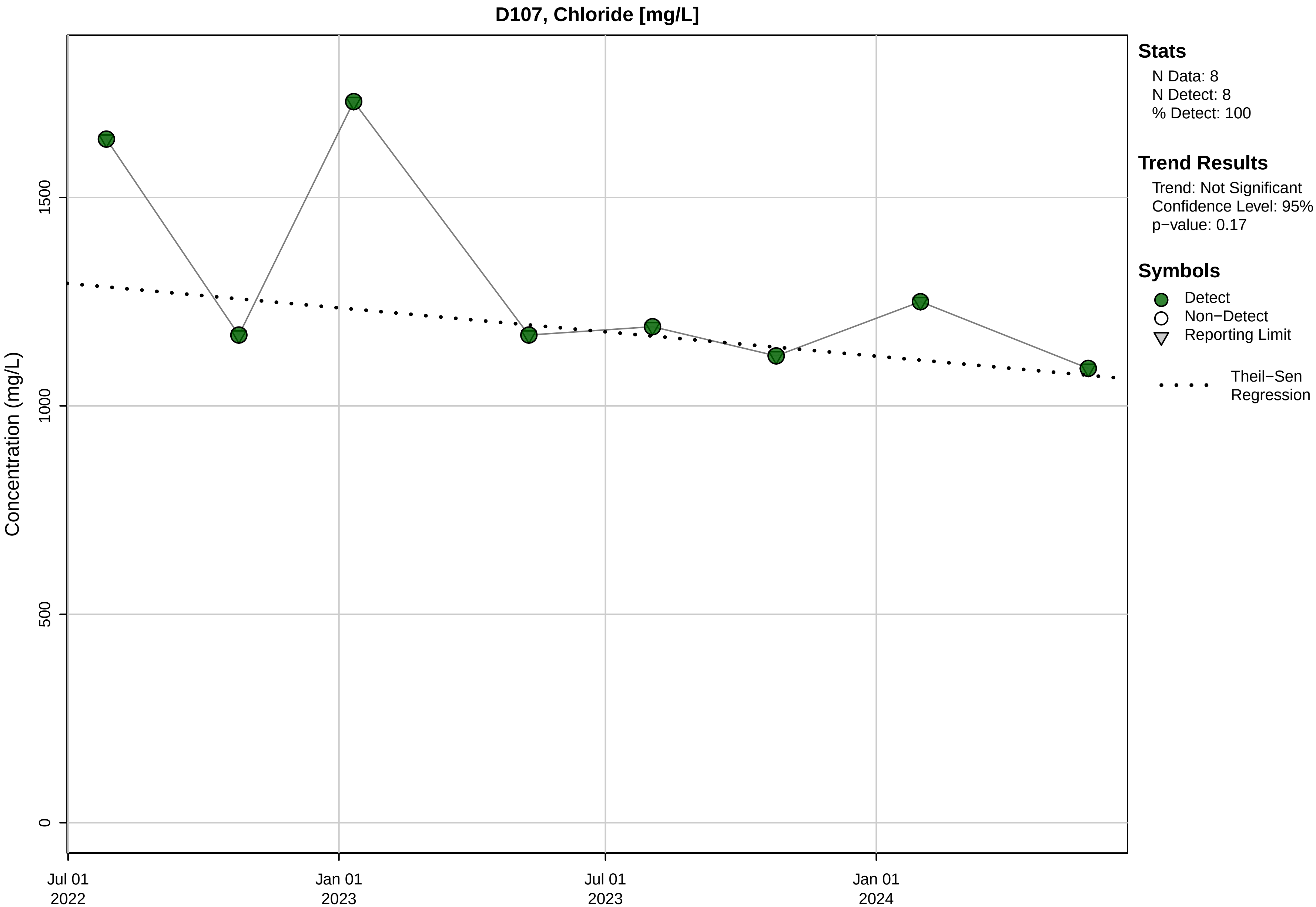
D106, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
10000
12000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D106, Zinc [ug/L]
Concentration (ug/L)
0
50
100
150
200
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0785
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

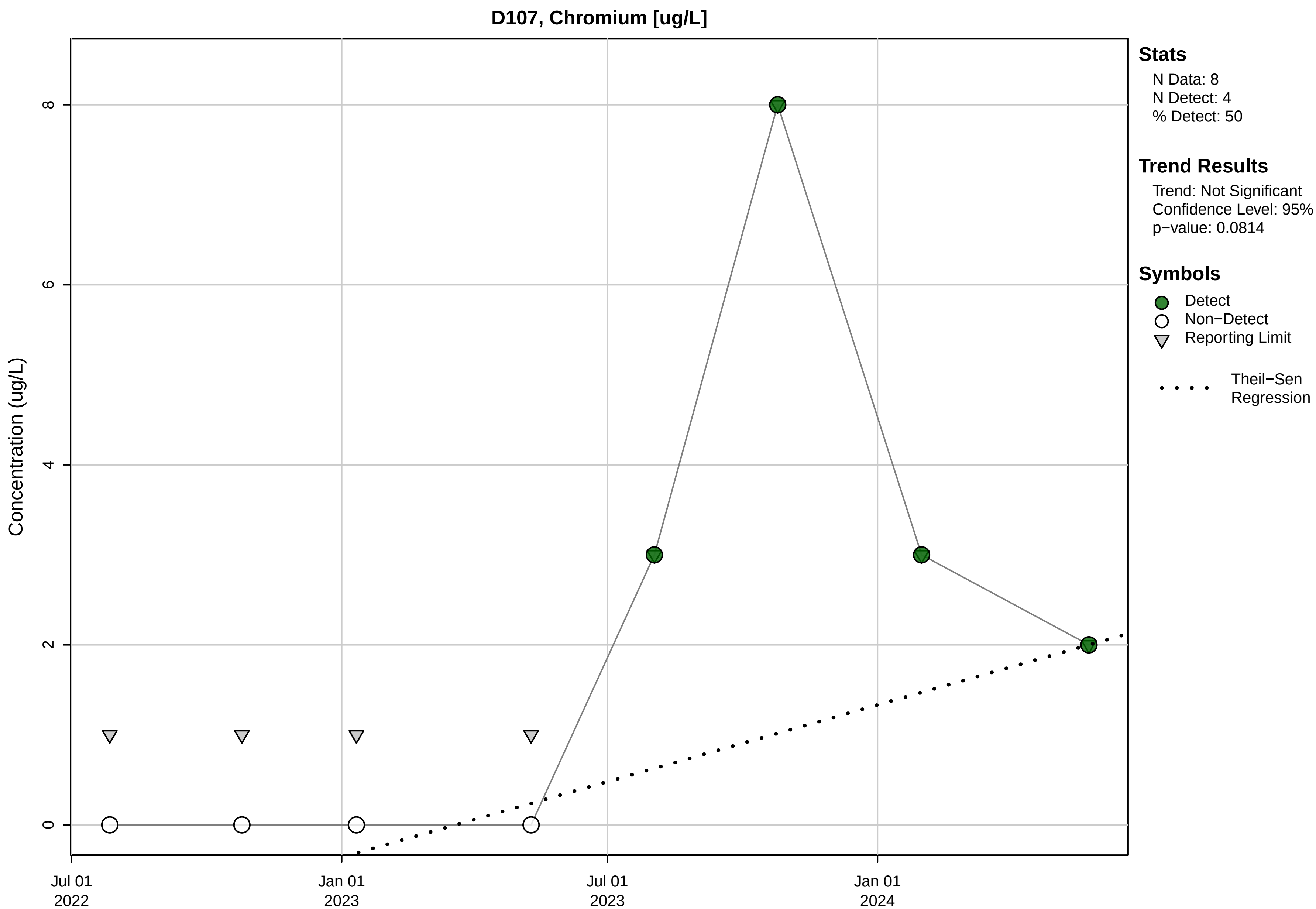

D107, Arsenic [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
6
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0996
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

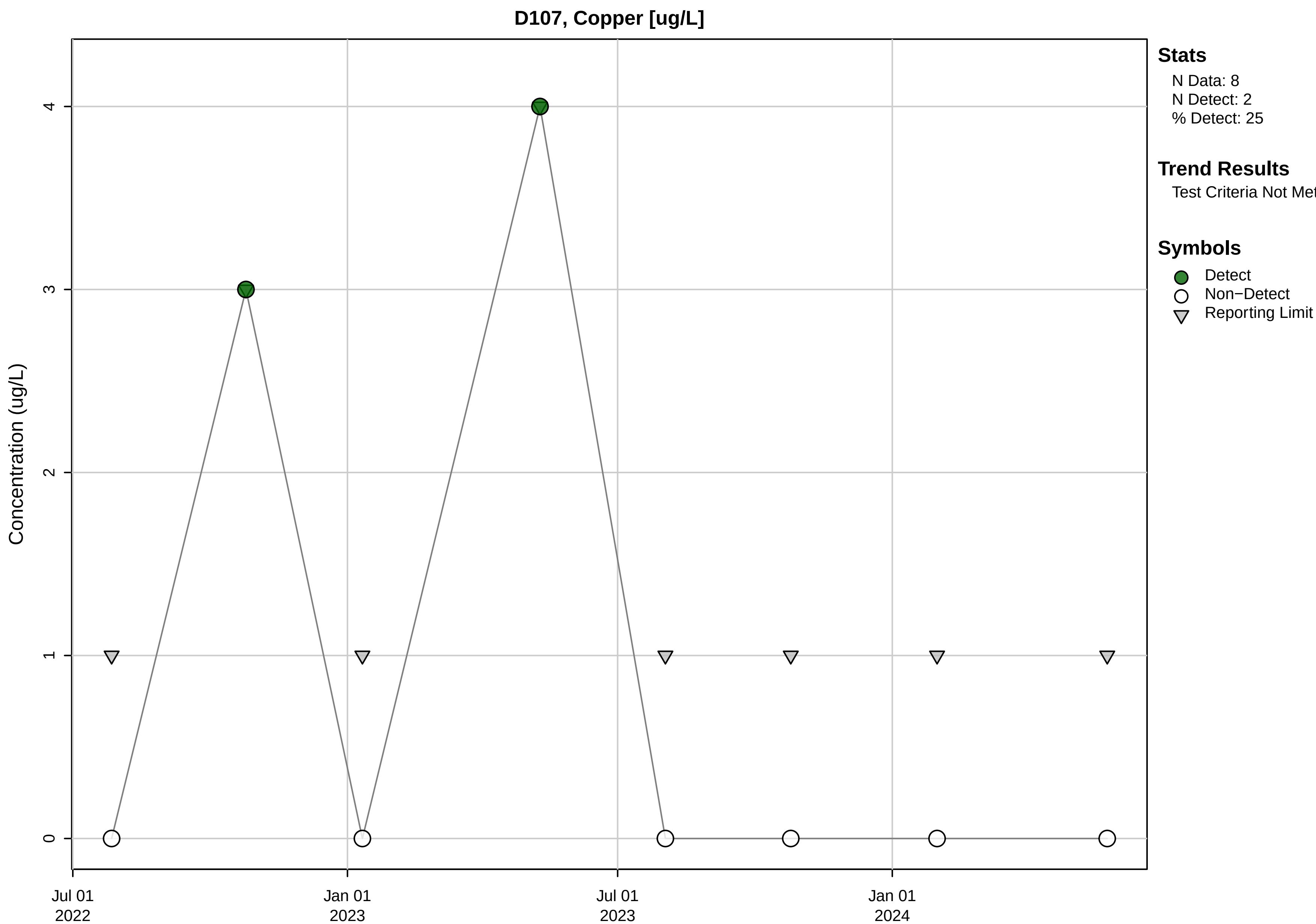

D107, Boron [ug/L]
Concentration (ug/L)
0
1000
2000
3000
4000
5000
6000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

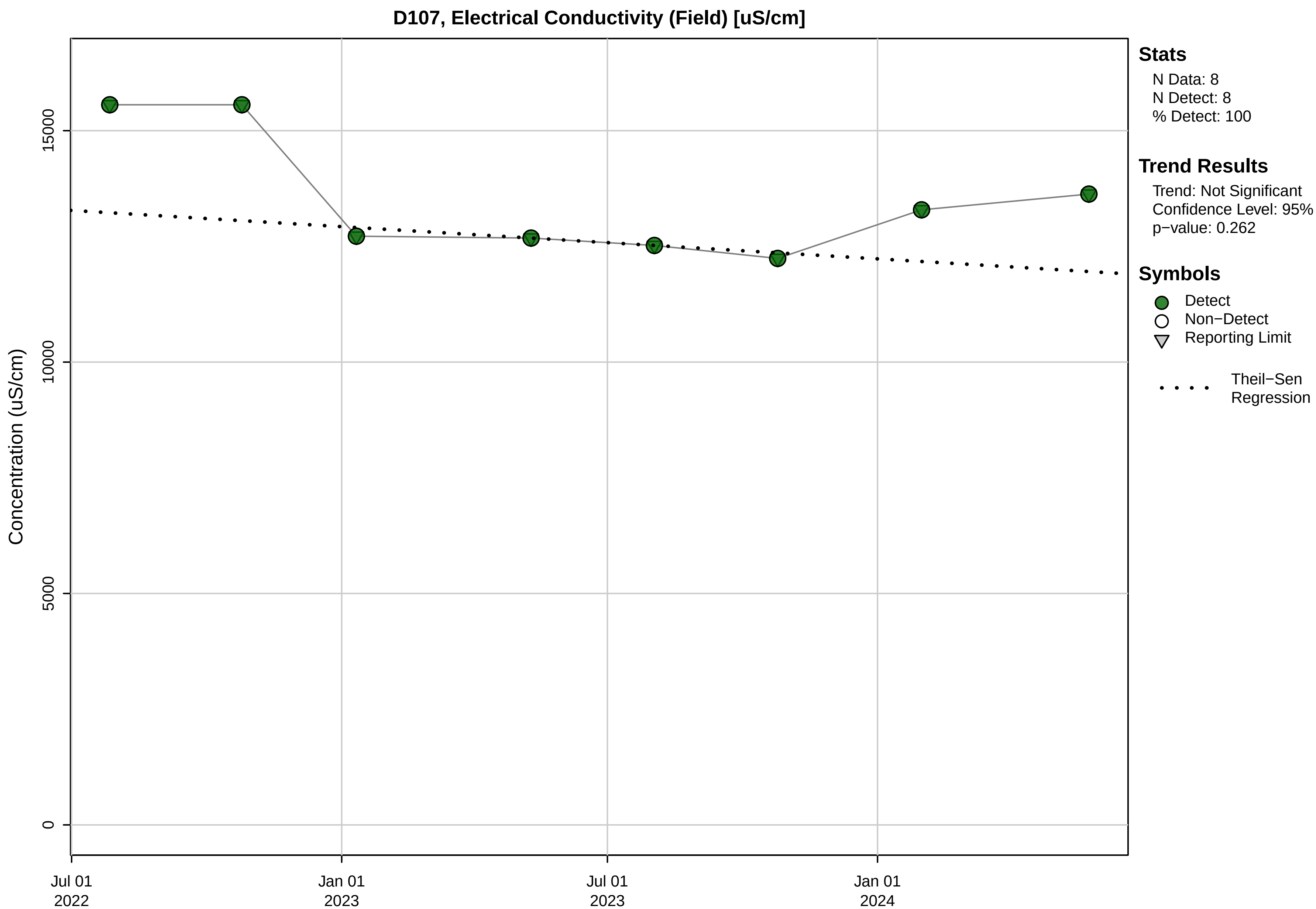

D107, Cadmium [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.451
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



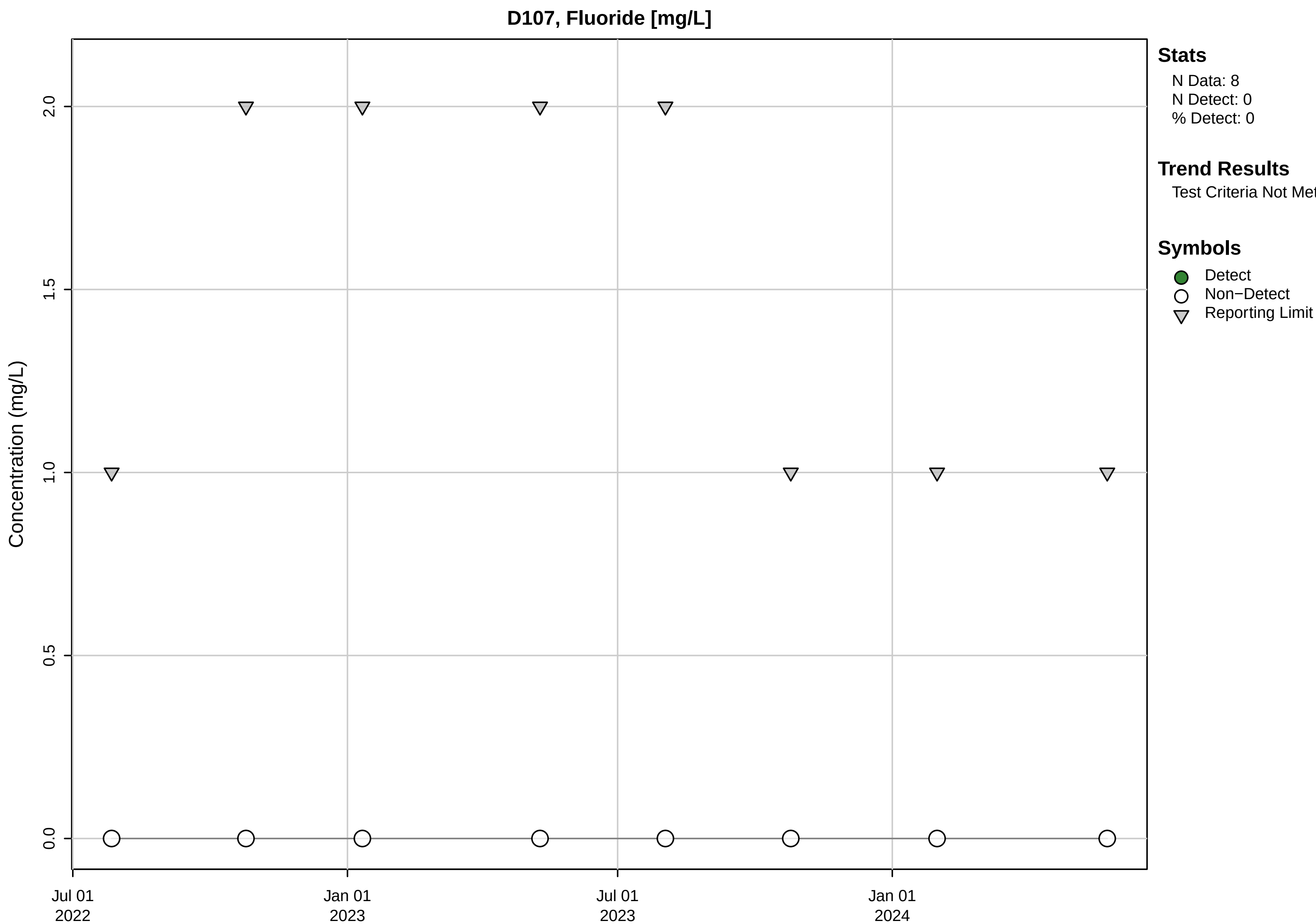
D107, Chloride [mg/L]
Concentration (mg/L)
0
500
1000
1500
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.17
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D107, Chromium [ug/L]
Concentration (ug/L)
0
2
4
6
8
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0814
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

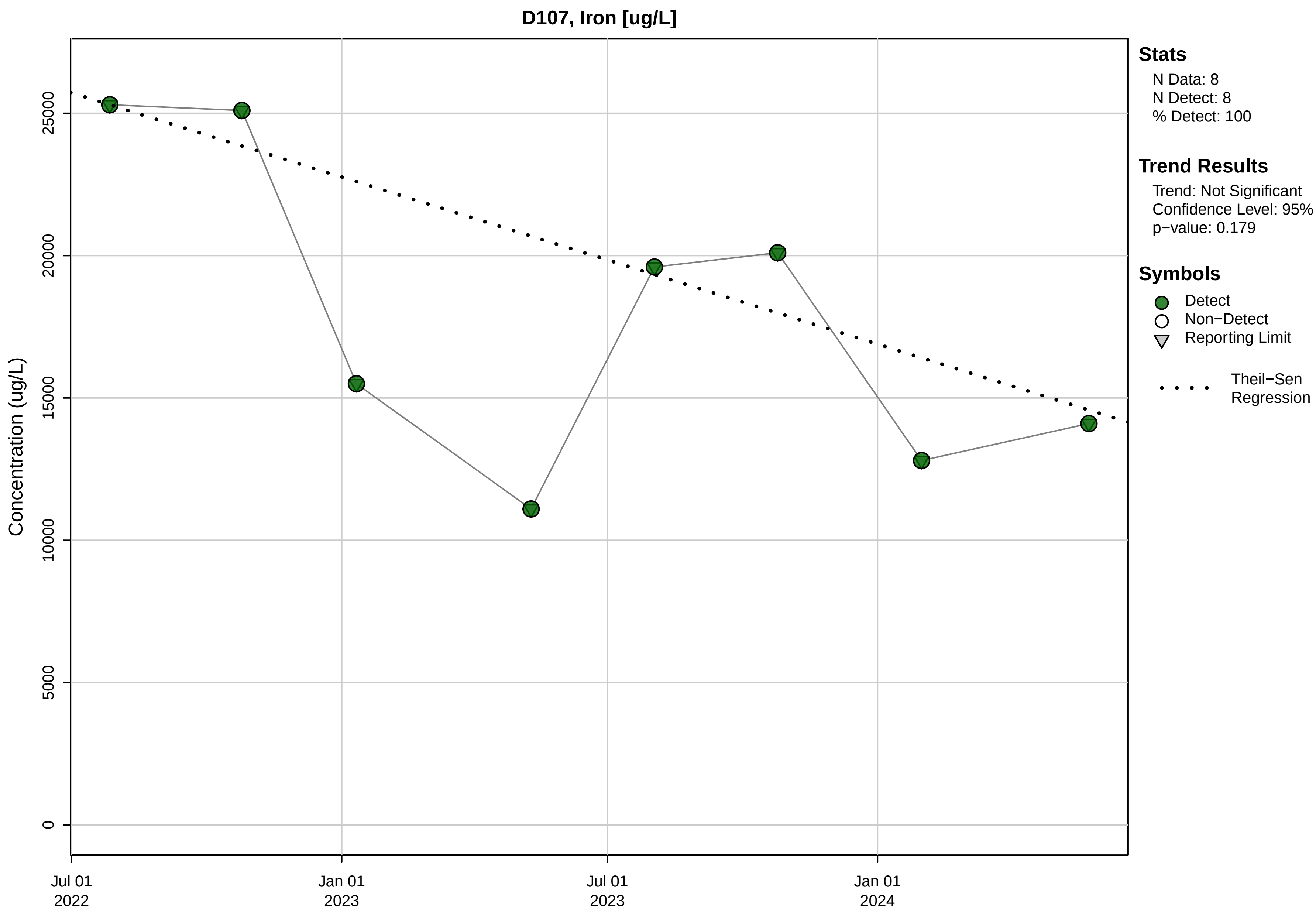

D107, Copper [ug/L]
Concentration (ug/L)
0
1
2
3
4
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



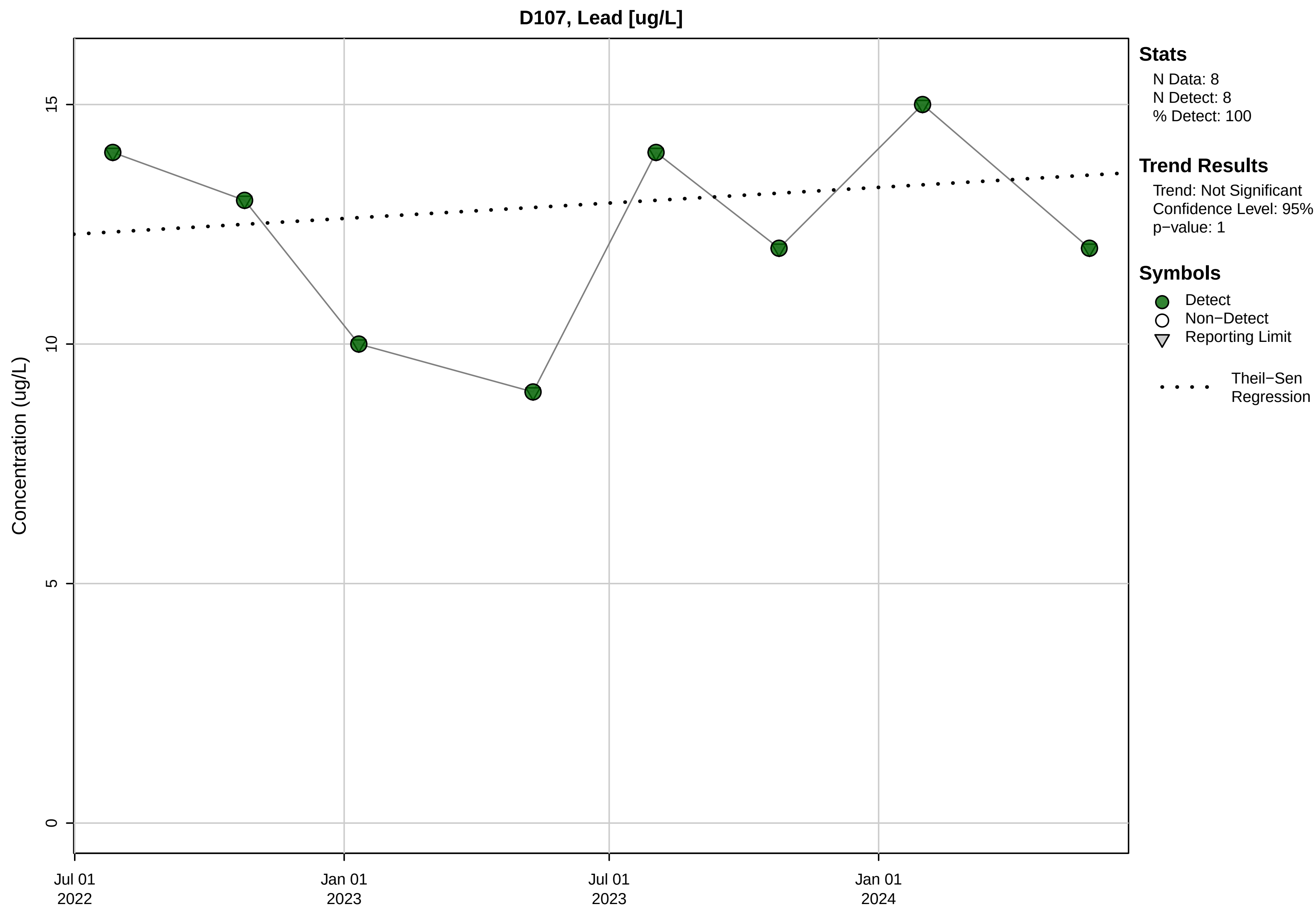
D107, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
5000
10000
15000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.262
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



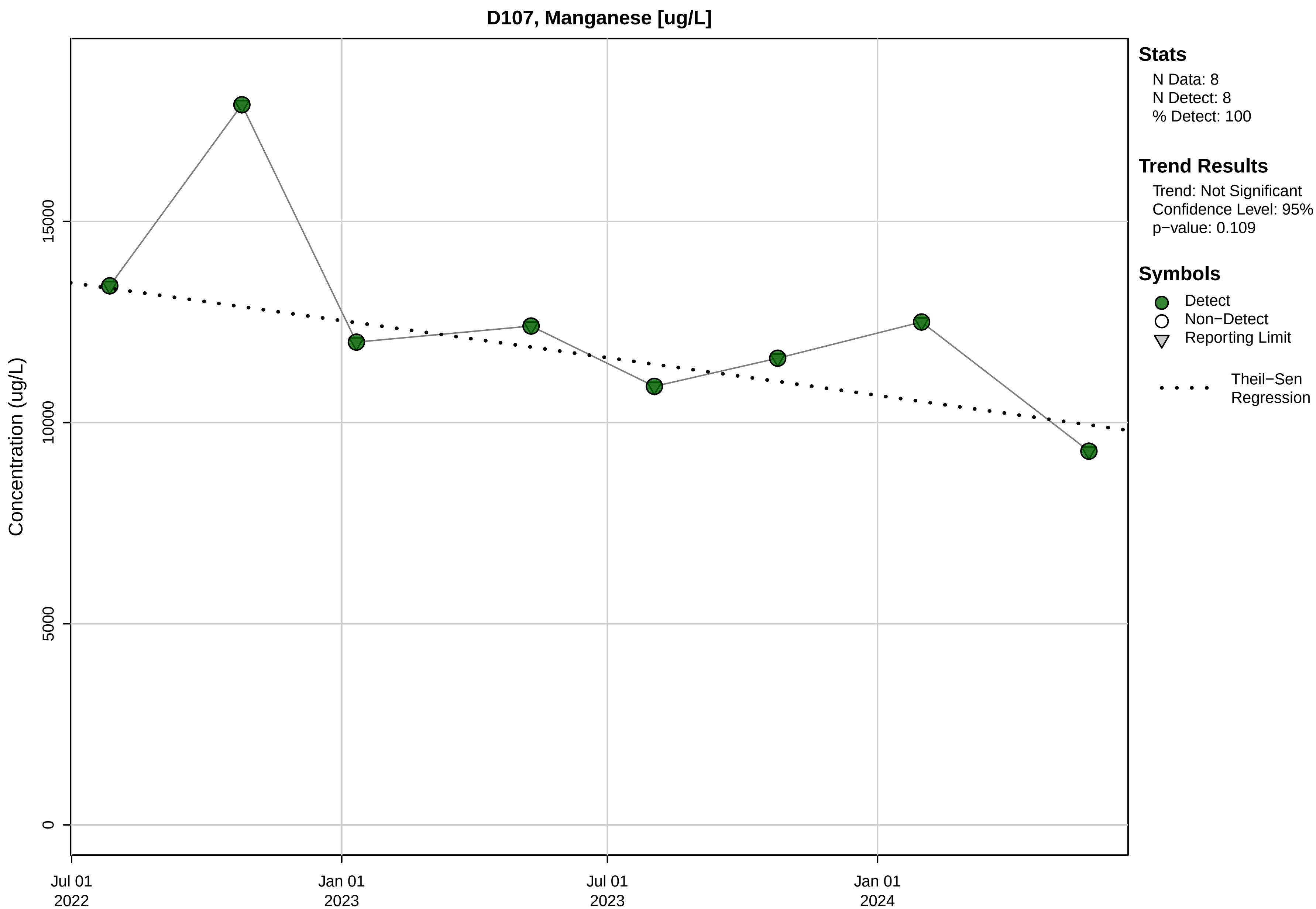
D107, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.5
1.0
1.5
2.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

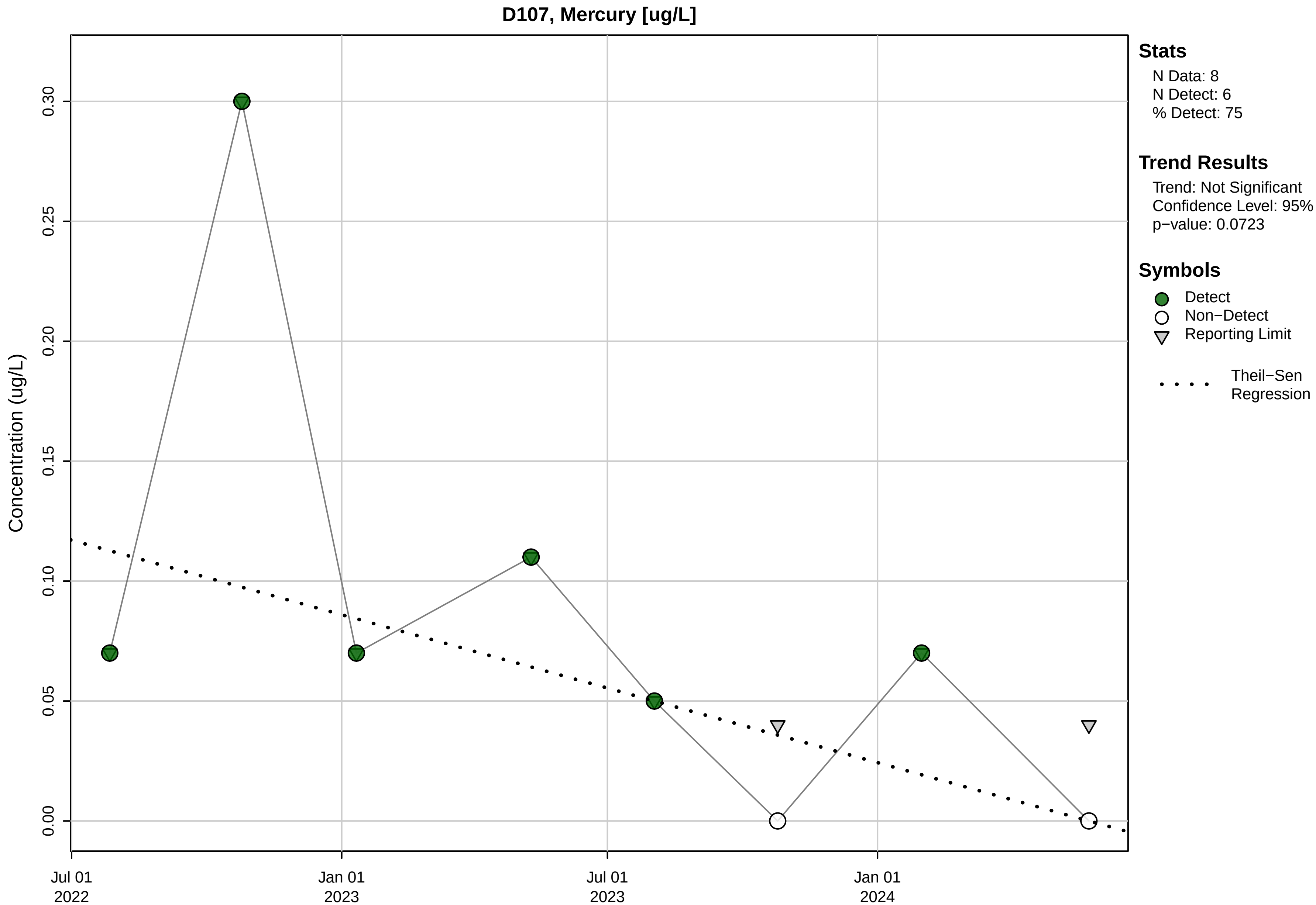


D107, Iron [ug/L]
Concentration (ug/L)
0
5000
10000
15000
20000
25000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

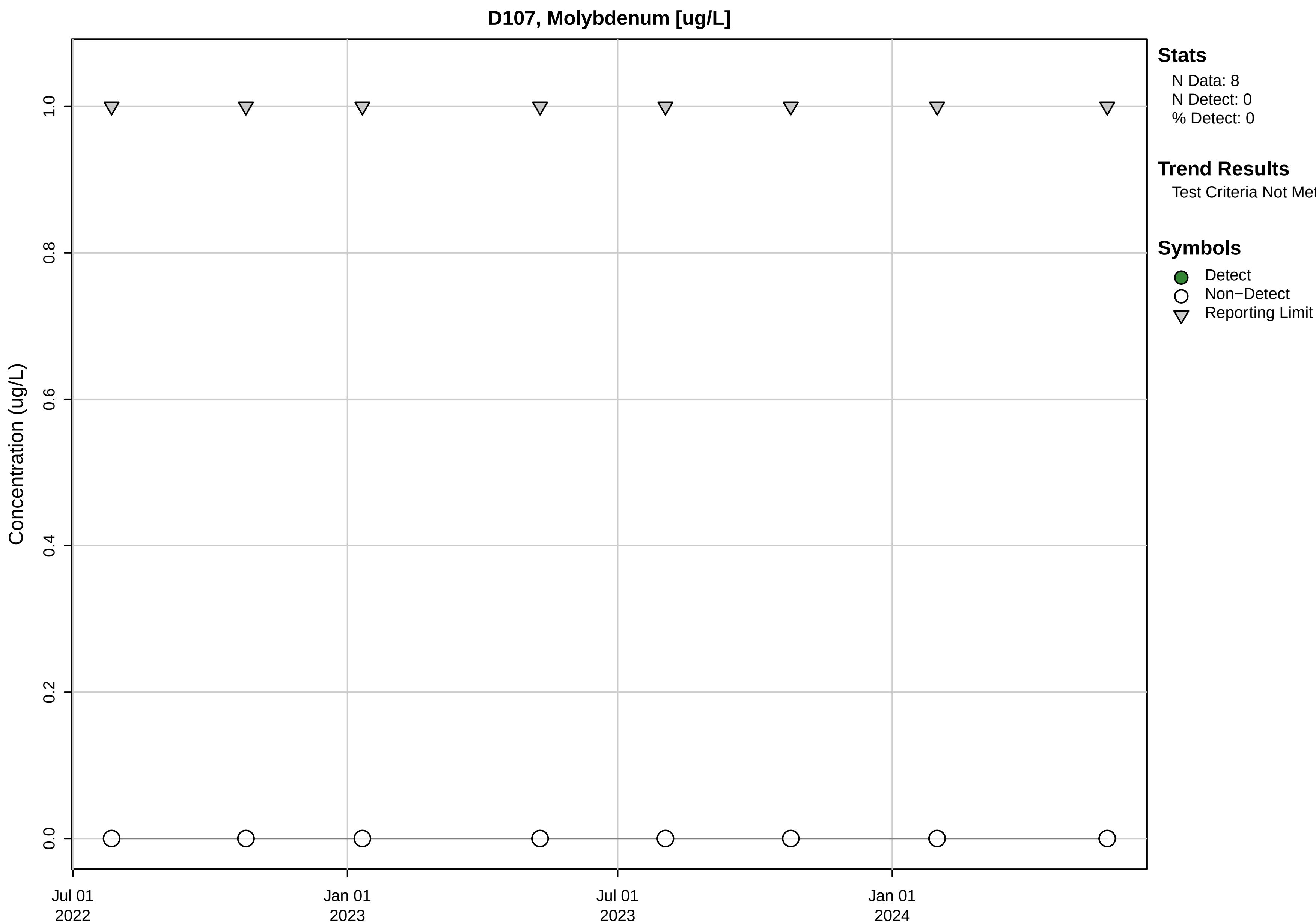


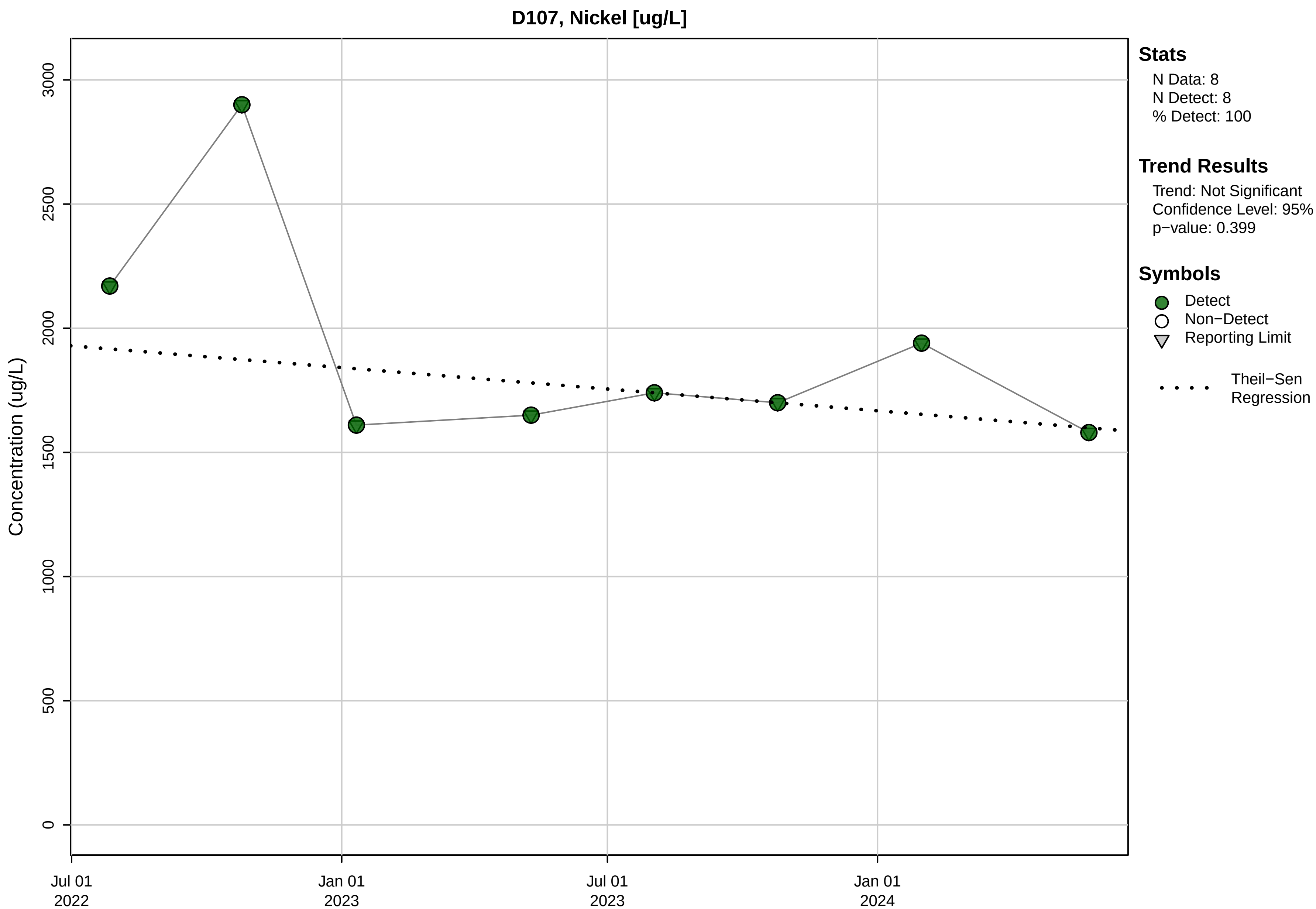
D107, Lead [ug/L]
Concentration (ug/L)
0
5
10
15
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

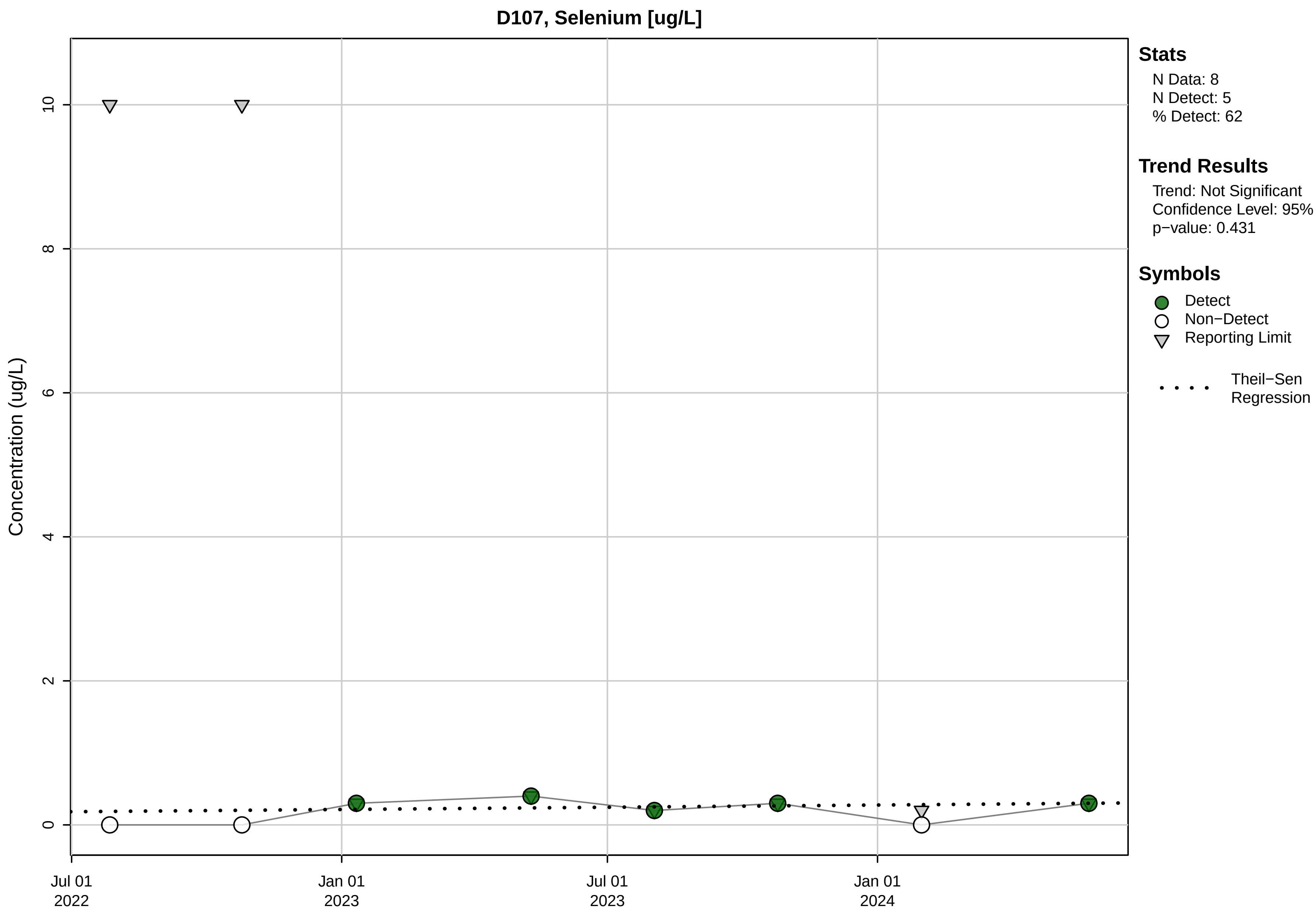

D107, Manganese [ug/L]
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression
Concentration (ug/L)
0
5000
10000
15000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024



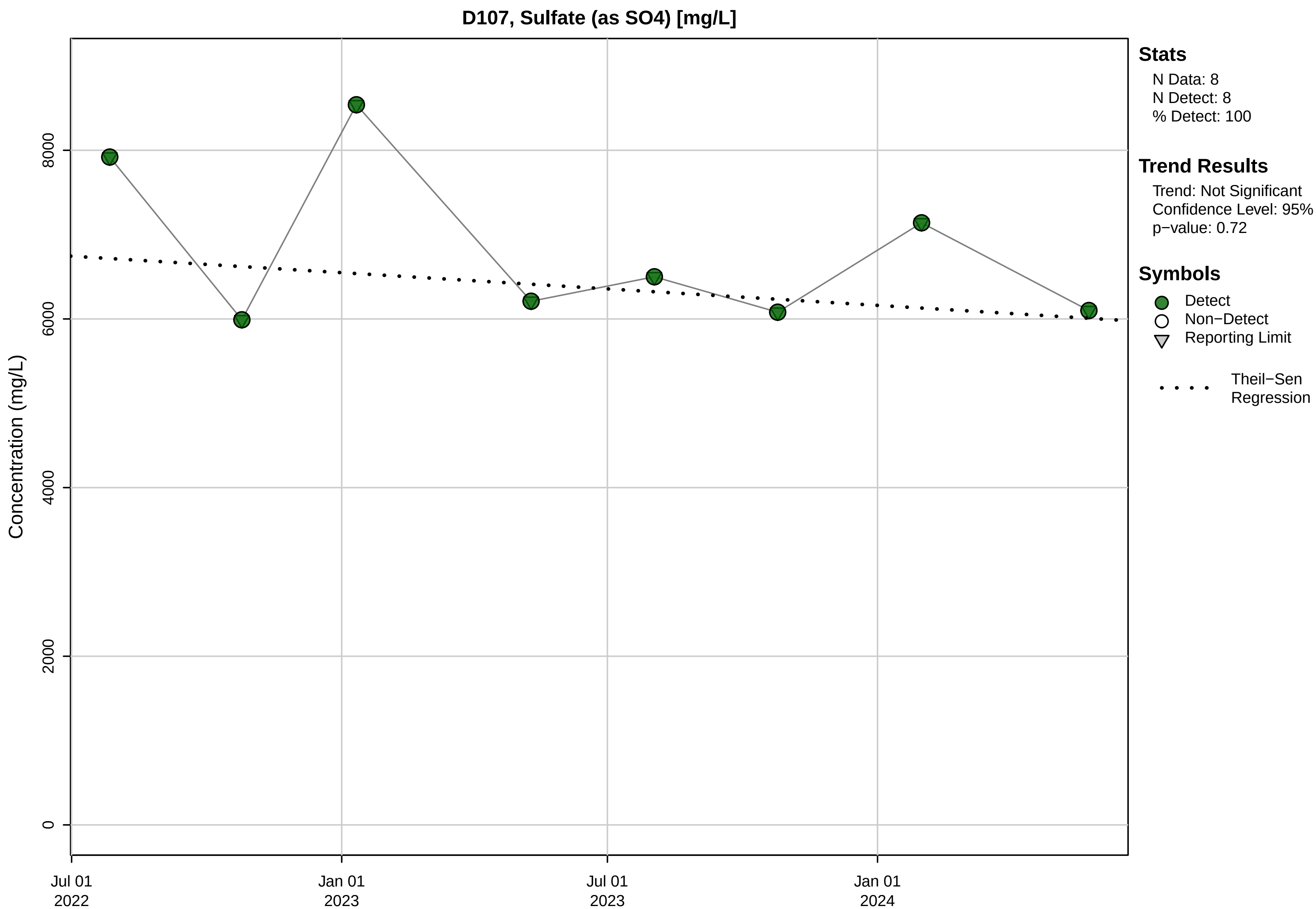
D107, Mercury [ug/L]
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 6
% Detect: 75
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0723
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D107, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

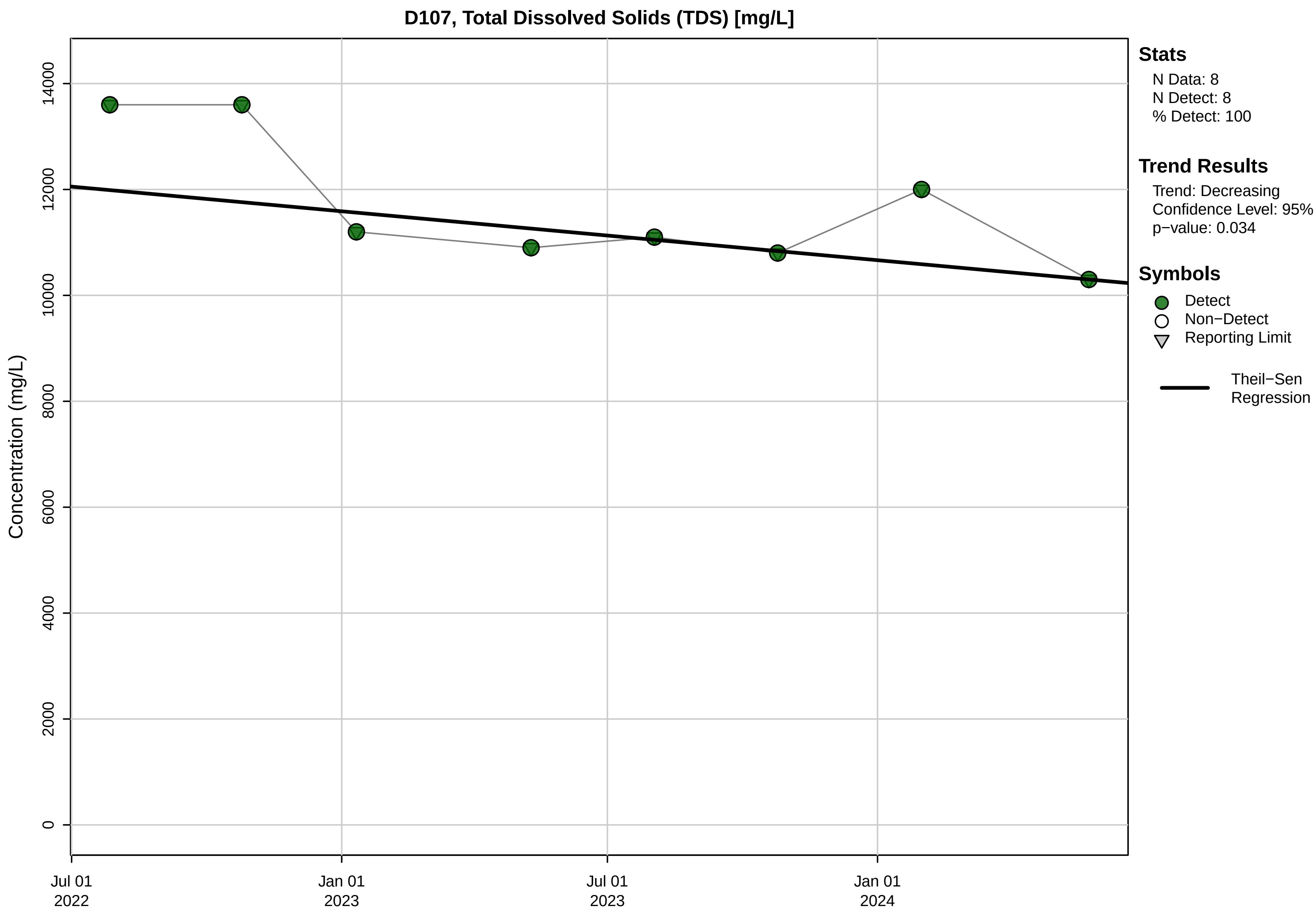

D107, Nickel [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
2500
3000
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



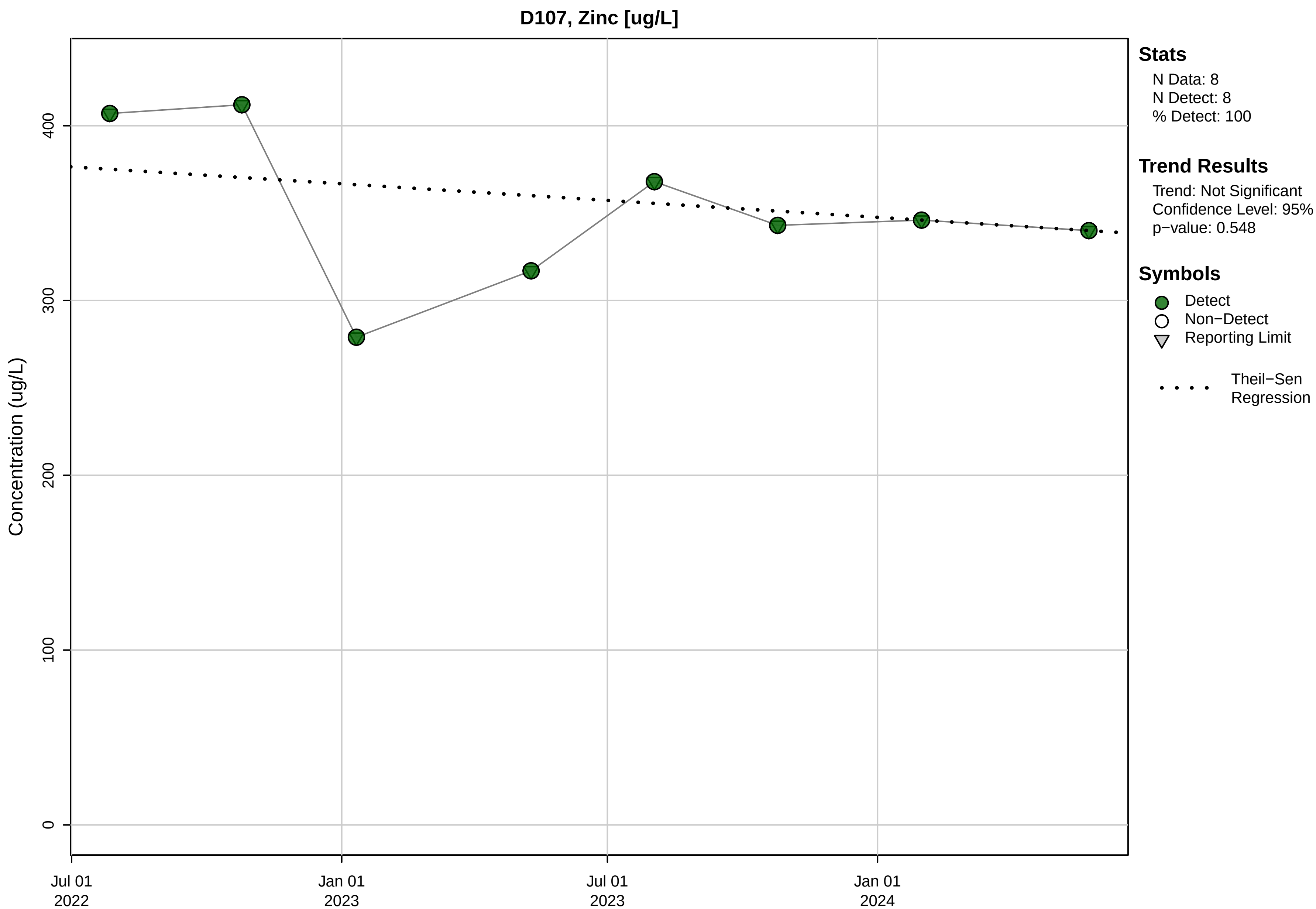
D107, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.431
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

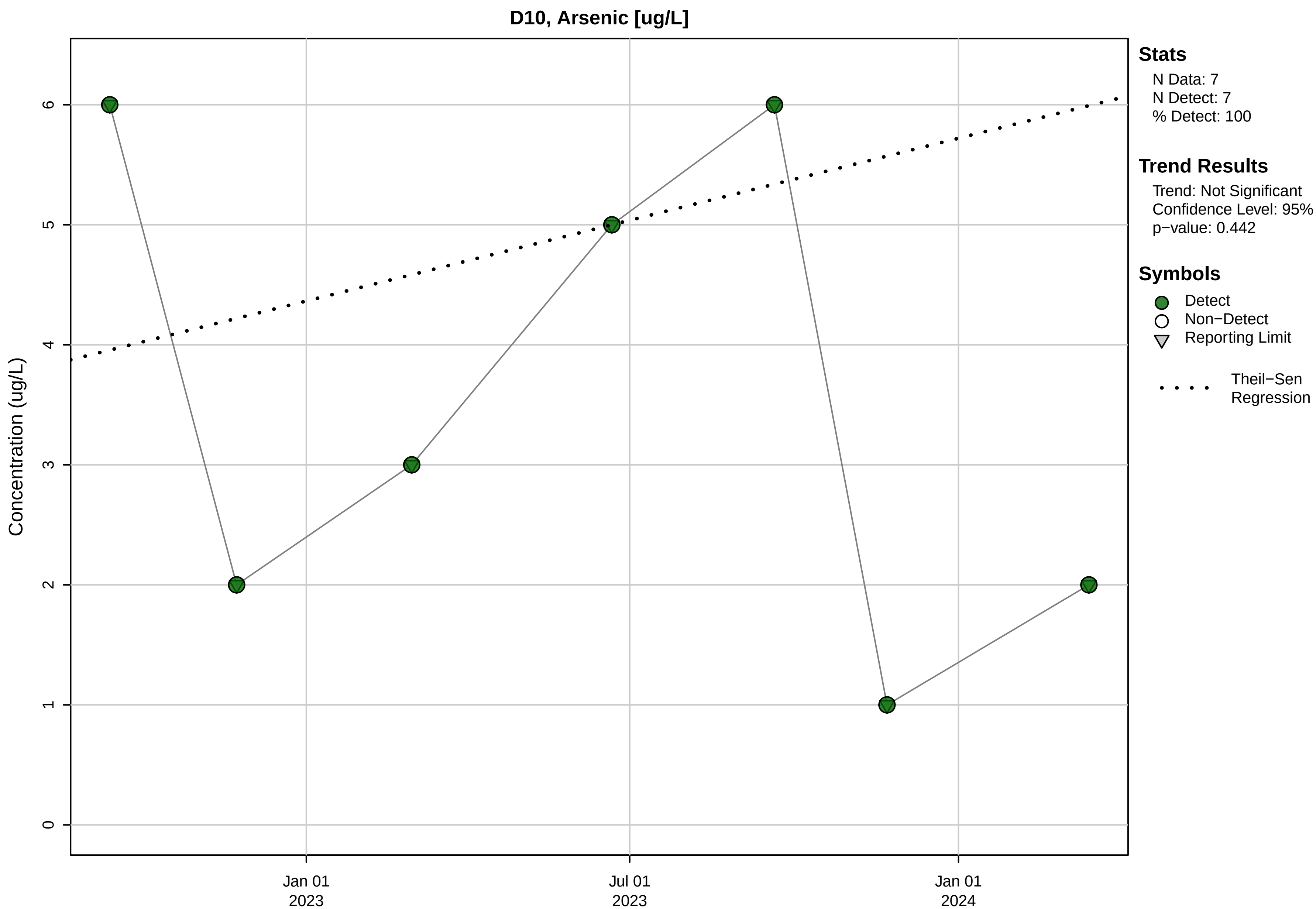


D107, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

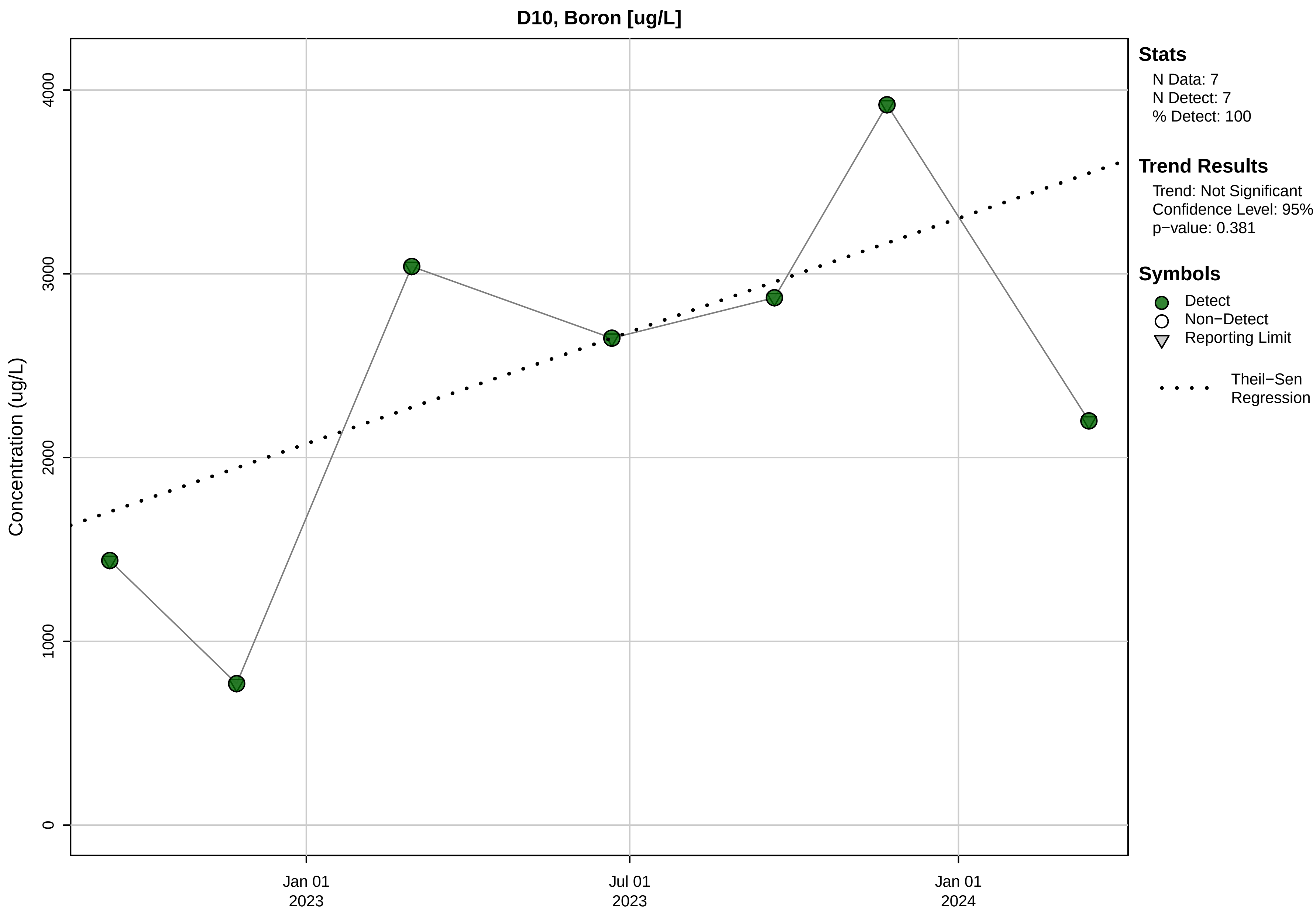


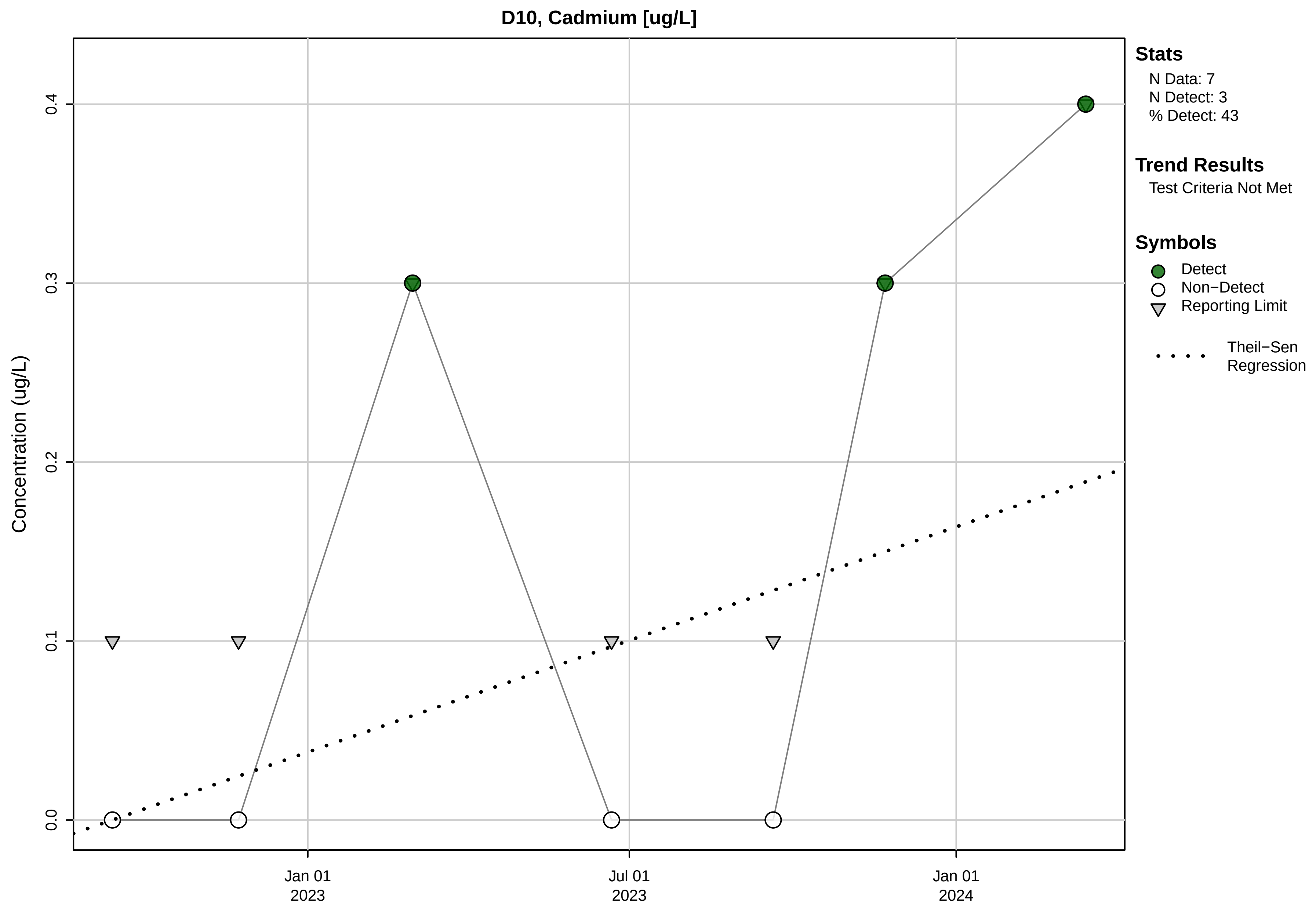
D107, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
10000
12000
14000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.034
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D107, Zinc [ug/L]
Concentration (ug/L)
0
100
200
300
400
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.548
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

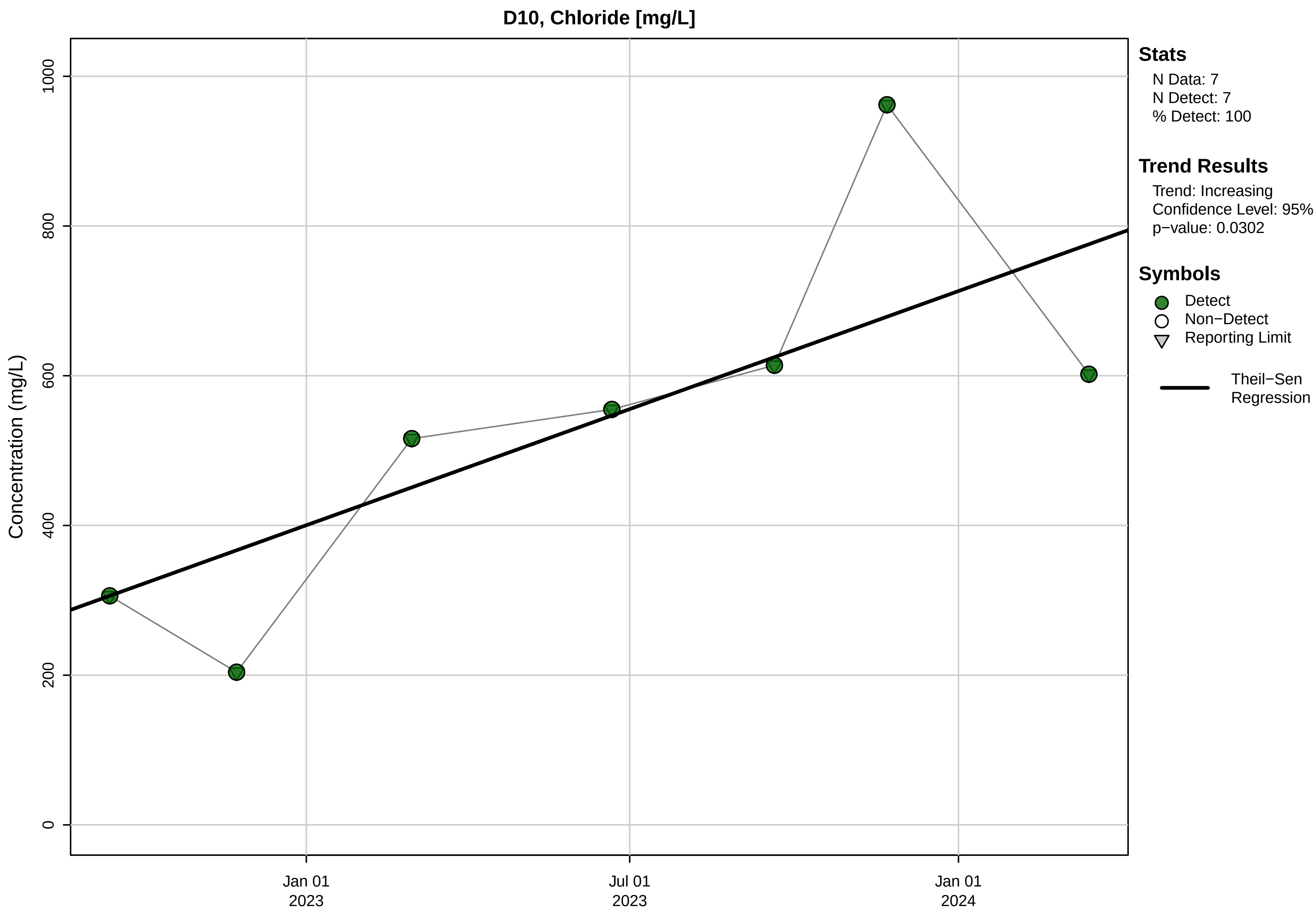


D10, Arsenic [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
6
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.442
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

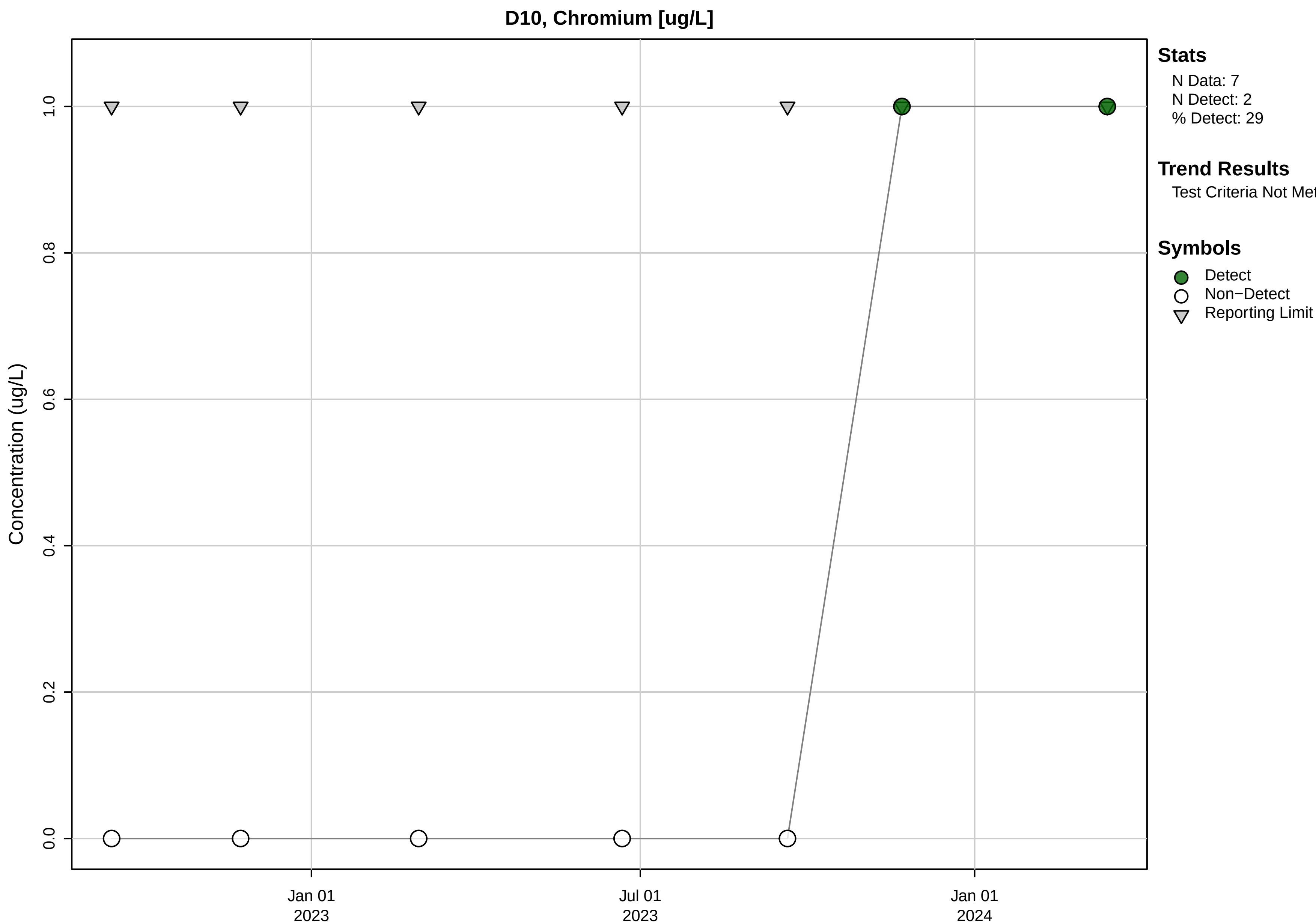

D10, Boron [ug/L]
Concentration (ug/L)
0
1000
2000
3000
4000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.381
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



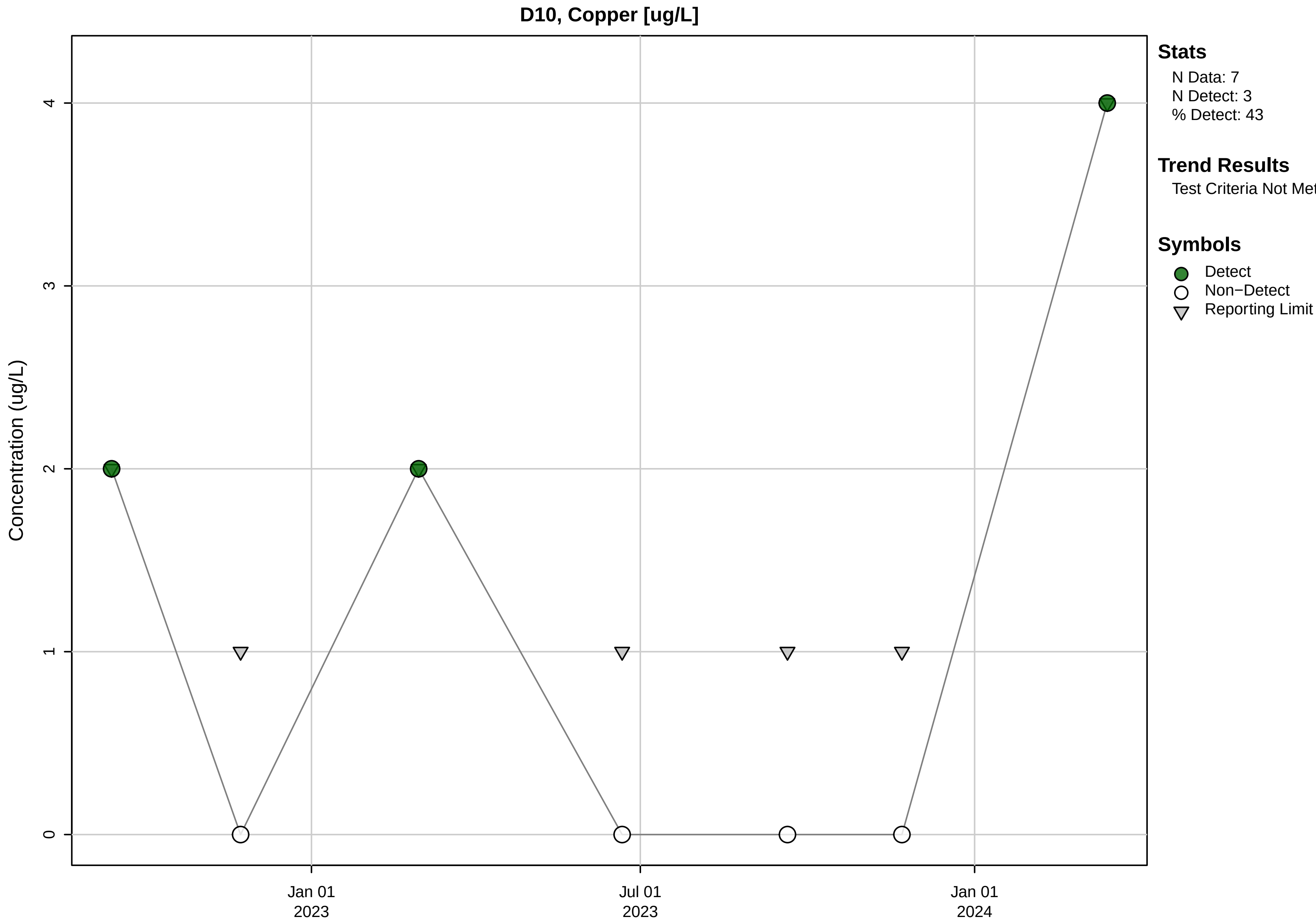
D10, Cadmium [ug/L]
Concentration (ug/L)
0.0
0.1
0.2
0.3
0.4
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 3
% Detect: 43
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



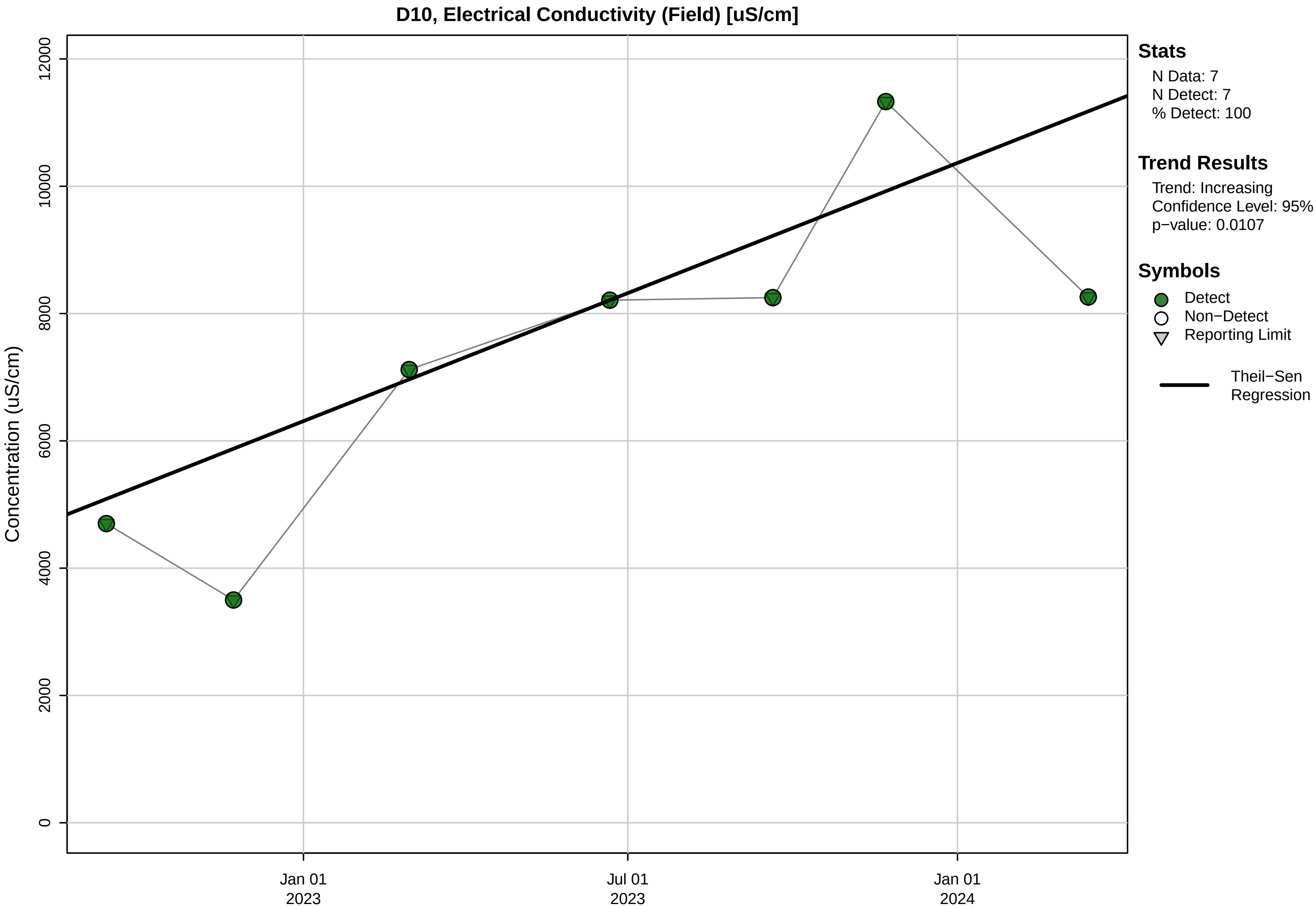
D10, Chloride [mg/L]
Concentration (mg/L)
0
200
400
600
800
1000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0302
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



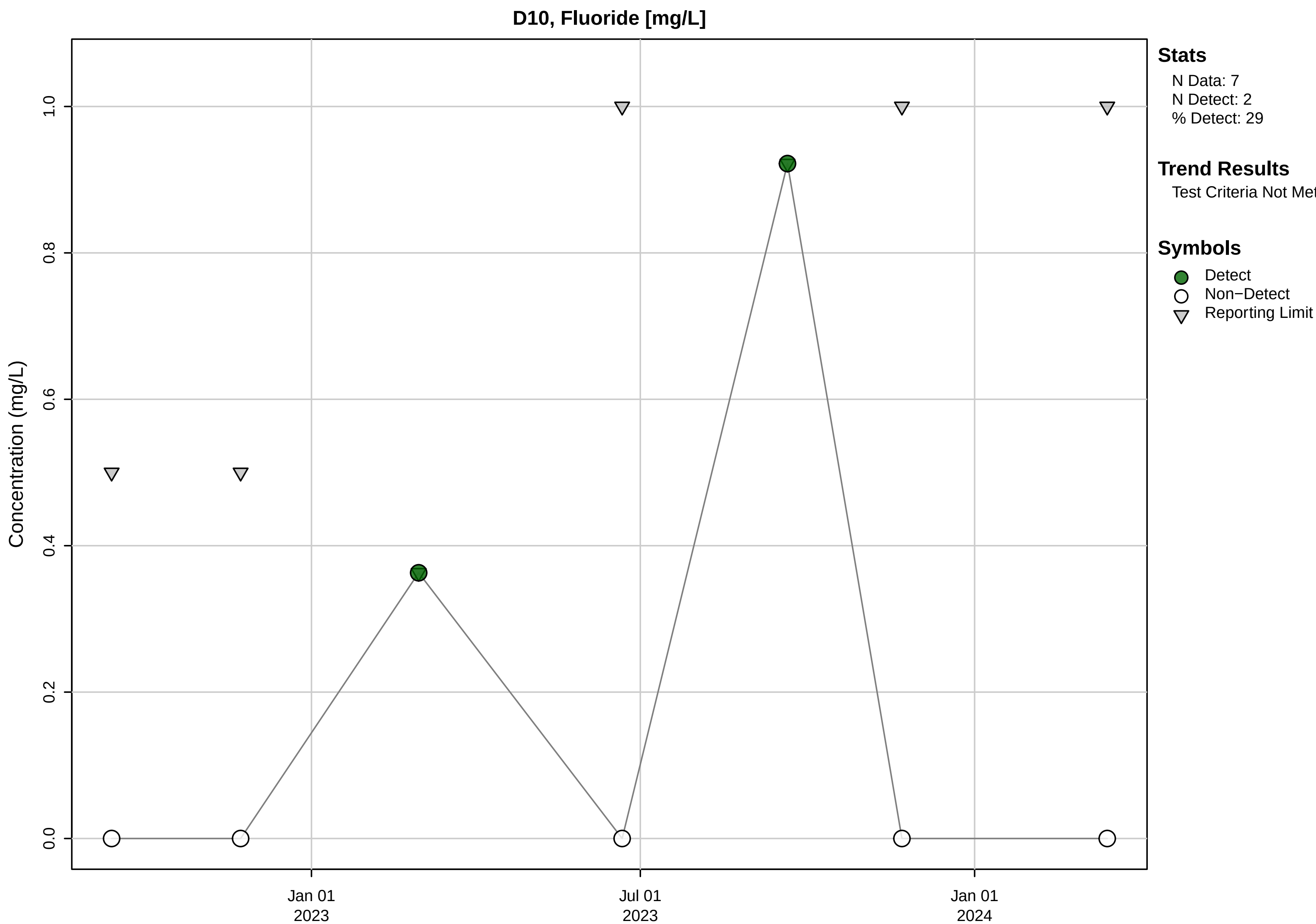
D10, Chromium [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 7
N Detect: 2
% Detect: 29
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

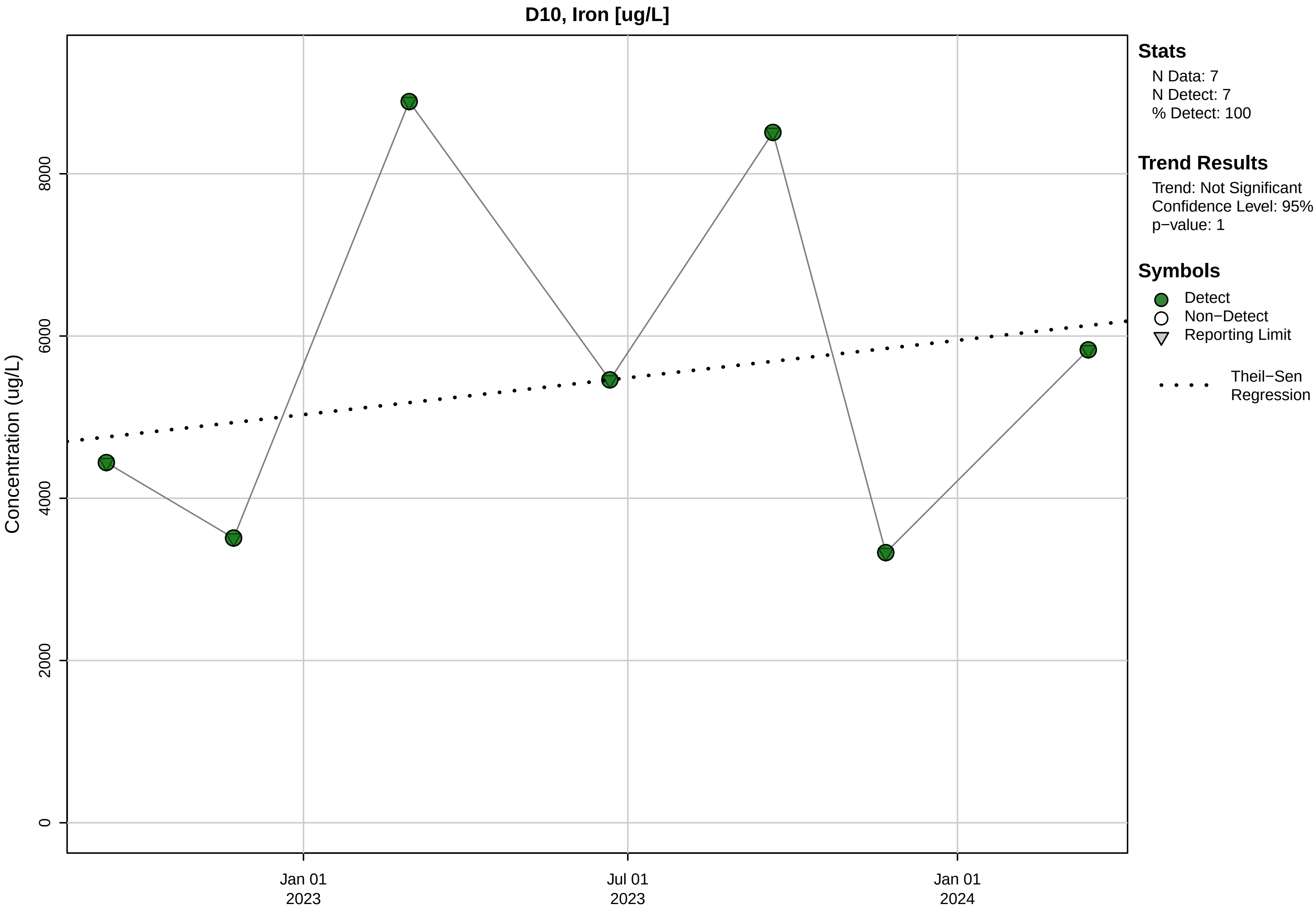


D10, Copper [ug/L]
Concentration (ug/L)
0
1
2
3
4
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 3
% Detect: 43
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

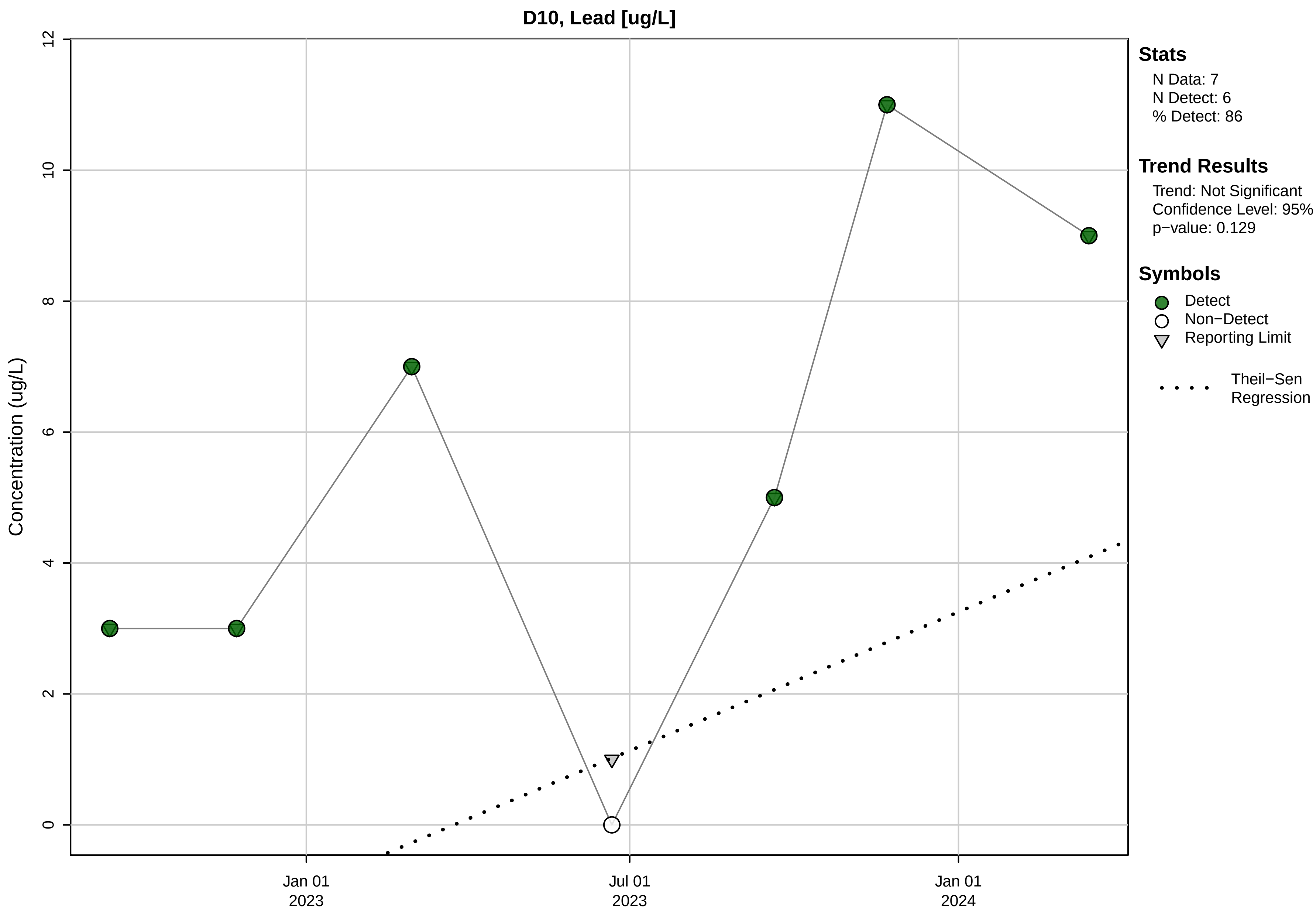


D10, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
12000
10000
8000
6000
4000
2000
0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0107
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

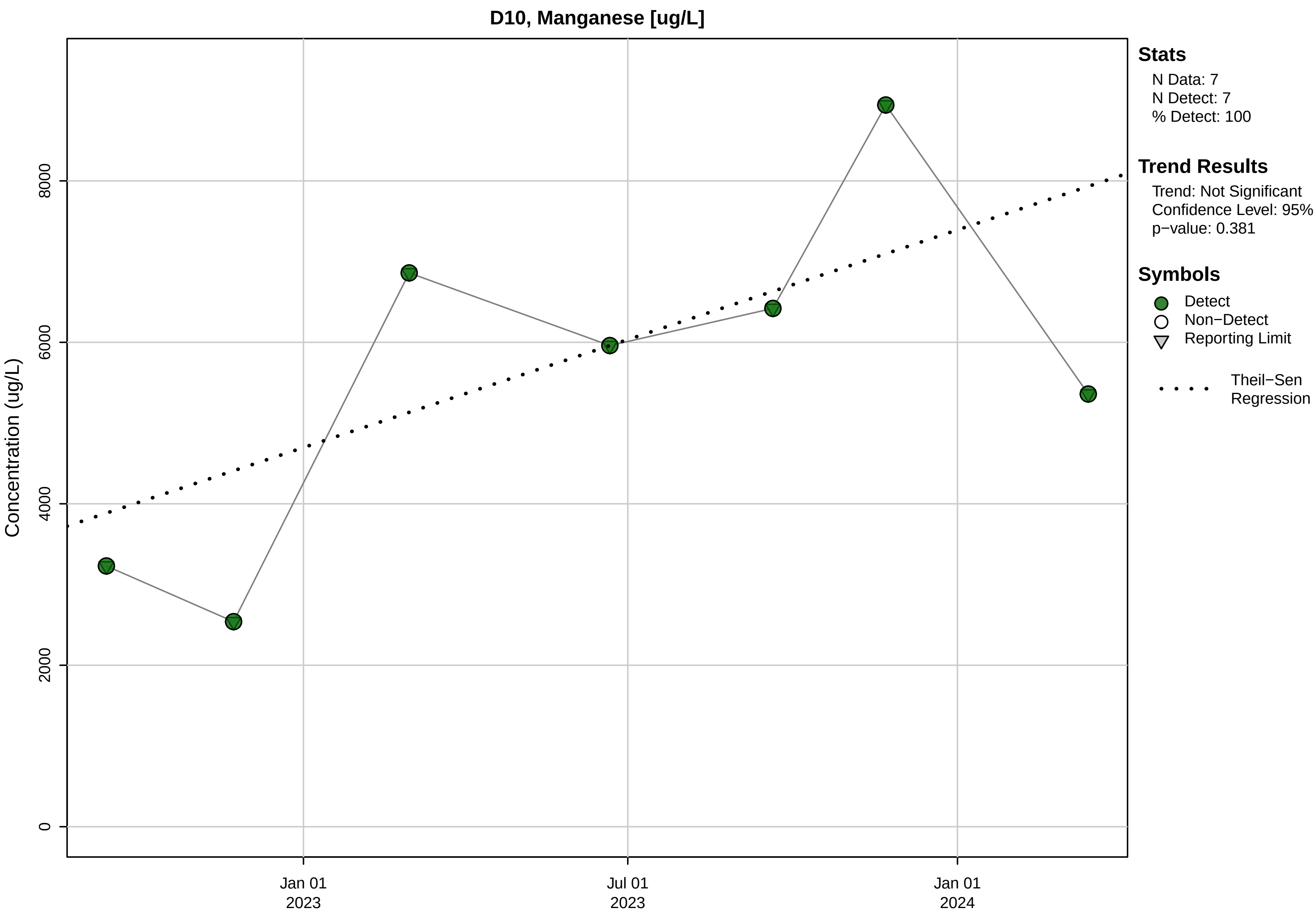

D10, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 2
% Detect: 29
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



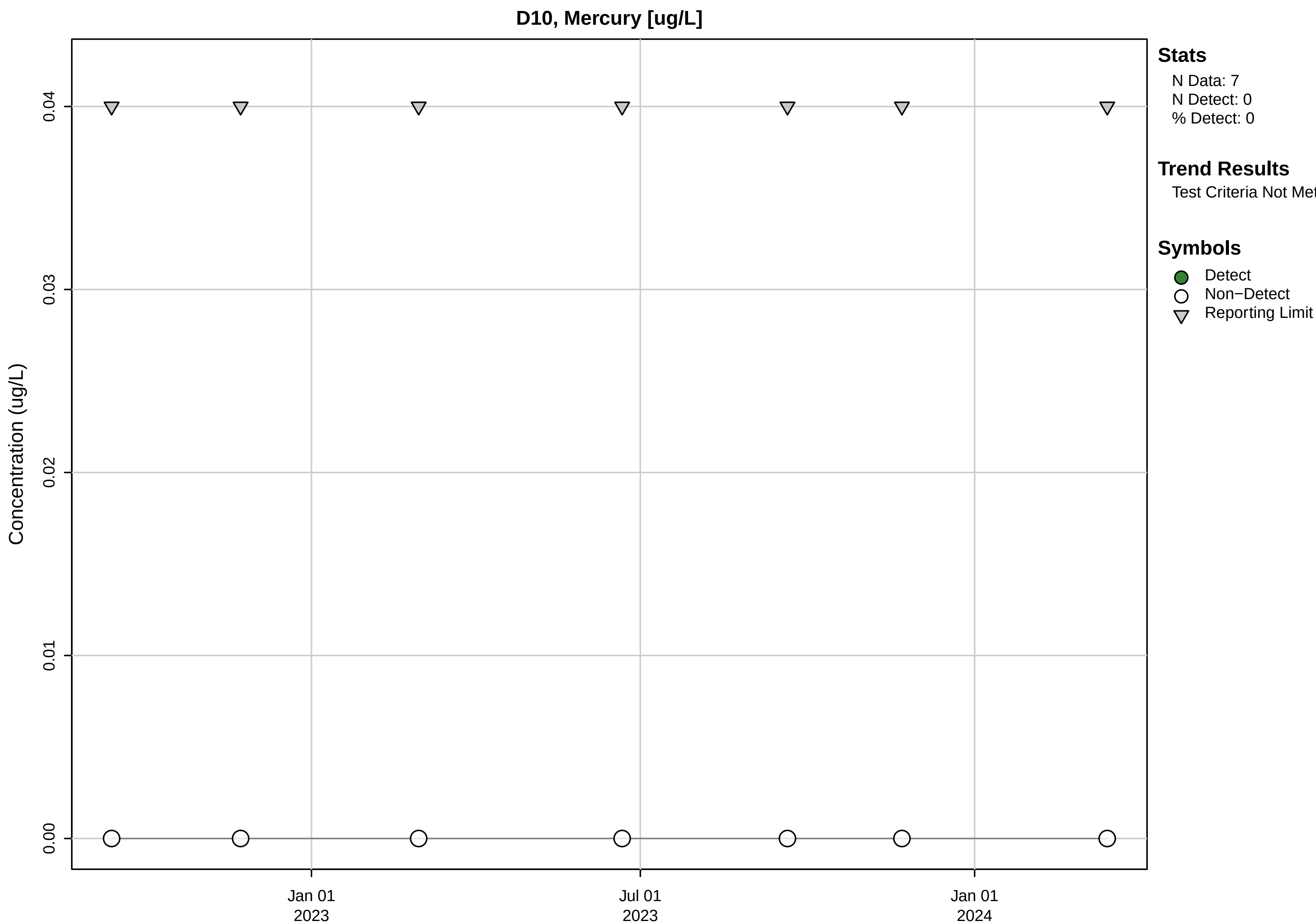
D10, Iron [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

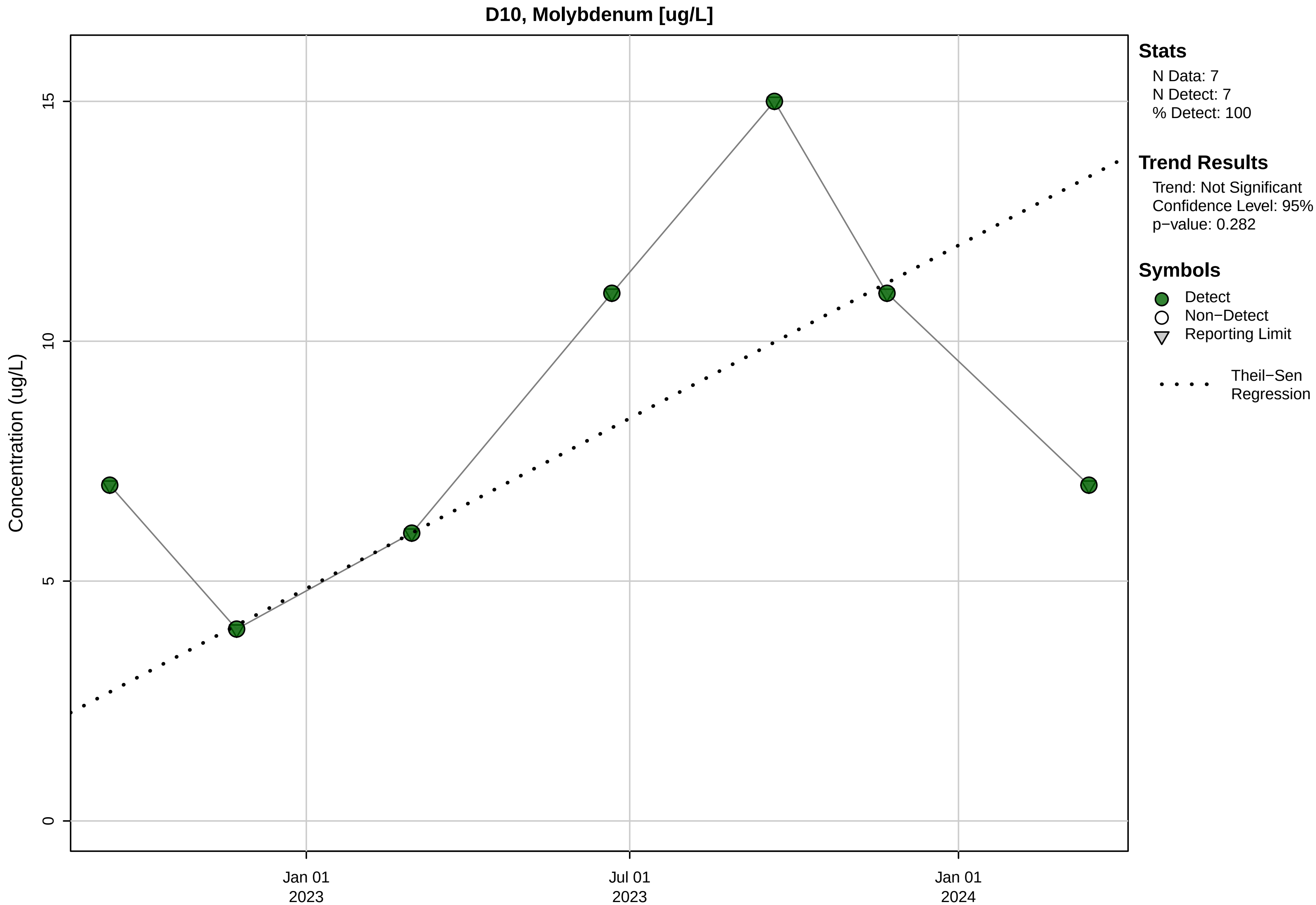


D10, Lead [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
12
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 6
% Detect: 86
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.129
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

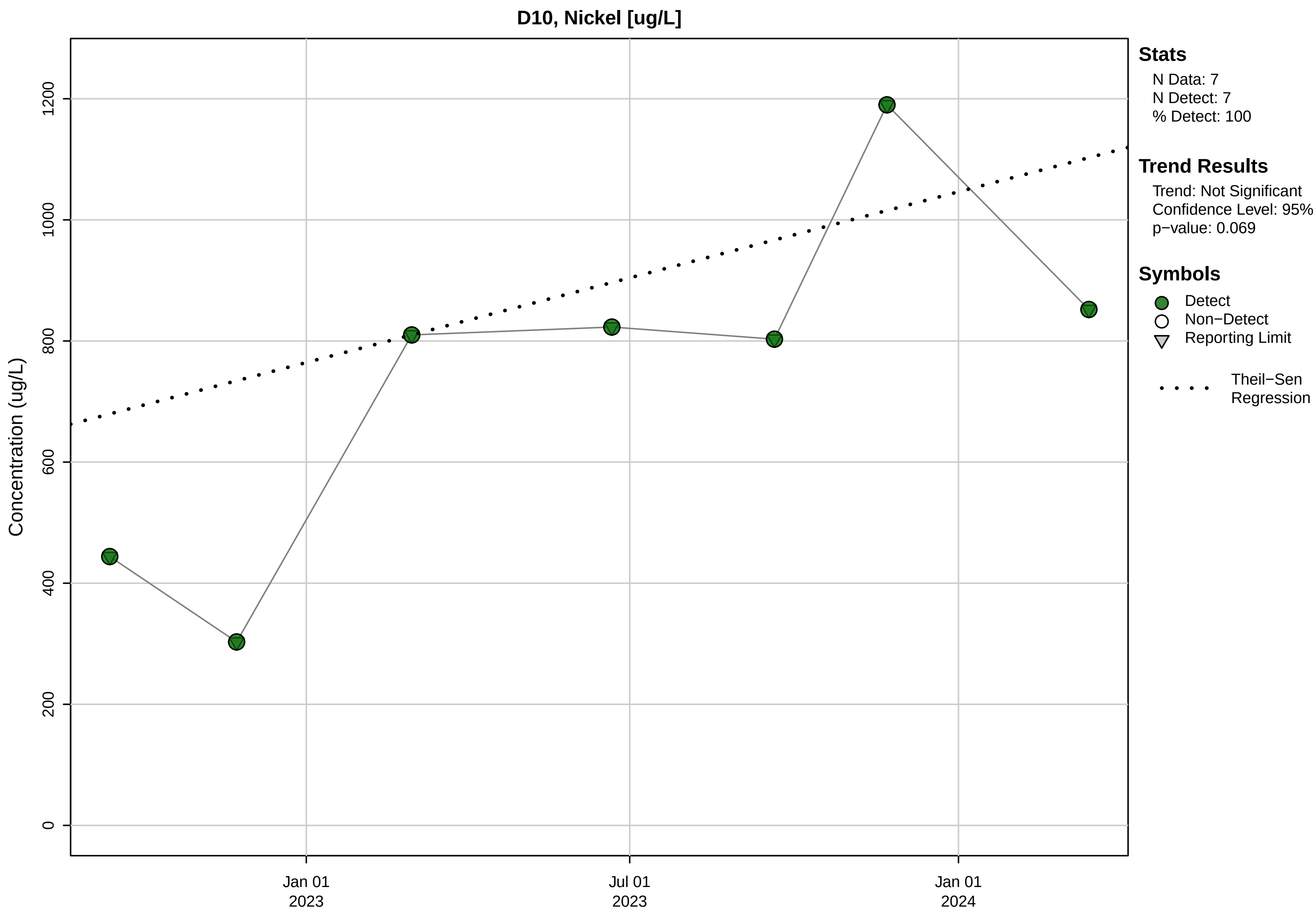


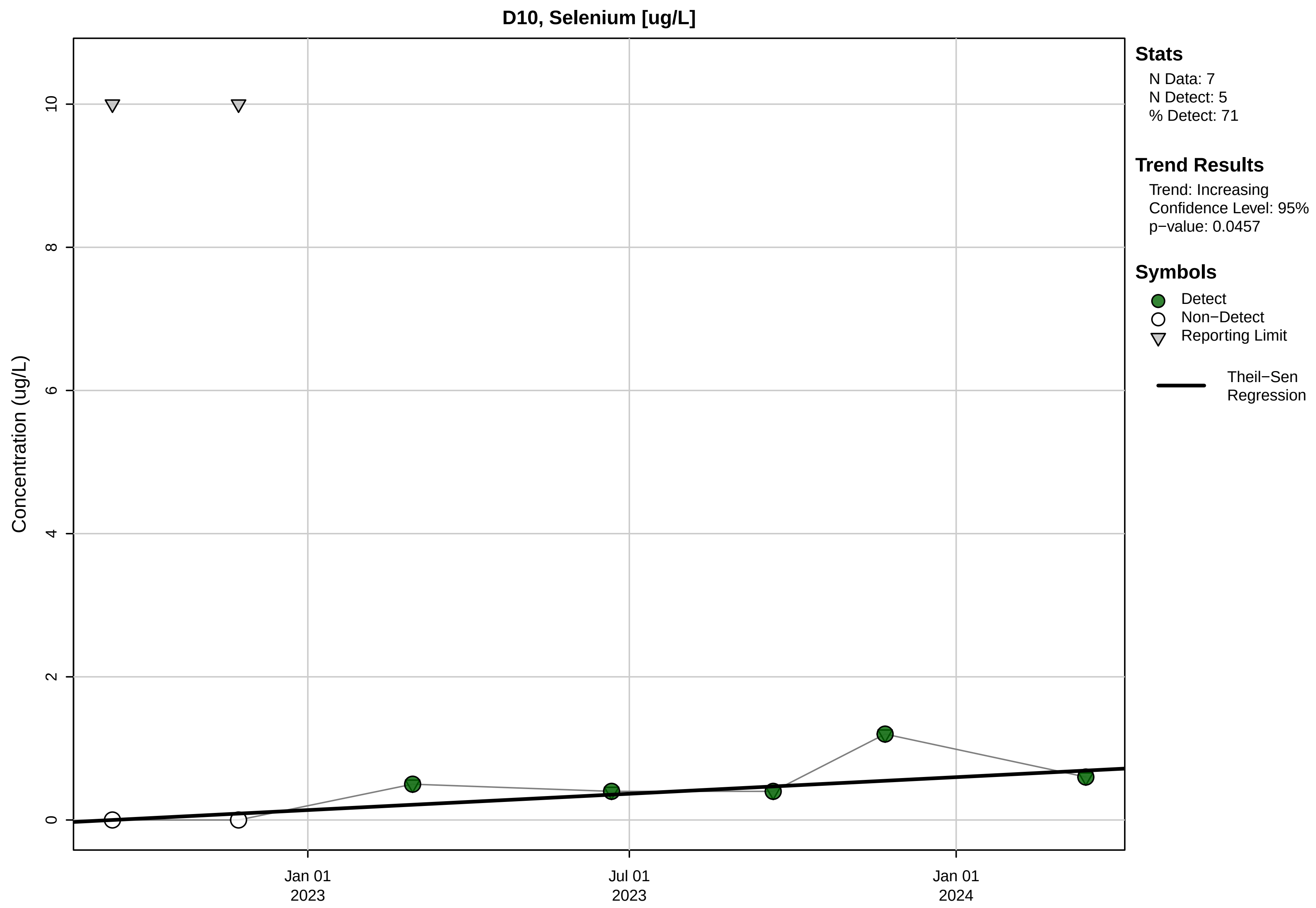
D10, Manganese [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.381
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression


D10, Mercury [ug/L]
Concentration (ug/L)
0.04
0.03
0.02
0.01
0.00
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

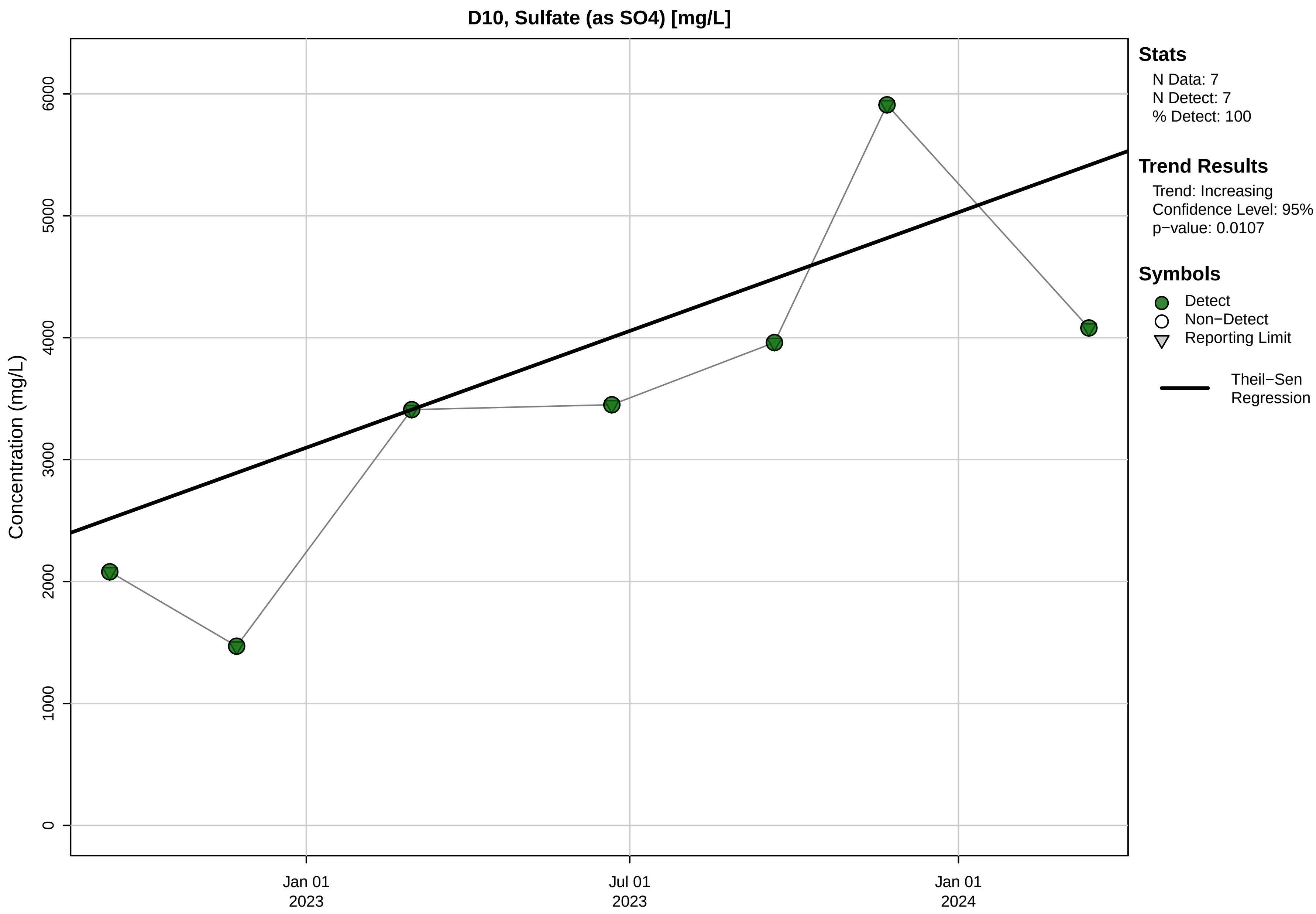


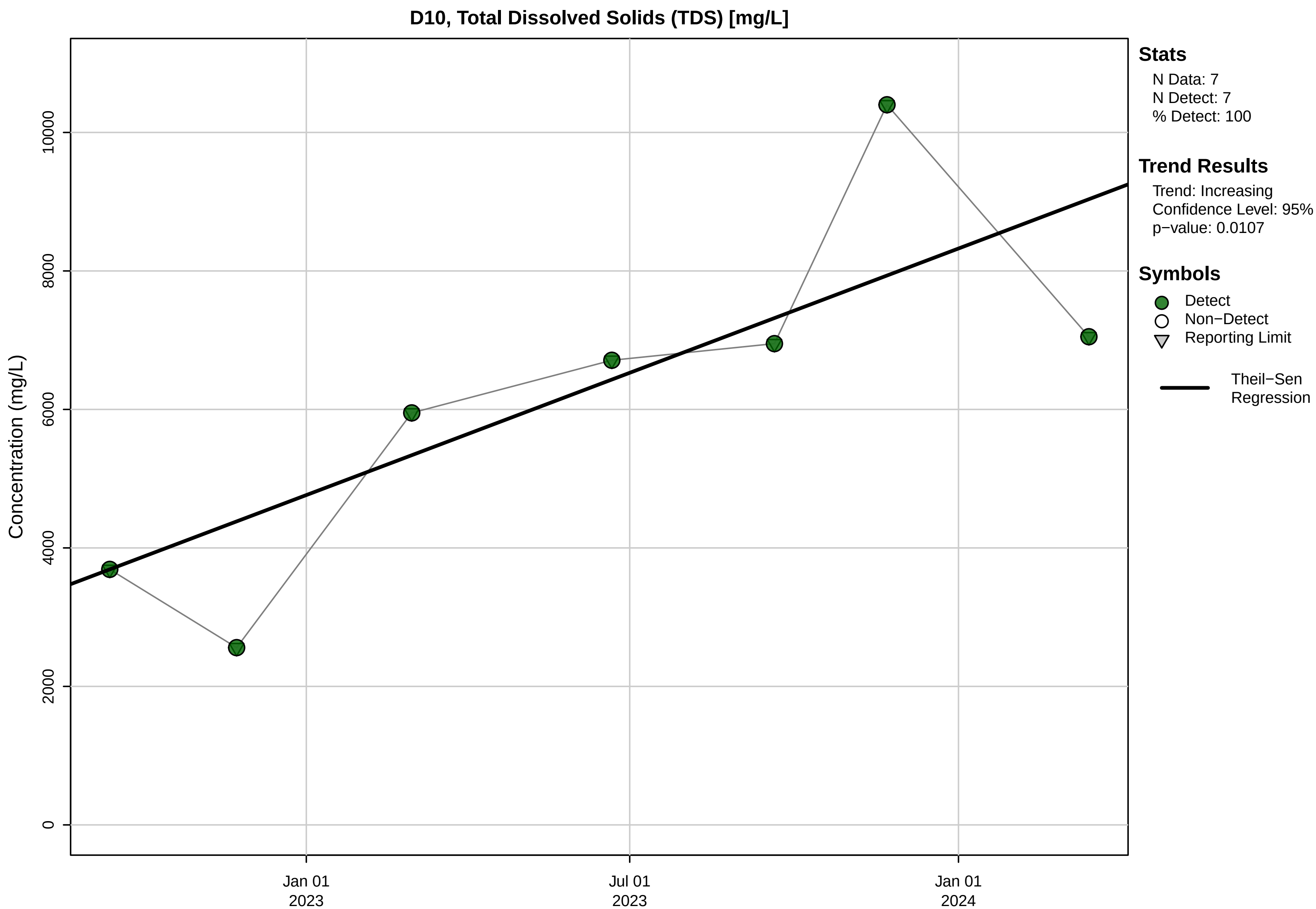
D10, Molybdenum [ug/L]
Concentration (ug/L)
0
5
10
15
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.282
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression


D10, Nickel [ug/L]
Concentration (ug/L)
0
200
400
600
800
1000
1200
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.069
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

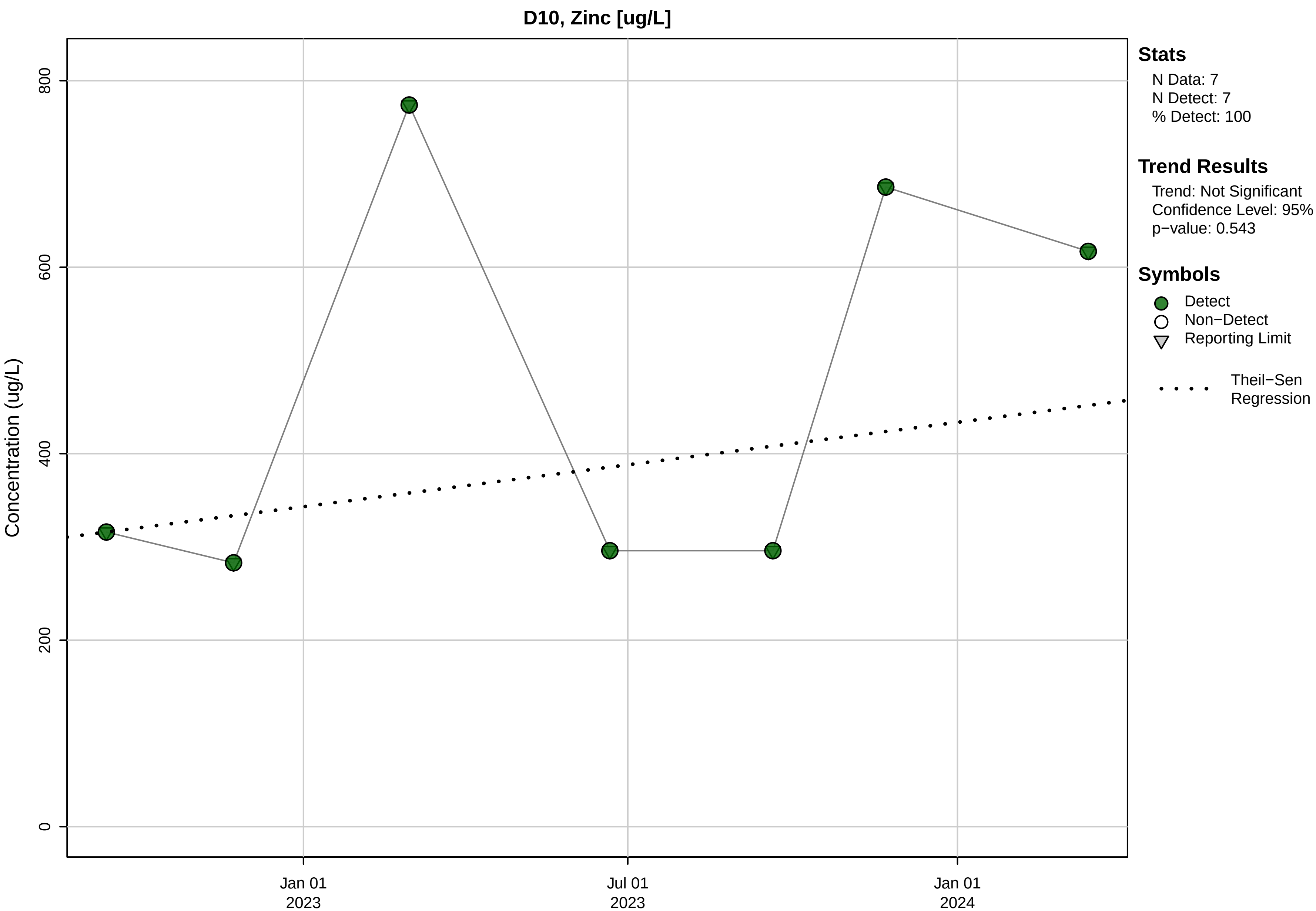


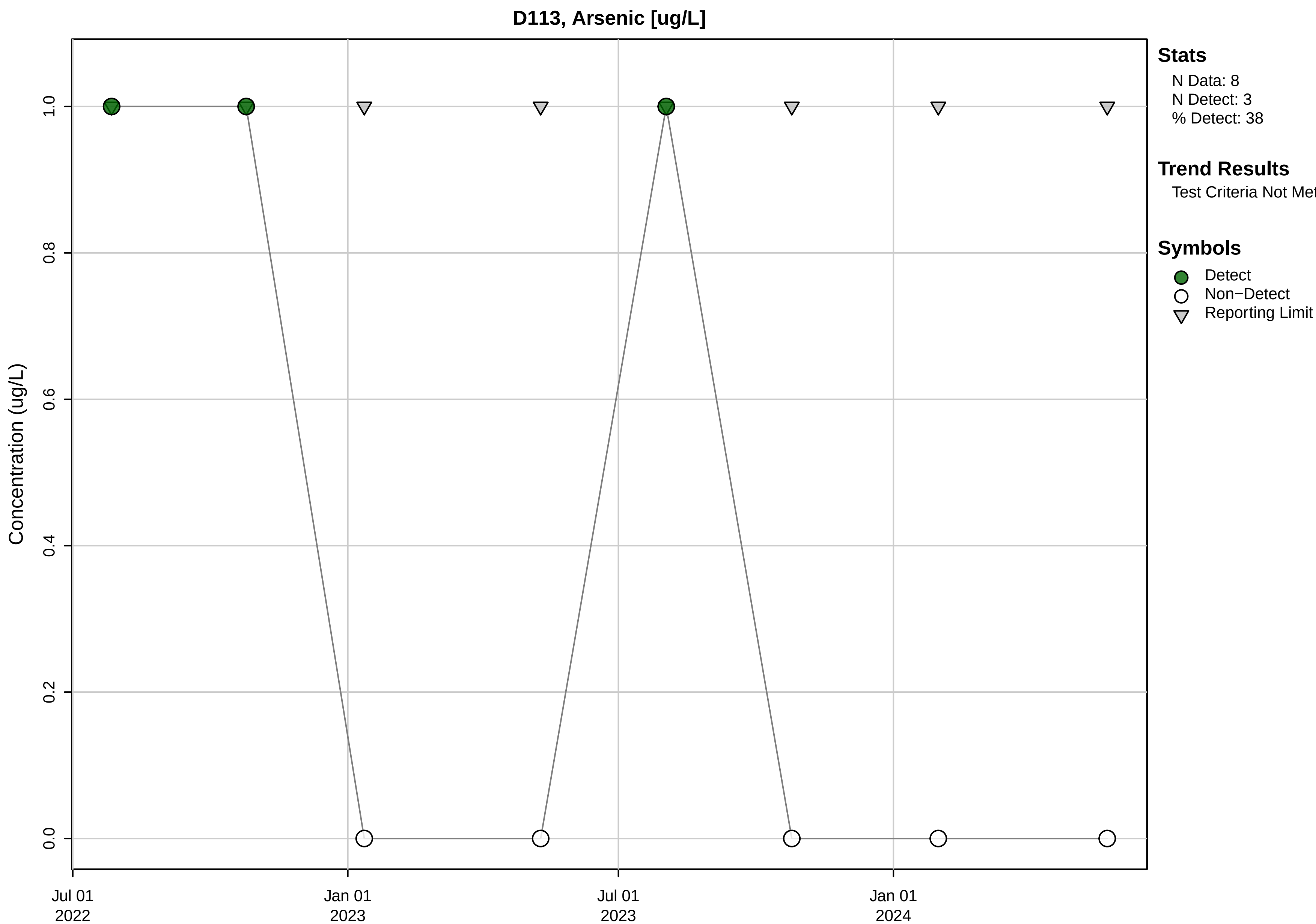
D10, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 5
% Detect: 71
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0457
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

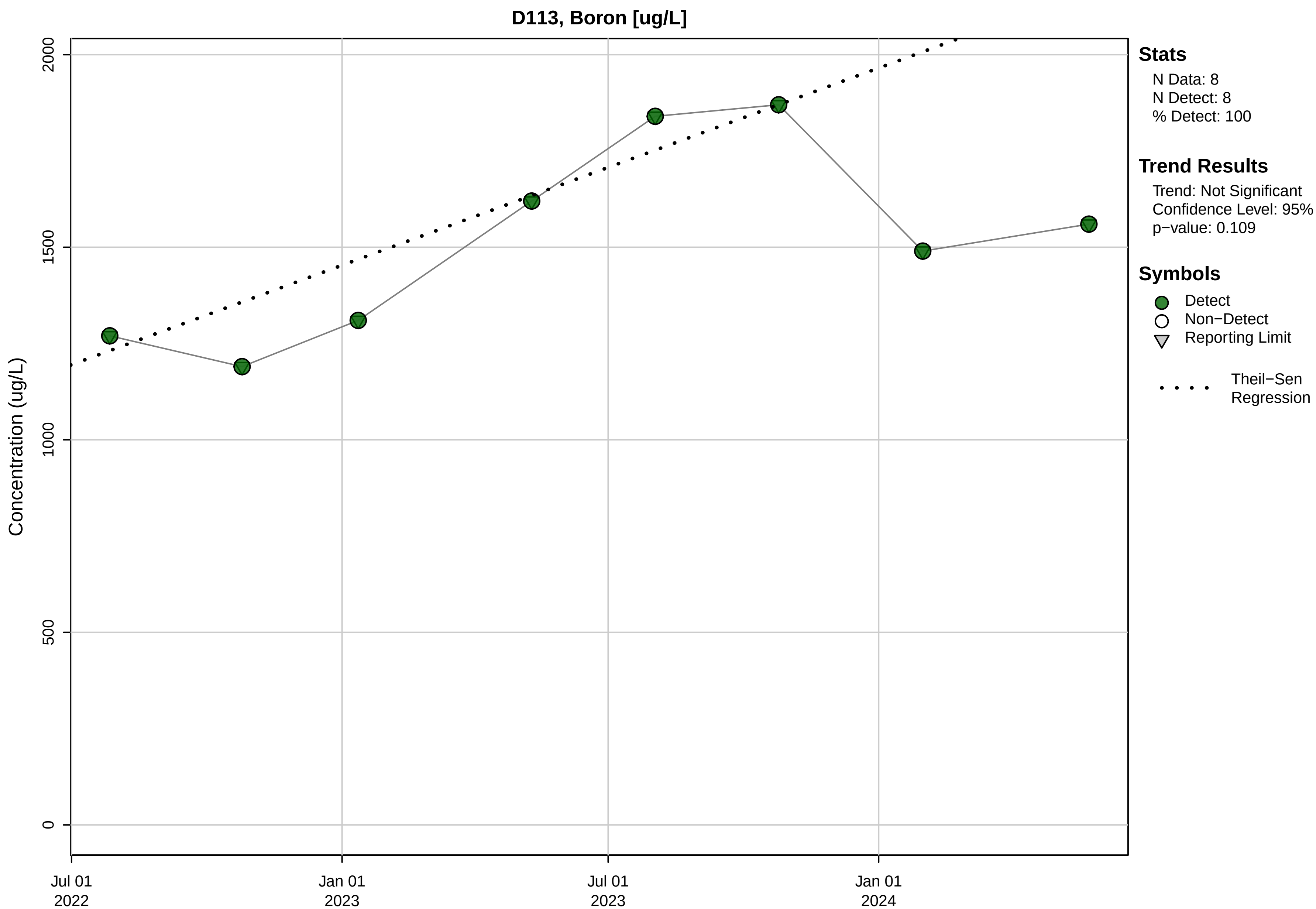

D10, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
1000
2000
3000
4000
5000
6000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0107
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



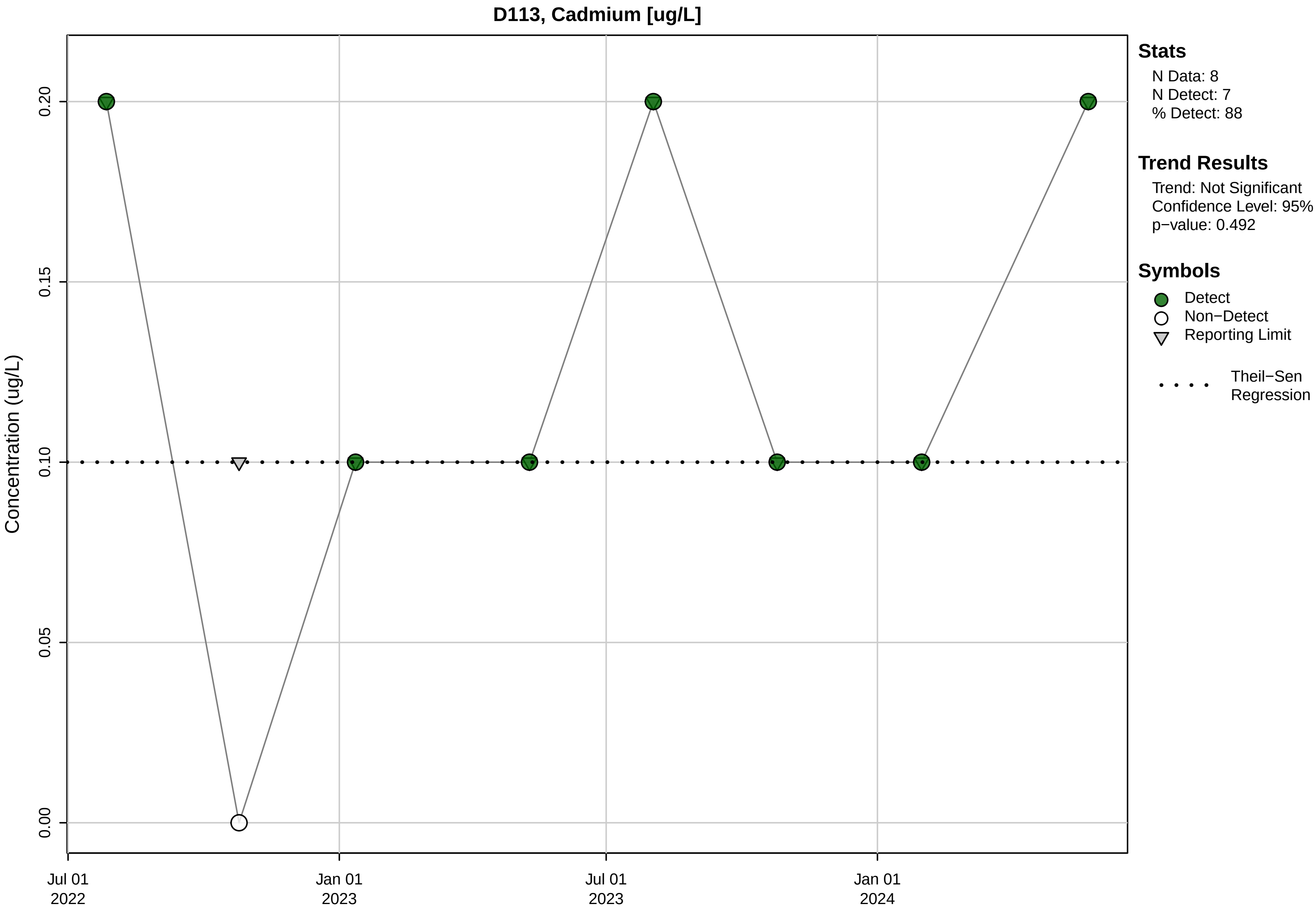
D10, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
10000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0107
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

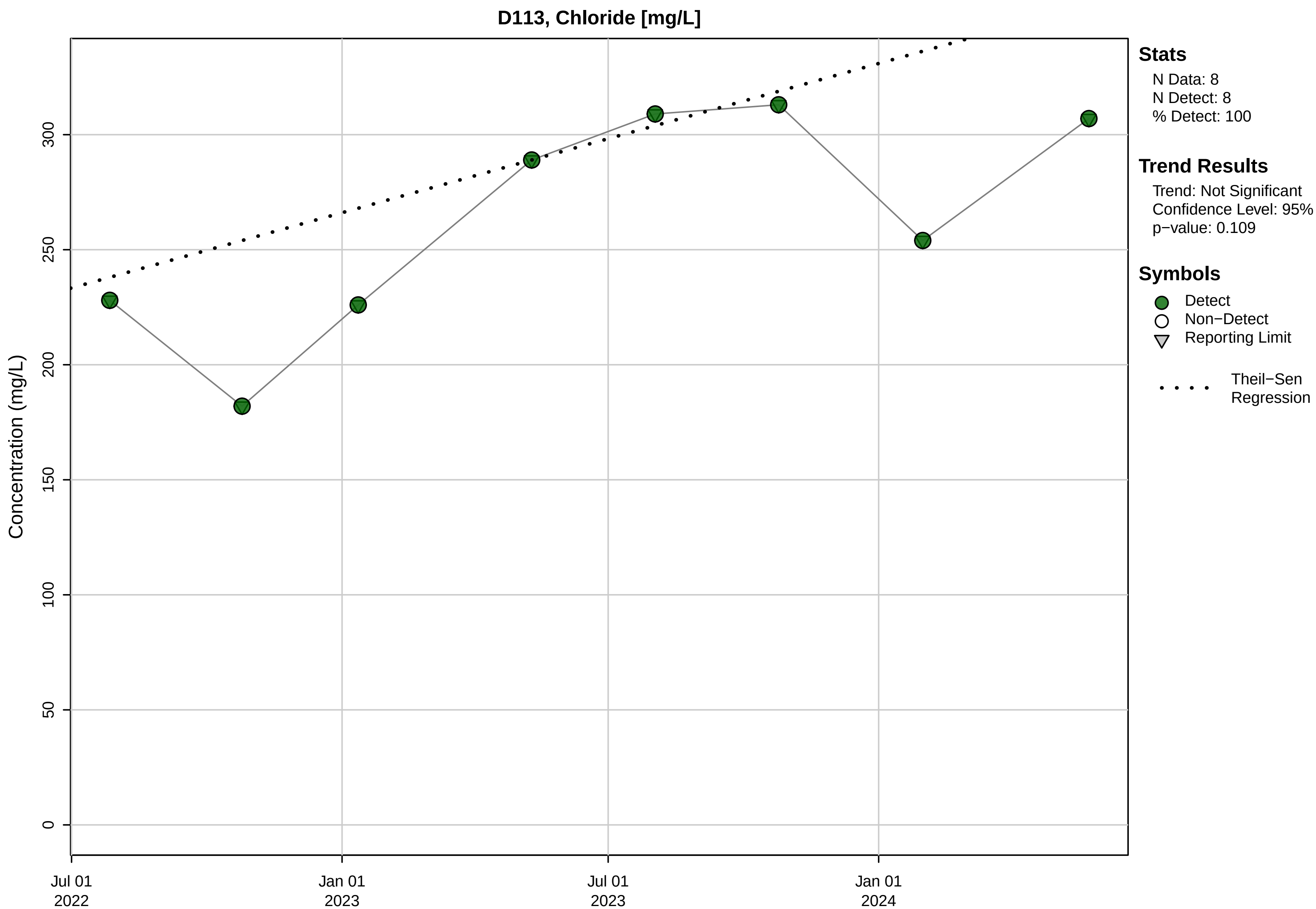

D10, Zinc [ug/L]
Concentration (ug/L)
0
200
400
600
800
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.543
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

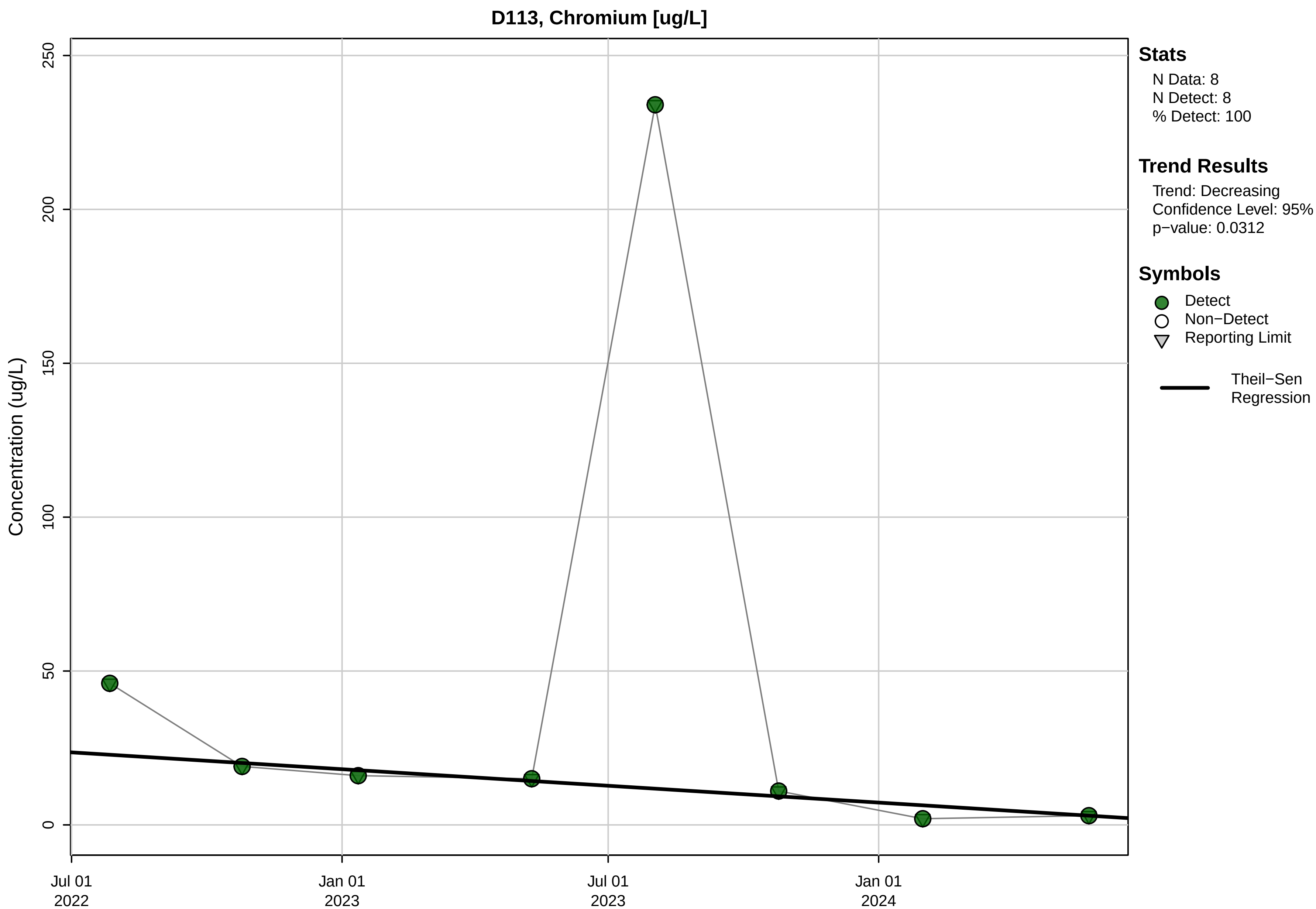

D113, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

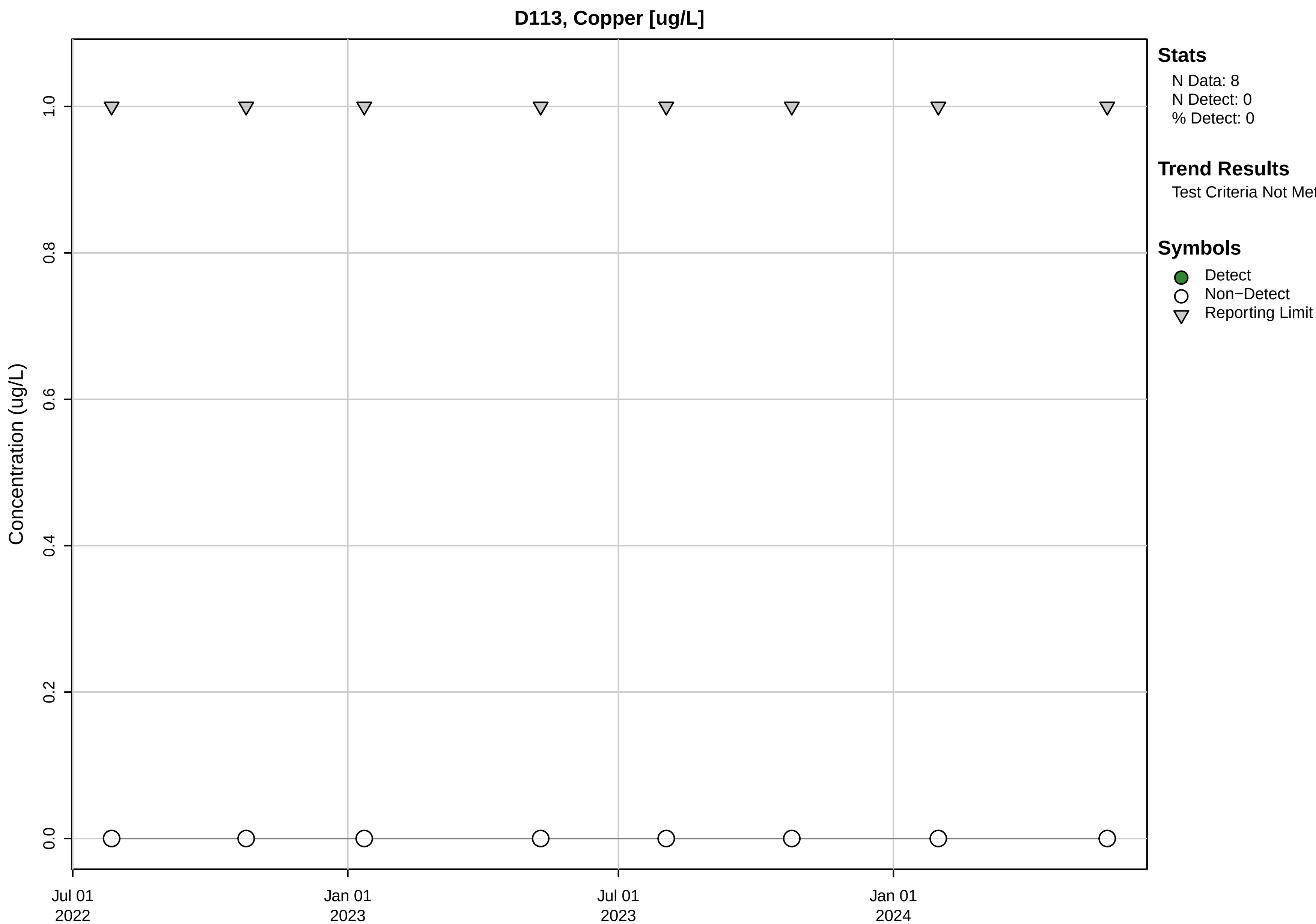


D113, Boron [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

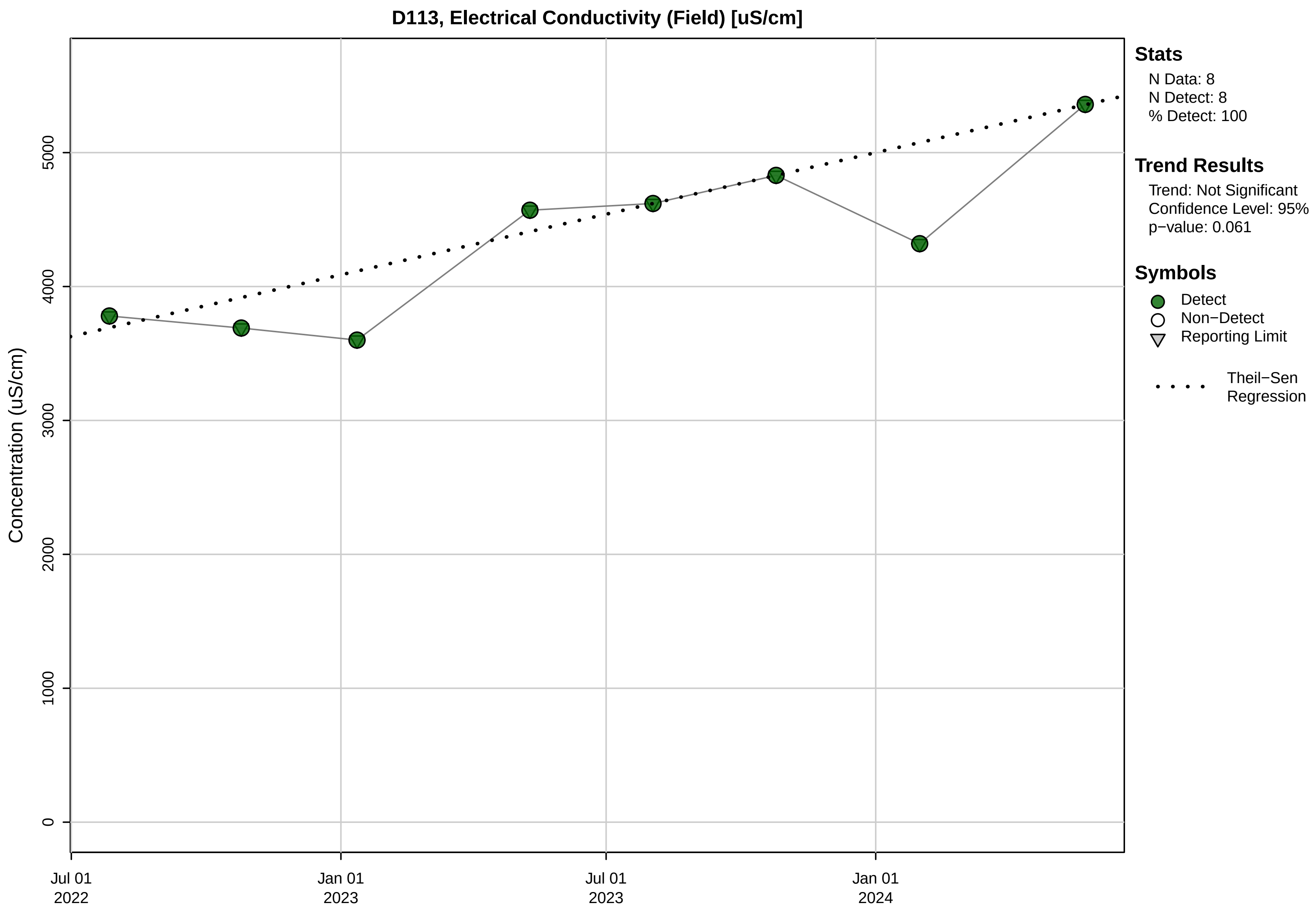

D113, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.492
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

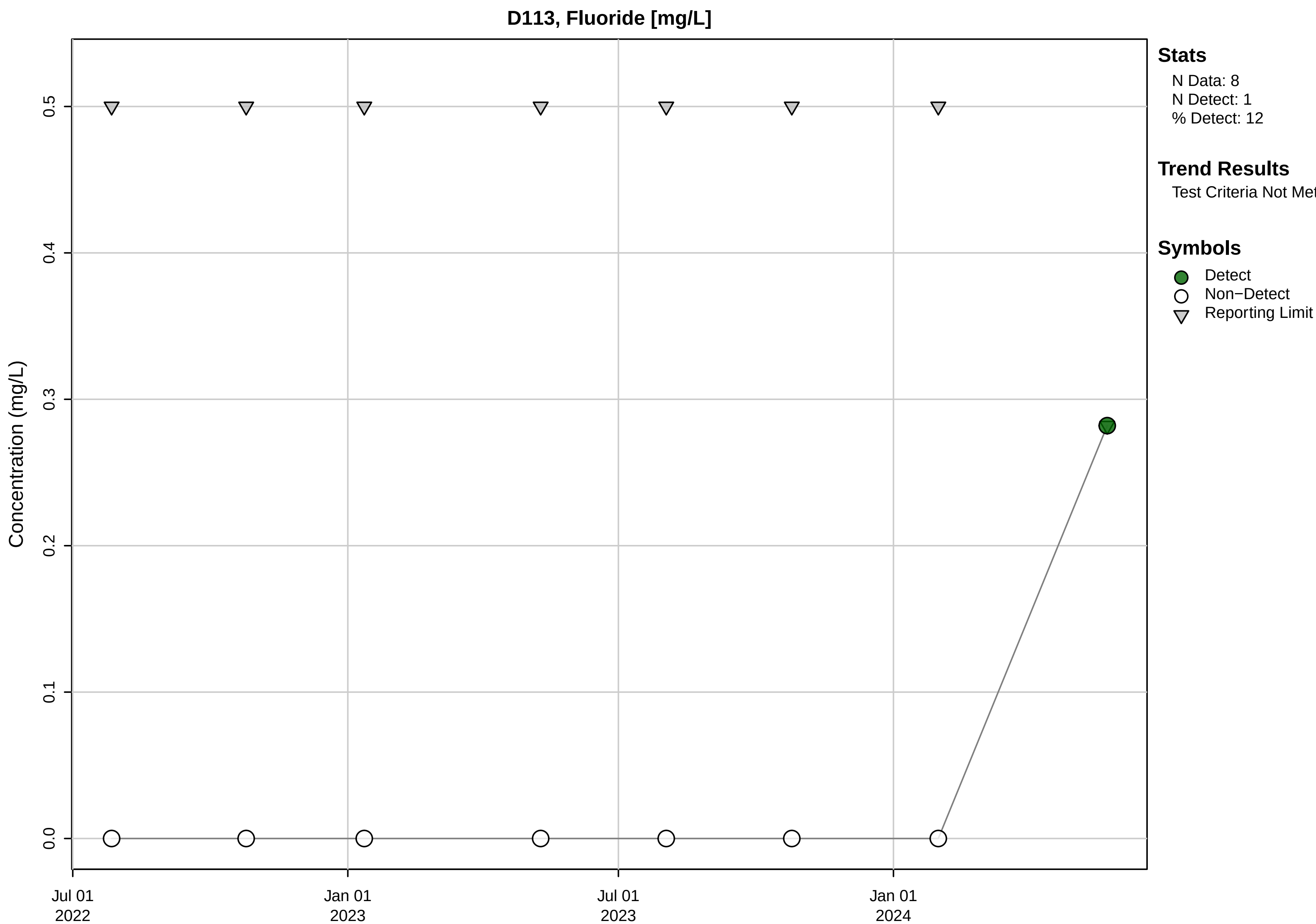

D113, Chloride [mg/L]
Concentration (mg/L)
0
50
100
150
200
250
300
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D113, Chromium [ug/L]
Concentration (ug/L)
0
50
100
150
200
250
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

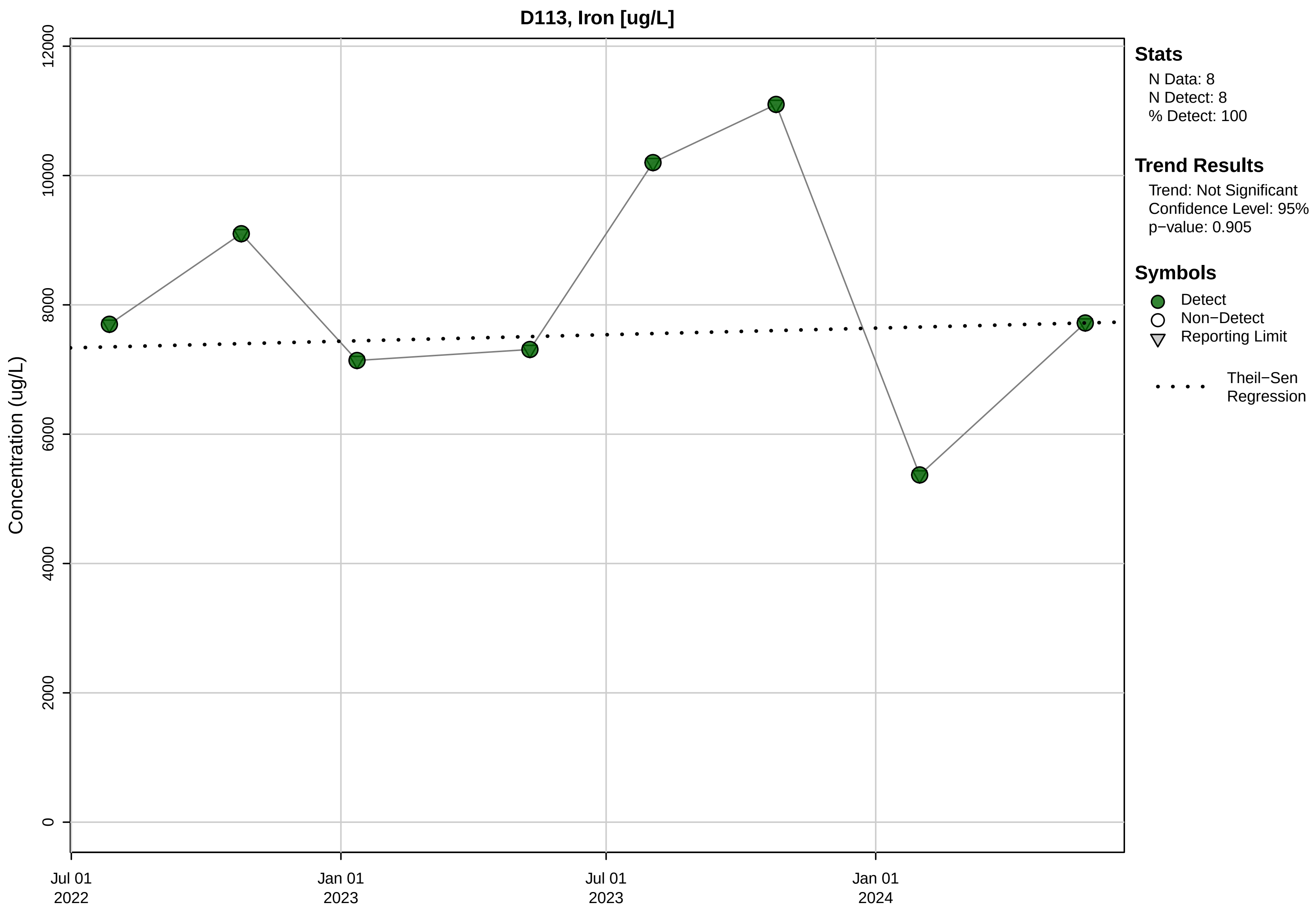


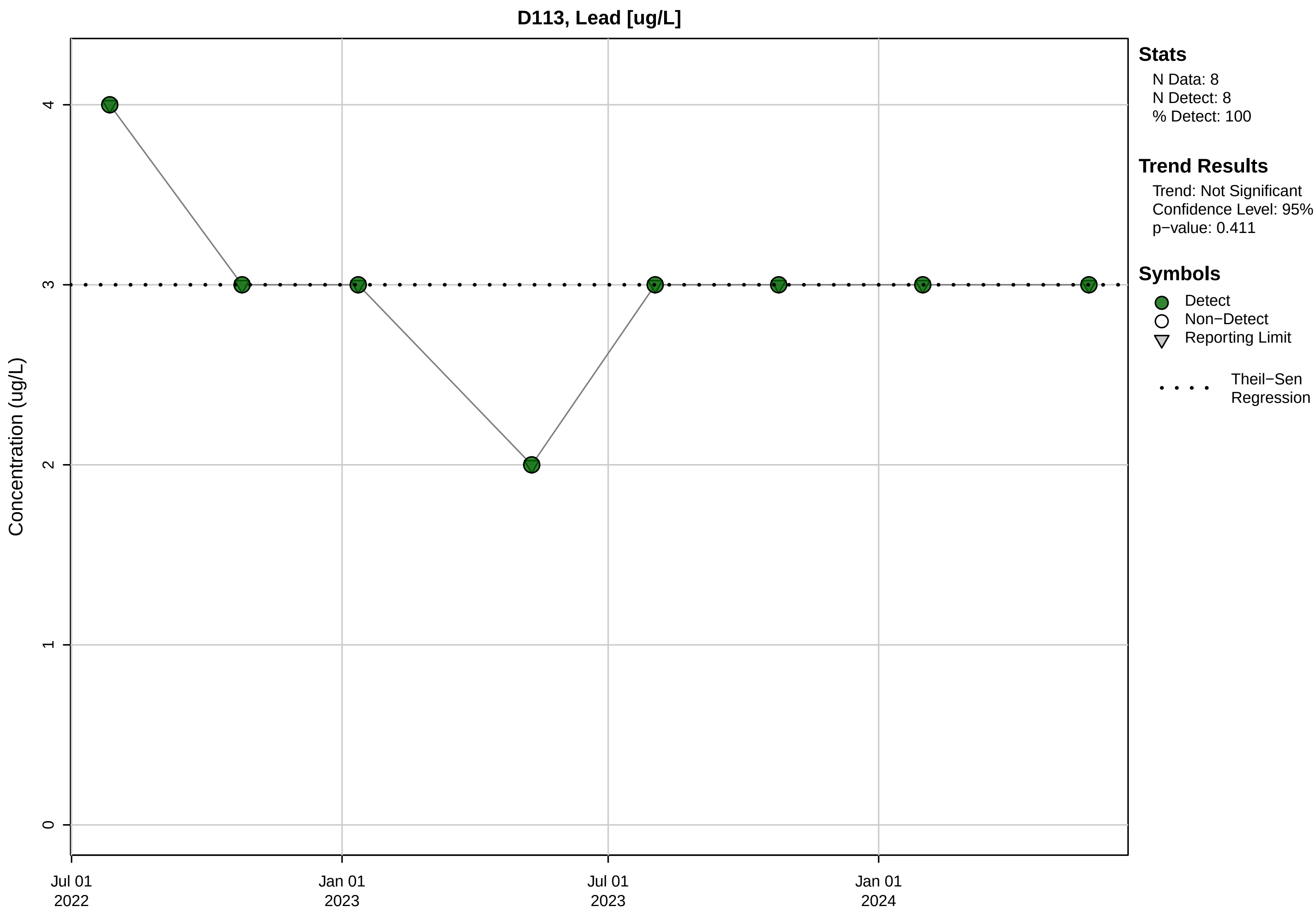
D113, Copper [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

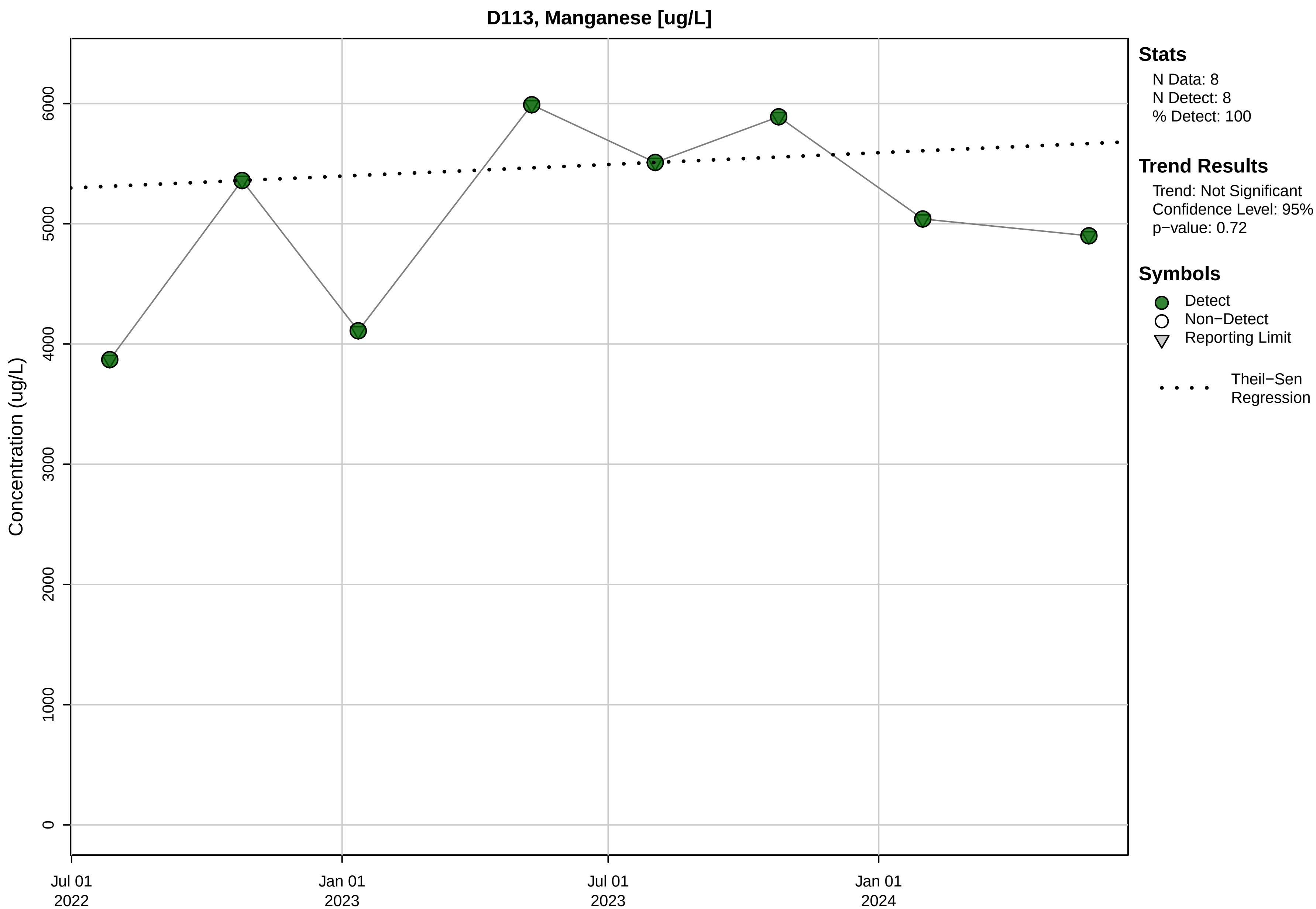

D113, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
1000
2000
3000
4000
5000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.061
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



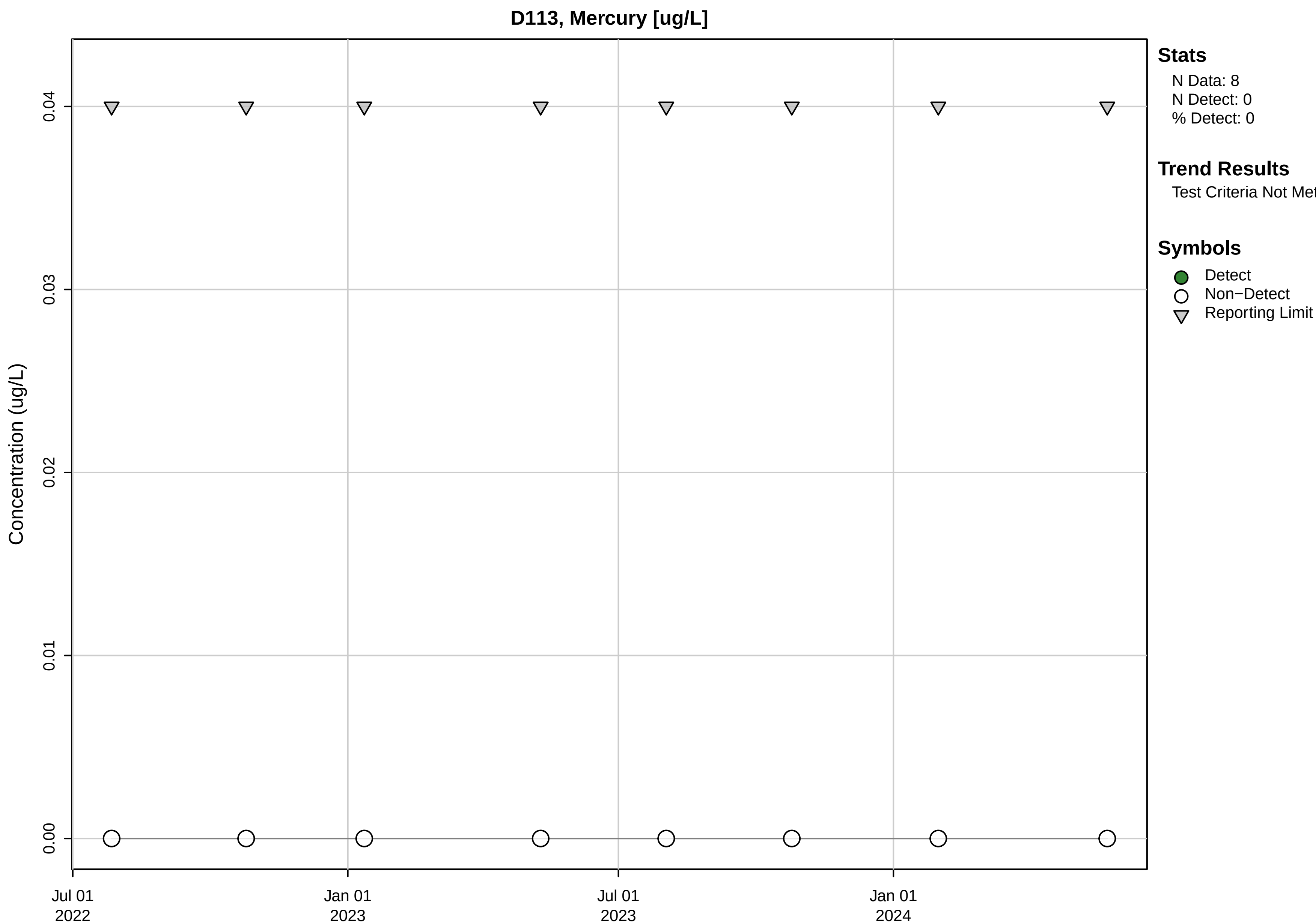
D113, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

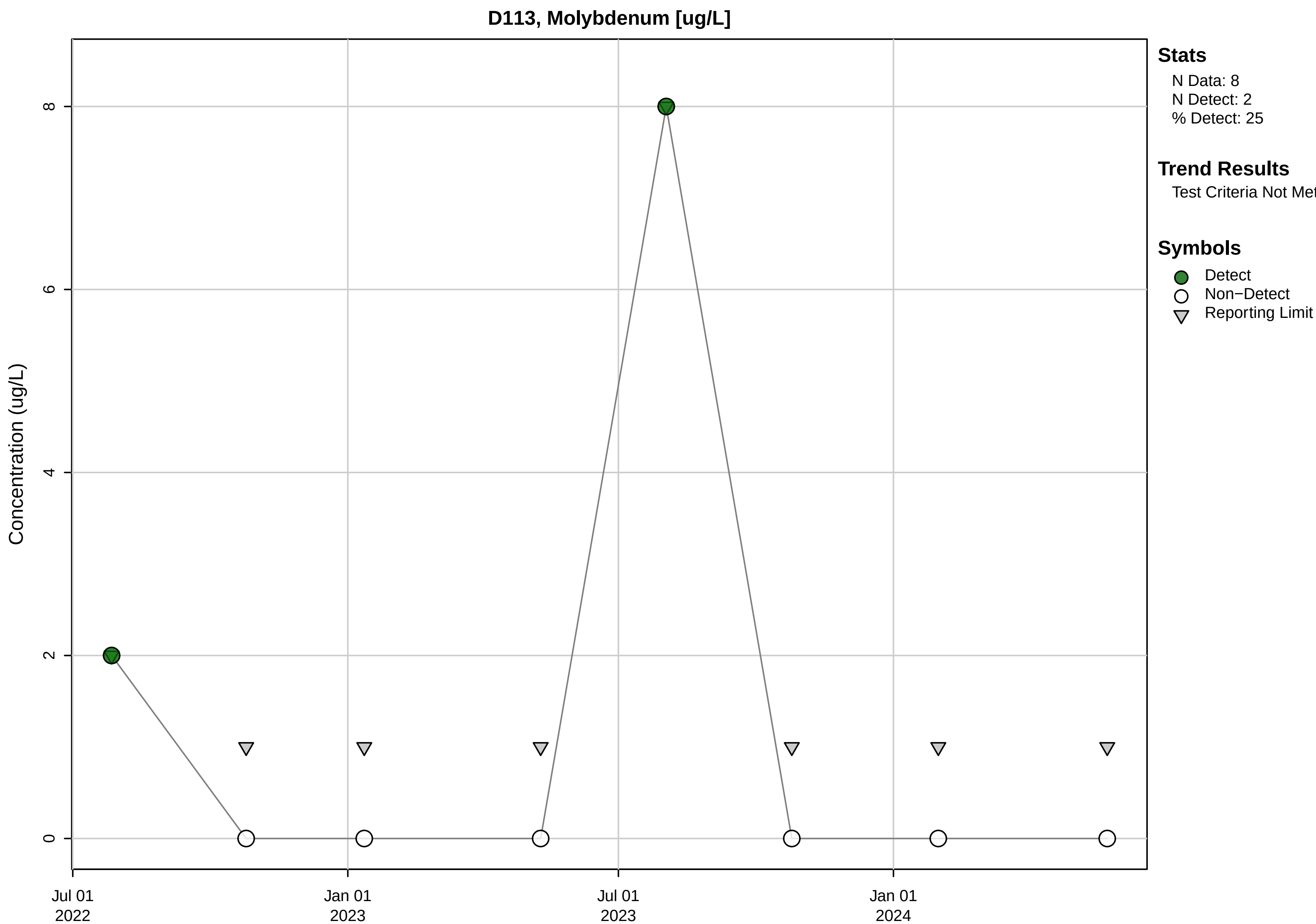

D113, Iron [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
10000
12000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D113, Lead [ug/L]
Concentration (ug/L)
0
1
2
3
4
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.411
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



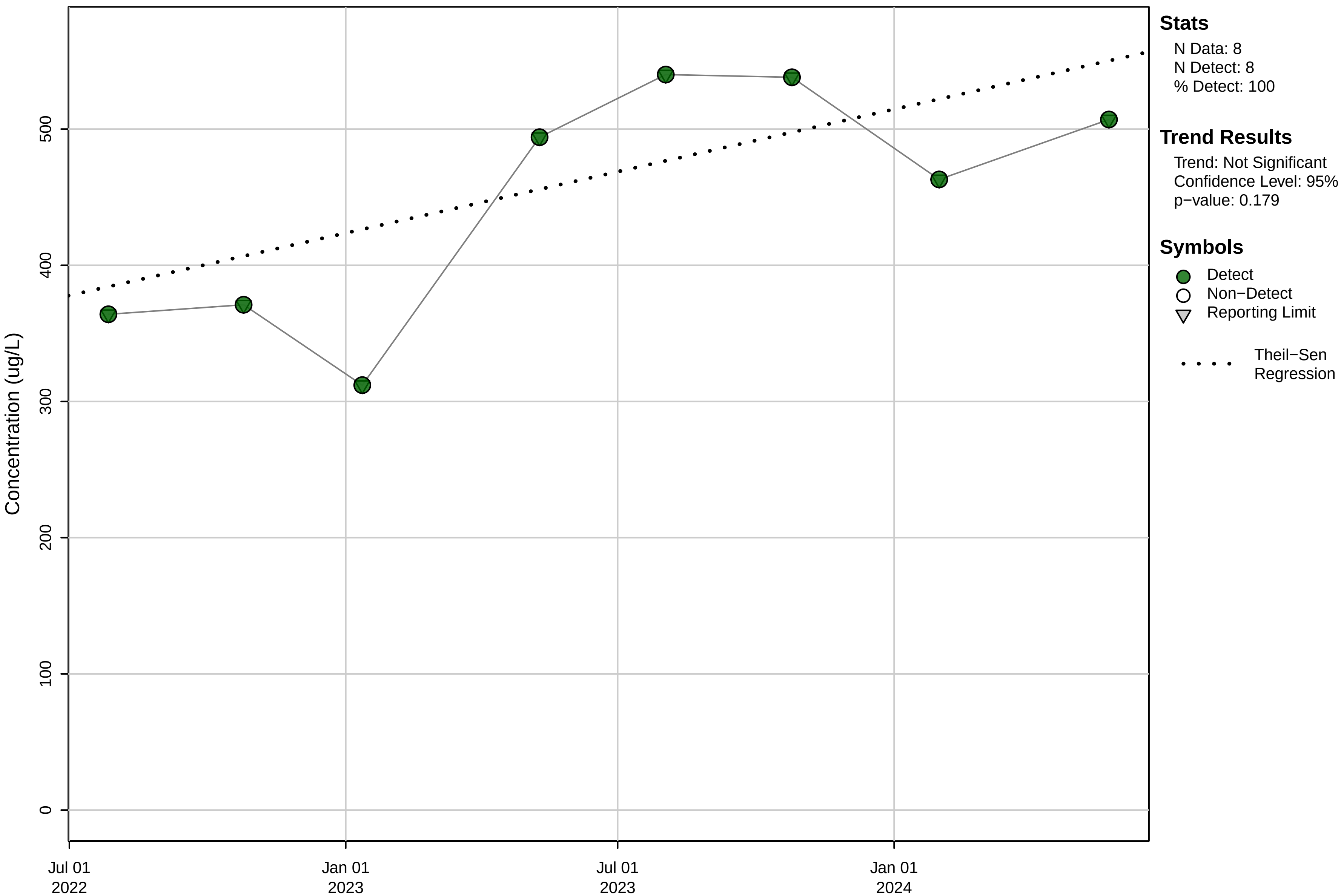
D113, Manganese [ug/L]
Concentration (ug/L)
0
1000
2000
3000
4000
5000
6000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

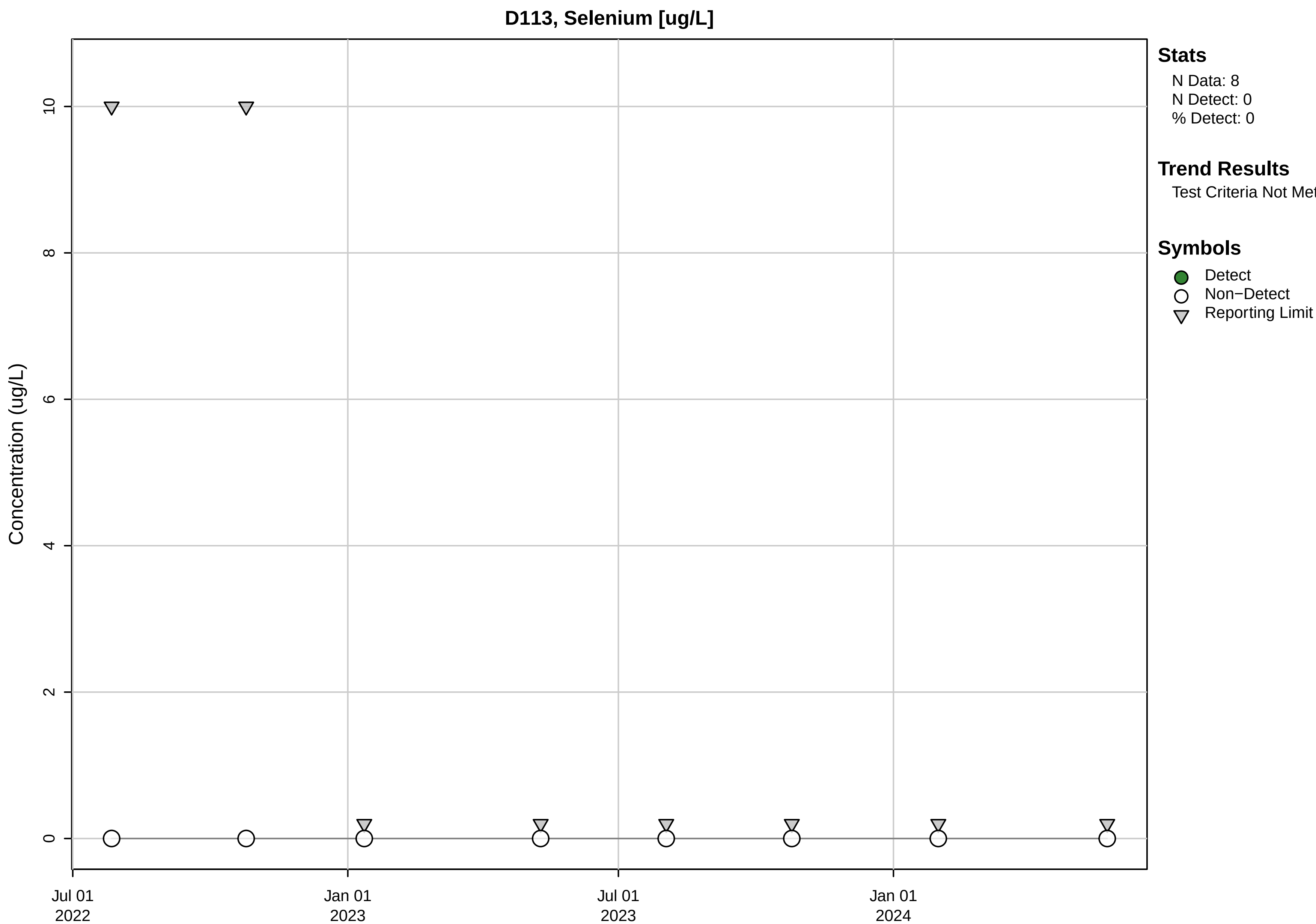

D113, Mercury [ug/L]
Concentration (ug/L)
0.04
0.03
0.02
0.01
0.00
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

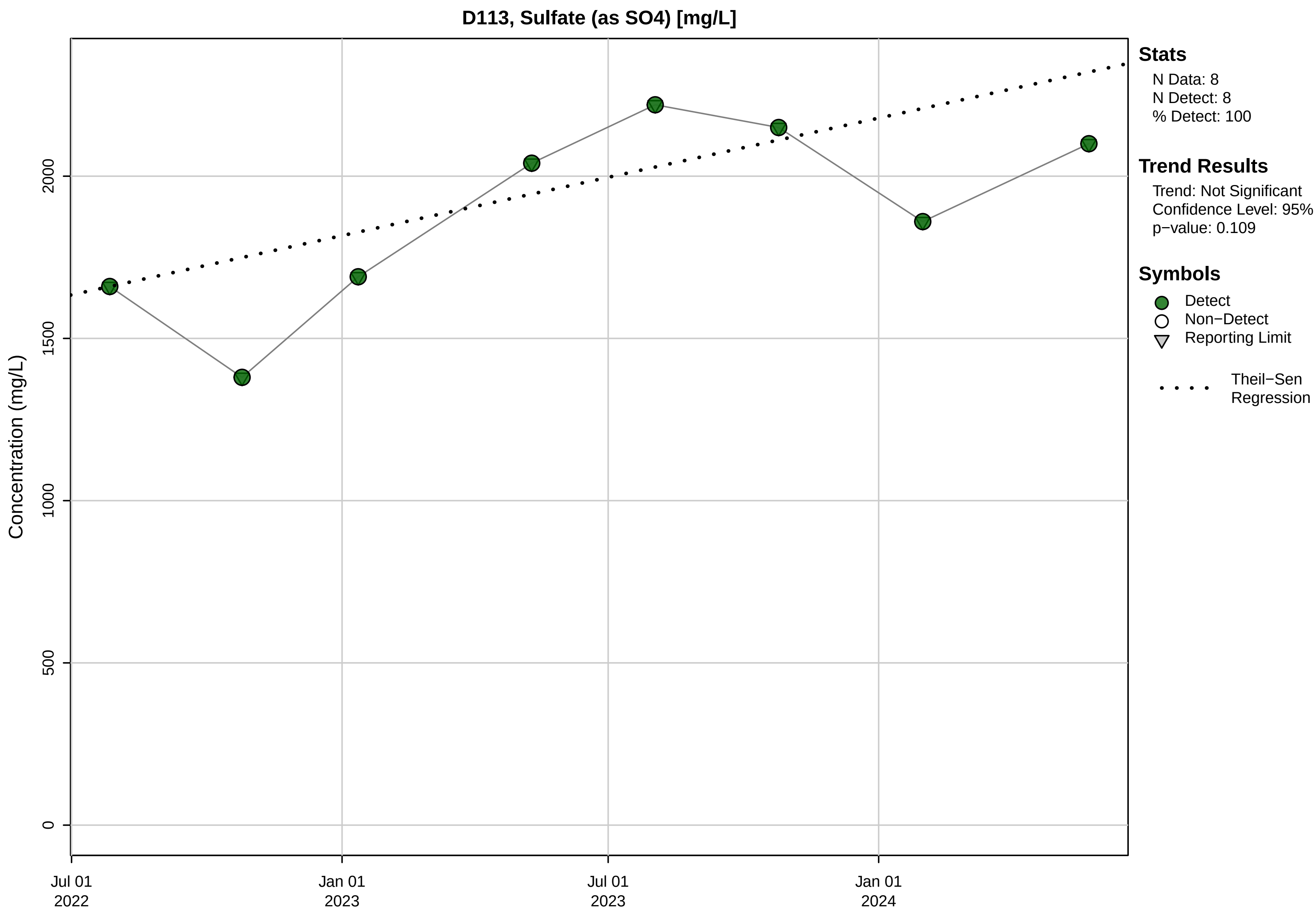


D113, Molybdenum [ug/L]
Concentration (ug/L)
0
2
4
6
8
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

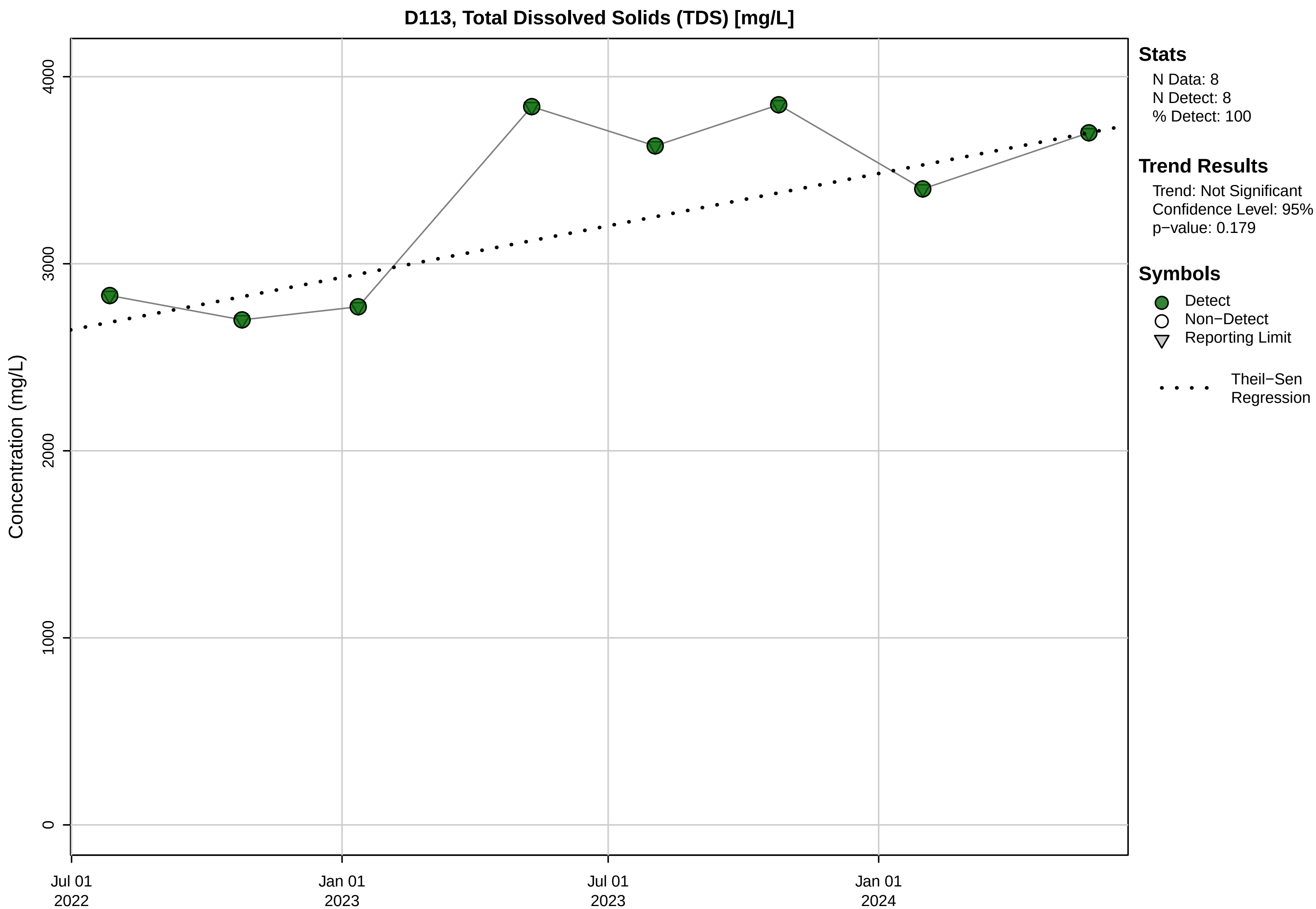
D113, Nickel [ug/L]



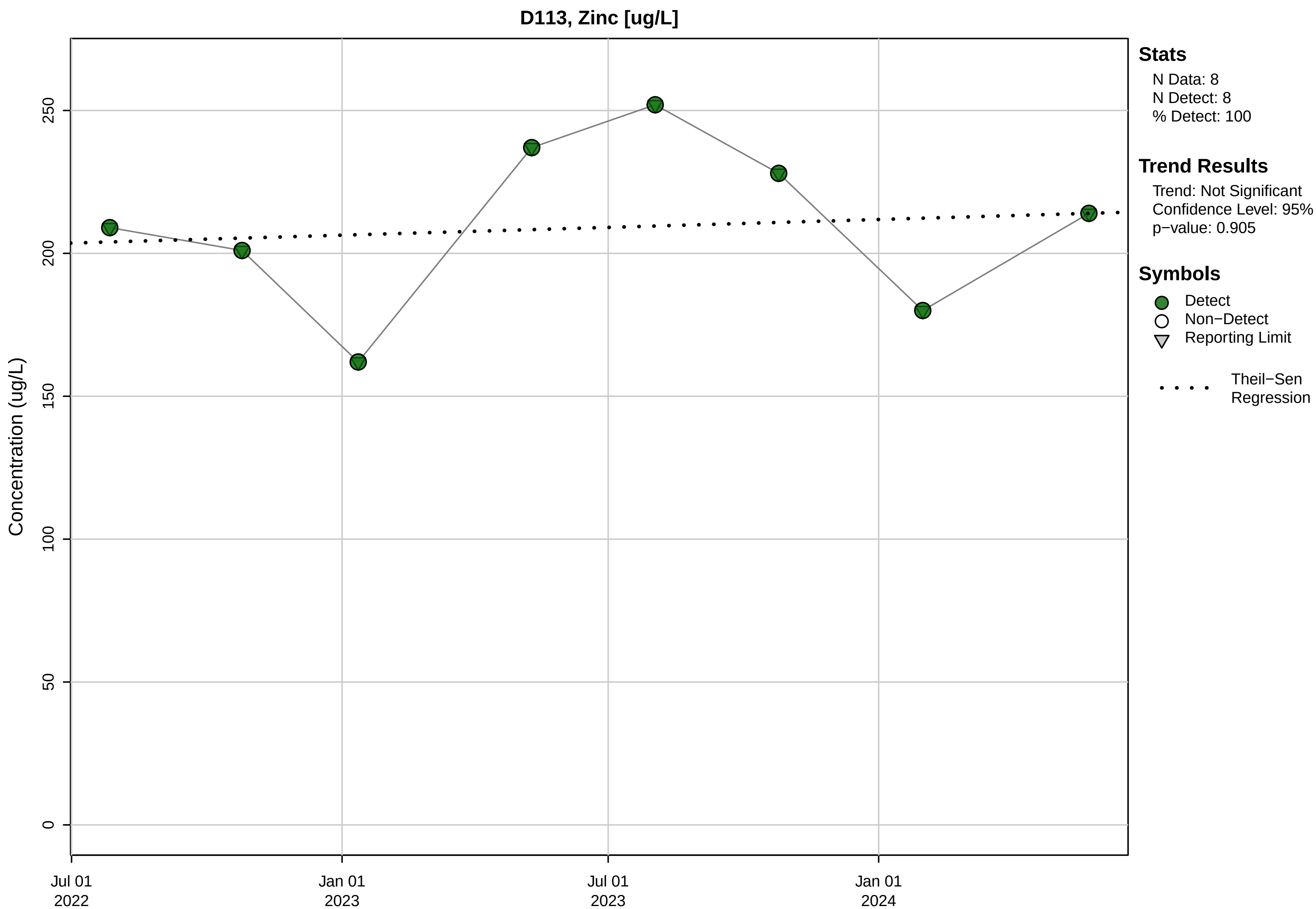

D113, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



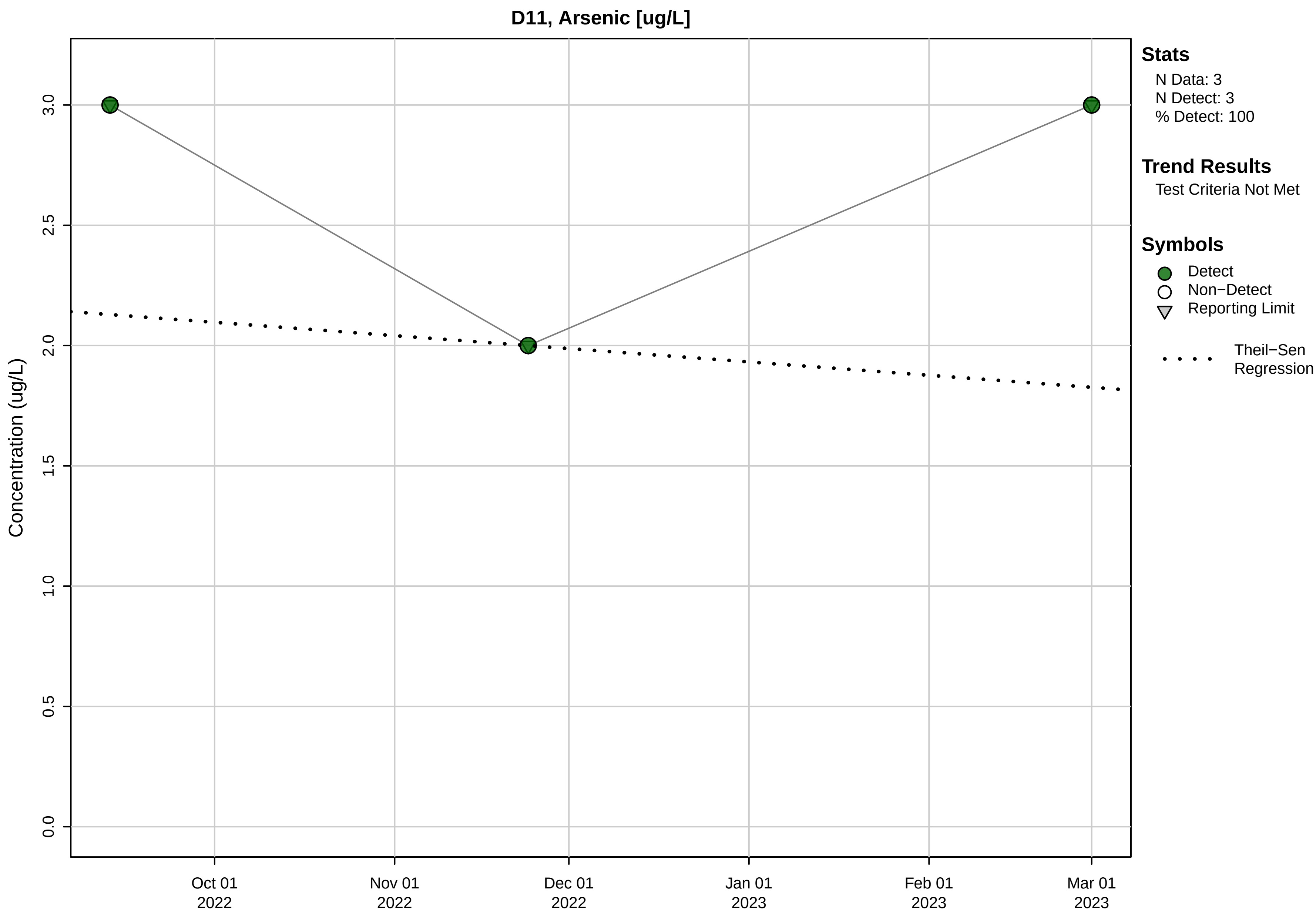
D113, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
500
1000
1500
2000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



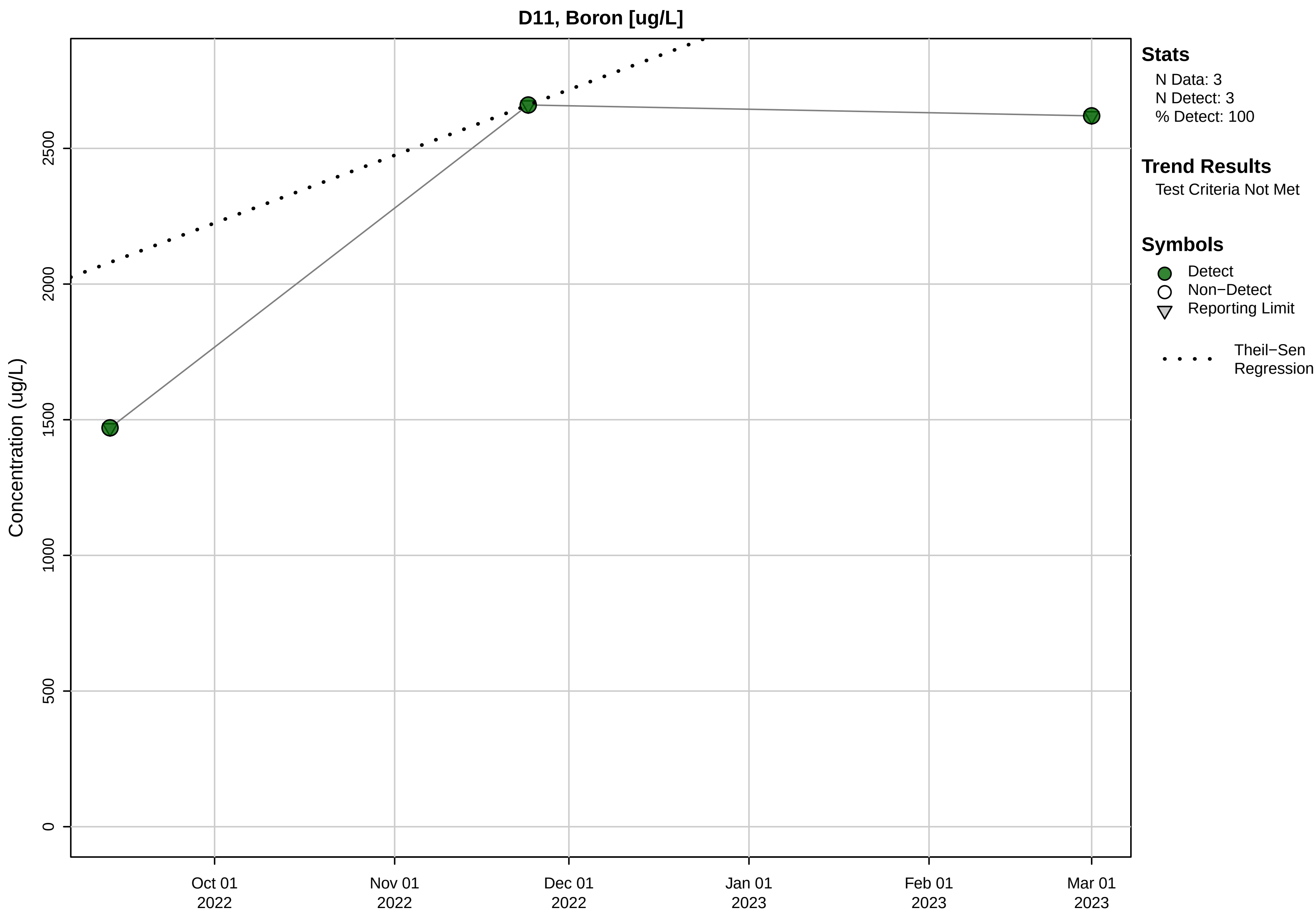
D113, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
1000
2000
3000
4000
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

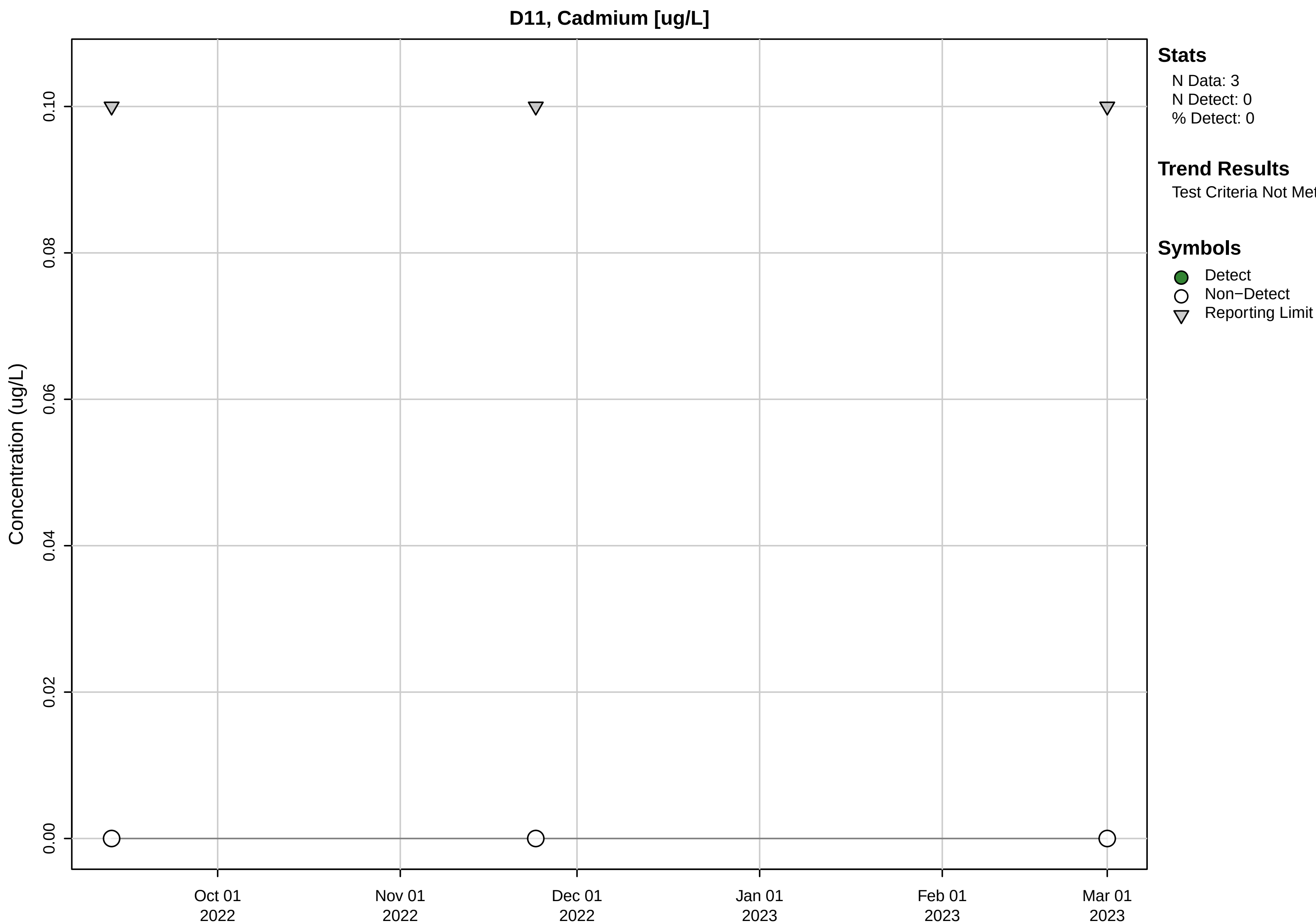


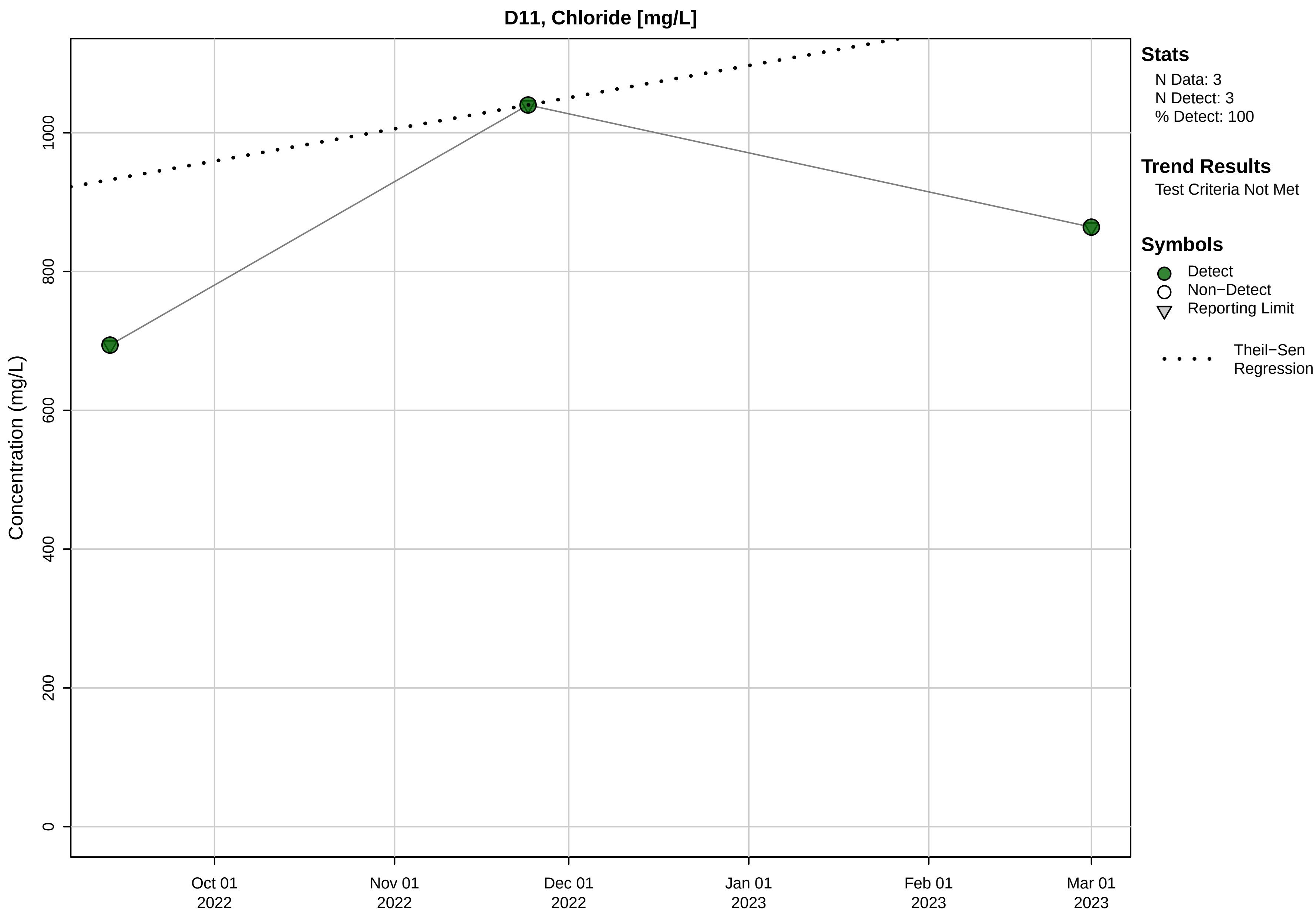
D113, Zinc [ug/L]
Concentration (ug/L)
0
50
100
150
200
250
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



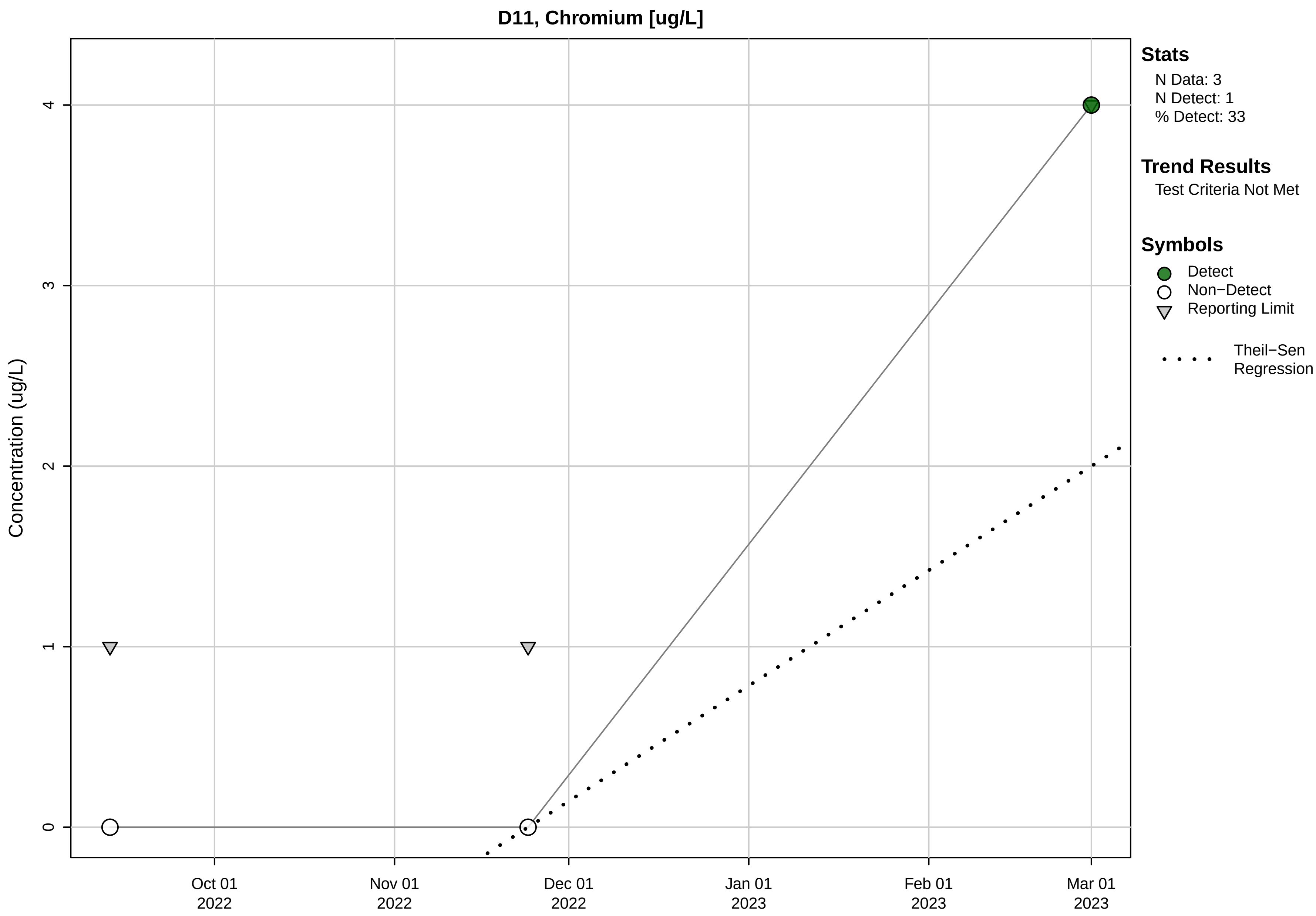
D11, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

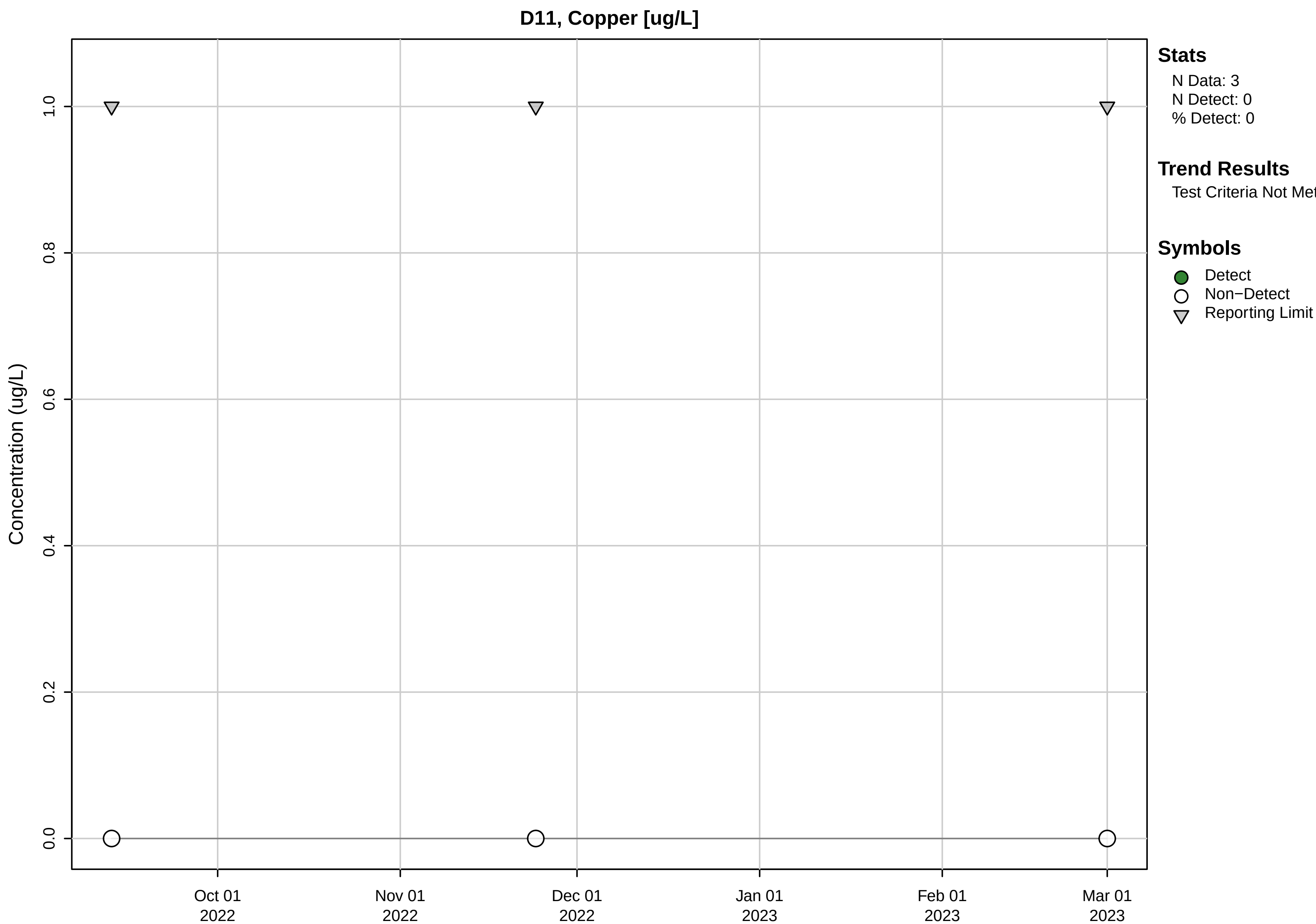

D11, Boron [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
2500
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

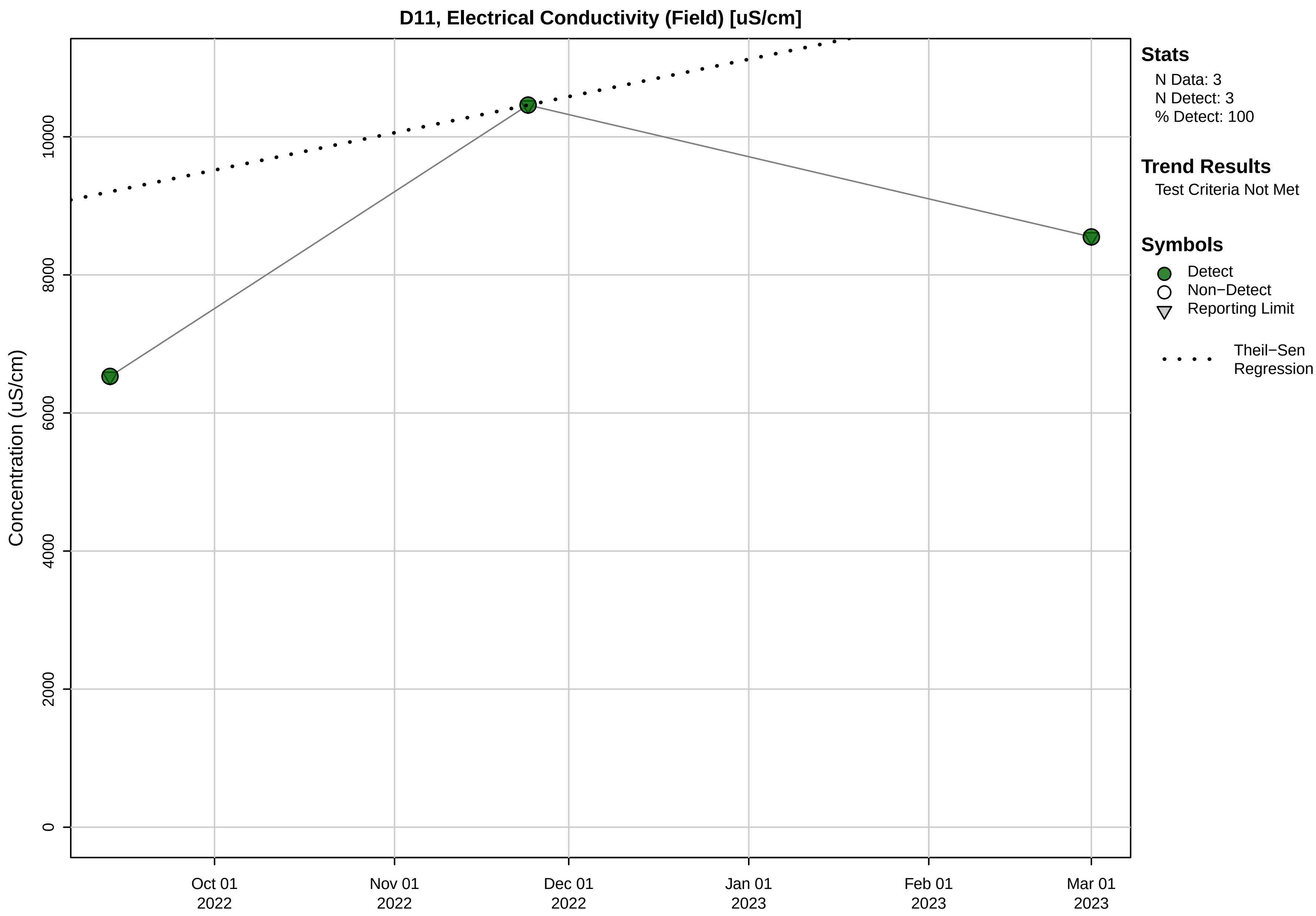

D11, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.02
0.04
0.06
0.08
0.10
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



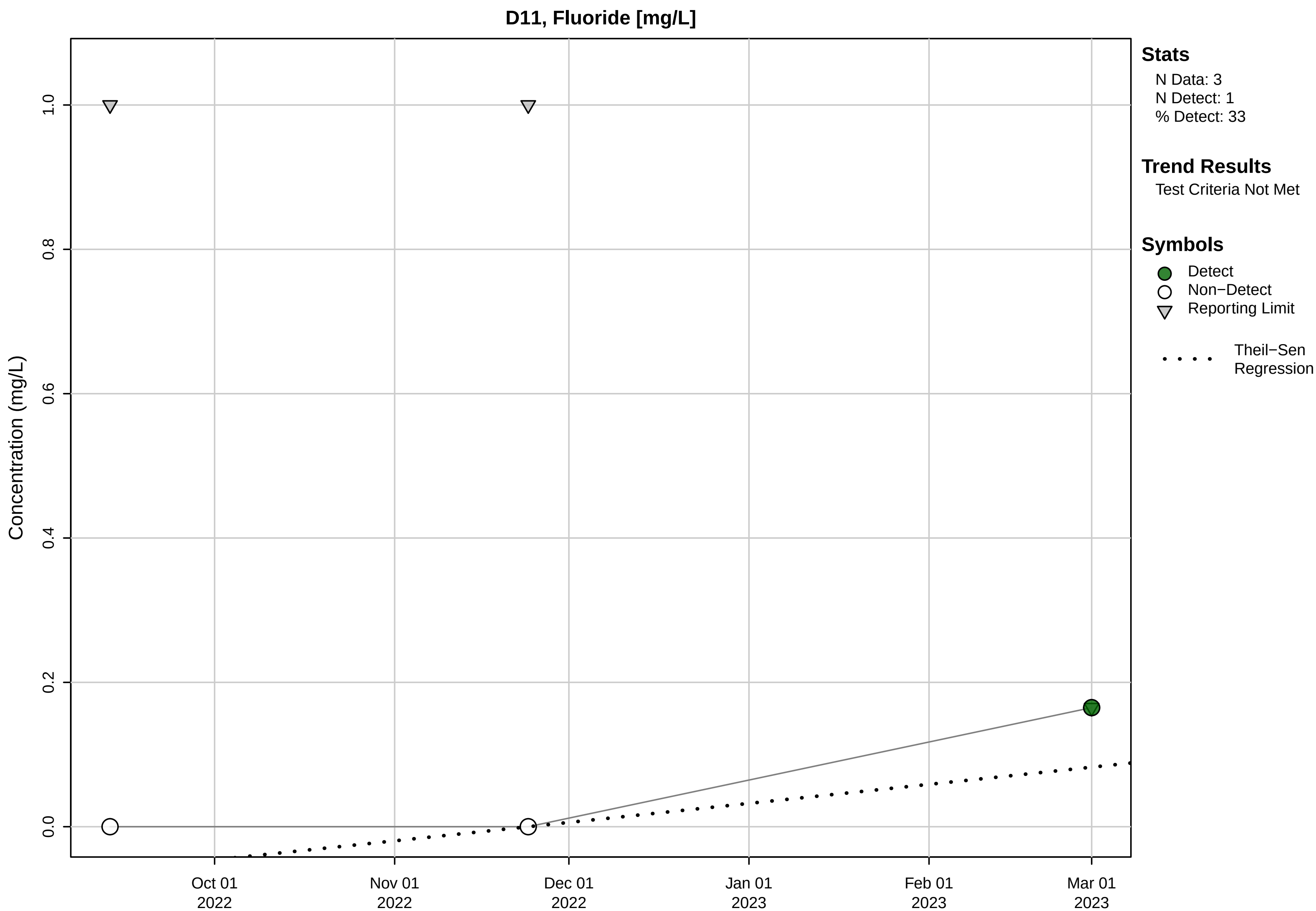
D11, Chloride [mg/L]
Concentration (mg/L)
0
200
400
600
800
1000
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

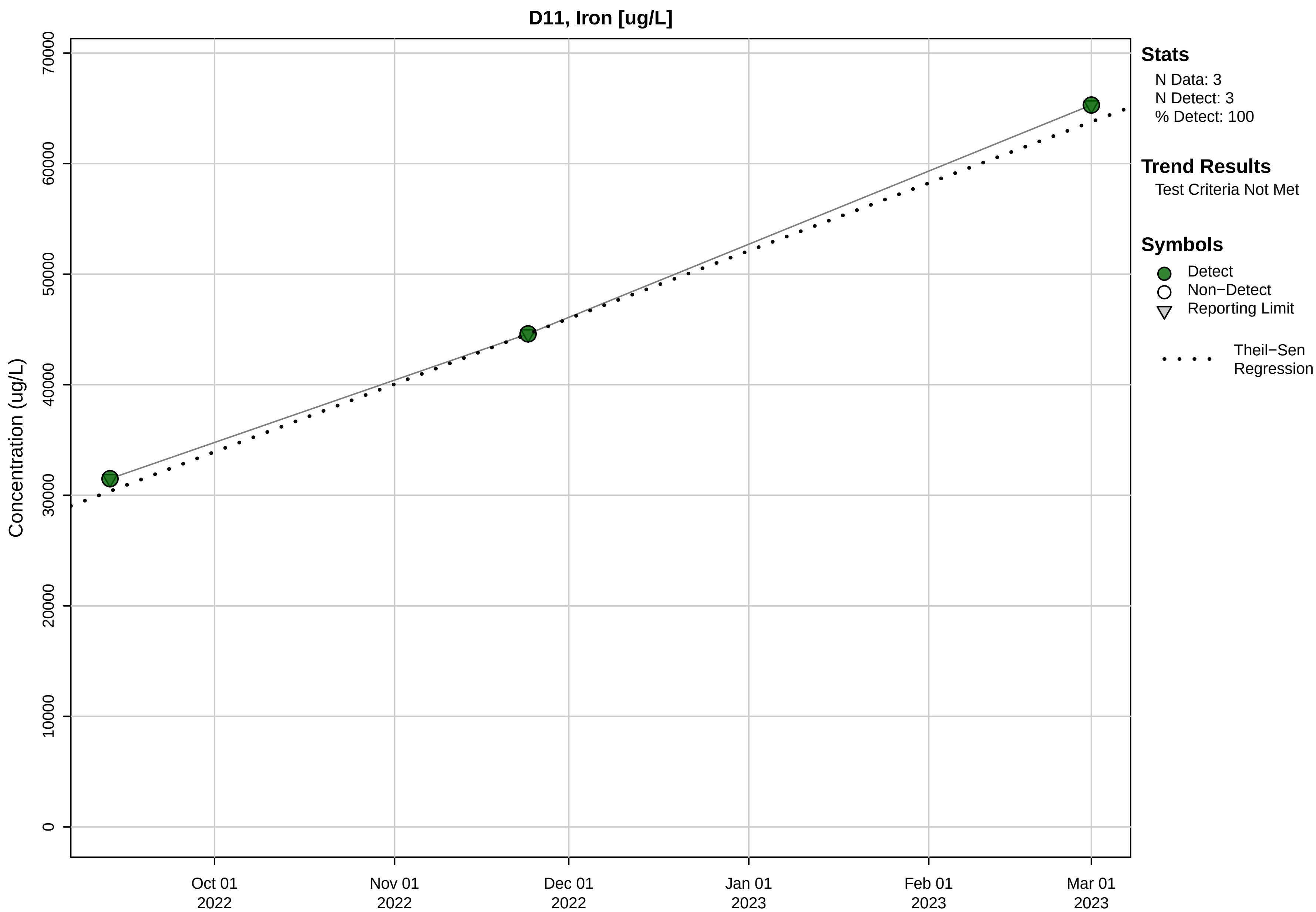

D11, Chromium [ug/L]
Concentration (ug/L)
0
1
2
3
4
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 1
% Detect: 33
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D11, Copper [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

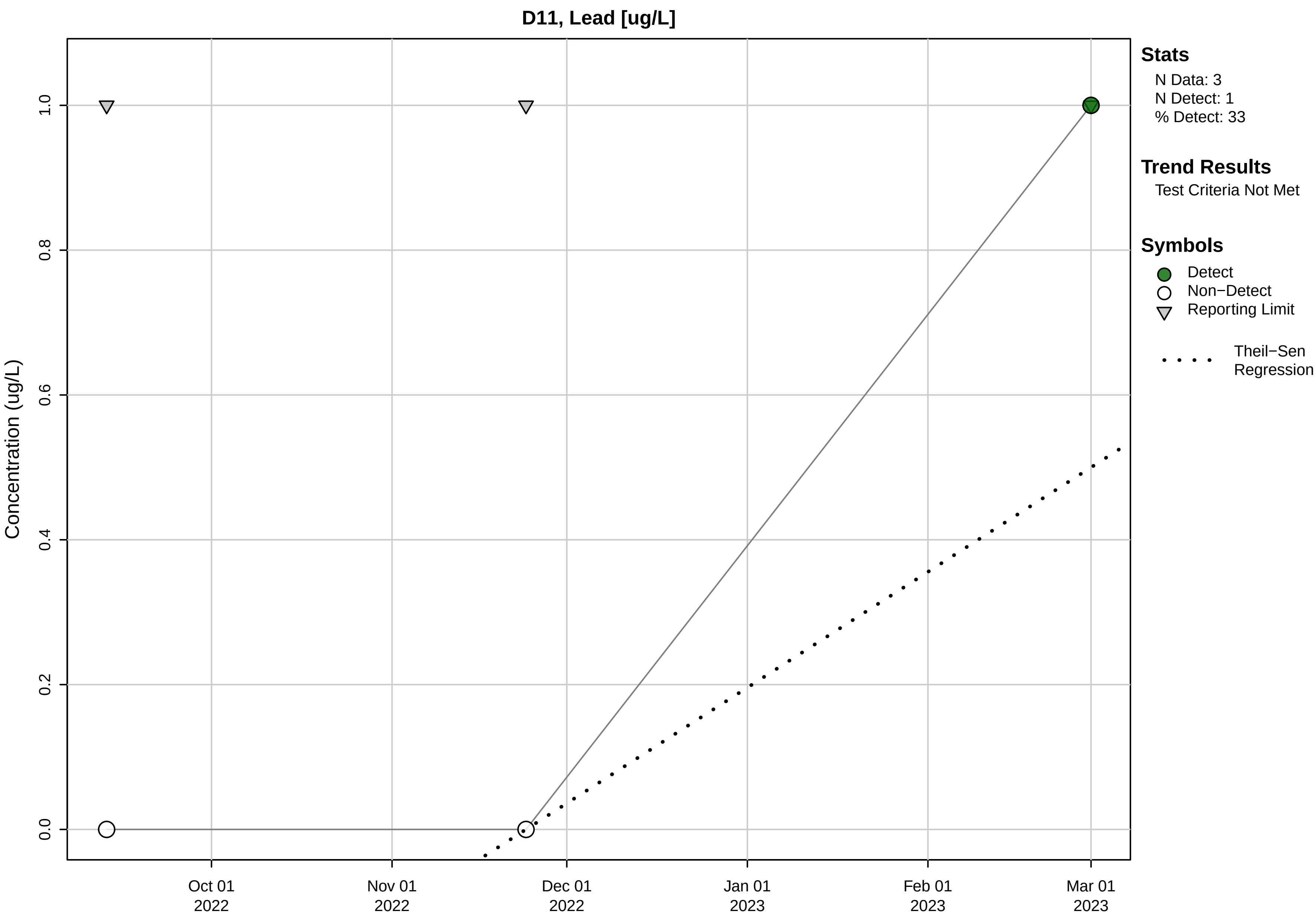


D11, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
2000
4000
6000
8000
10000
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

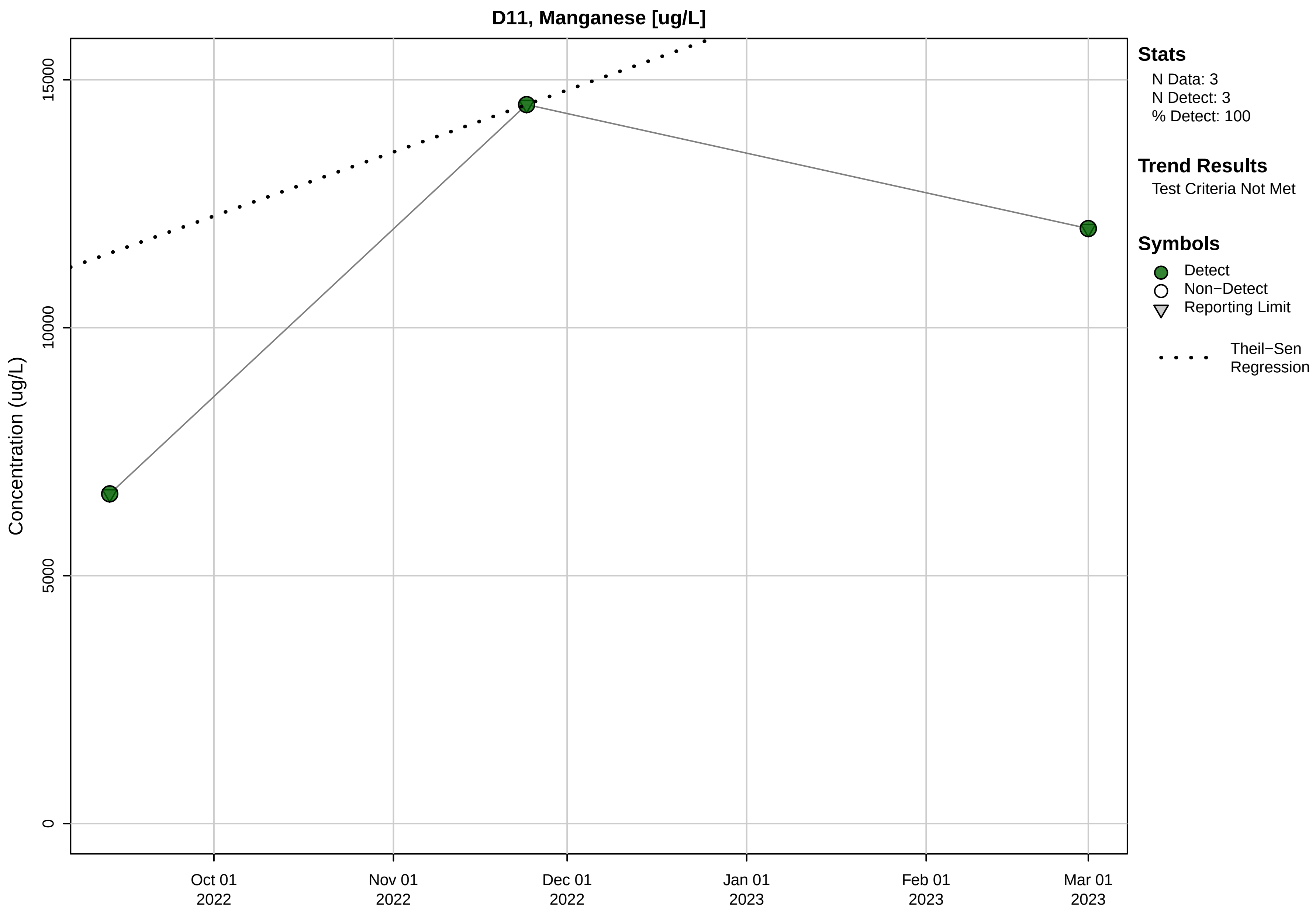

D11, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 1
% Detect: 33
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

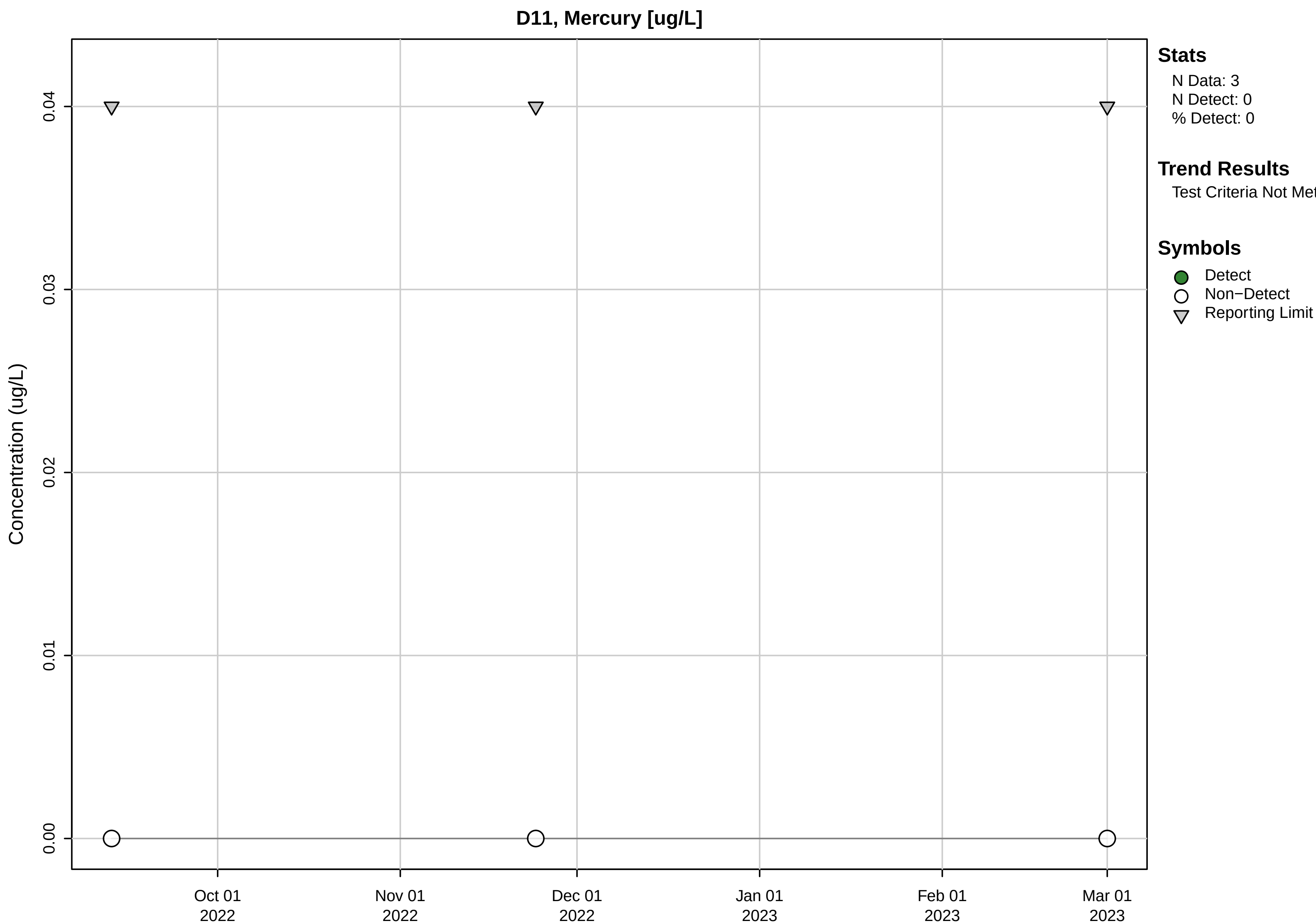


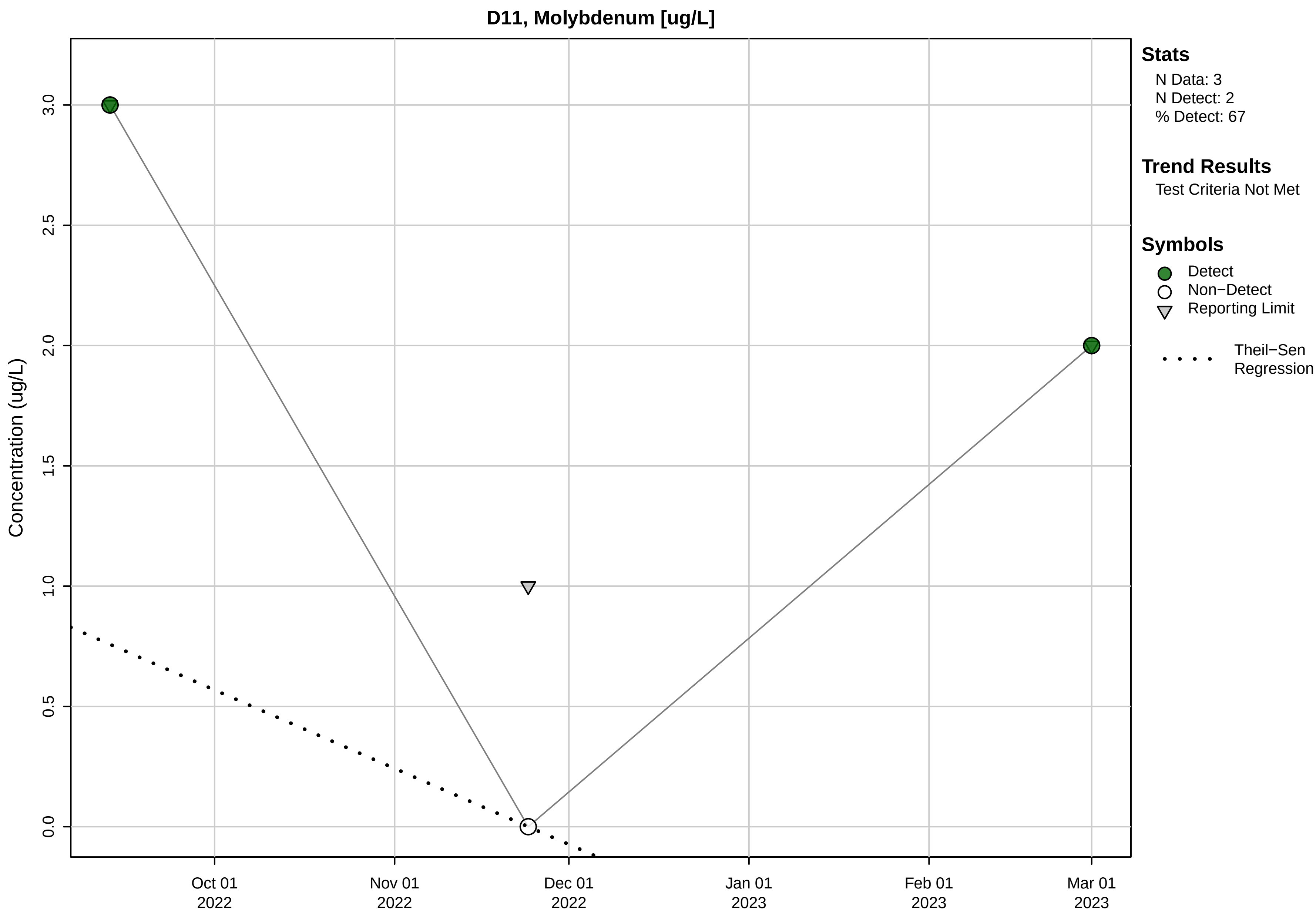
D11, Iron [ug/L]
Concentration (ug/L)
70000
60000
50000
40000
30000
20000
10000
0
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



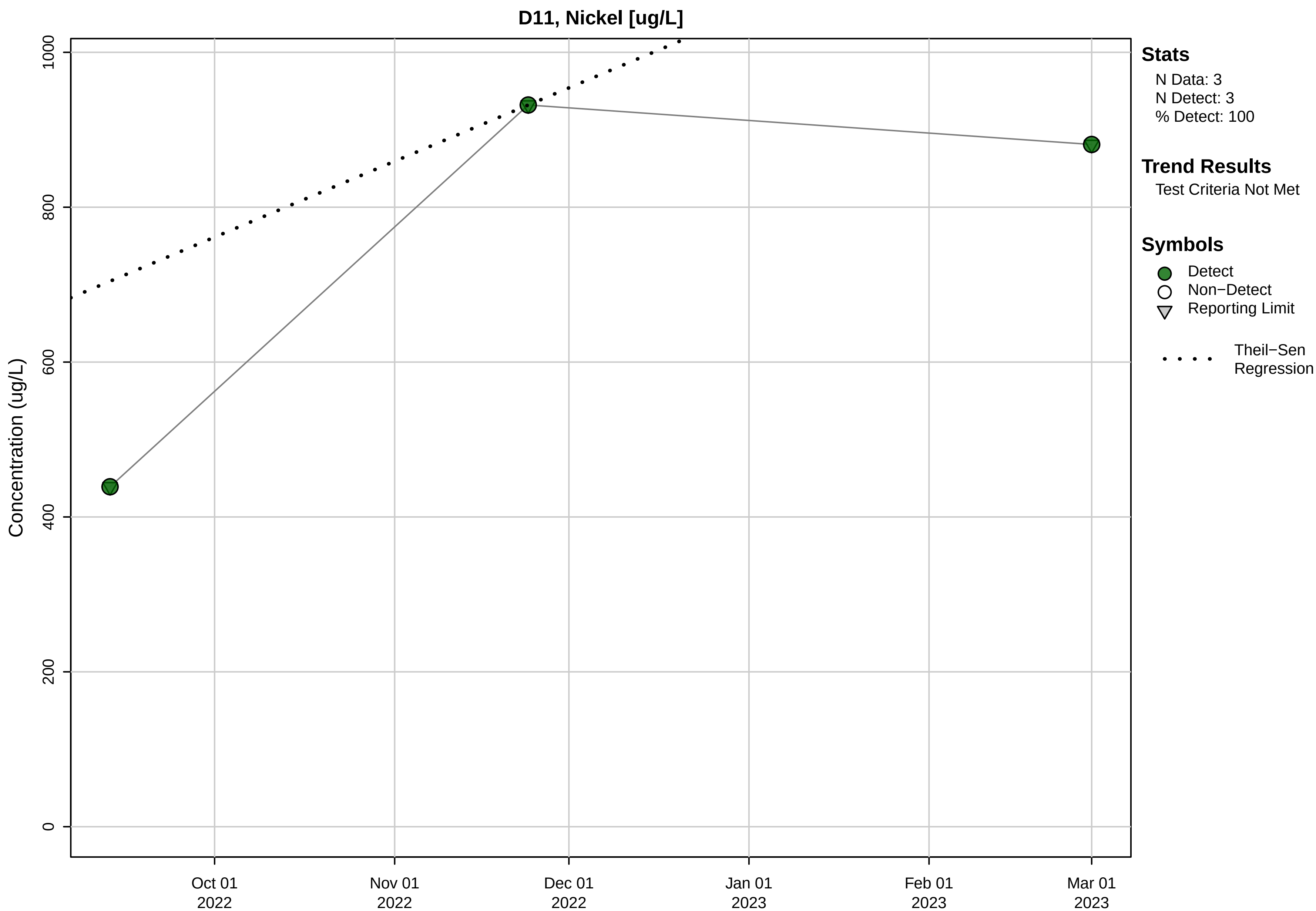
D11, Lead [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 1
% Detect: 33
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D11, Manganese [ug/L]
Concentration (ug/L)
15000
10000
5000
0
Oct 01
2022
Nov 01
2022
Dec 01
2022
Jan 01
2023
Feb 01
2023
Mar 01
2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

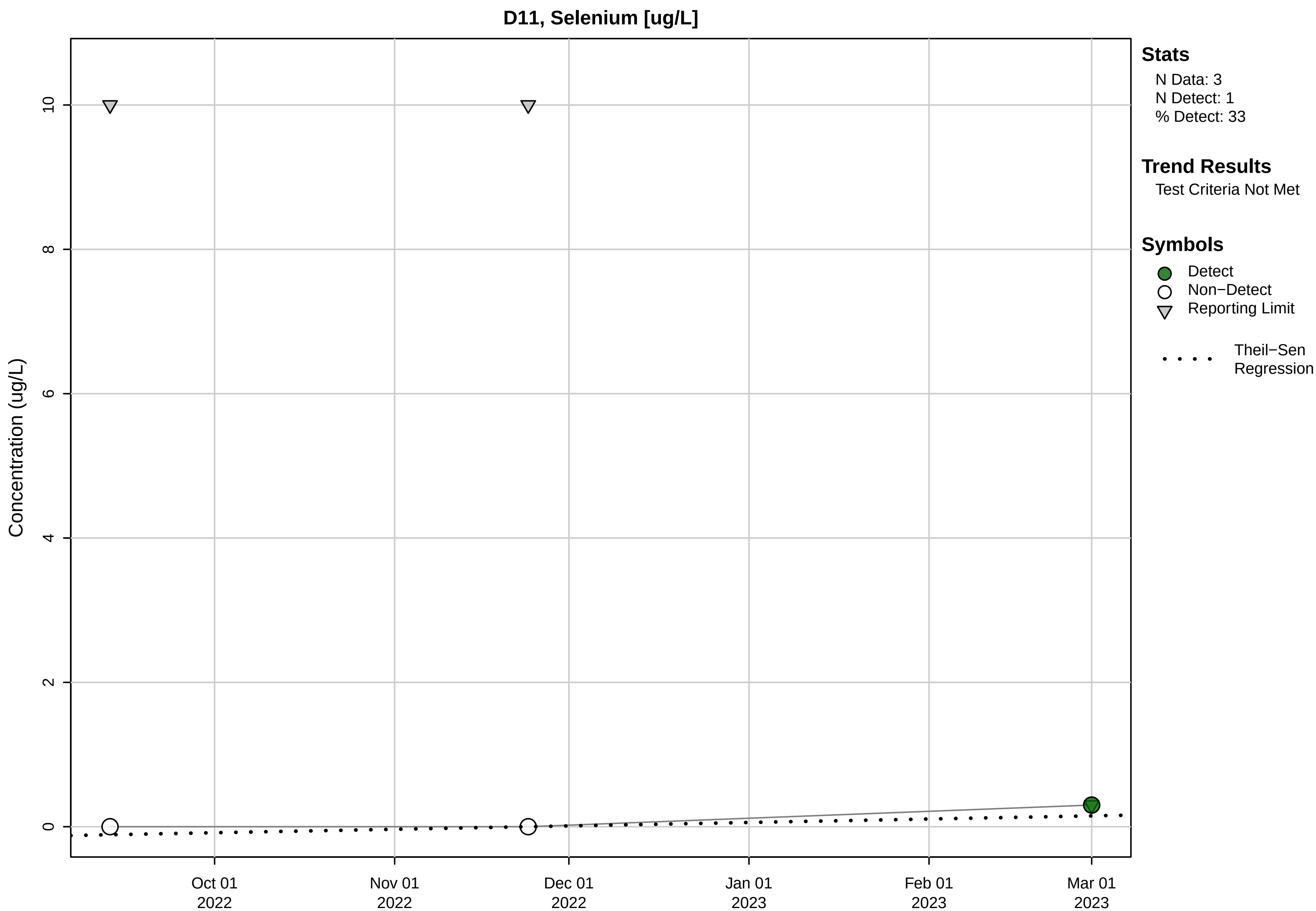

D11, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

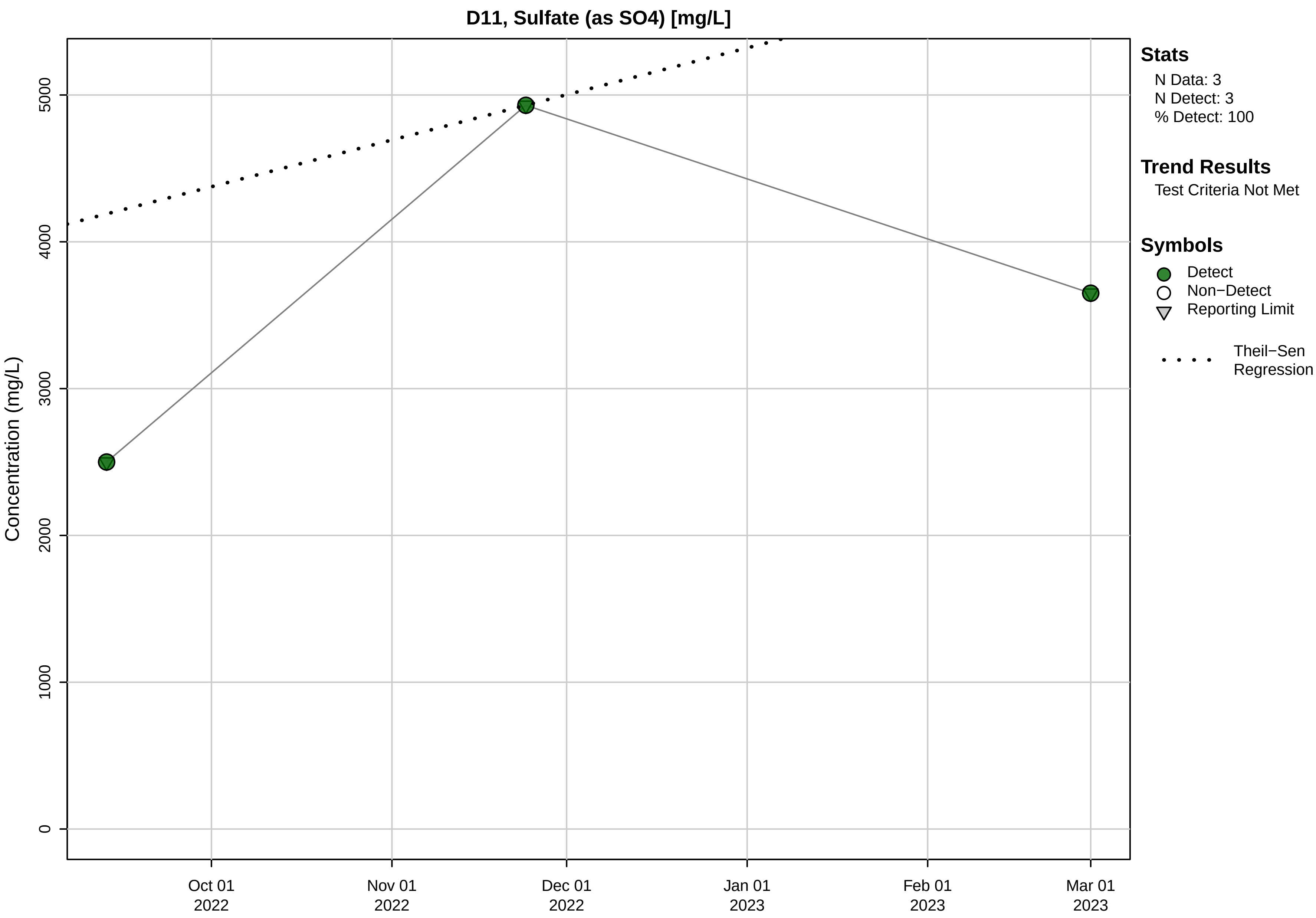


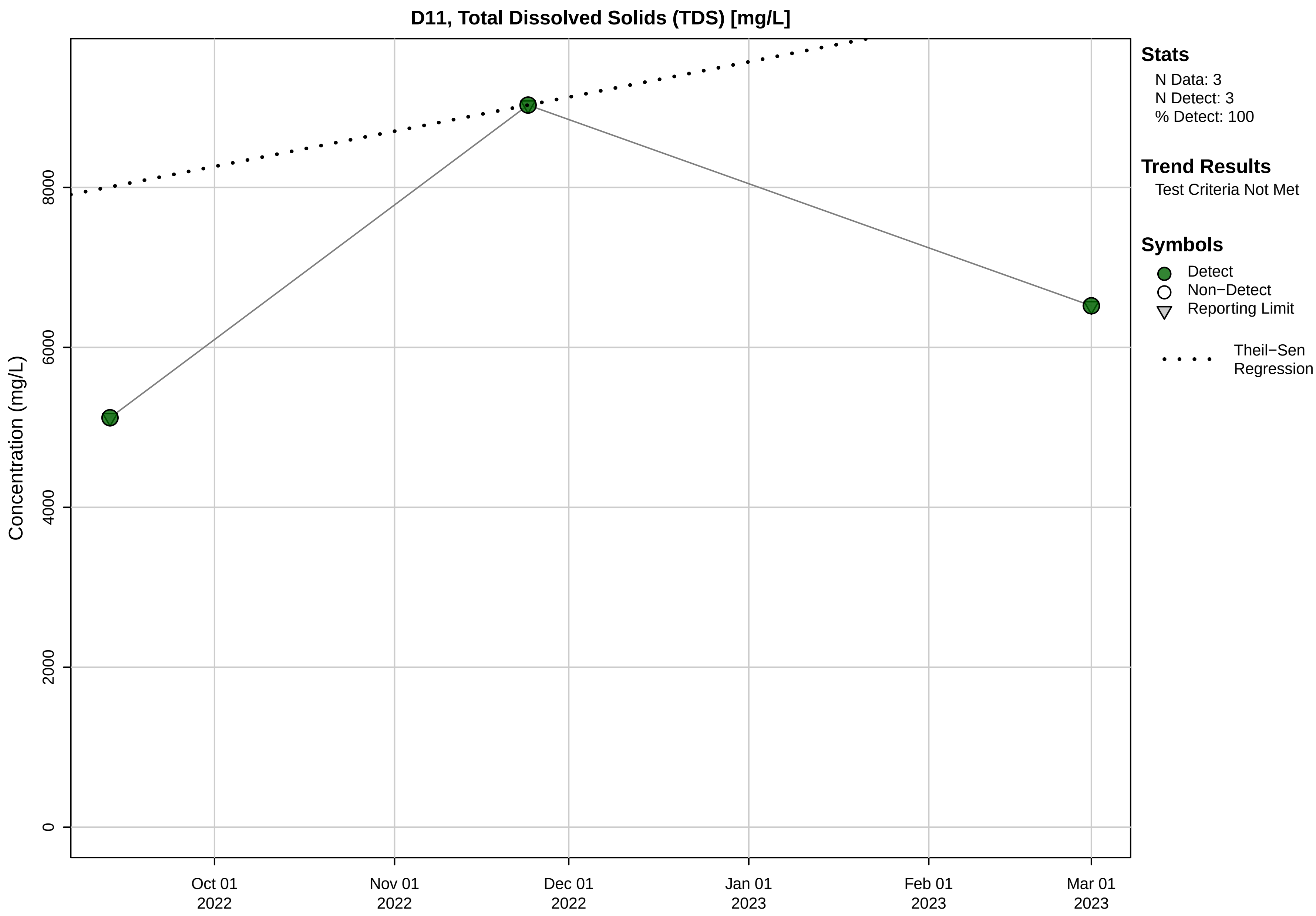
D11, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 2
% Detect: 67
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



D11, Nickel [ug/L]
Concentration (ug/L)
0
200
400
600
800
1000
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

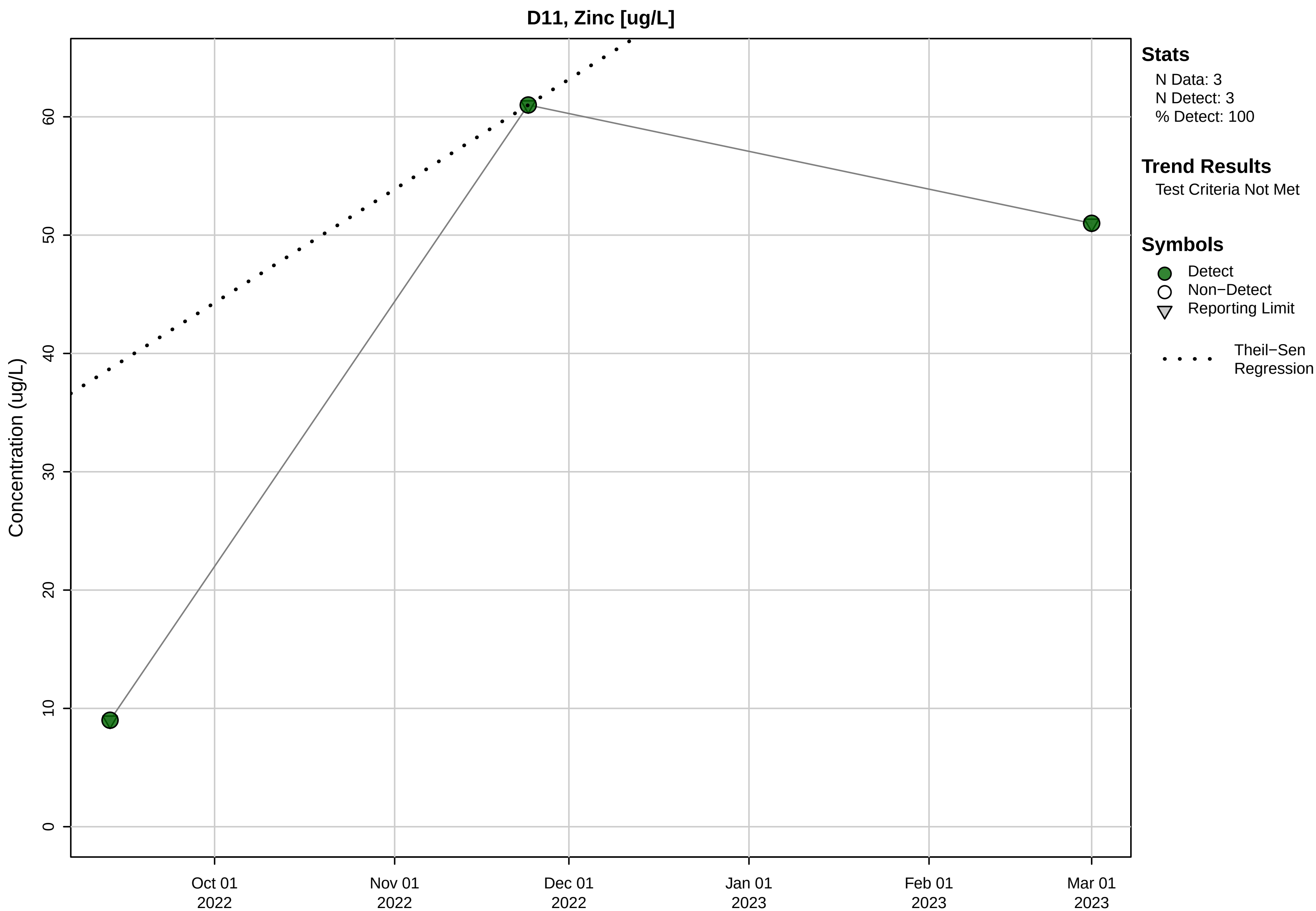

D11, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 1
% Detect: 33
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D11, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
1000
2000
3000
4000
5000
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

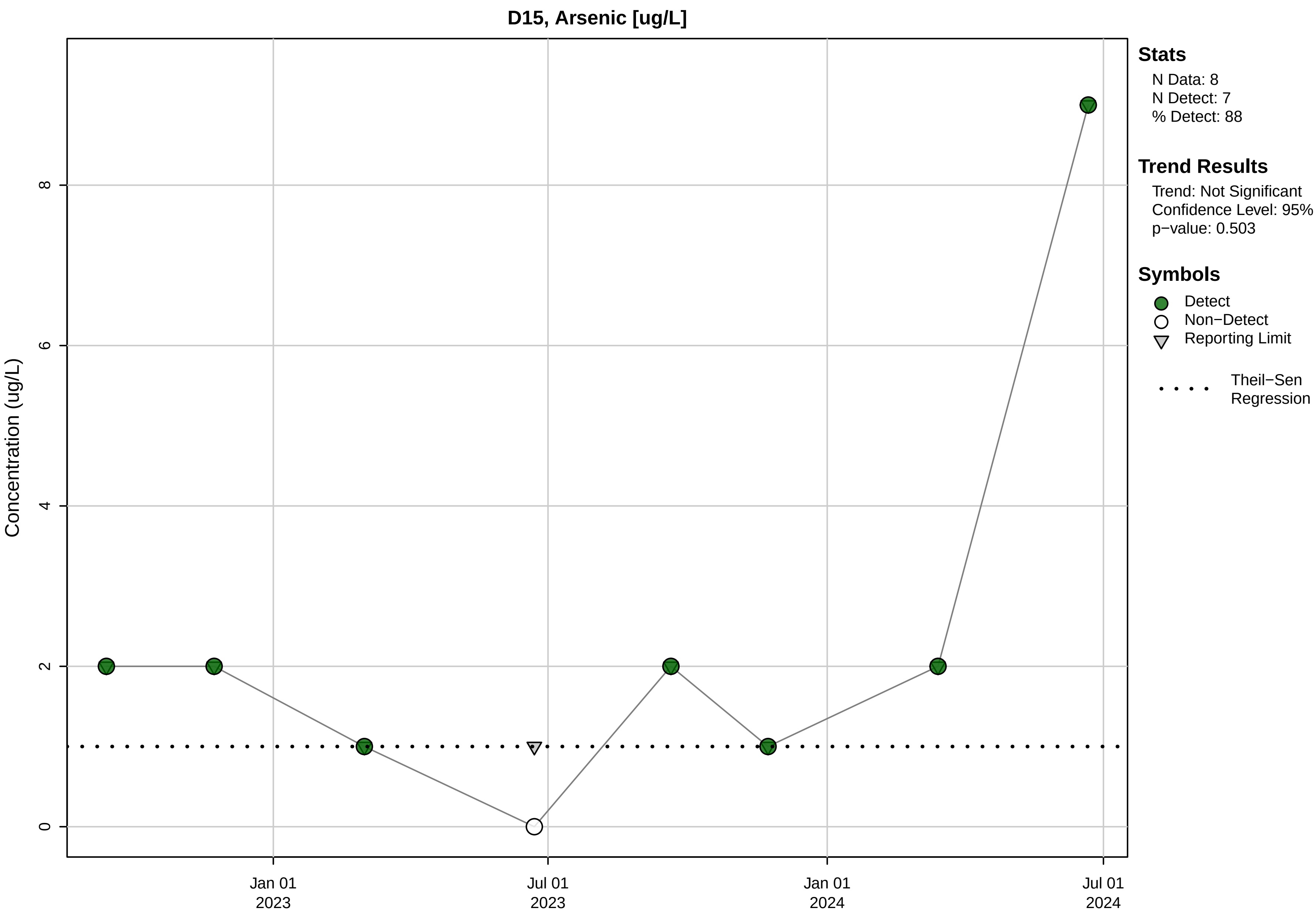


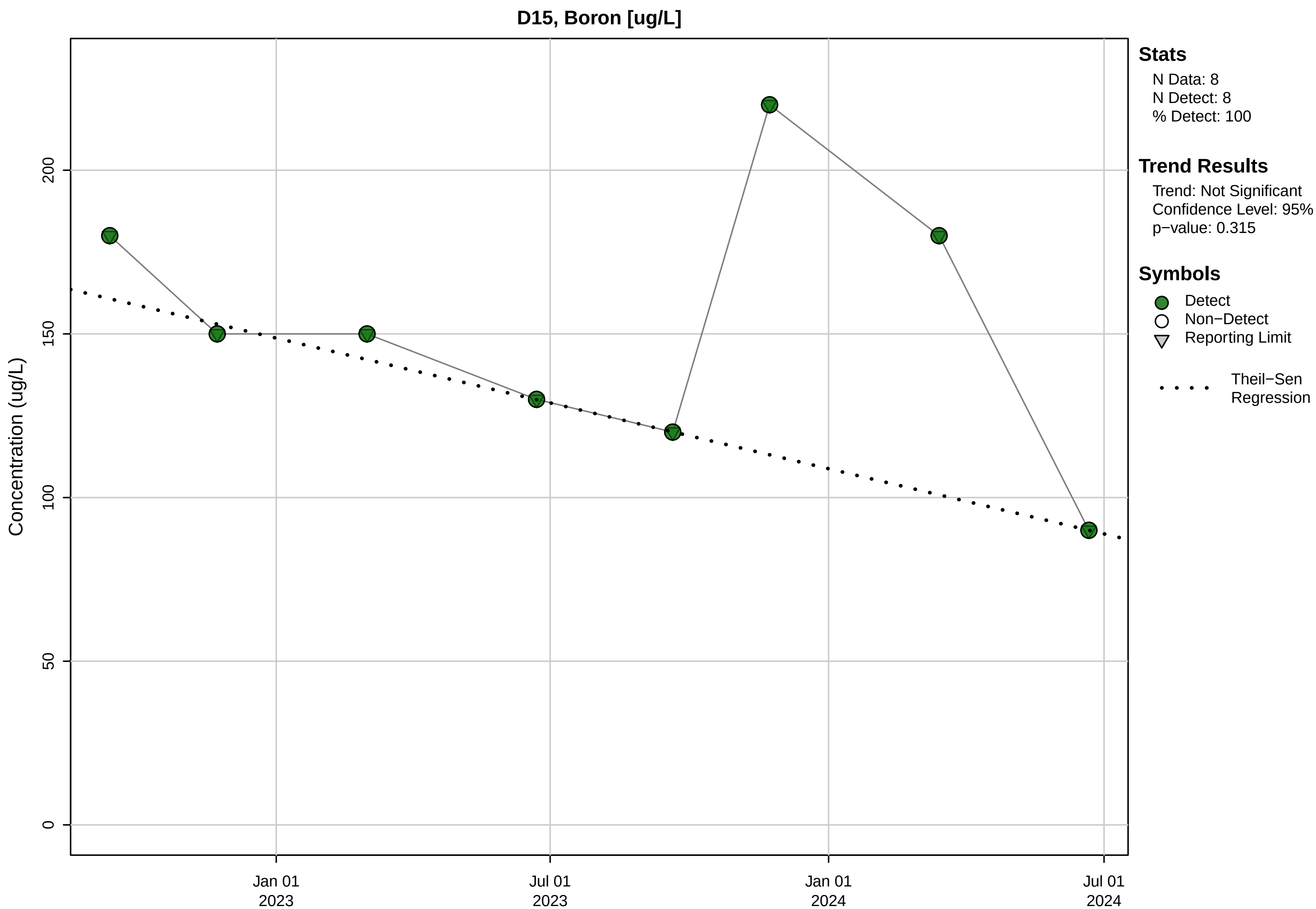
D11, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

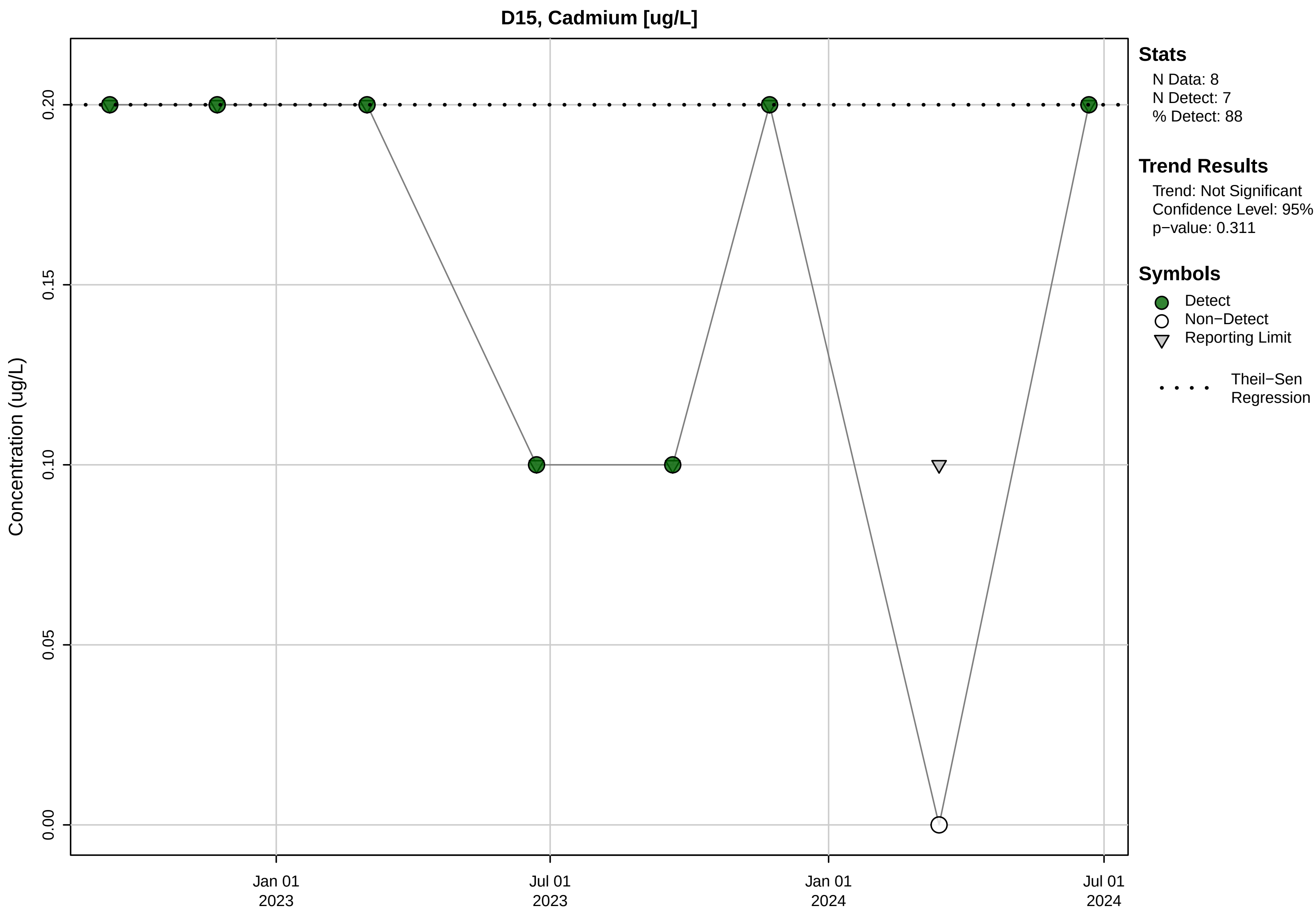
D11, Zinc [ug/L]



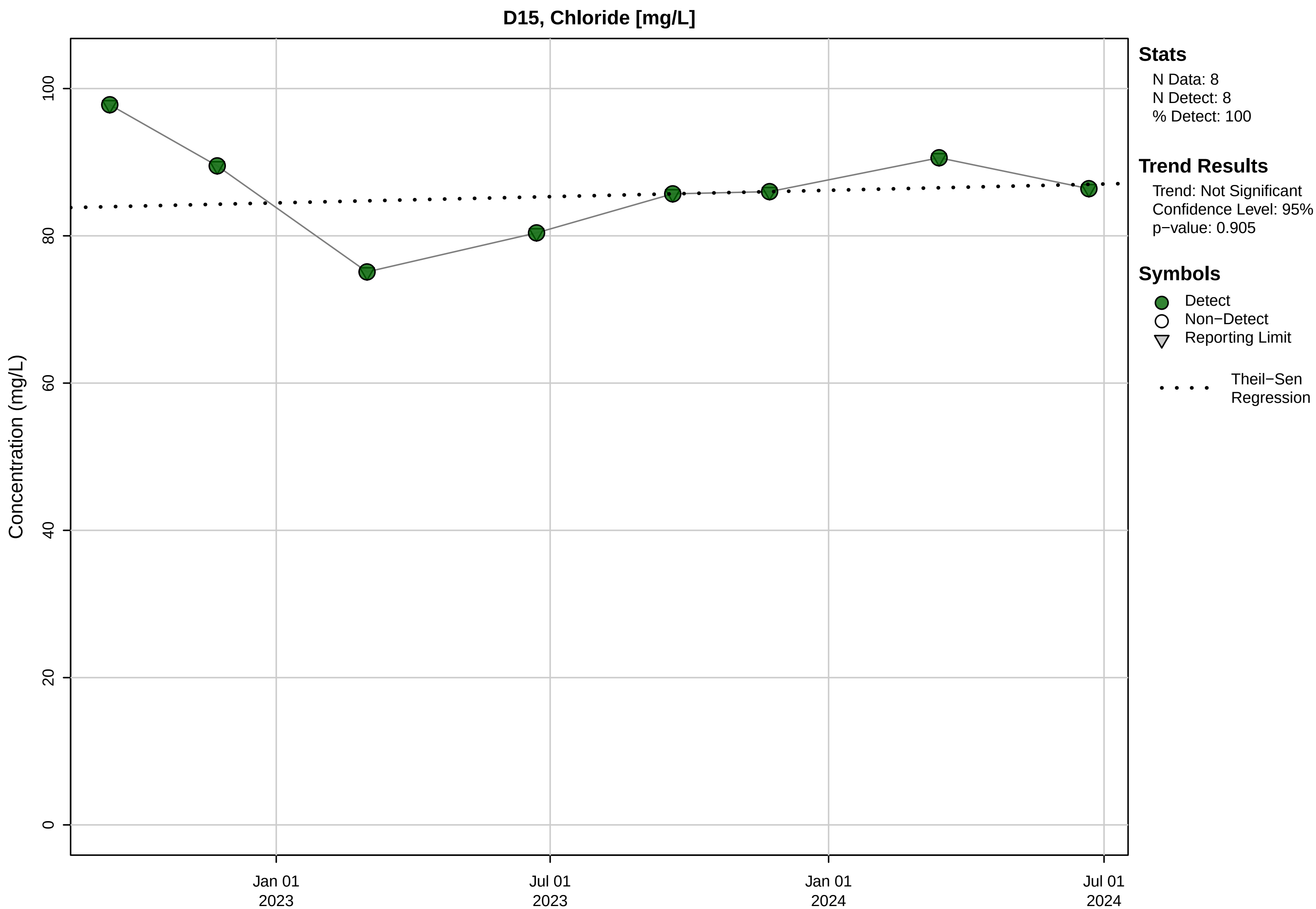
D11, Zinc [ug/L]
Concentration (ug/L)
0
10
20
30
40
50
60
Oct 01 2022
Nov 01 2022
Dec 01 2022
Jan 01 2023
Feb 01 2023
Mar 01 2023
Stats
N Data: 3
N Detect: 3
% Detect: 100
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D15, Arsenic [ug/L]
Concentration (ug/L)
0
2
4
6
8
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.503
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

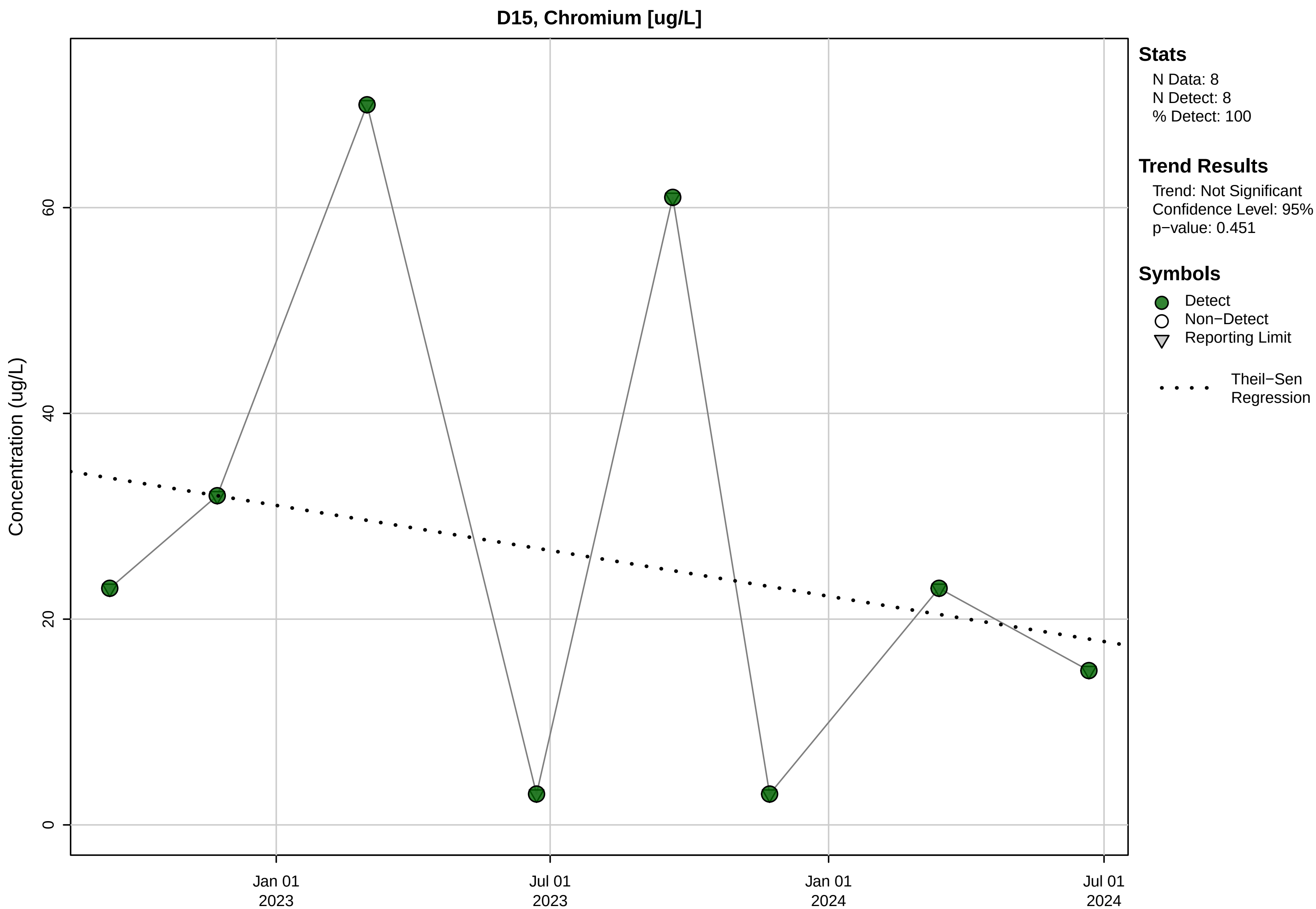

D15, Boron [ug/L]
Concentration (ug/L)
0
50
100
150
200
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.315
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

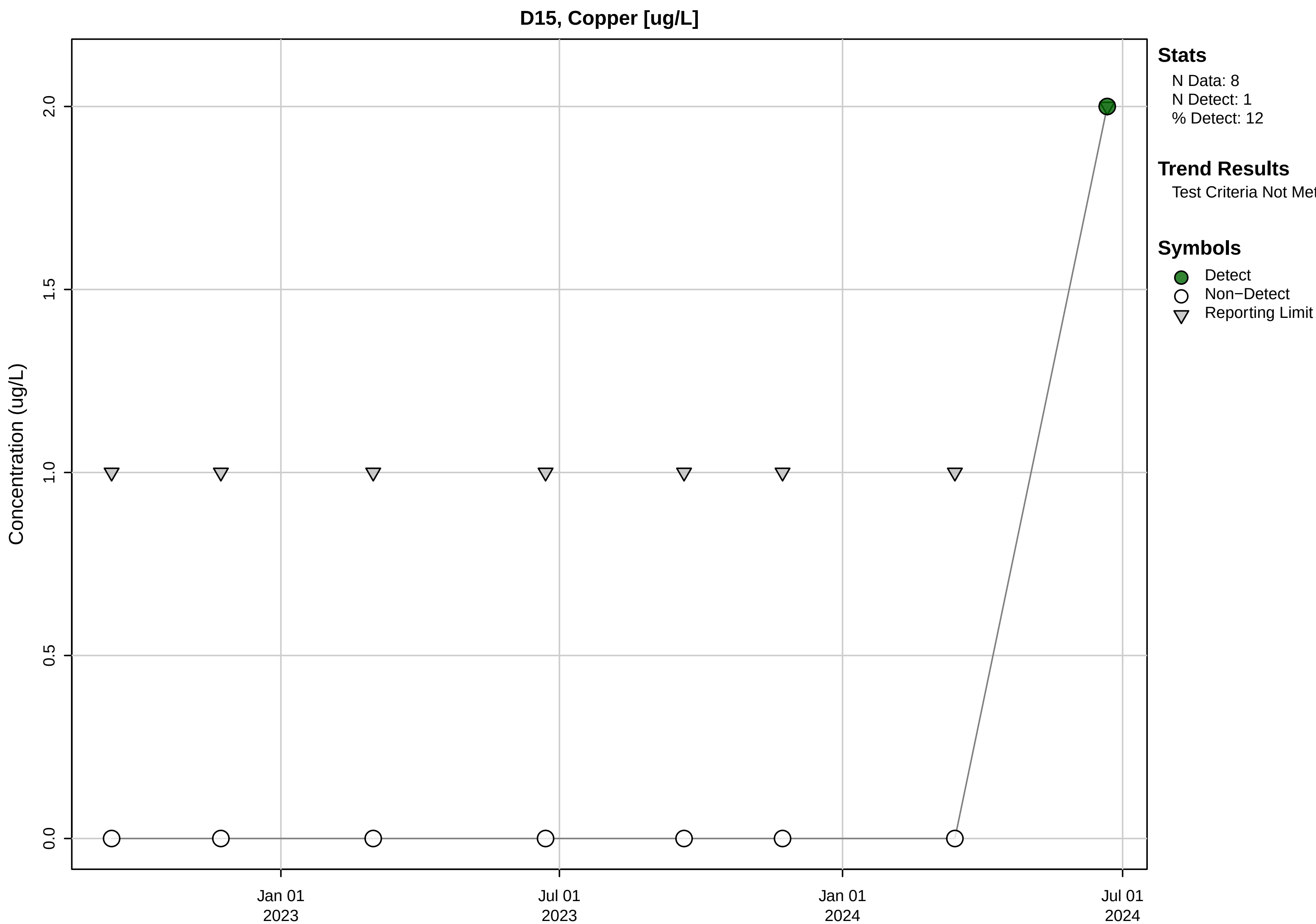


D15, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.311
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

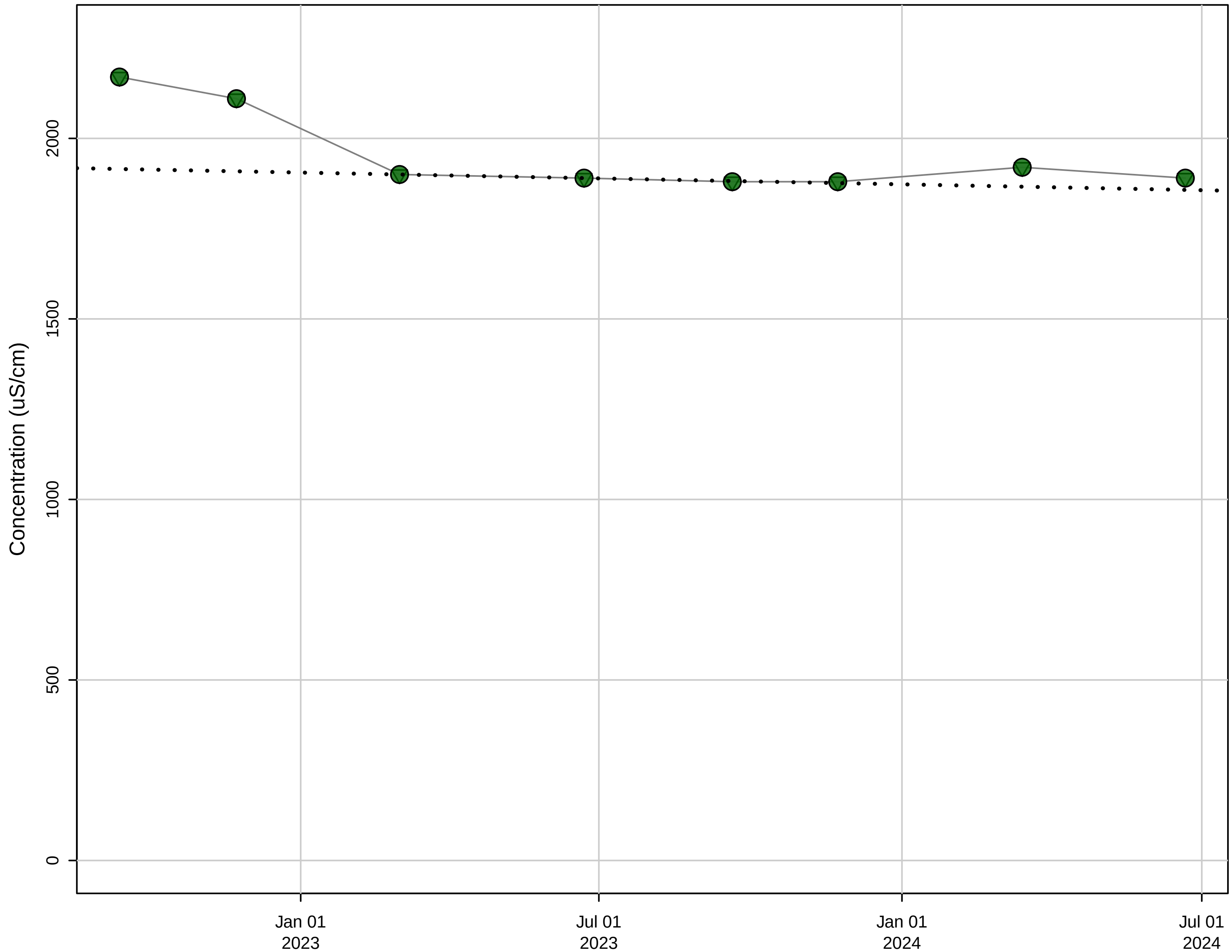


D15, Chloride [mg/L]
Concentration (mg/L)
0
20
40
60
80
100
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D15, Chromium [ug/L]
Concentration (ug/L)
0
20
40
60
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.451
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D15, Copper [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

D15, Electrical Conductivity (Field) [uS/cm]

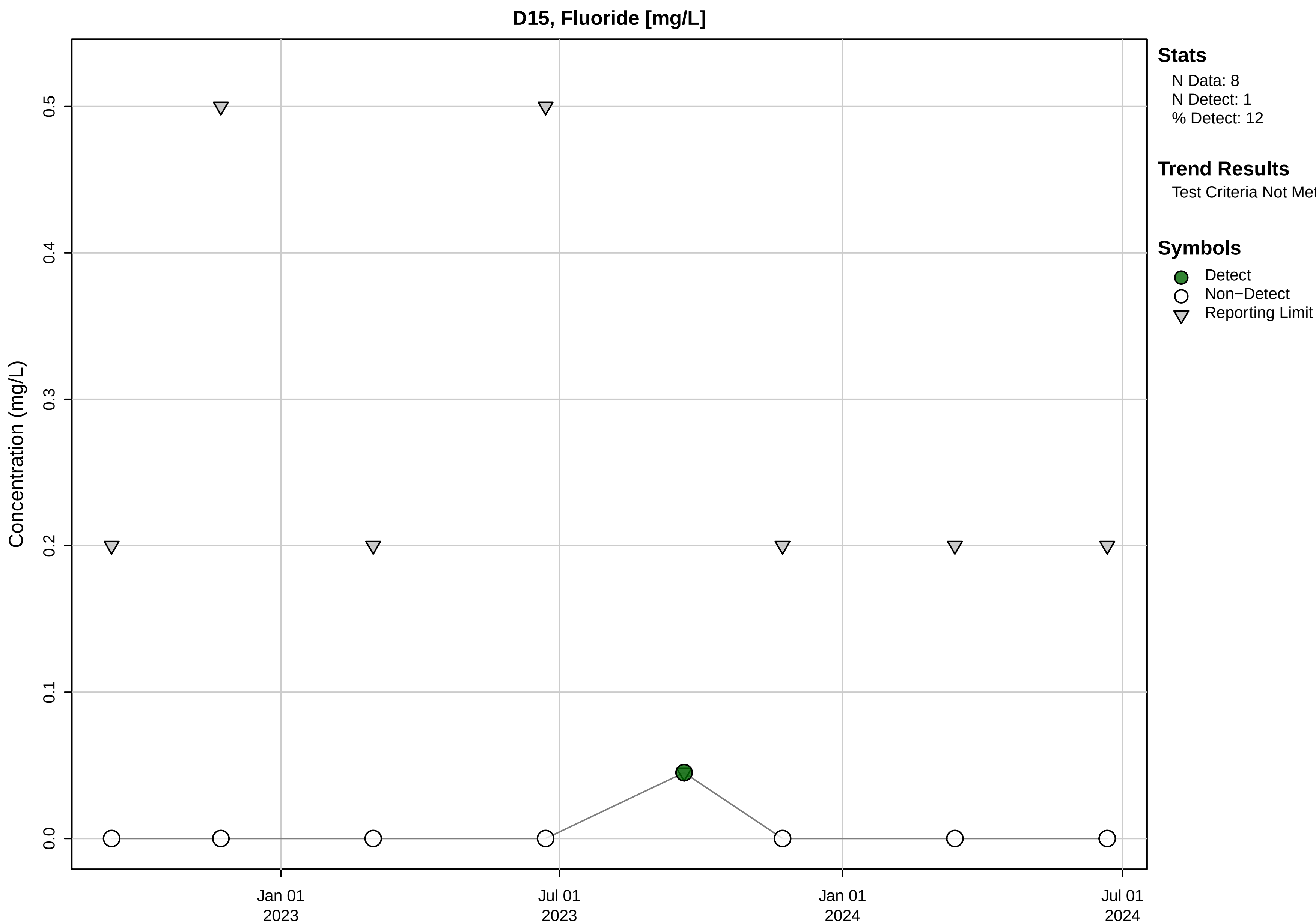


Stats
N Data: 8
N Detect: 8
% Detect: 100

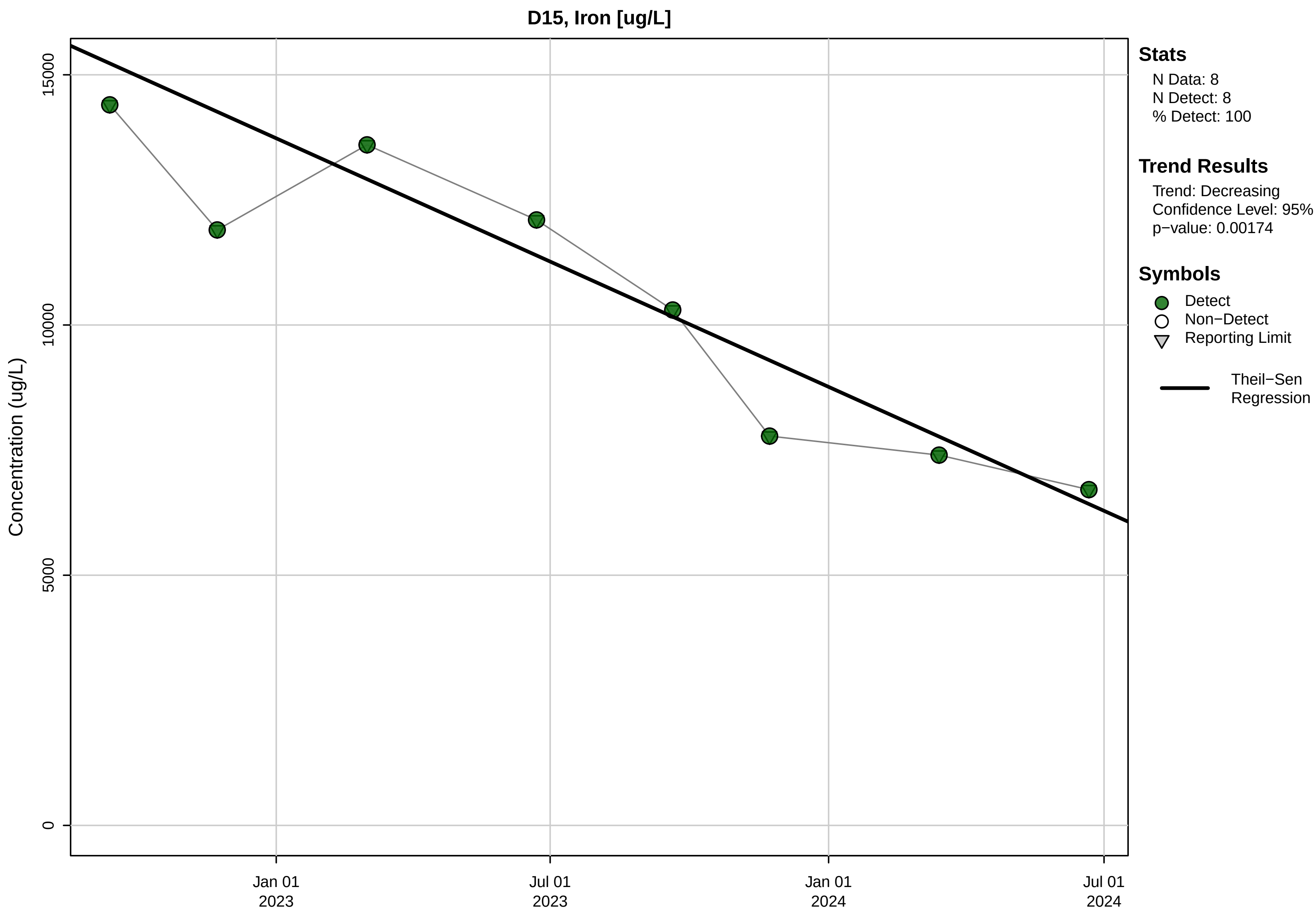
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0785

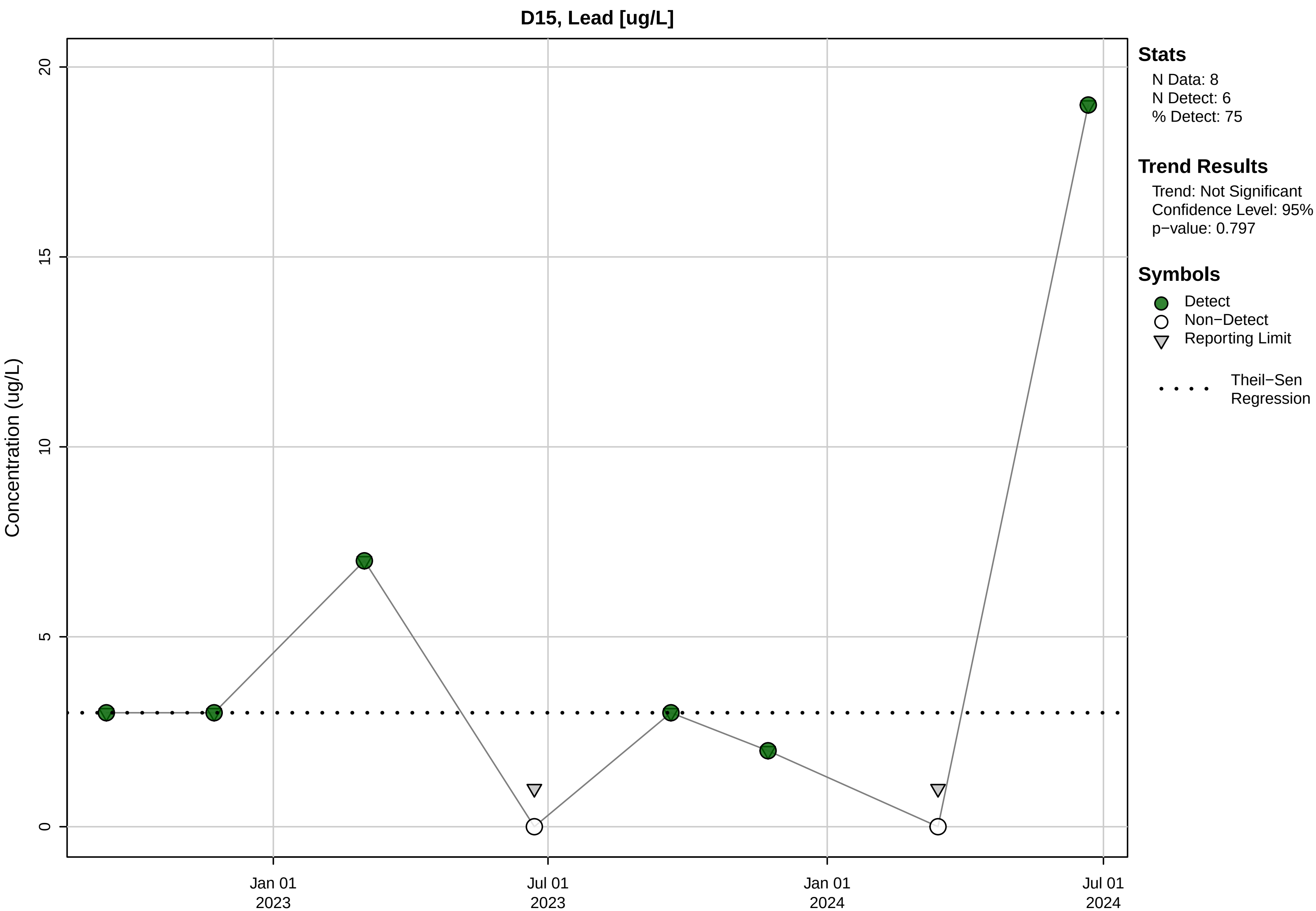
Symbols
Detect
Non−Detect
Reporting Limit

Theil−Sen Regression

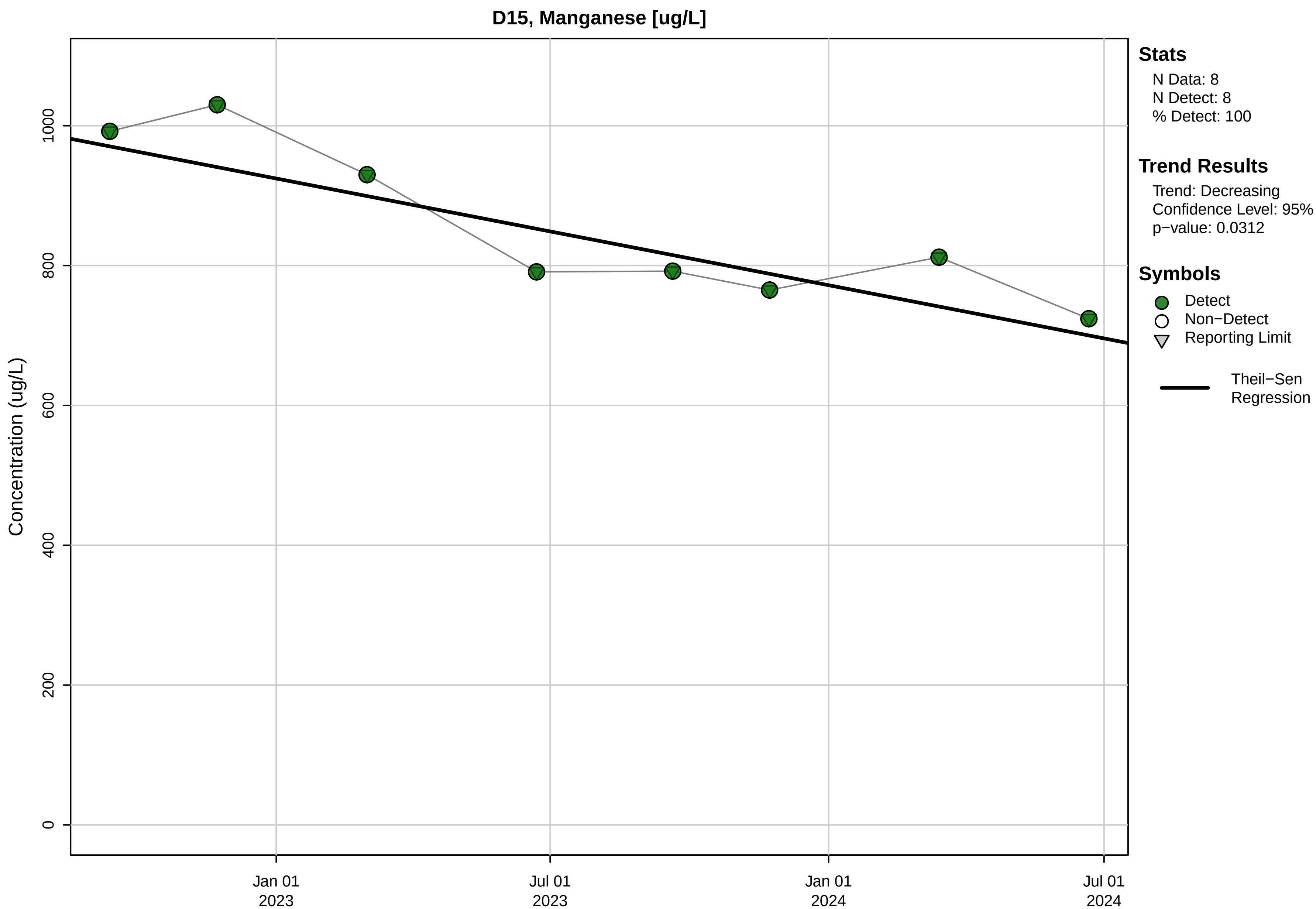


D15, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

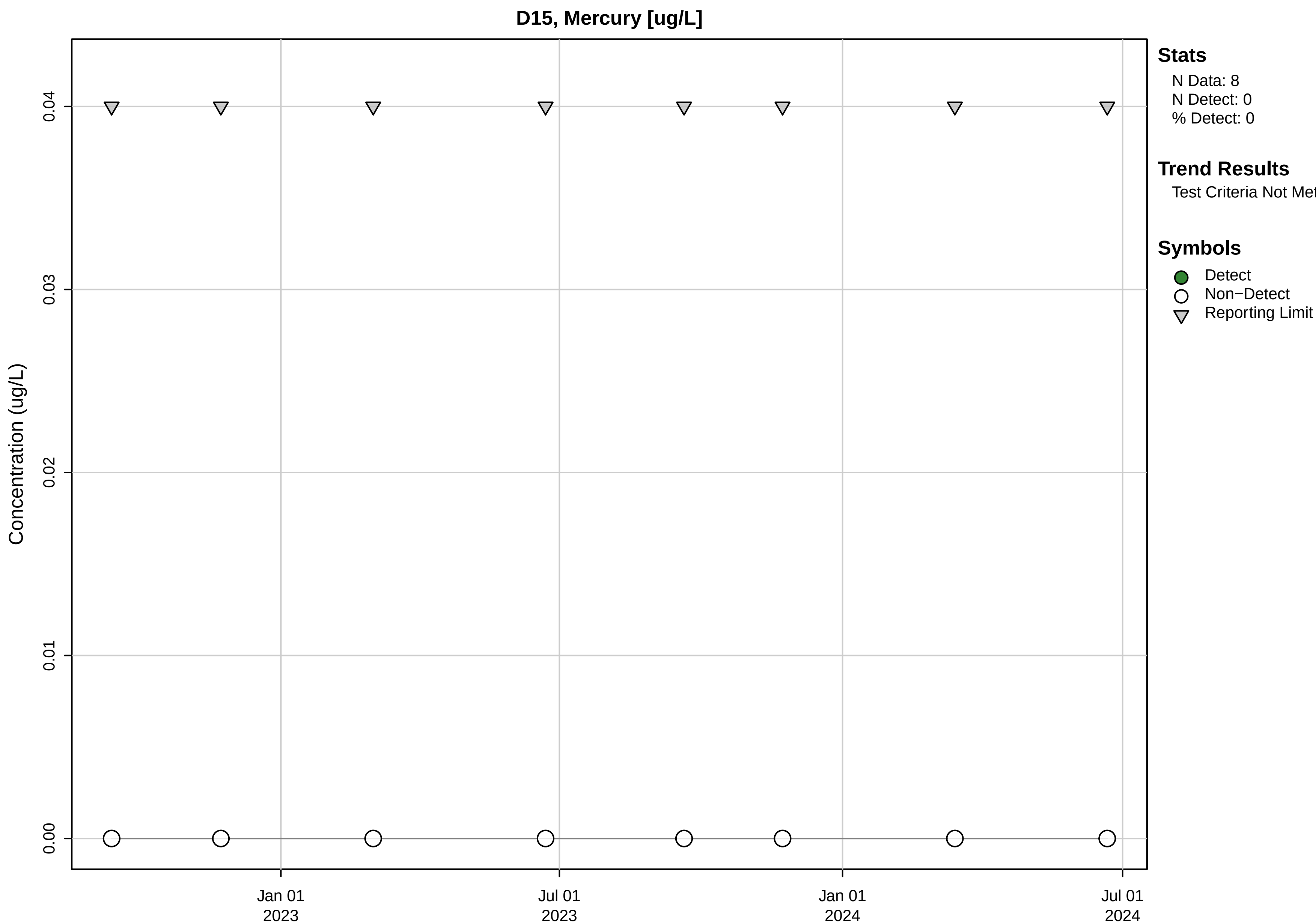

D15, Iron [ug/L]
Concentration (ug/L)
15000
10000
5000
0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.00174
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

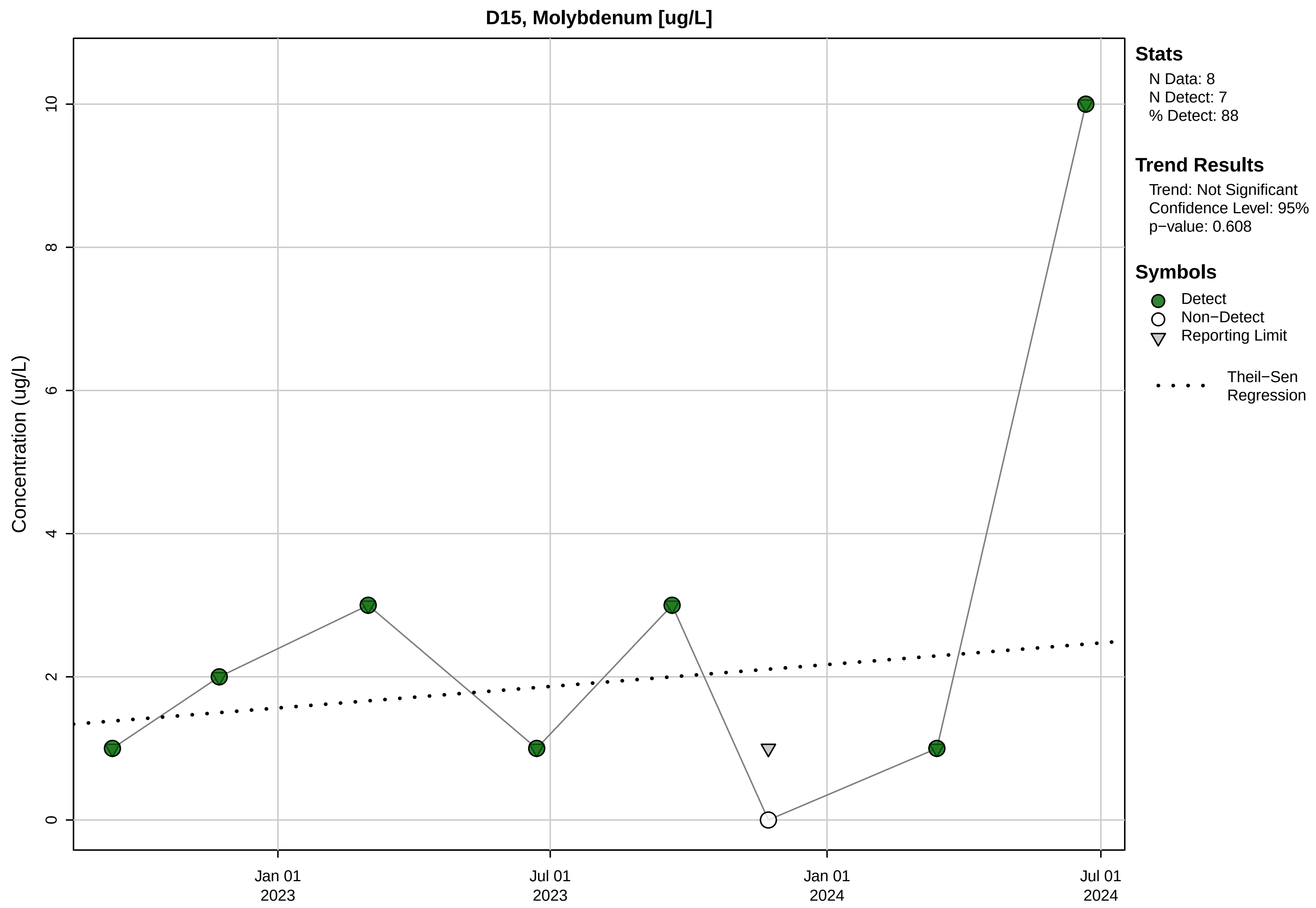


D15, Lead [ug/L]
Concentration (ug/L)
0
5
10
15
20
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 6
% Detect: 75
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.797
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

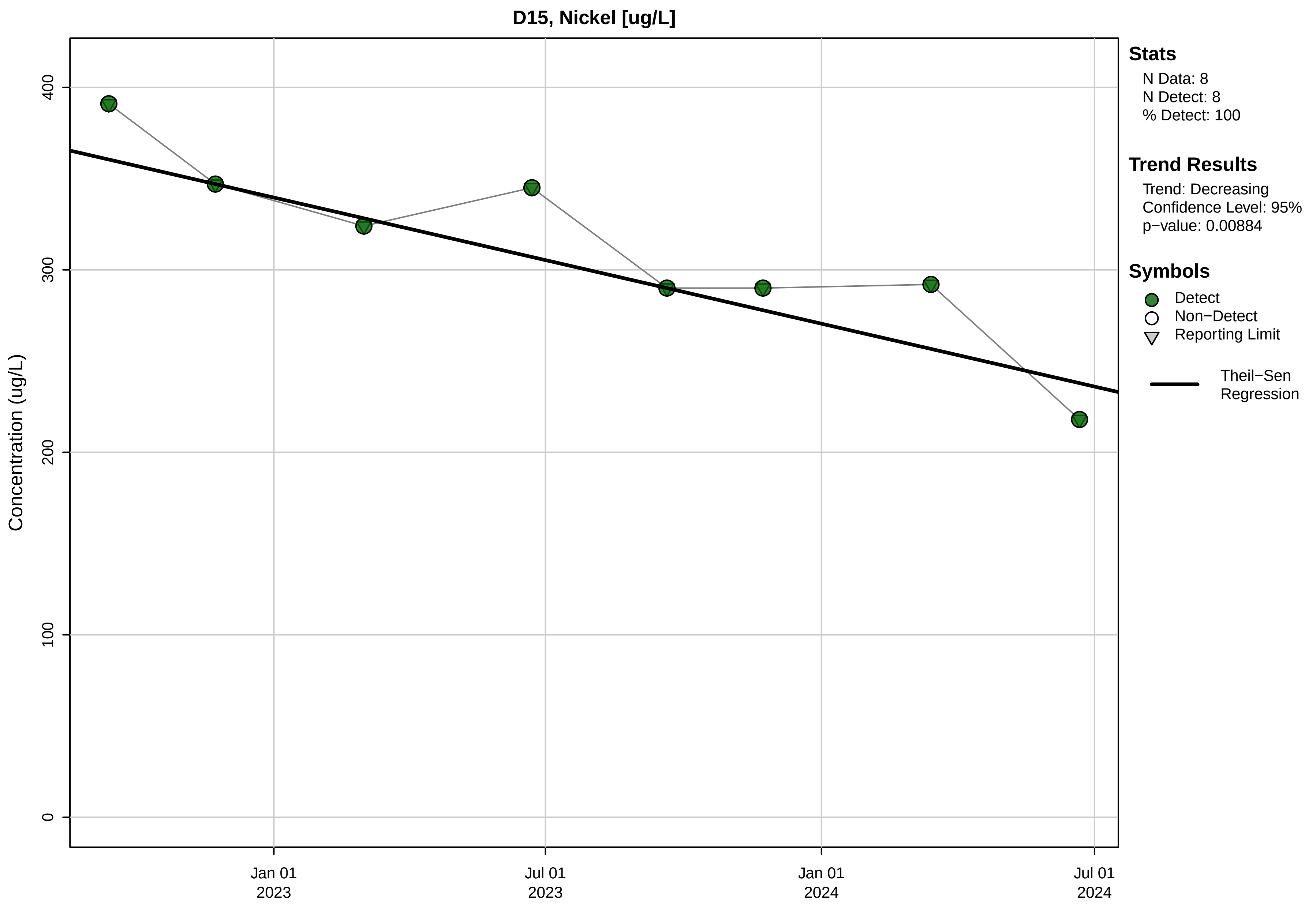


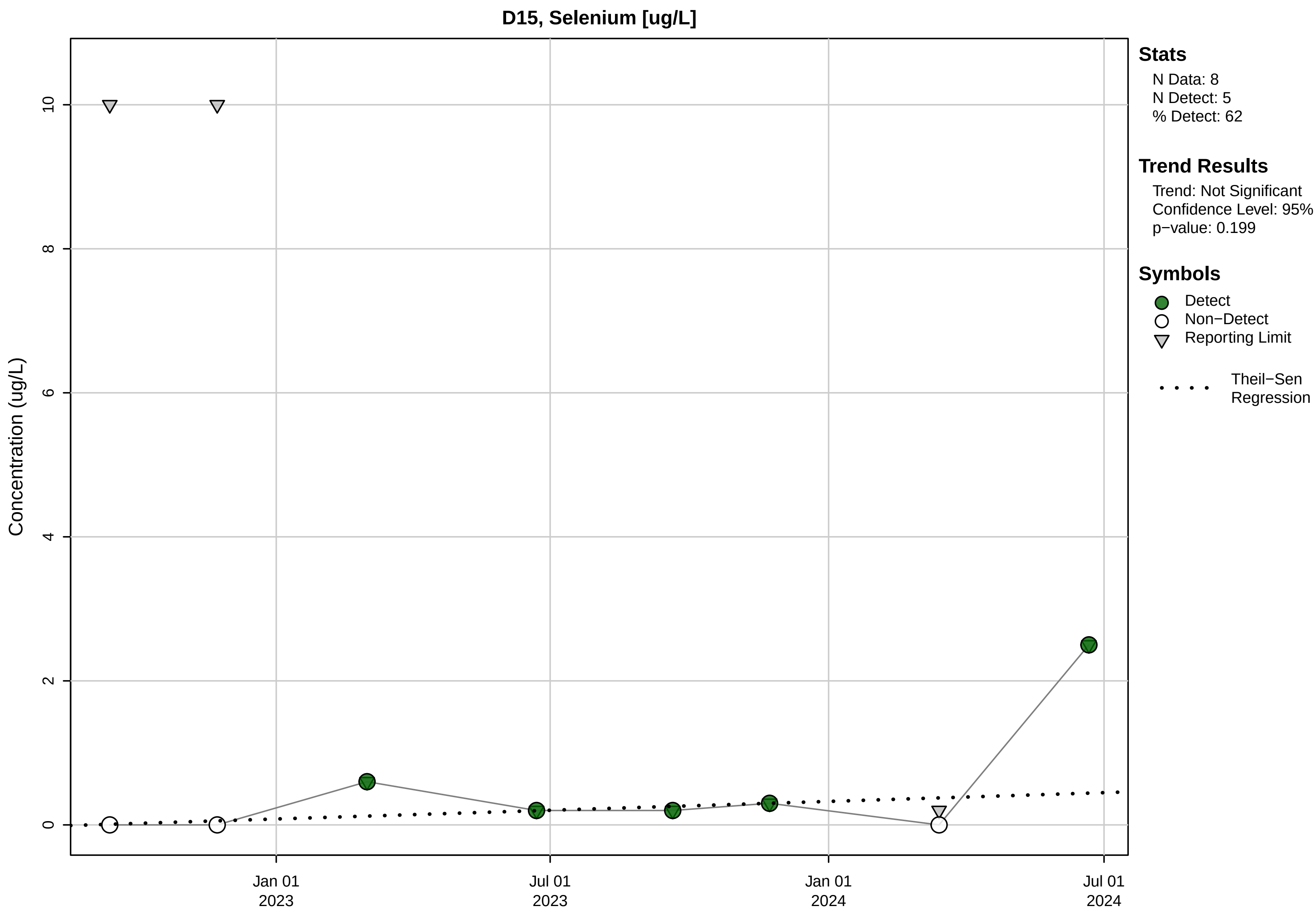
D15, Manganese [ug/L]
Concentration (ug/L)
0
200
400
600
800
1000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

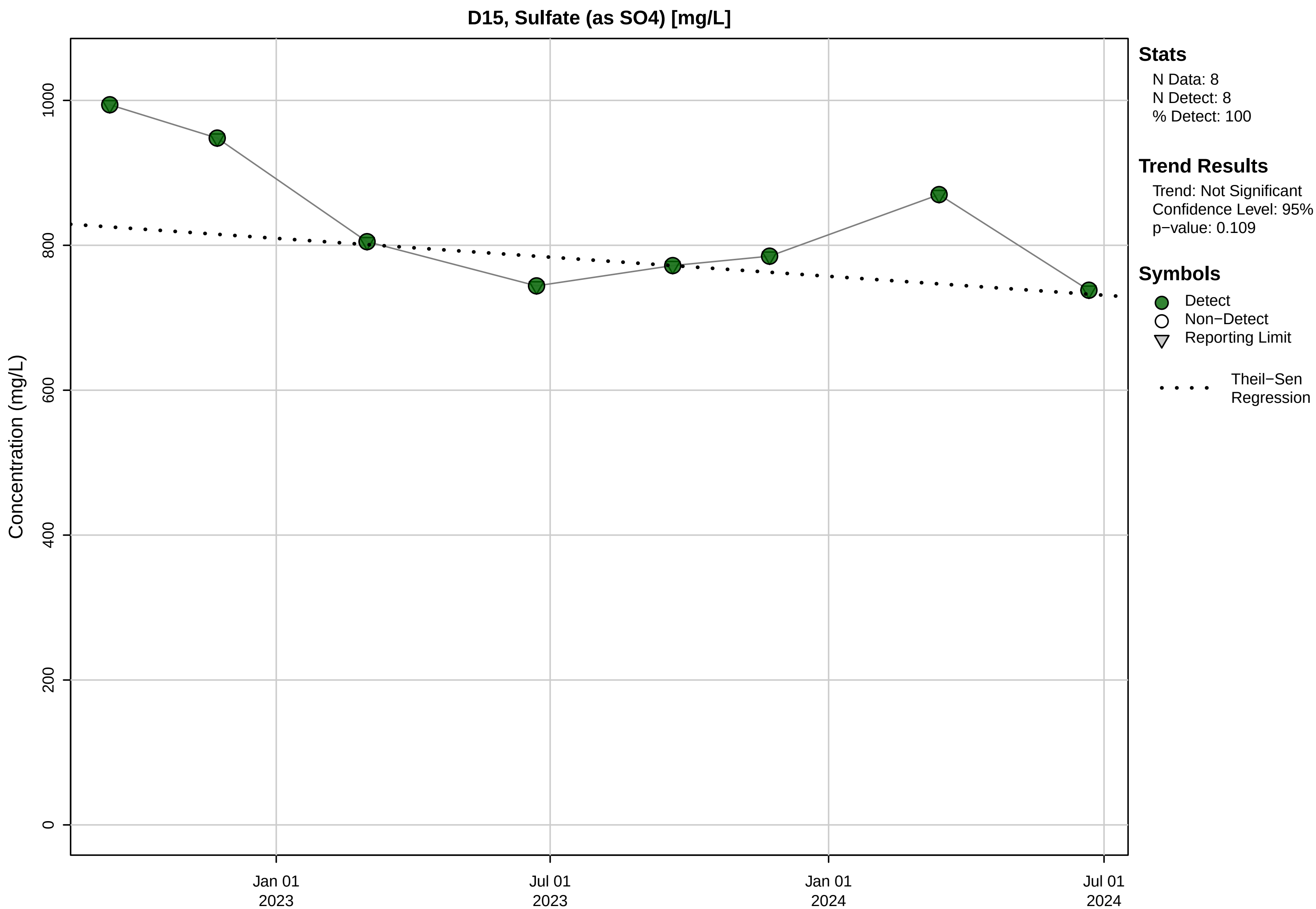

D15, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

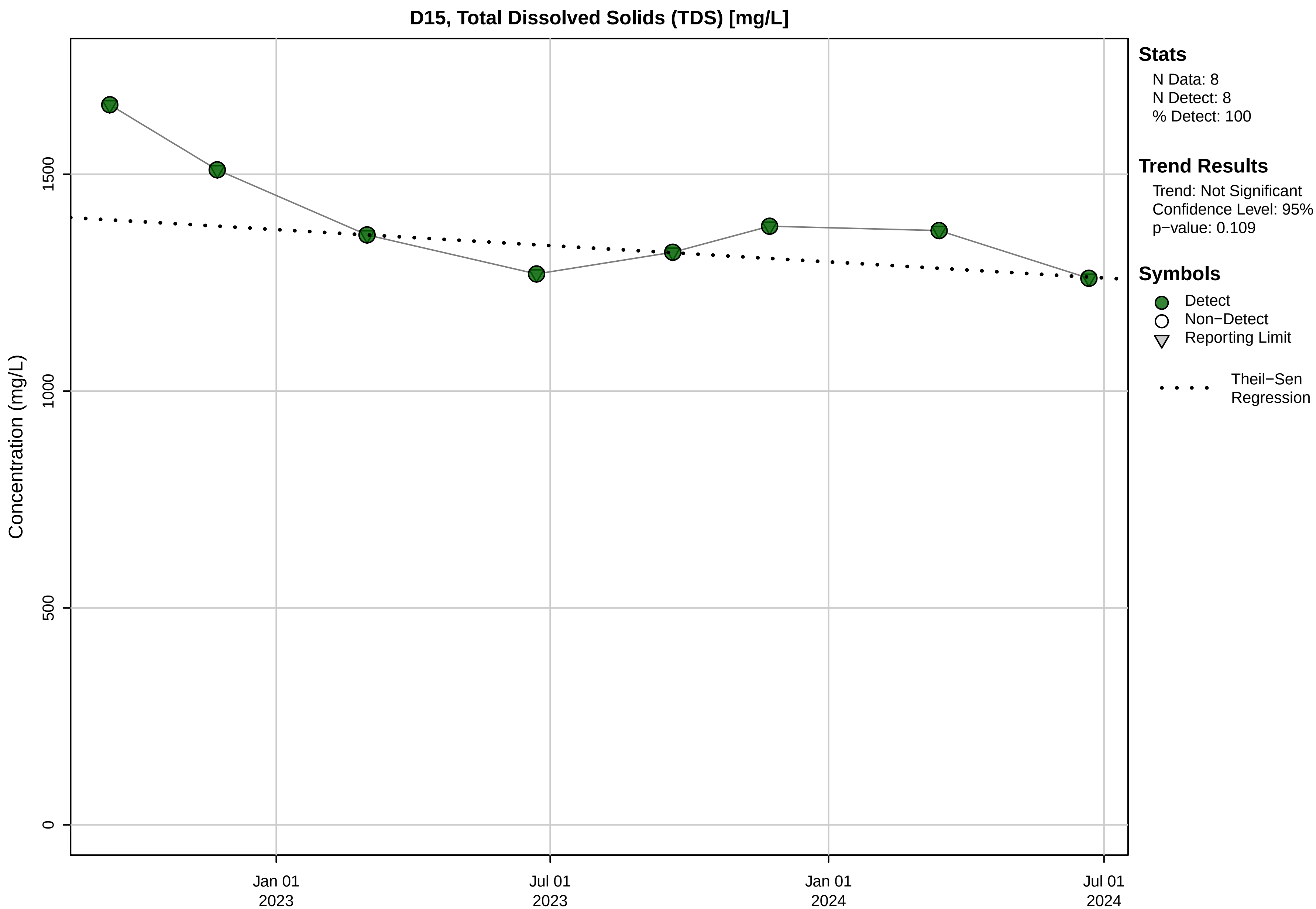


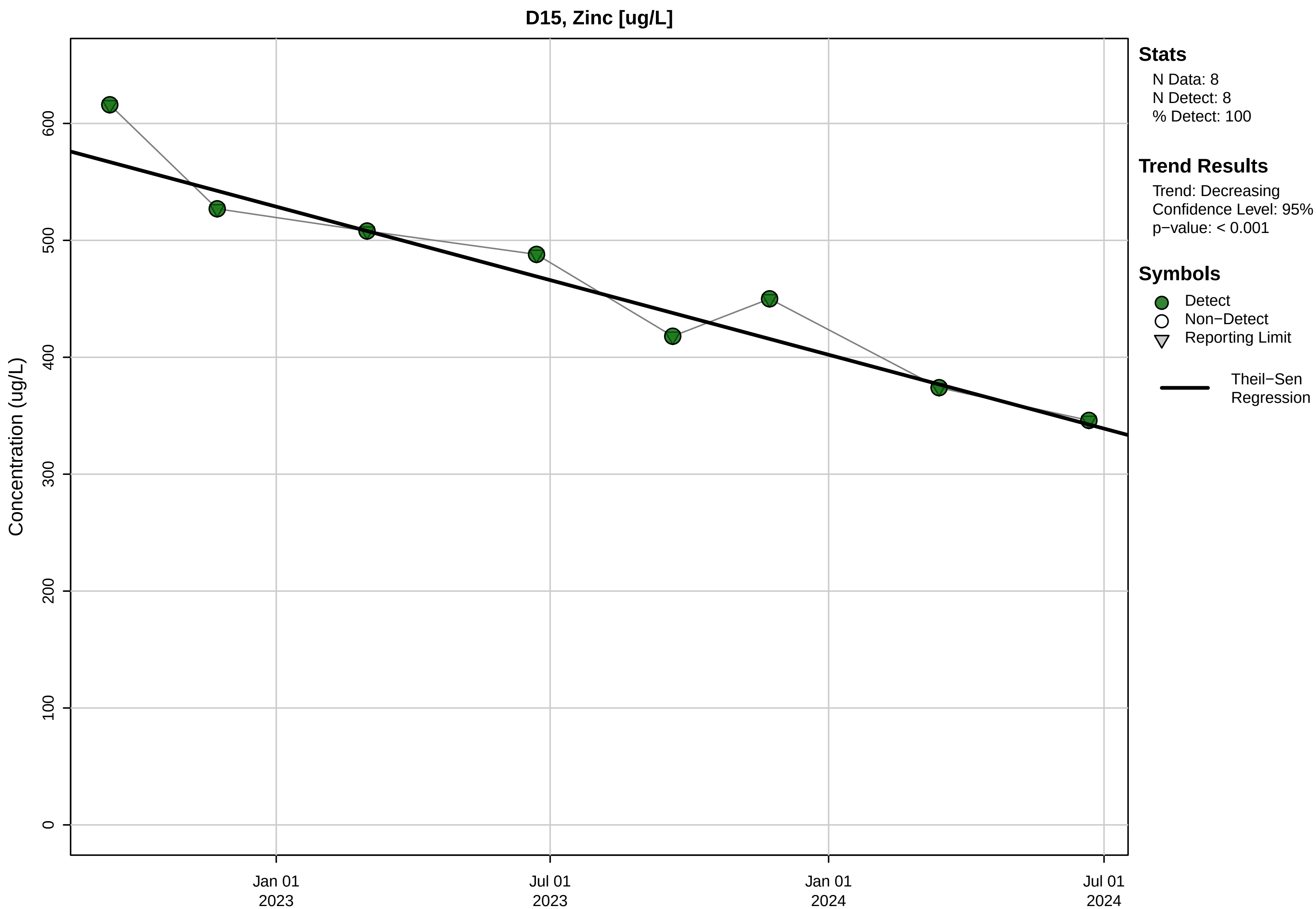
D15, Molybdenum [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.608
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D15, Nickel [ug/L]
Concentration (ug/L)
0
100
200
300
400
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.00884
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

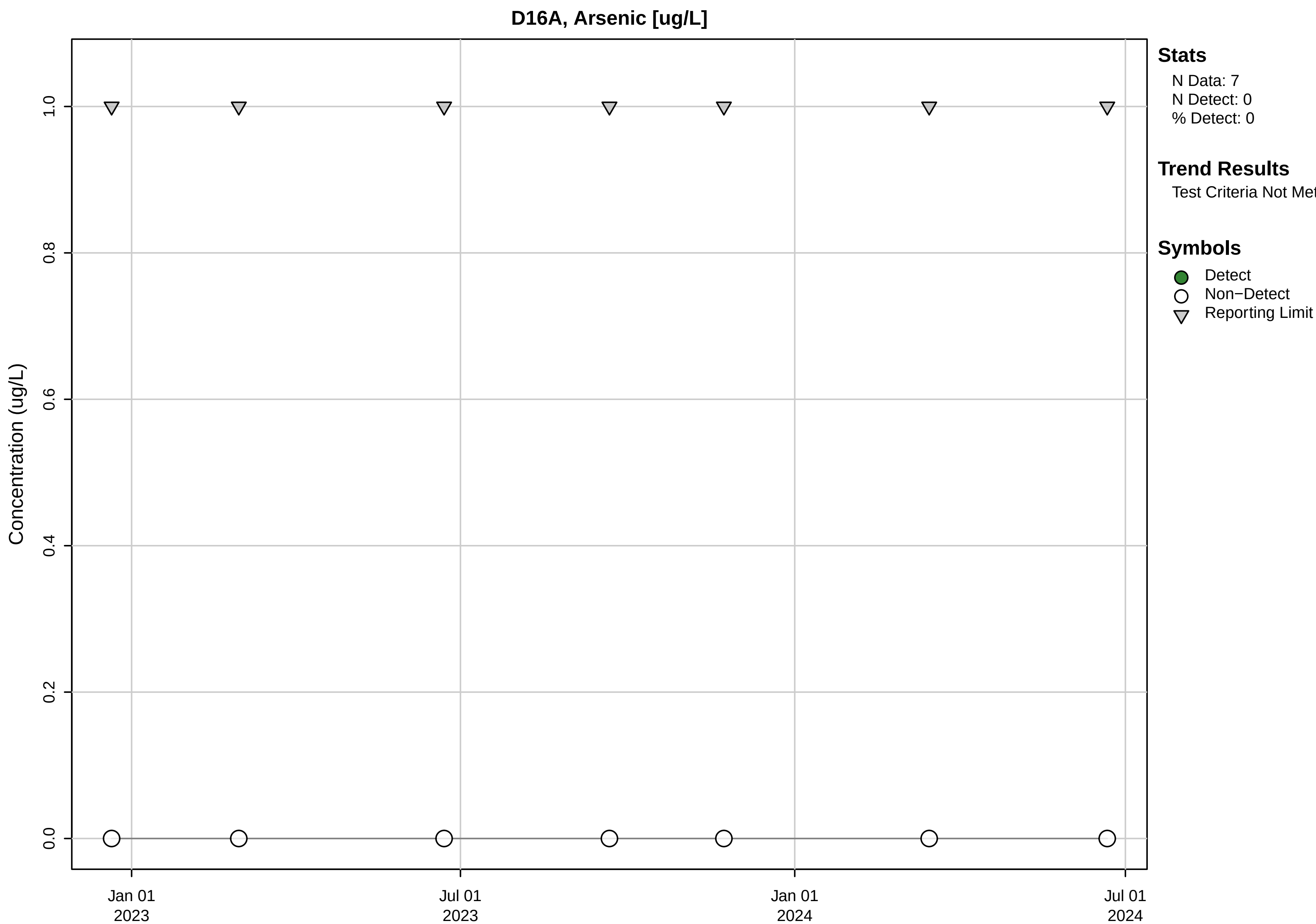

D15, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.199
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D15, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
200
400
600
800
1000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

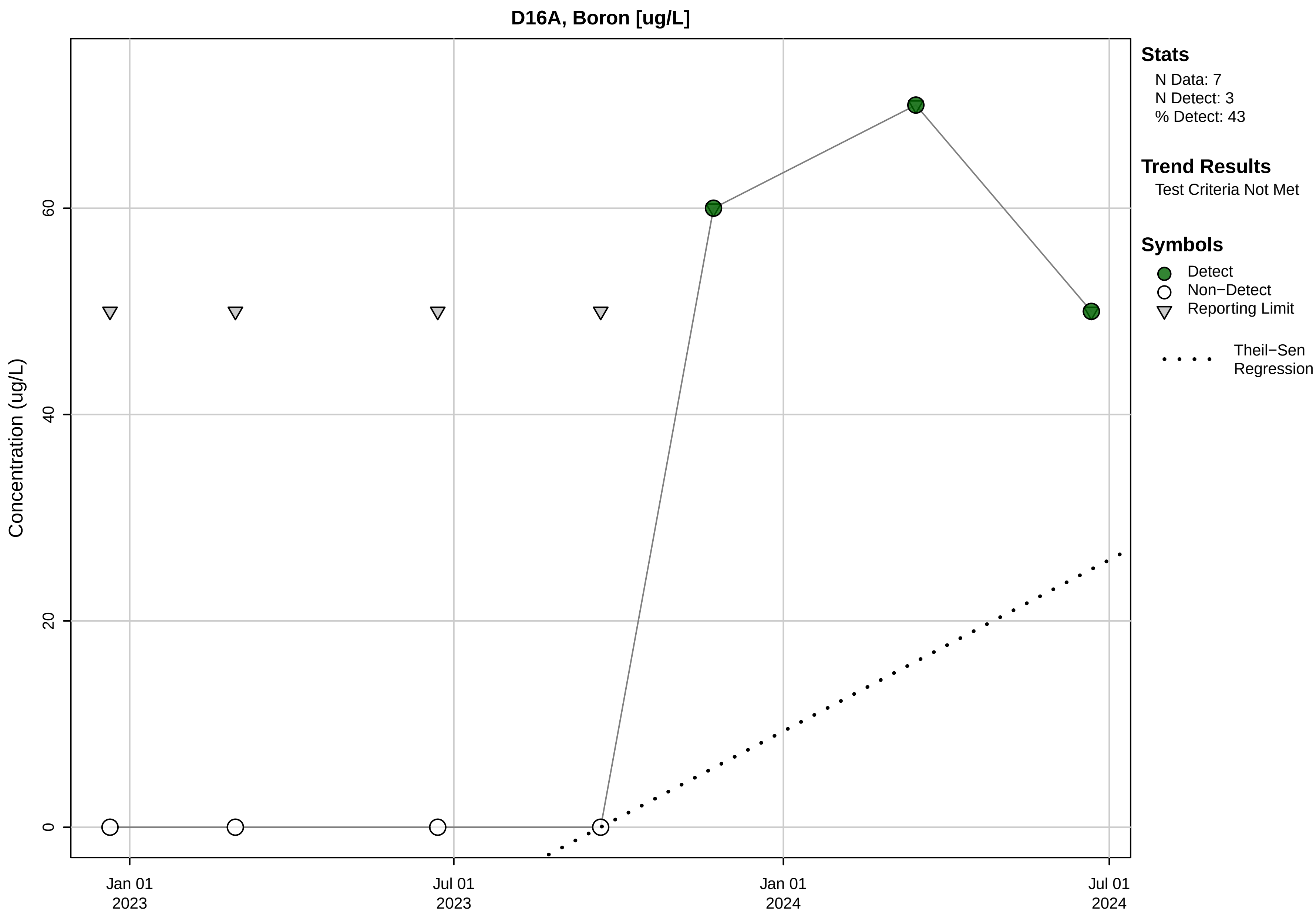

D15, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
500
1000
1500
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

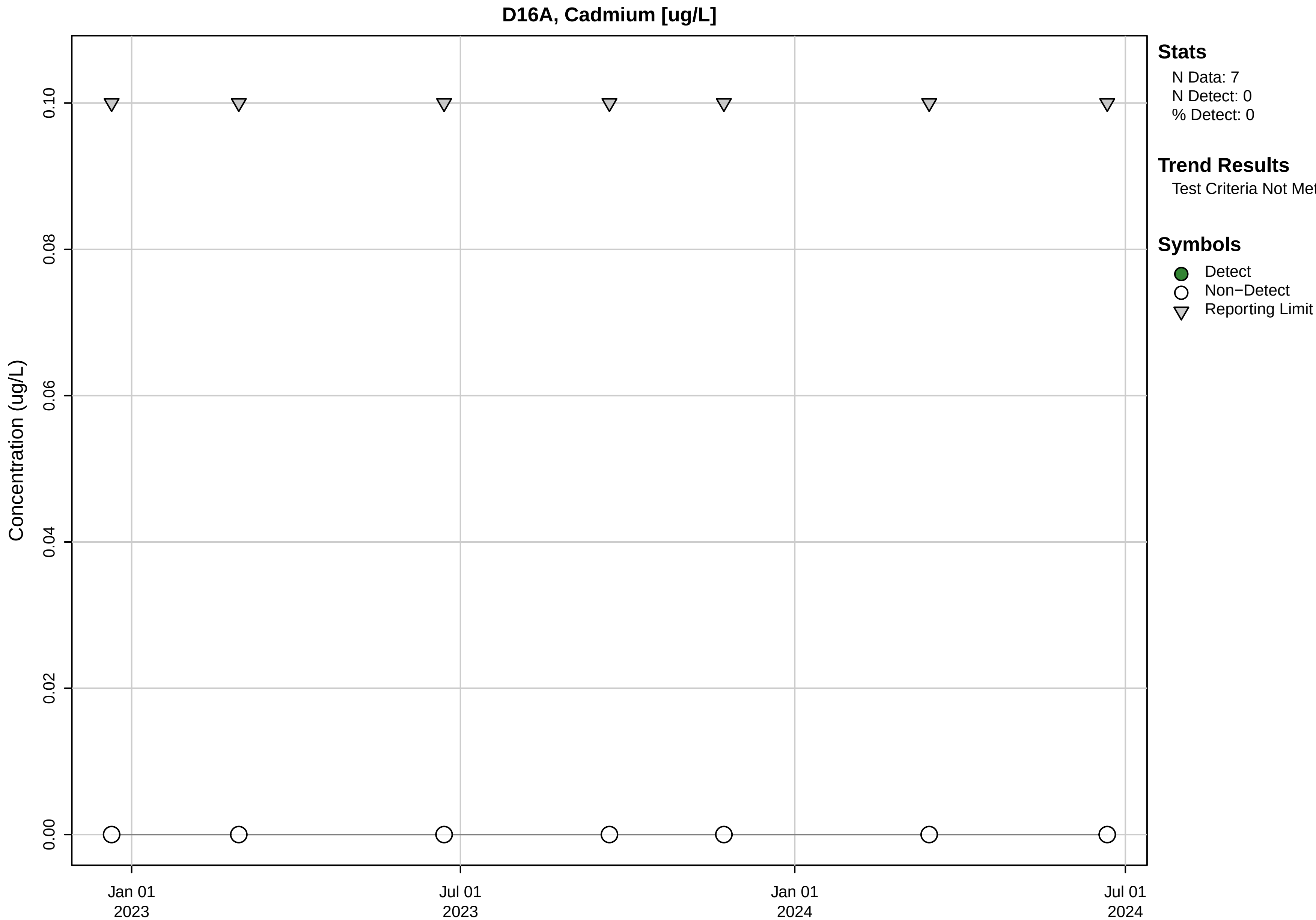


D15, Zinc [ug/L]
Concentration (ug/L)
0
100
200
300
400
500
600
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: < 0.001
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

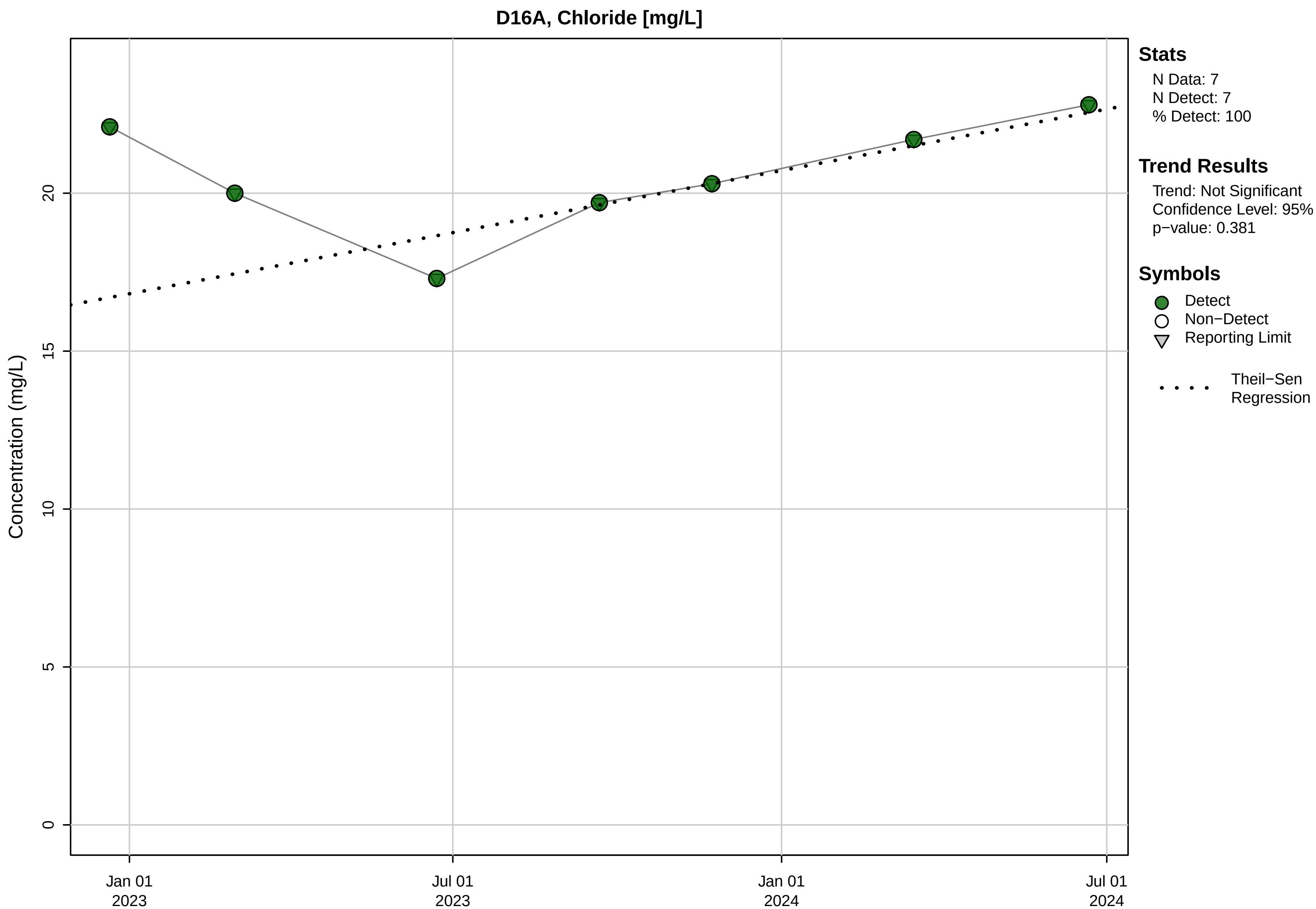


D16A, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

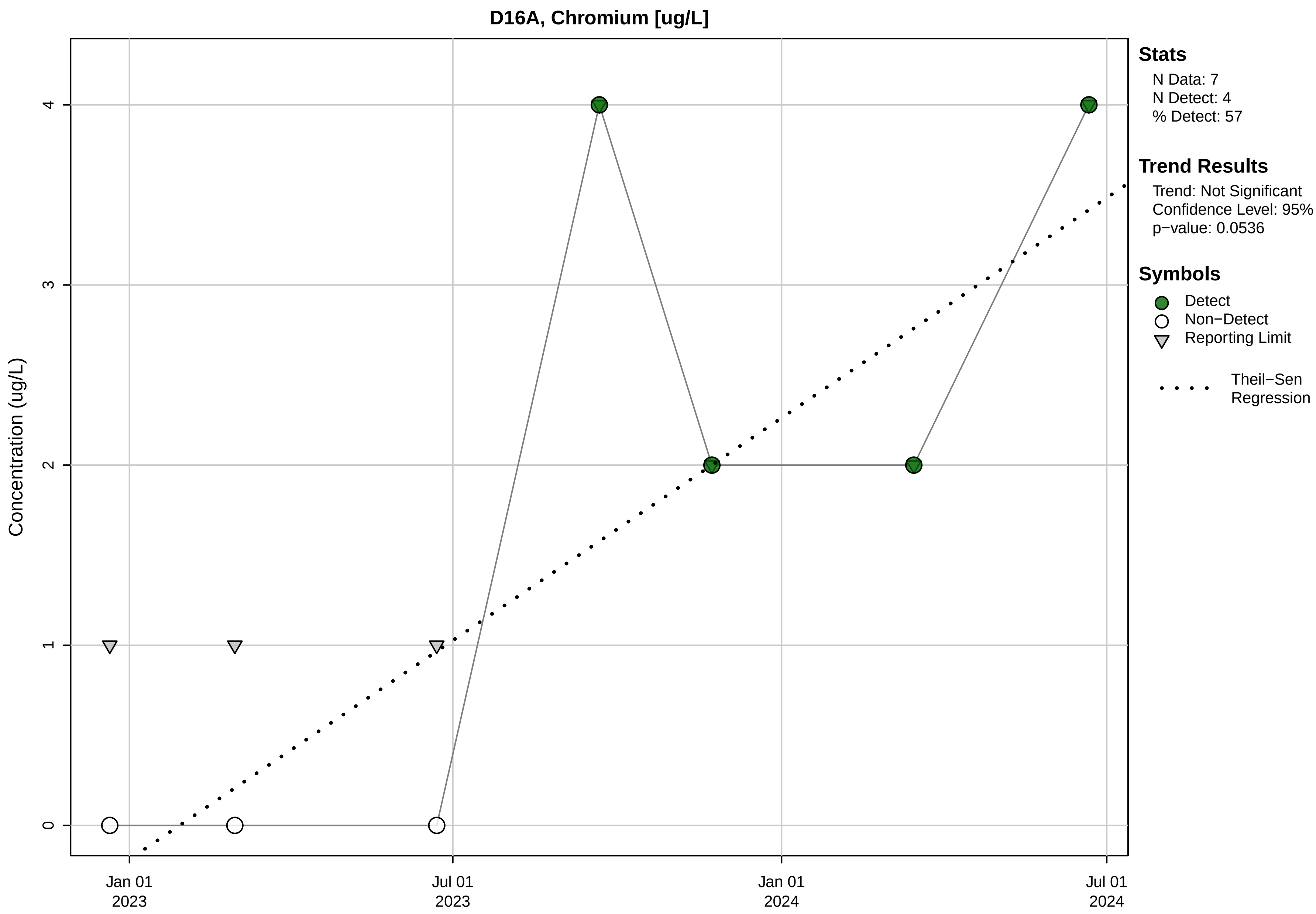

D16A, Boron [ug/L]
Concentration (ug/L)
0
20
40
60
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 3
% Detect: 43
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

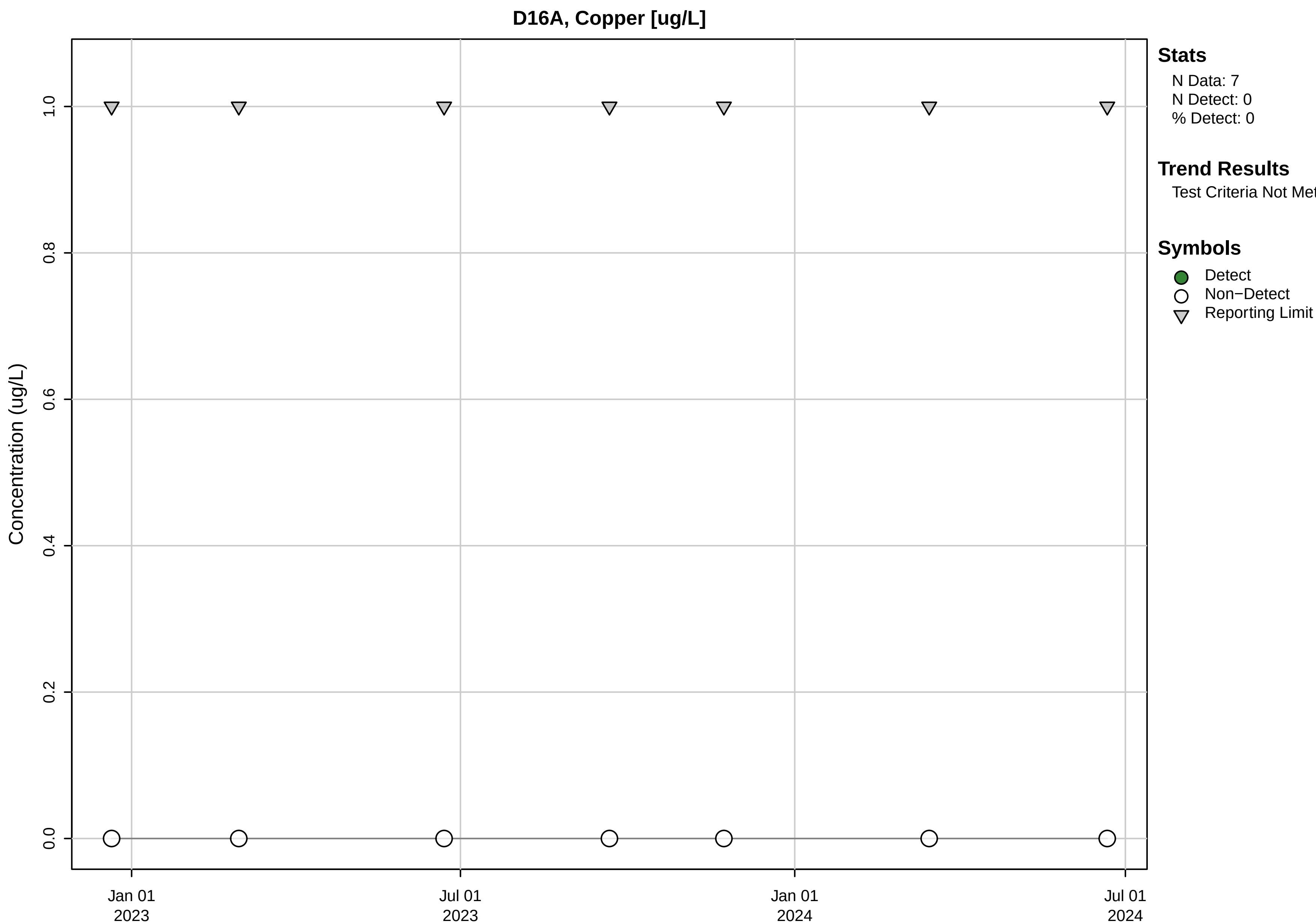


D16A, Cadmium [ug/L]
Concentration (ug/L)
0.10
0.08
0.06
0.04
0.02
0.00
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

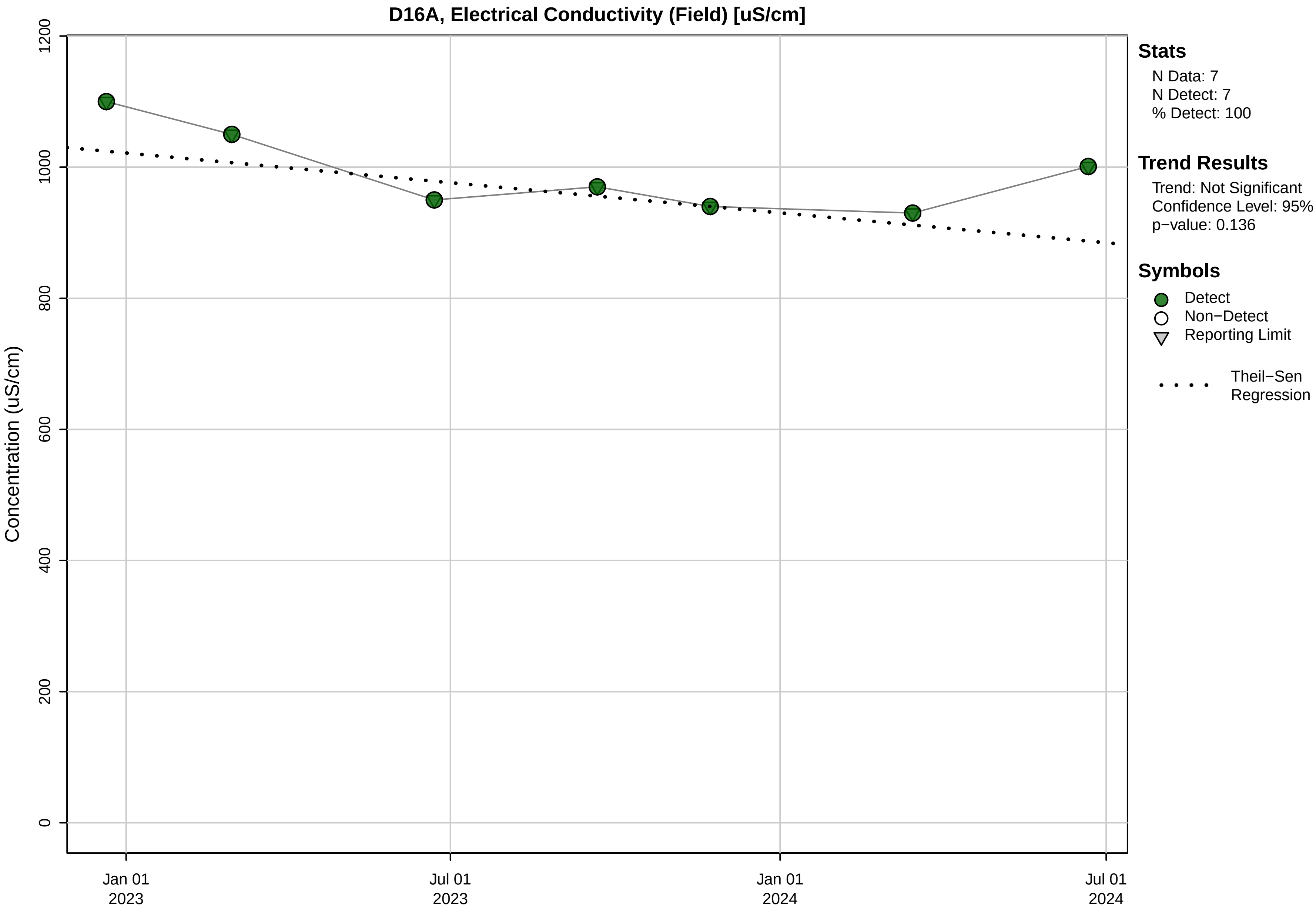


D16A, Chloride [mg/L]
Concentration (mg/L)
0
5
10
15
20
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.381
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

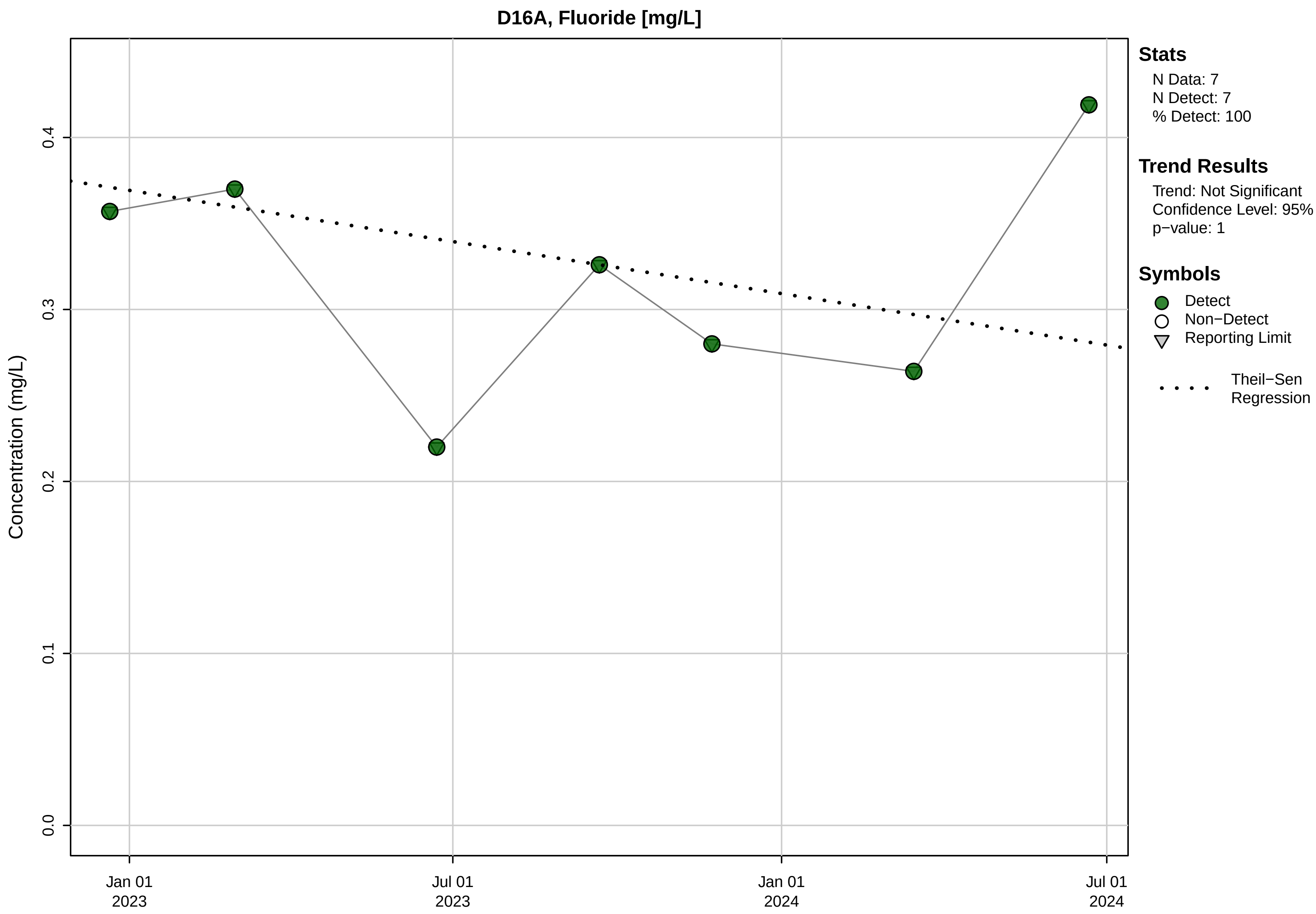

D16A, Chromium [ug/L]
Concentration (ug/L)
0
1
2
3
4
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 7
N Detect: 4
% Detect: 57
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0536
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

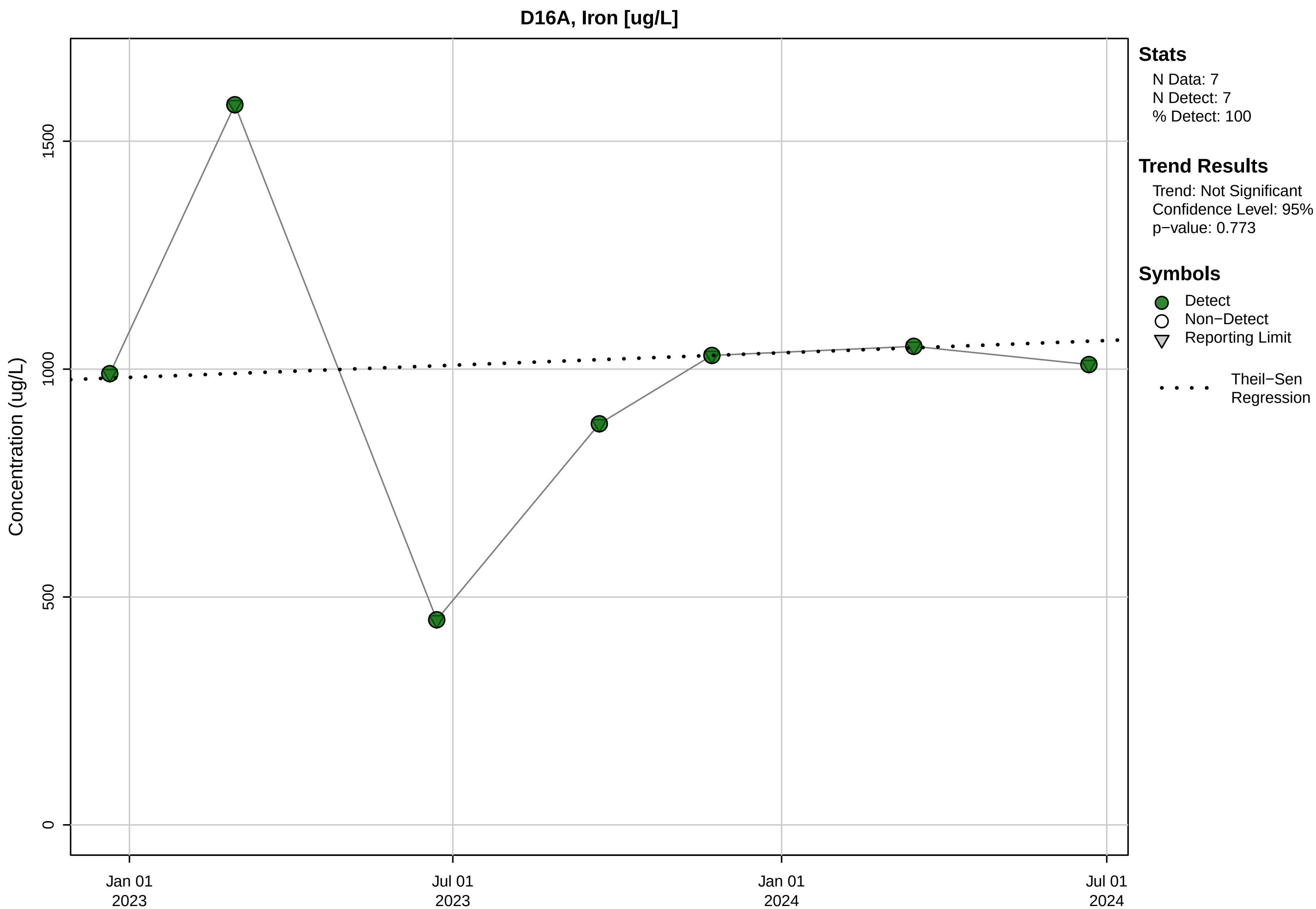


D16A, Copper [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

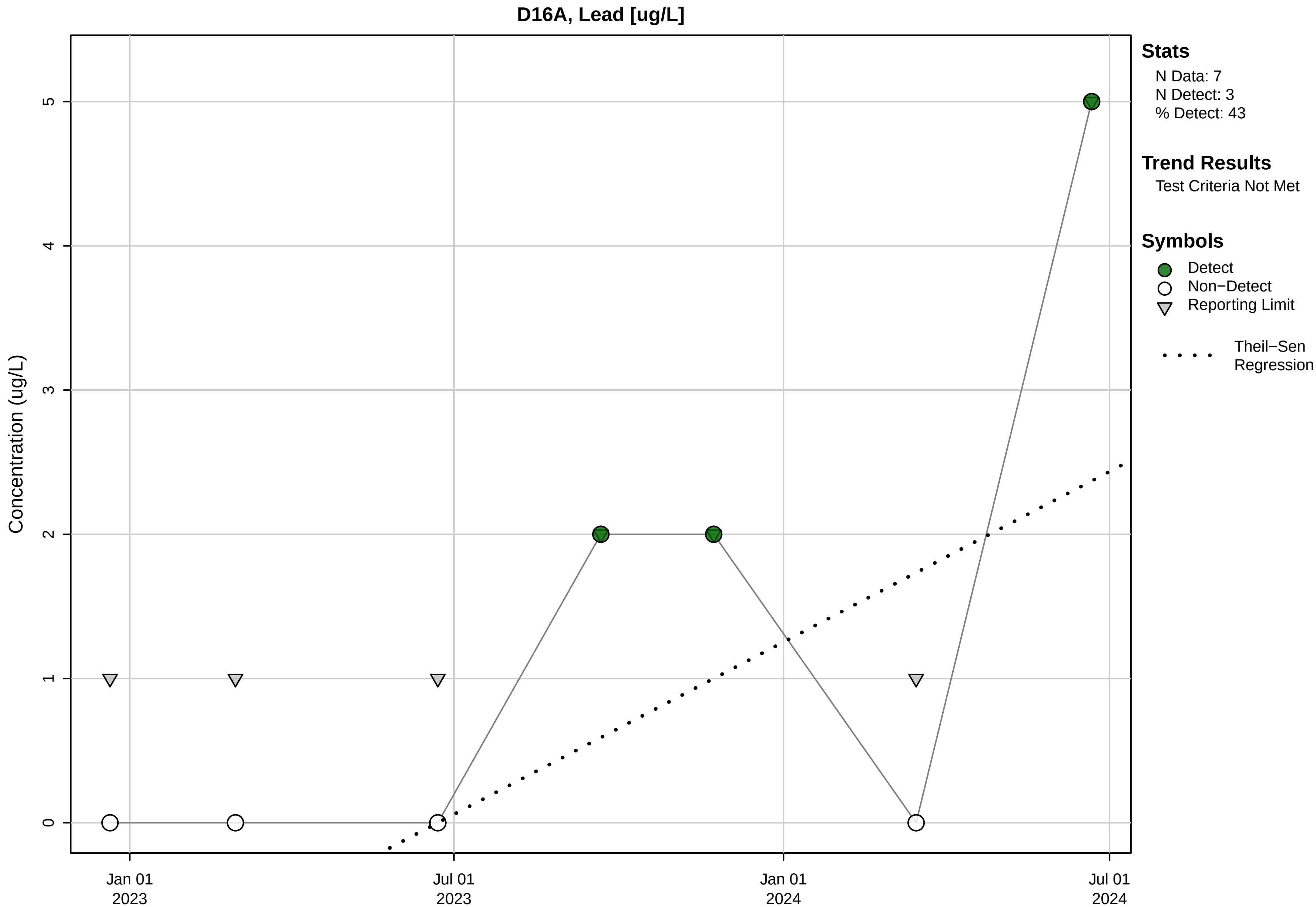


D16A, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
200
400
600
800
1000
1200
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.136
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

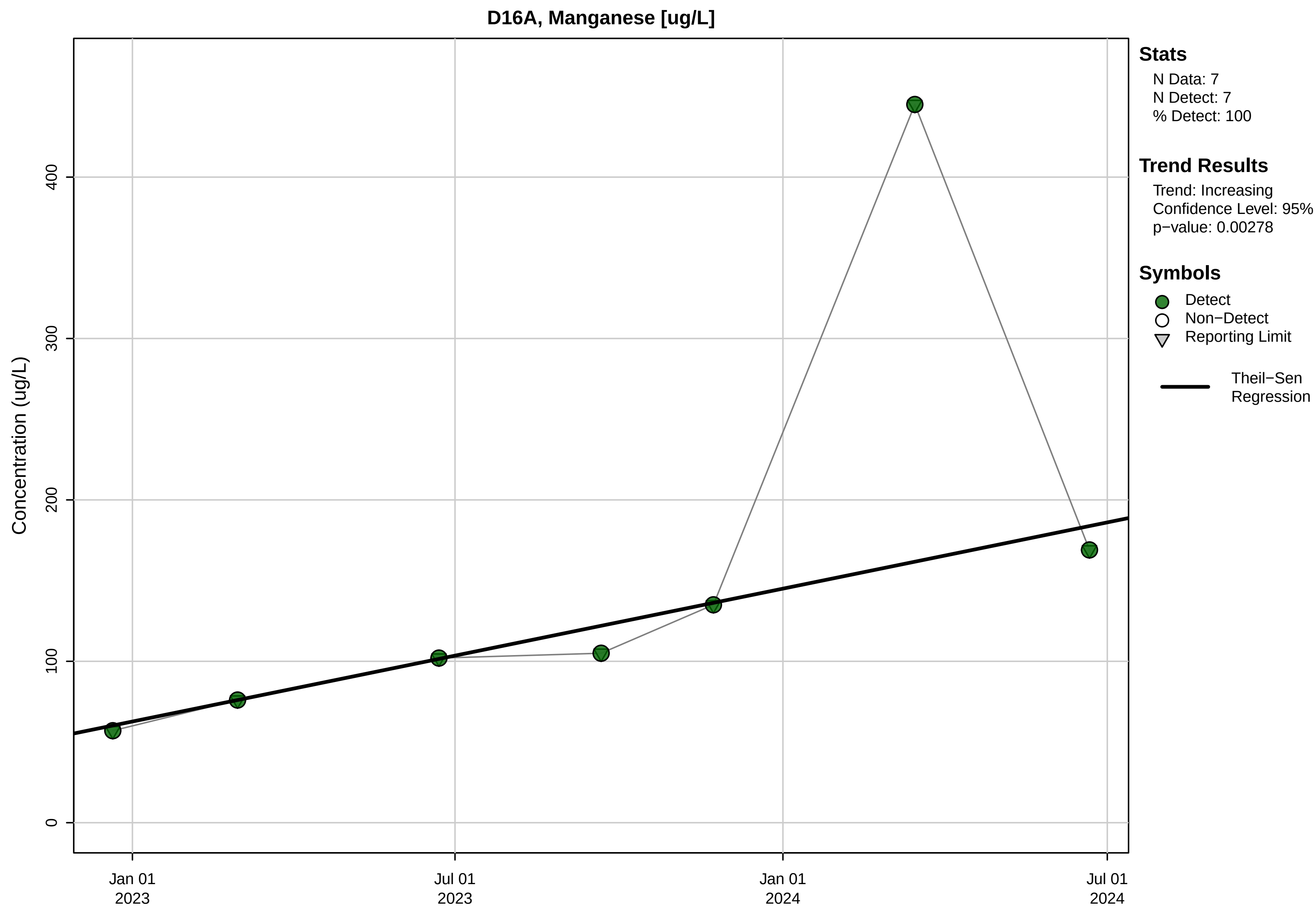

D16A, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

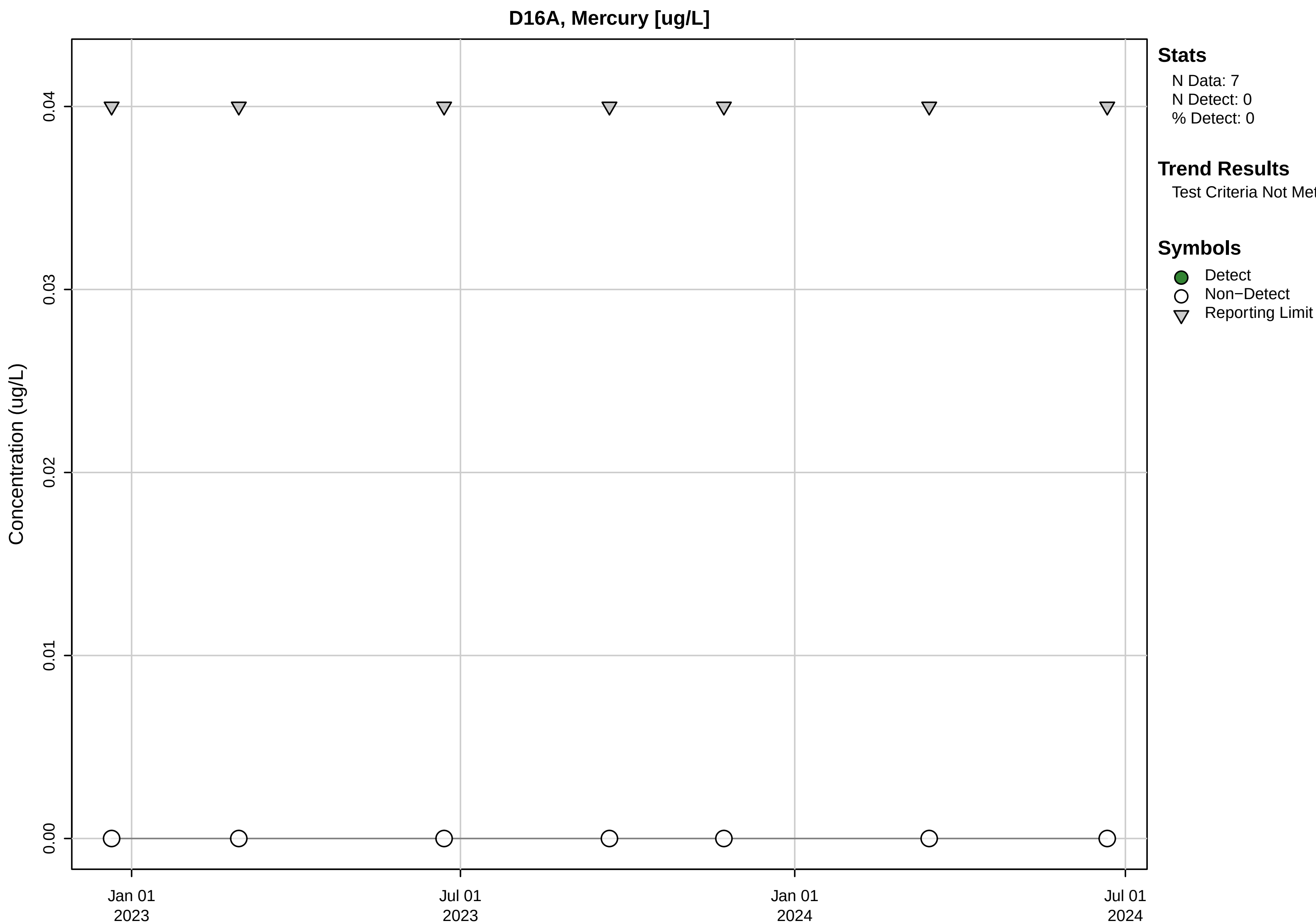


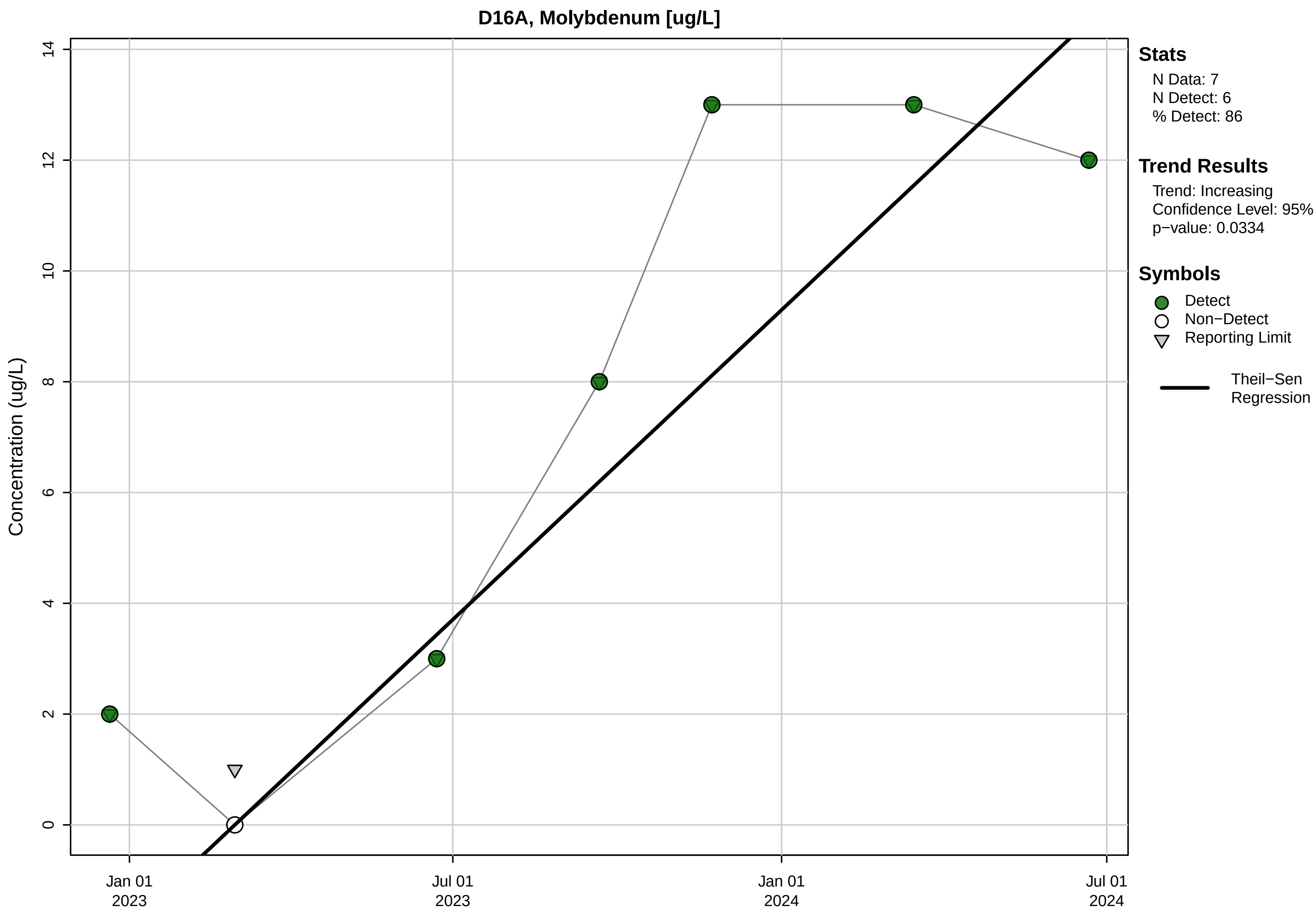
D16A, Iron [ug/L]
Concentration (ug/L)
0
500
1000
1500
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.773
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



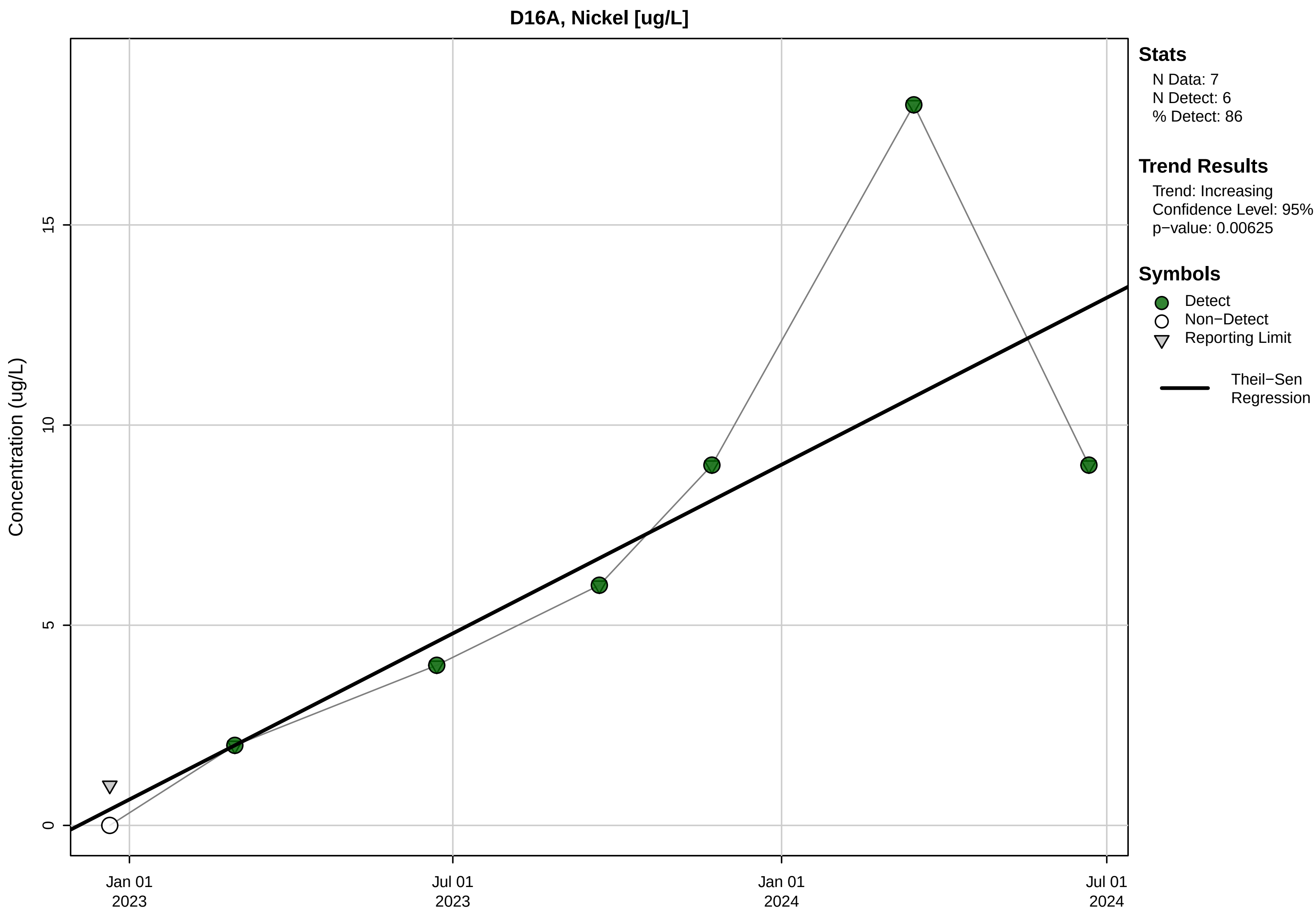
D16A, Lead [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 7
N Detect: 3
% Detect: 43
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

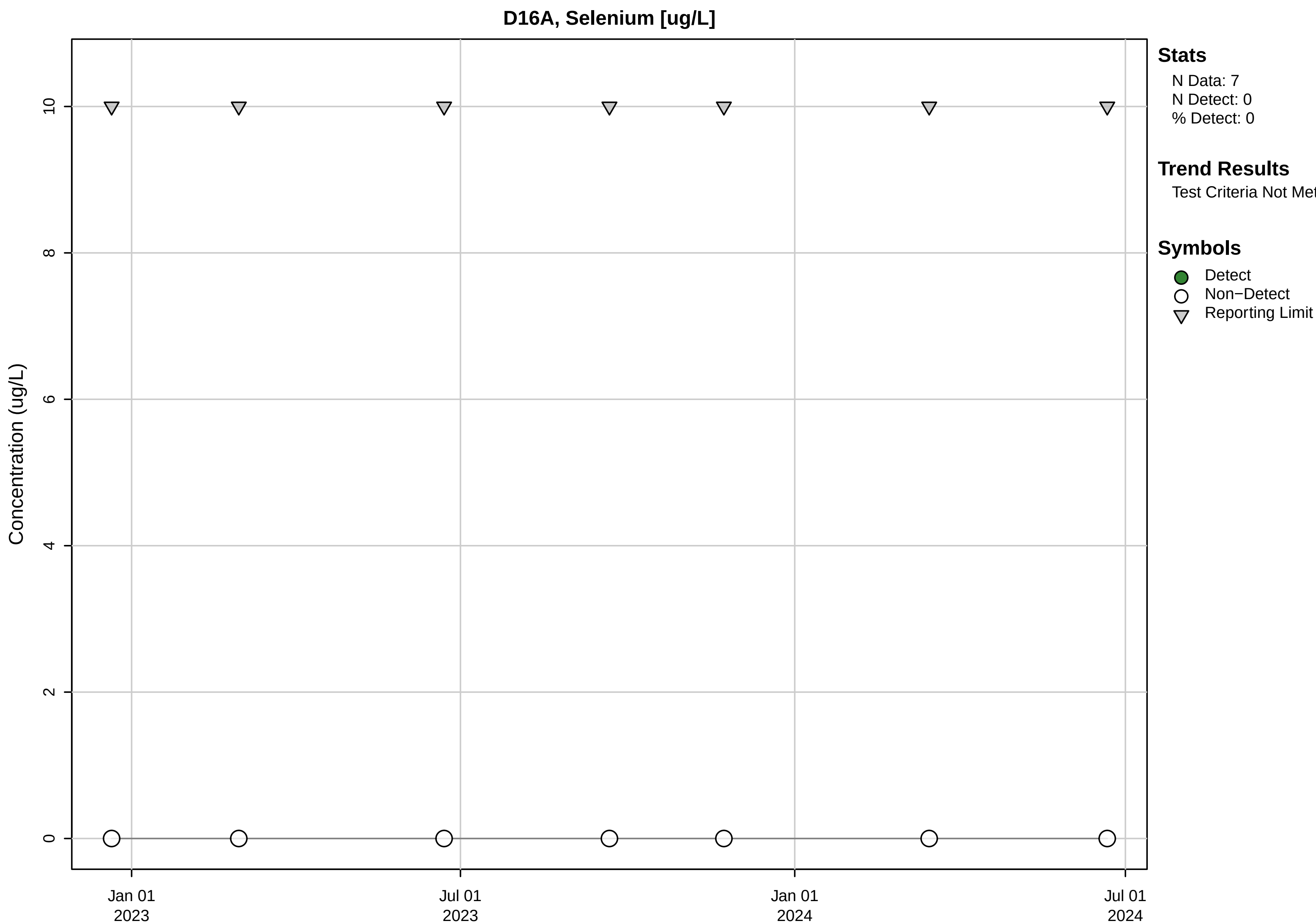

D16A, Manganese [ug/L]
Concentration (ug/L)
0
100
200
300
400
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.00278
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

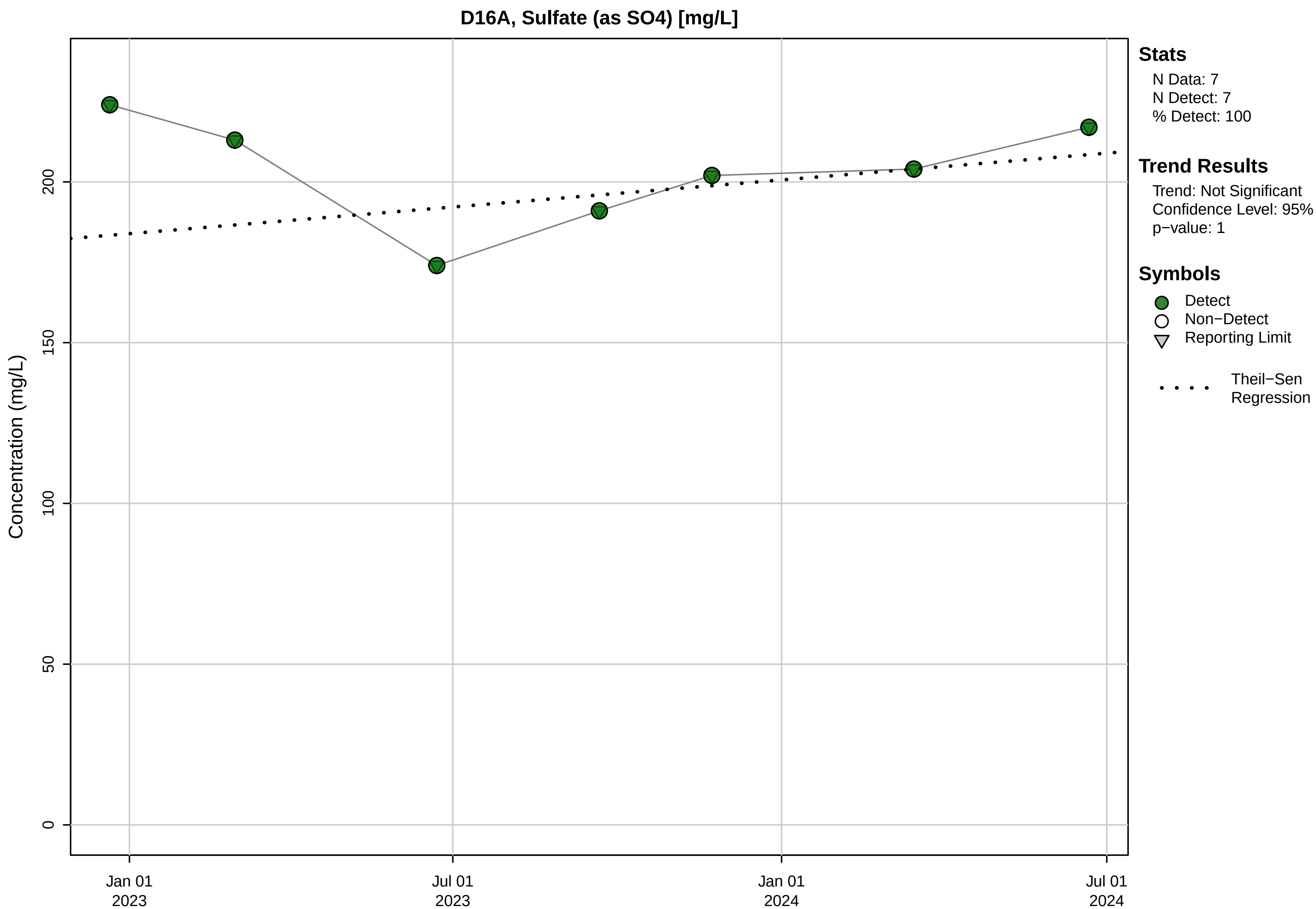

D16A, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



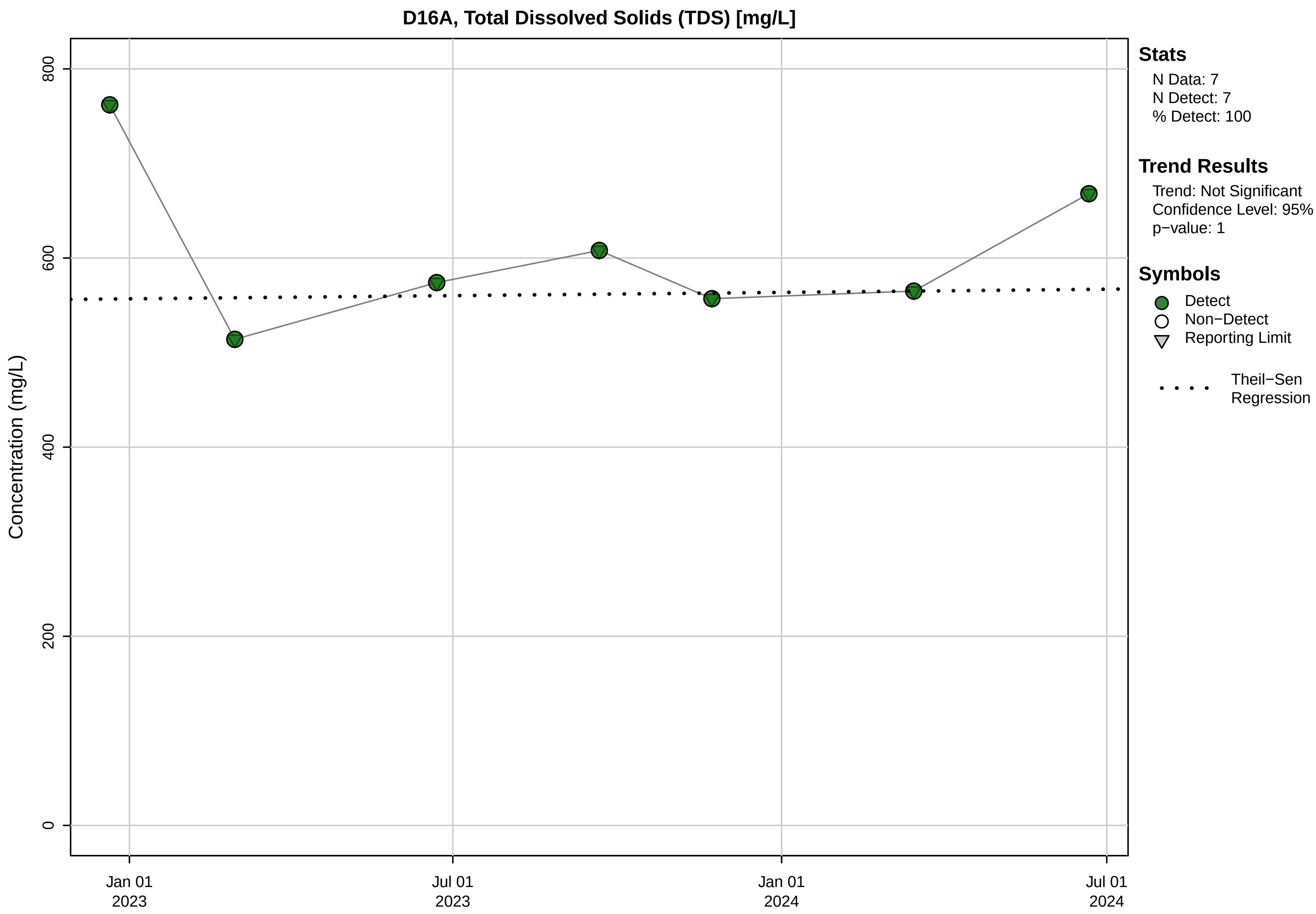
D16A, Molybdenum [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
12
14
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 6
% Detect: 86
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0334
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D16A, Nickel [ug/L]
Concentration (ug/L)
0
5
10
15
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 6
% Detect: 86
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.00625
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

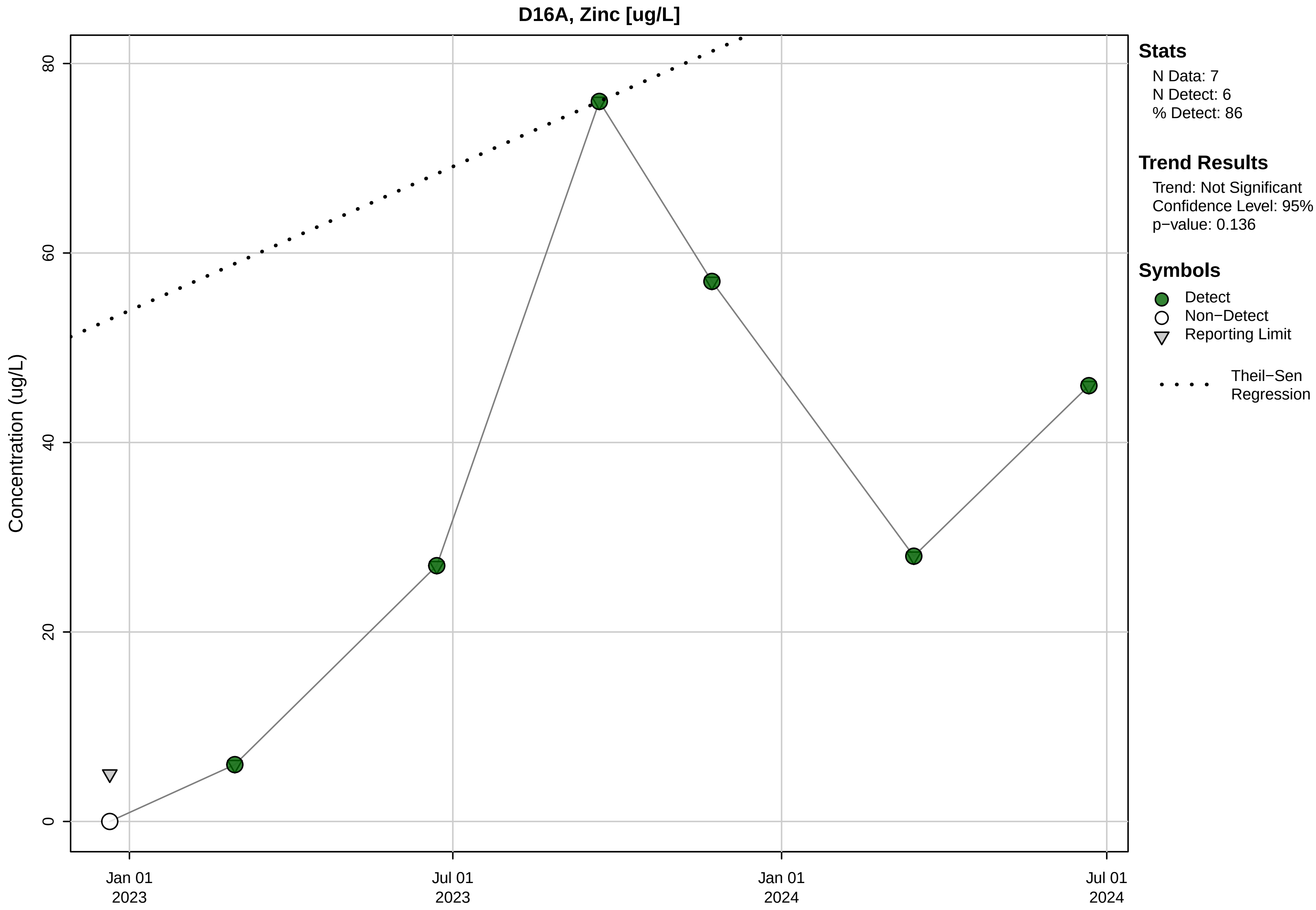

D16A, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



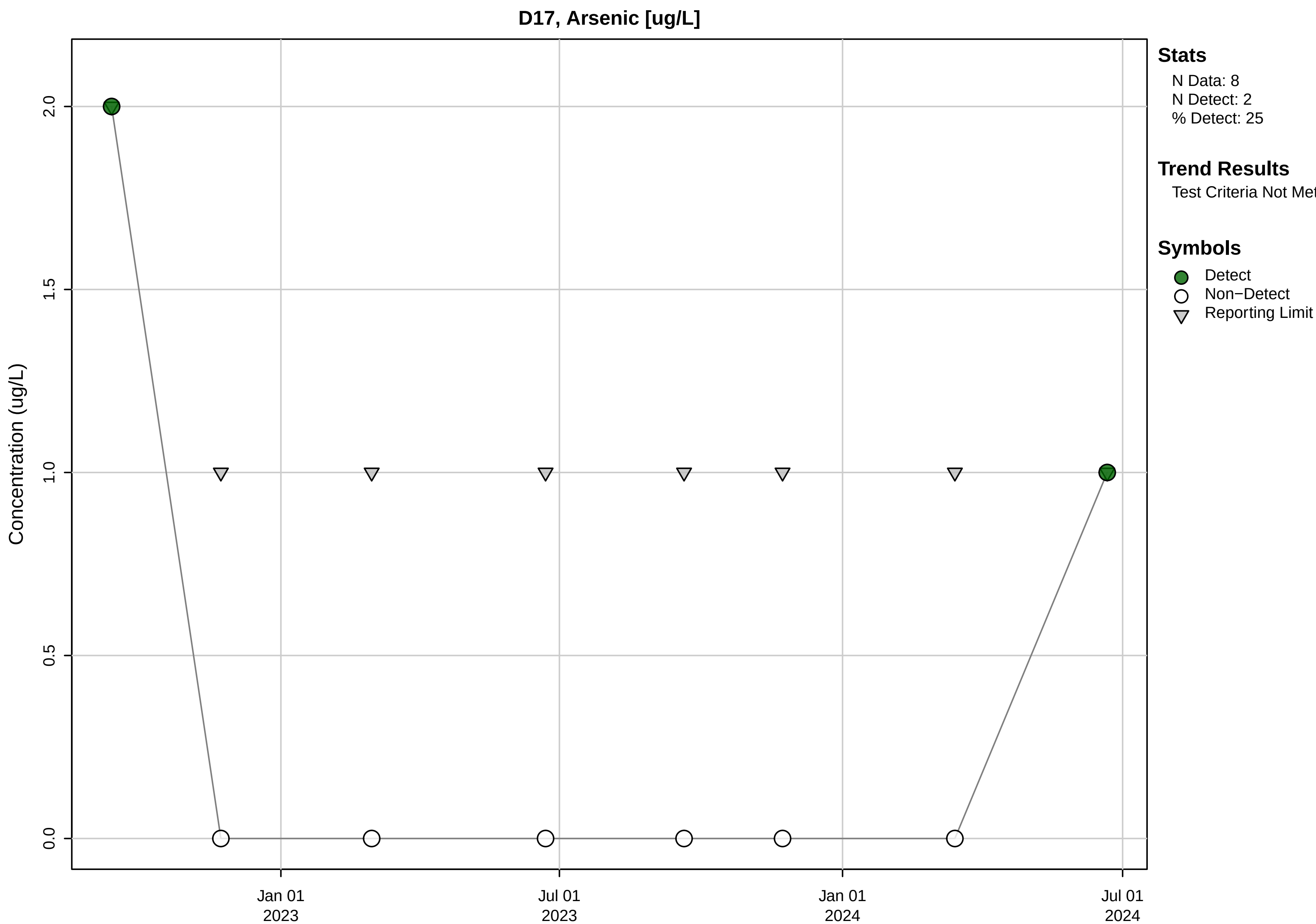
D16A, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
50
100
150
200
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

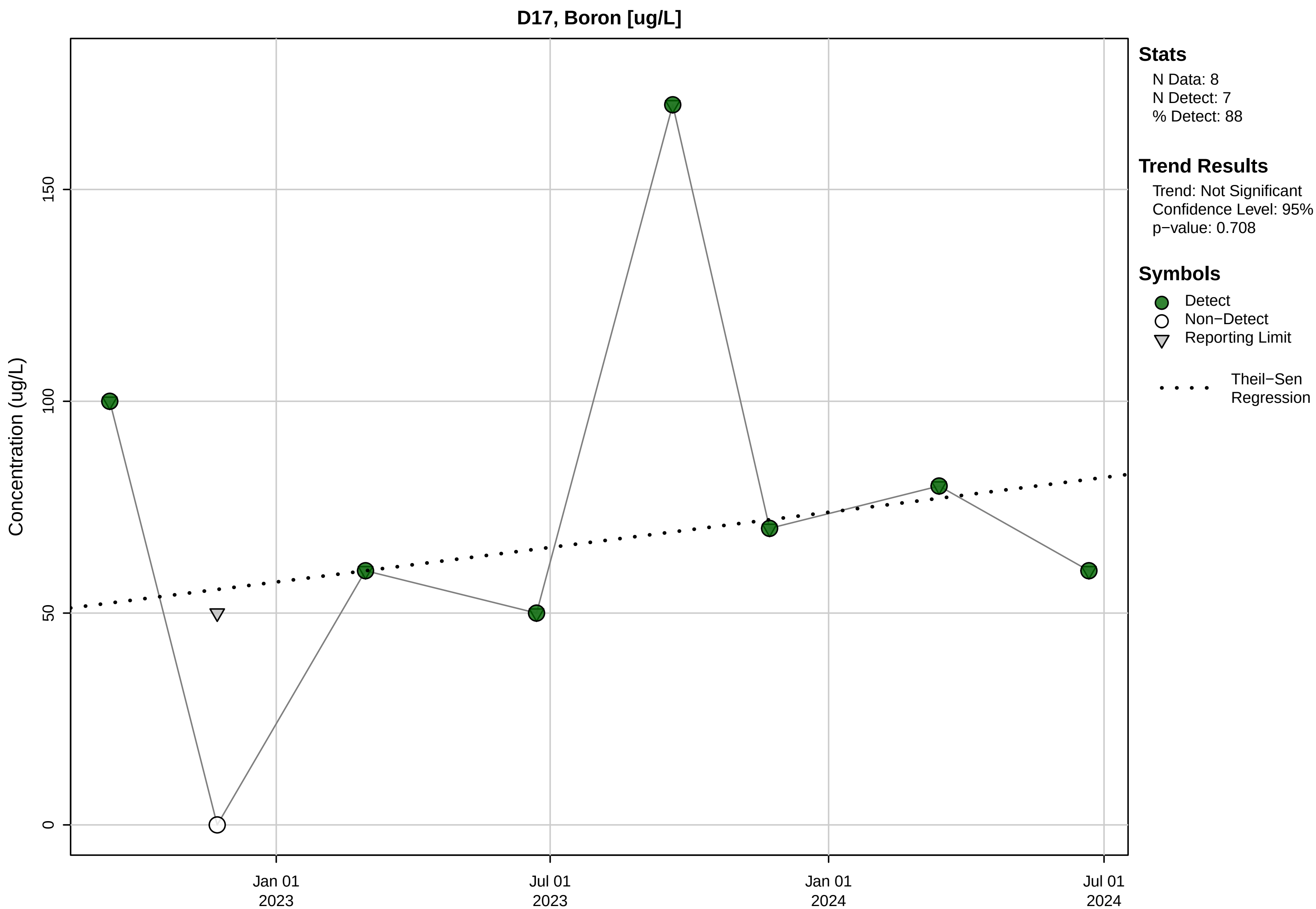


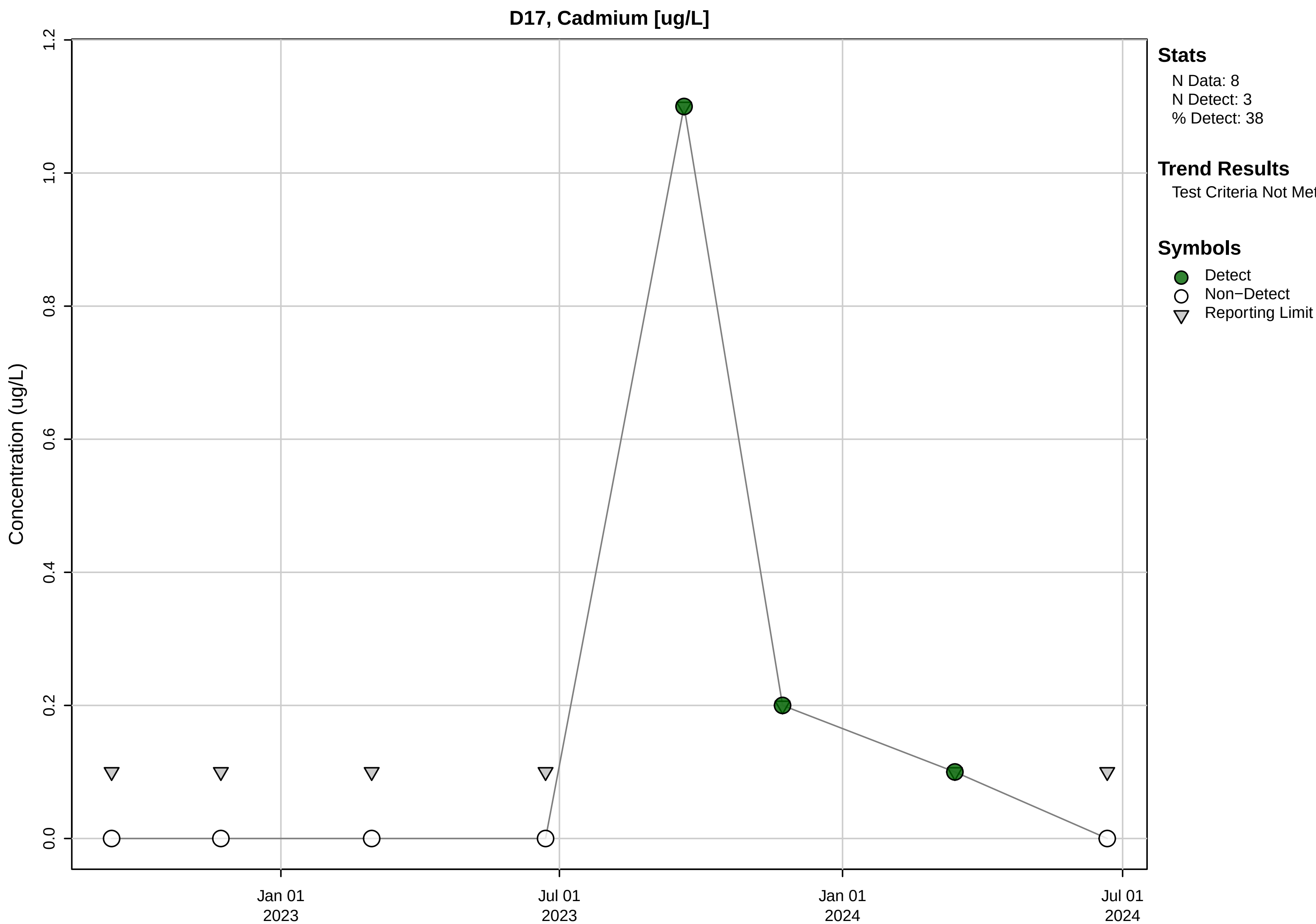
D16A, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
200
400
600
800
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 7
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



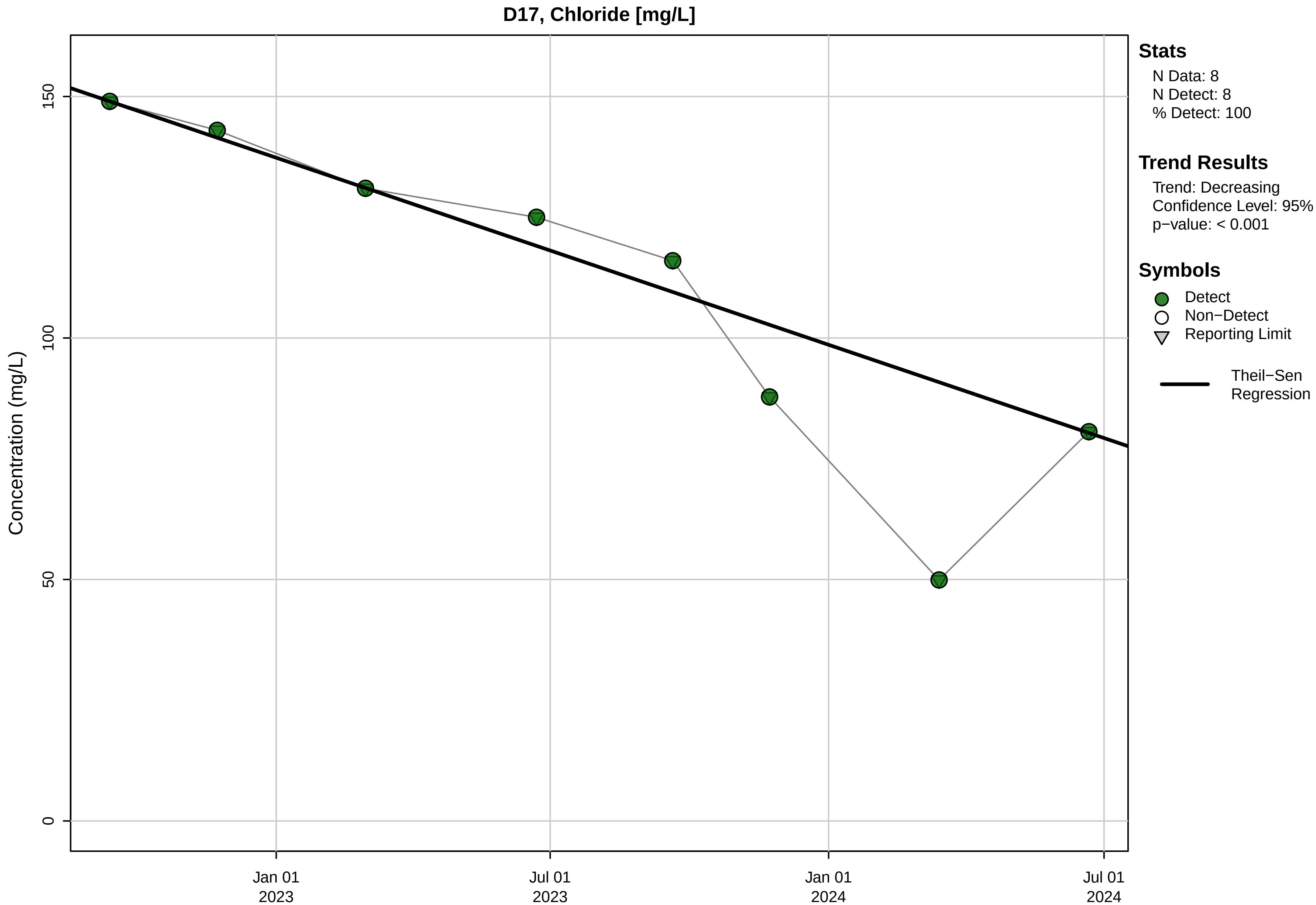
D16A, Zinc [ug/L]
Concentration (ug/L)
0
20
40
60
80
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 7
N Detect: 6
% Detect: 86
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.136
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D17, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

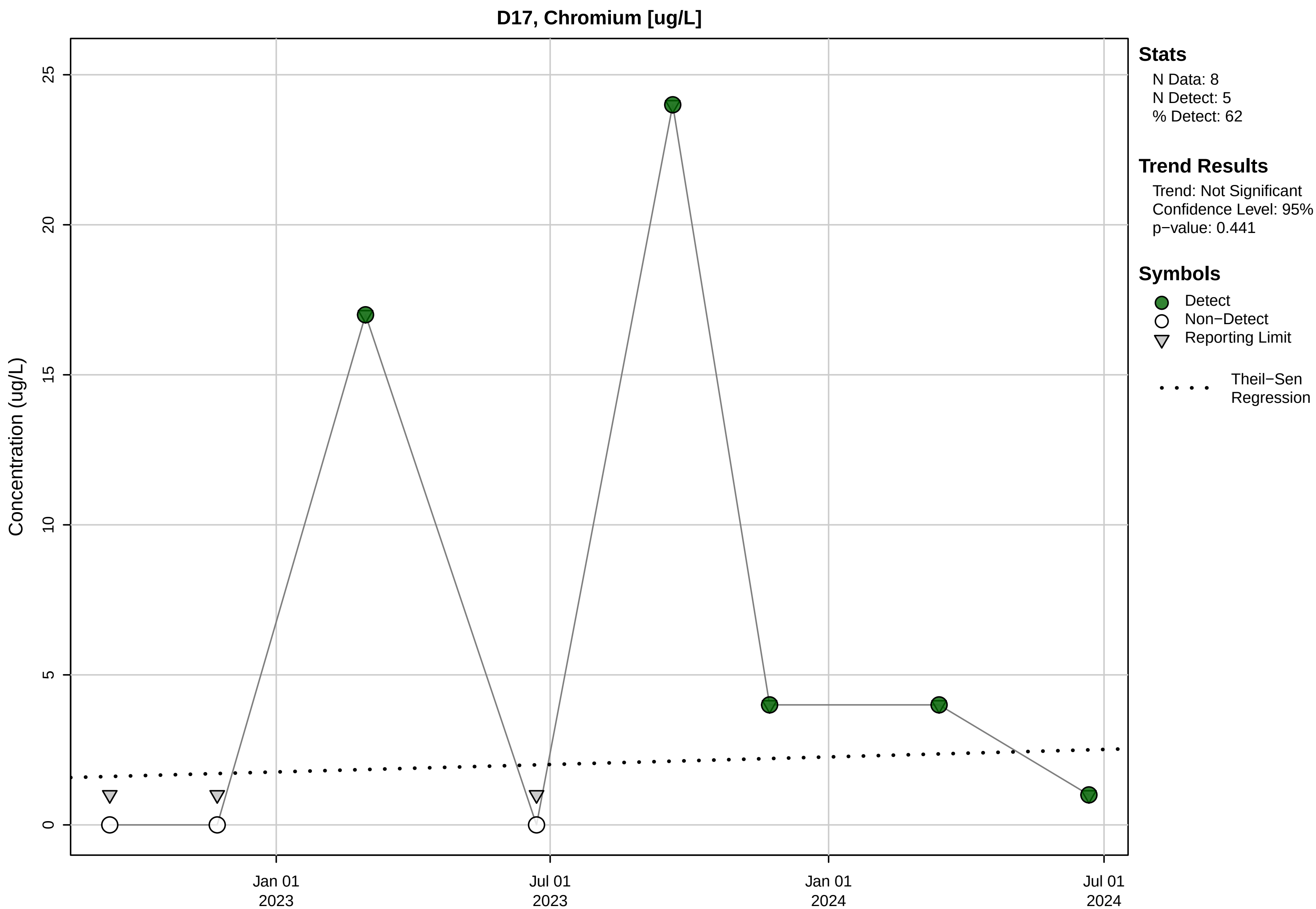

D17, Boron [ug/L]
Concentration (ug/L)
0
50
100
150
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.708
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



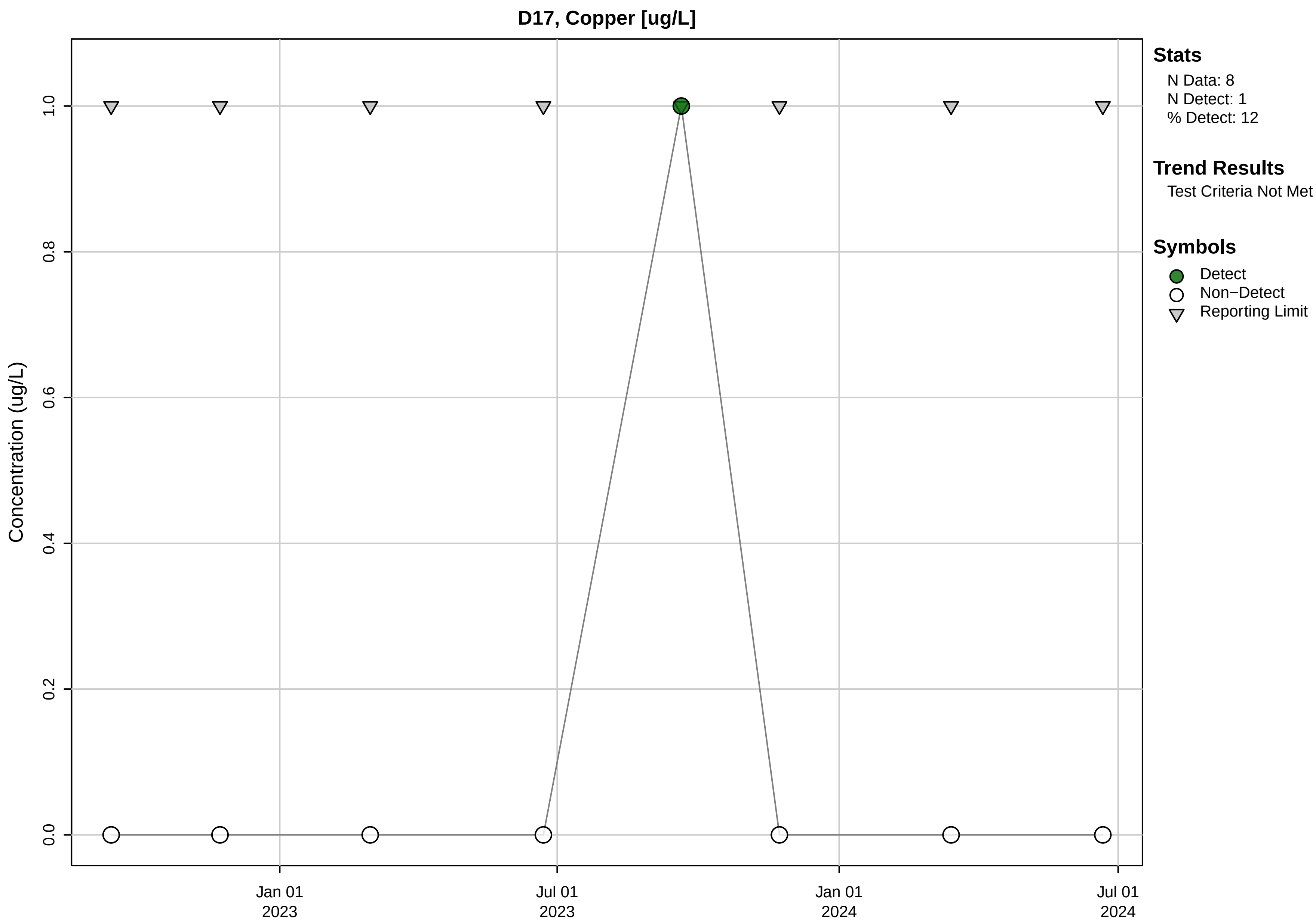
D17, Cadmium [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



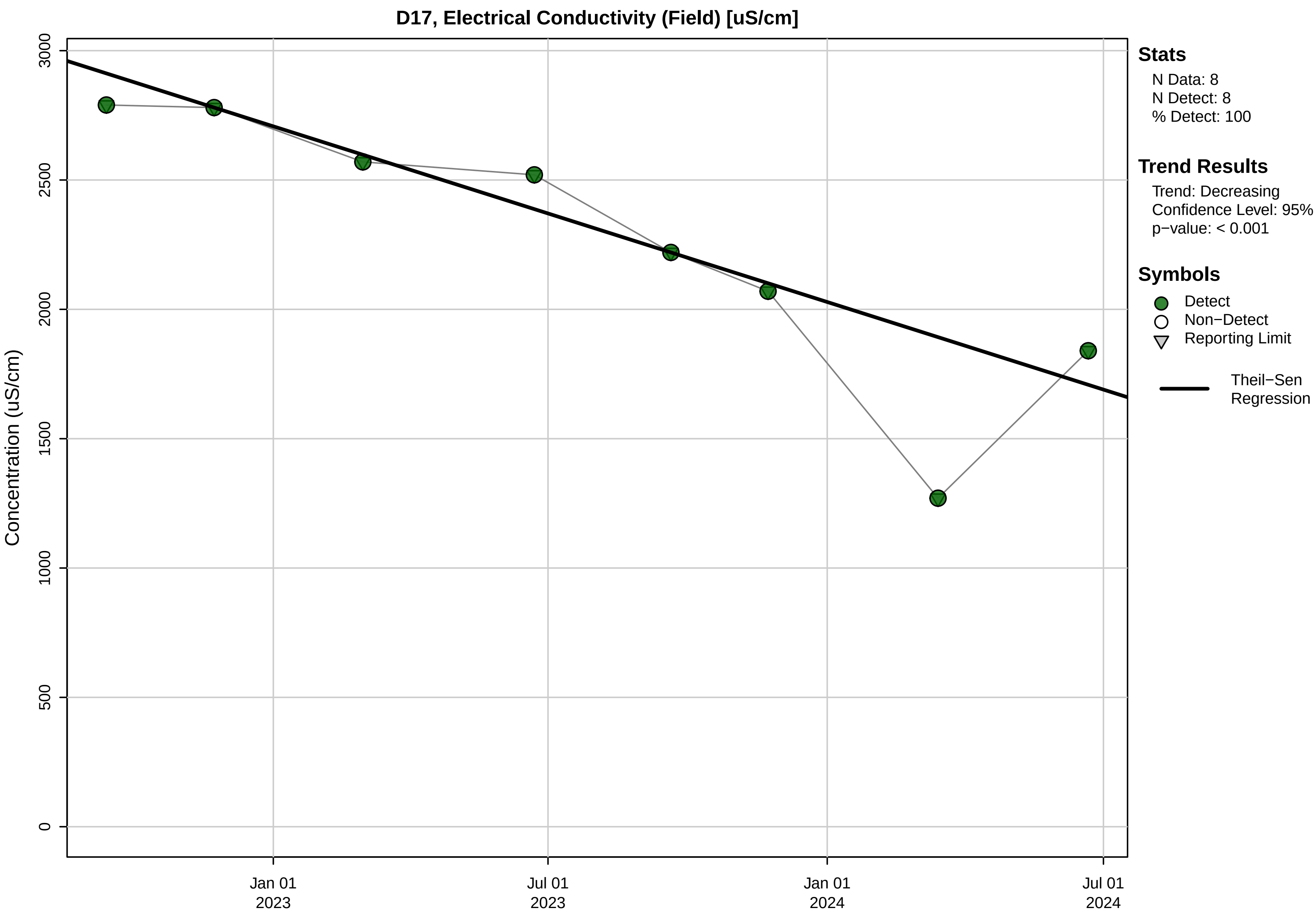
D17, Chloride [mg/L]
Concentration (mg/L)
0
50
100
150
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: < 0.001
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



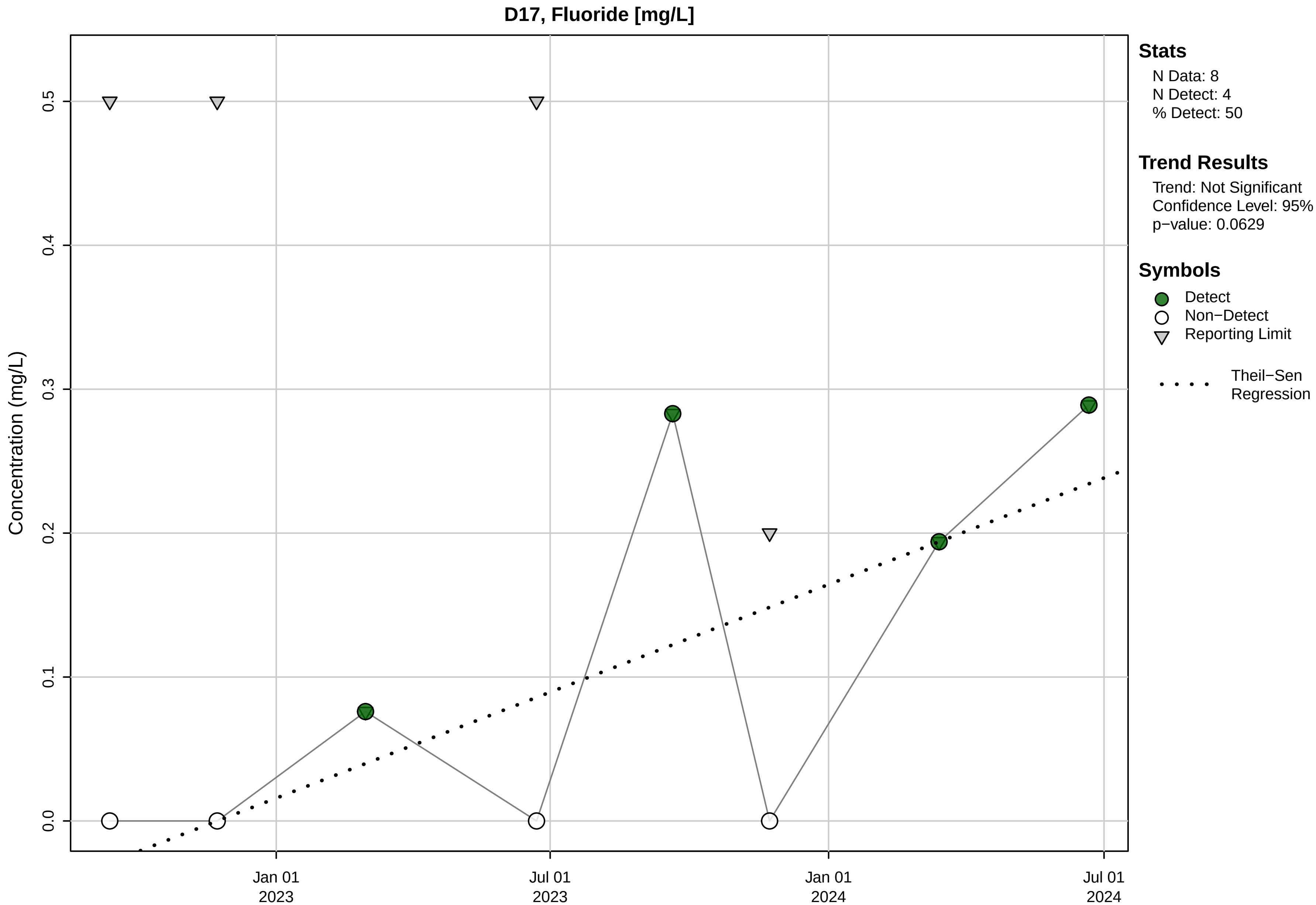
D17, Chromium [ug/L]
Concentration (ug/L)
0
5
10
15
20
25
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.441
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



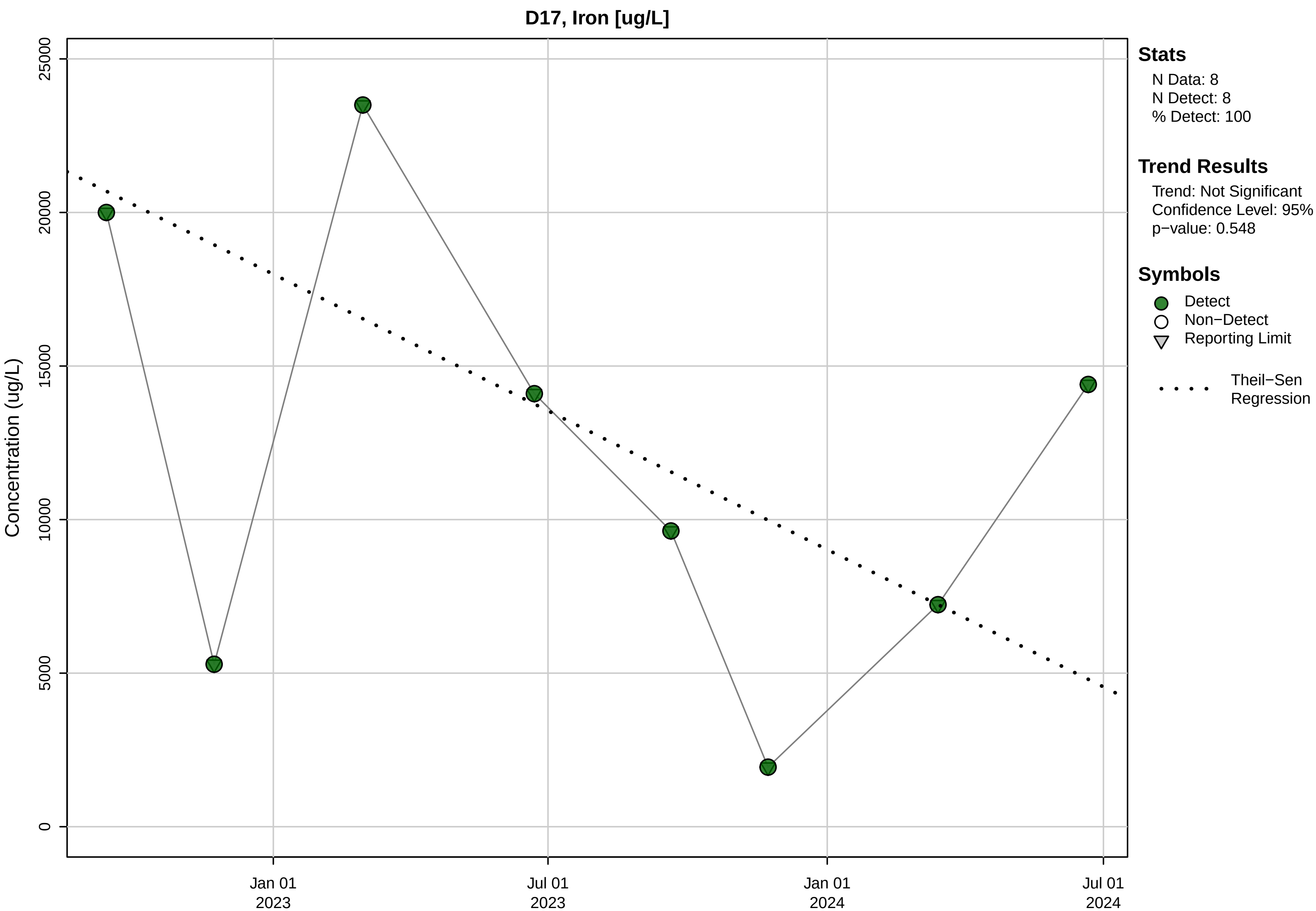
D17, Copper [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



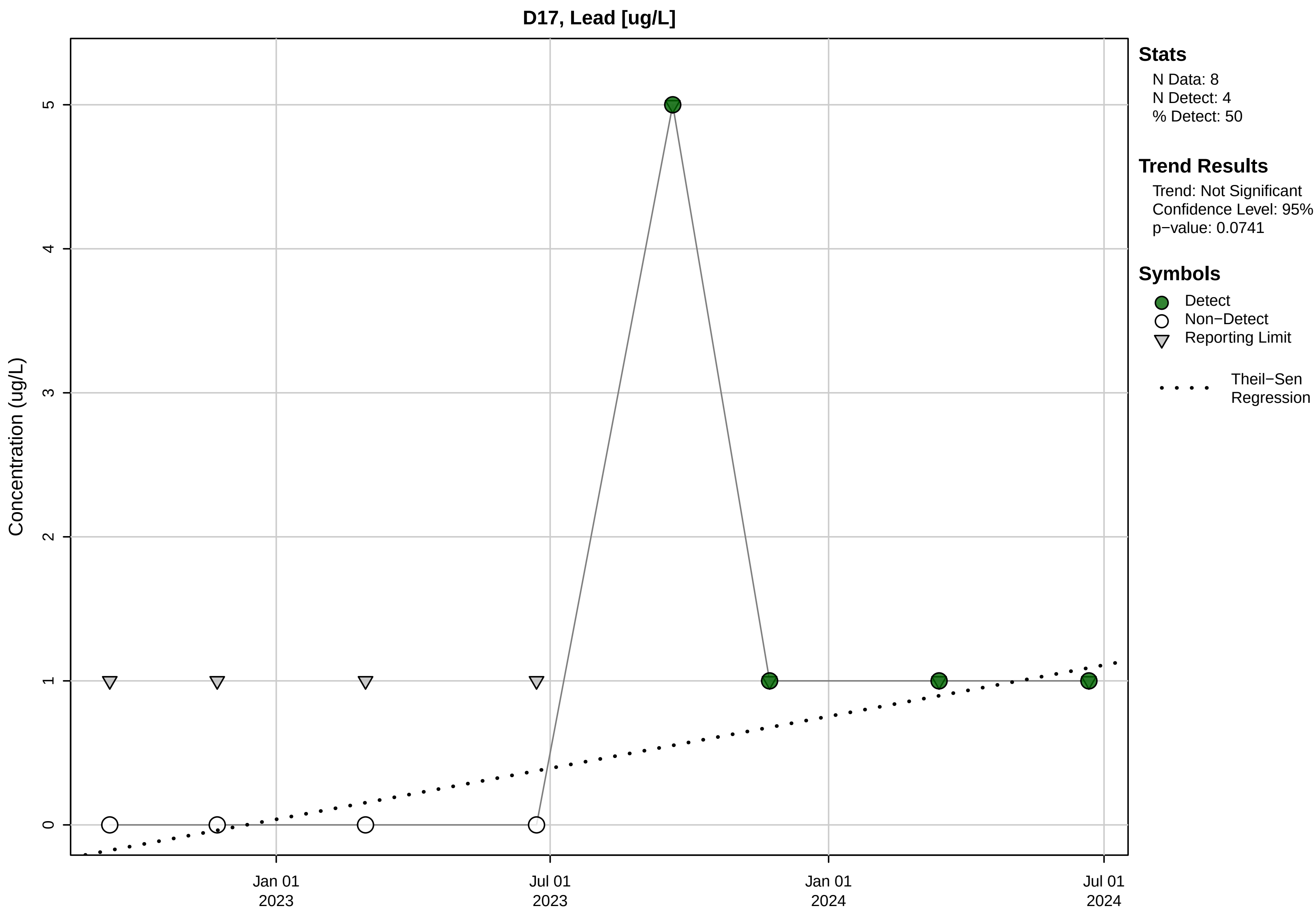
D17, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
500
1000
1500
2000
2500
3000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: < 0.001
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

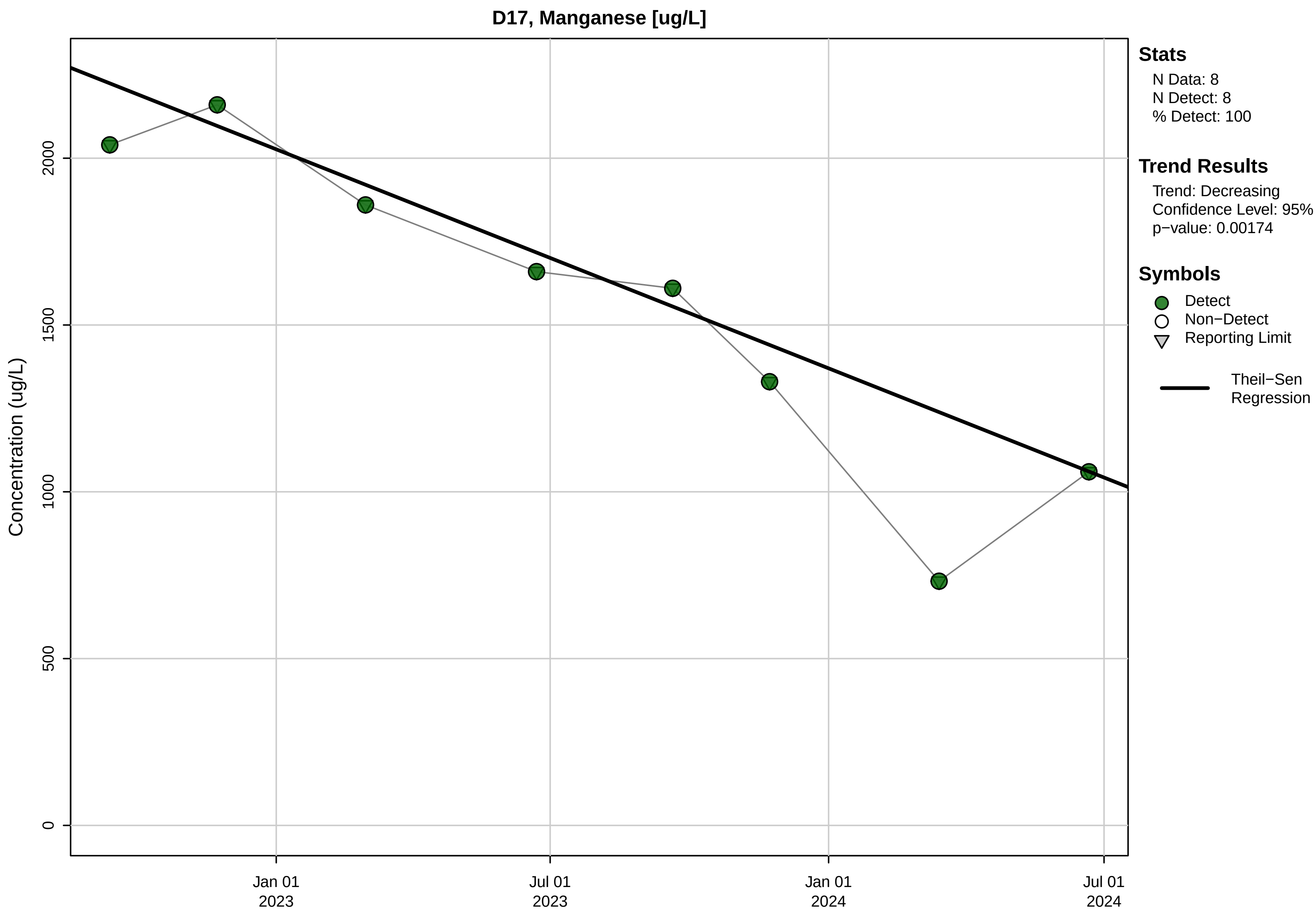


D17, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0629
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

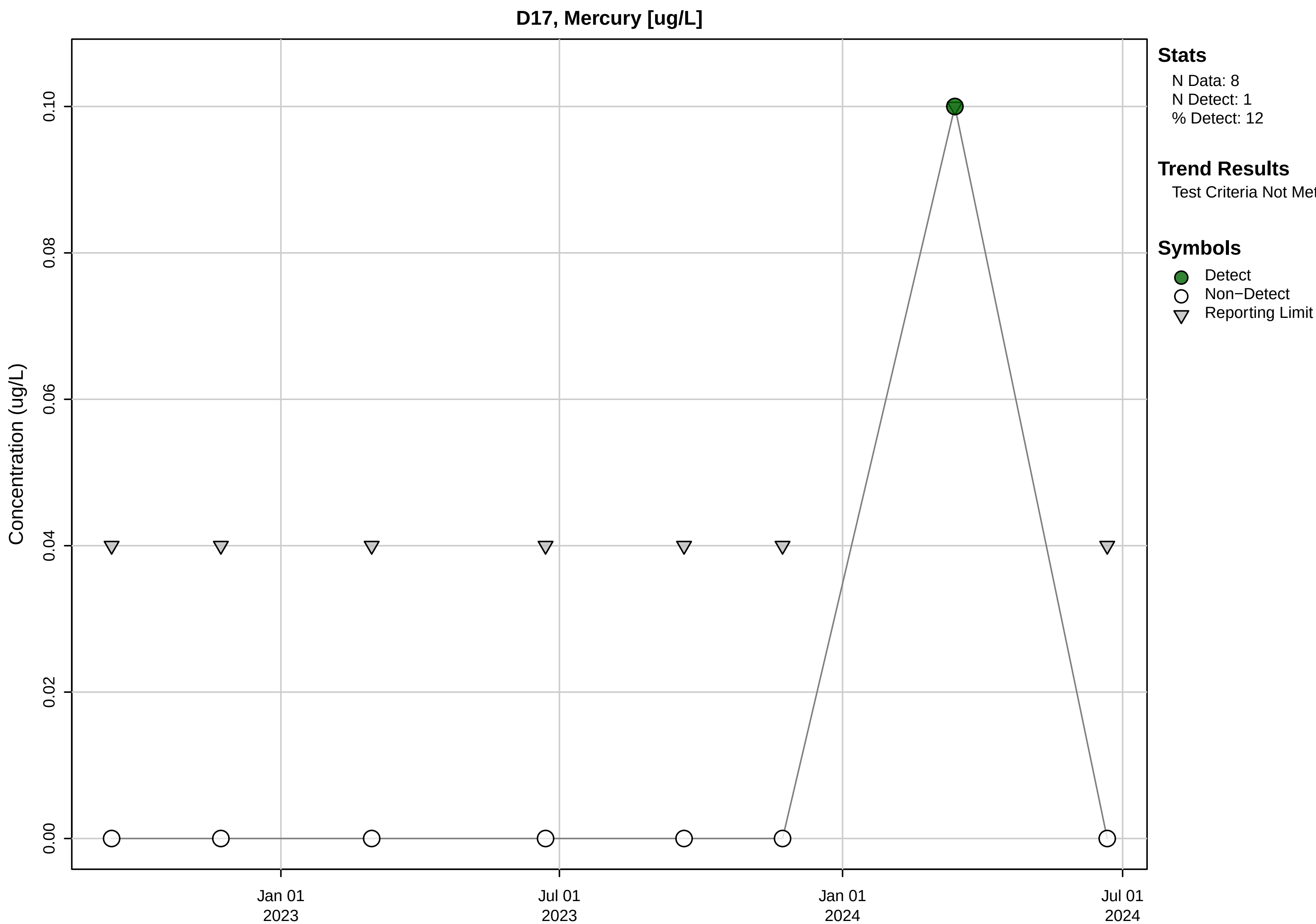


D17, Iron [ug/L]
Concentration (ug/L)
25000
20000
15000
10000
5000
0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.548
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

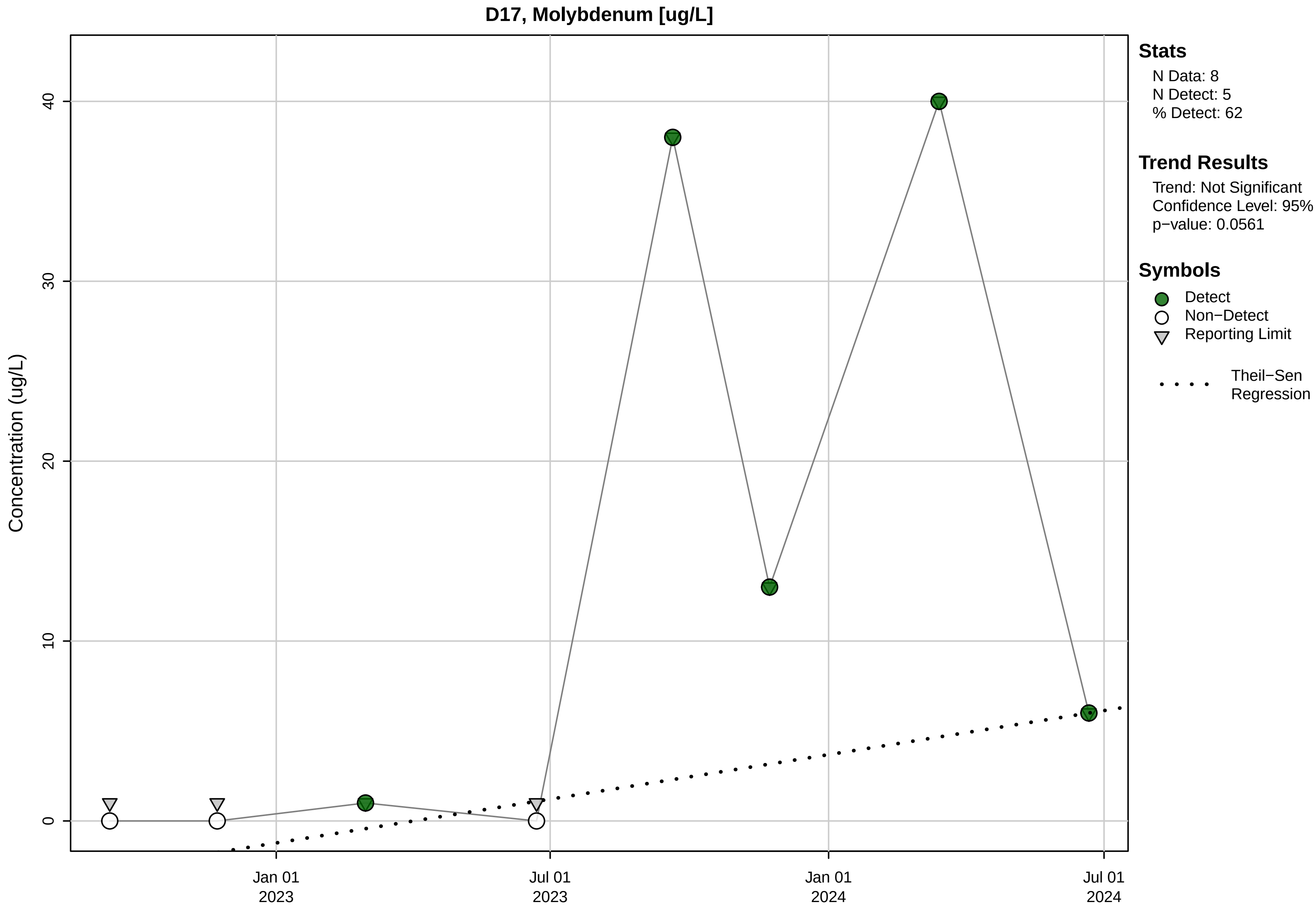

D17, Lead [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0741
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

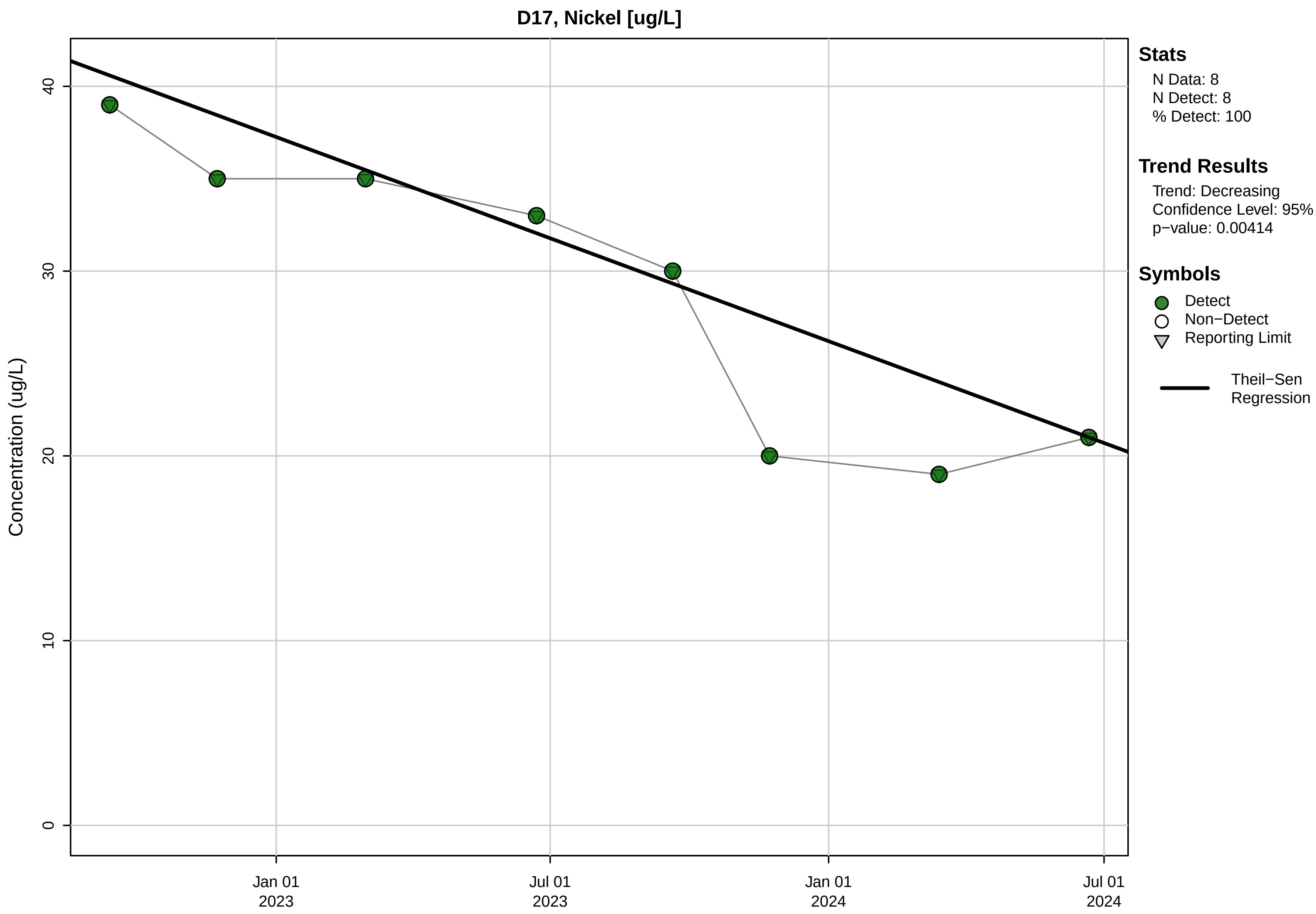


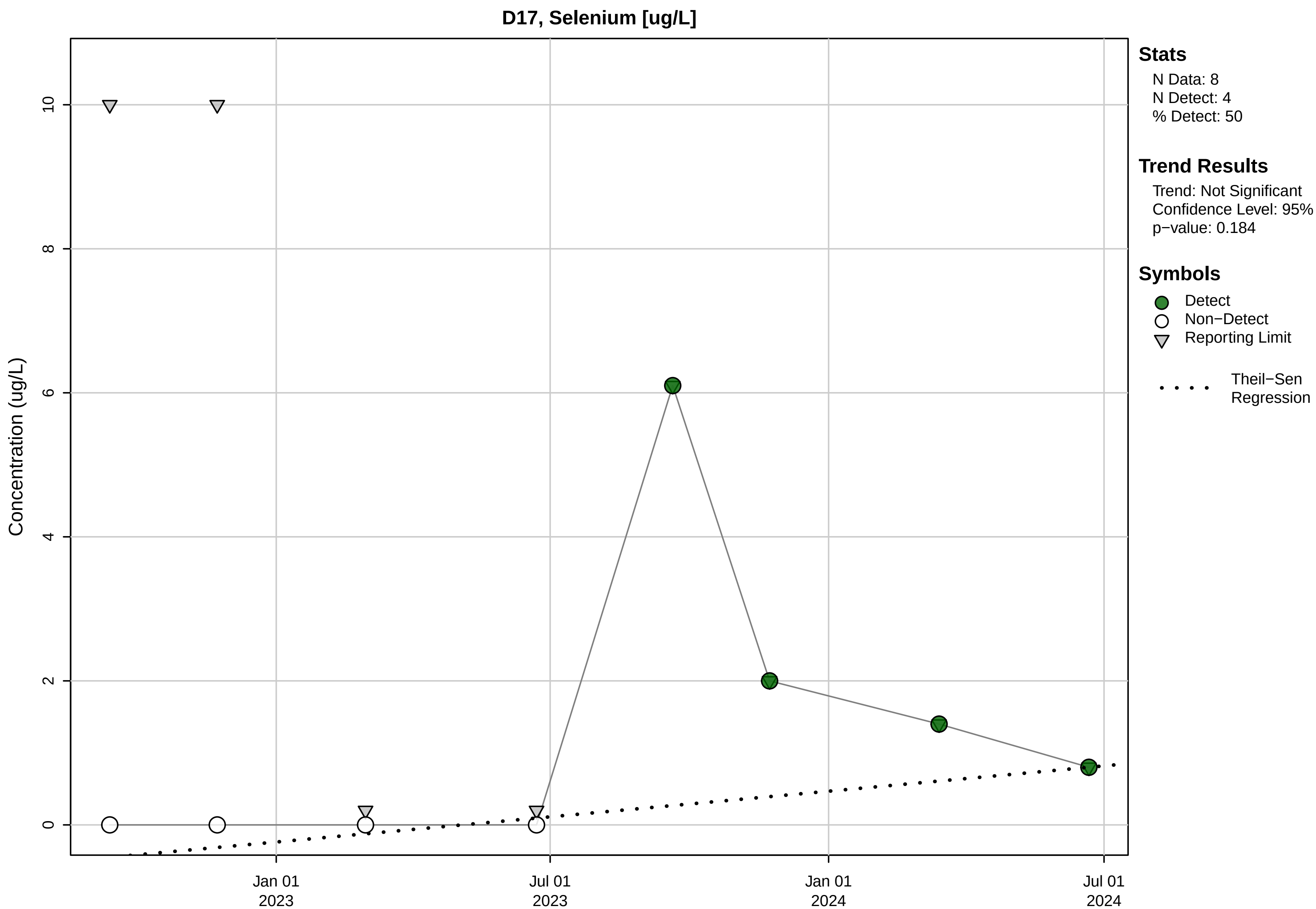
D17, Manganese [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.00174
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

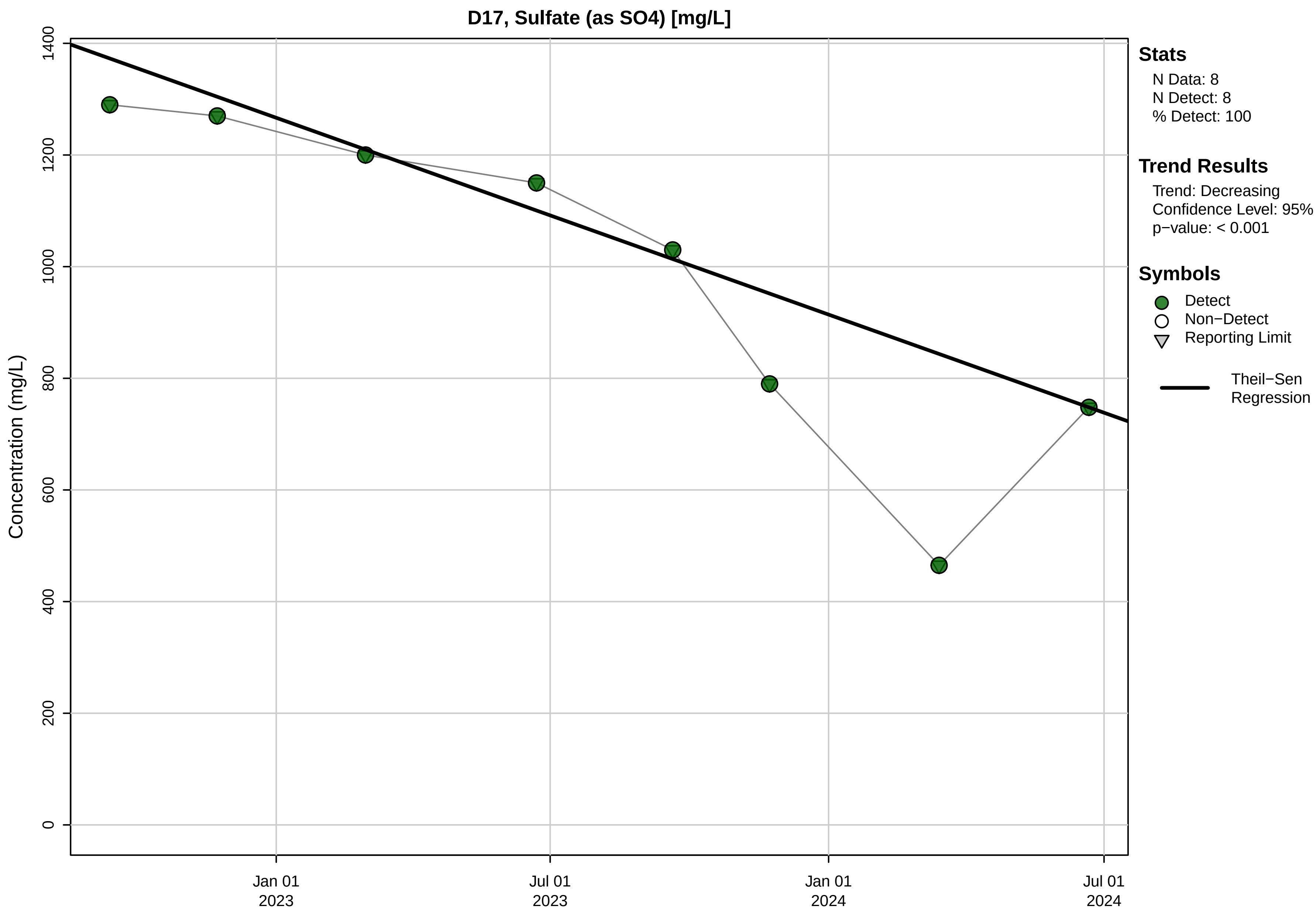


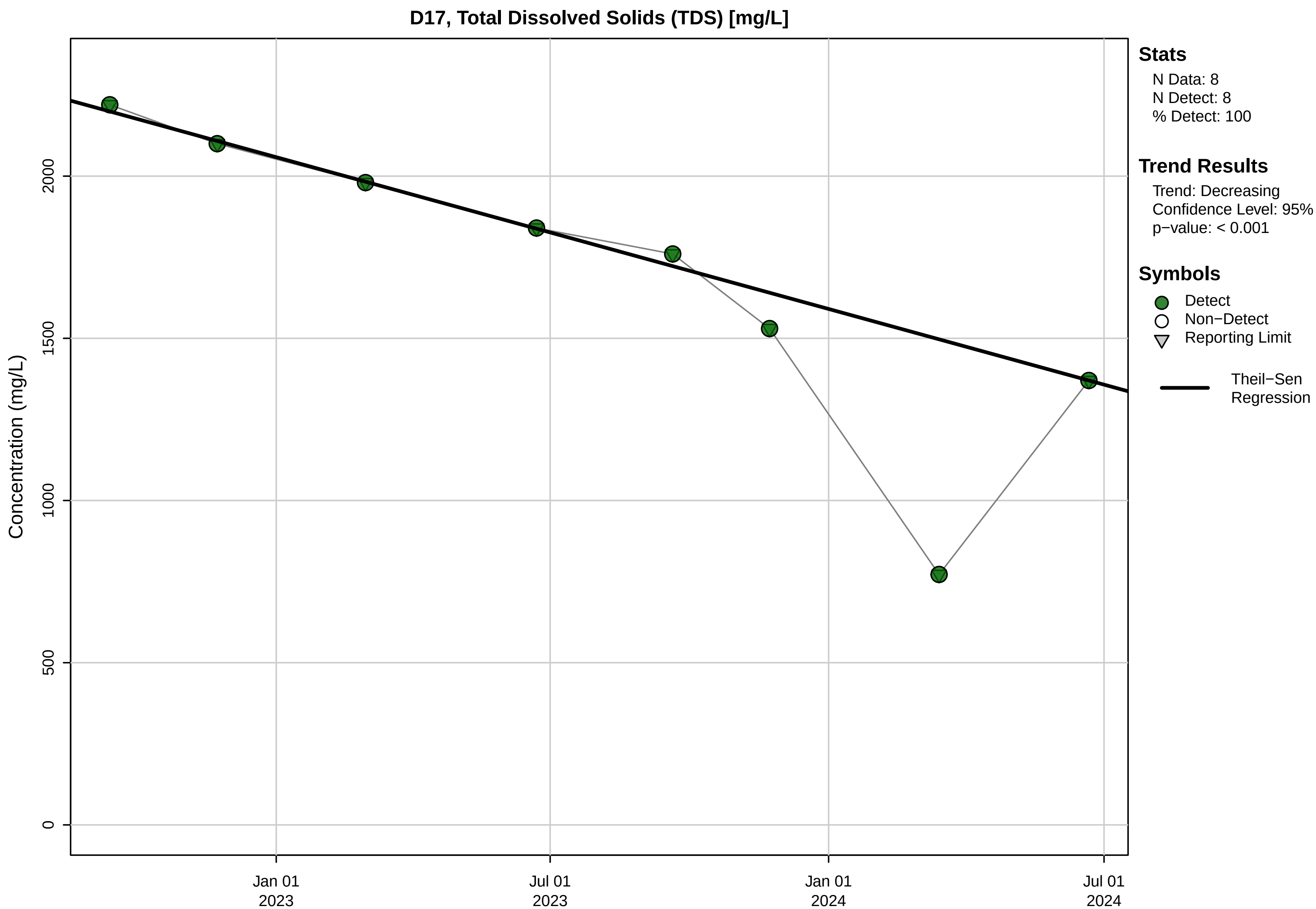
D17, Mercury [ug/L]
Concentration (ug/L)
0.00
0.02
0.04
0.06
0.08
0.10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D17, Molybdenum [ug/L]
Concentration (ug/L)
0
10
20
30
40
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0561
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

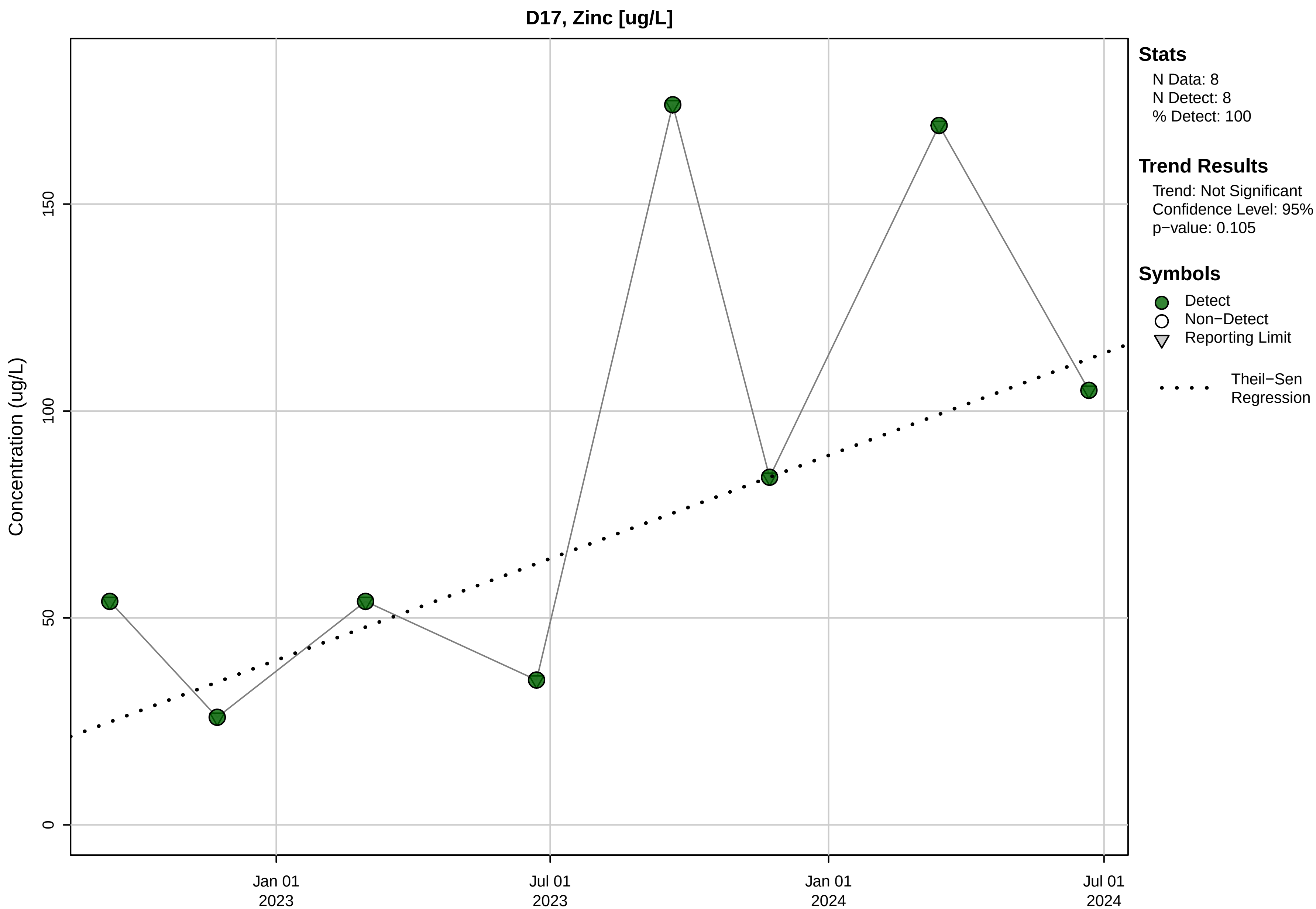

D17, Nickel [ug/L]
Concentration (ug/L)
0
10
20
30
40
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.00414
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D17, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.184
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

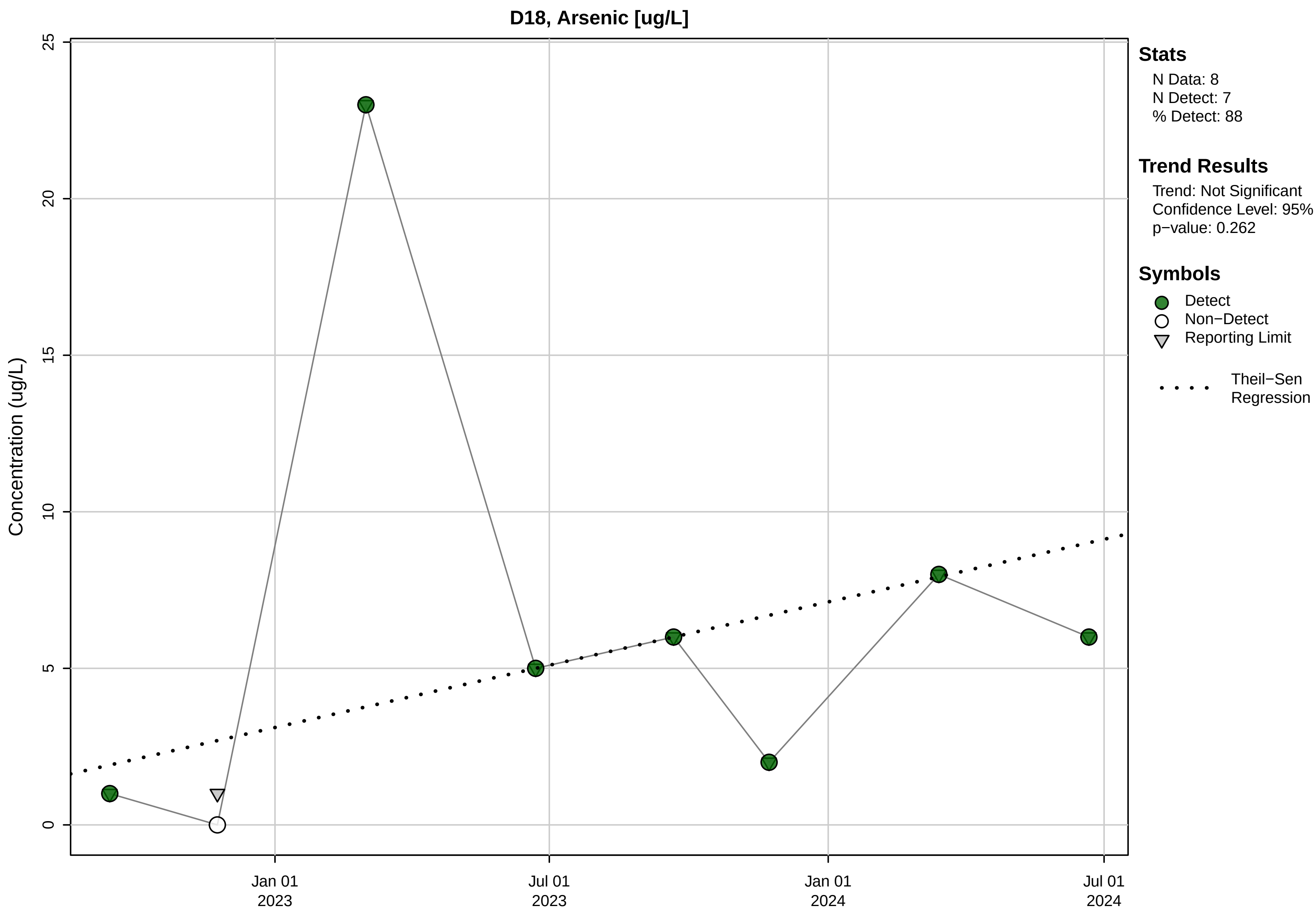

D17, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
200
400
600
800
1000
1200
1400
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: < 0.001
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

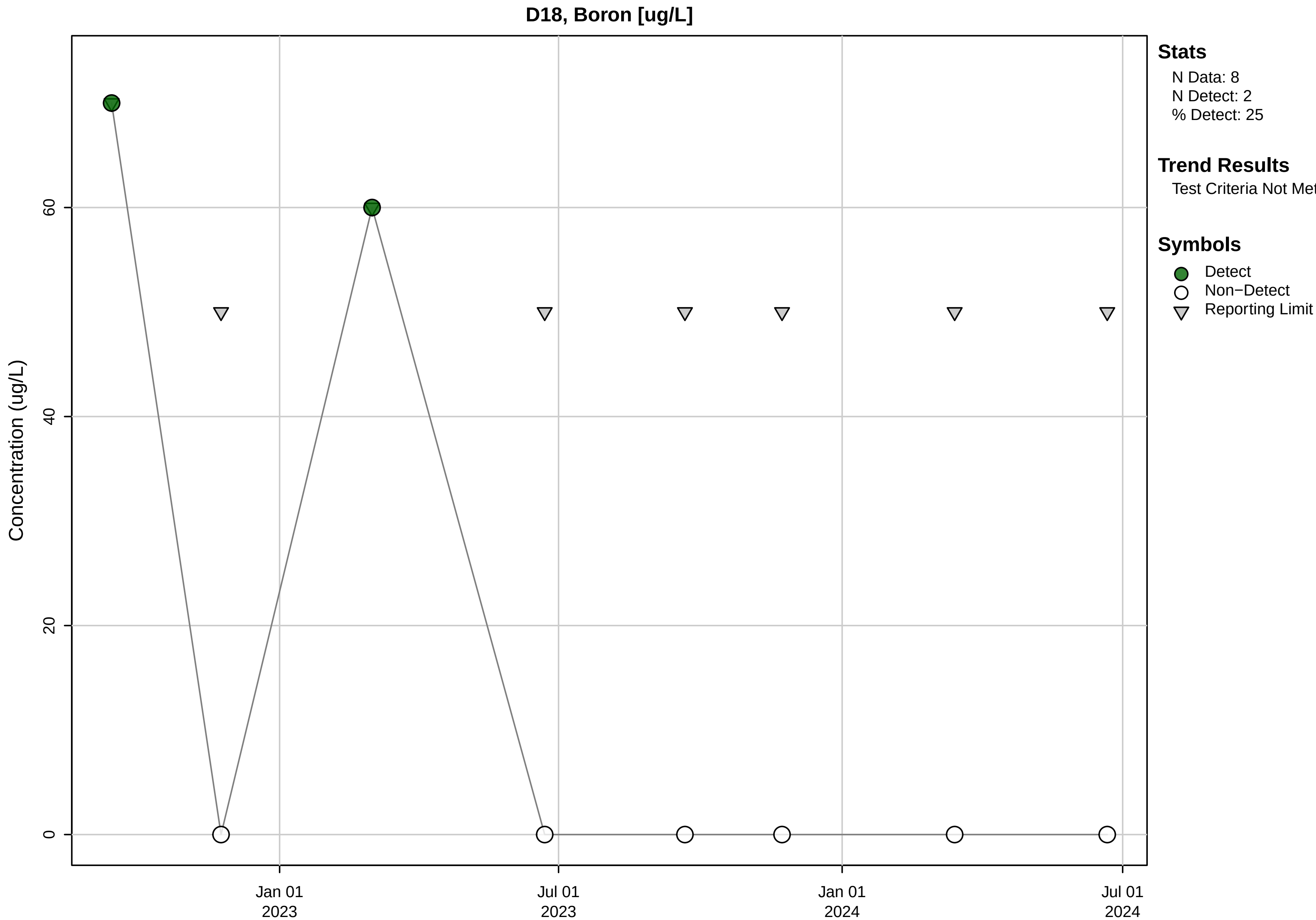


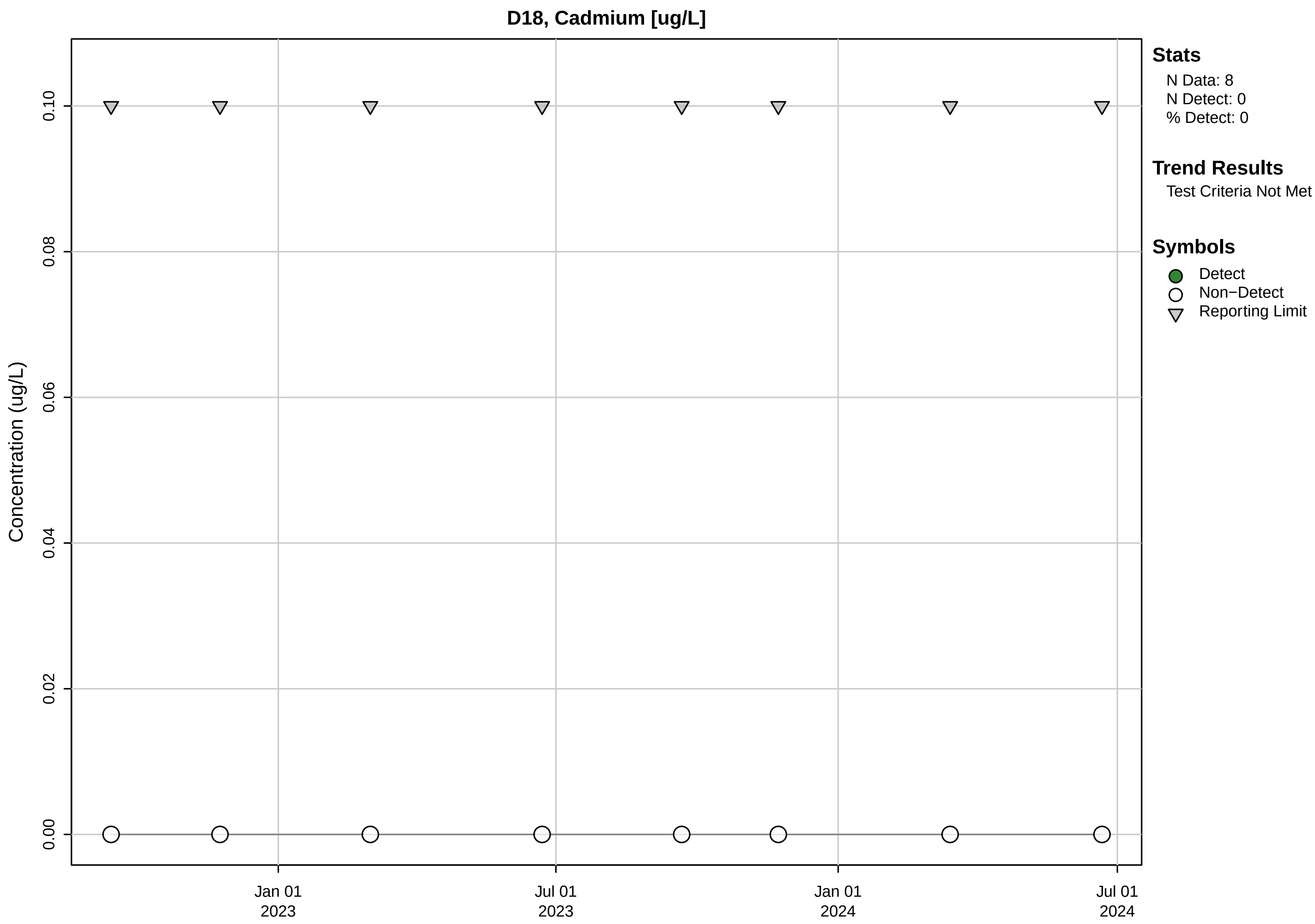
D17, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
500
1000
1500
2000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: < 0.001
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



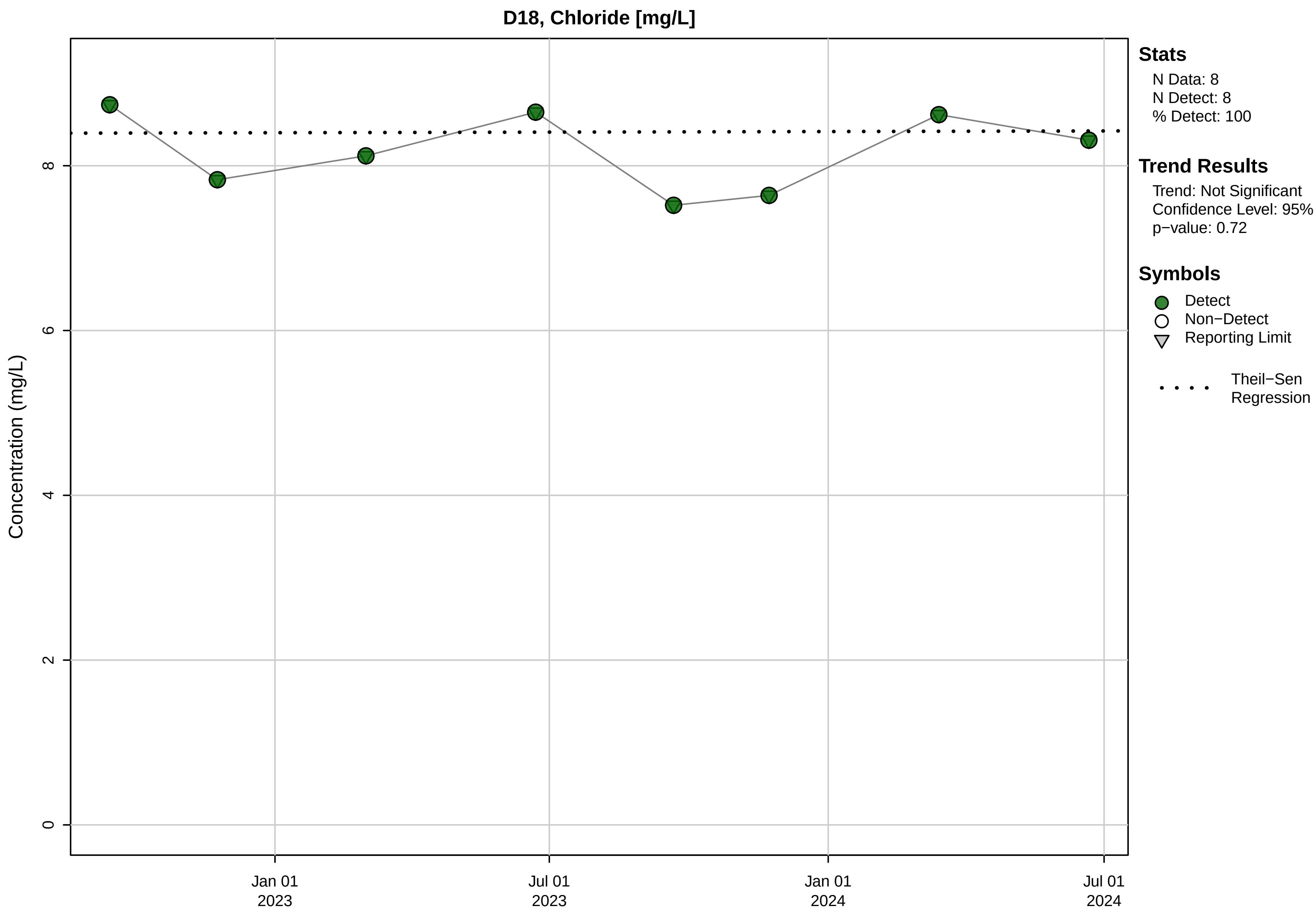
D17, Zinc [ug/L]
Concentration (ug/L)
0
50
100
150
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.105
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D18, Arsenic [ug/L]
Concentration (ug/L)
0
5
10
15
20
25
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.262
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

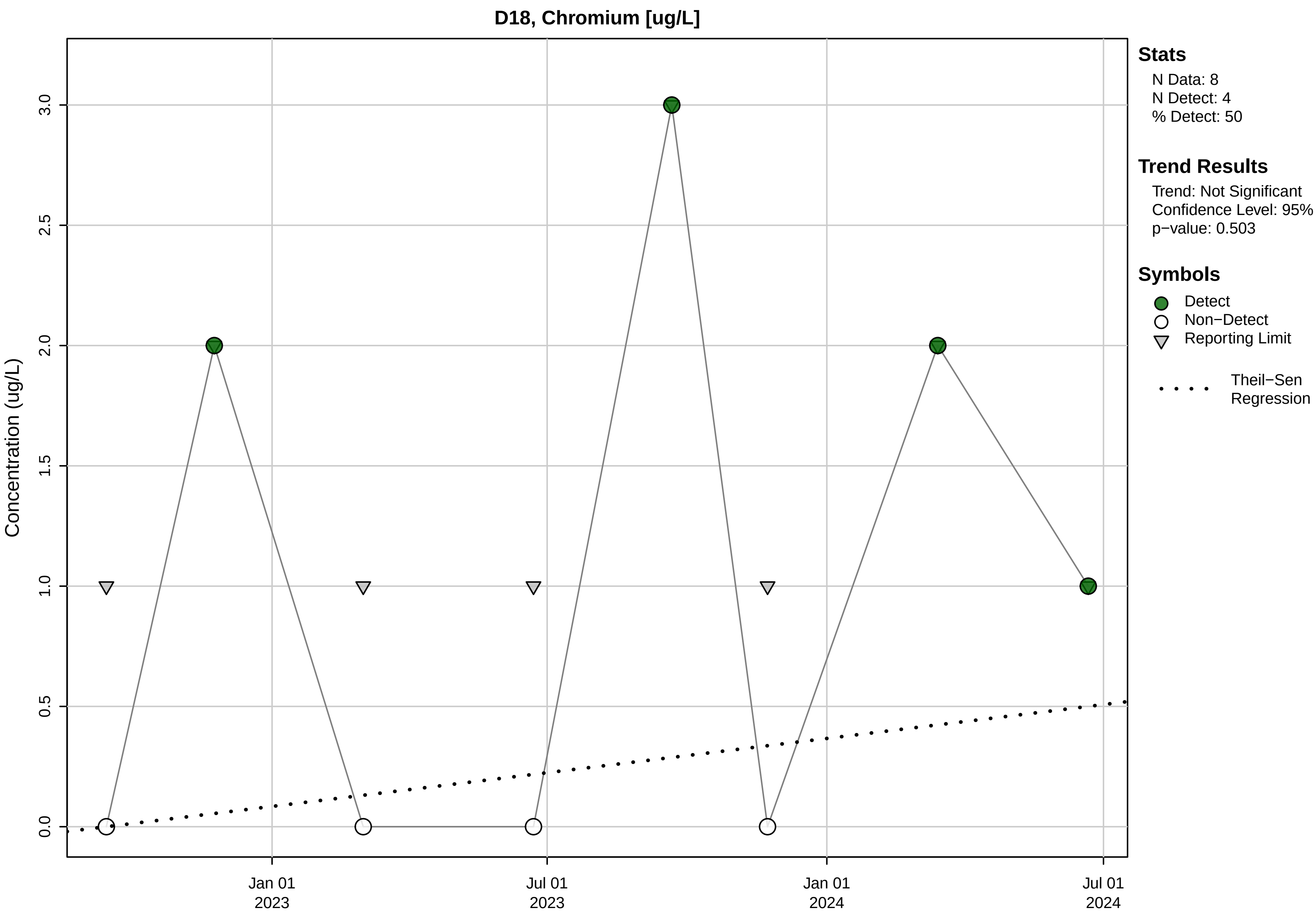

D18, Boron [ug/L]
Concentration (ug/L)
0
20
40
60
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

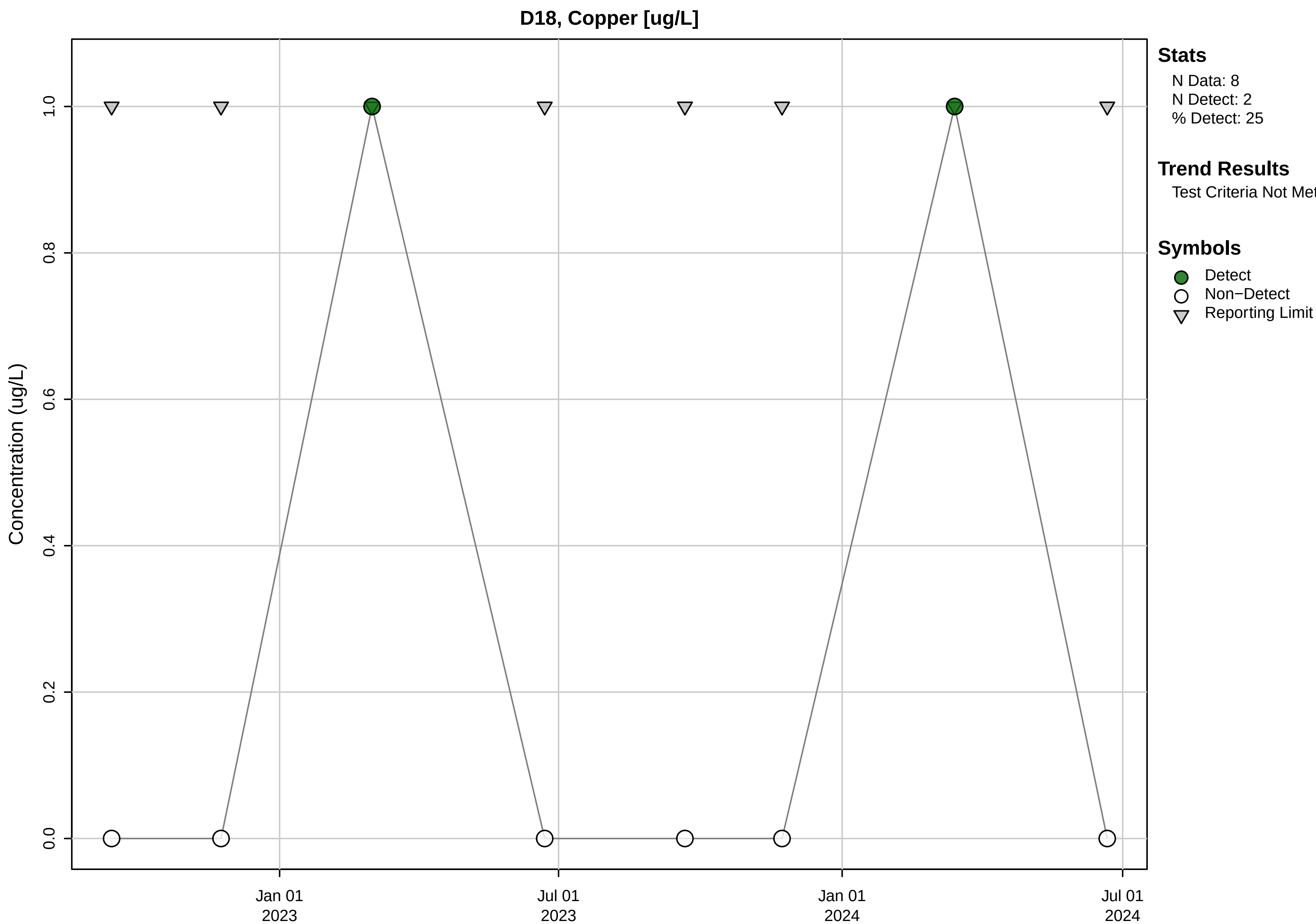


D18, Cadmium [ug/L]
Concentration (ug/L)
0.10
0.08
0.06
0.04
0.02
0.00
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

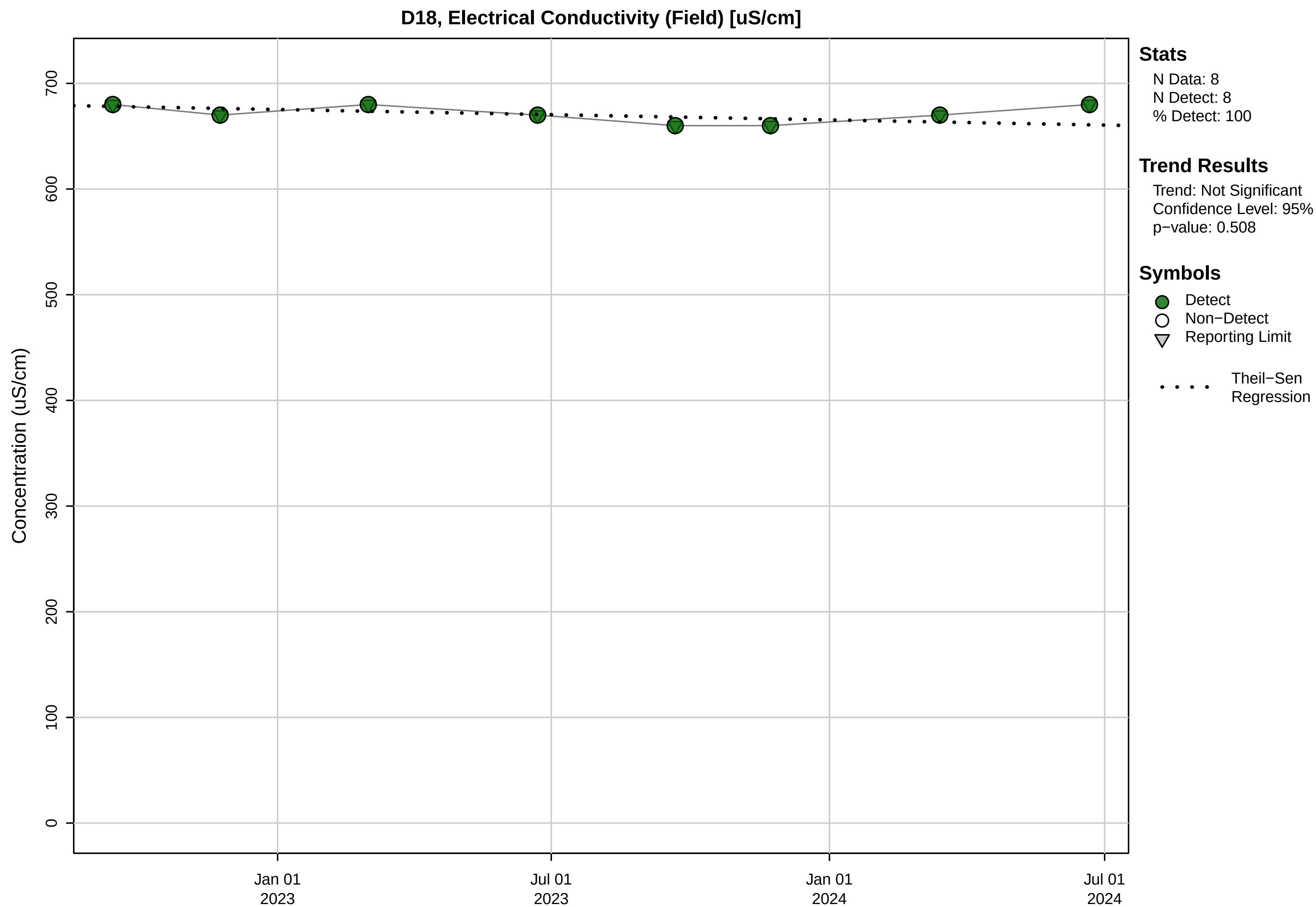


D18, Chloride [mg/L]
Concentration (mg/L)
0
2
4
6
8
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

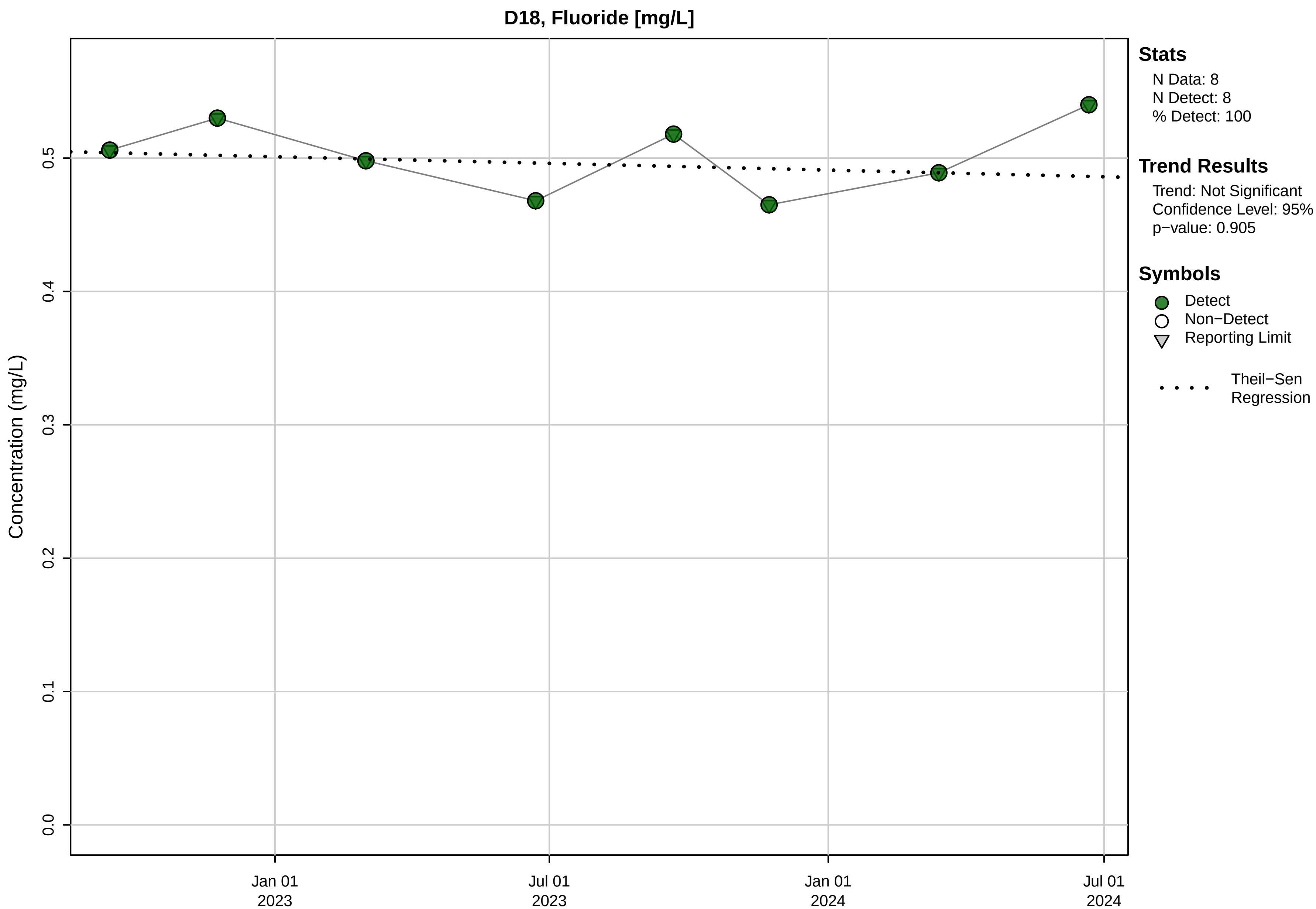

D18, Chromium [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.503
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



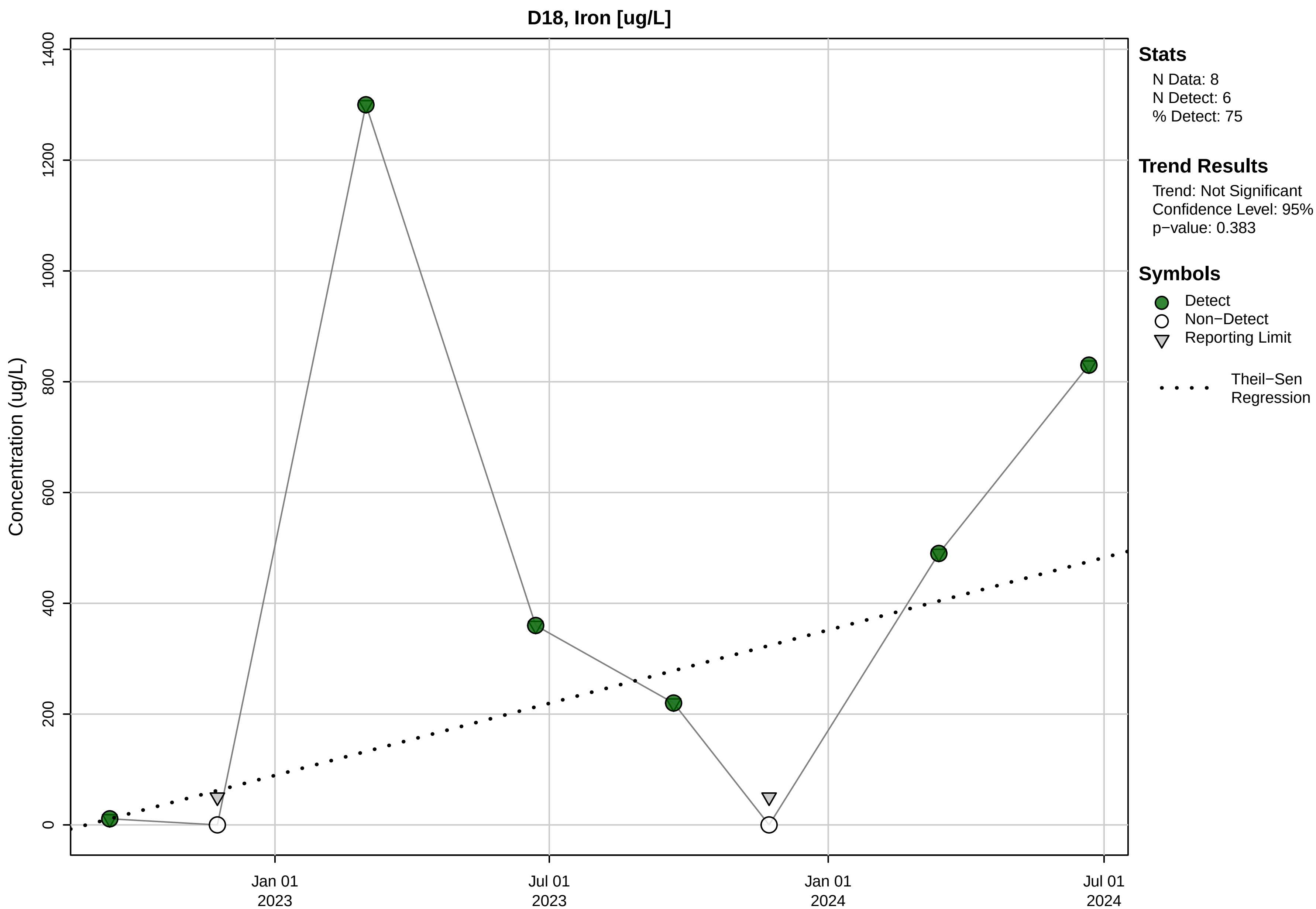
D18, Copper [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

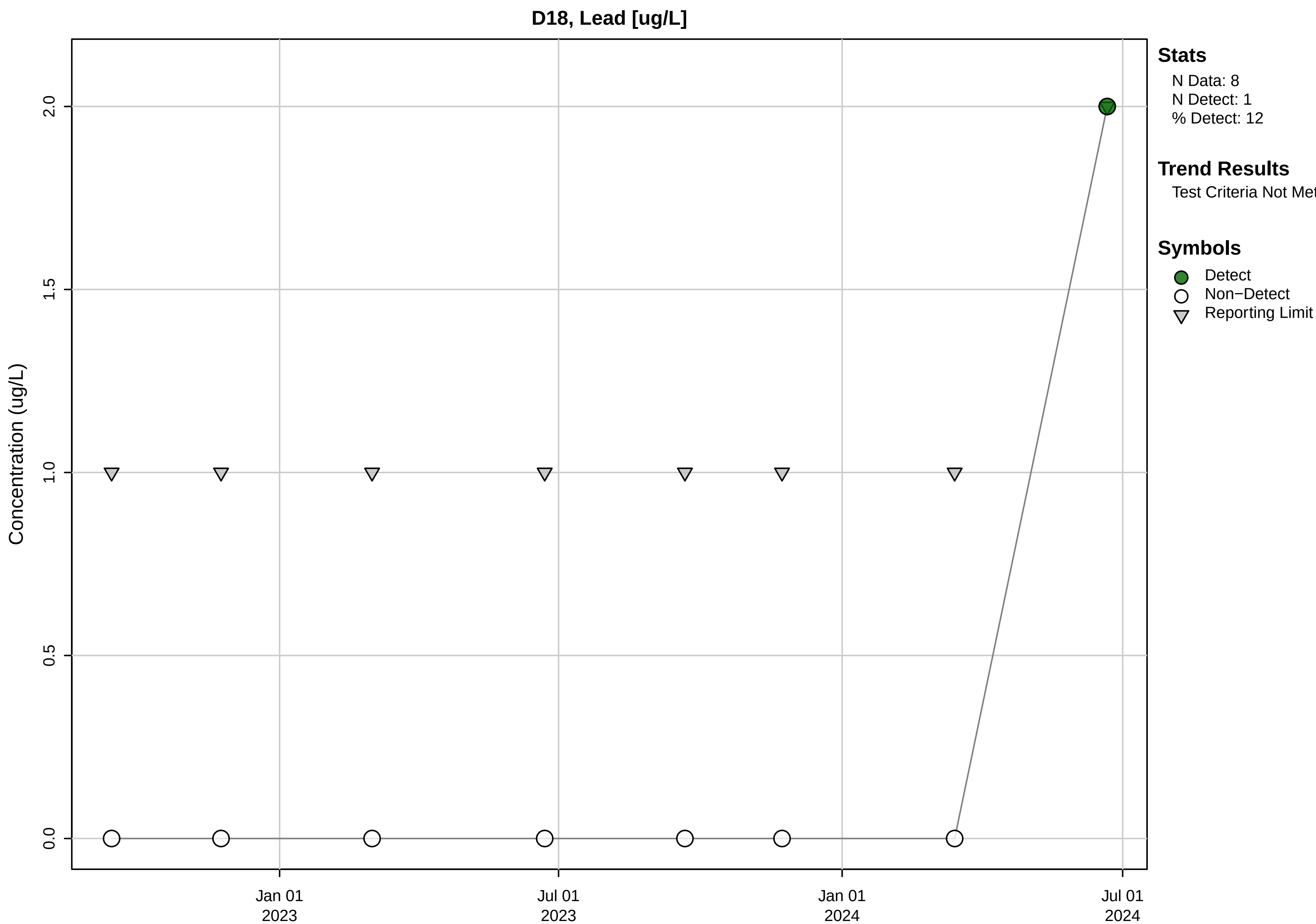


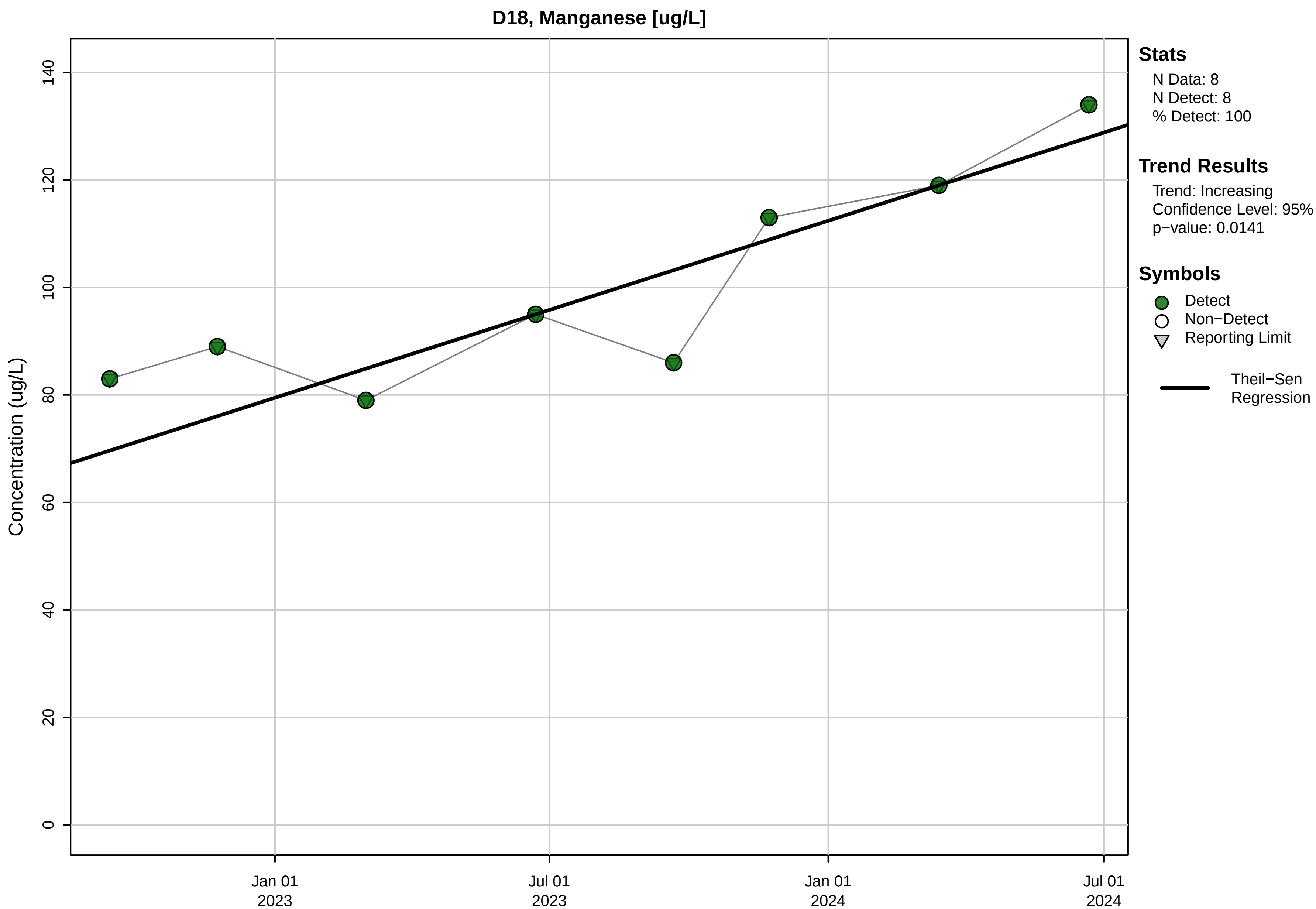
D18, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
100
200
300
400
500
600
700
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.508
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



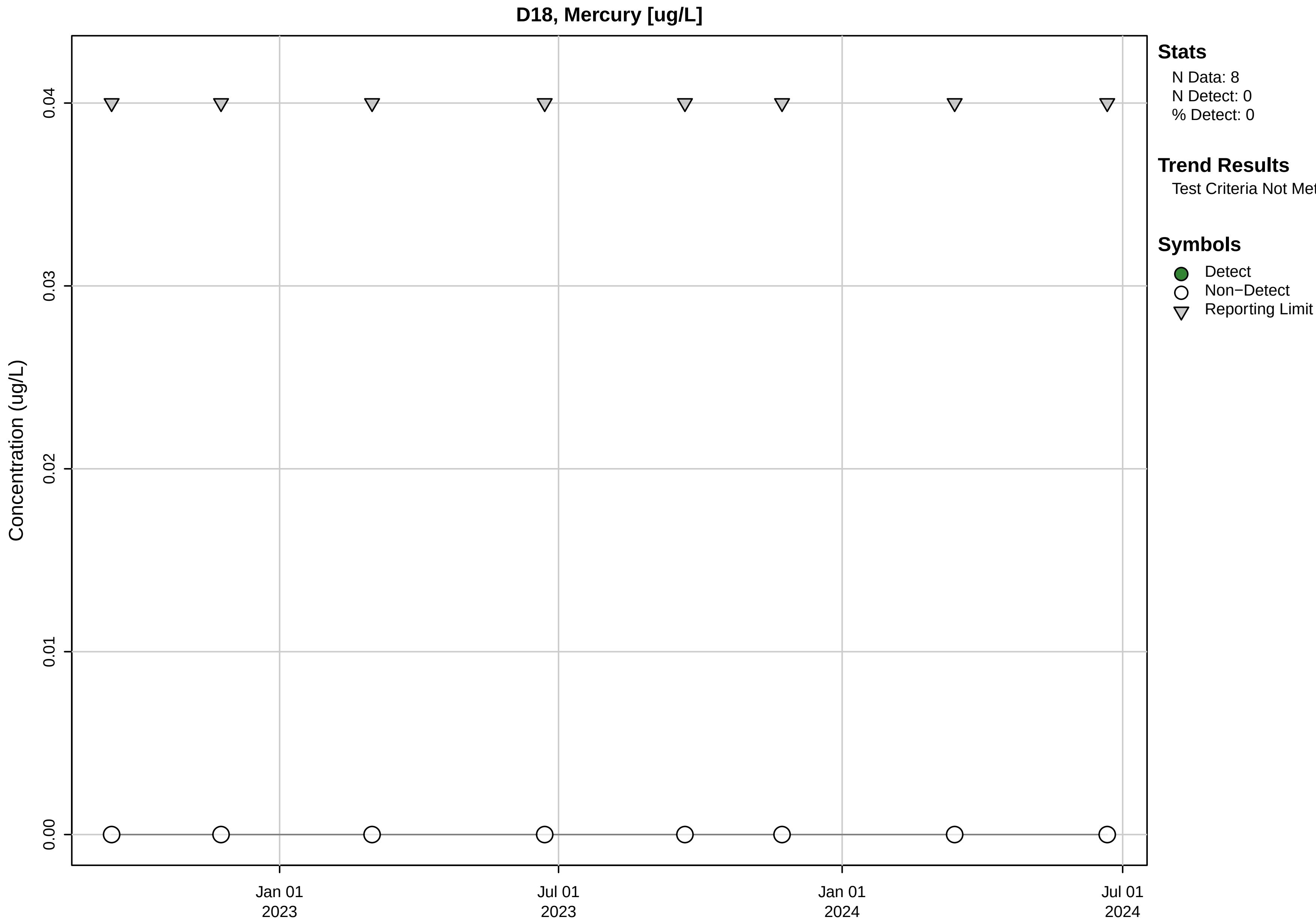
D18, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

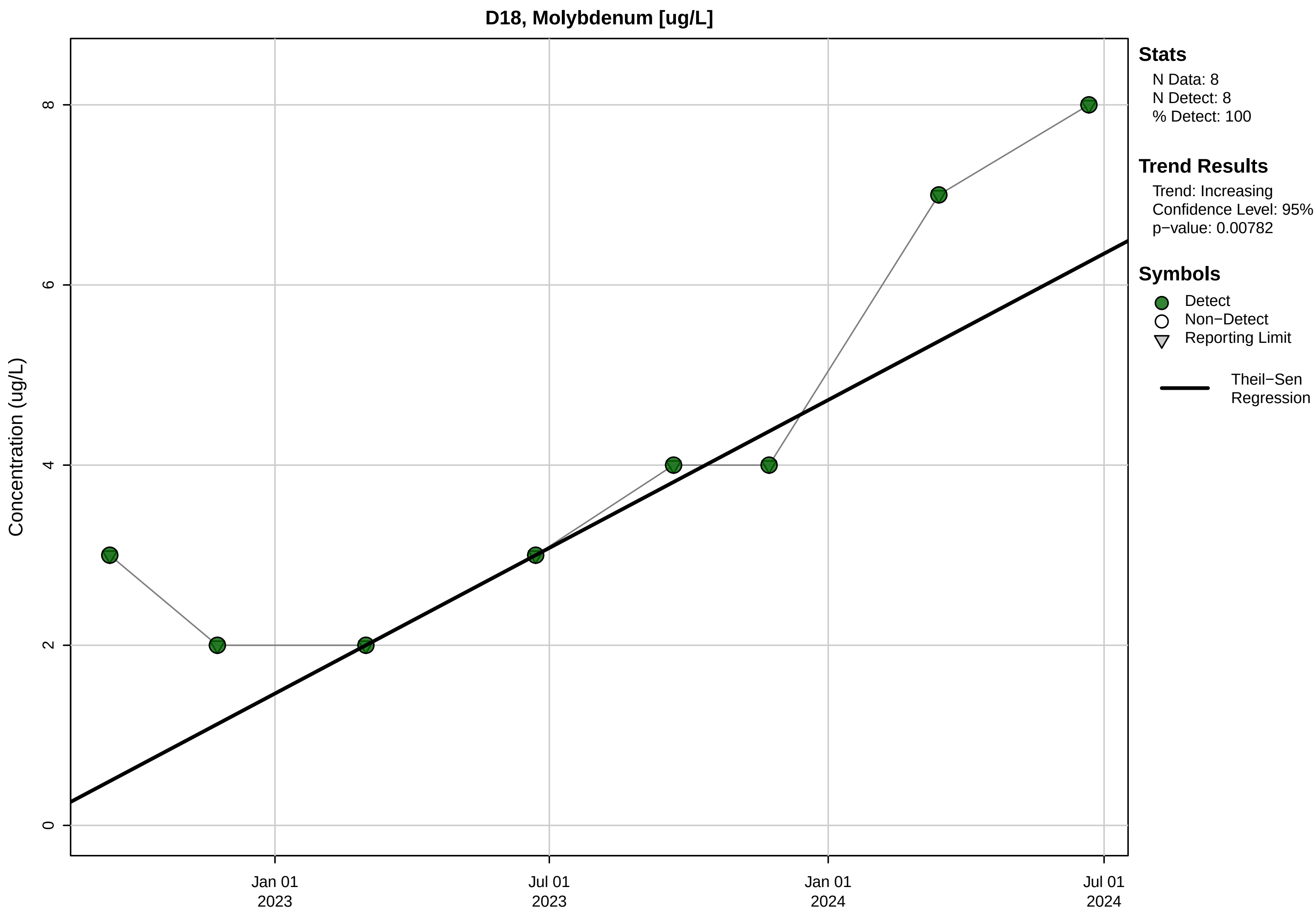

D18, Iron [ug/L]
Concentration (ug/L)
0
200
400
600
800
1000
1200
1400
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 6
% Detect: 75
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.383
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

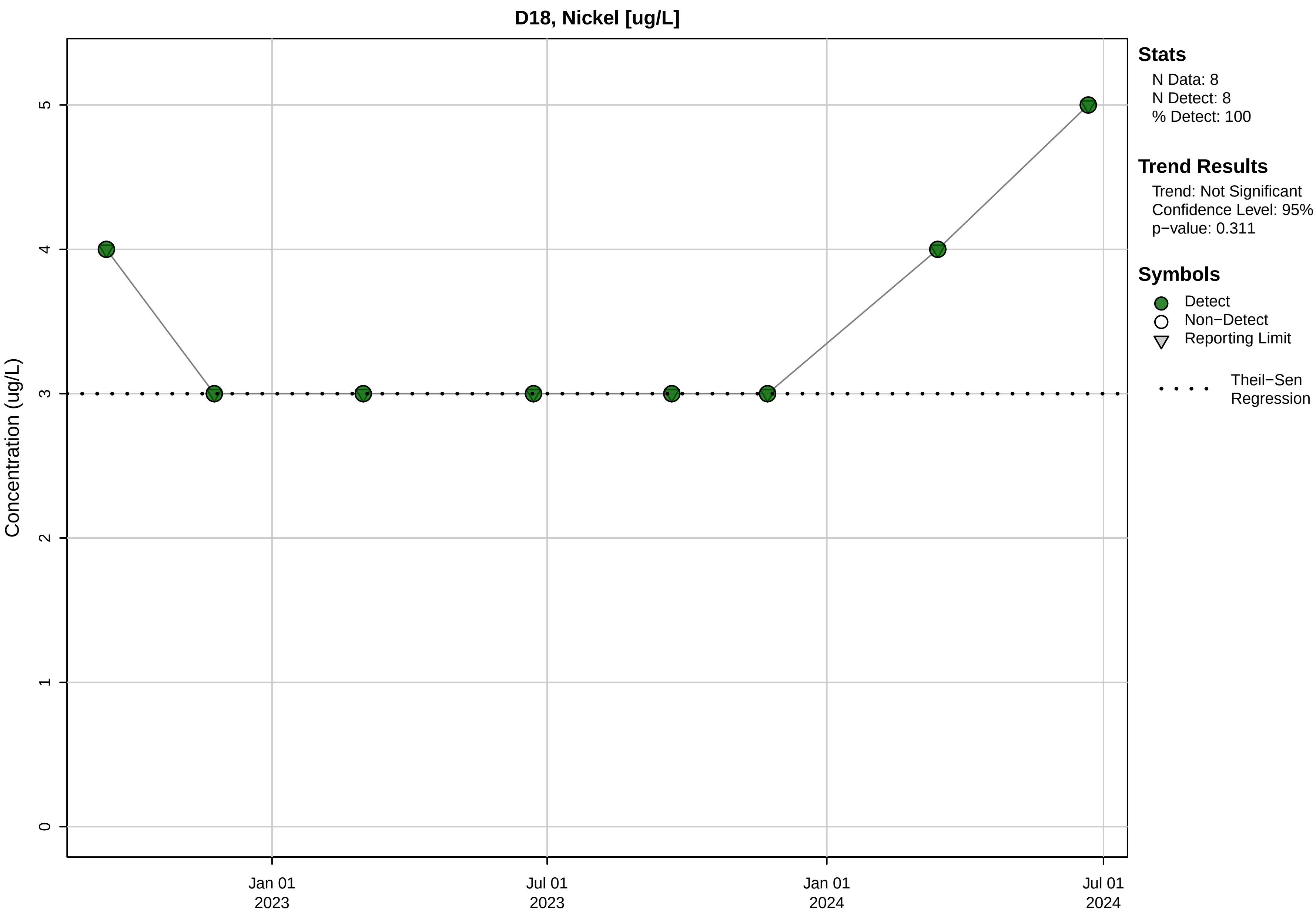

D18, Lead [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



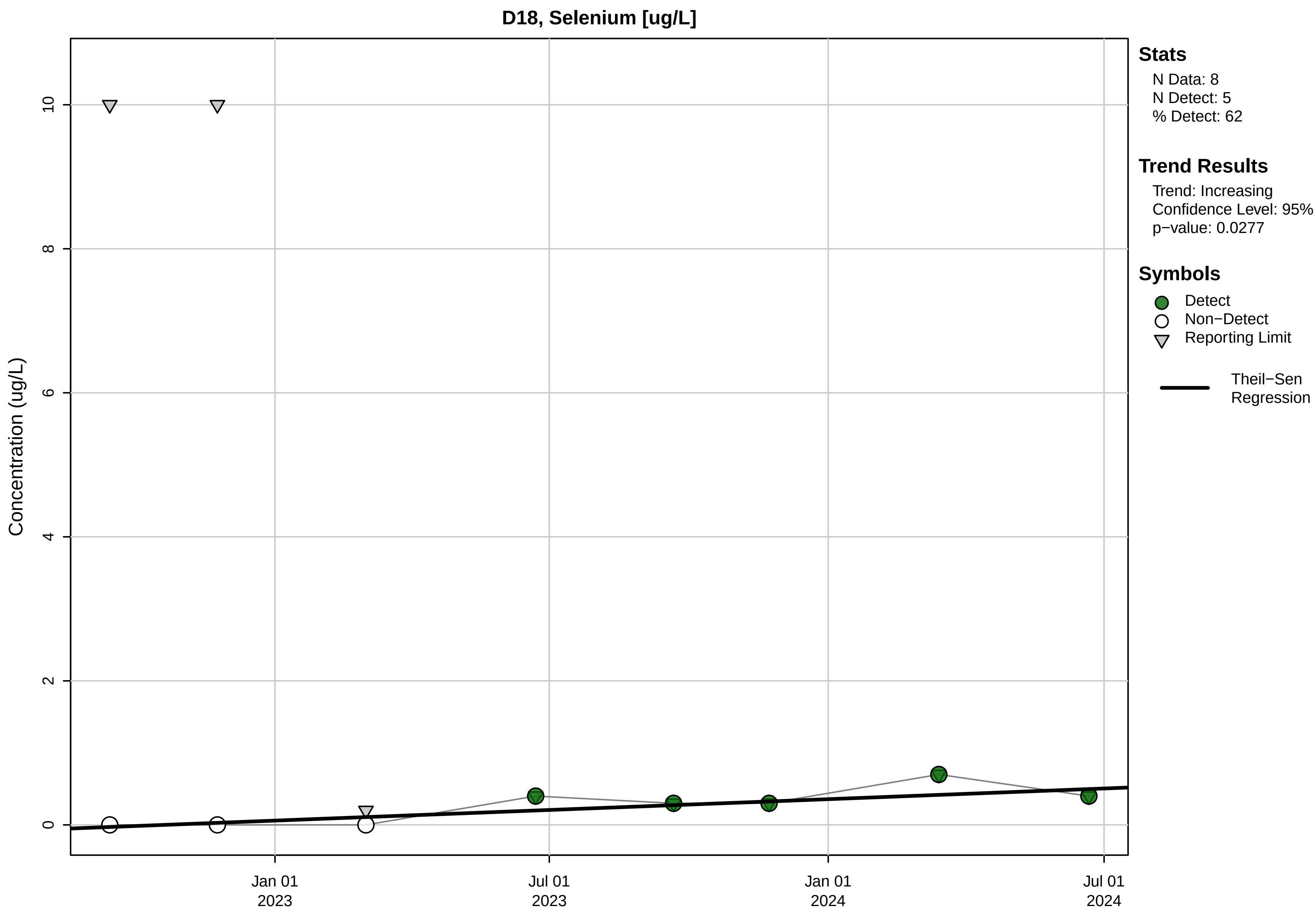
D18, Manganese [ug/L]
Concentration (ug/L)
0
20
40
60
80
100
120
140
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0141
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

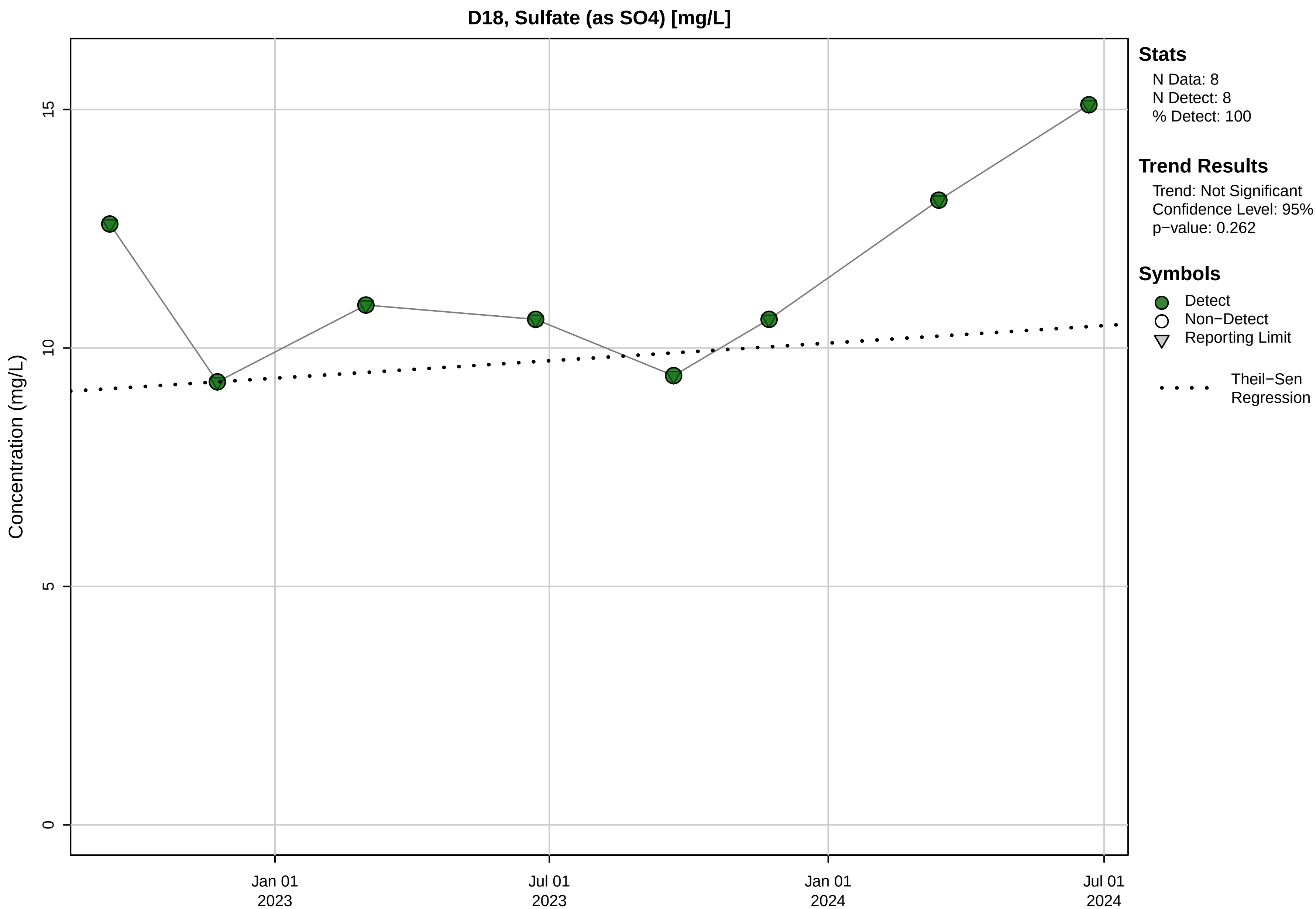

D18, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

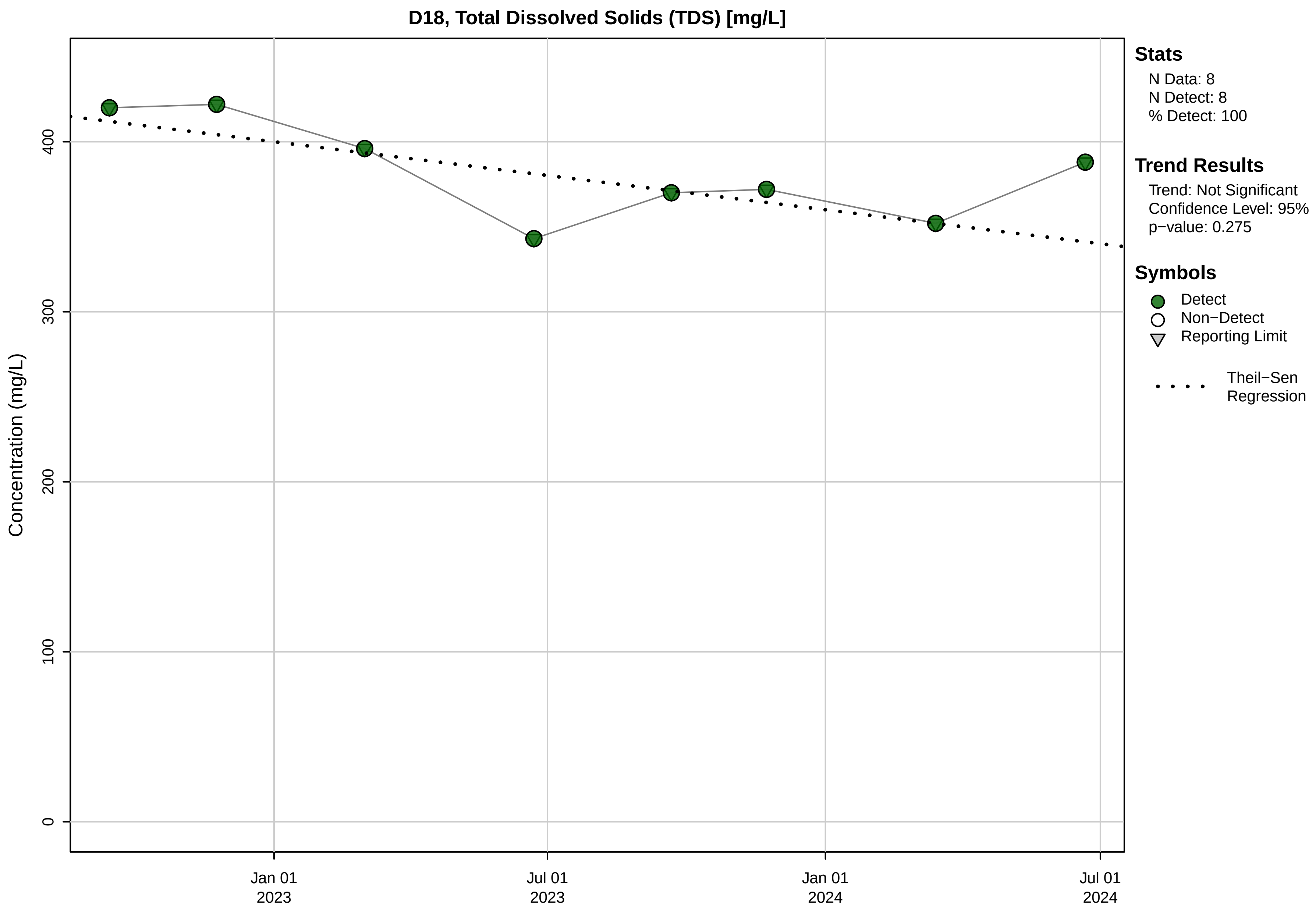

D18, Molybdenum [ug/L]
Concentration (ug/L)
0
2
4
6
8
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.00782
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



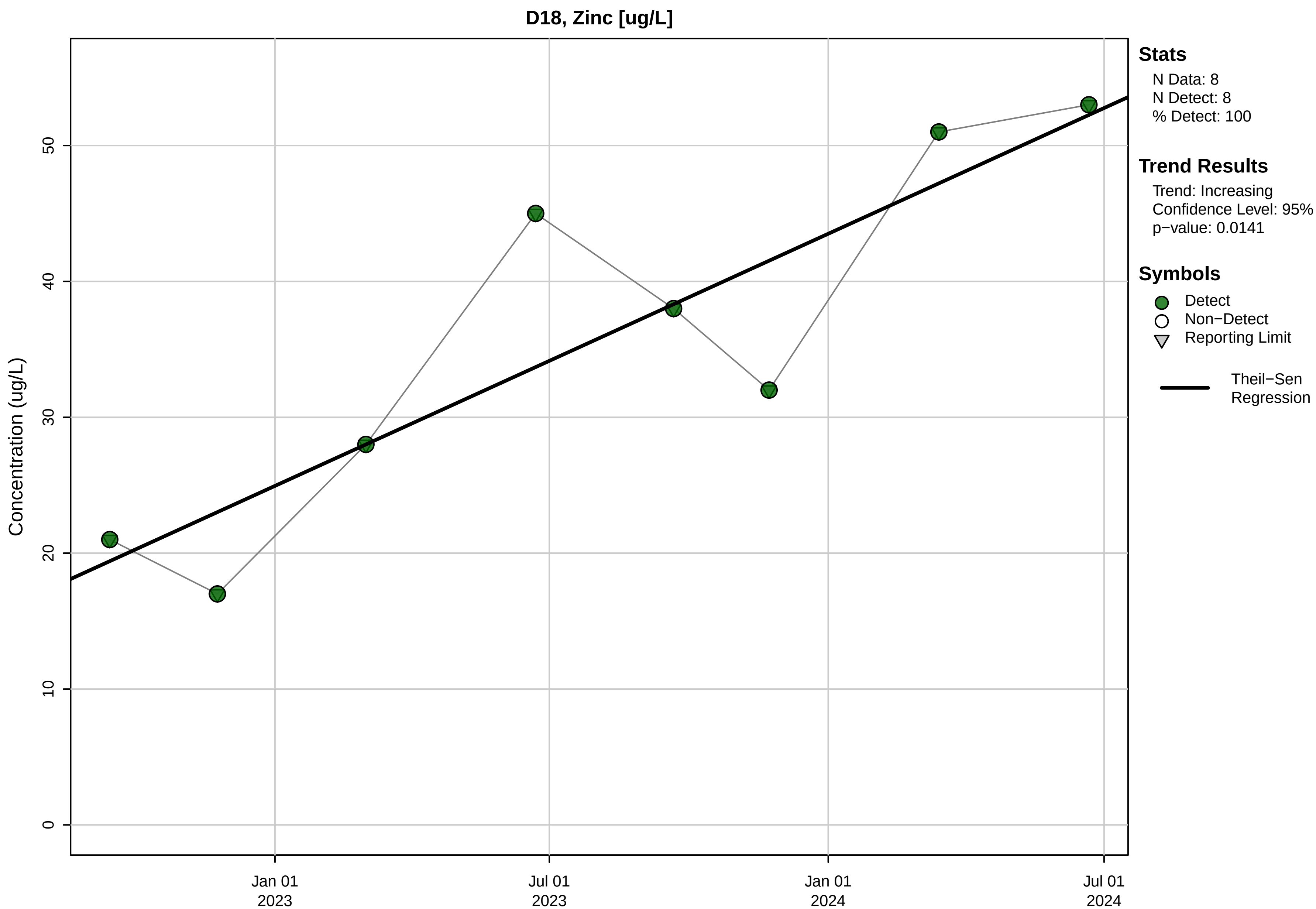
D18, Nickel [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.311
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

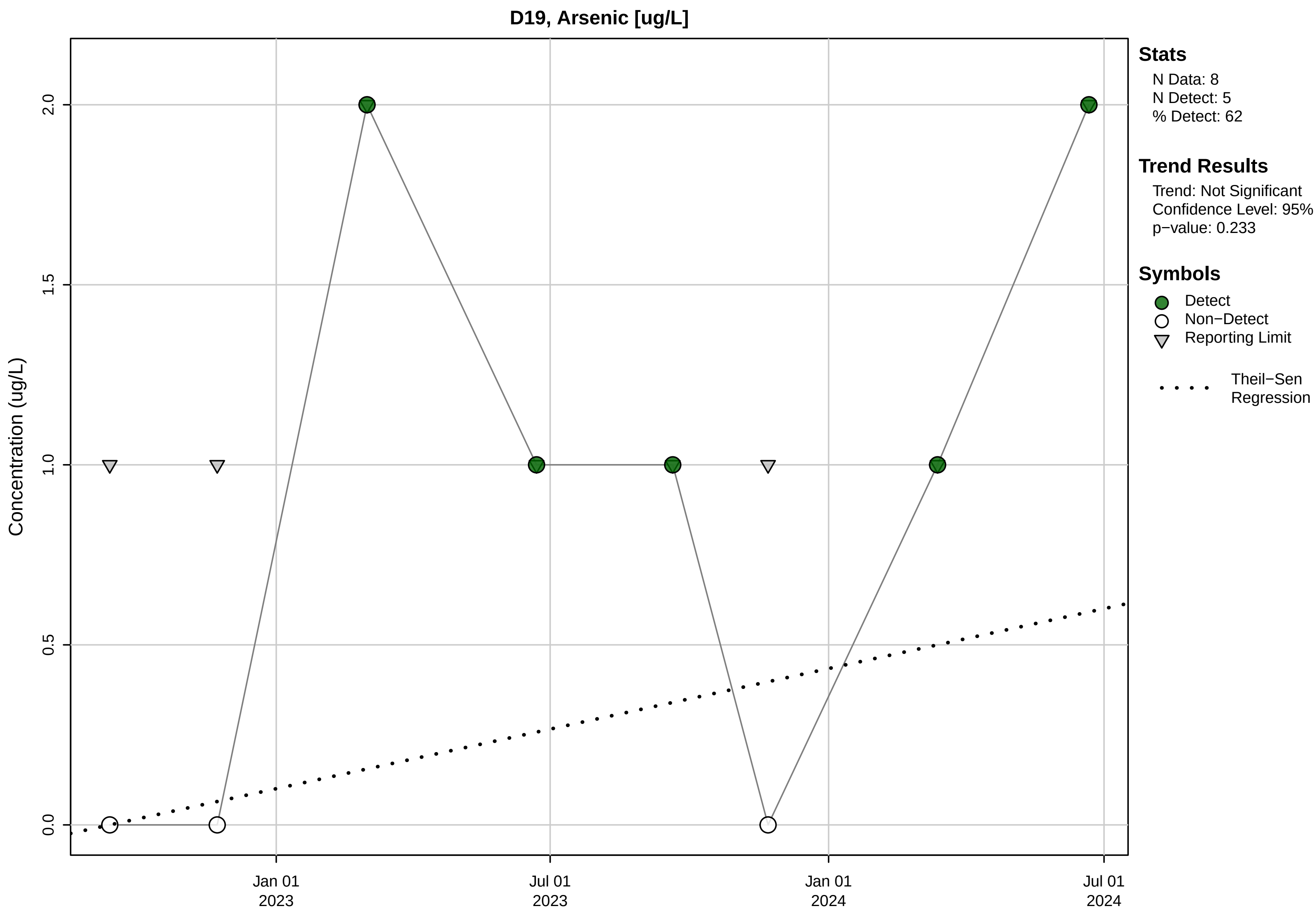

D18, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0277
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

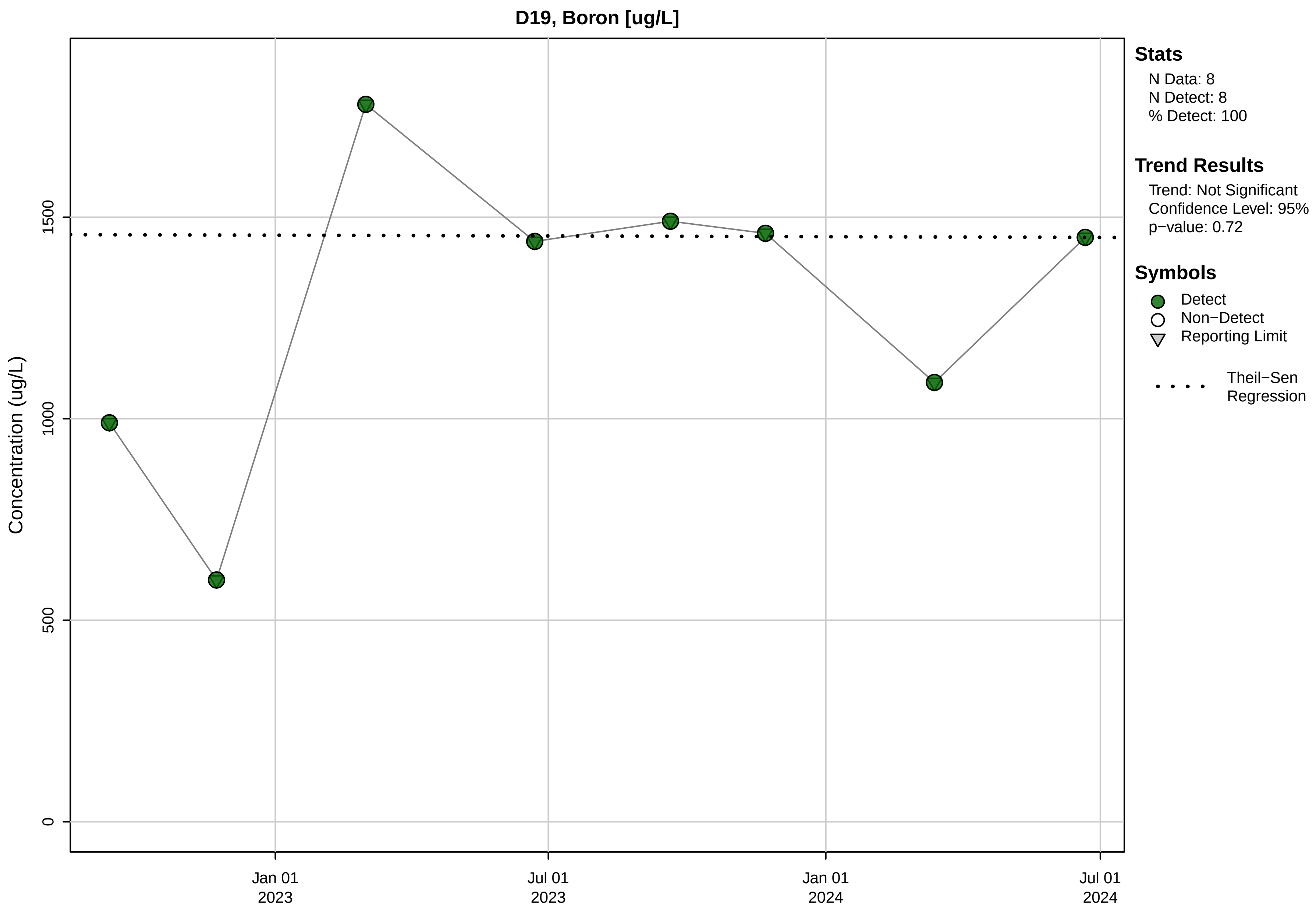

D18, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
5
10
15
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.262
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

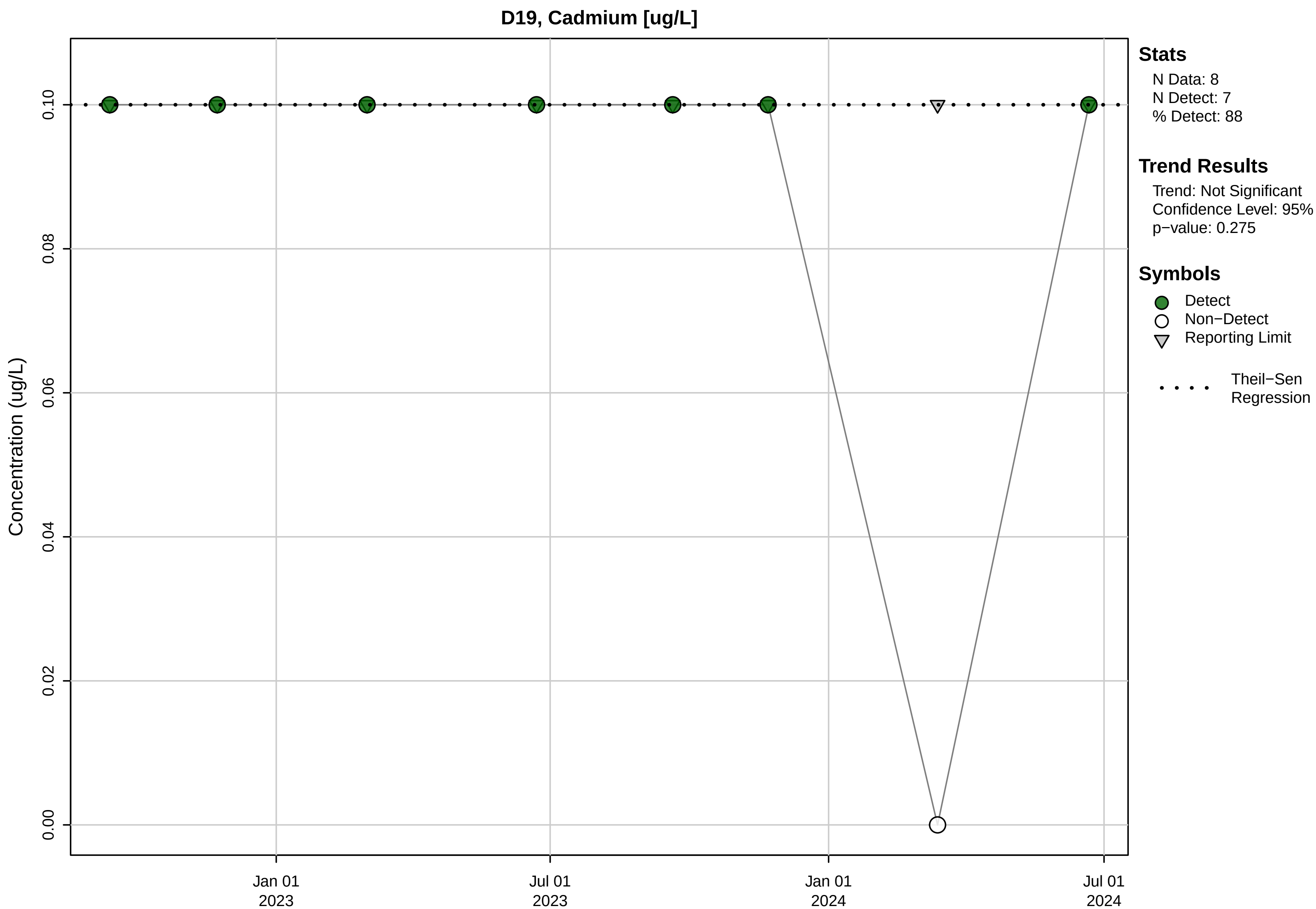


D18, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
100
200
300
400
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

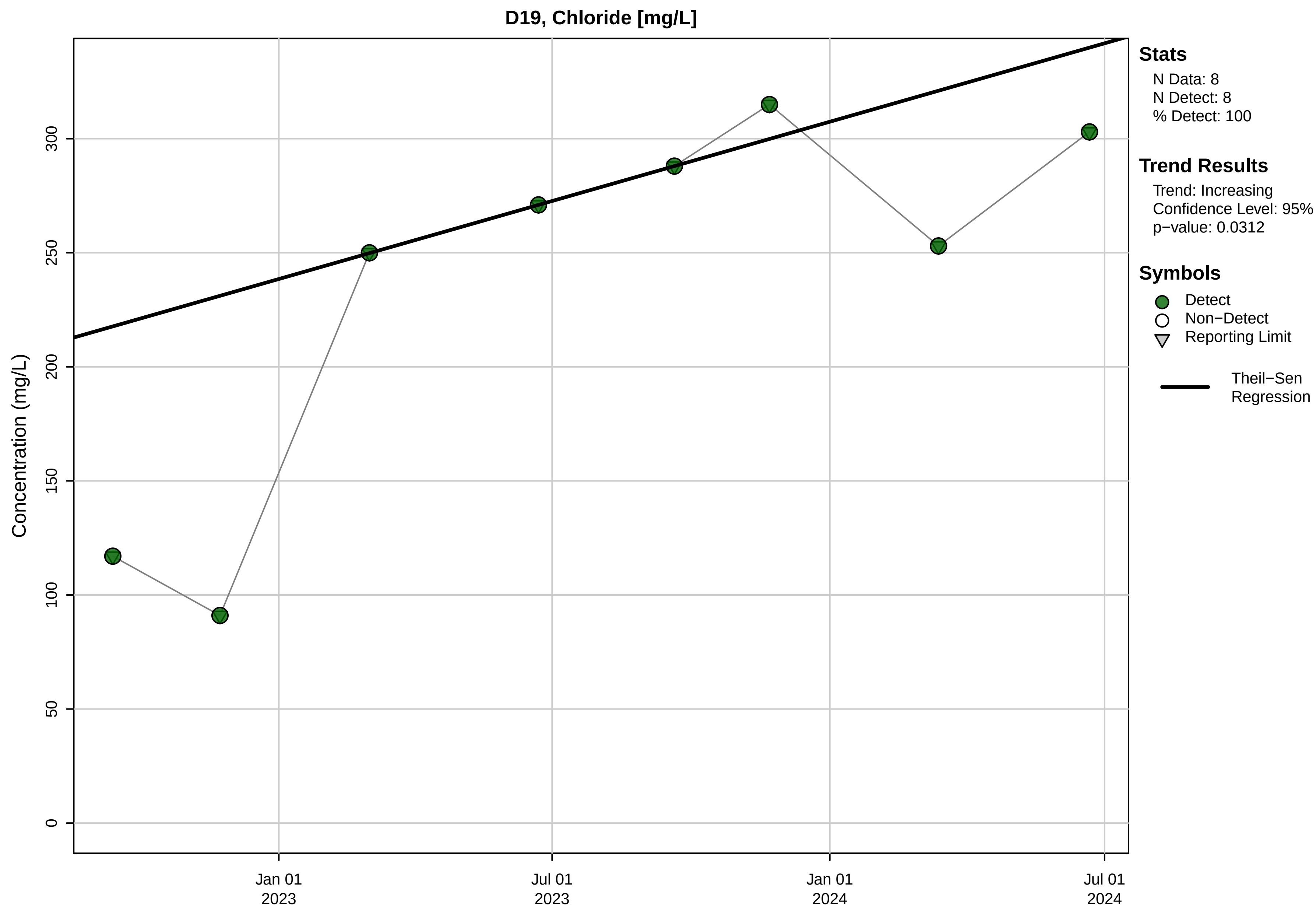

D18, Zinc [ug/L]
Concentration (ug/L)
0
10
20
30
40
50
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0141
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

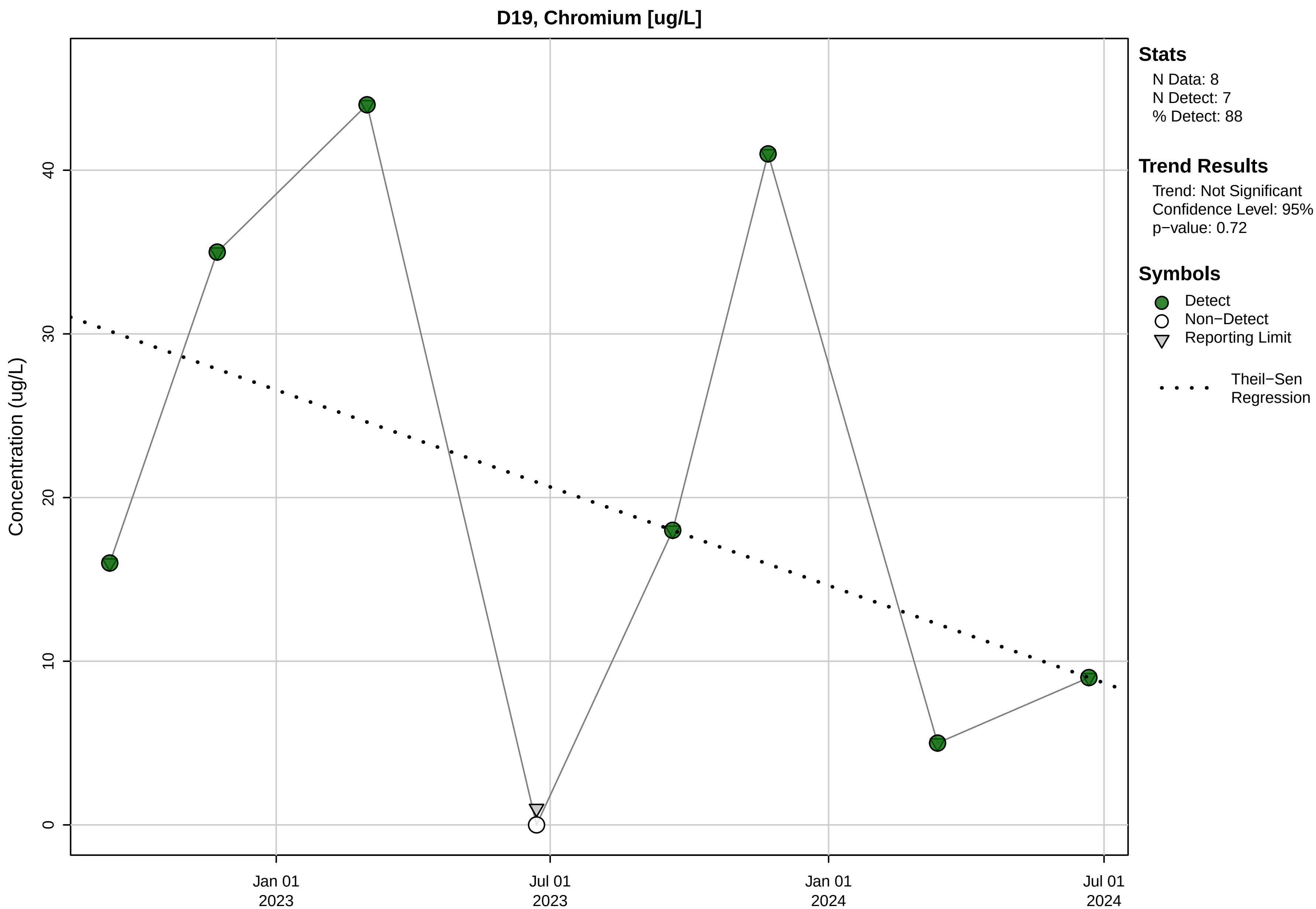

D19, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.233
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

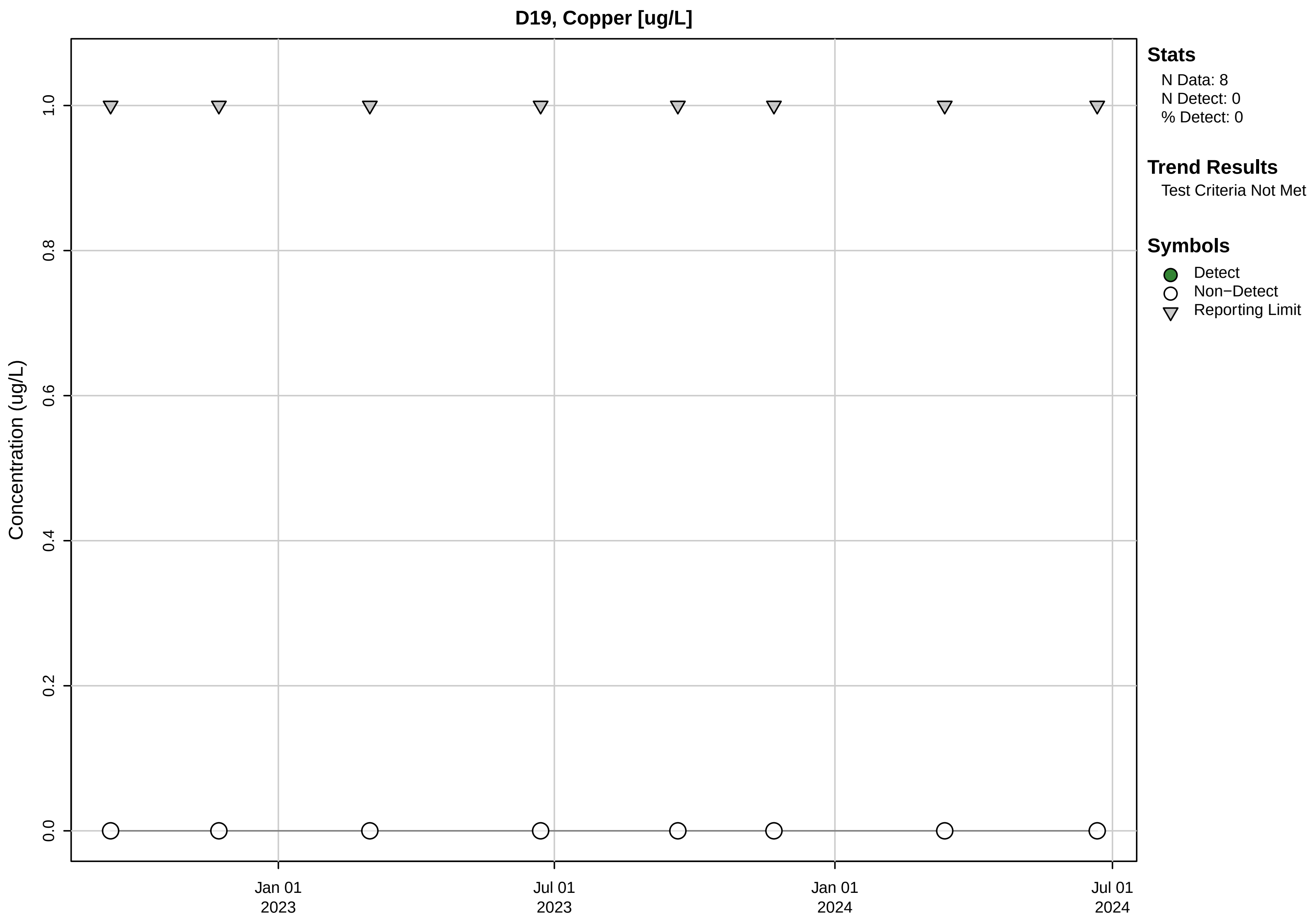

D19, Boron [ug/L]
Concentration (ug/L)
0
500
1000
1500
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



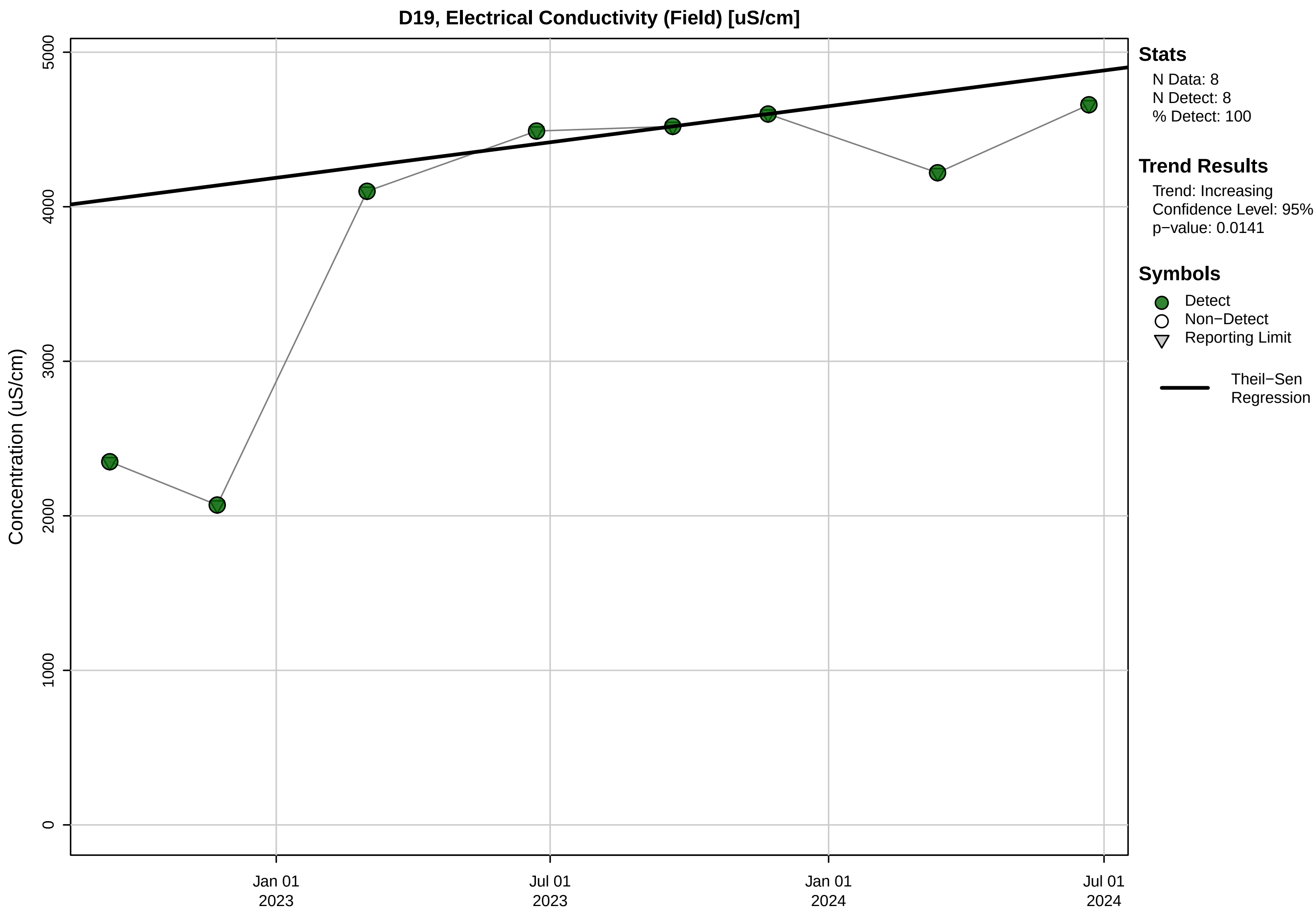
D19, Cadmium [ug/L]
Concentration (ug/L)
0.10
0.08
0.06
0.04
0.02
0.00
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

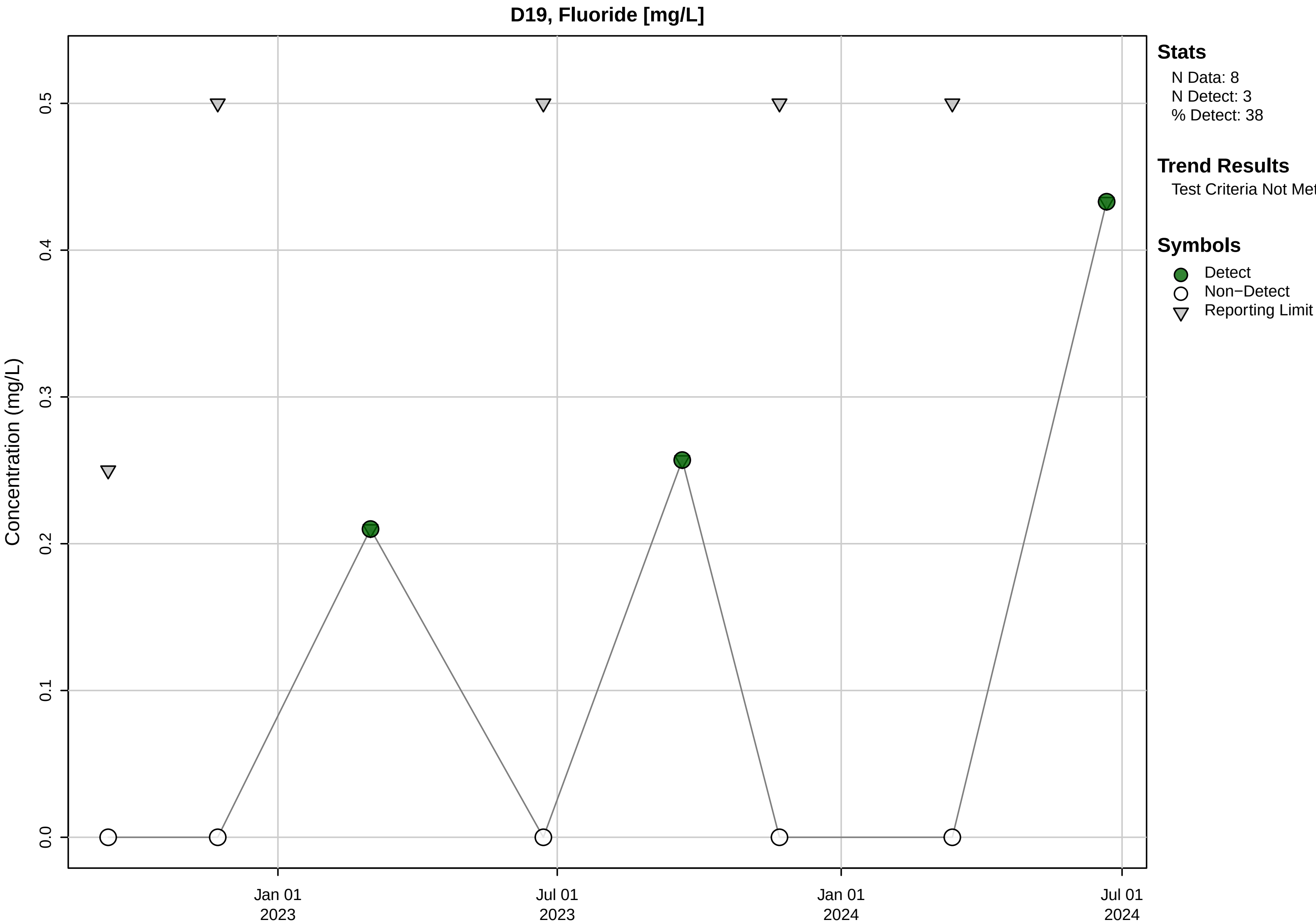

D19, Chloride [mg/L]
Concentration (mg/L)
0
50
100
150
200
250
300
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

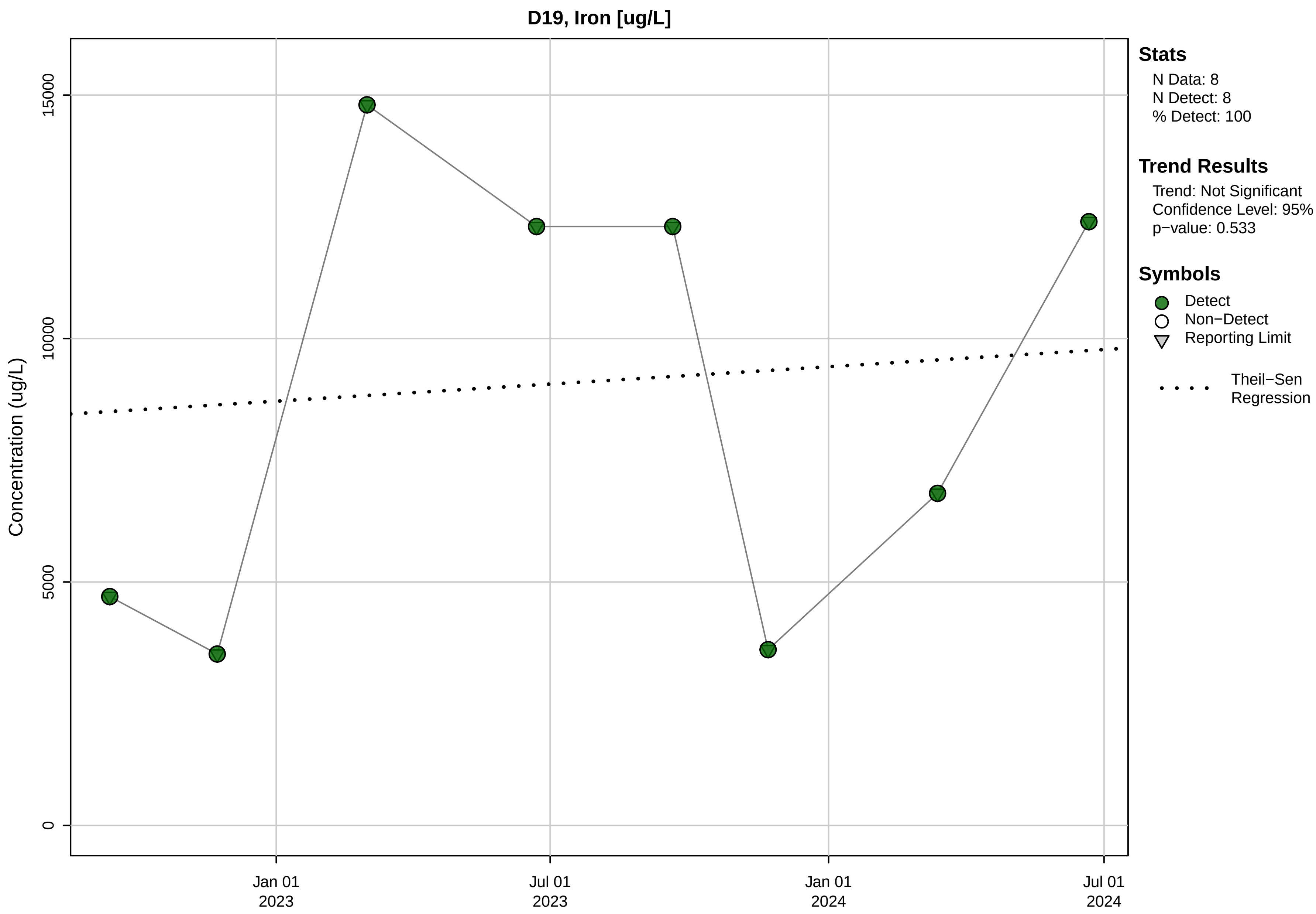

D19, Chromium [ug/L]
Concentration (ug/L)
0
10
20
30
40
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

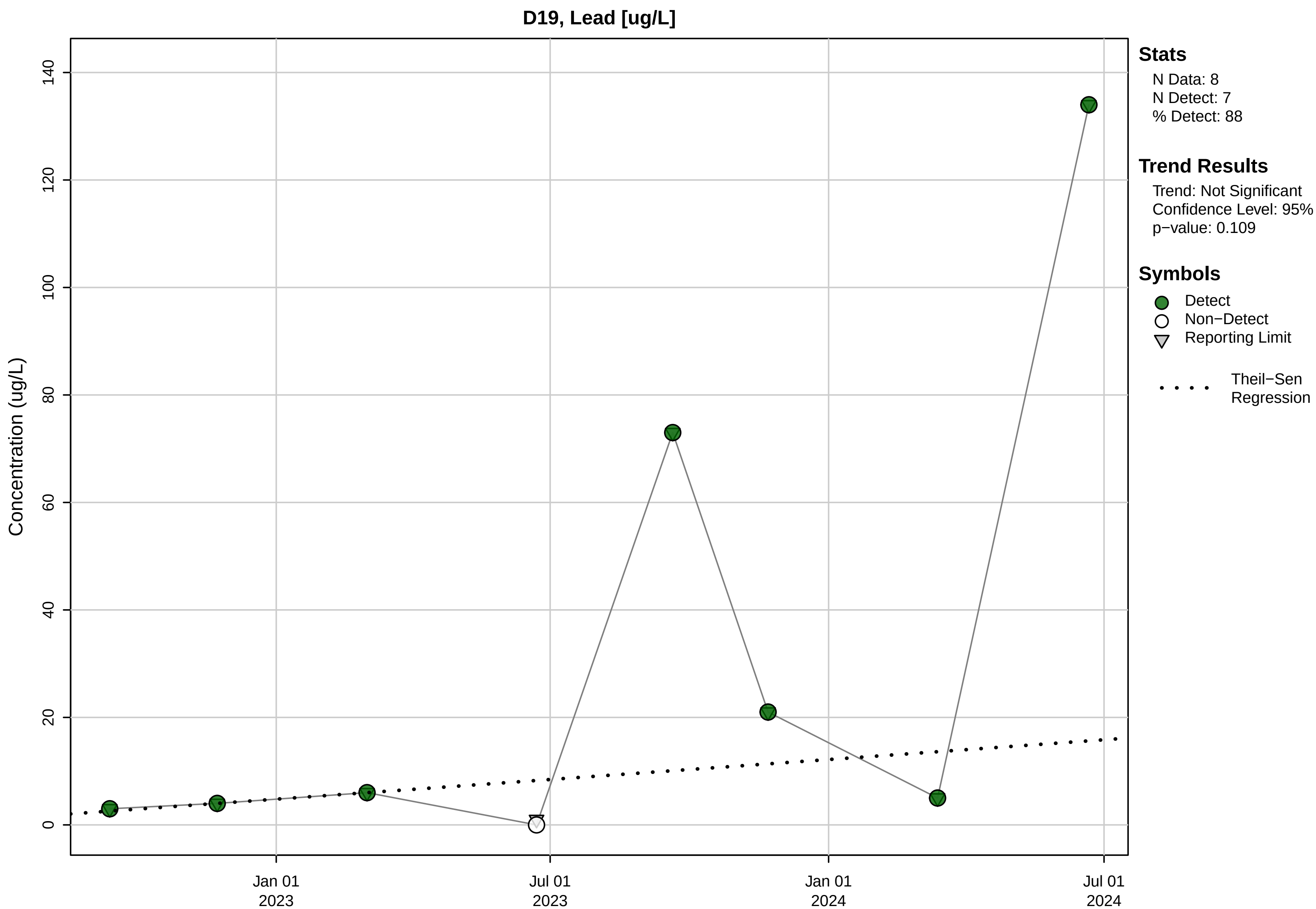


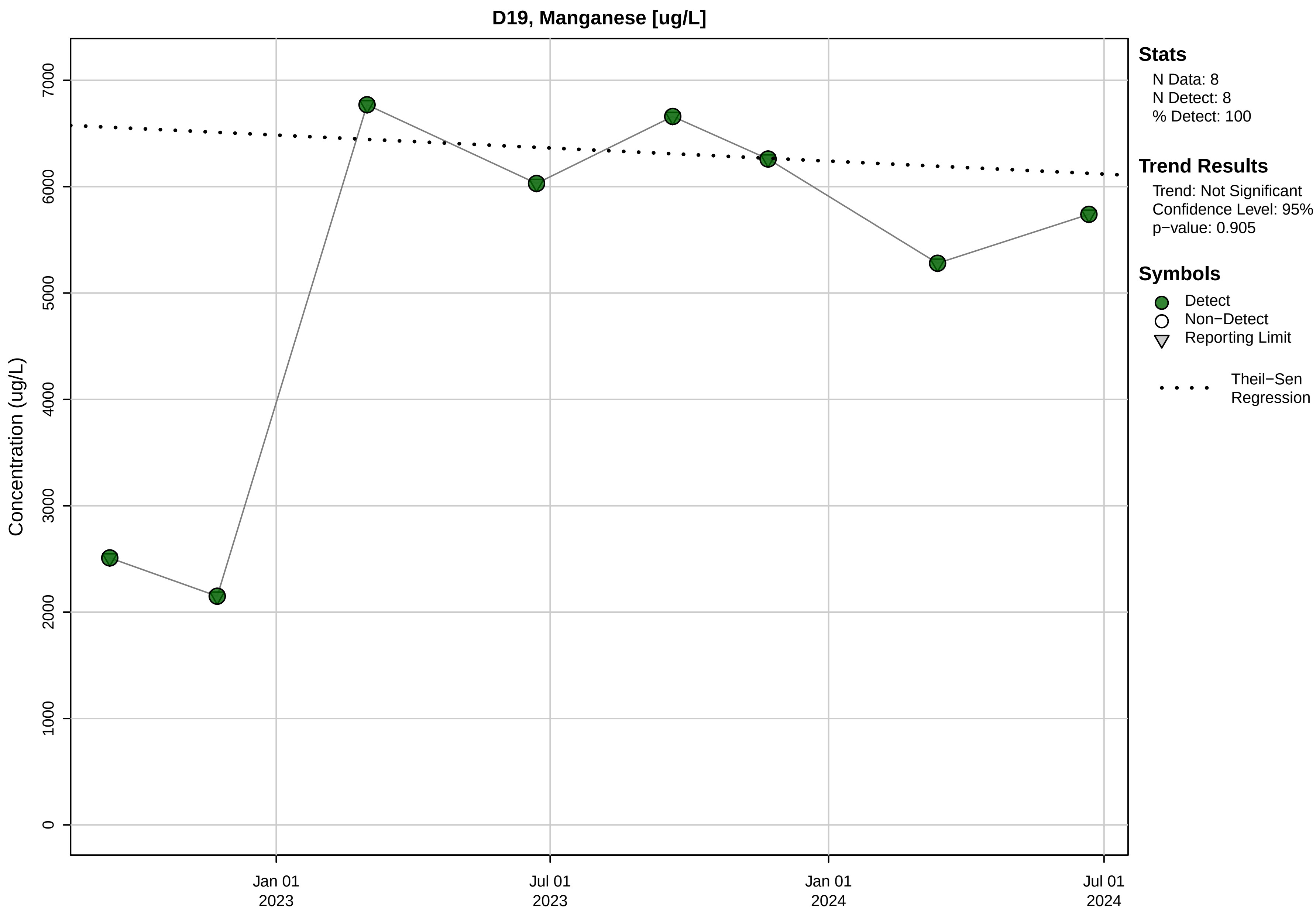
D19, Copper [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D19, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
1000
2000
3000
4000
5000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0141
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

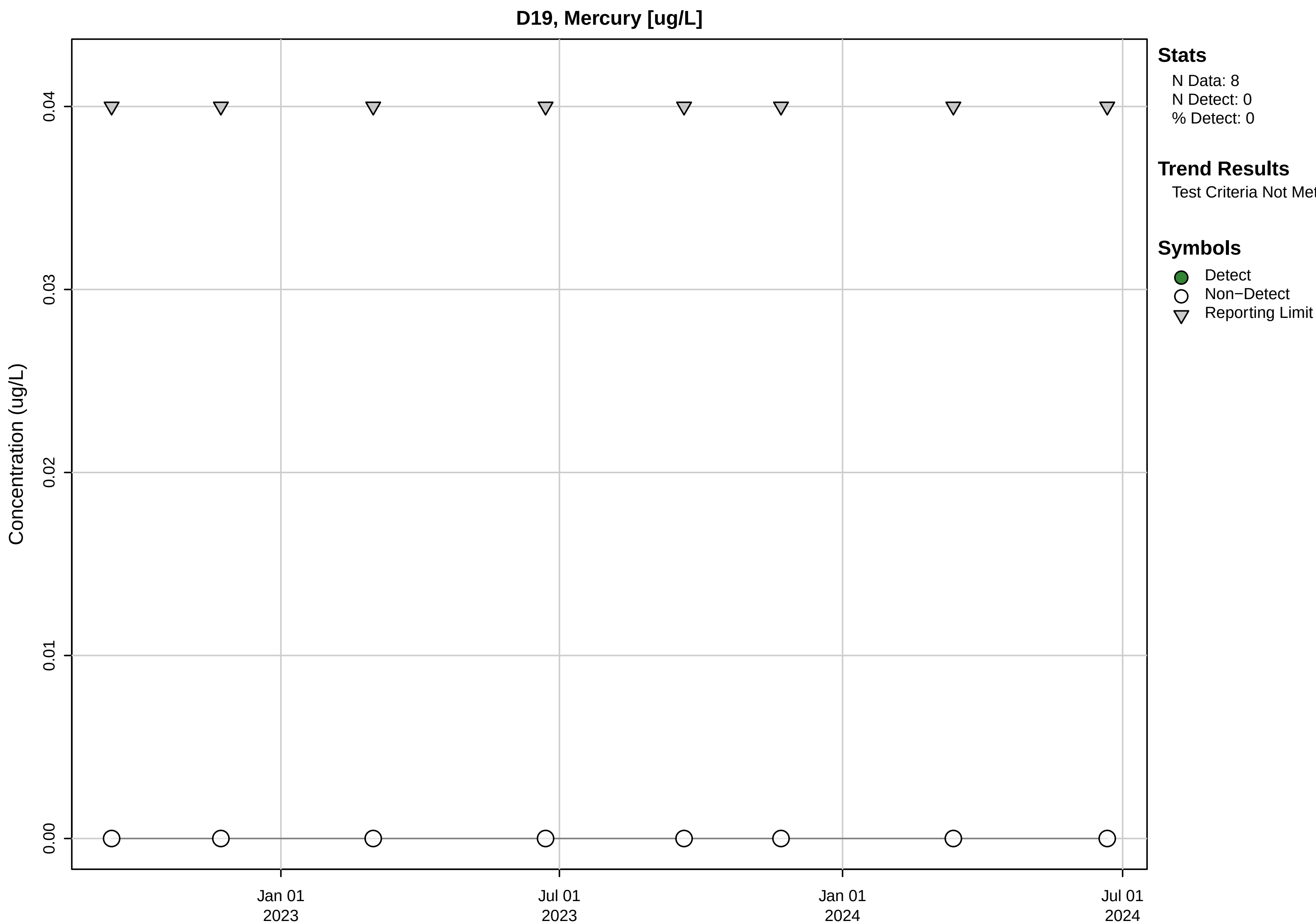

D19, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D19, Iron [ug/L]
Concentration (ug/L)
0
5000
10000
15000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.533
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

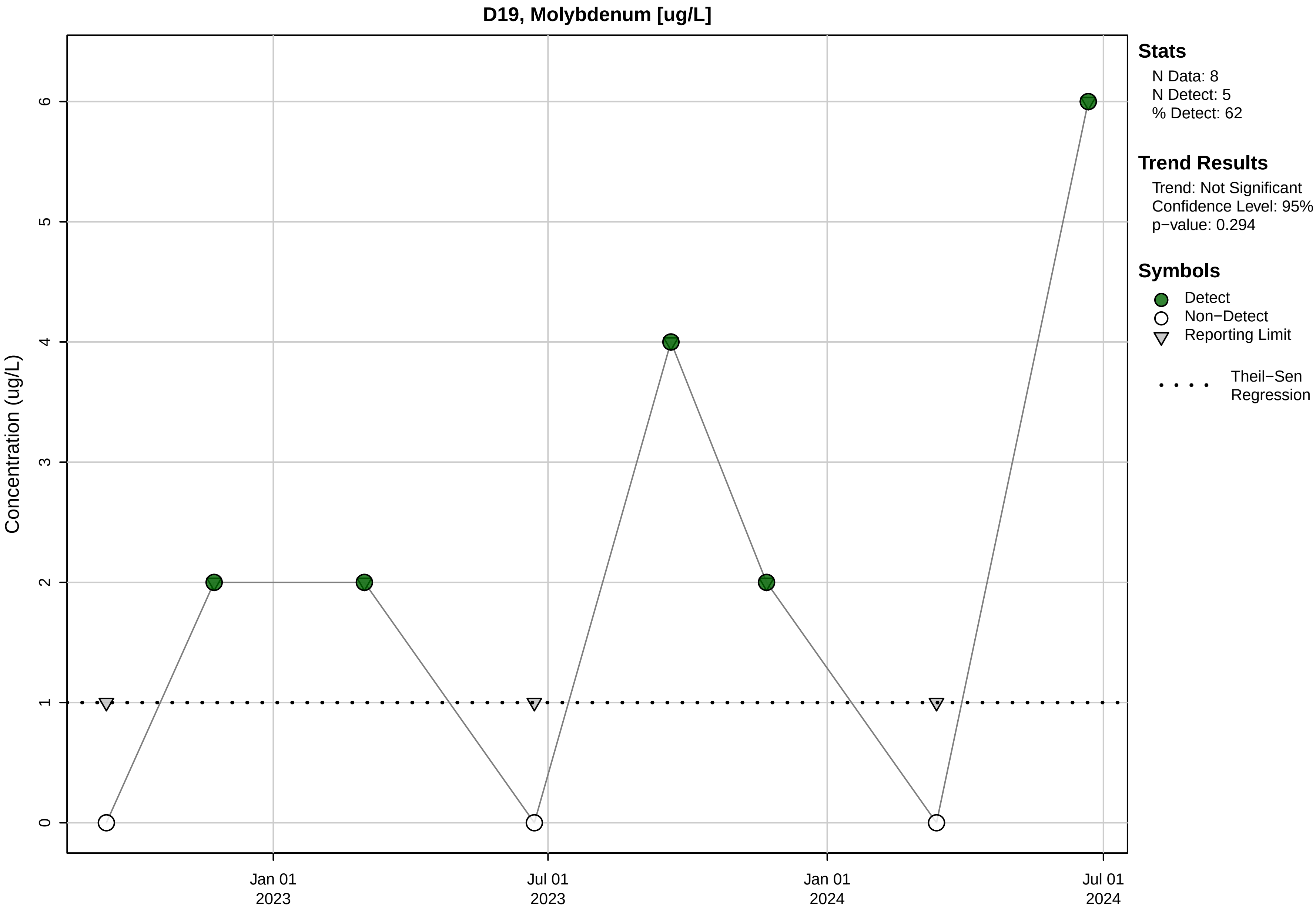

D19, Lead [ug/L]
Concentration (ug/L)
0
20
40
60
80
100
120
140
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



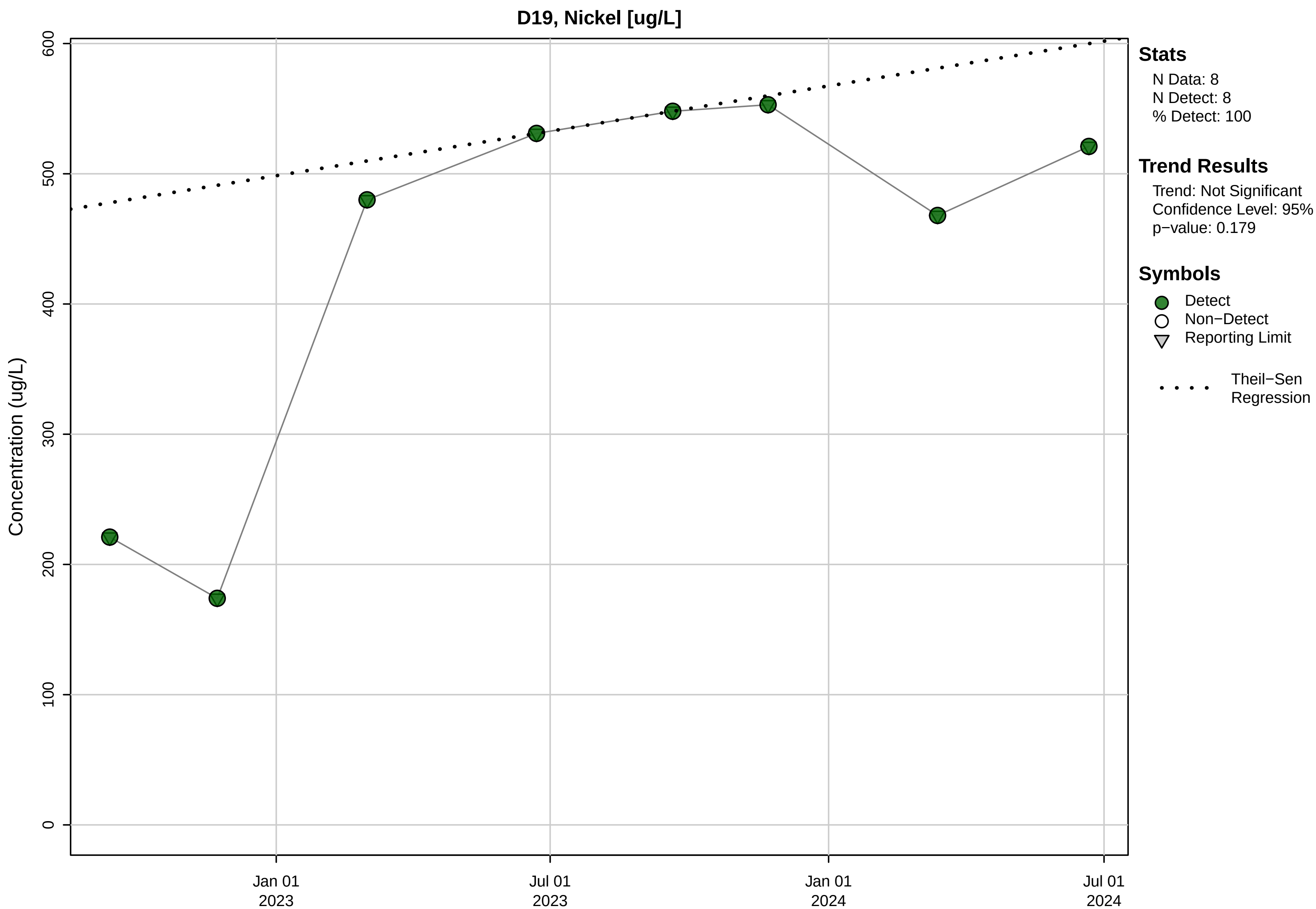
D19, Manganese [ug/L]
Concentration (ug/L)
0
1000
2000
3000
4000
5000
6000
7000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



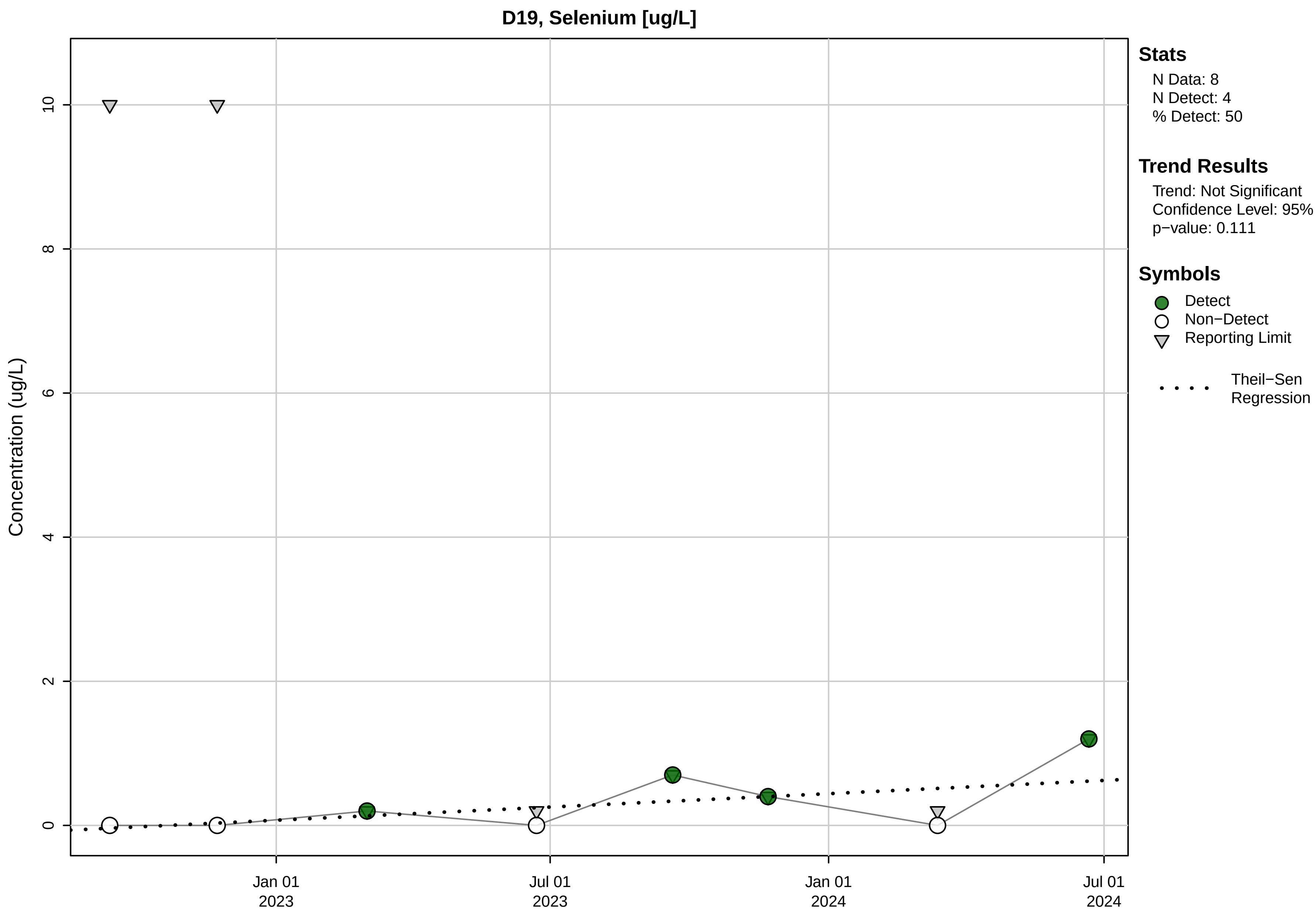
D19, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

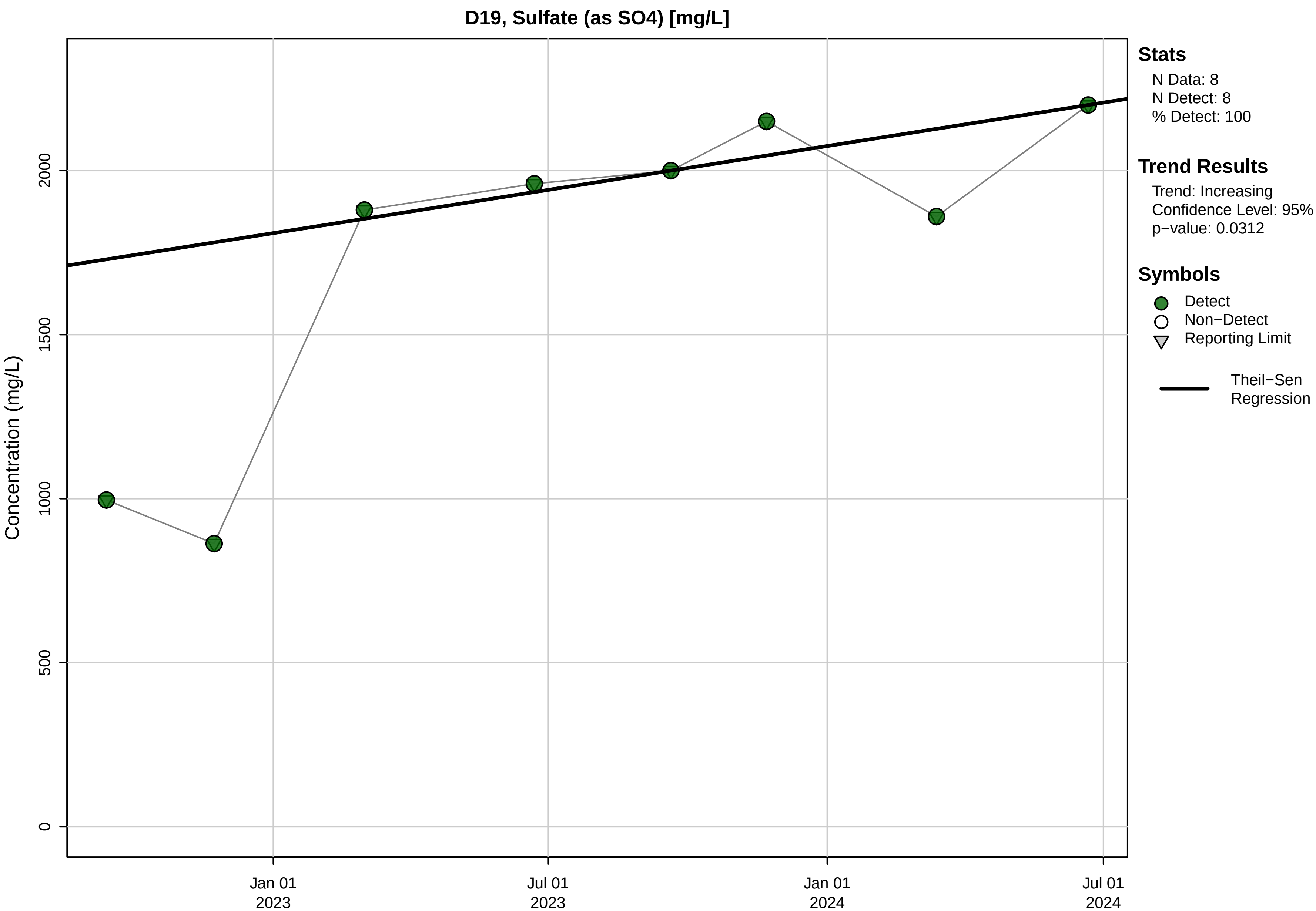


D19, Molybdenum [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
6
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.294
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

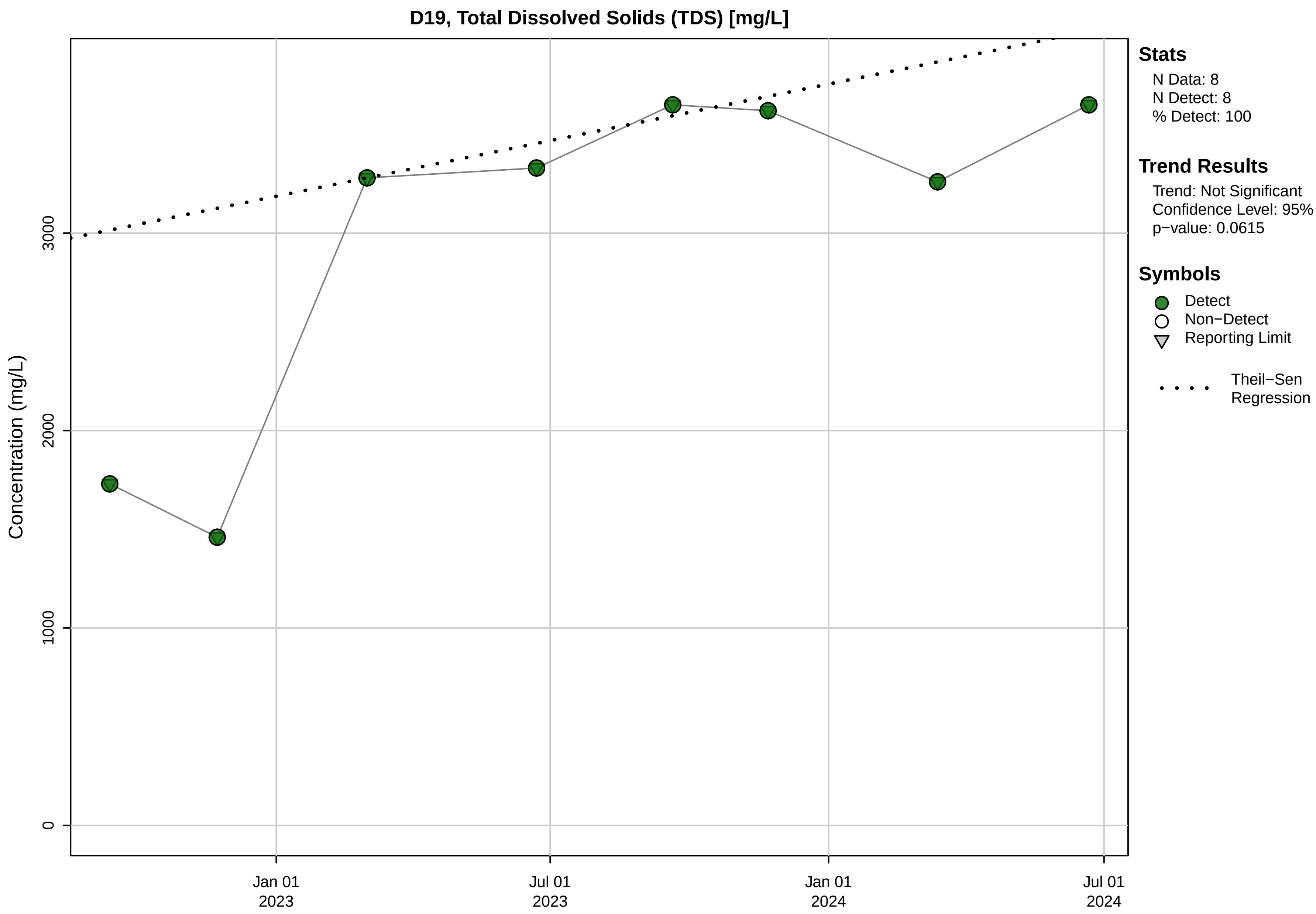


D19, Nickel [ug/L]
Concentration (ug/L)
0
100
200
300
400
500
600
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

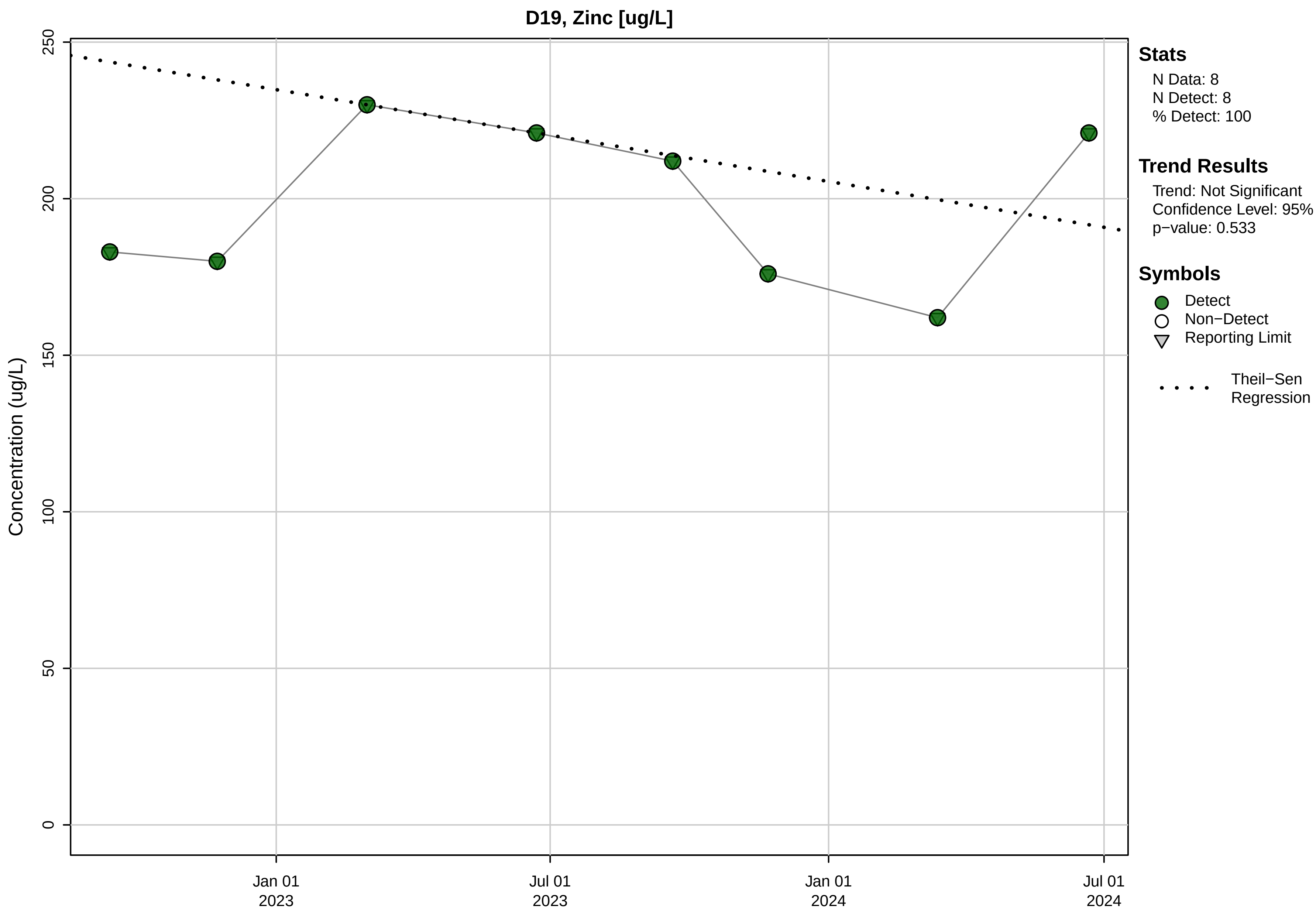

D19, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.111
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



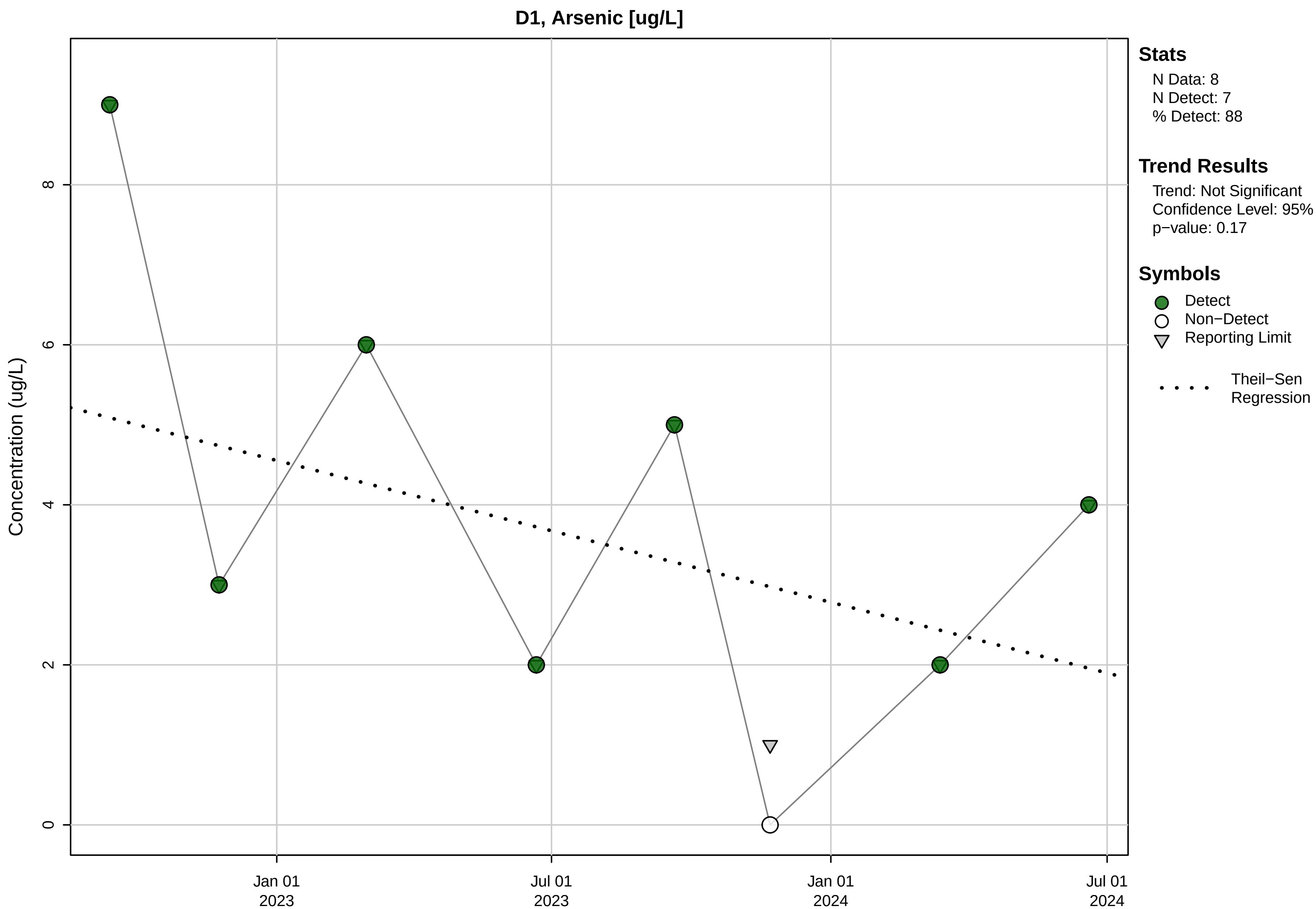
D19, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
500
1000
1500
2000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



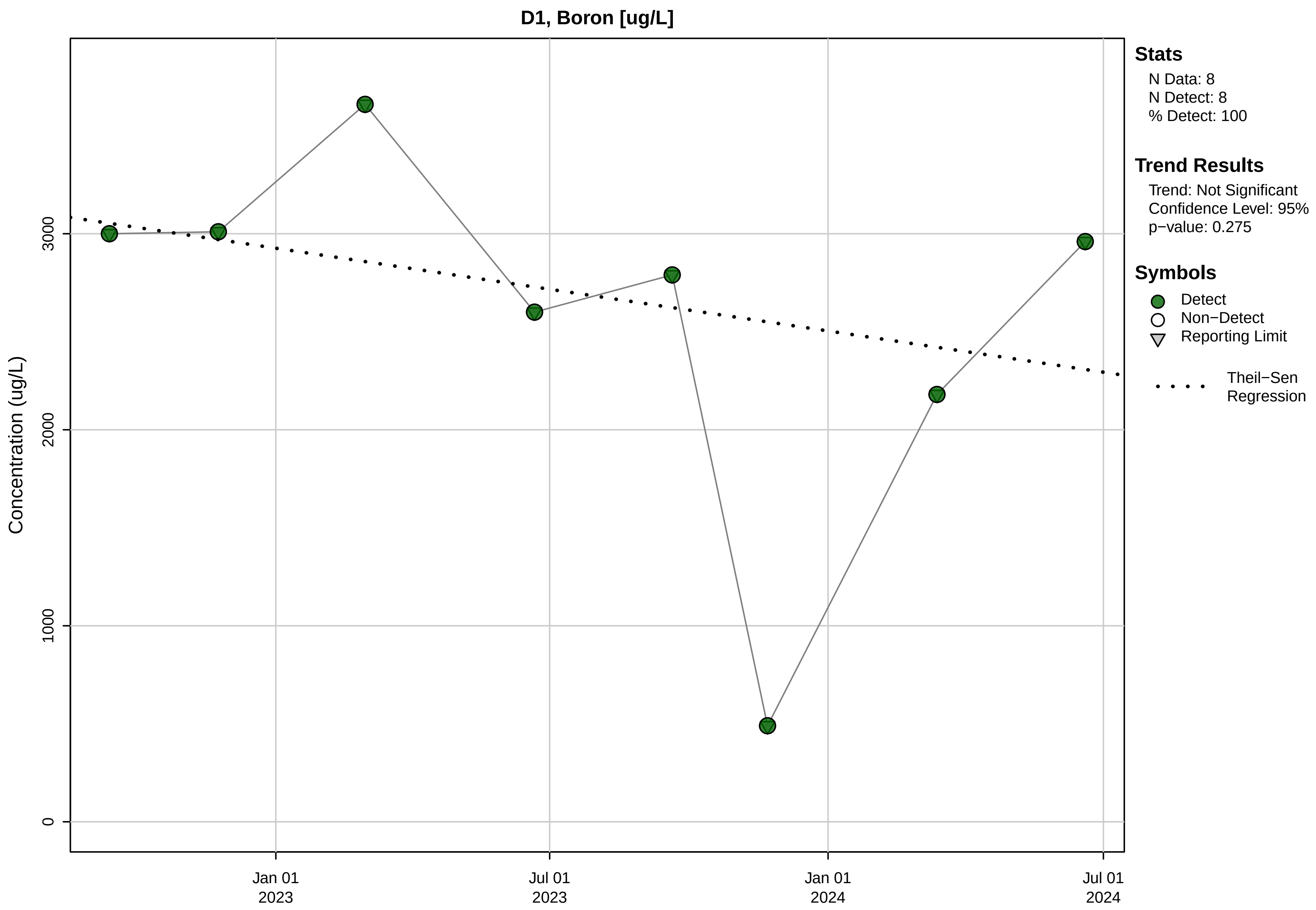
D19, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
1000
2000
3000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0615
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



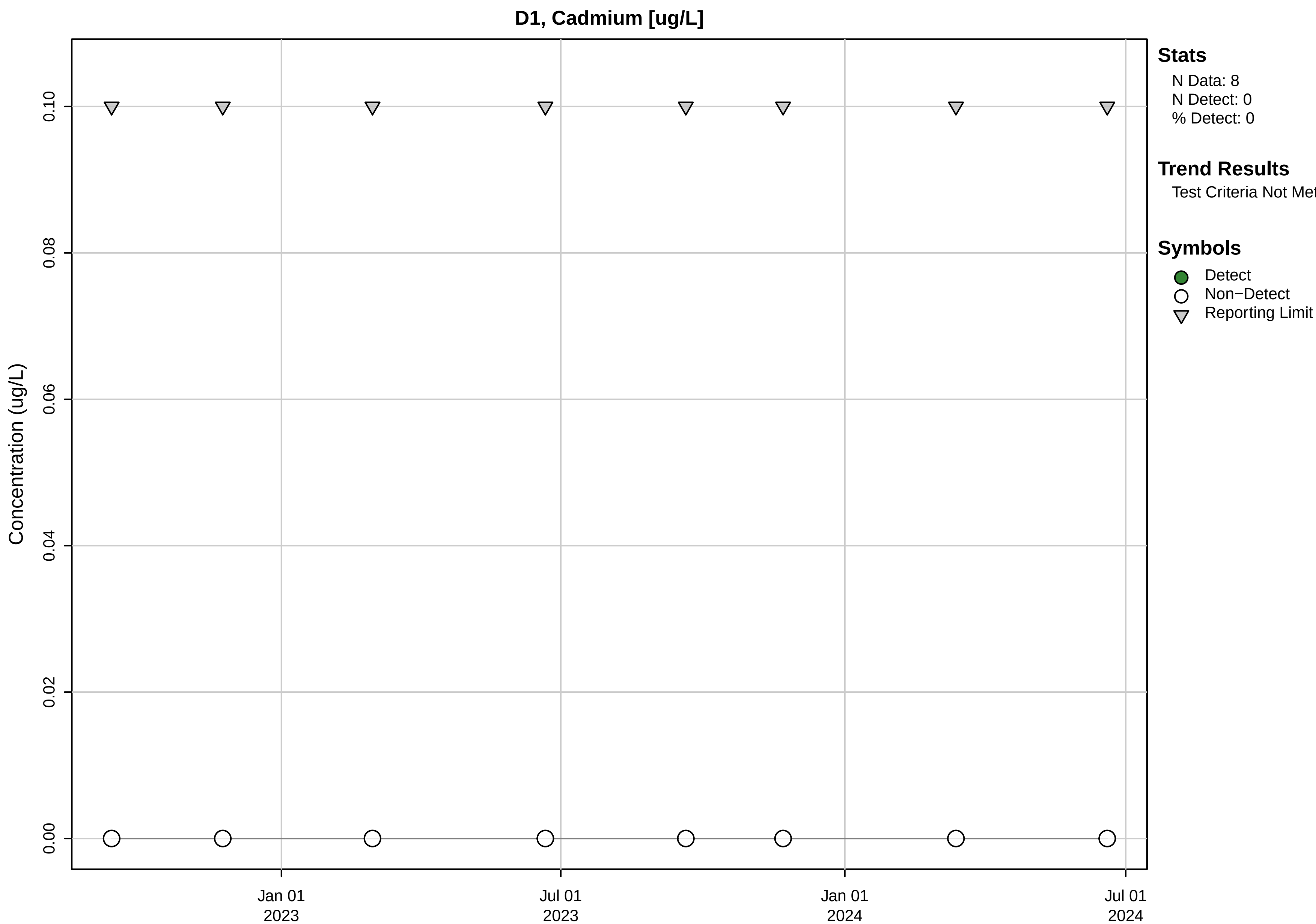
D19, Zinc [ug/L]
Concentration (ug/L)
0
50
100
150
200
250
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.533
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



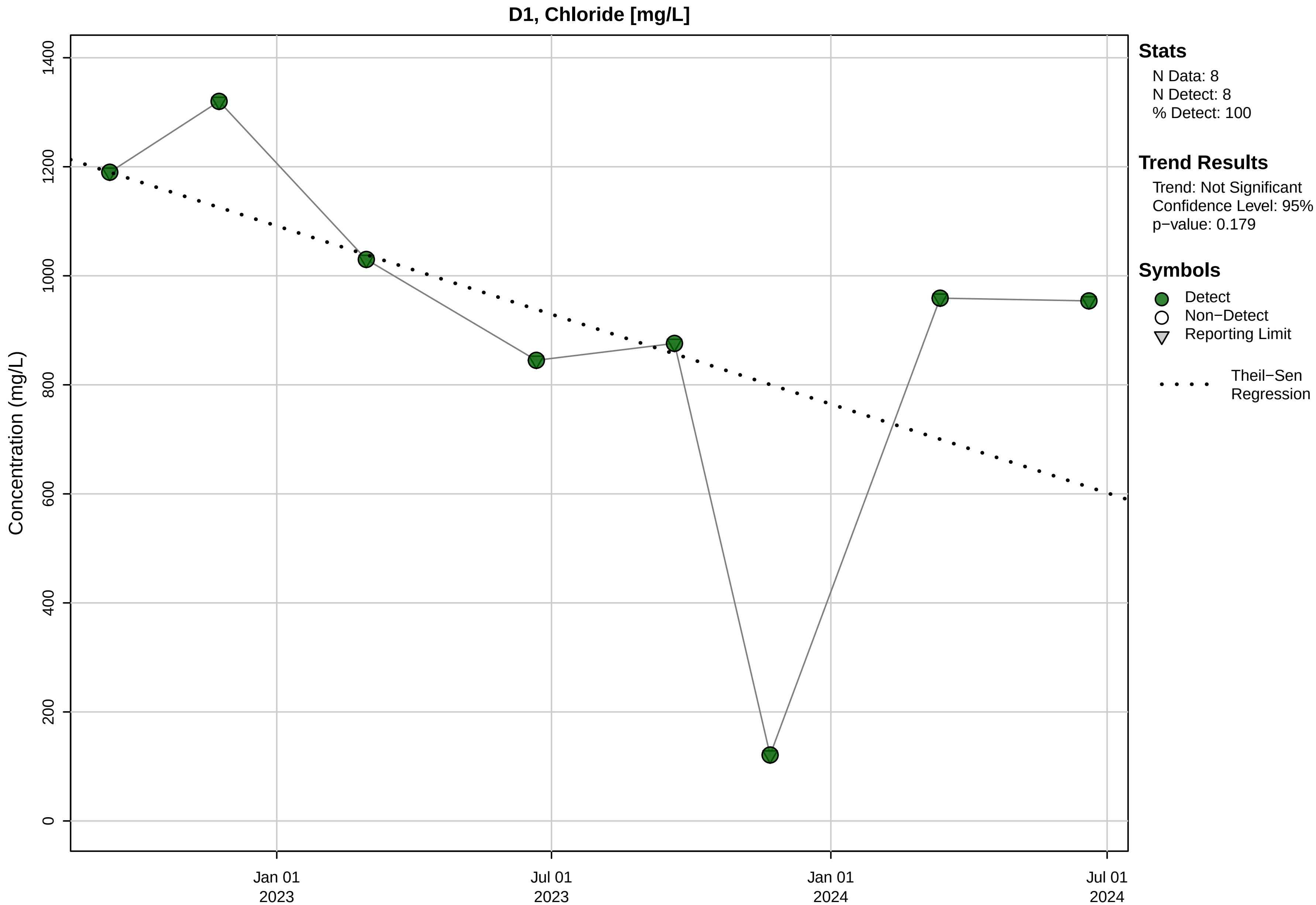
D1, Arsenic [ug/L]
Concentration (ug/L)
0
2
4
6
8
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.17
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



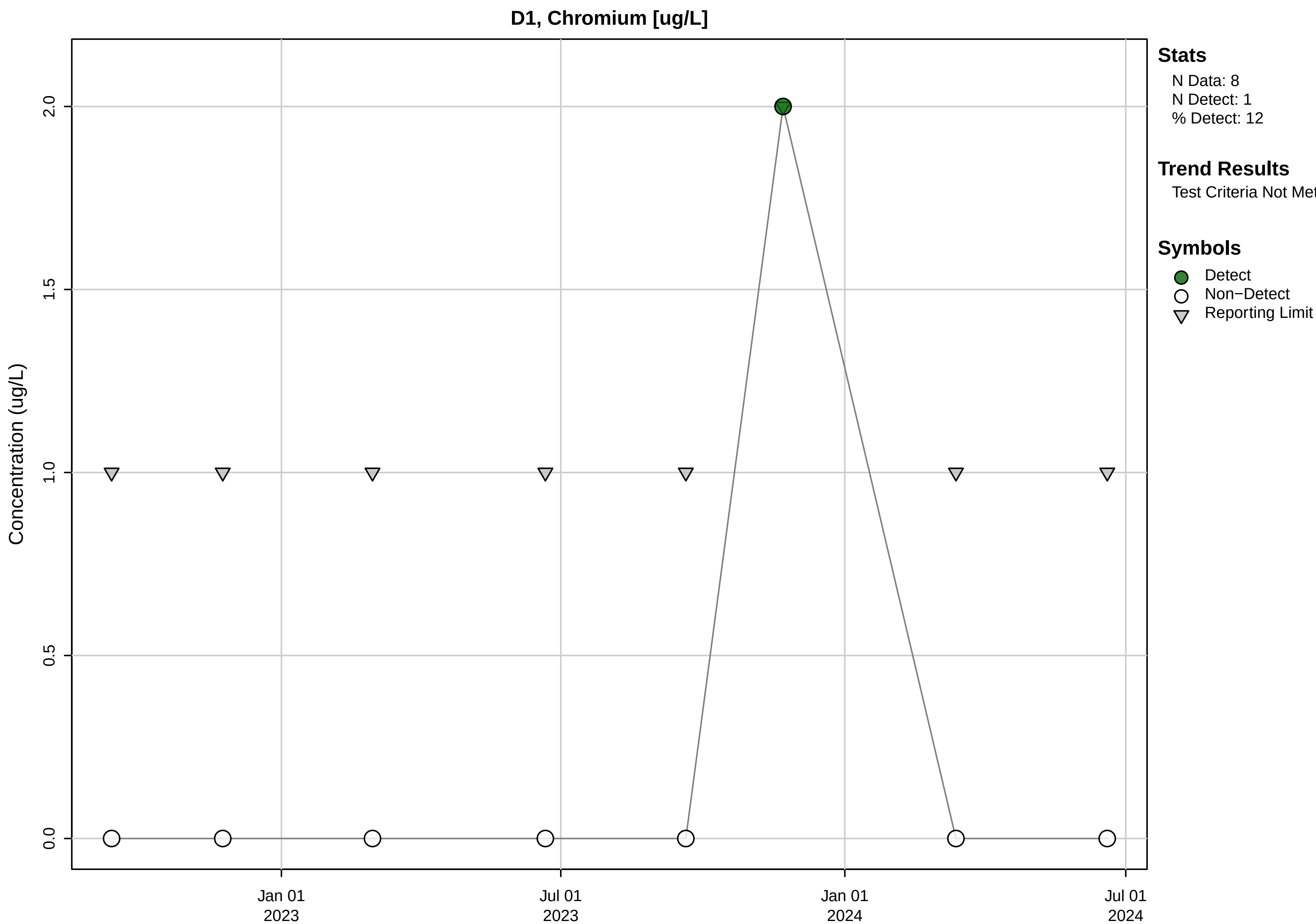
D1, Boron [ug/L]
Concentration (ug/L)
0
1000
2000
3000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



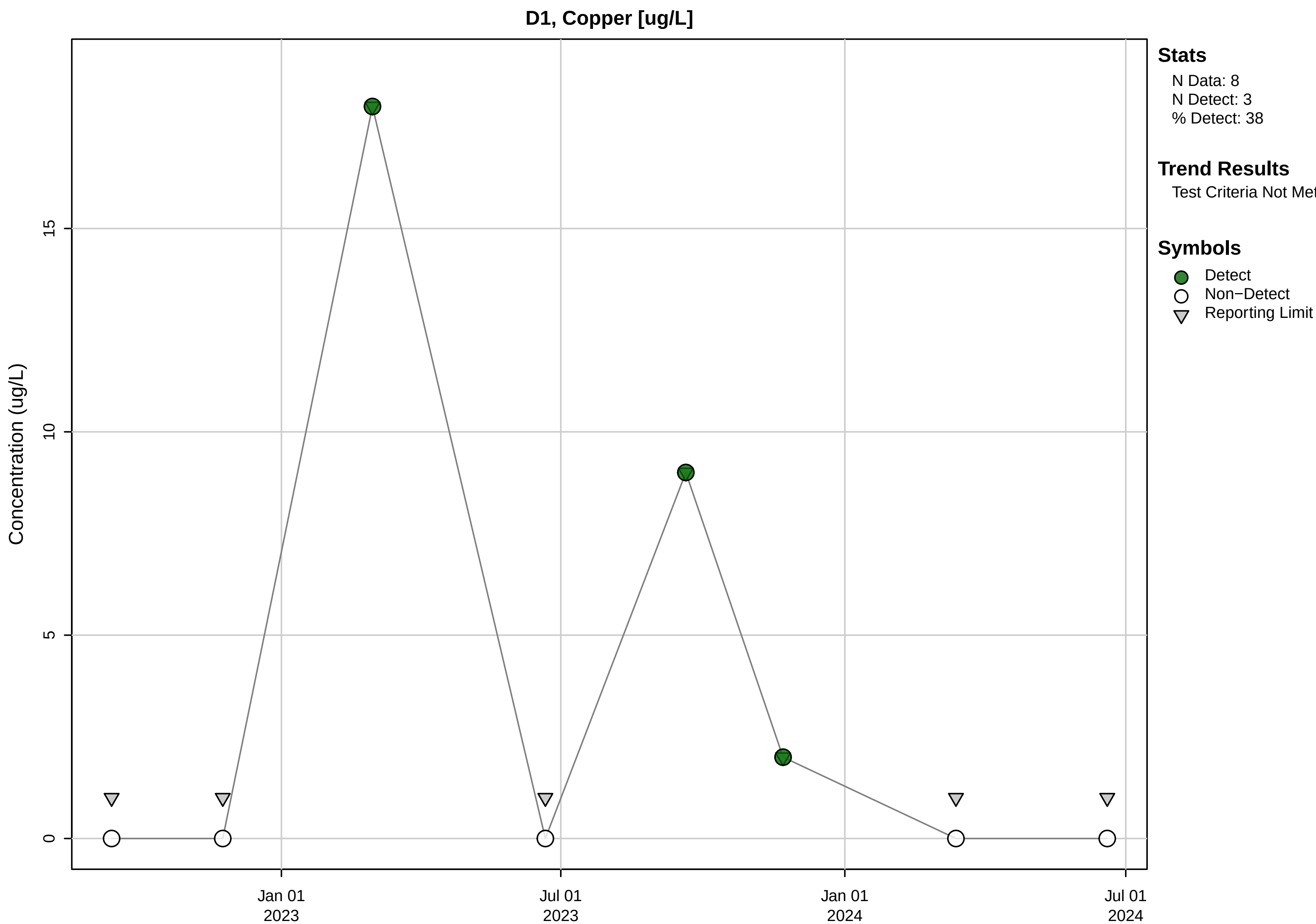
D1, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.02
0.04
0.06
0.08
0.10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



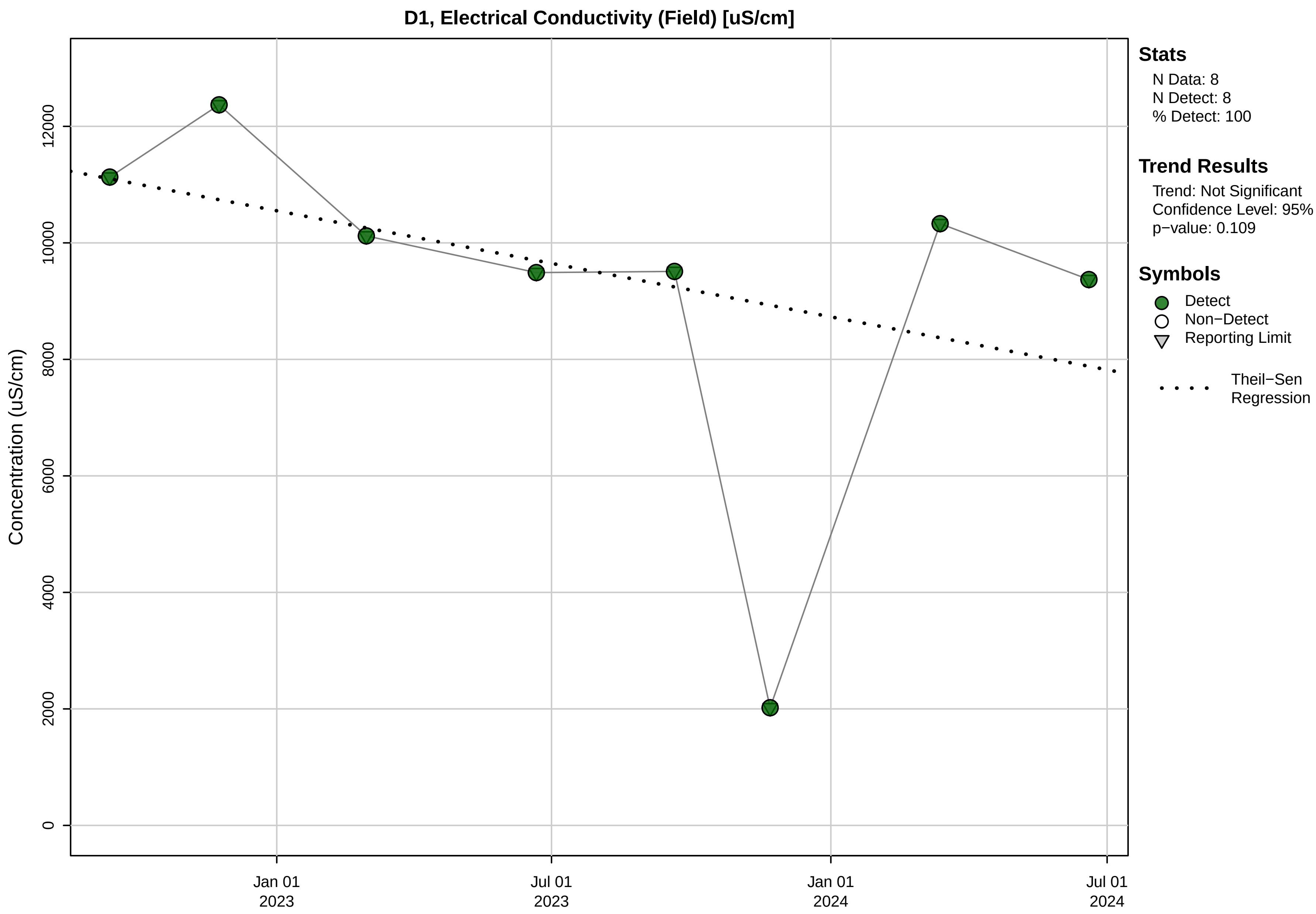
D1, Chloride [mg/L]
Concentration (mg/L)
0
200
400
600
800
1000
1200
1400
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



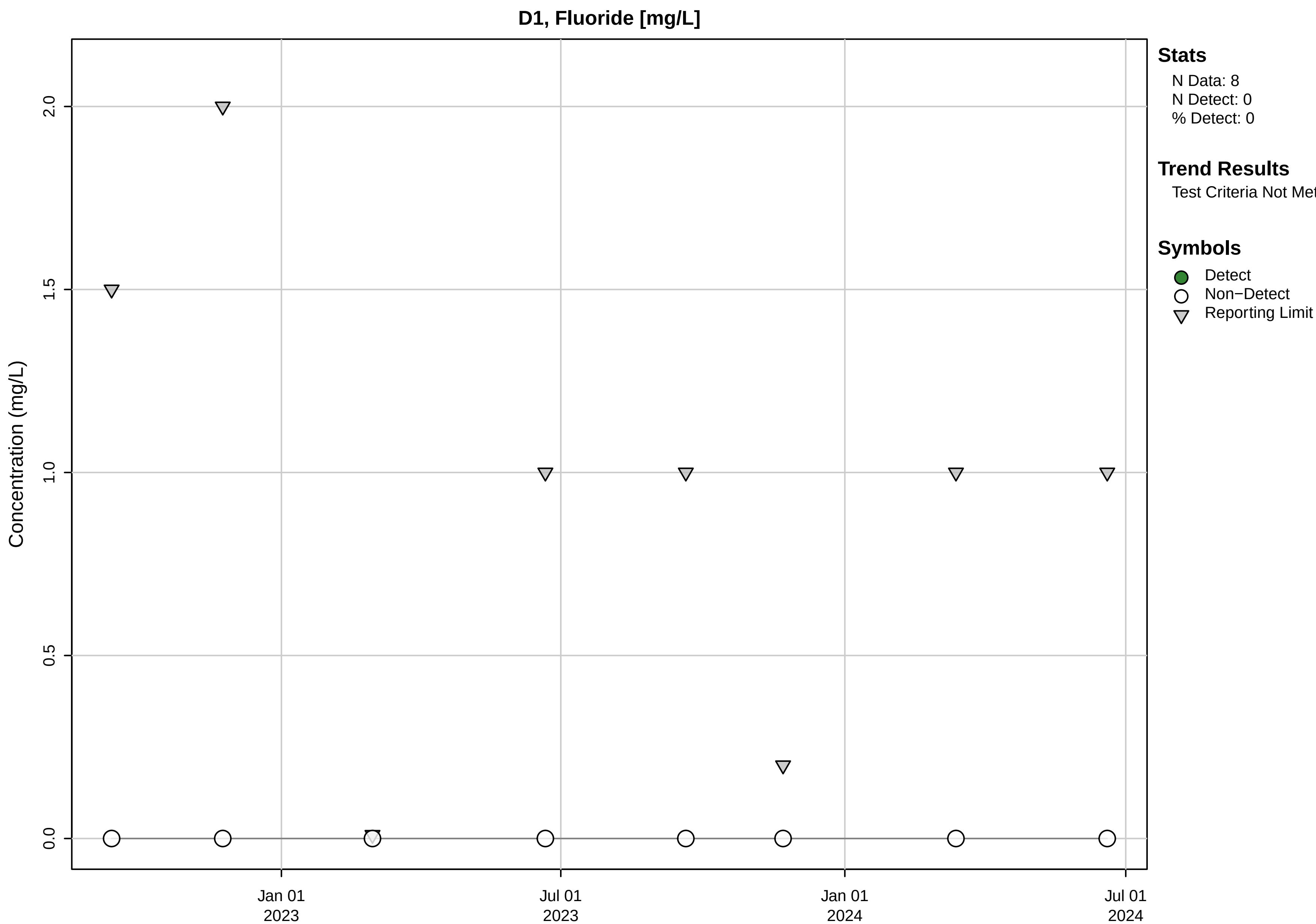
D1, Chromium [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



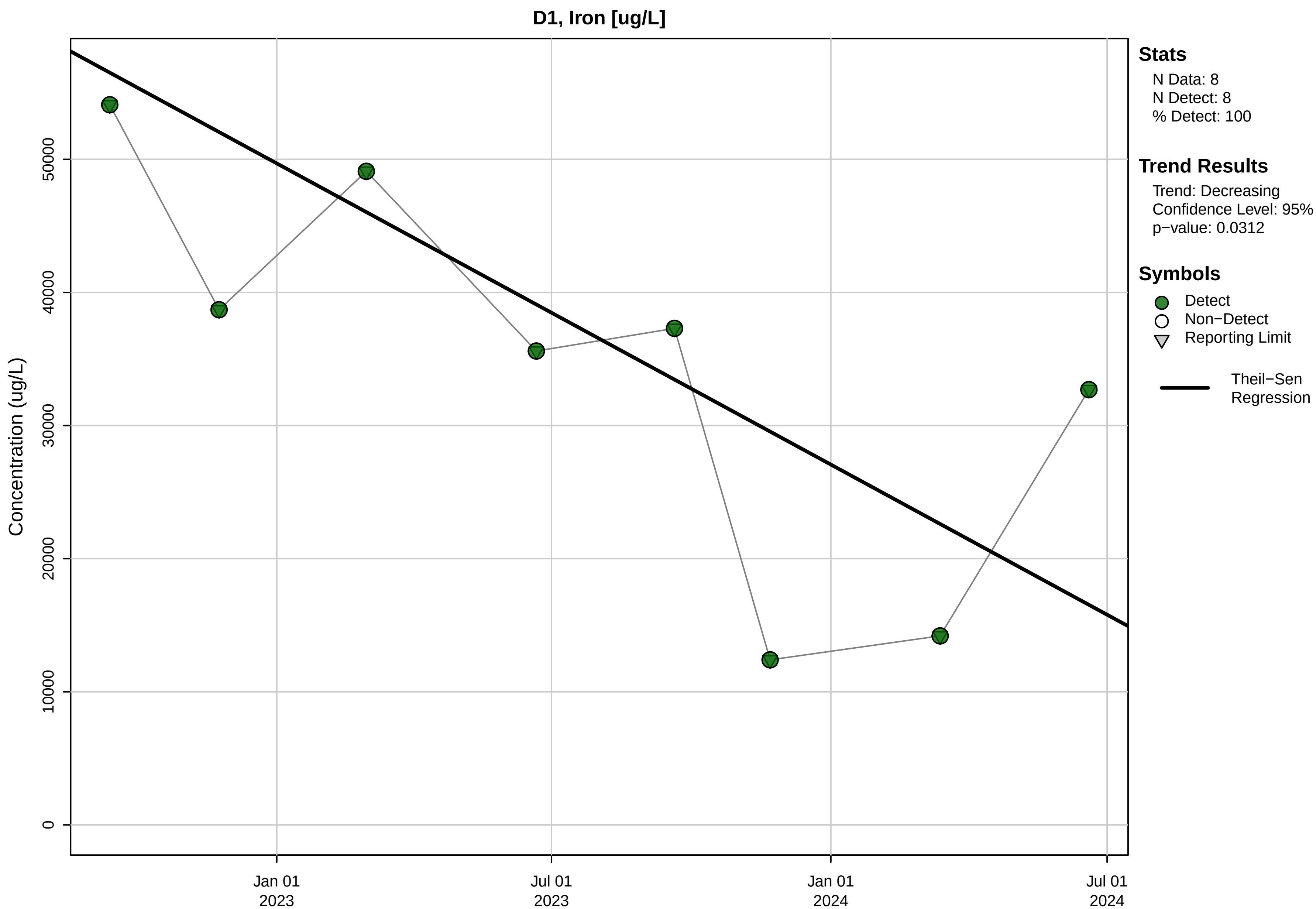
D1, Copper [ug/L]
Concentration (ug/L)
0
5
10
15
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

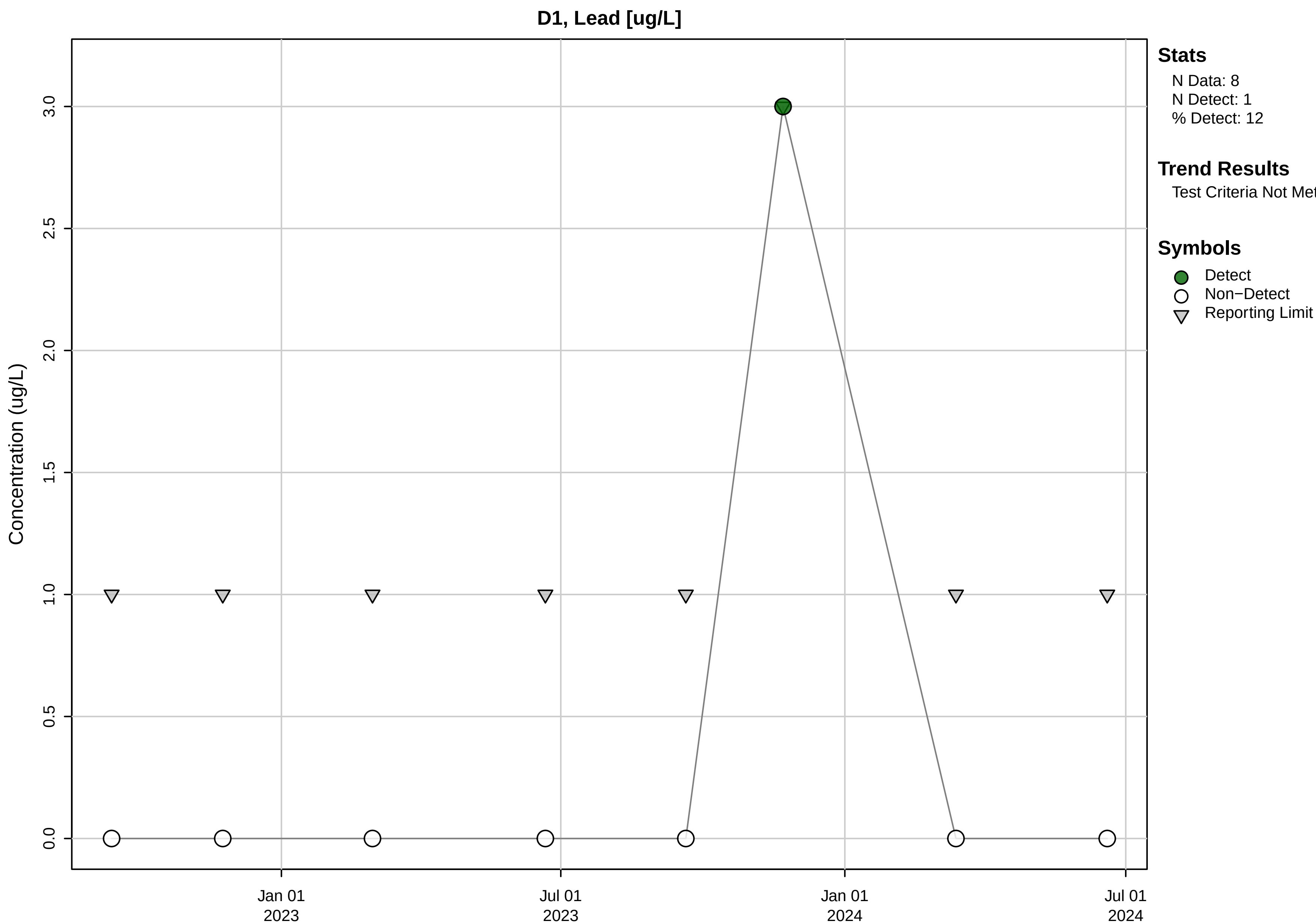


D1, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
2000
4000
6000
8000
10000
12000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

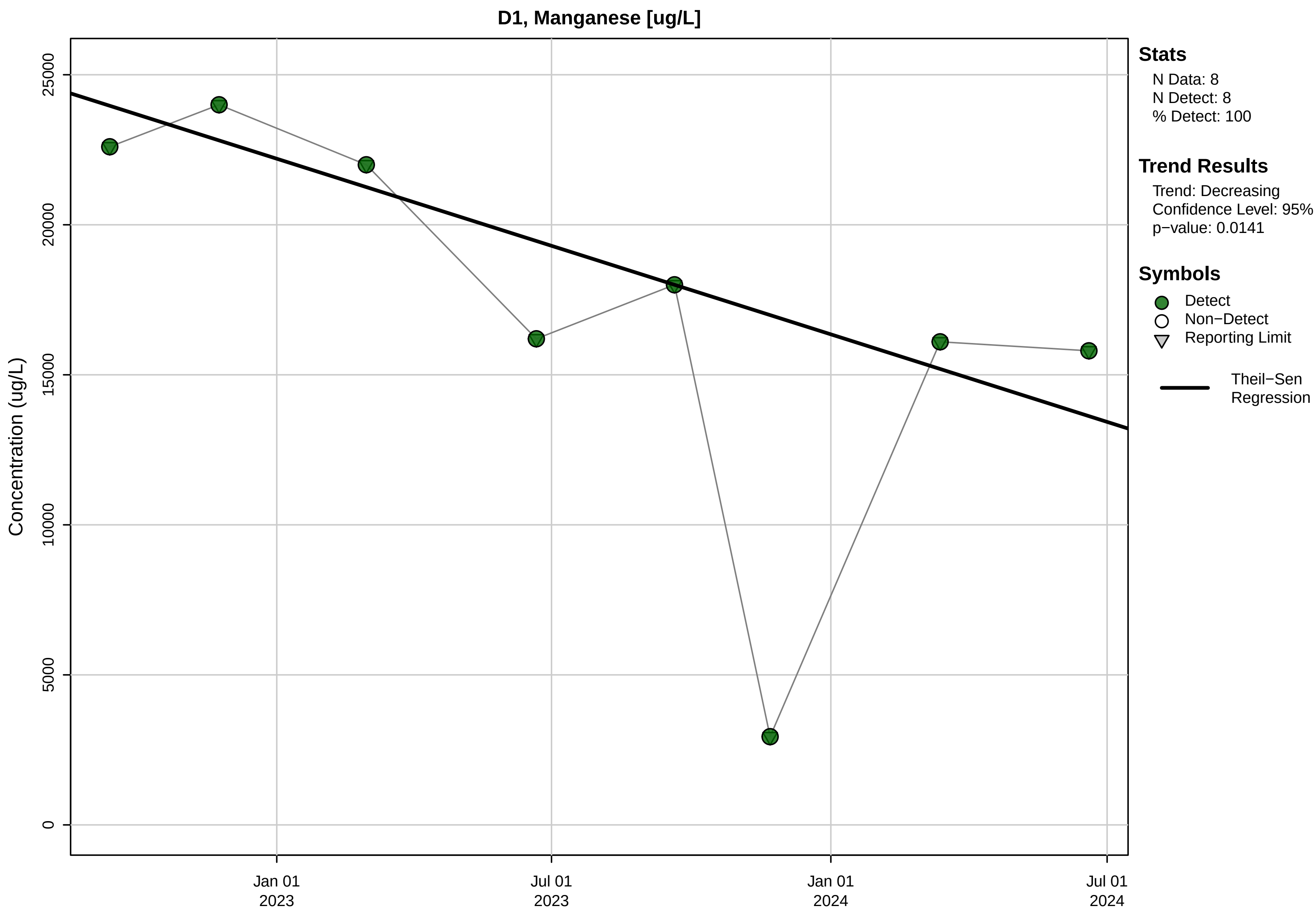


D1, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.5
1.0
1.5
2.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

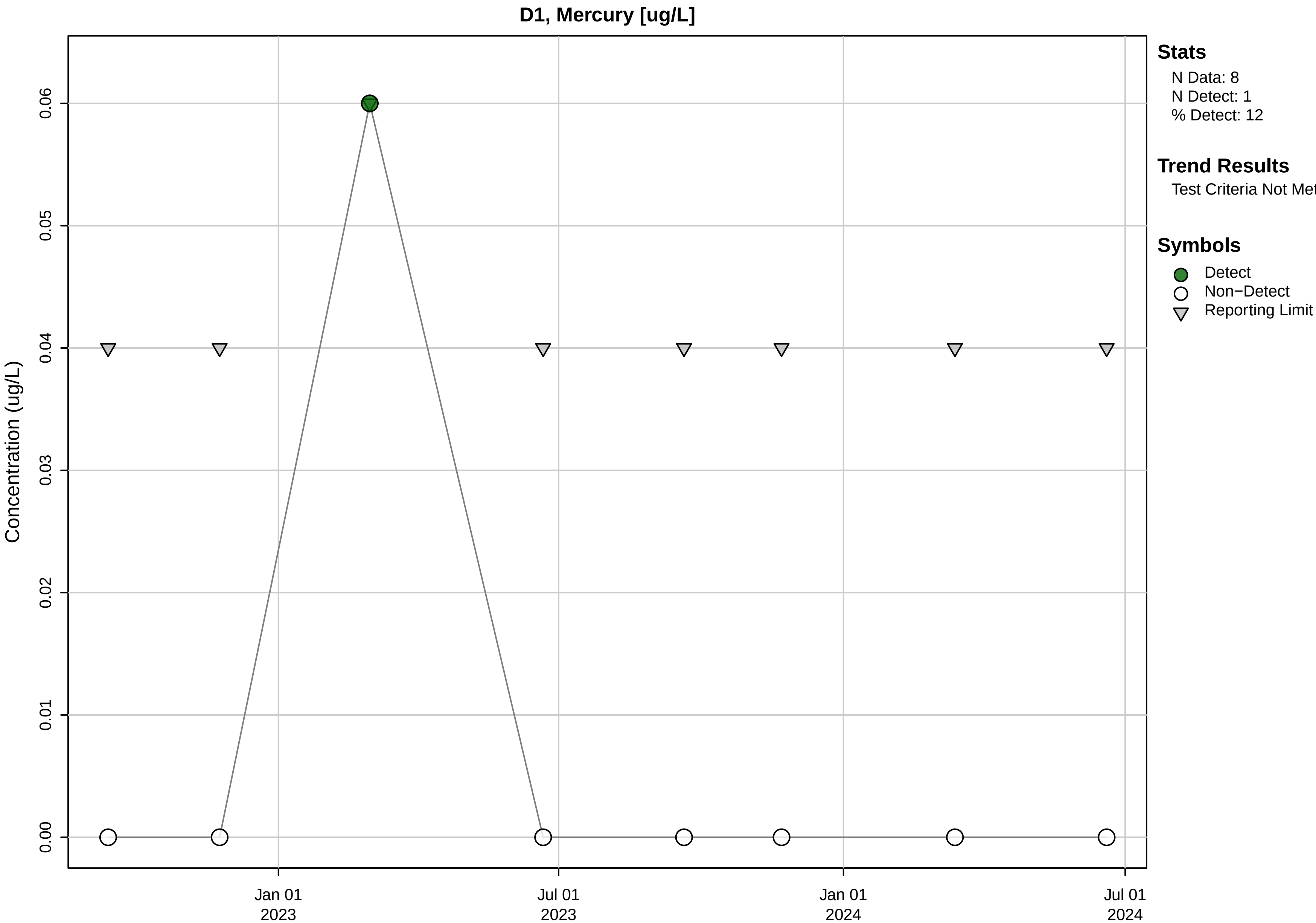

D1, Iron [ug/L]
Concentration (ug/L)
0
10000
20000
30000
40000
50000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

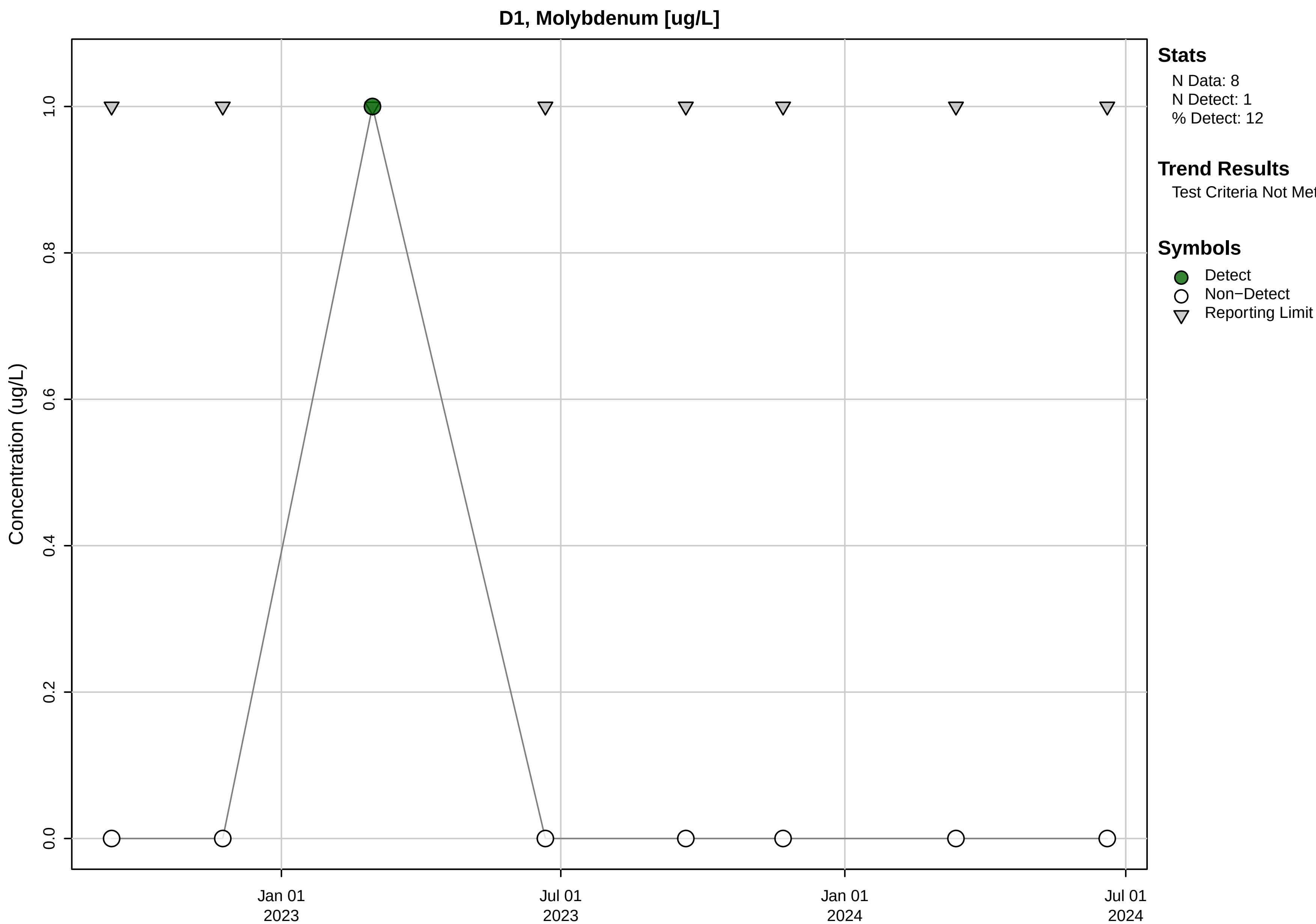


D1, Lead [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

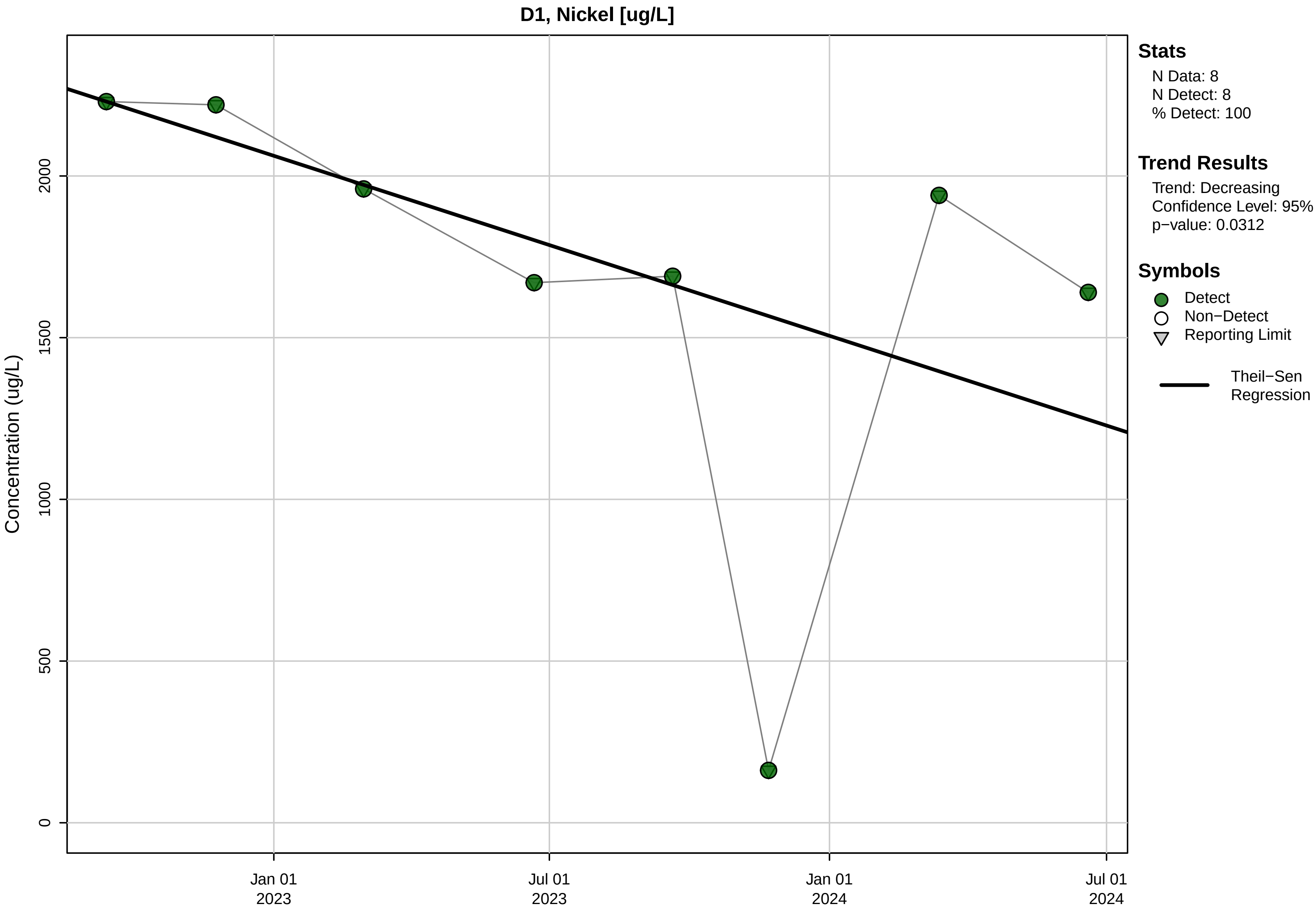


D1, Manganese [ug/L]
Concentration (ug/L)
0
5000
10000
15000
20000
25000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0141
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

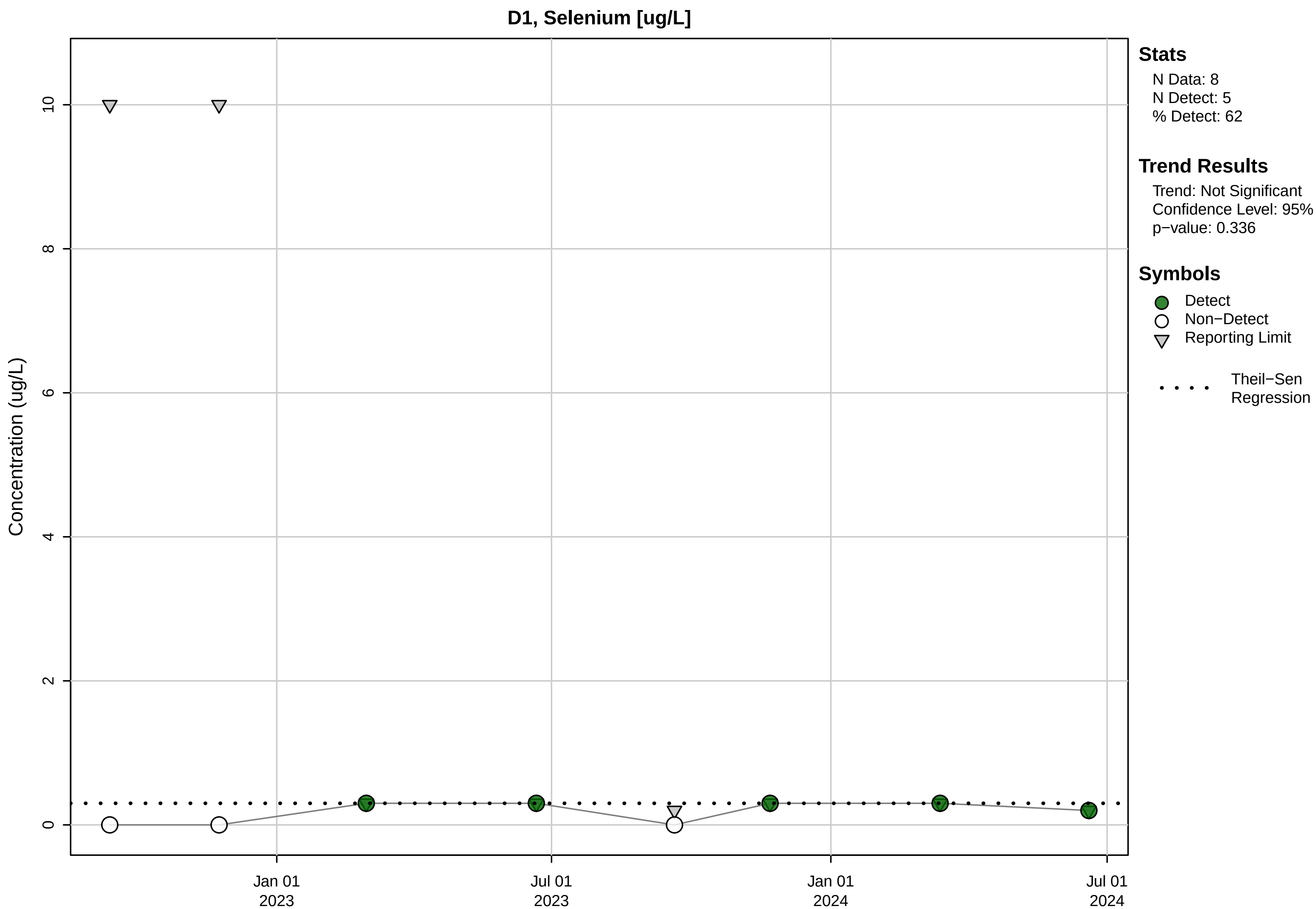

D1, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



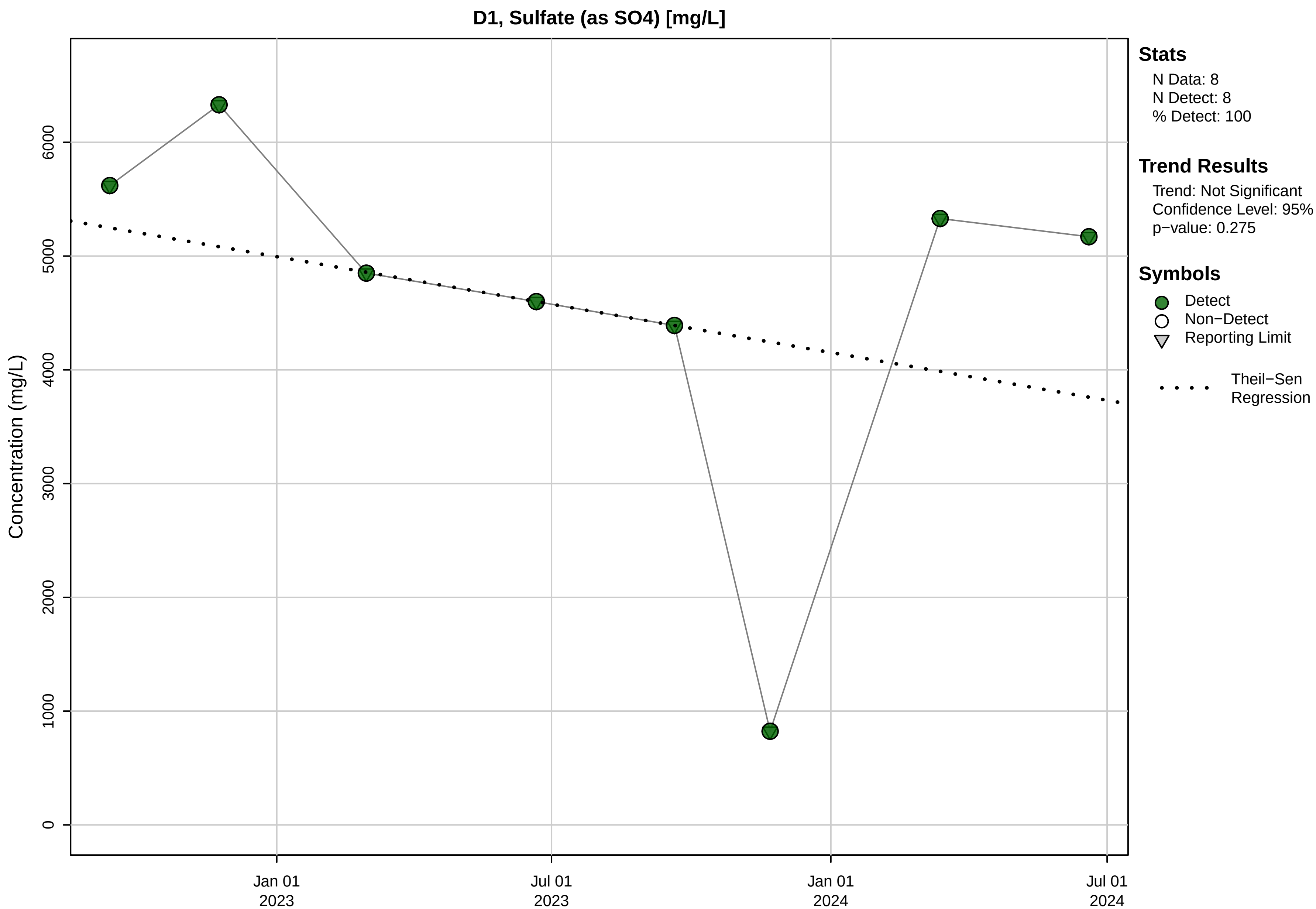
D1, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



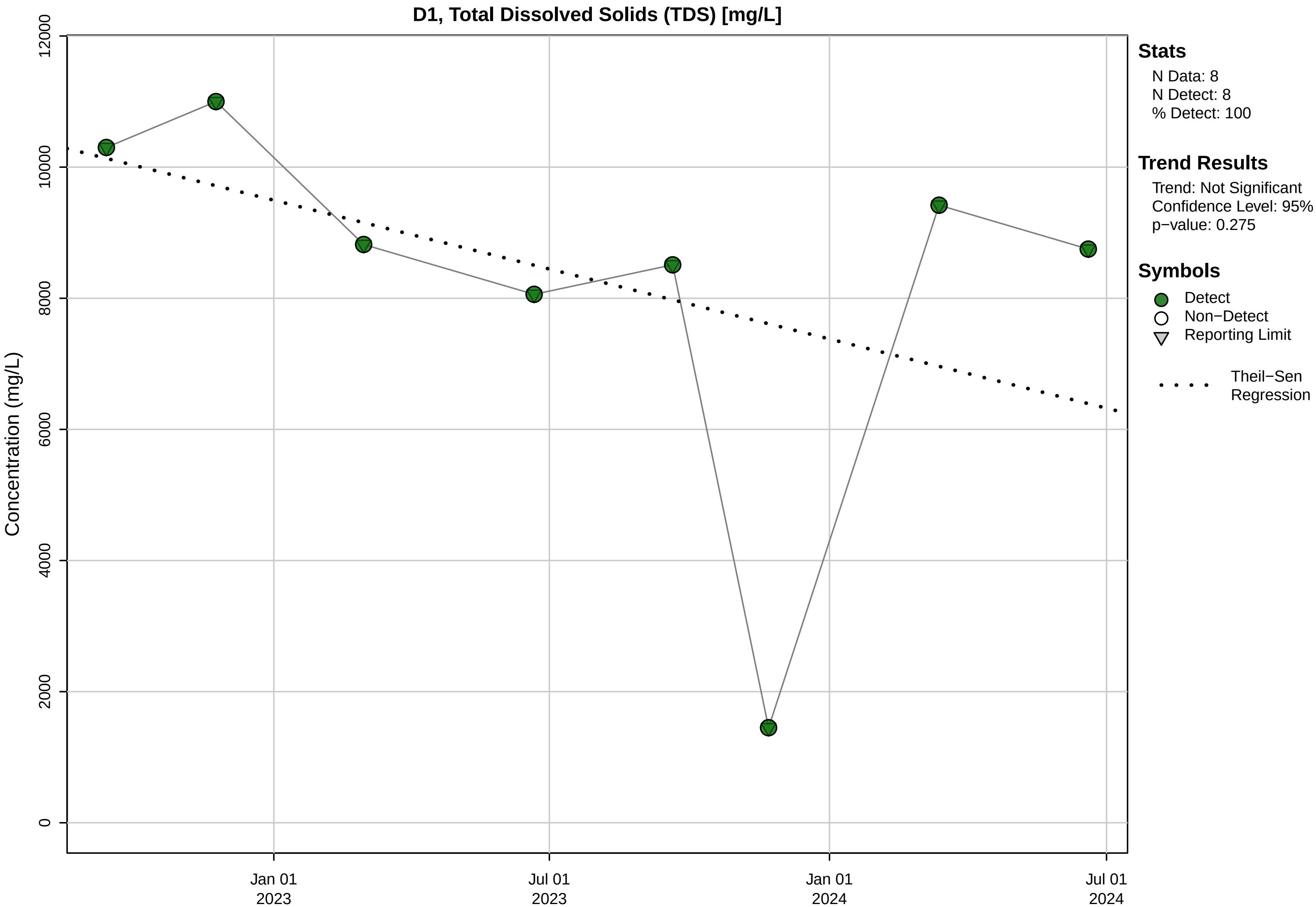
D1, Nickel [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



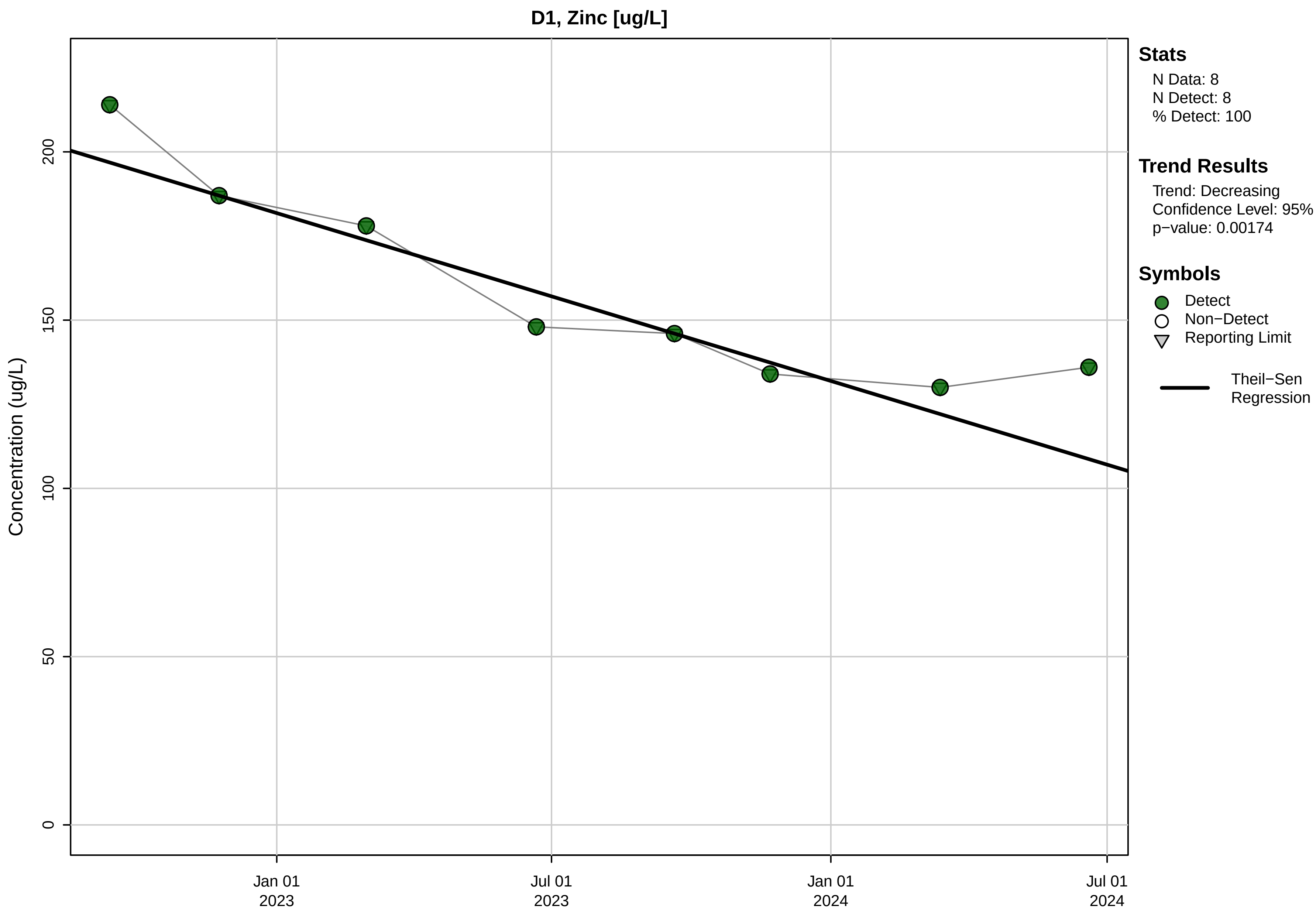
D1, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.336
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



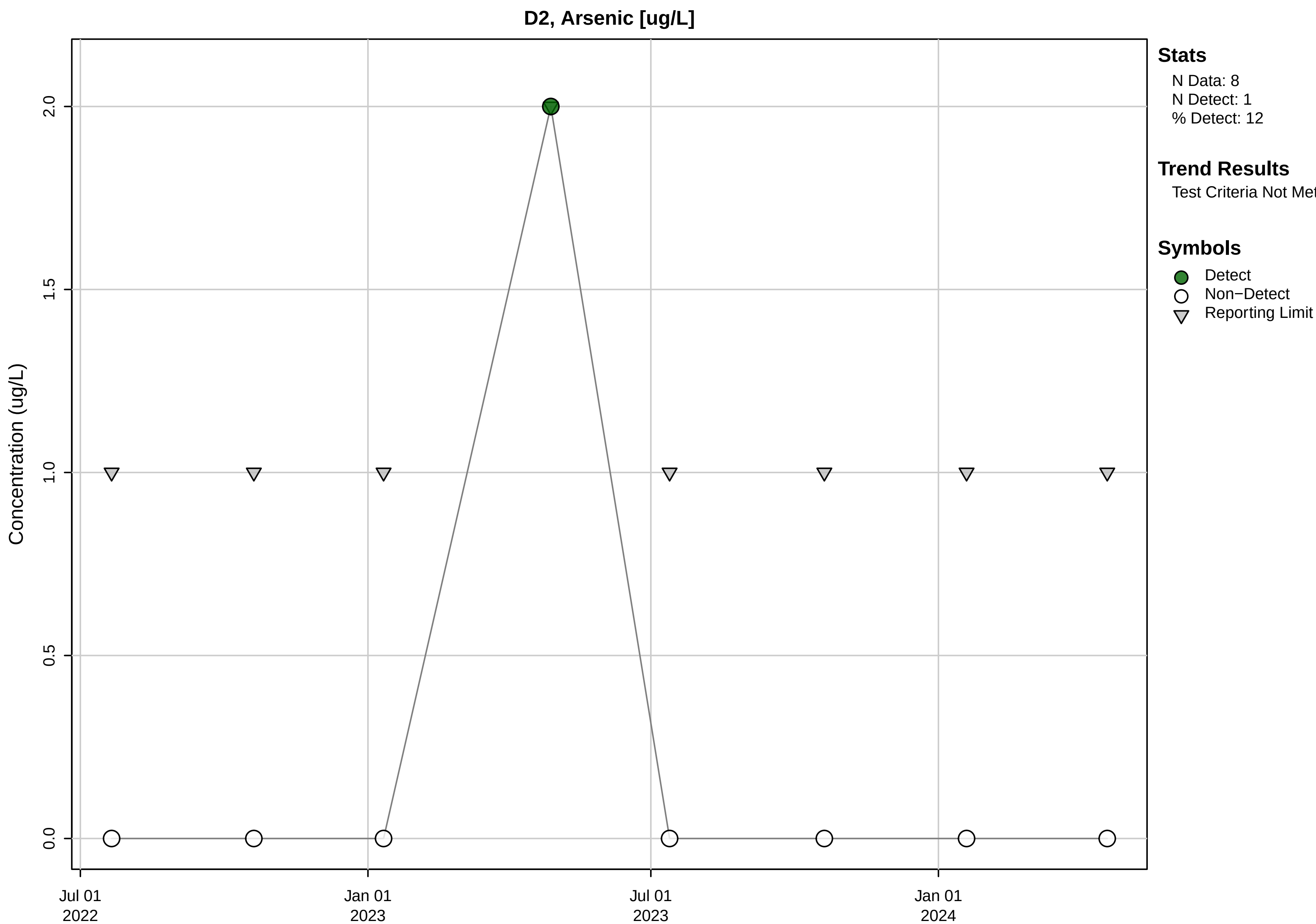
D1, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
1000
2000
3000
4000
5000
6000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



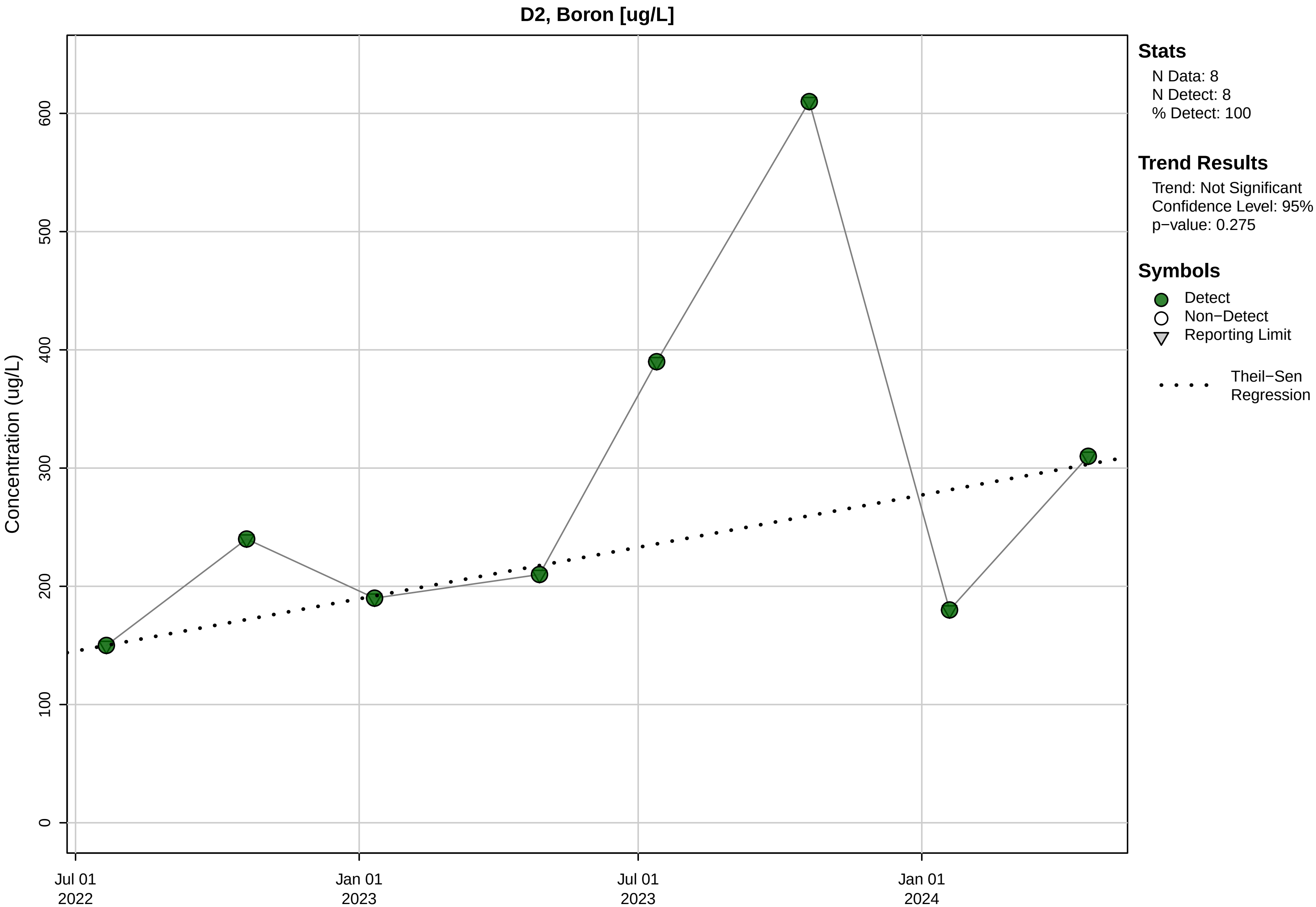
D1, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
10000
12000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



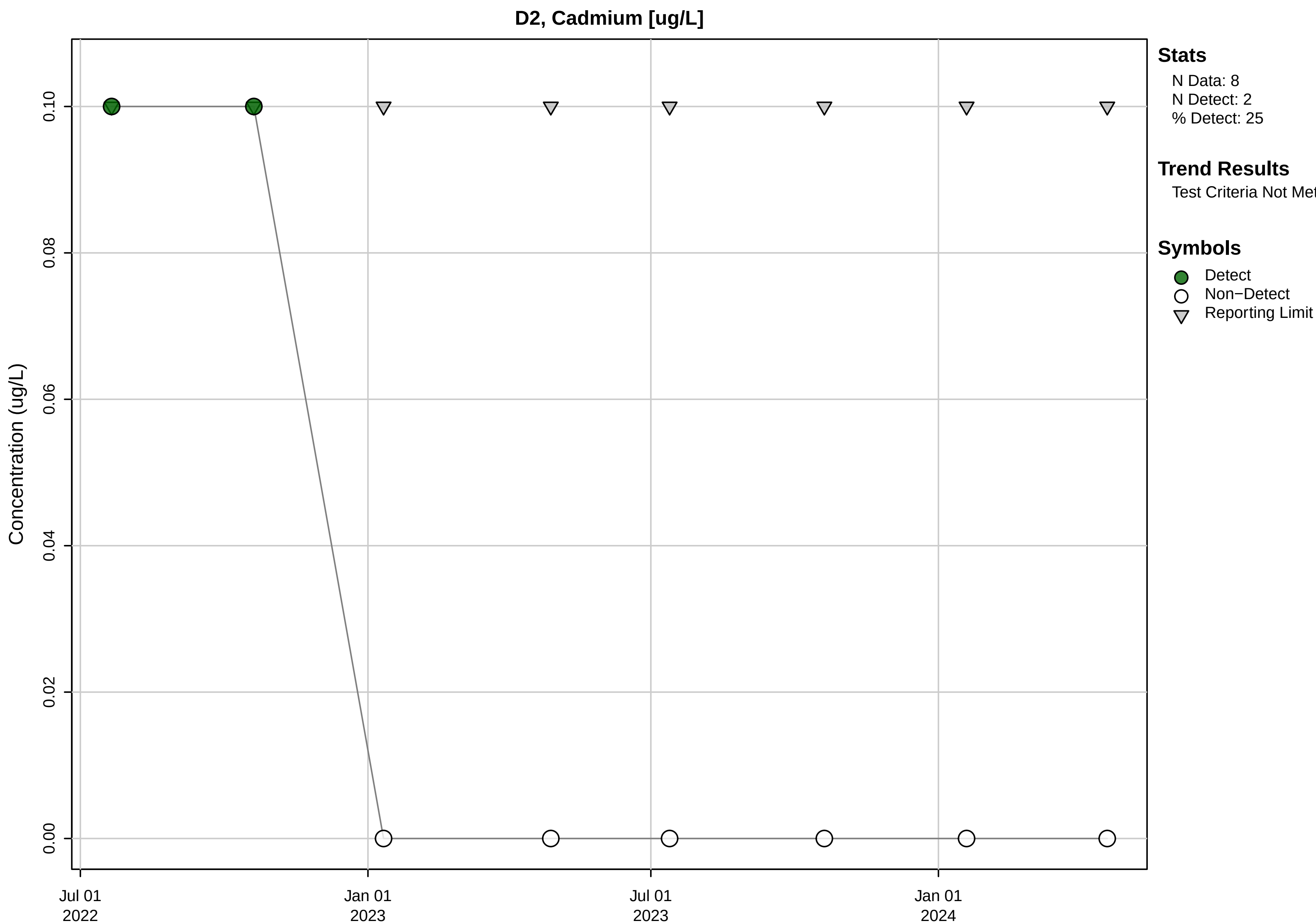
D1, Zinc [ug/L]
Concentration (ug/L)
0
50
100
150
200
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.00174
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



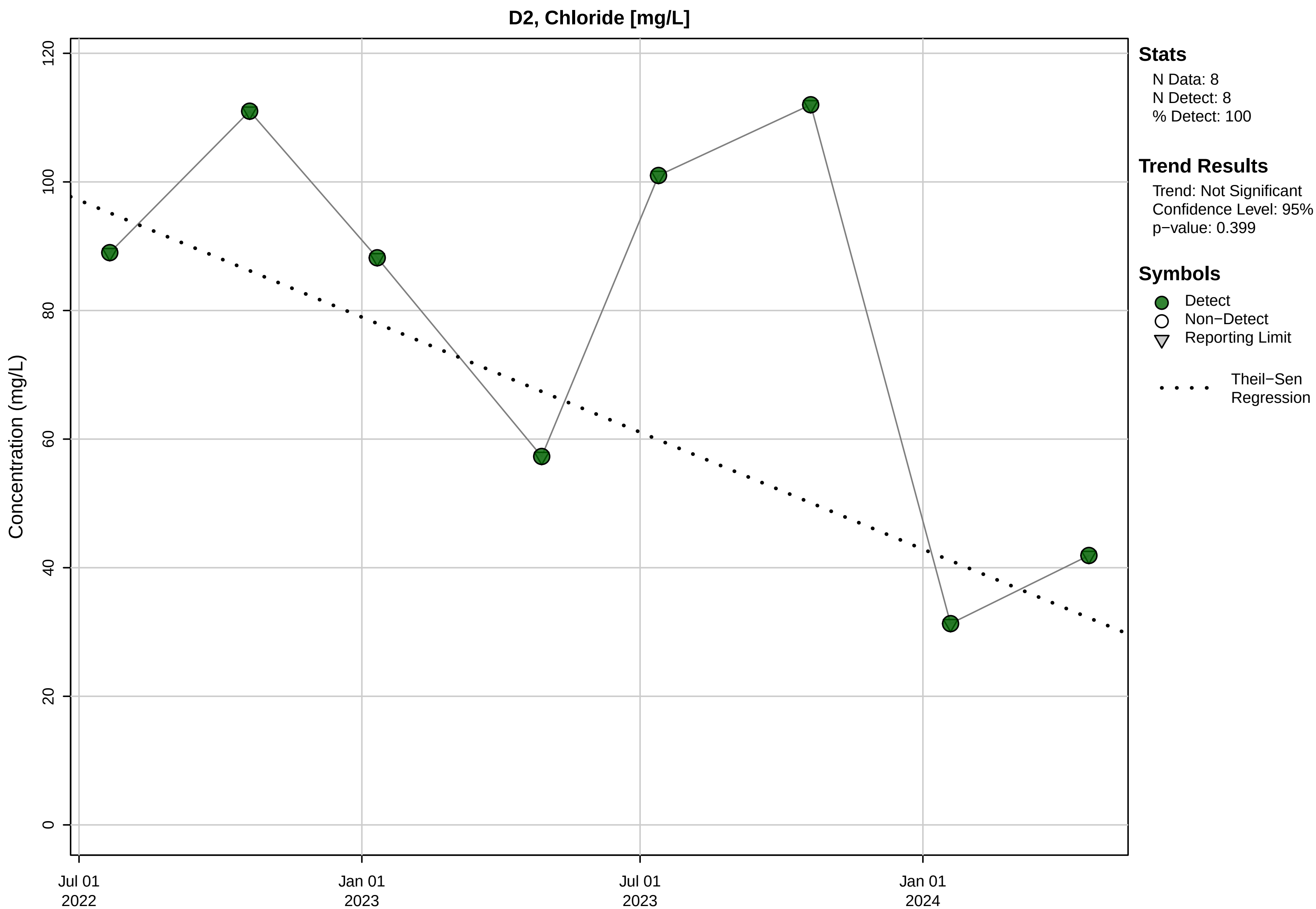
D2, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

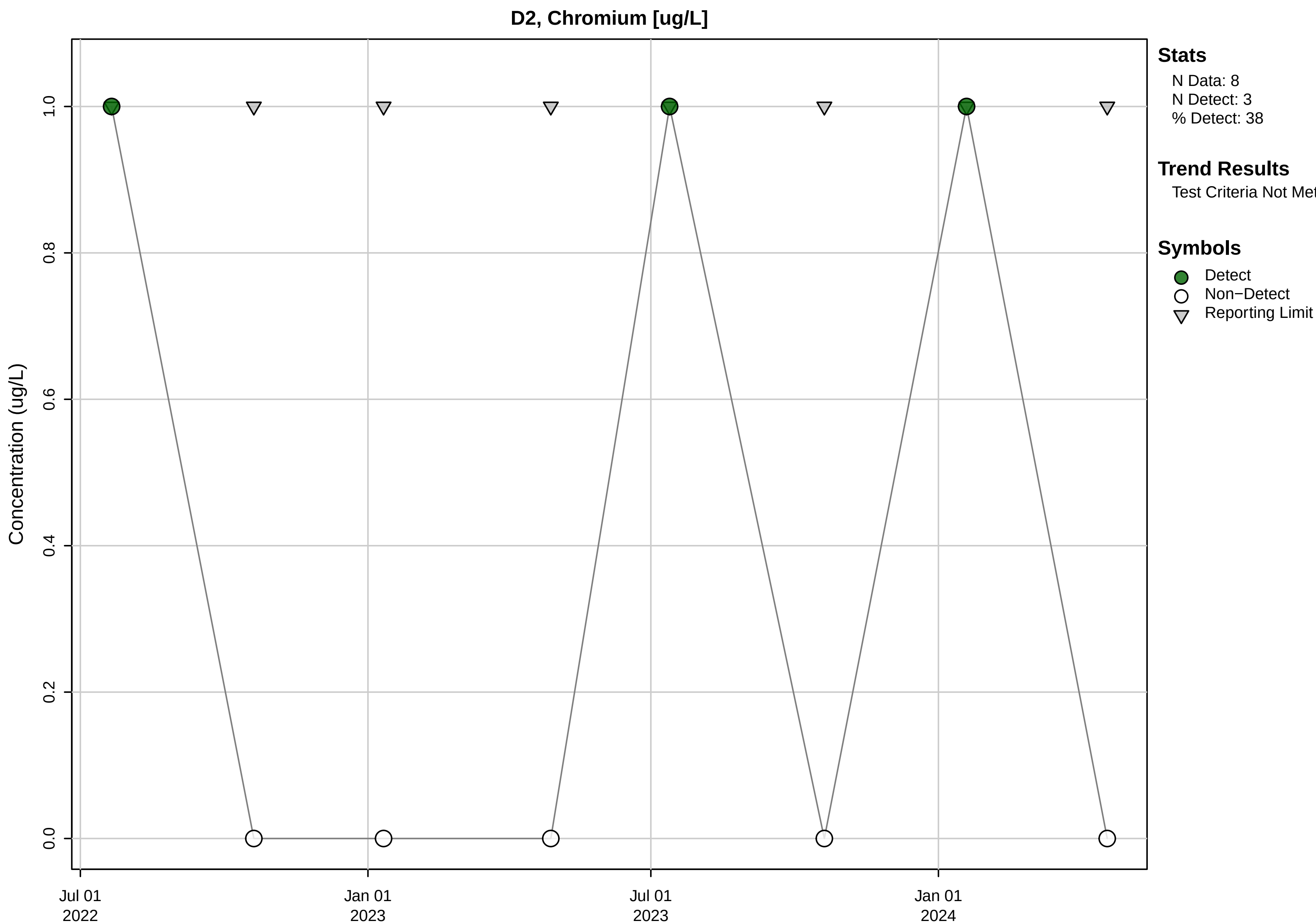


D2, Boron [ug/L]
Concentration (ug/L)
0
100
200
300
400
500
600
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

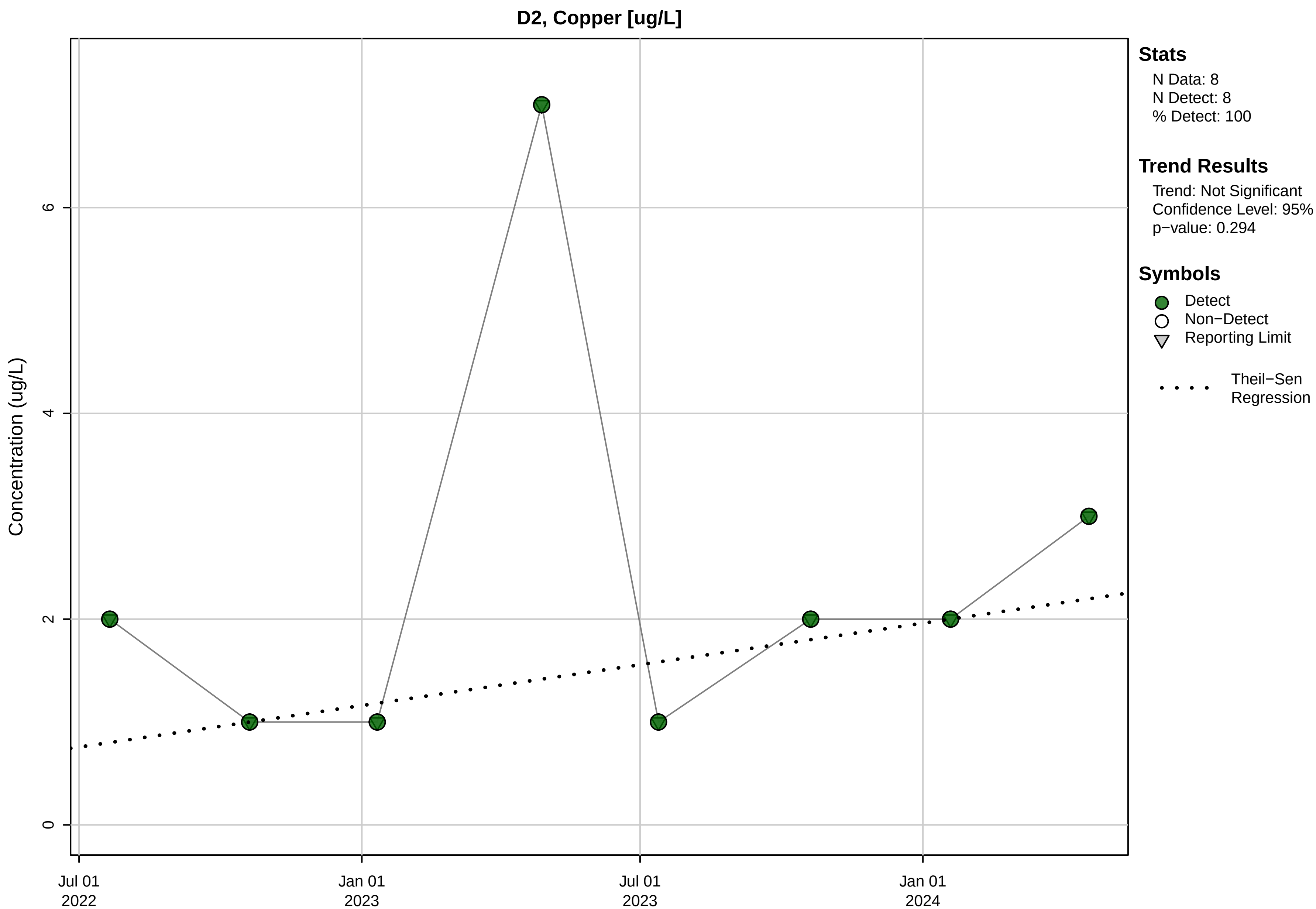


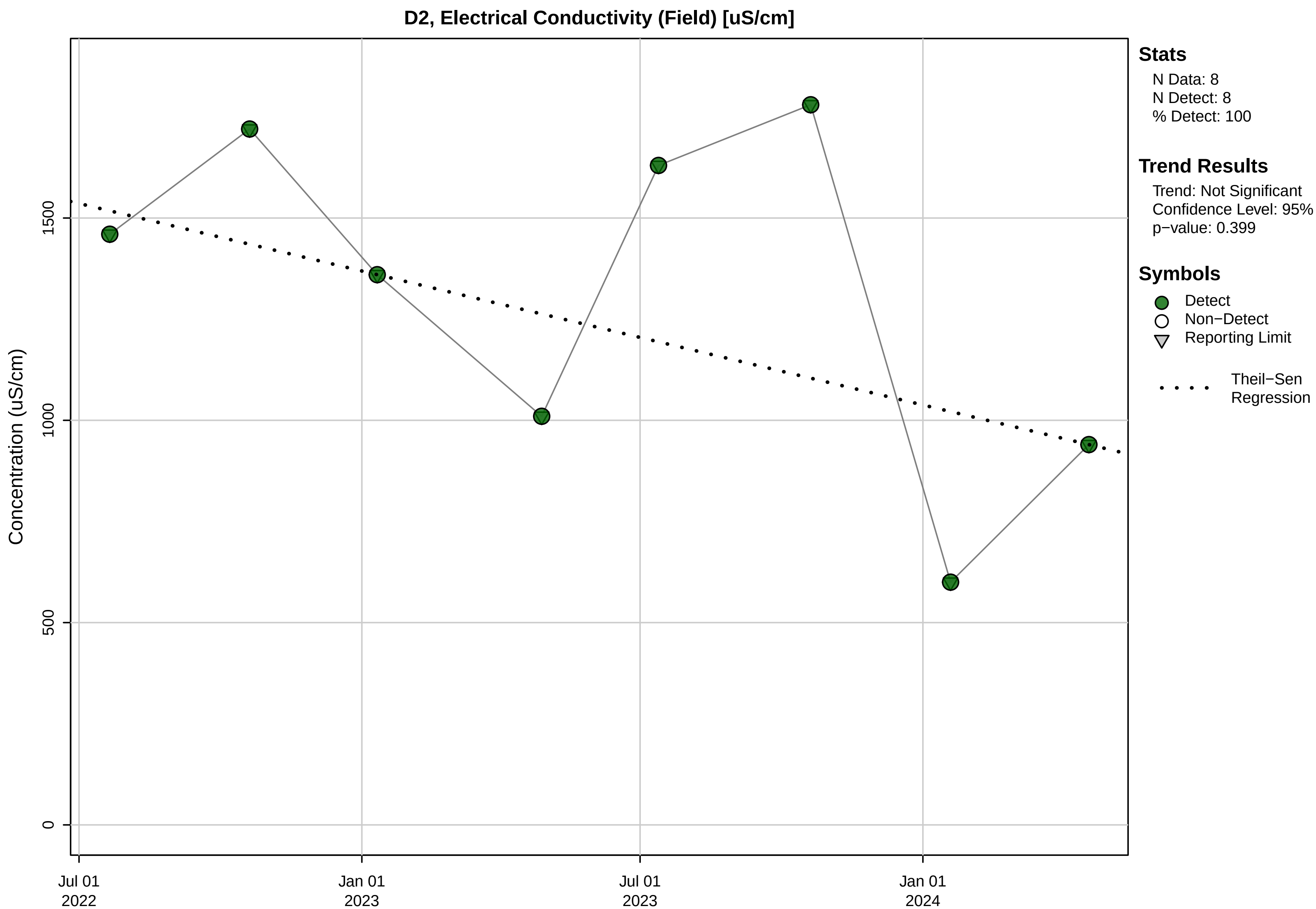
D2, Cadmium [ug/L]
Concentration (ug/L)
0.10
0.08
0.06
0.04
0.02
0.00
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D2, Chloride [mg/L]
Concentration (mg/L)
0
20
40
60
80
100
120
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

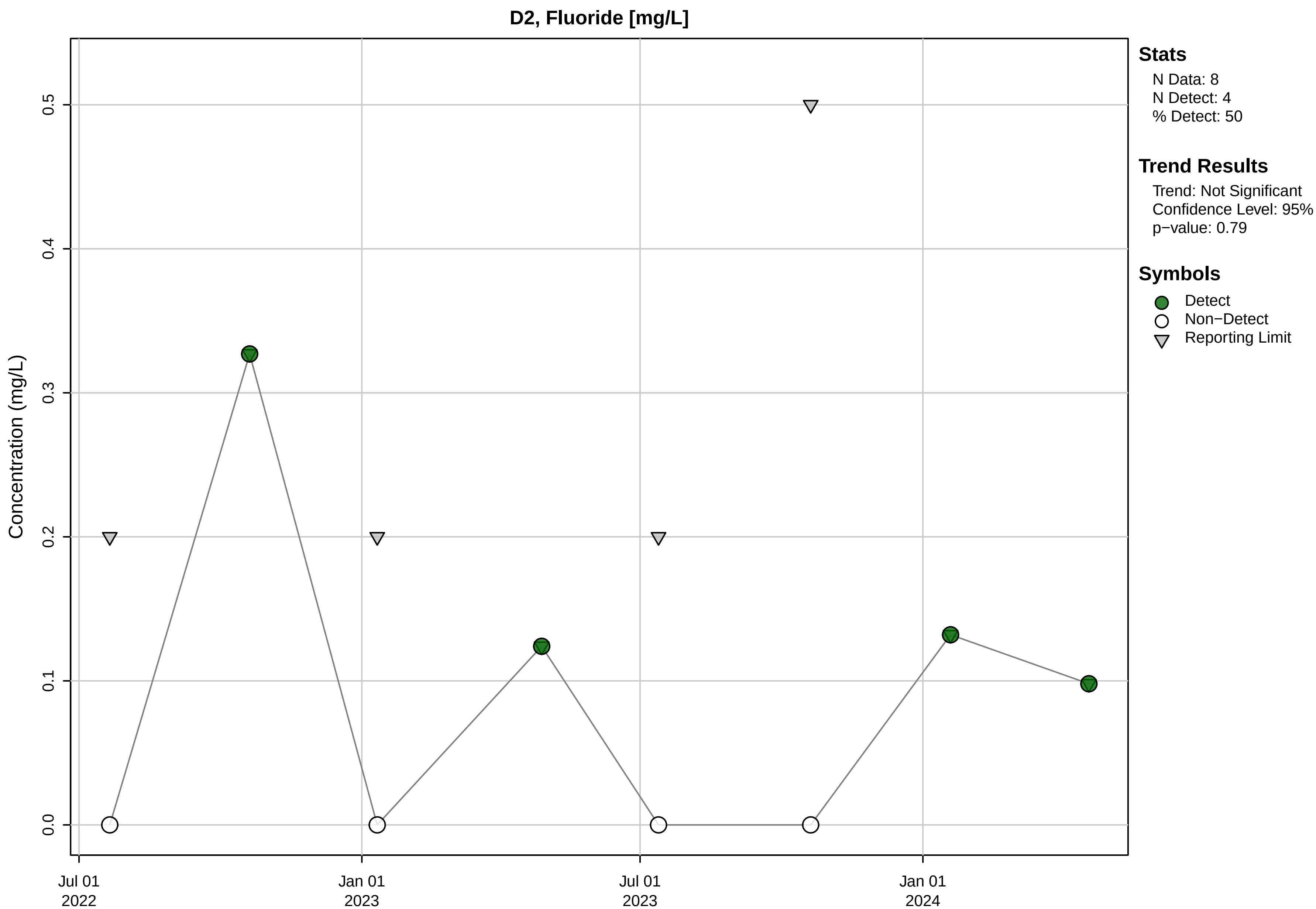


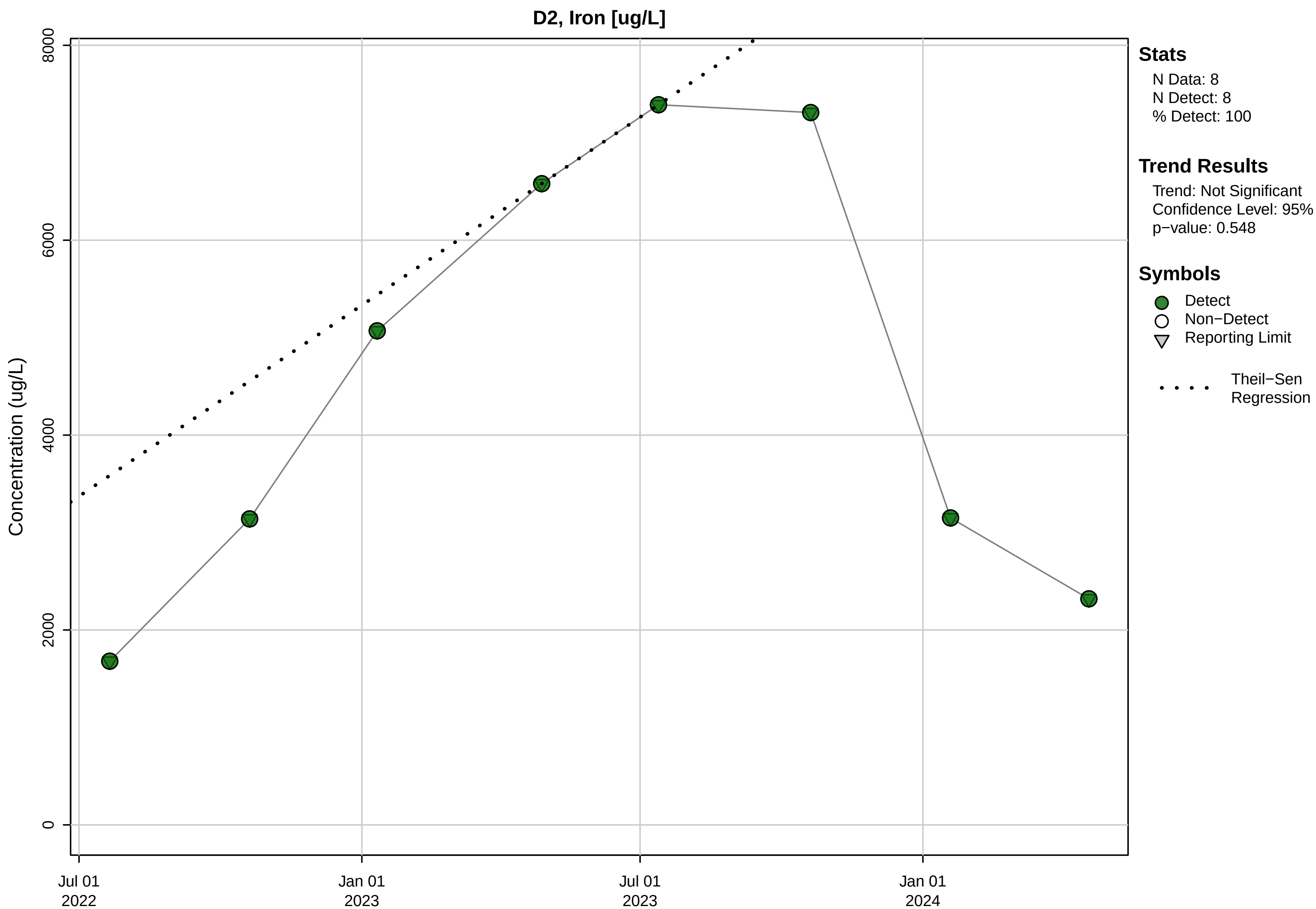
D2, Chromium [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D2, Copper [ug/L]
Concentration (ug/L)
0
2
4
6
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.294
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

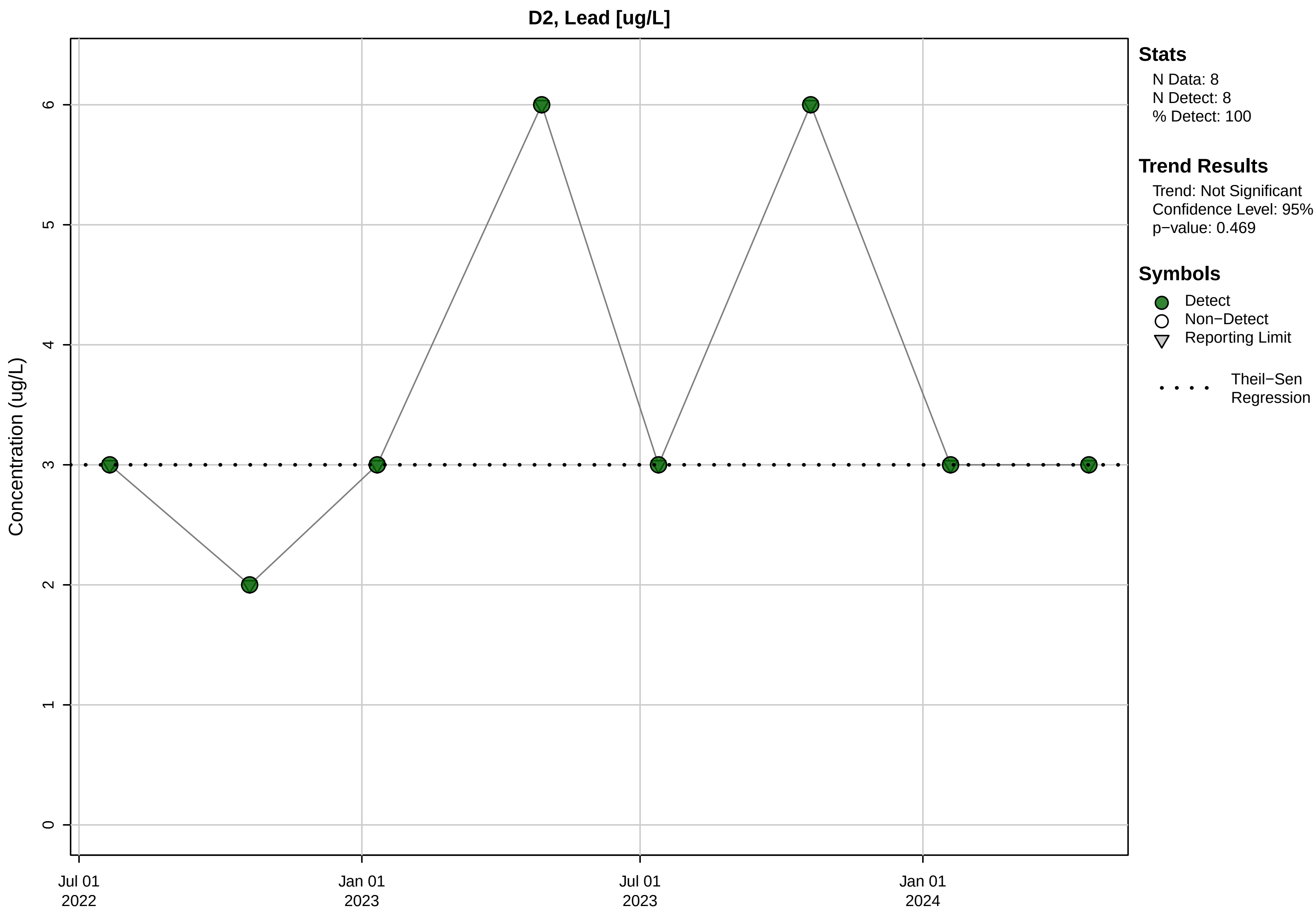


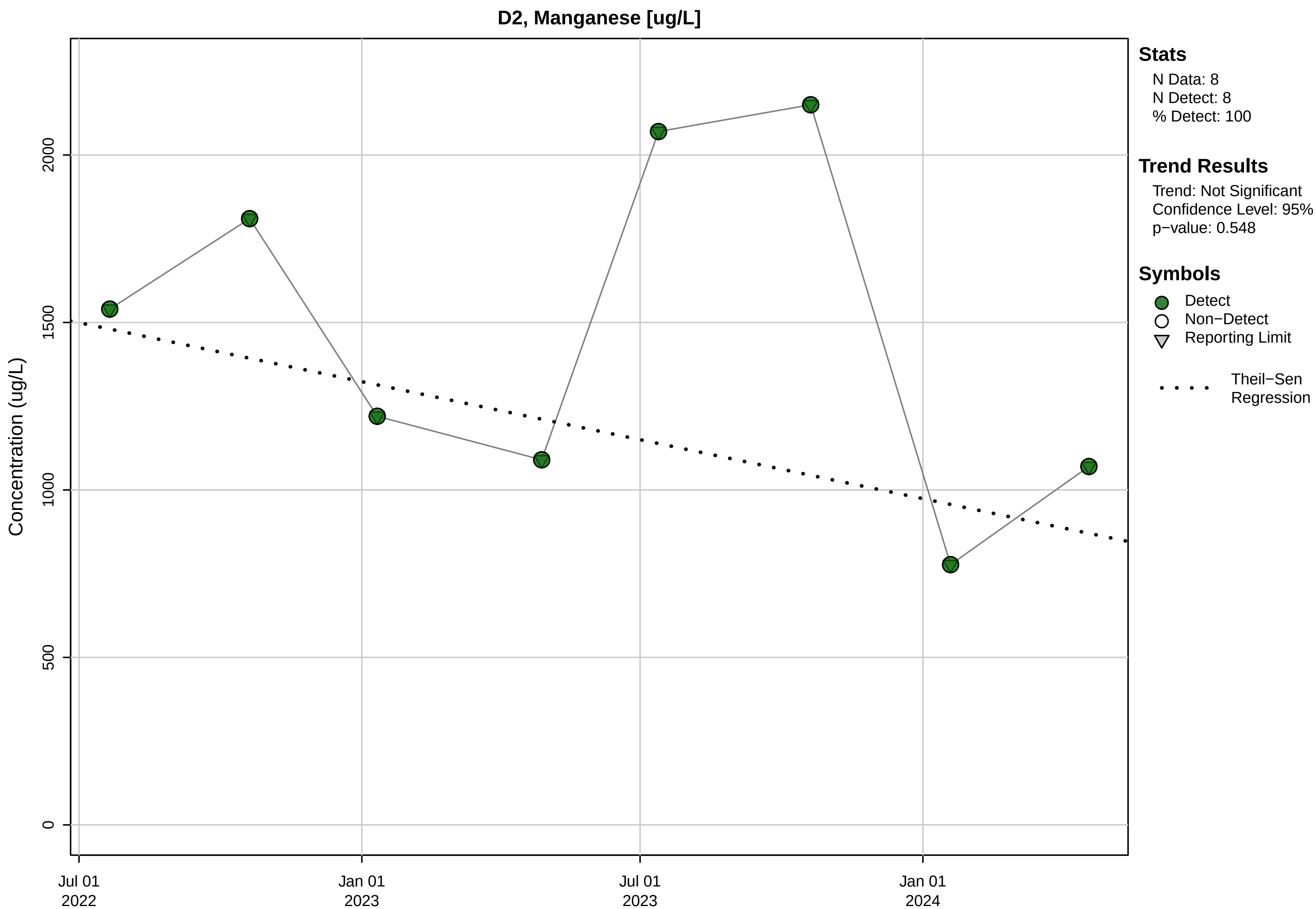
D2, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
500
1000
1500
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

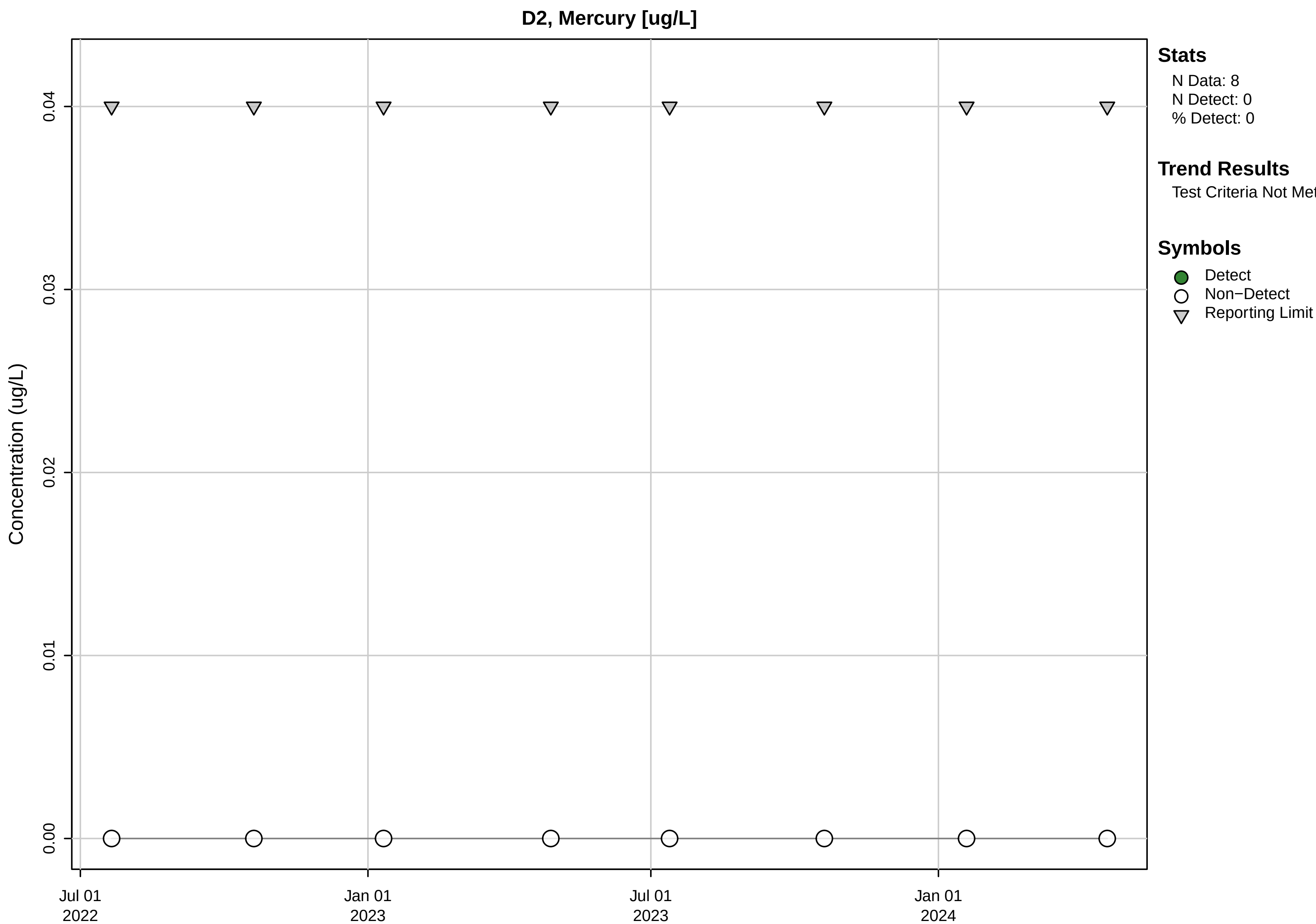

D2, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.79
Symbols
Detect
Non−Detect
Reporting Limit

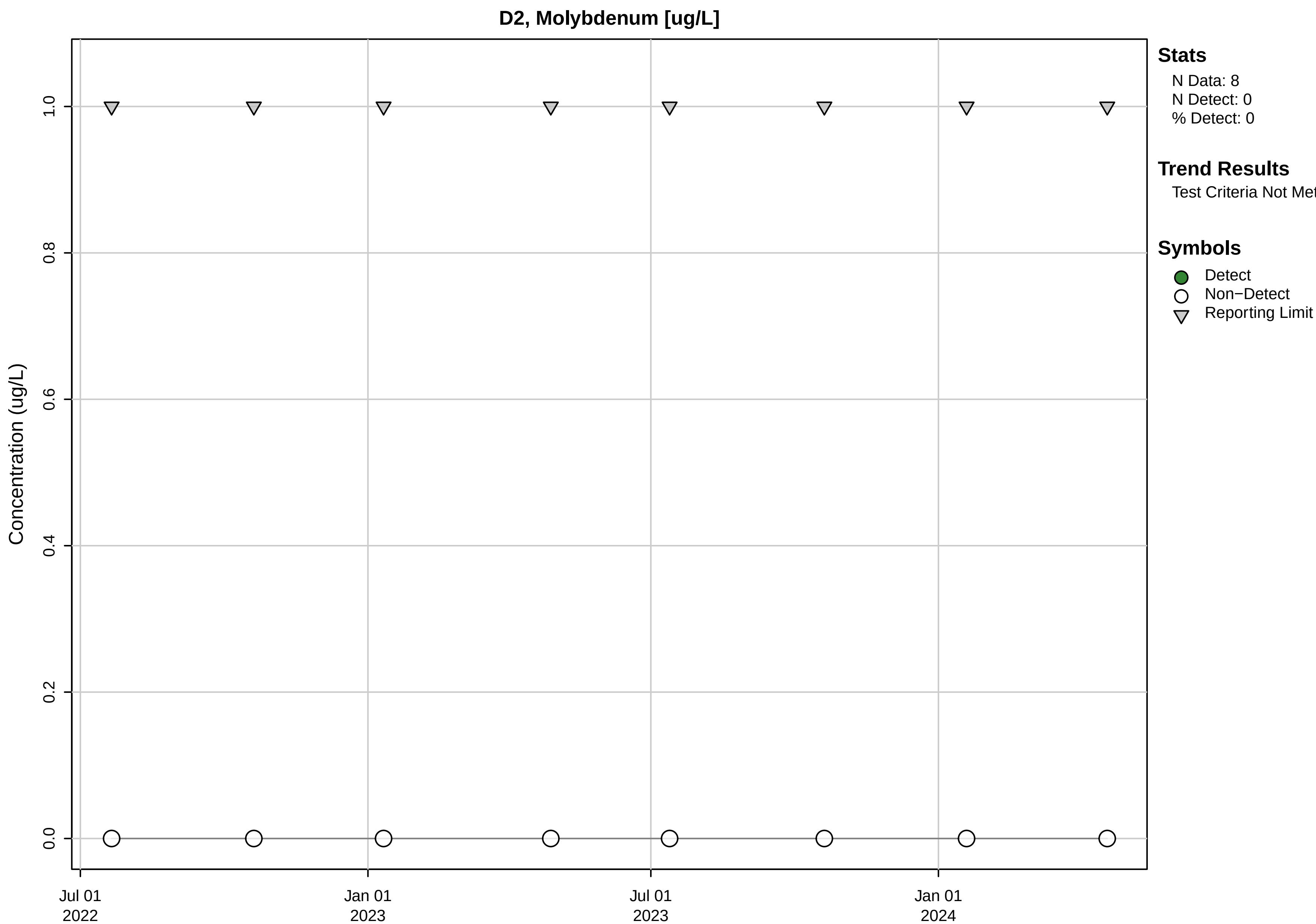


D2, Iron [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.548
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

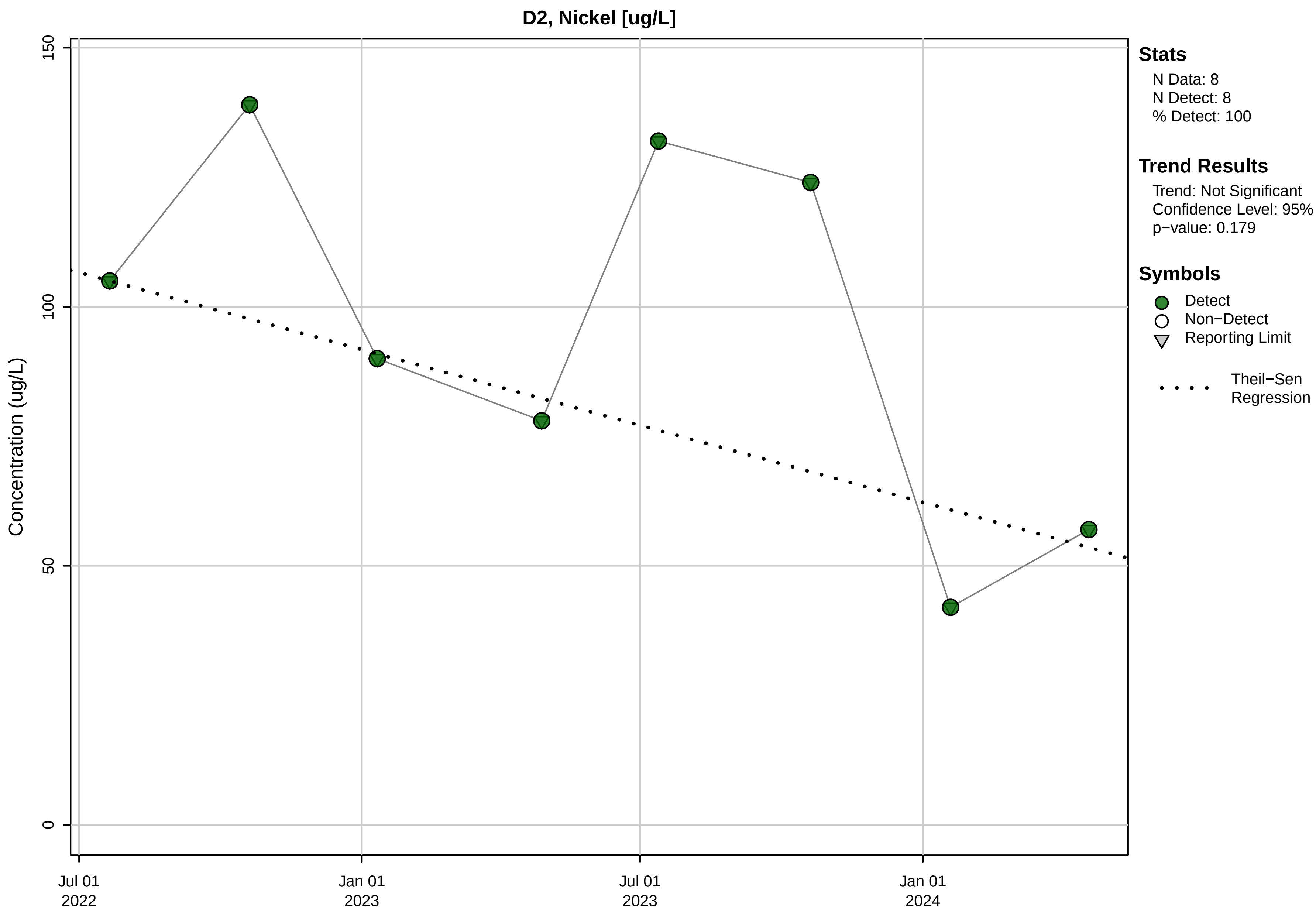

D2, Lead [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
6
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.469
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D2, Manganese [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.548
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

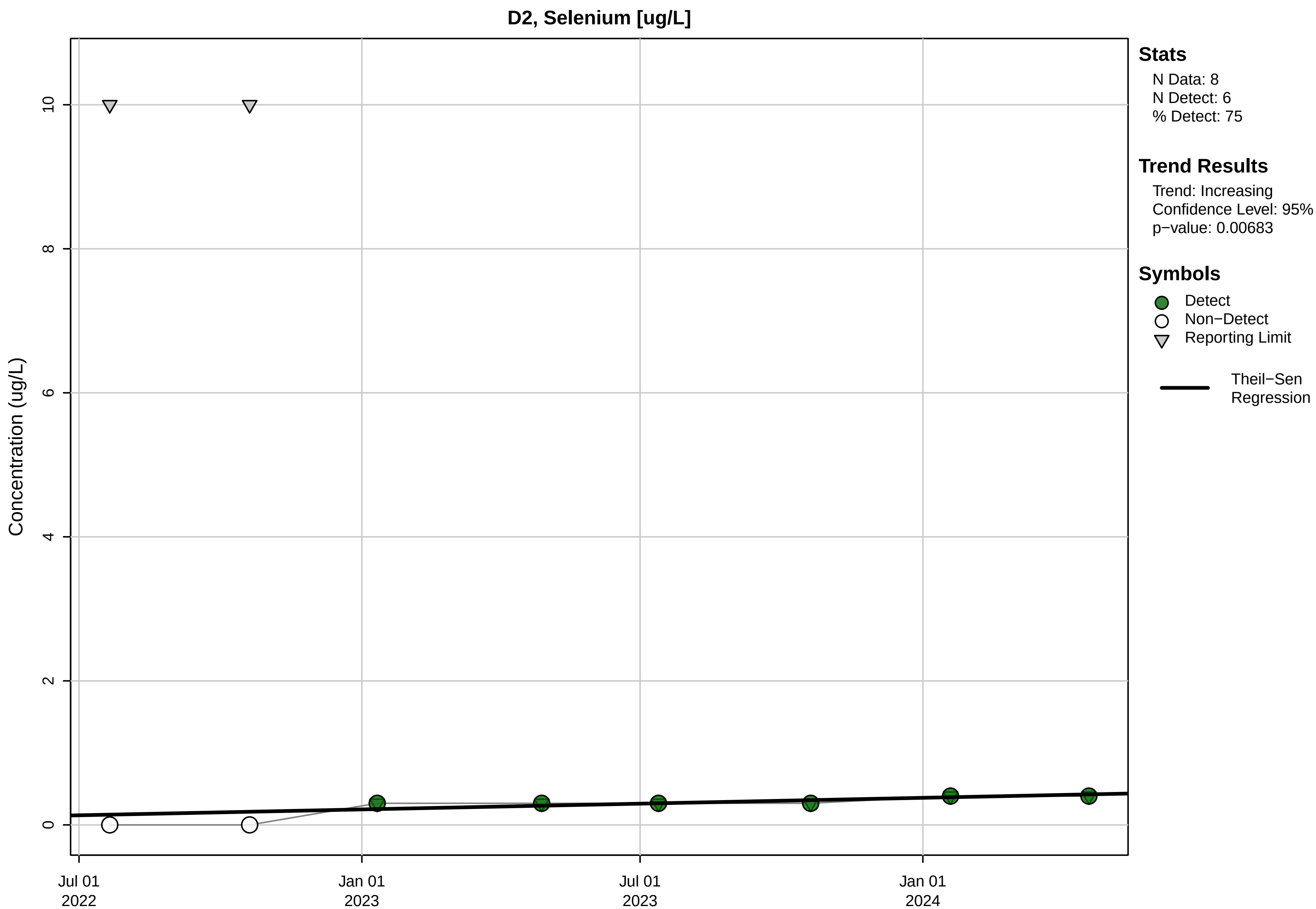

D2, Mercury [ug/L]
Concentration (ug/L)
0.04
0.03
0.02
0.01
0.00
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

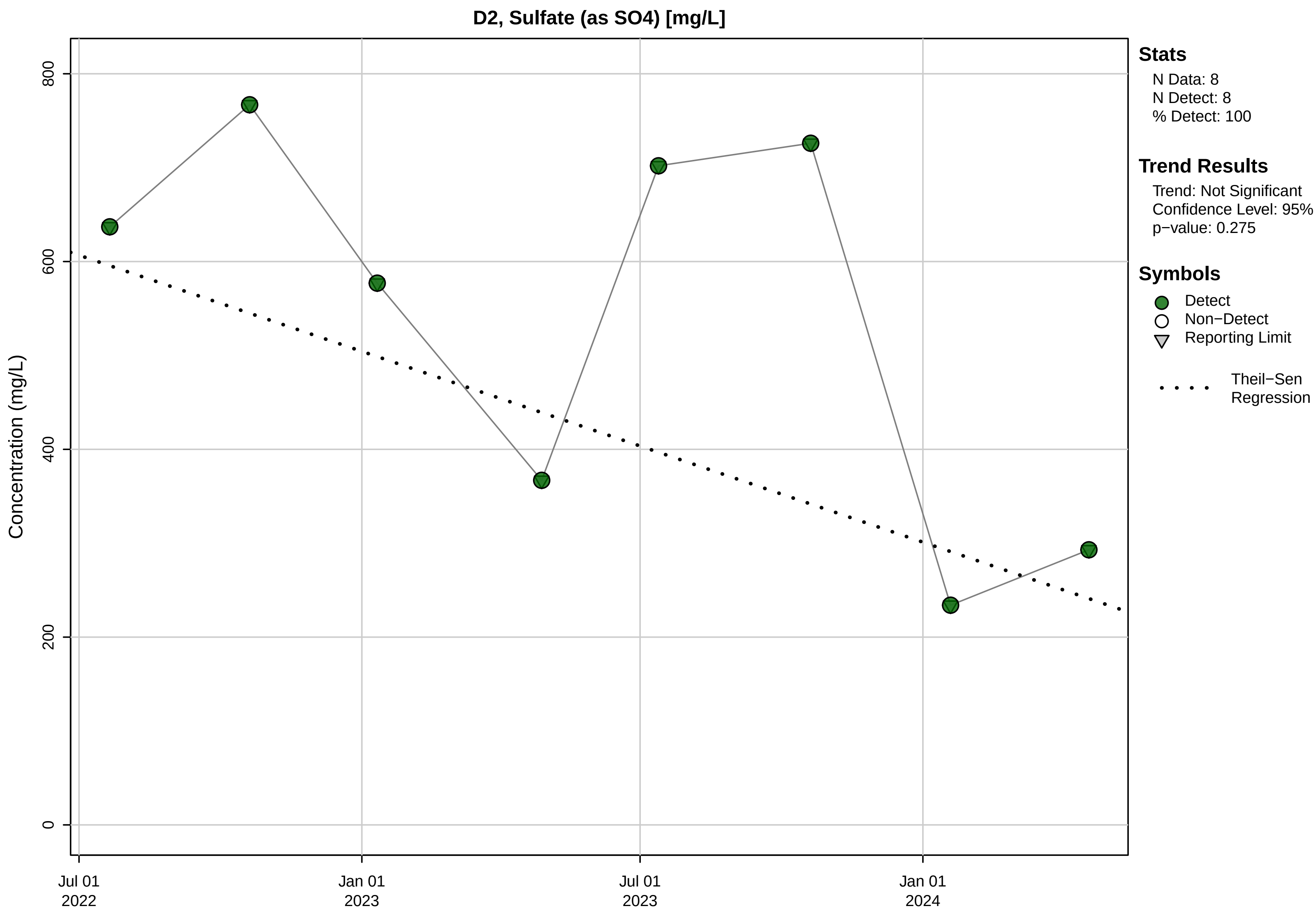


D2, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

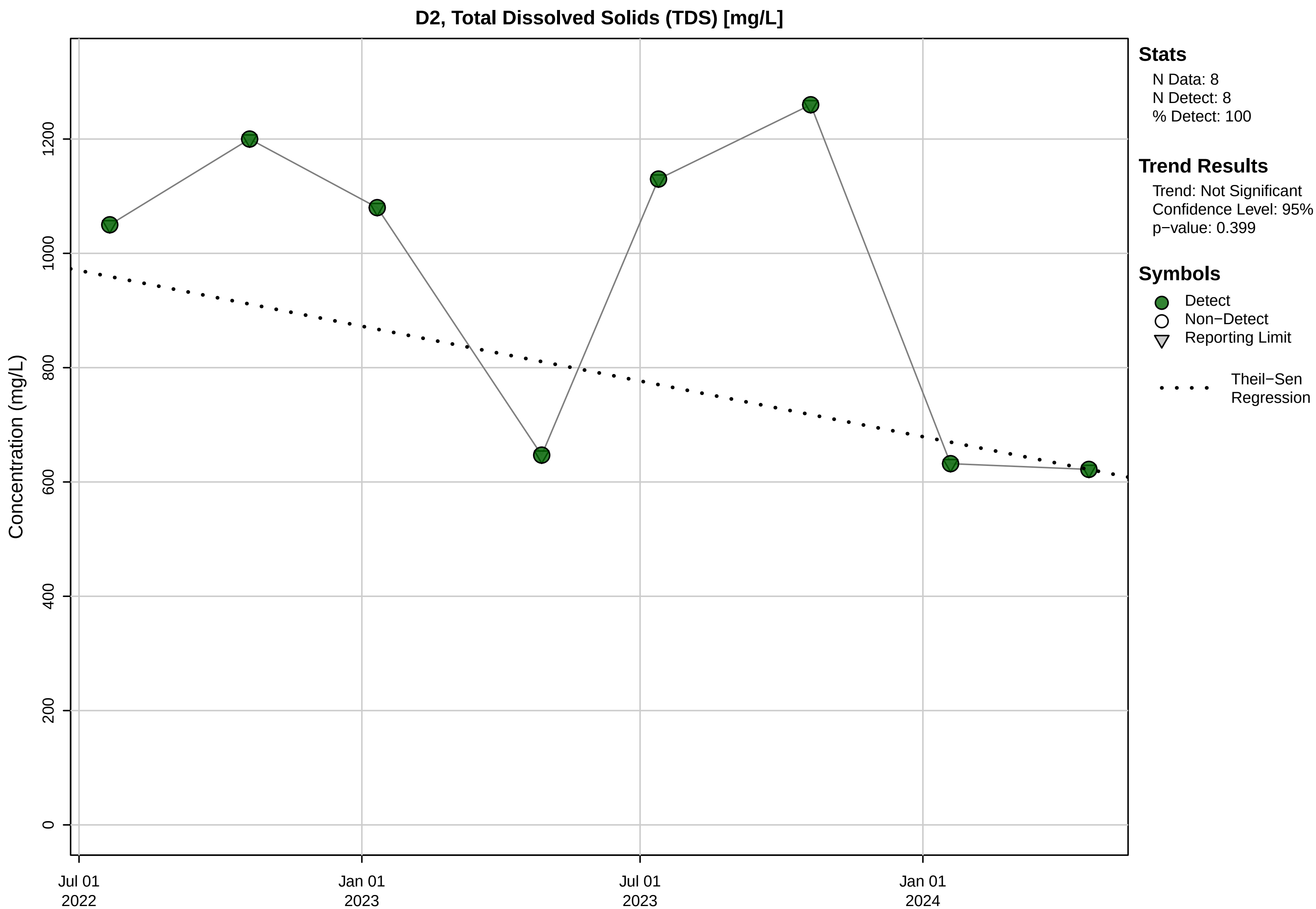


D2, Nickel [ug/L]
Concentration (ug/L)
150
100
50
0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

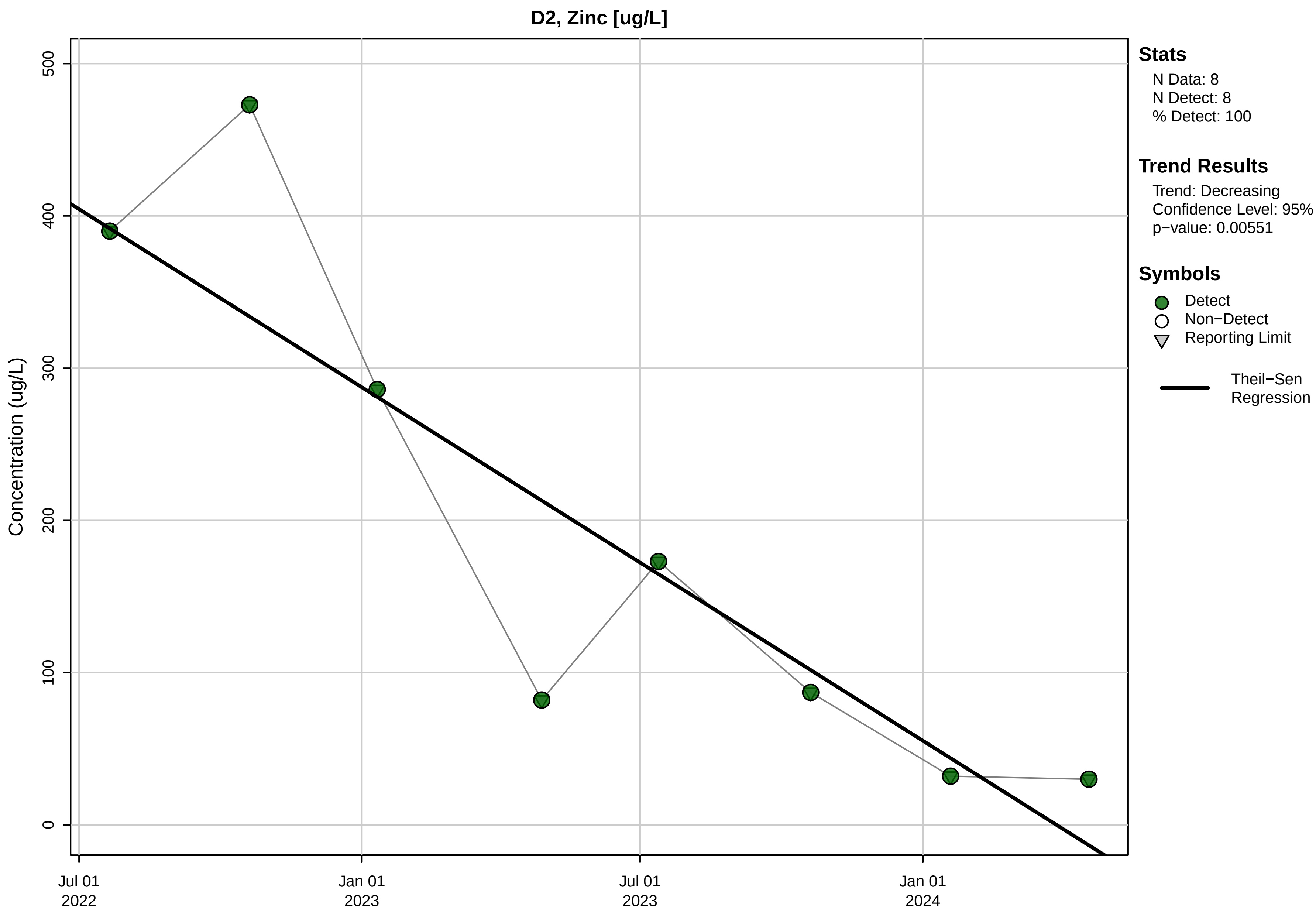

D2, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 6
% Detect: 75
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.00683
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



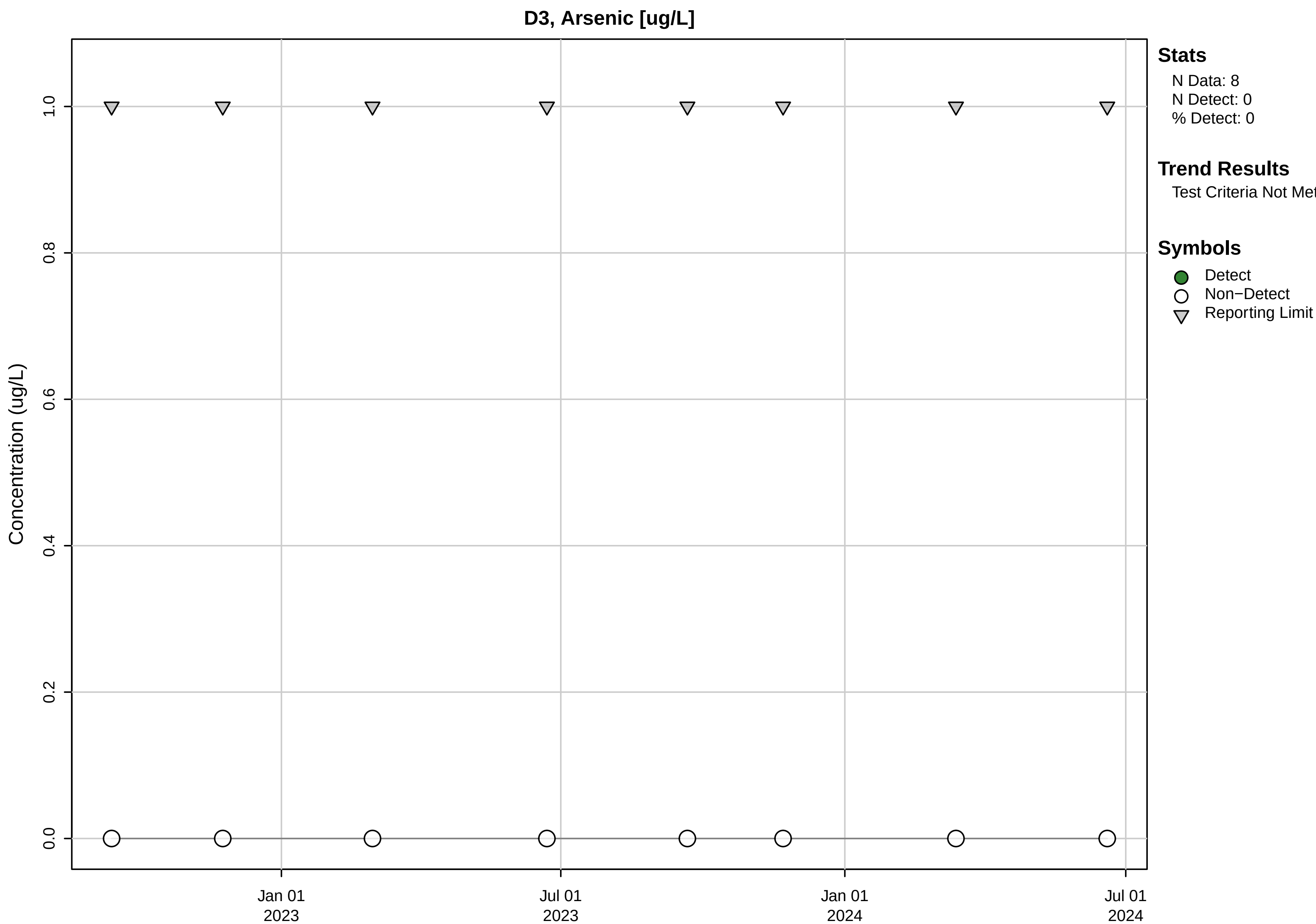
D2, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
200
400
600
800
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

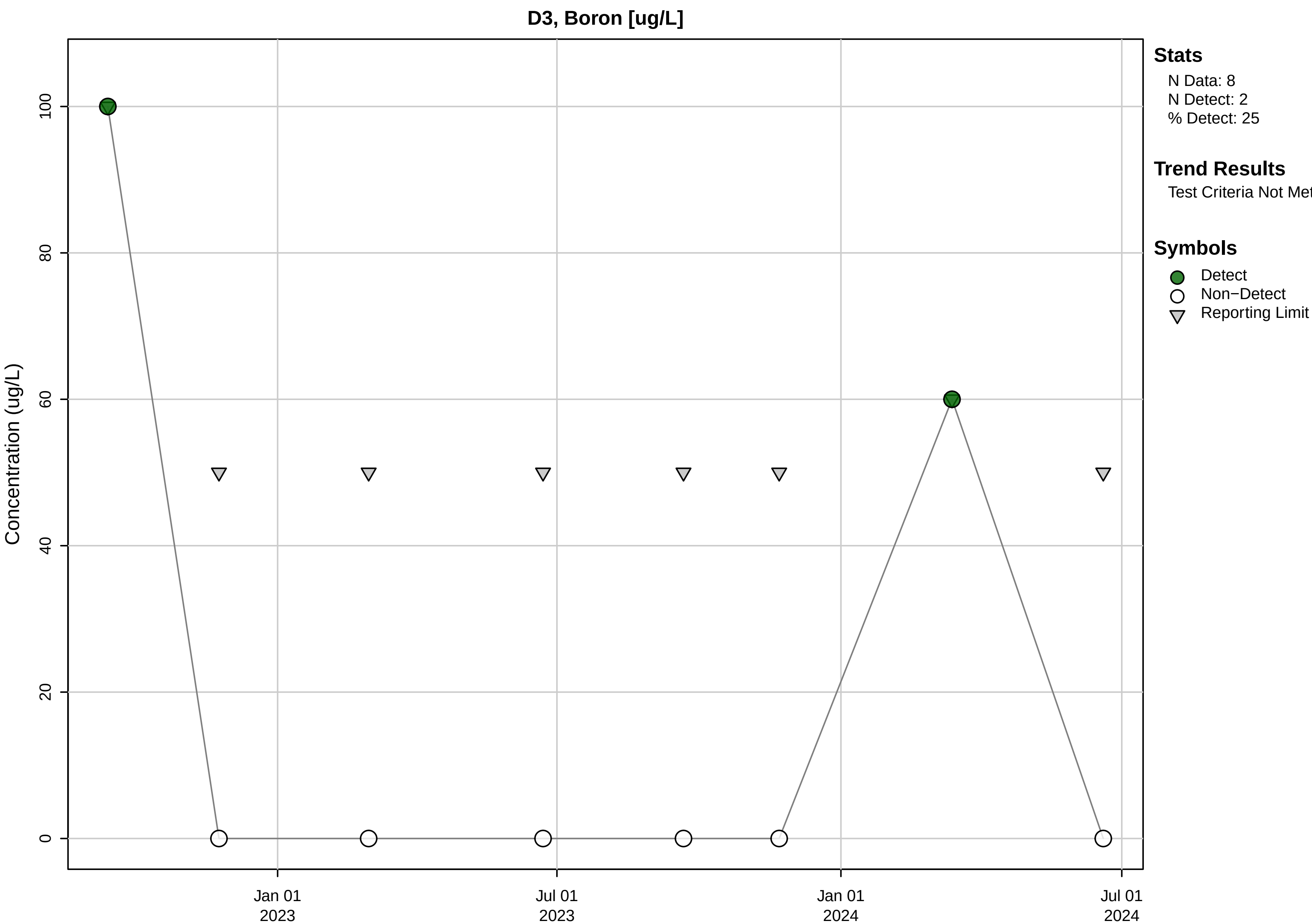


D2, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
200
400
600
800
1000
1200
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

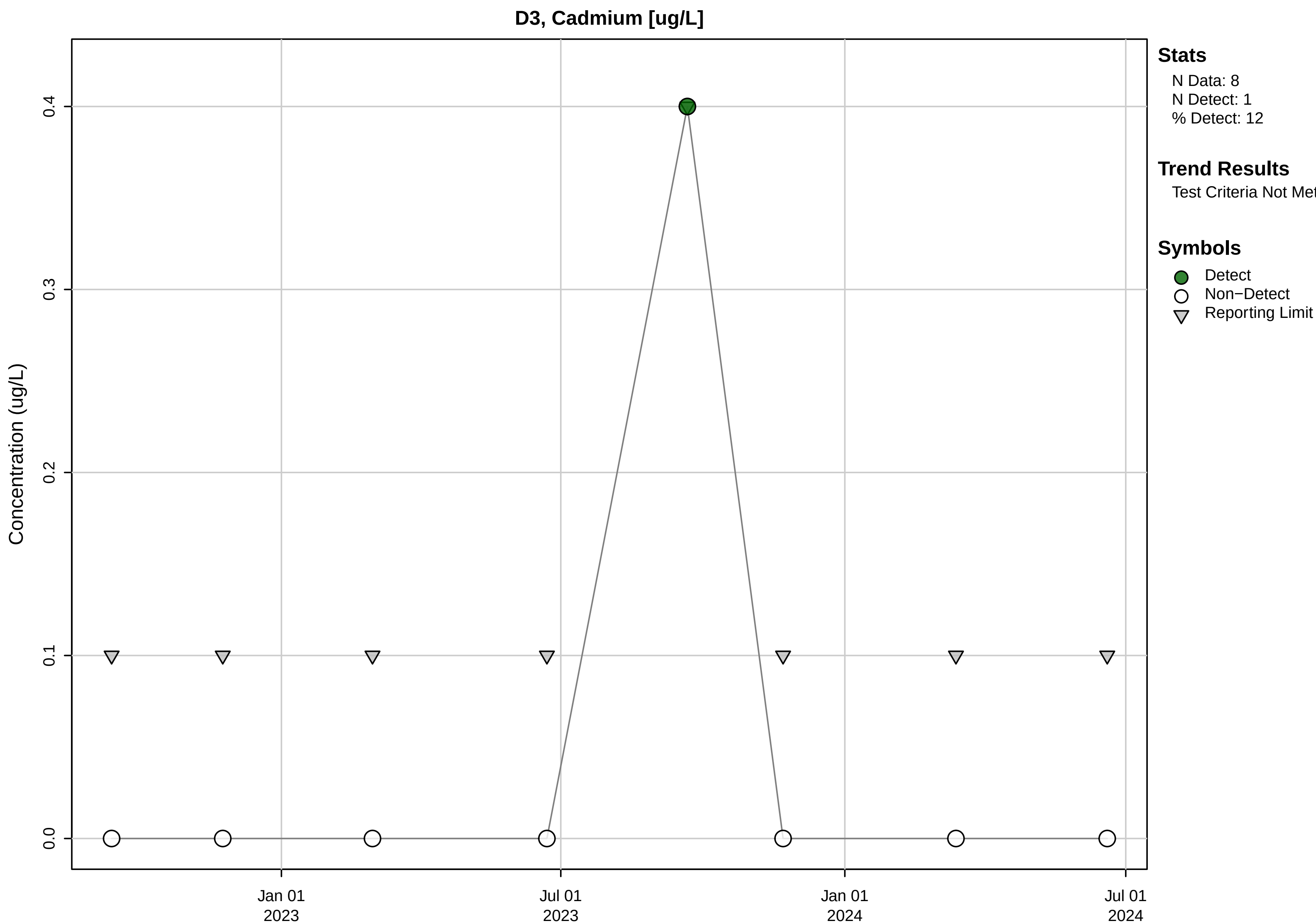


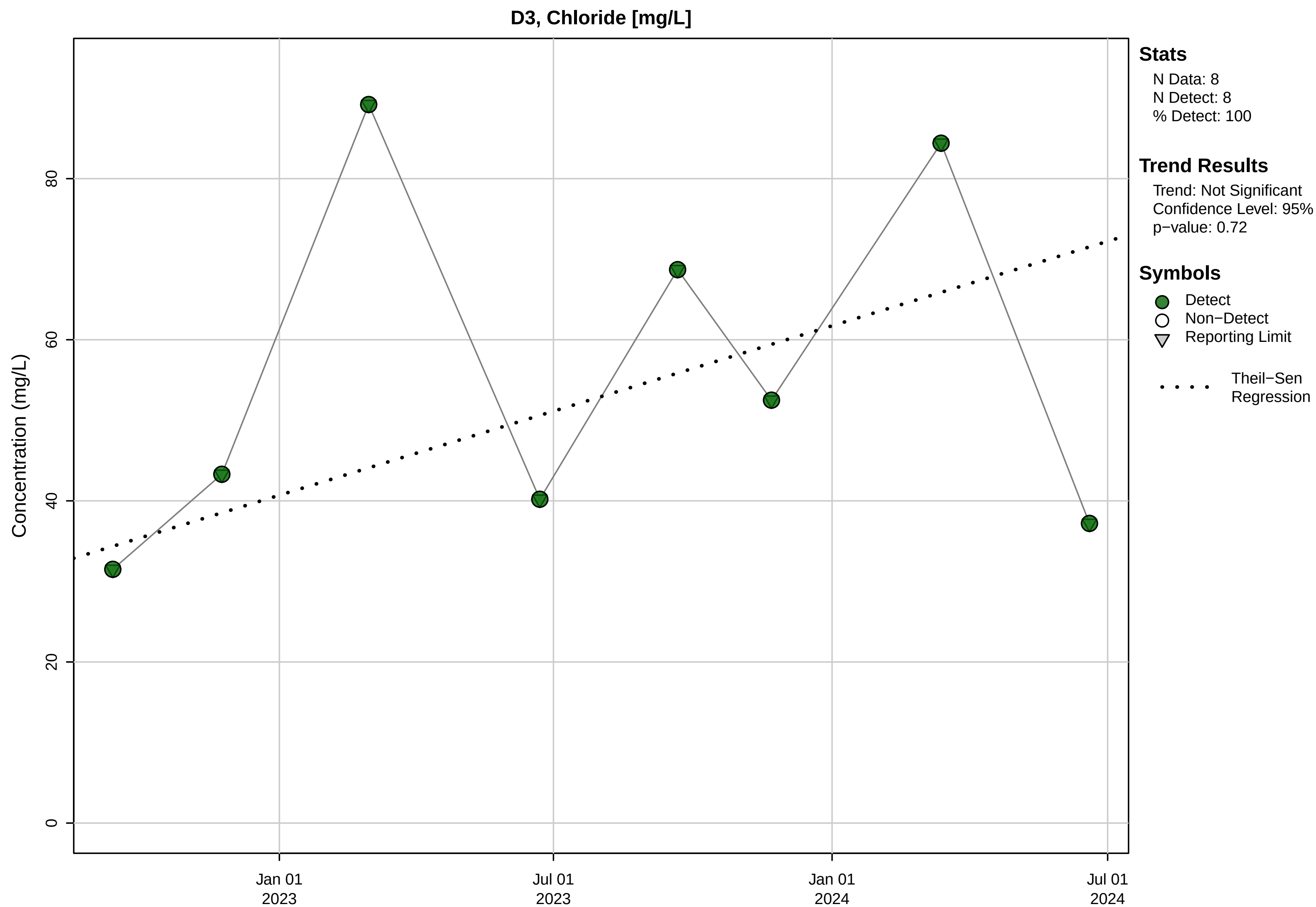
D2, Zinc [ug/L]
Concentration (ug/L)
0
100
200
300
400
500
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.00551
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D3, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

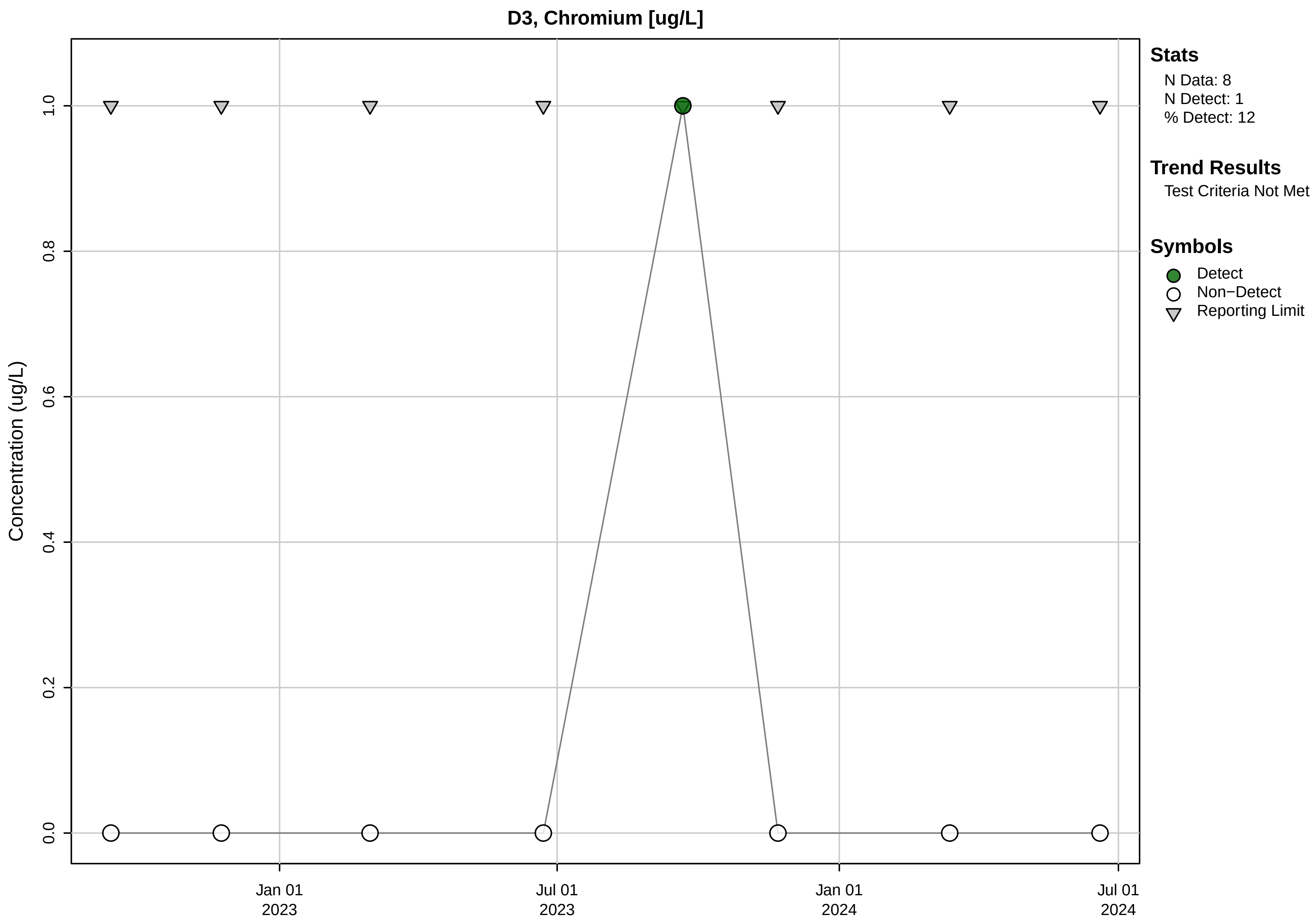


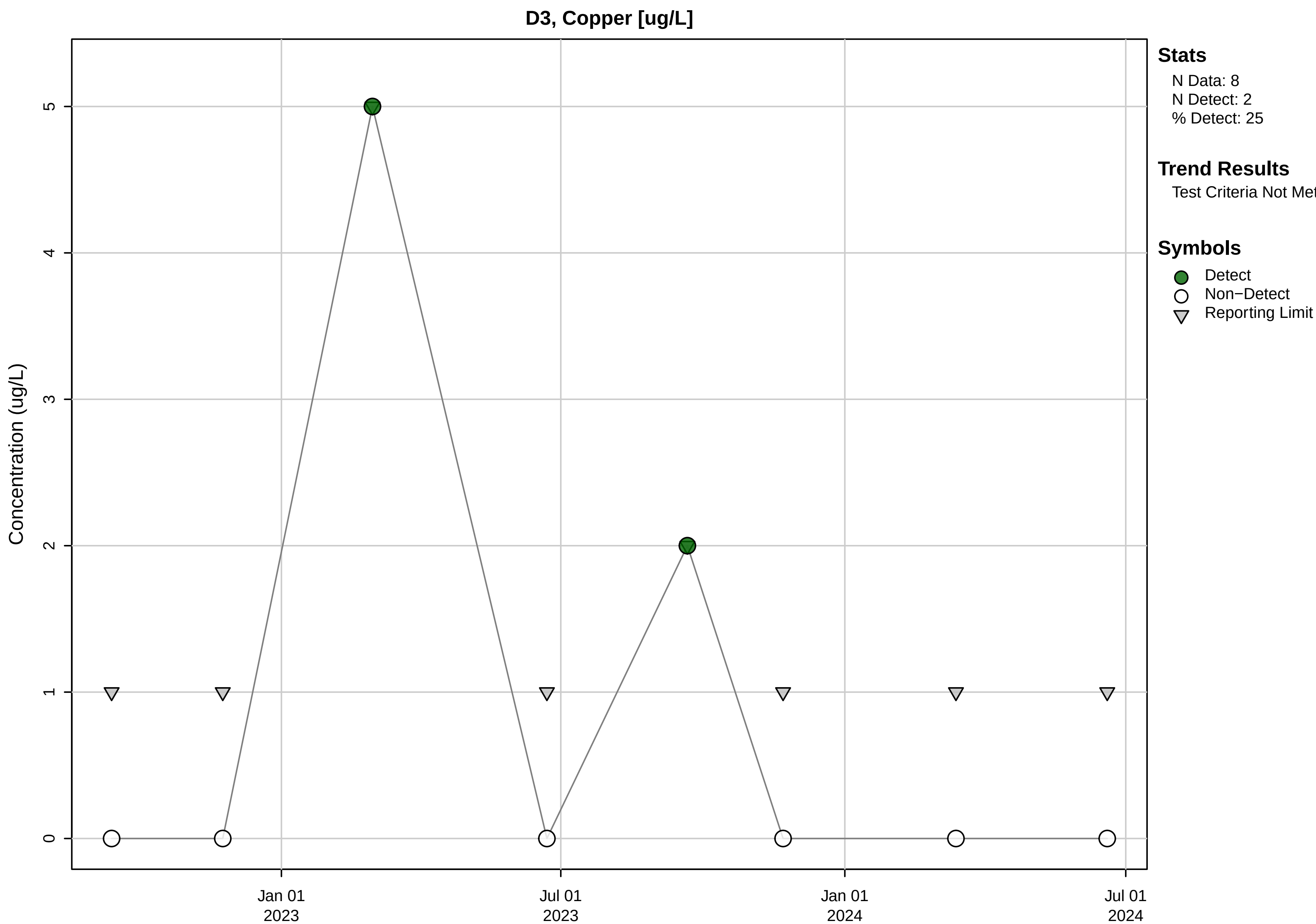
D3, Boron [ug/L]
Concentration (ug/L)
0
20
40
60
80
100
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D3, Cadmium [ug/L]
Concentration (ug/L)
0.0
0.1
0.2
0.3
0.4
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

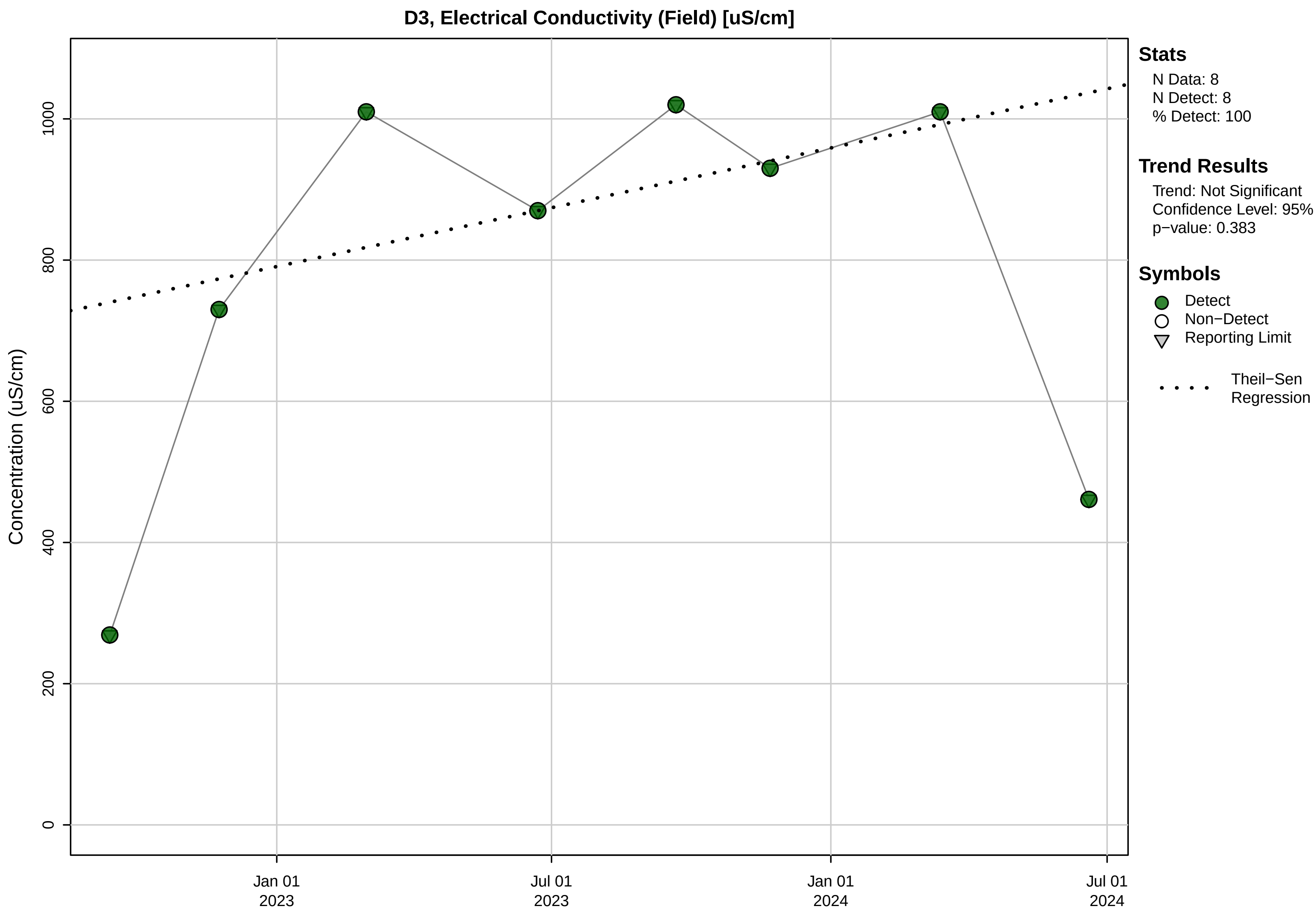


D3, Chloride [mg/L]
Concentration (mg/L)
0
20
40
60
80
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

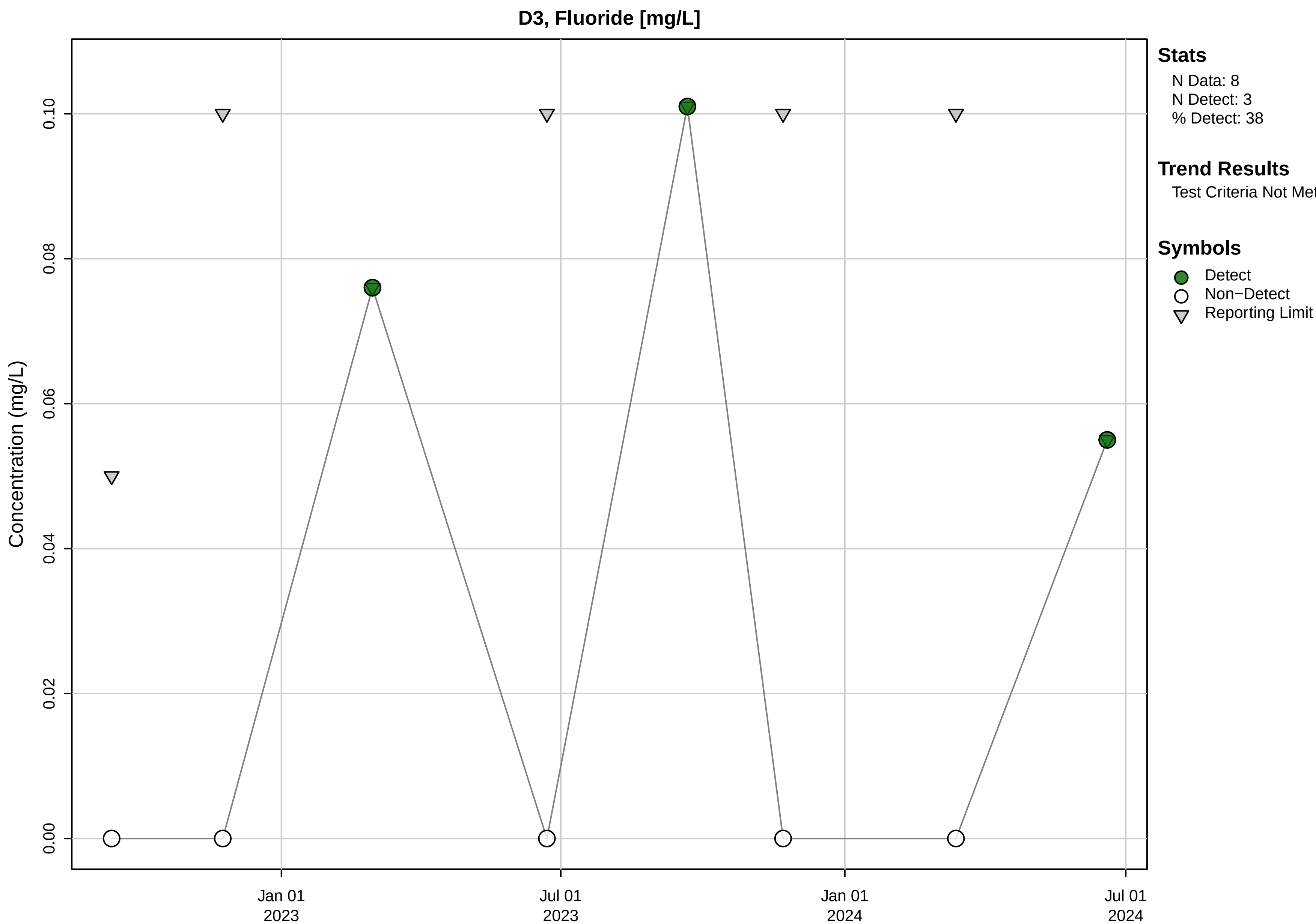

D3, Chromium [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



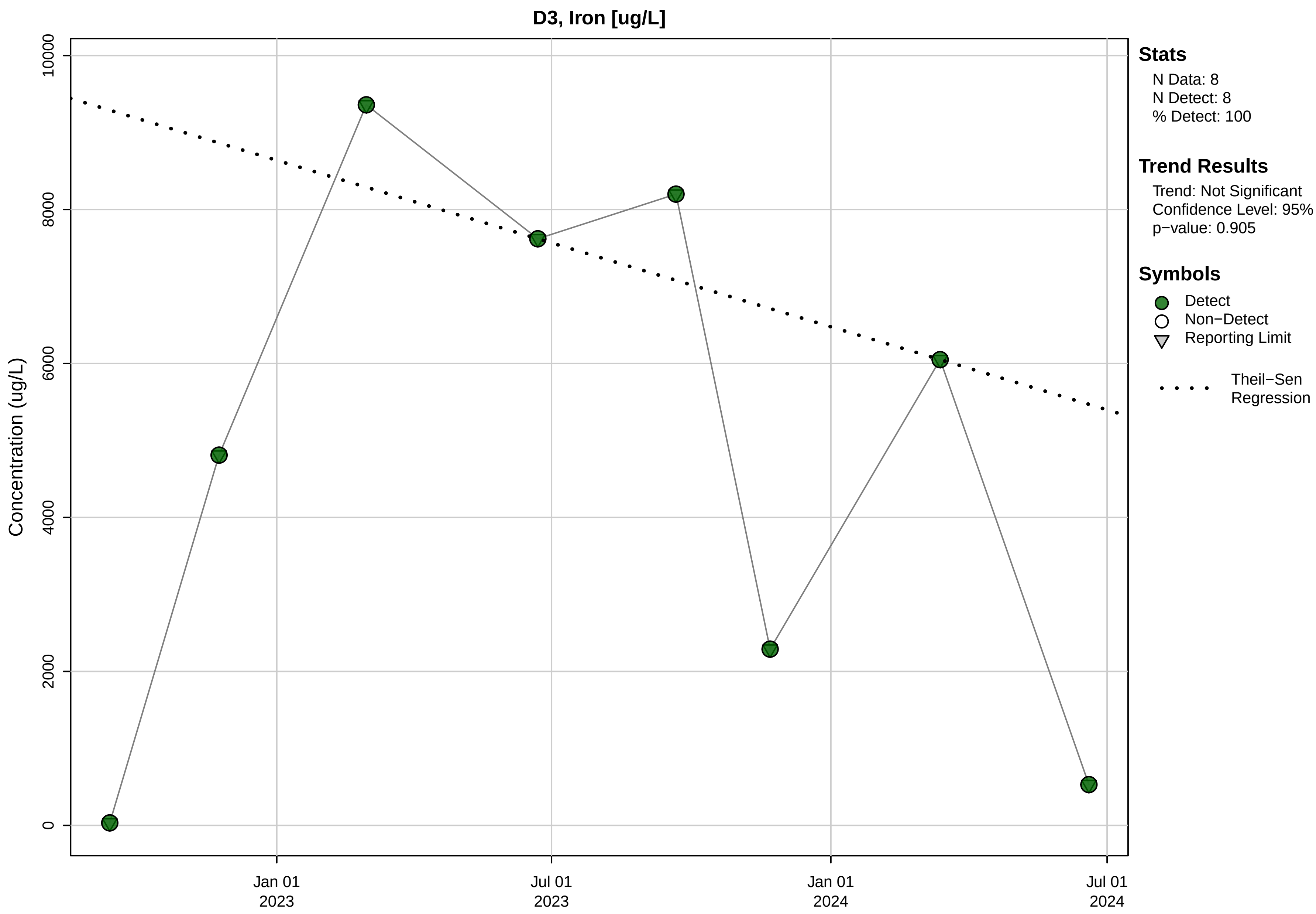
D3, Copper [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



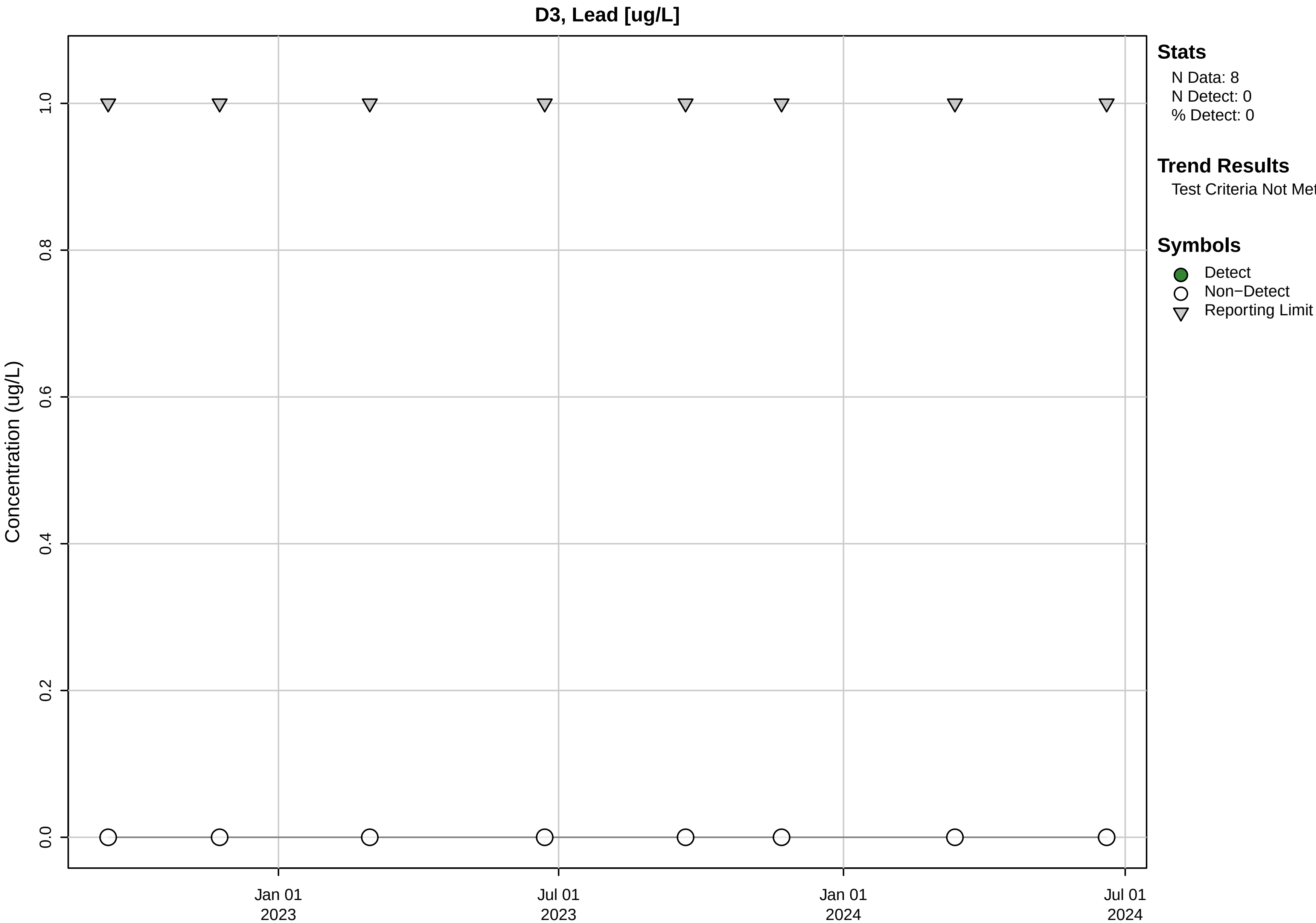
D3, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
200
400
600
800
1000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.383
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

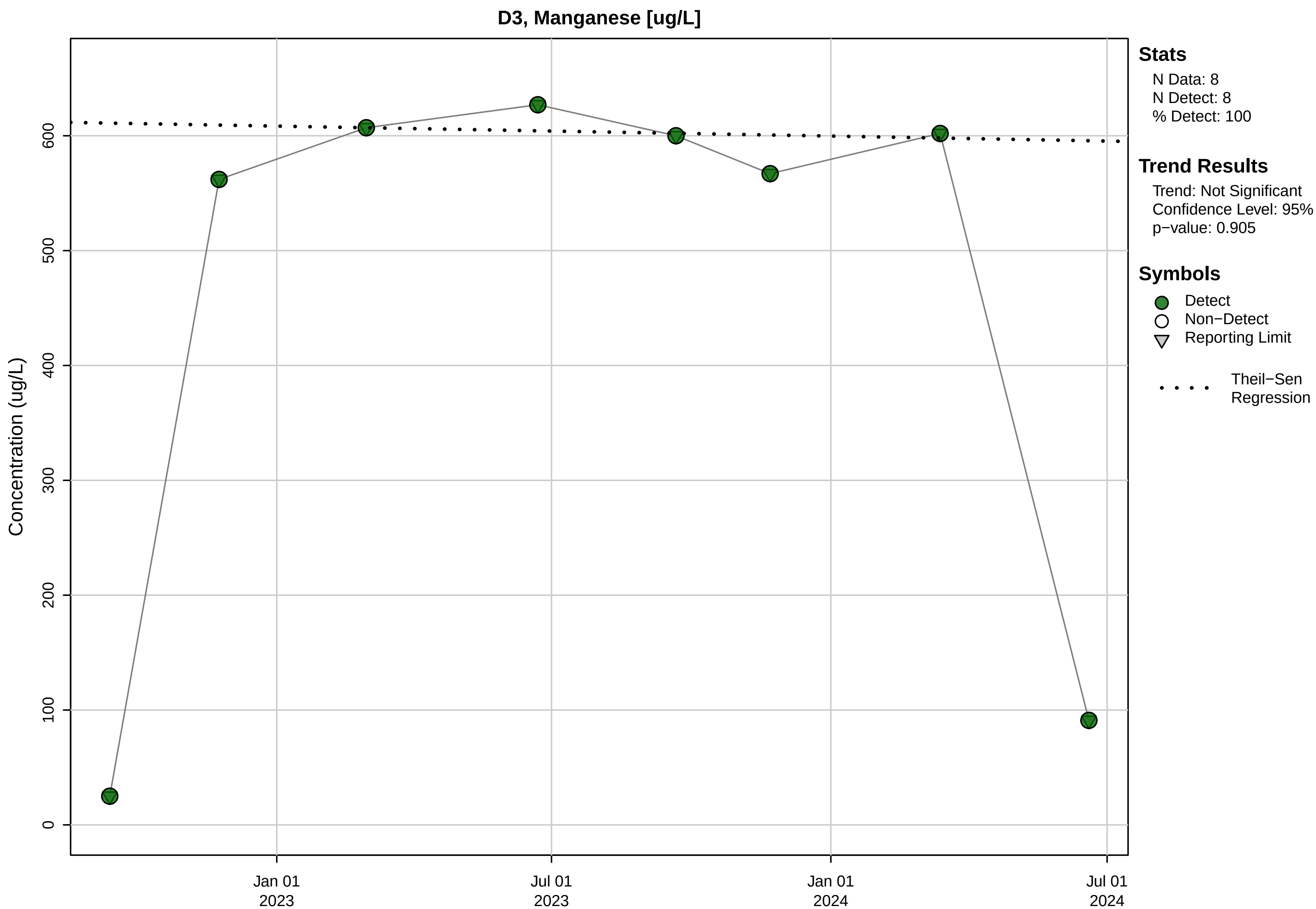


D3, Fluoride [mg/L]
Concentration (mg/L)
0.00
0.02
0.04
0.06
0.08
0.10
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

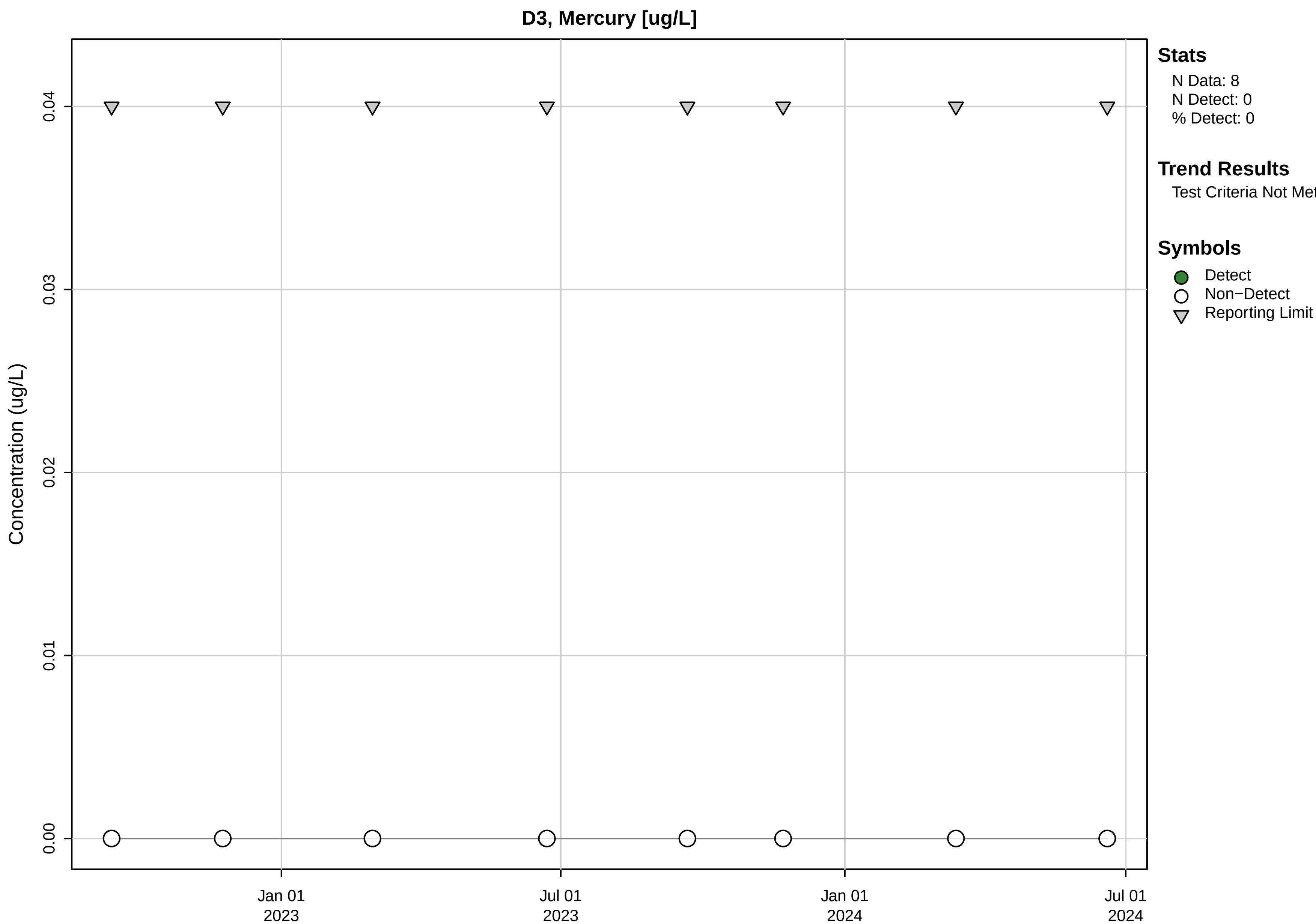


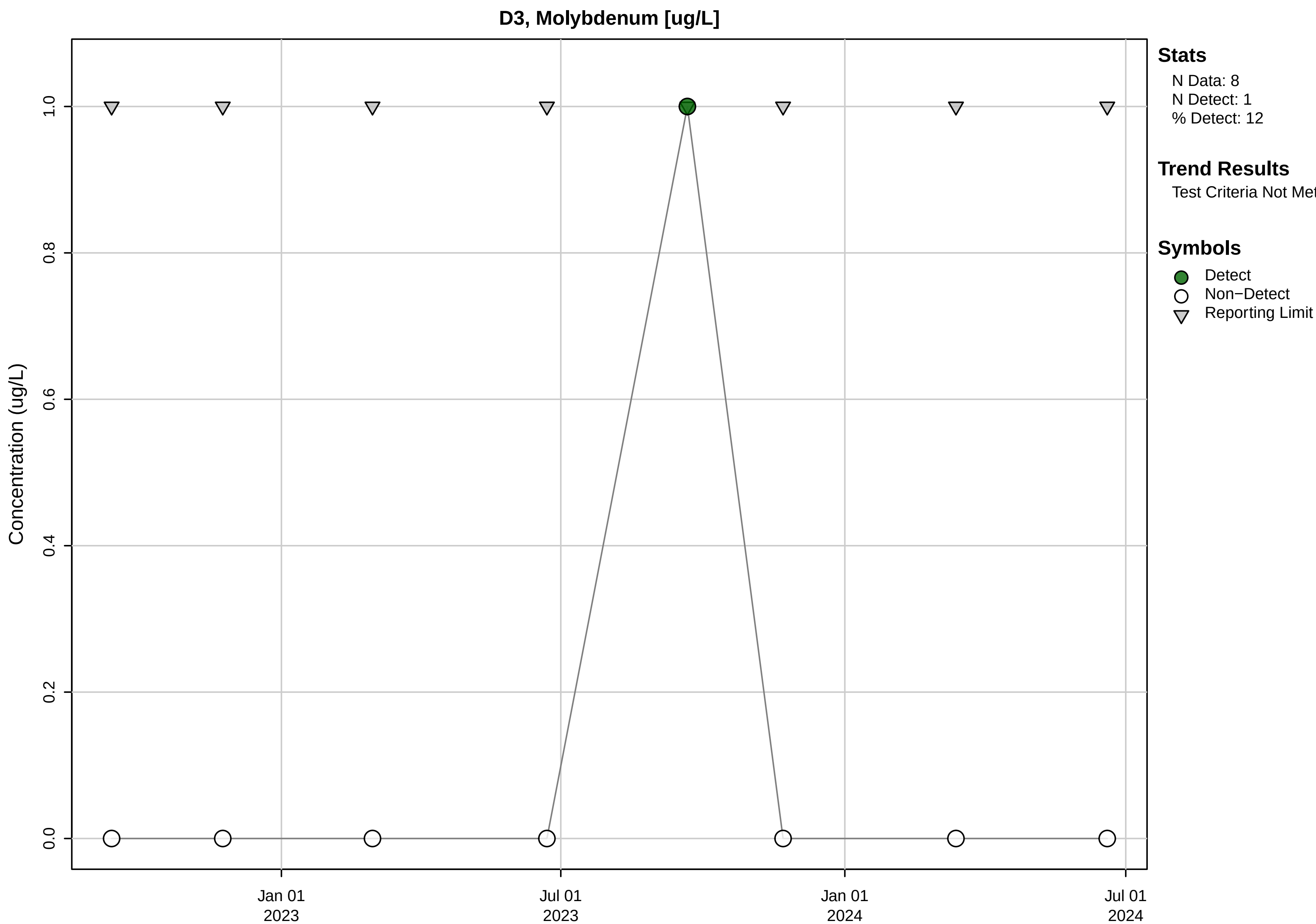
D3, Iron [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
10000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

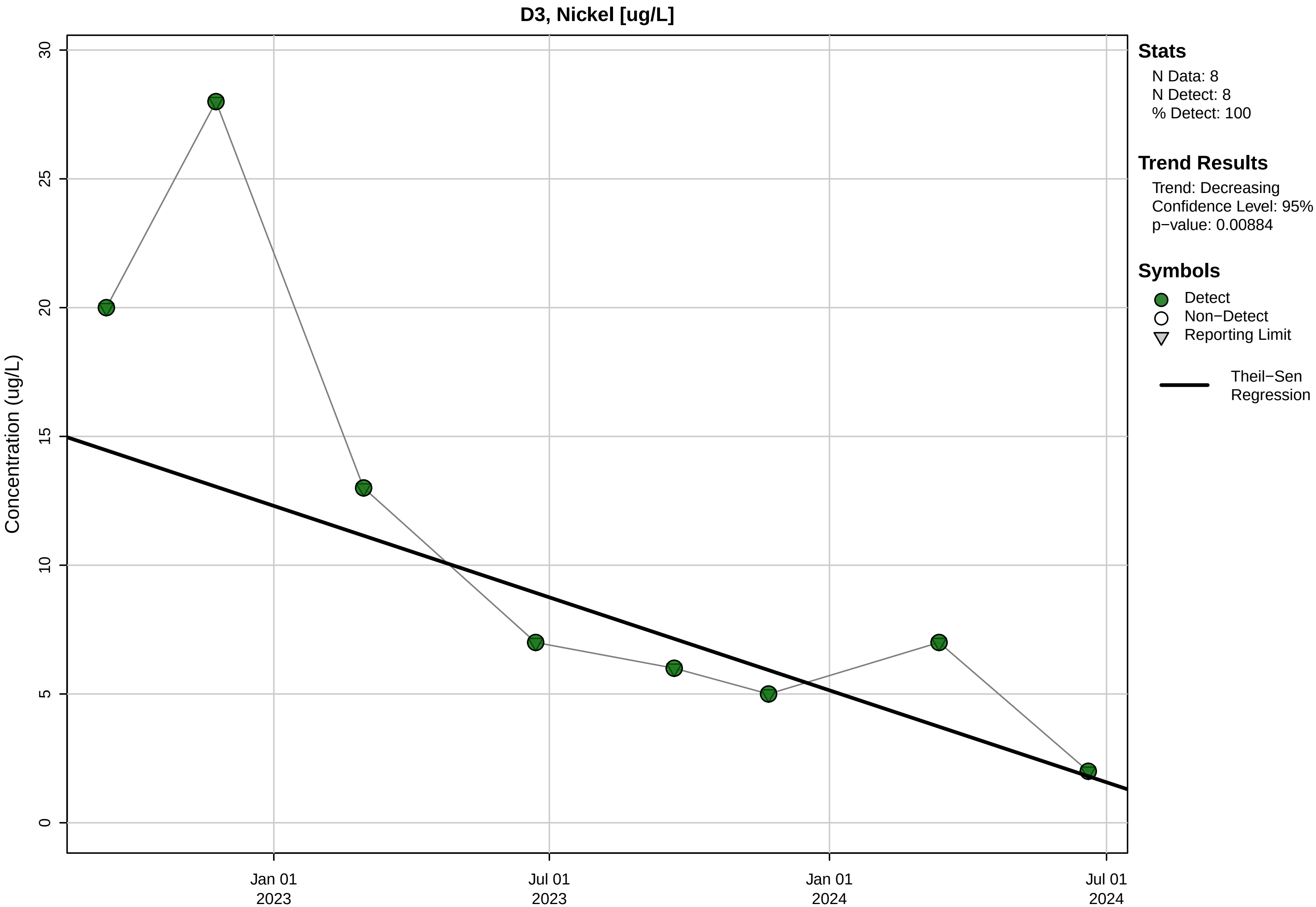

D3, Lead [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



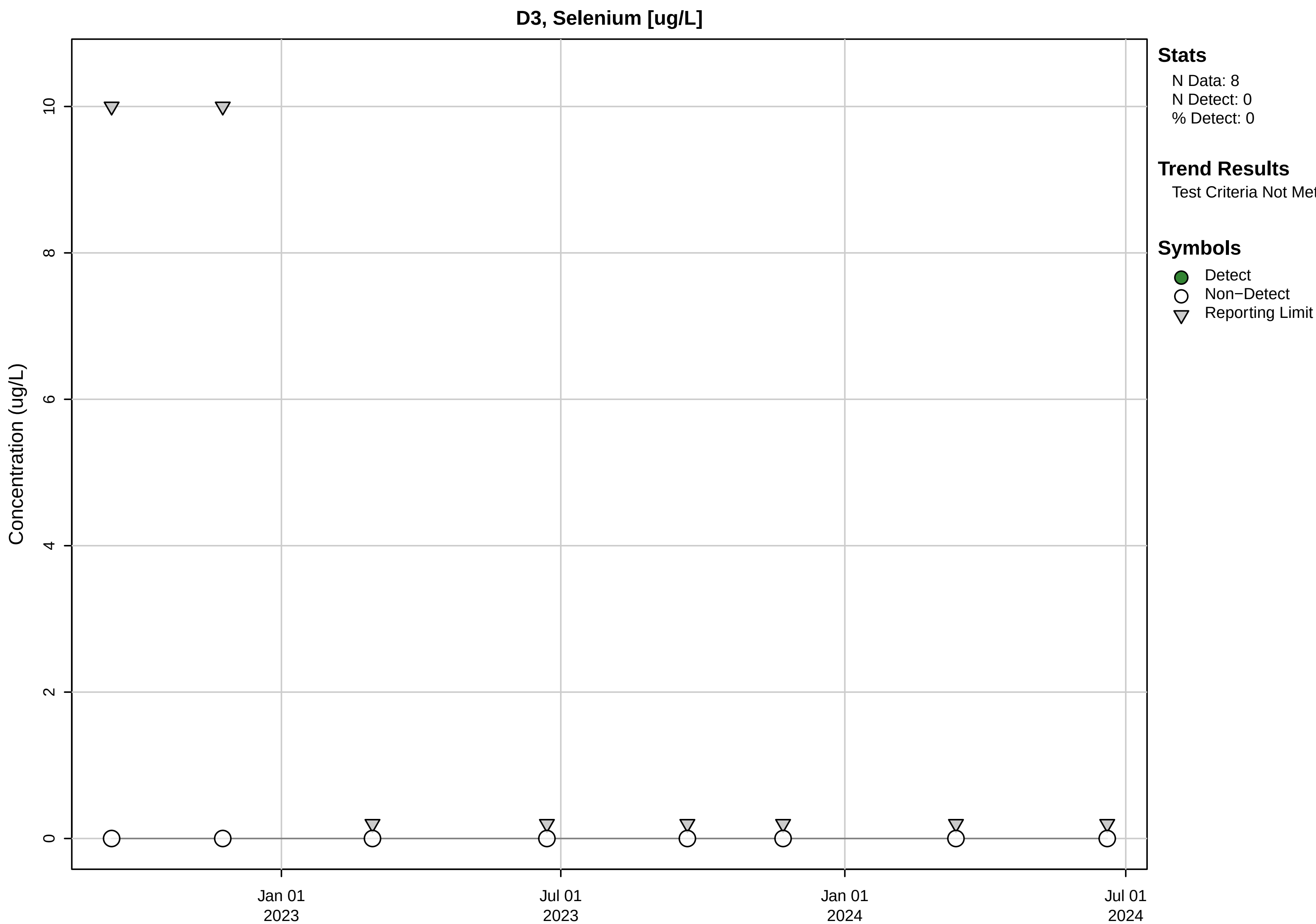
D3, Manganese [ug/L]
Concentration (ug/L)
0
100
200
300
400
500
600
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D3, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

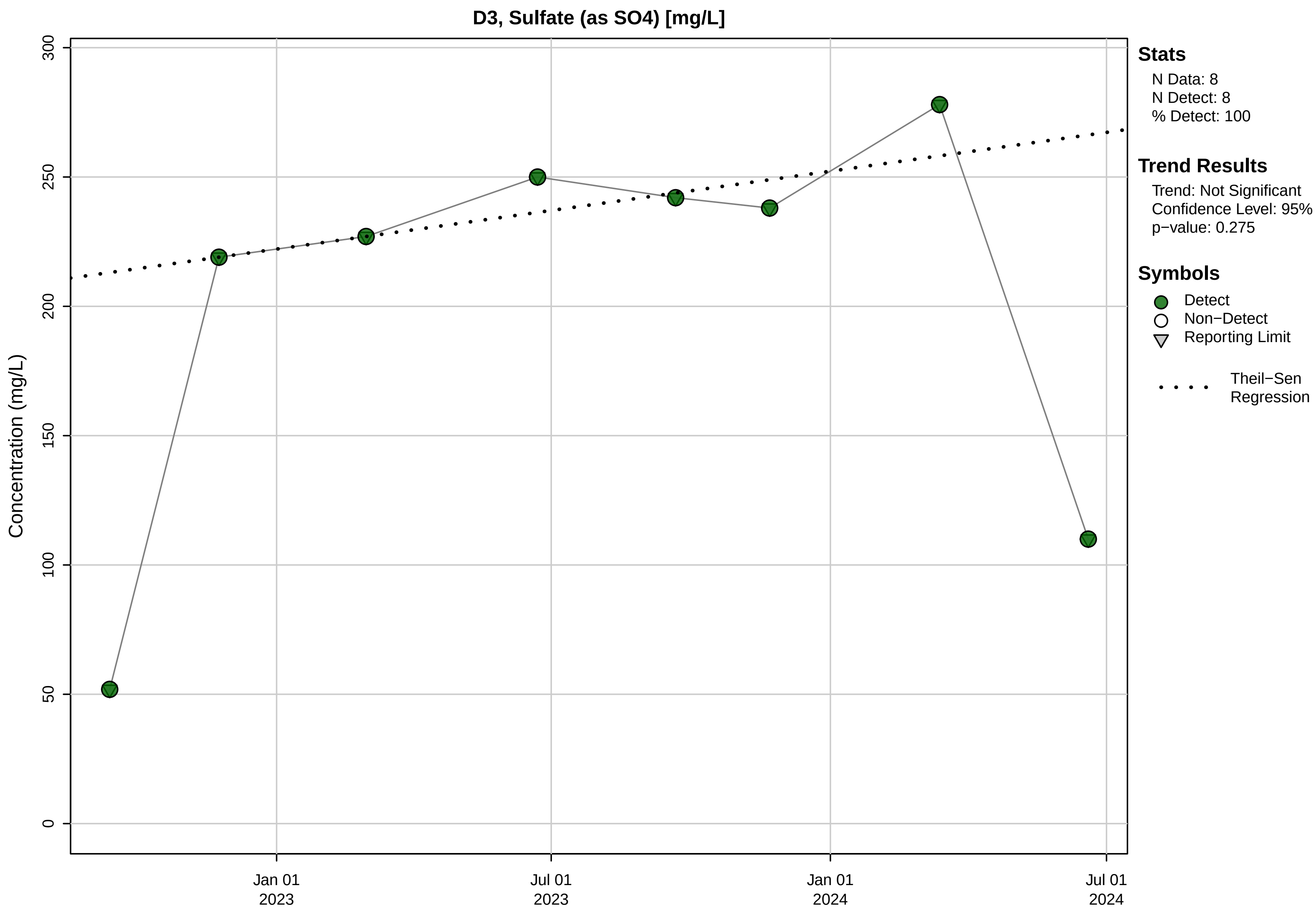

D3, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

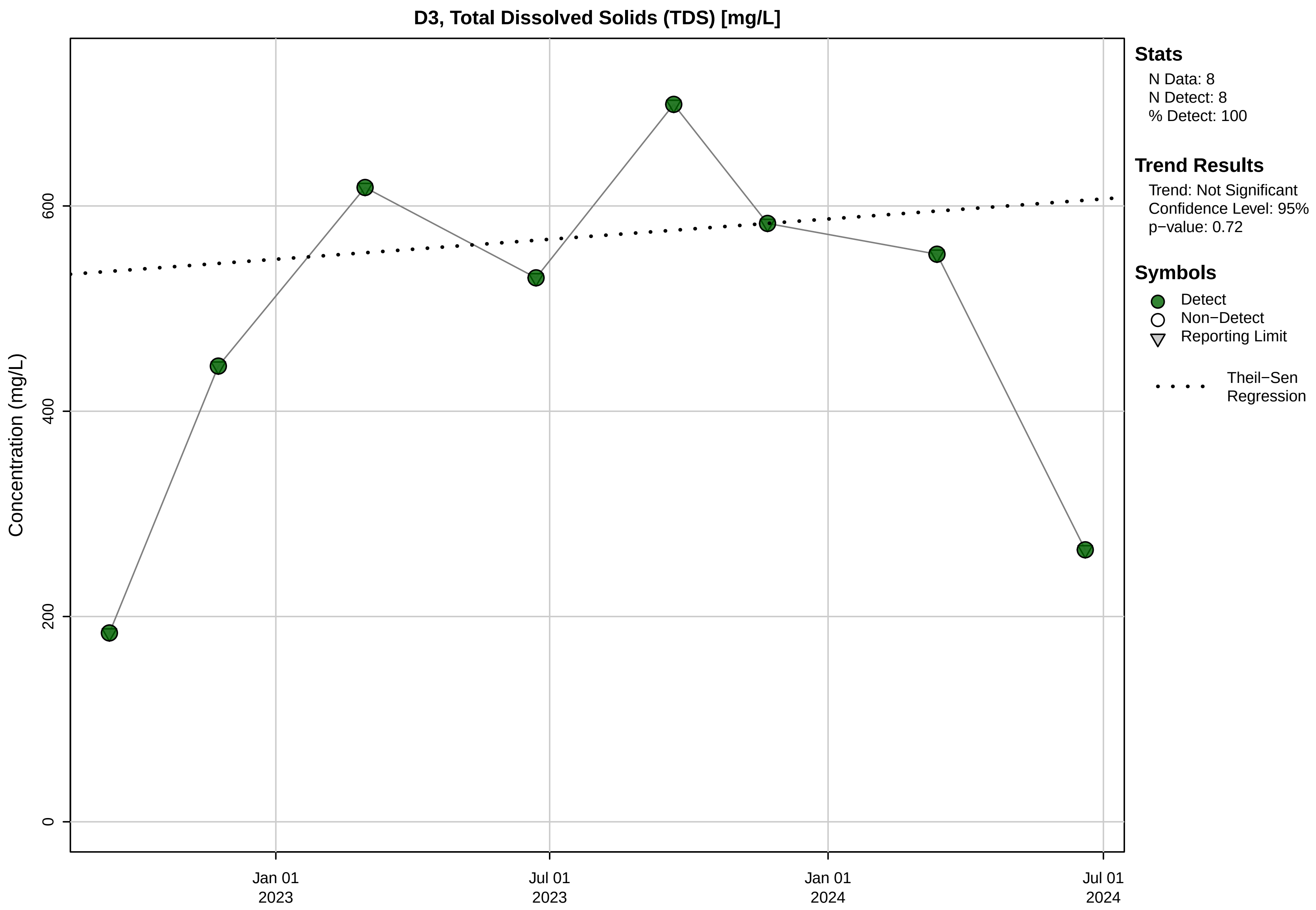


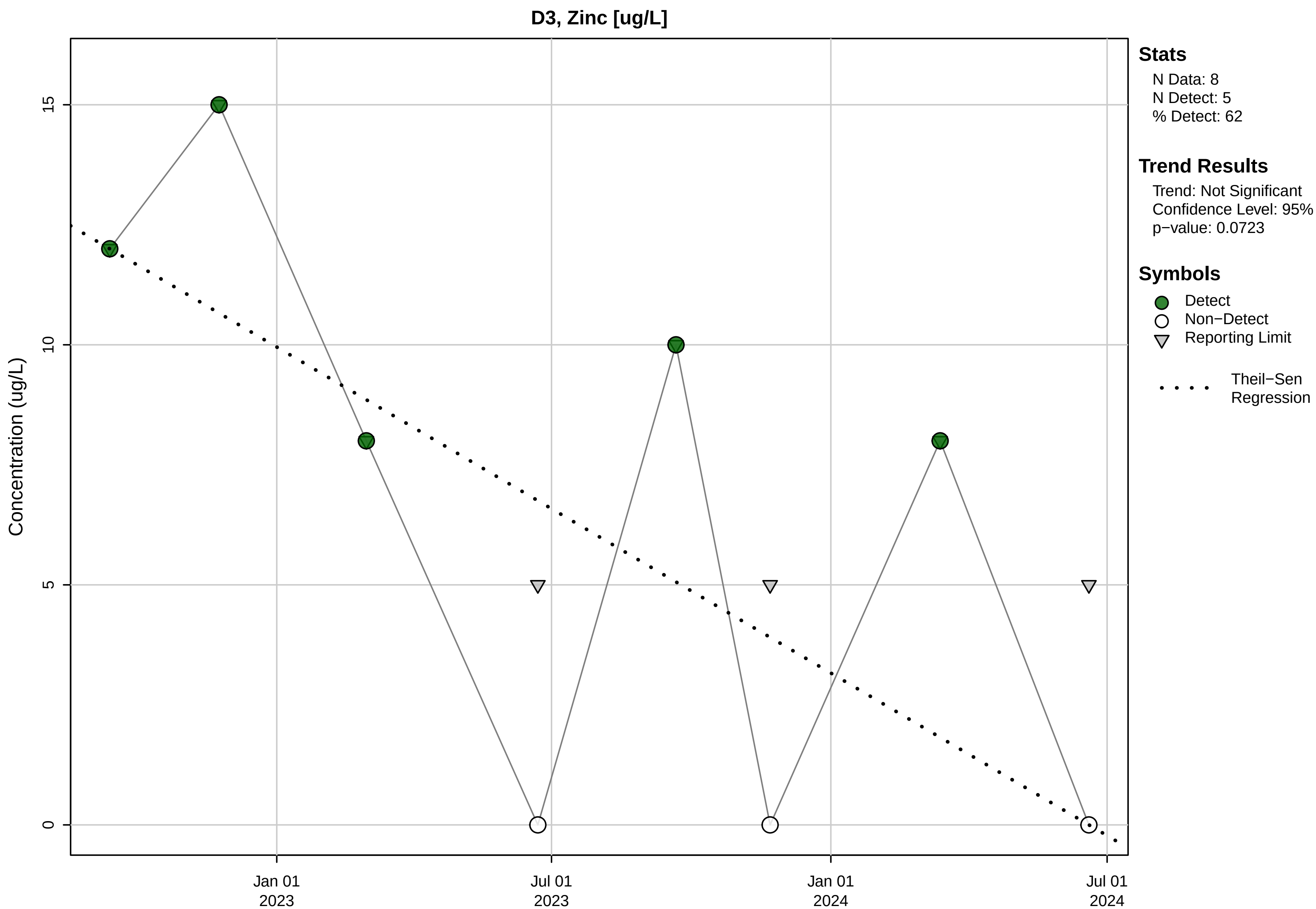
D3, Nickel [ug/L]
Concentration (ug/L)
0
5
10
15
20
25
30
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.00884
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



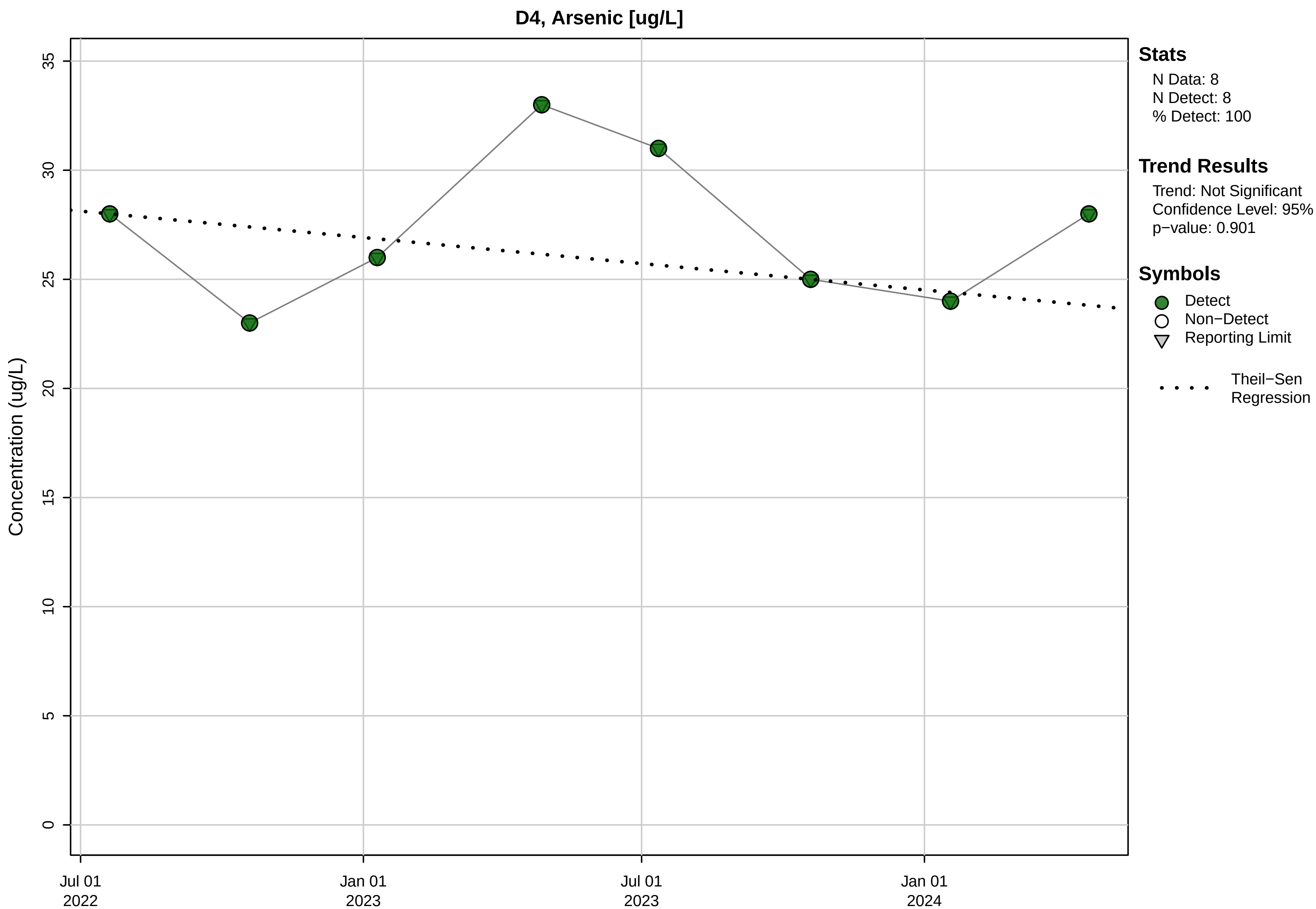
D3, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D3, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
50
100
150
200
250
300
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D3, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
200
400
600
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

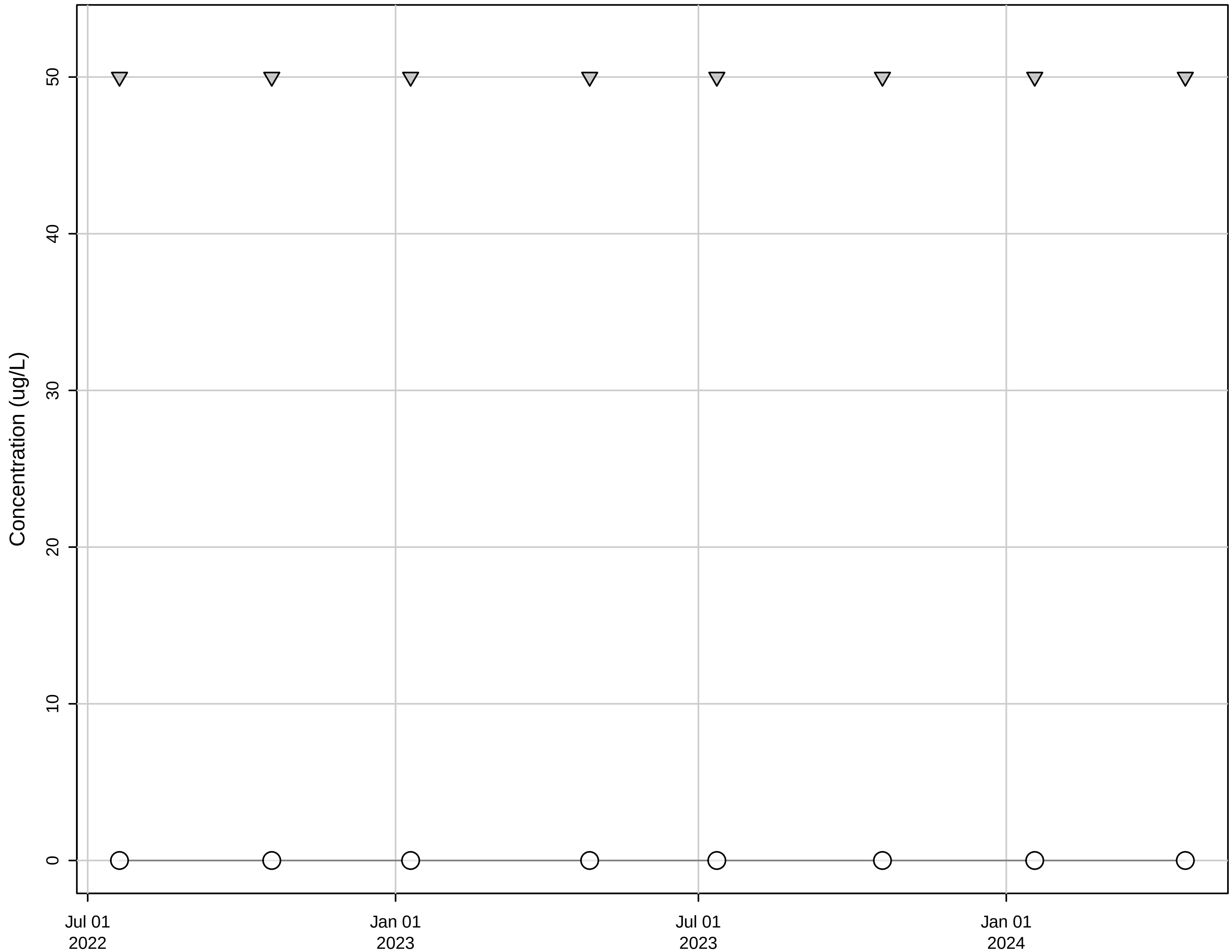


D3, Zinc [ug/L]
Concentration (ug/L)
0
5
10
15
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0723
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



D4, Arsenic [ug/L]
Concentration (ug/L)
0
5
10
15
20
25
30
35
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.901
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

D4, Boron [ug/L]



Stats

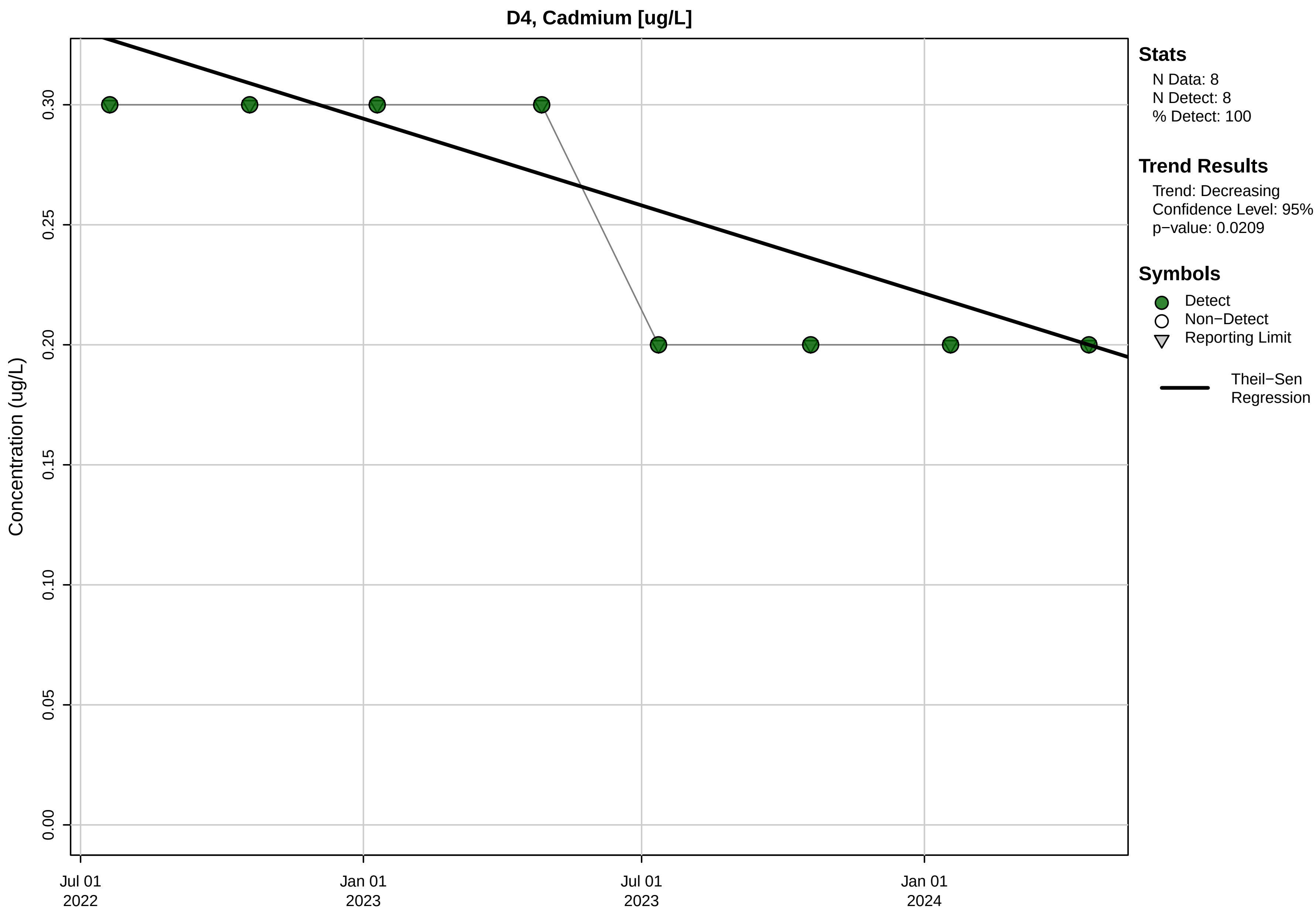
N Data: 8
N Detect: 0
% Detect: 0

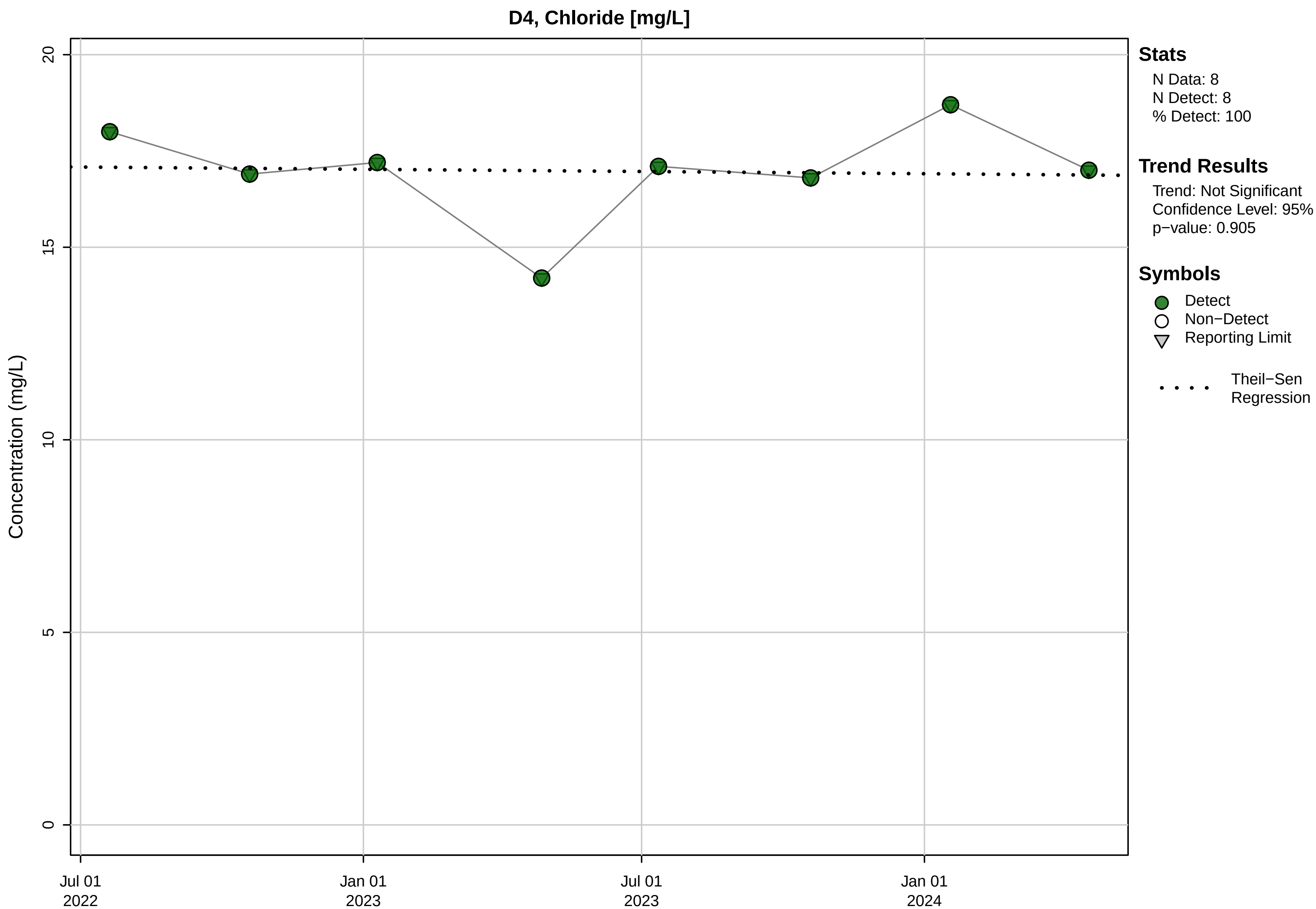
Trend Results

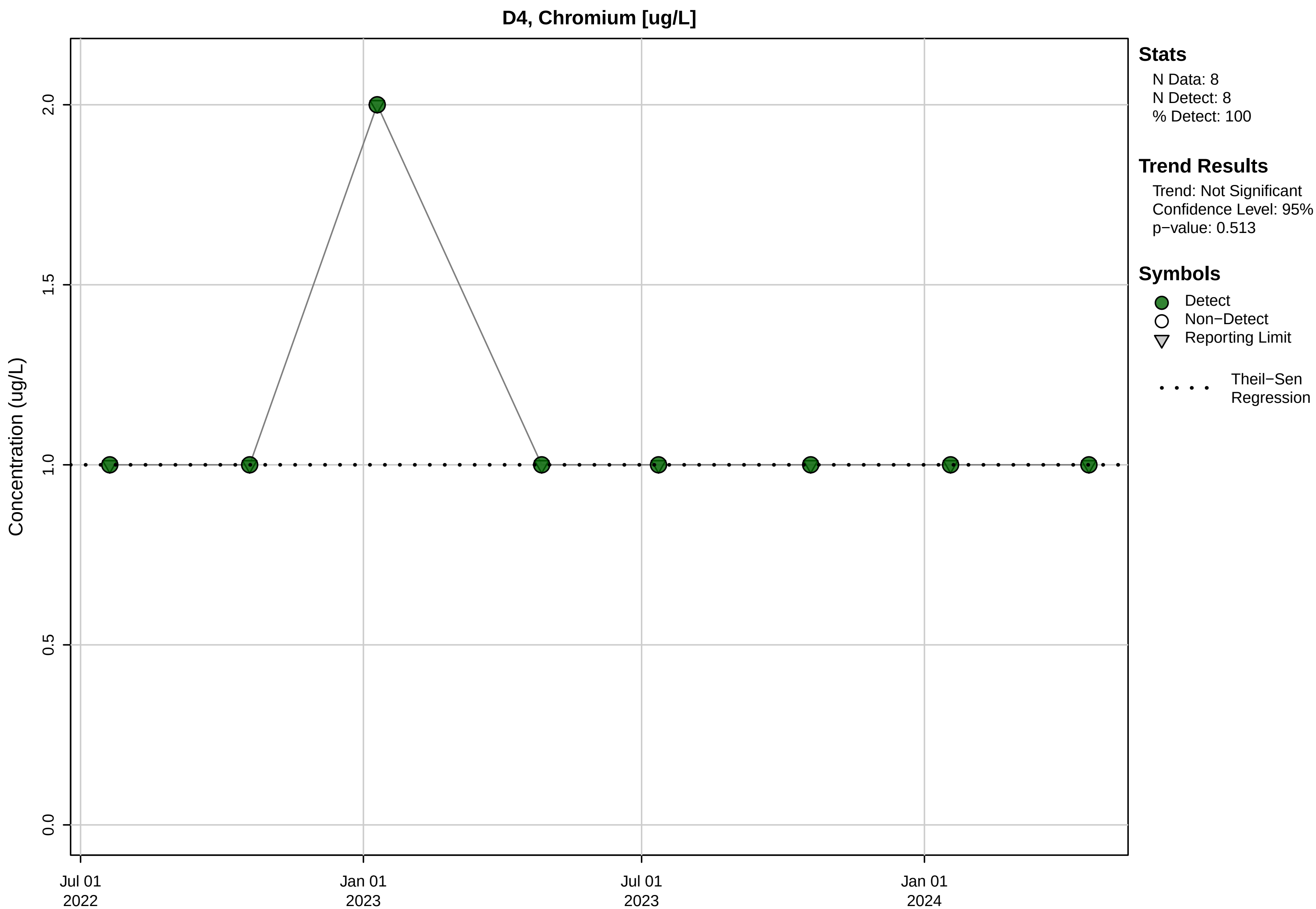
Test Criteria Not Met

Symbols

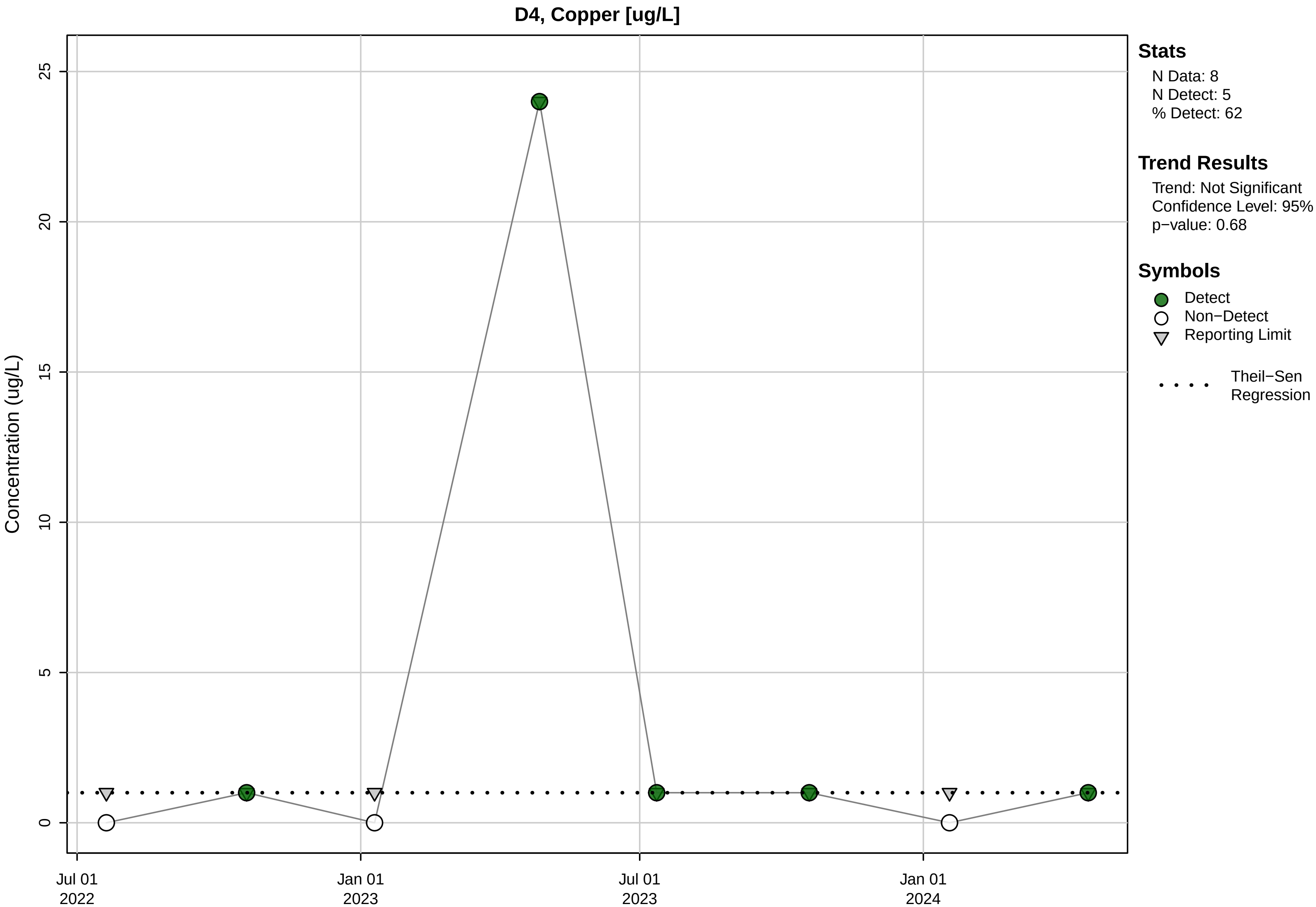
Detect
Non−Detect
Reporting Limit


D4, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0209
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

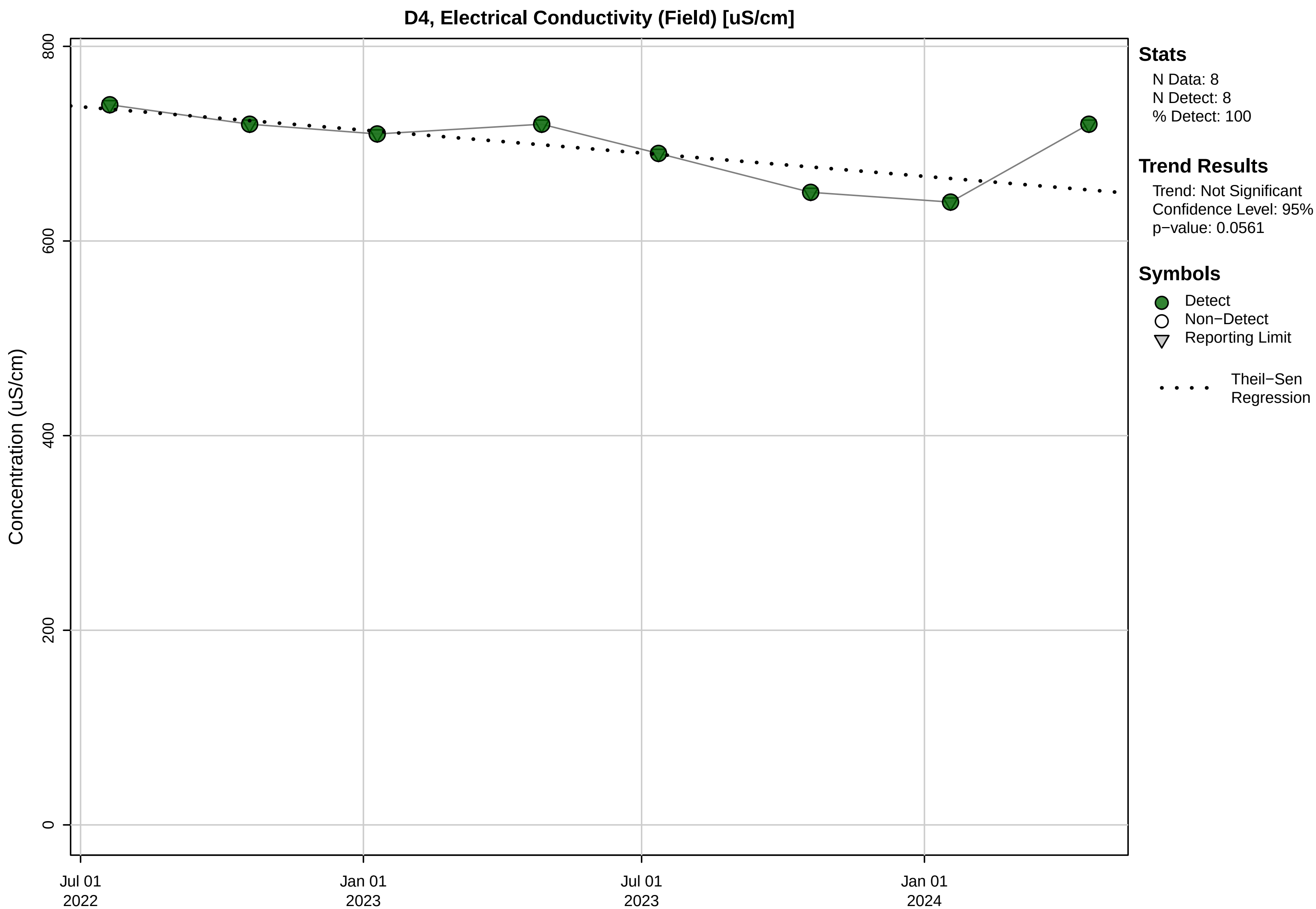

D4, Chloride [mg/L]
Concentration (mg/L)
0
5
10
15
20
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



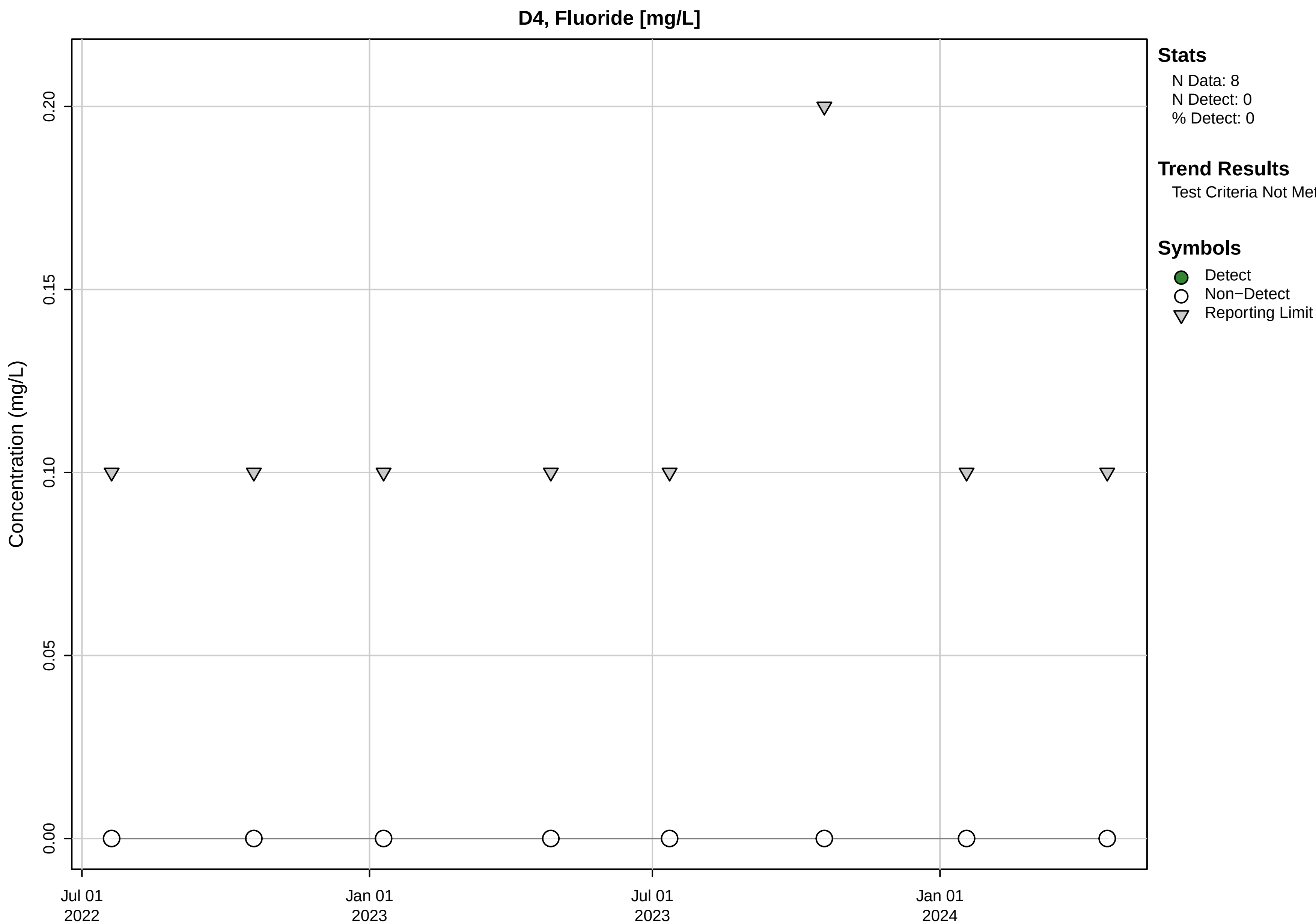
D4, Chromium [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.513
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



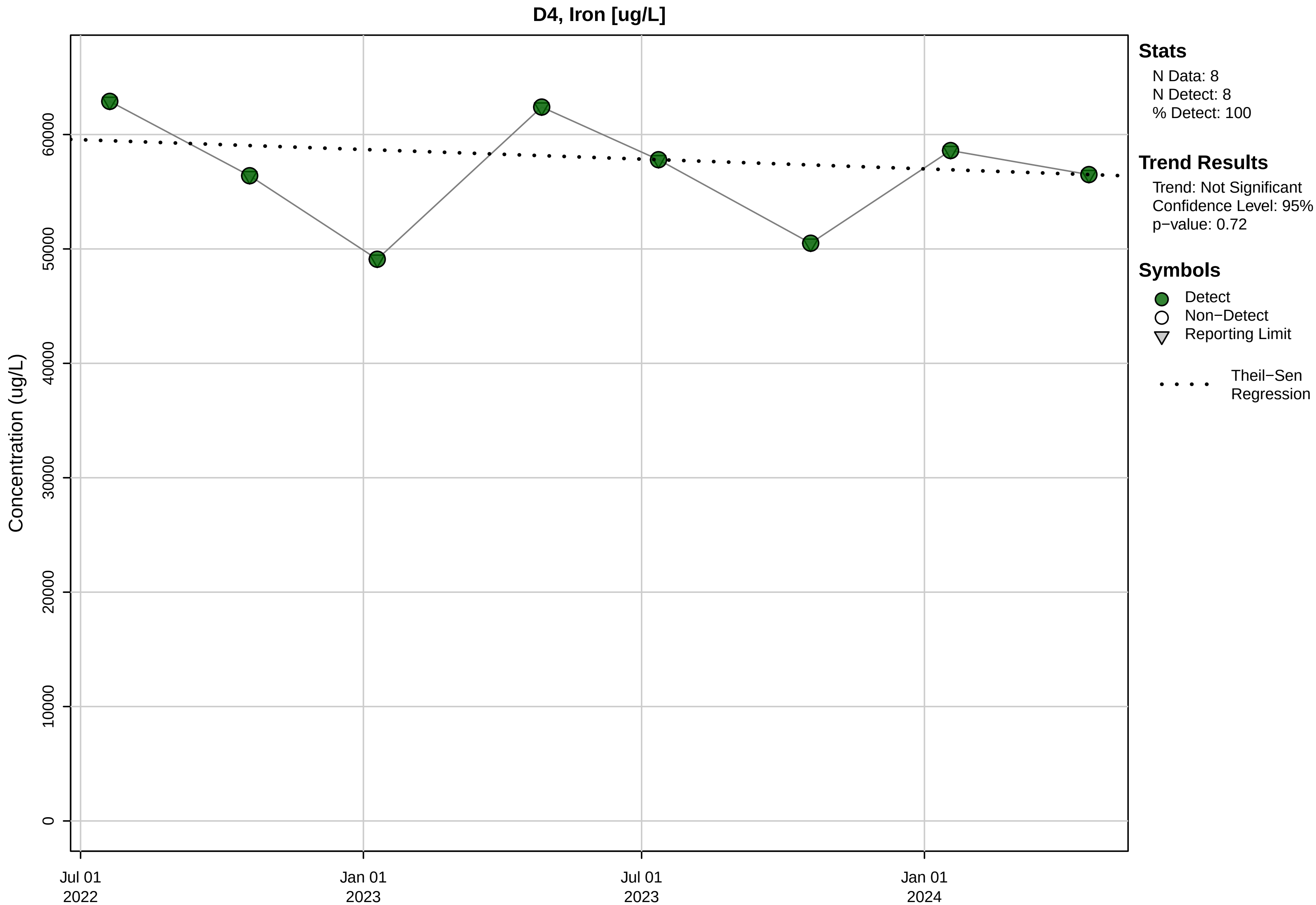
D4, Copper [ug/L]
Concentration (ug/L)
0
5
10
15
20
25
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.68
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



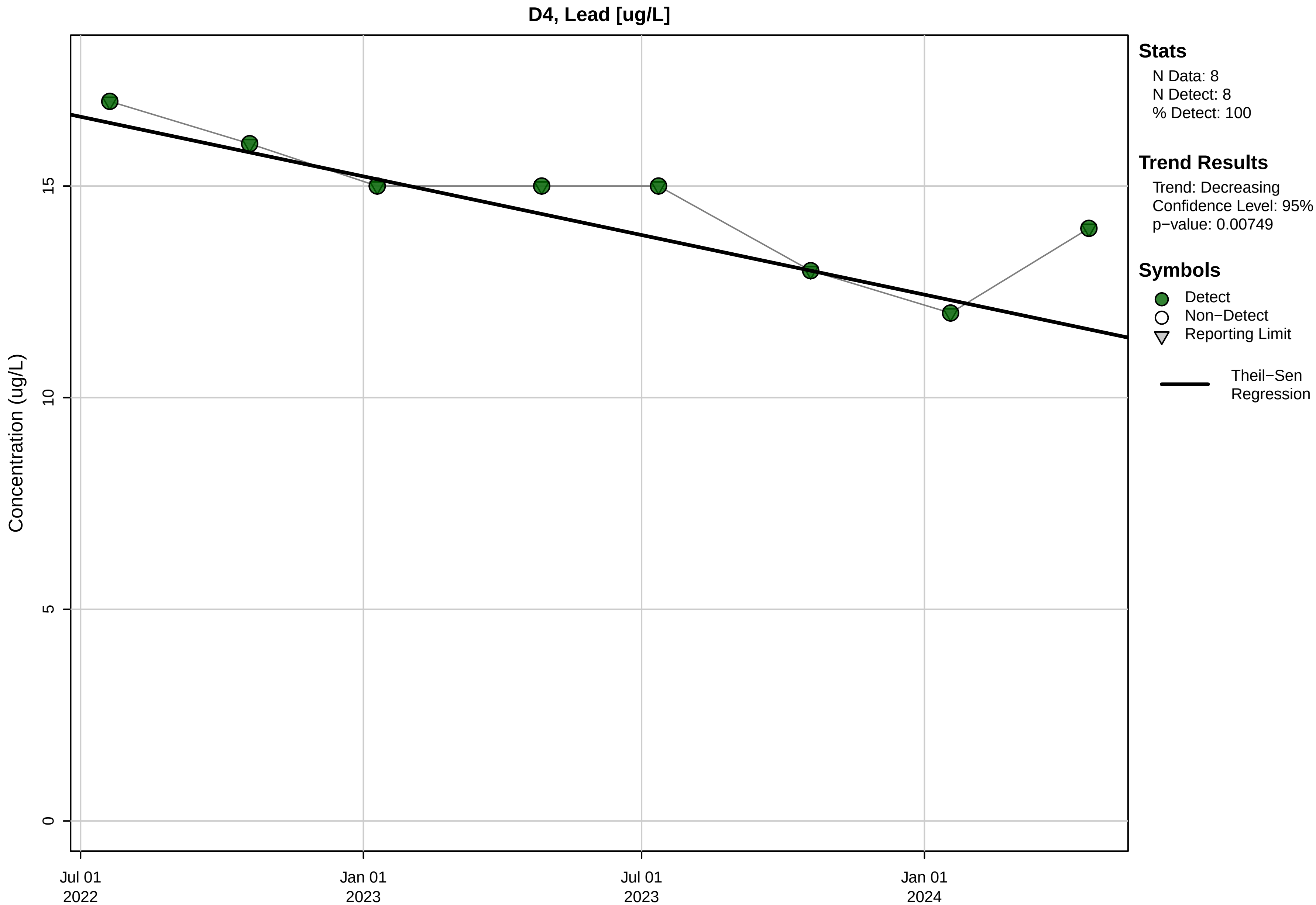
D4, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
200
400
600
800
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0561
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

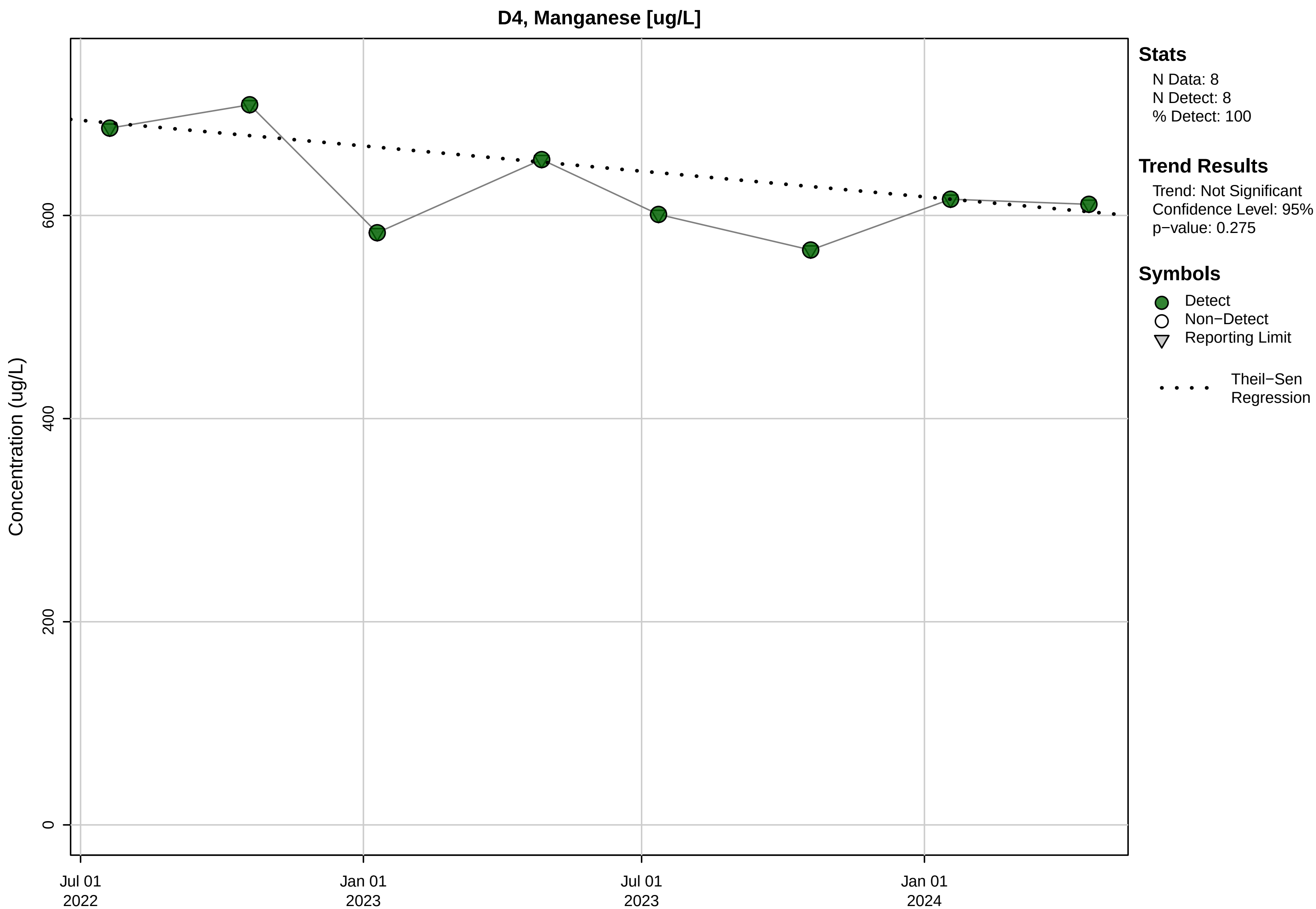


D4, Fluoride [mg/L]
Concentration (mg/L)
0.00
0.05
0.10
0.15
0.20
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

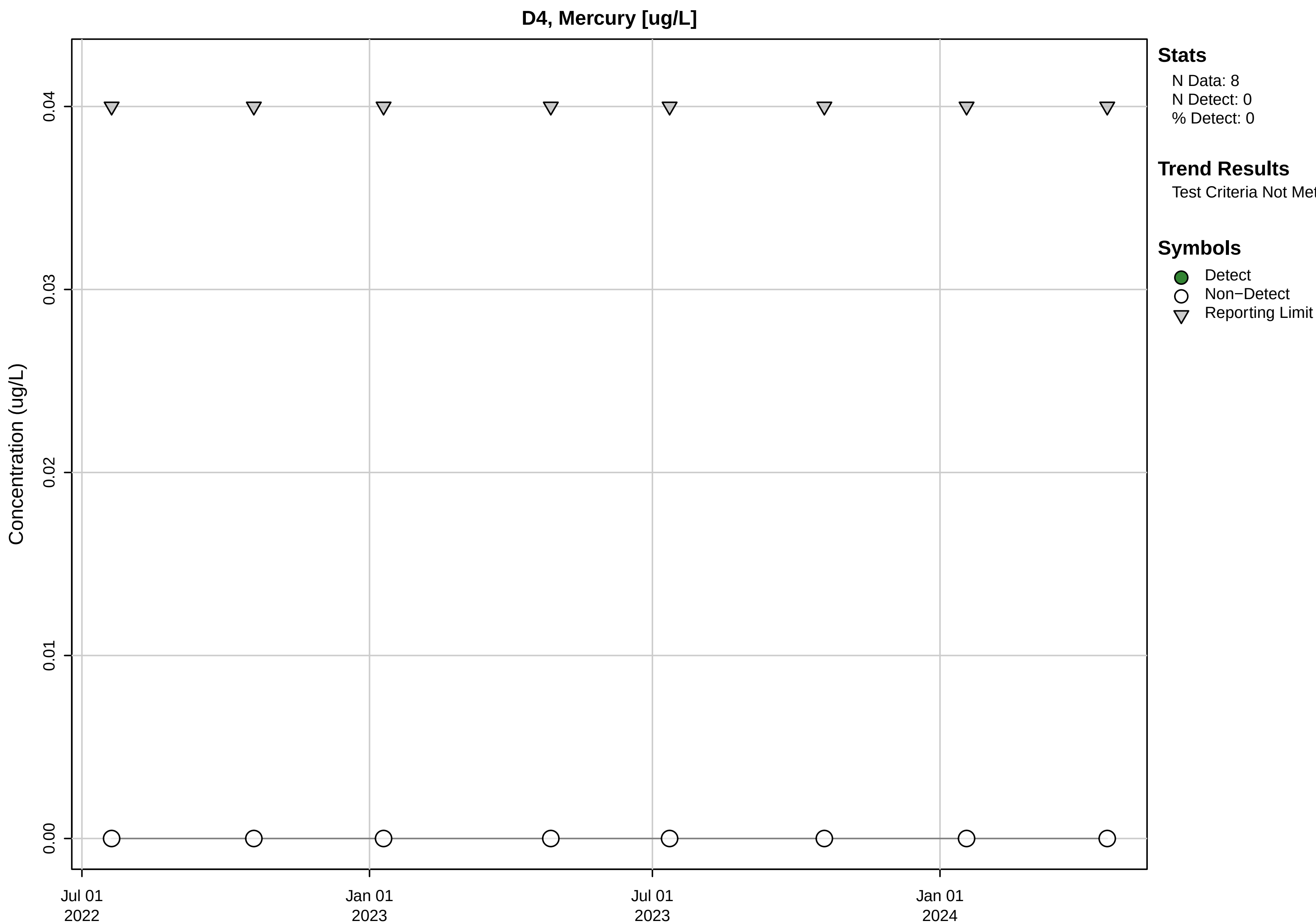


D4, Iron [ug/L]
Concentration (ug/L)
0
10000
20000
30000
40000
50000
60000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

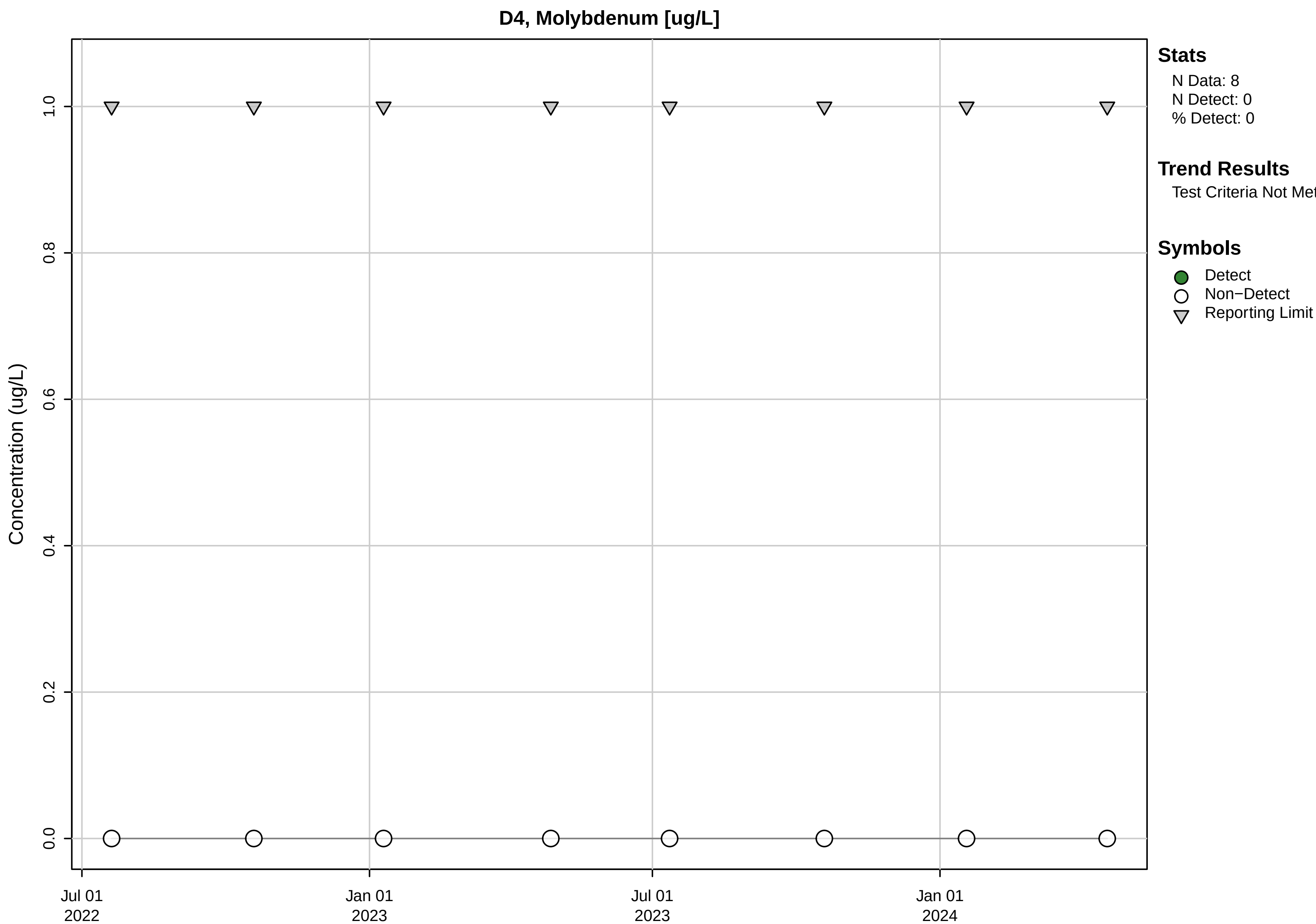

D4, Lead [ug/L]
Concentration (ug/L)
0
5
10
15
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.00749
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



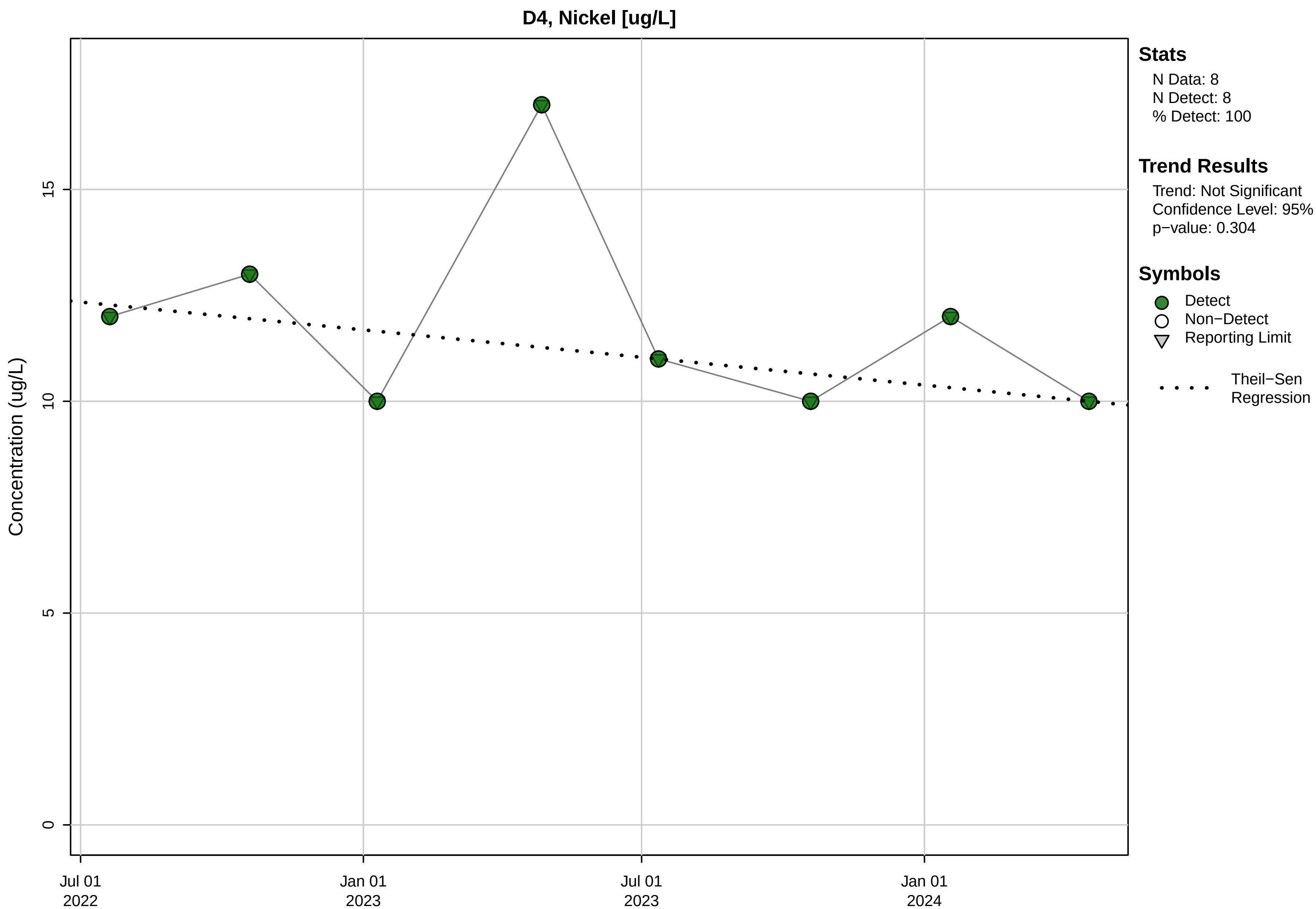
D4, Manganese [ug/L]
Concentration (ug/L)
0
200
400
600
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.275
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



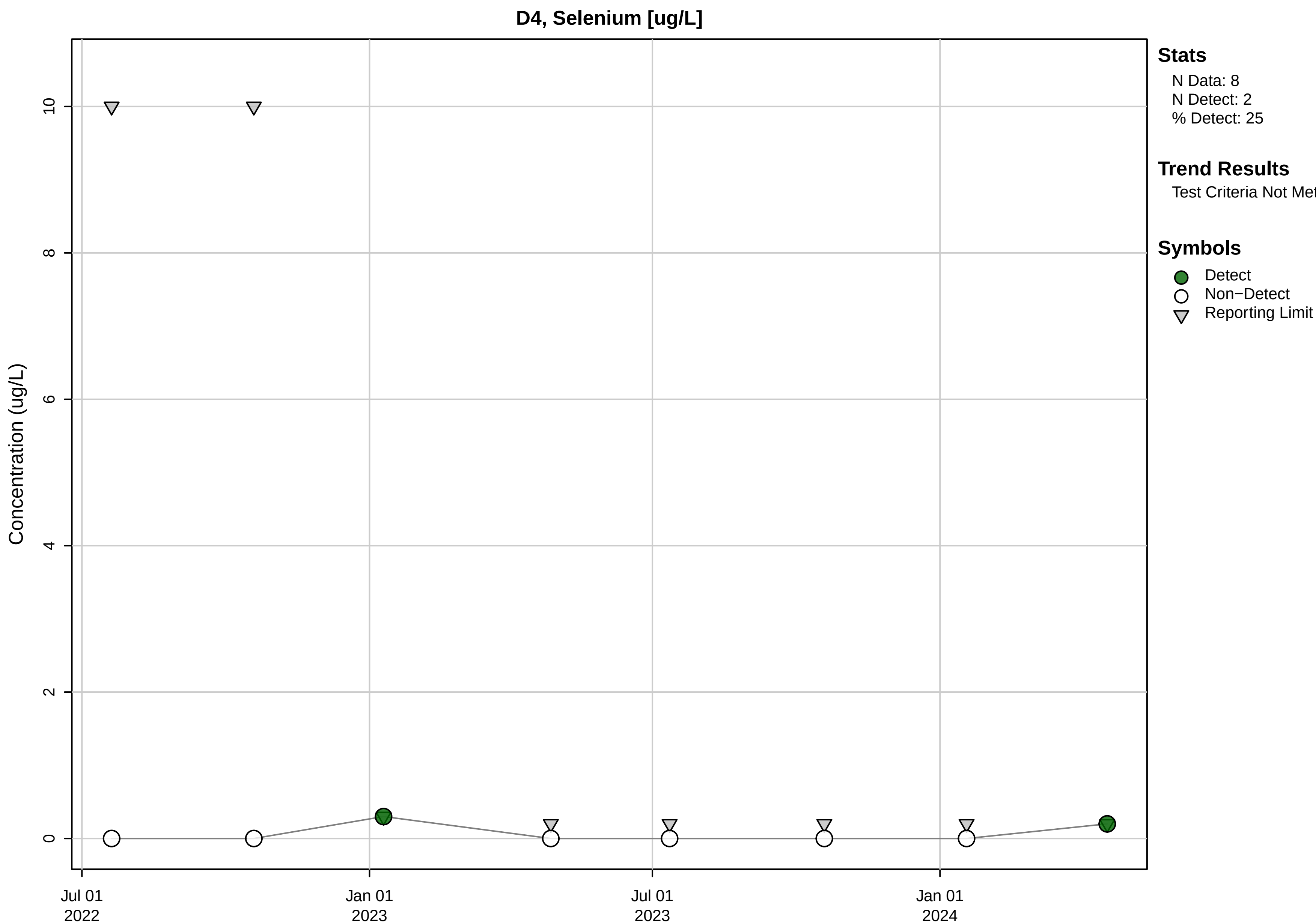
D4, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

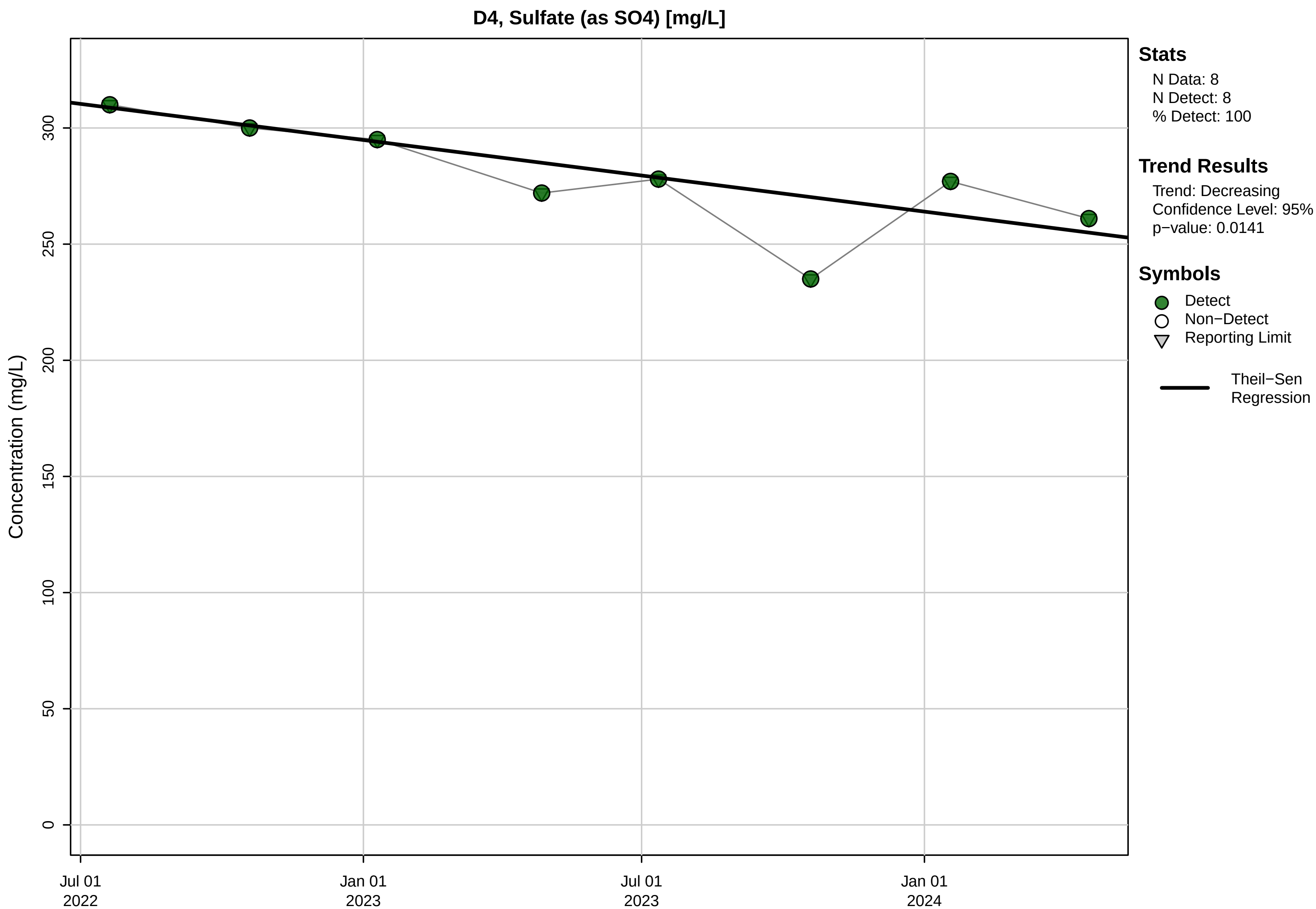


D4, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

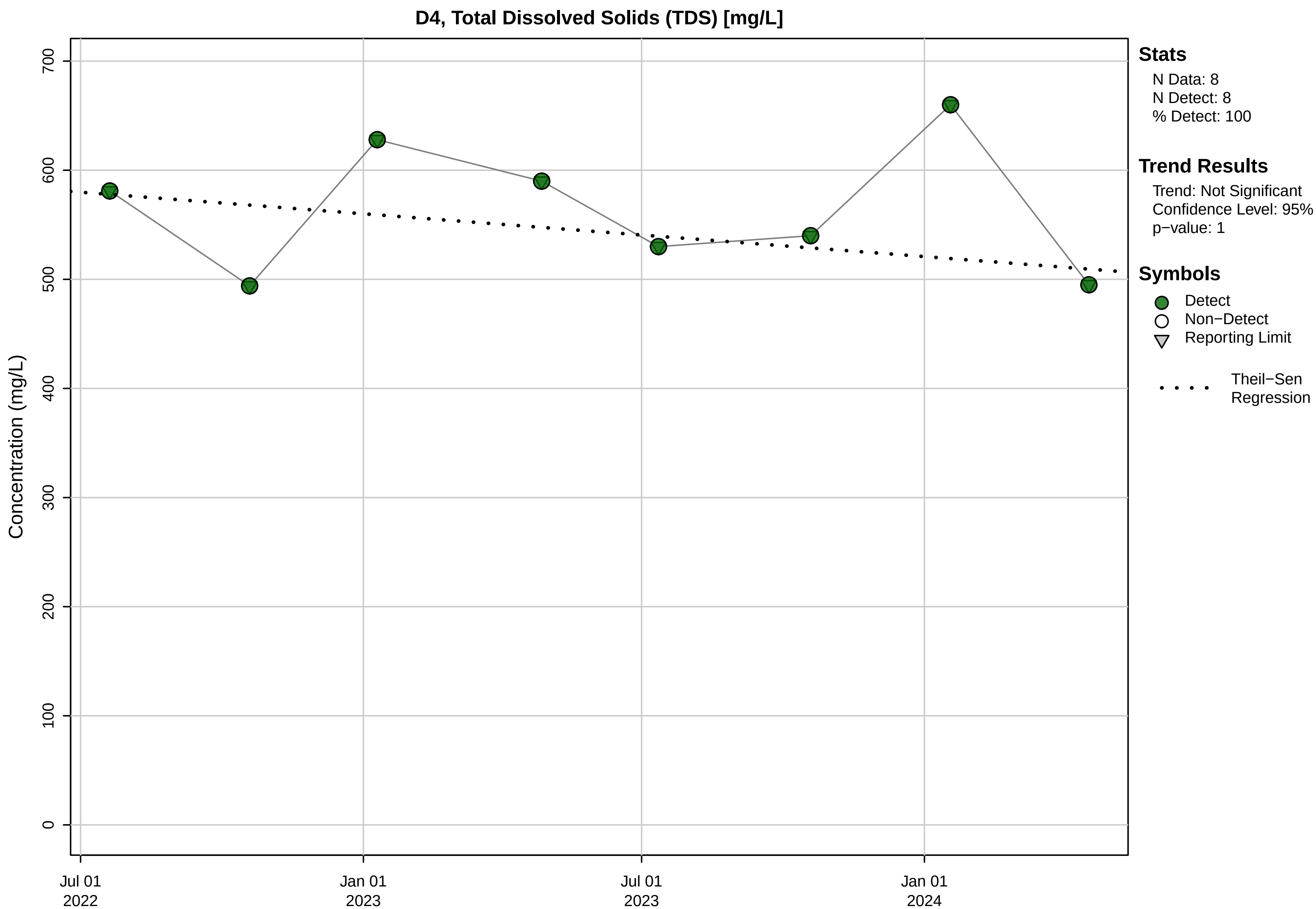


D4, Nickel [ug/L]
Concentration (ug/L)
0
5
10
15
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.304
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

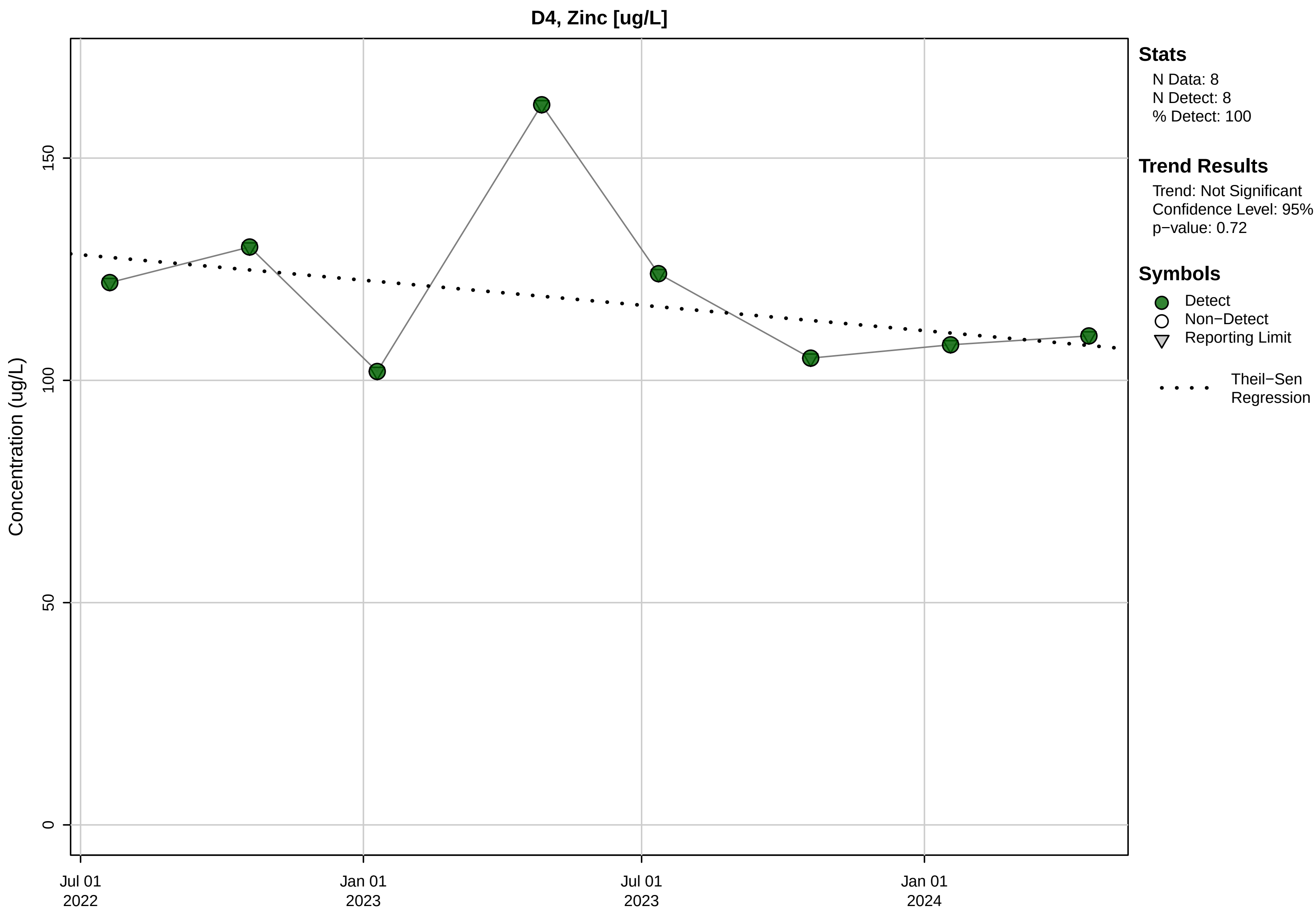

D4, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



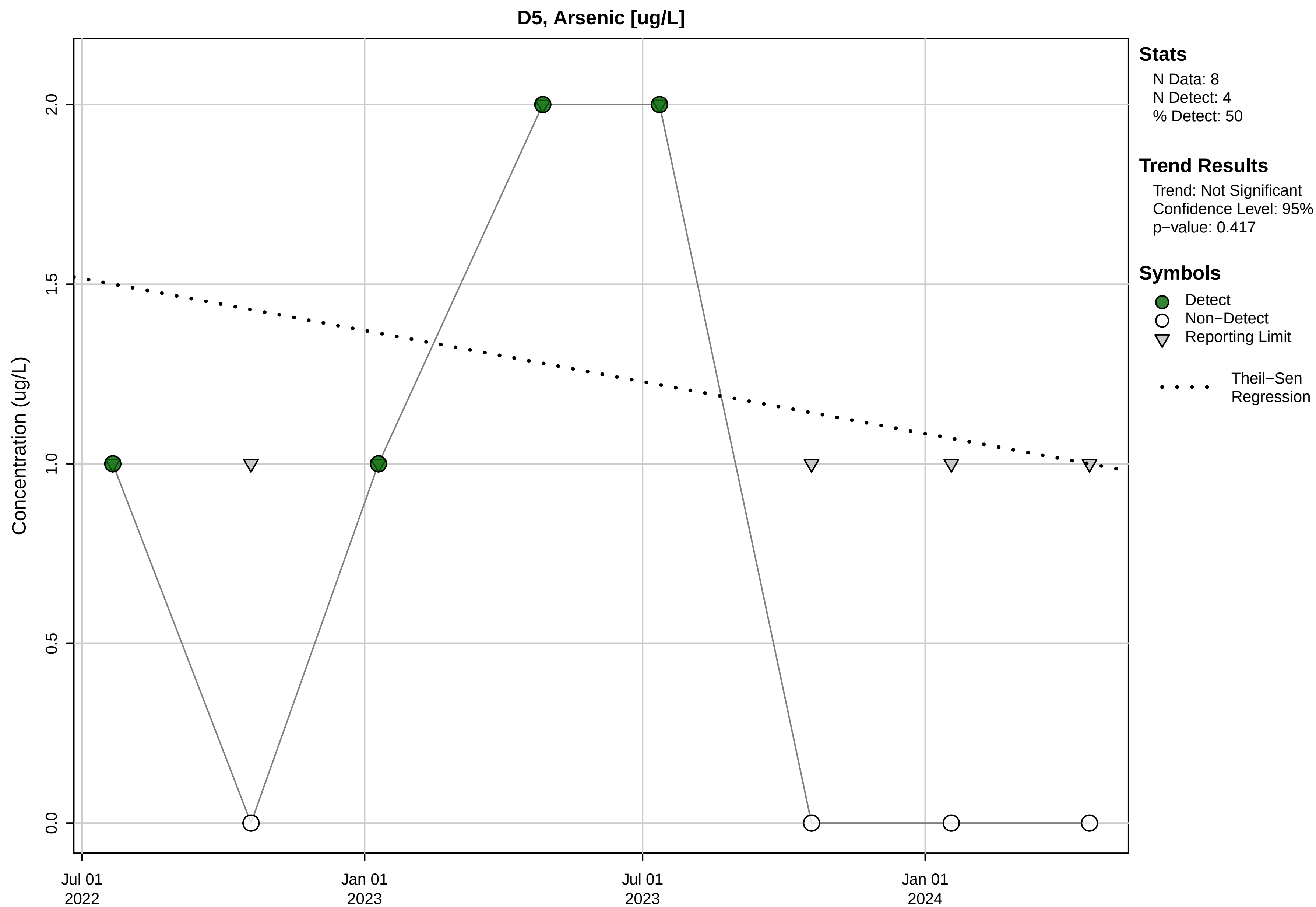
D4, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
50
100
150
200
250
300
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0141
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



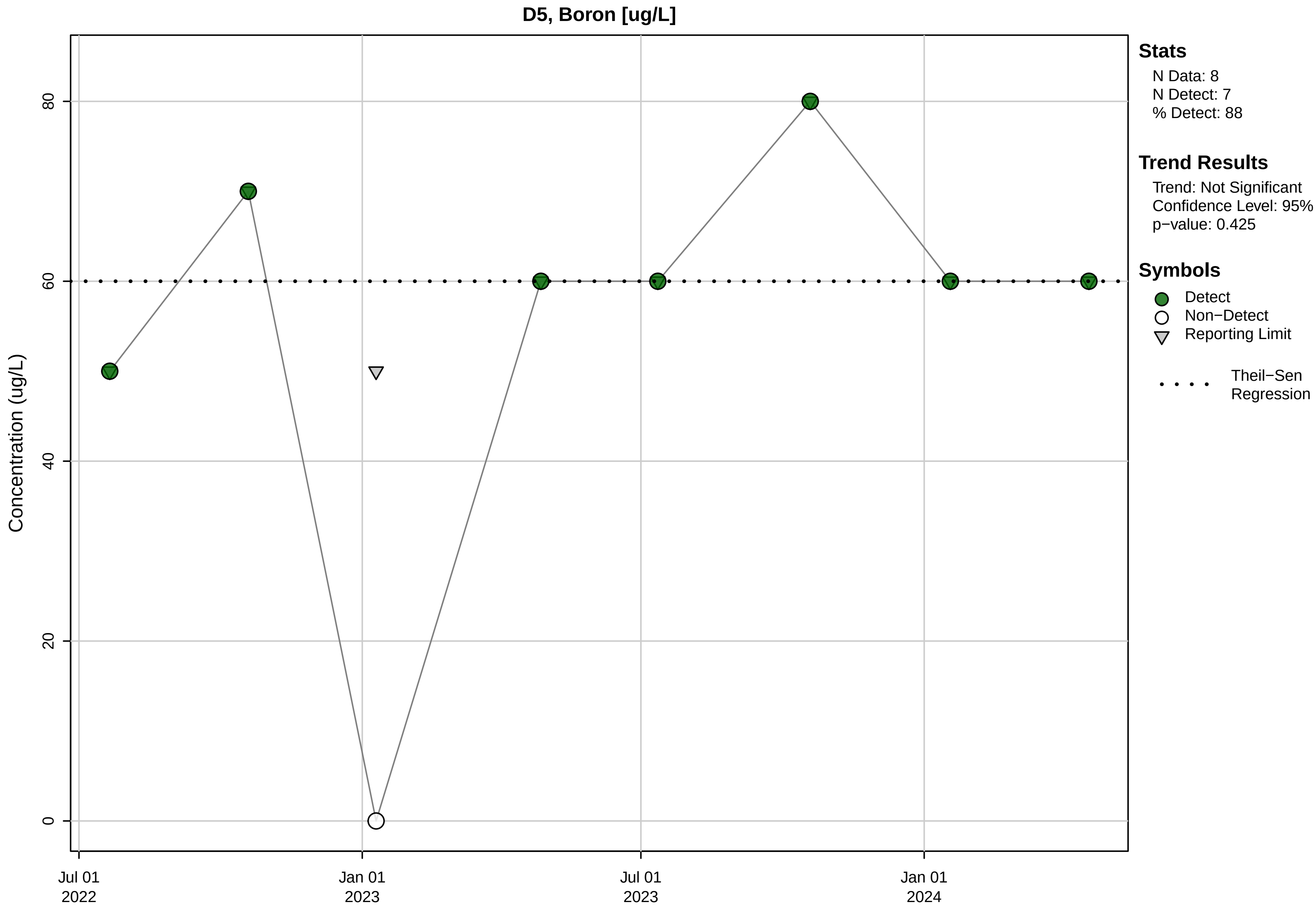
D4, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
100
200
300
400
500
600
700
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



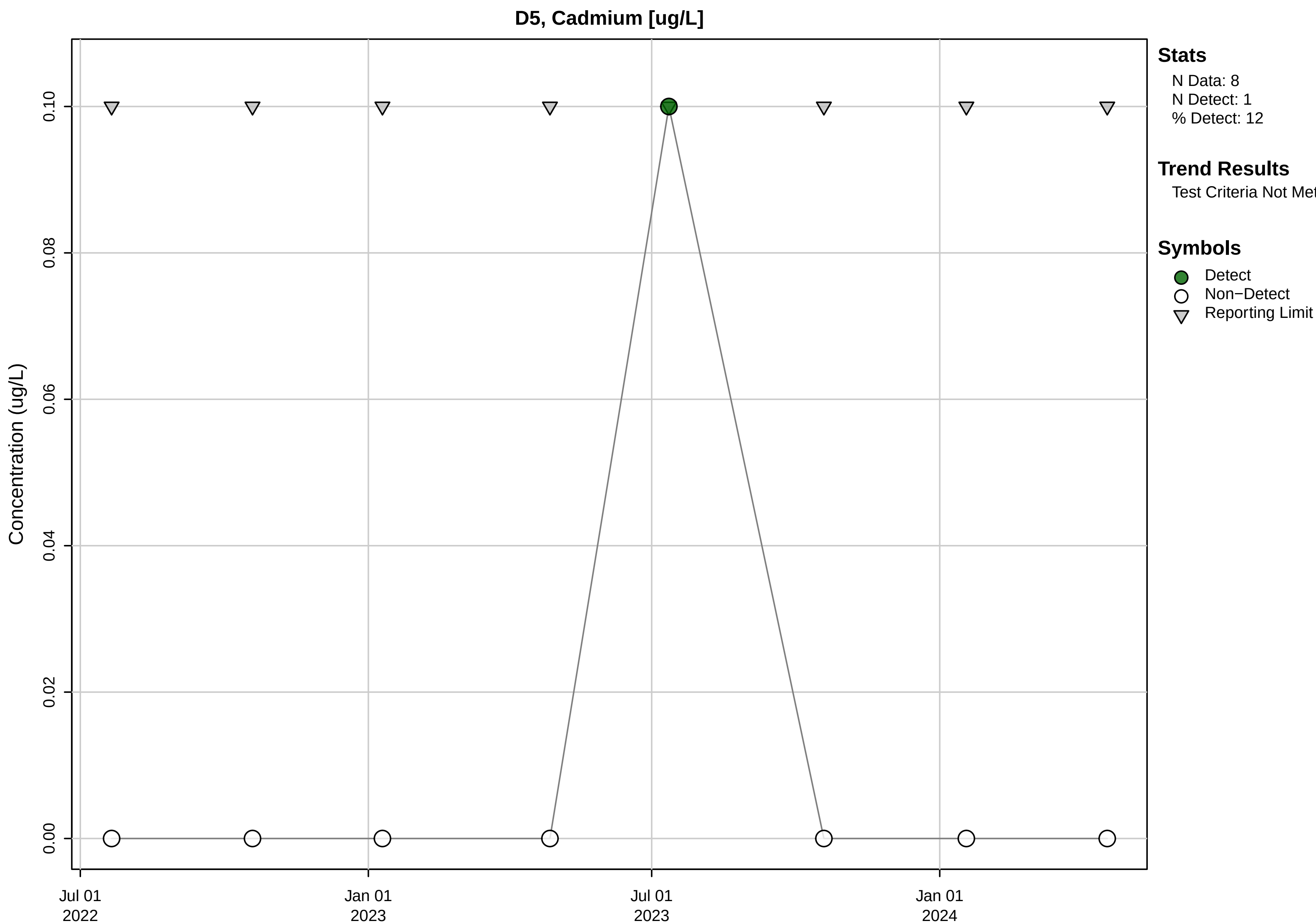
D4, Zinc [ug/L]
Concentration (ug/L)
0
50
100
150
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



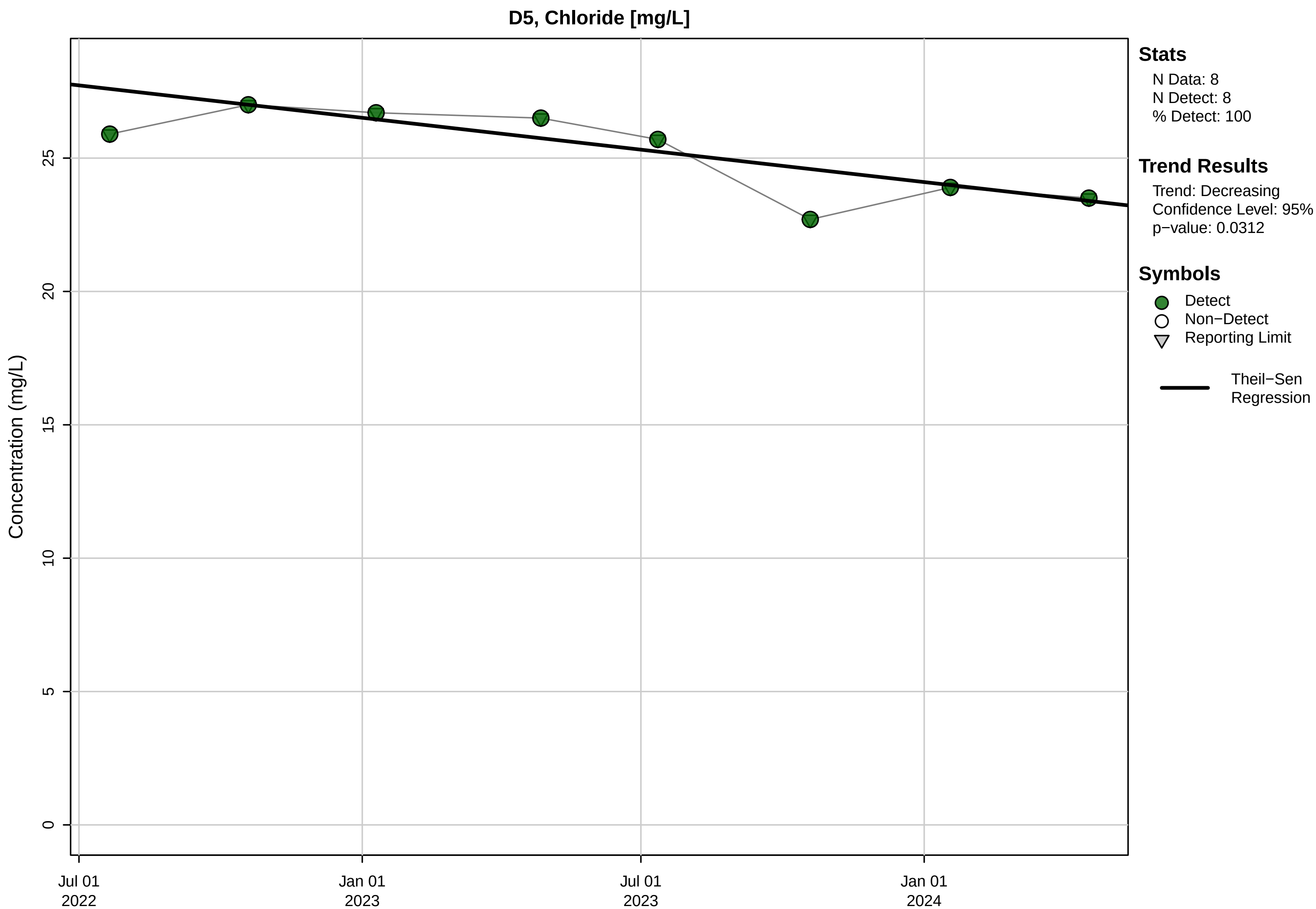
D5, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.417
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

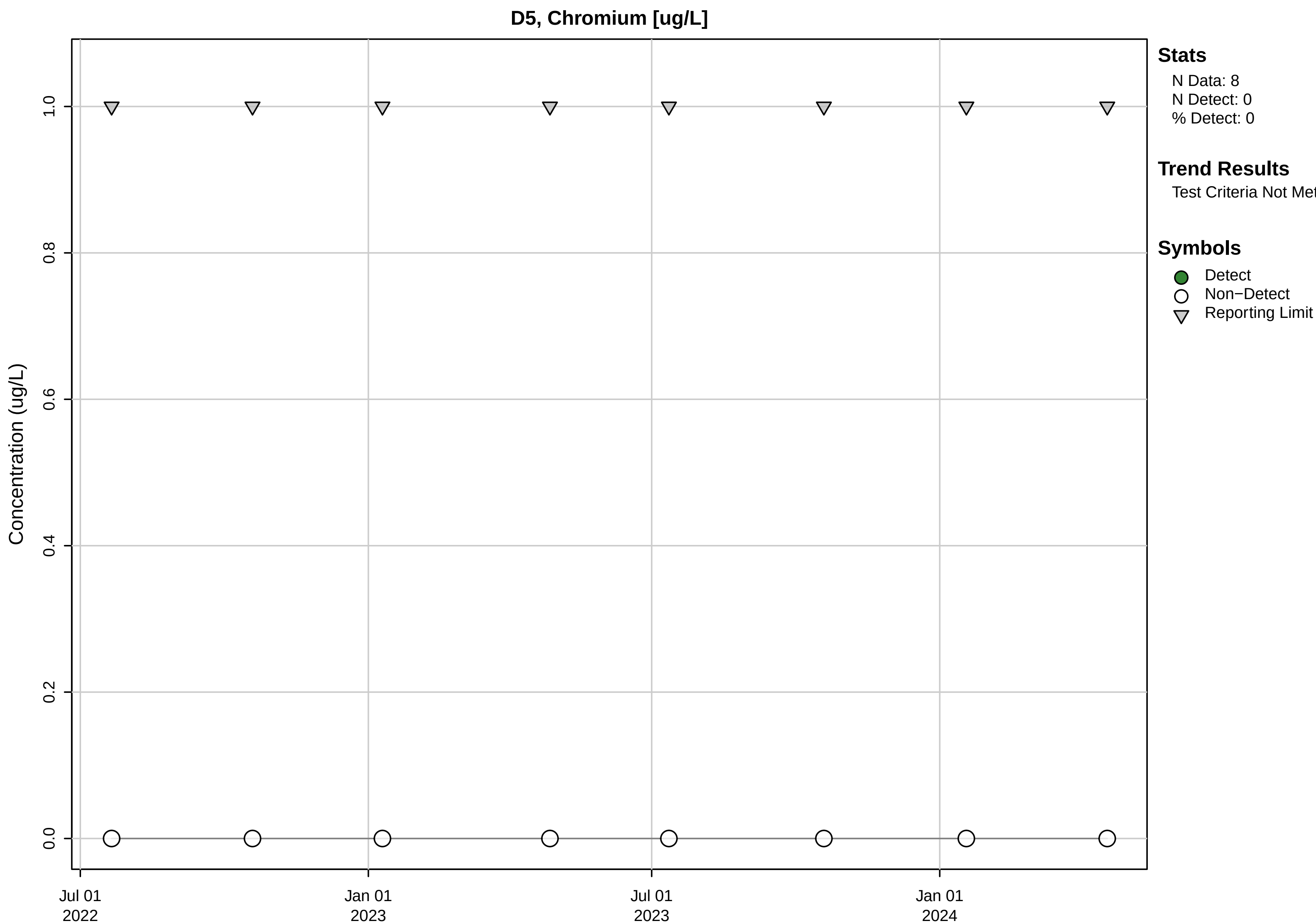


D5, Boron [ug/L]
Concentration (ug/L)
0
20
40
60
80
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 7
% Detect: 88
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.425
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

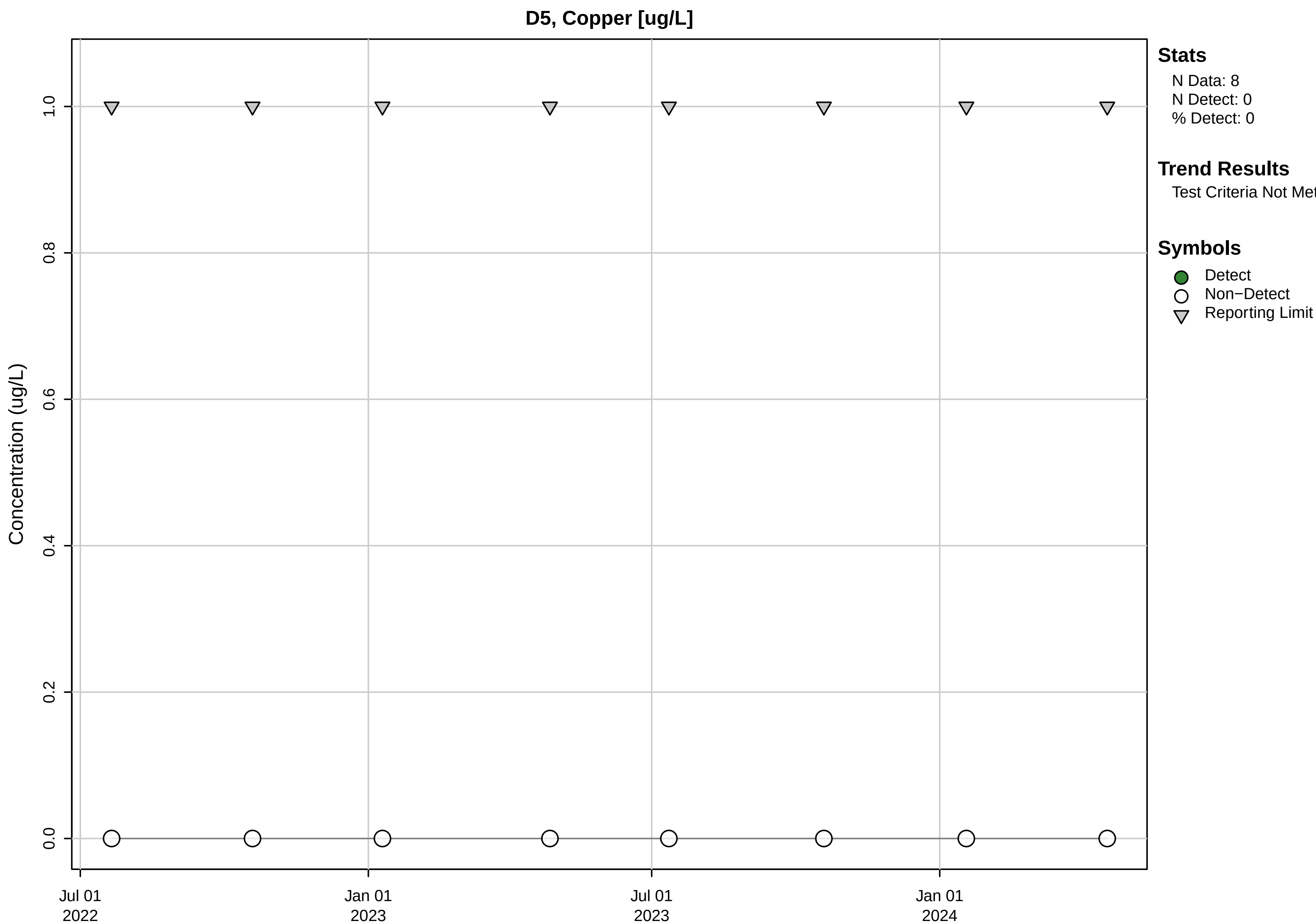


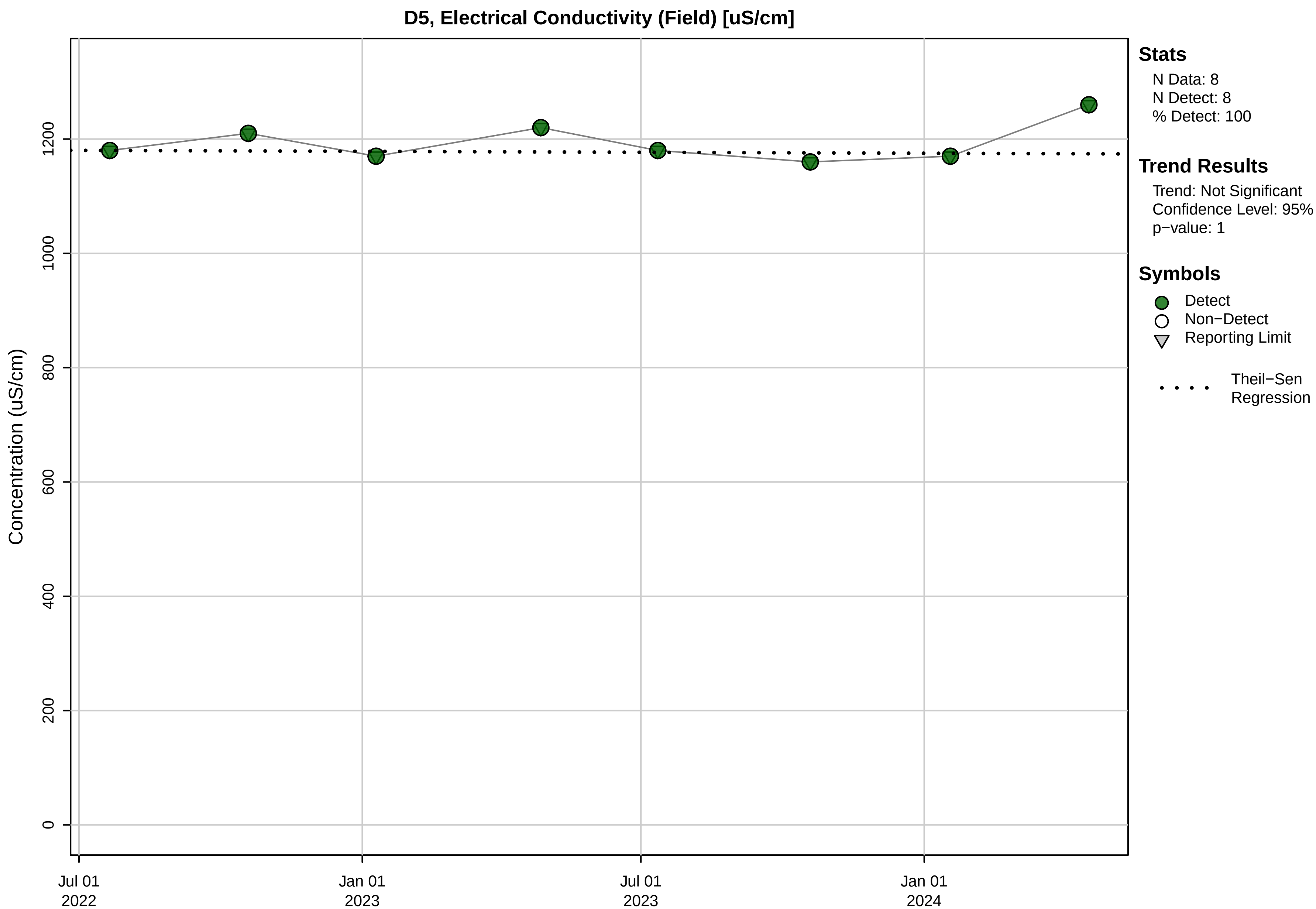
D5, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.02
0.04
0.06
0.08
0.10
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D5, Chloride [mg/L]
Concentration (mg/L)
0
5
10
15
20
25
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

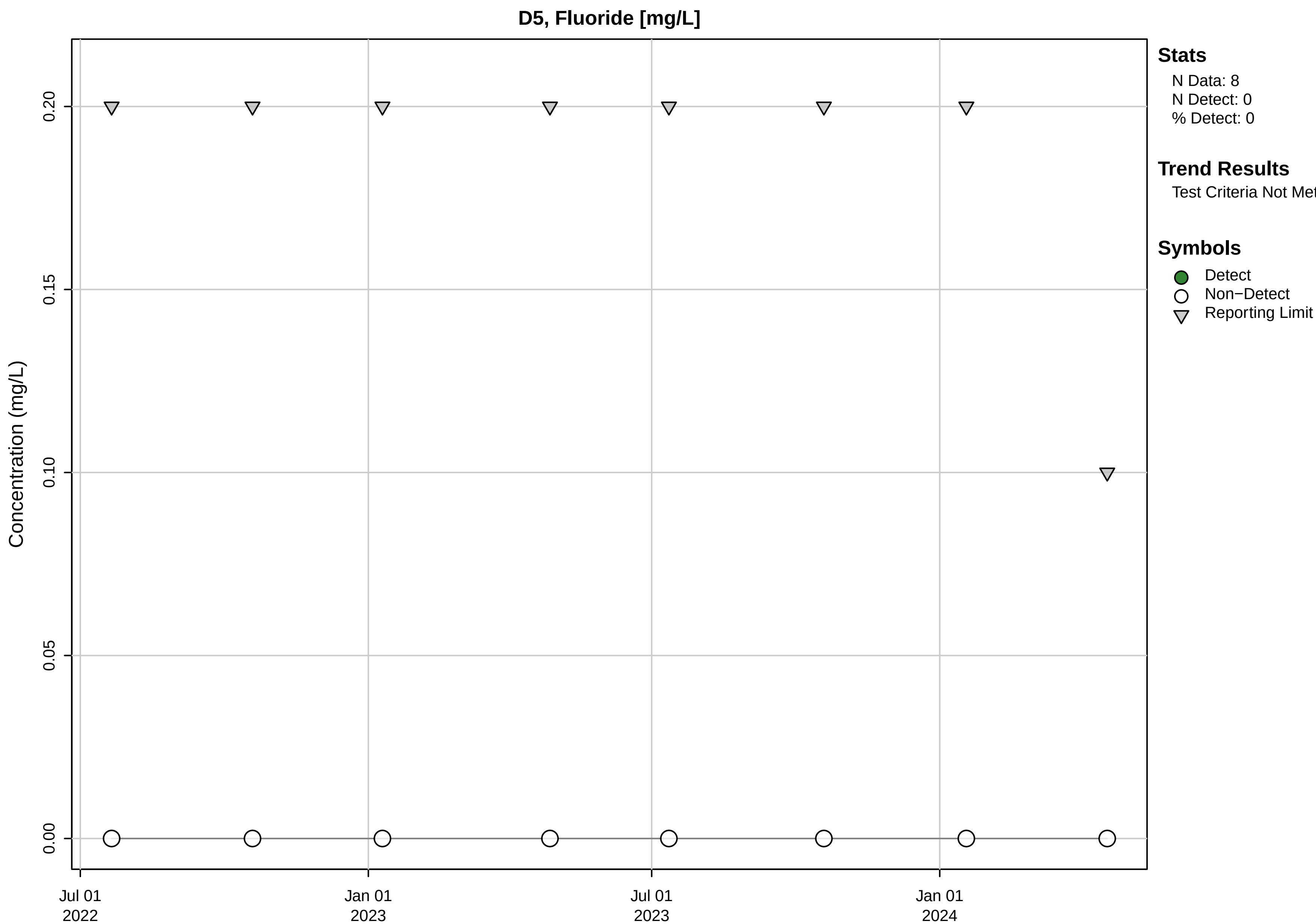


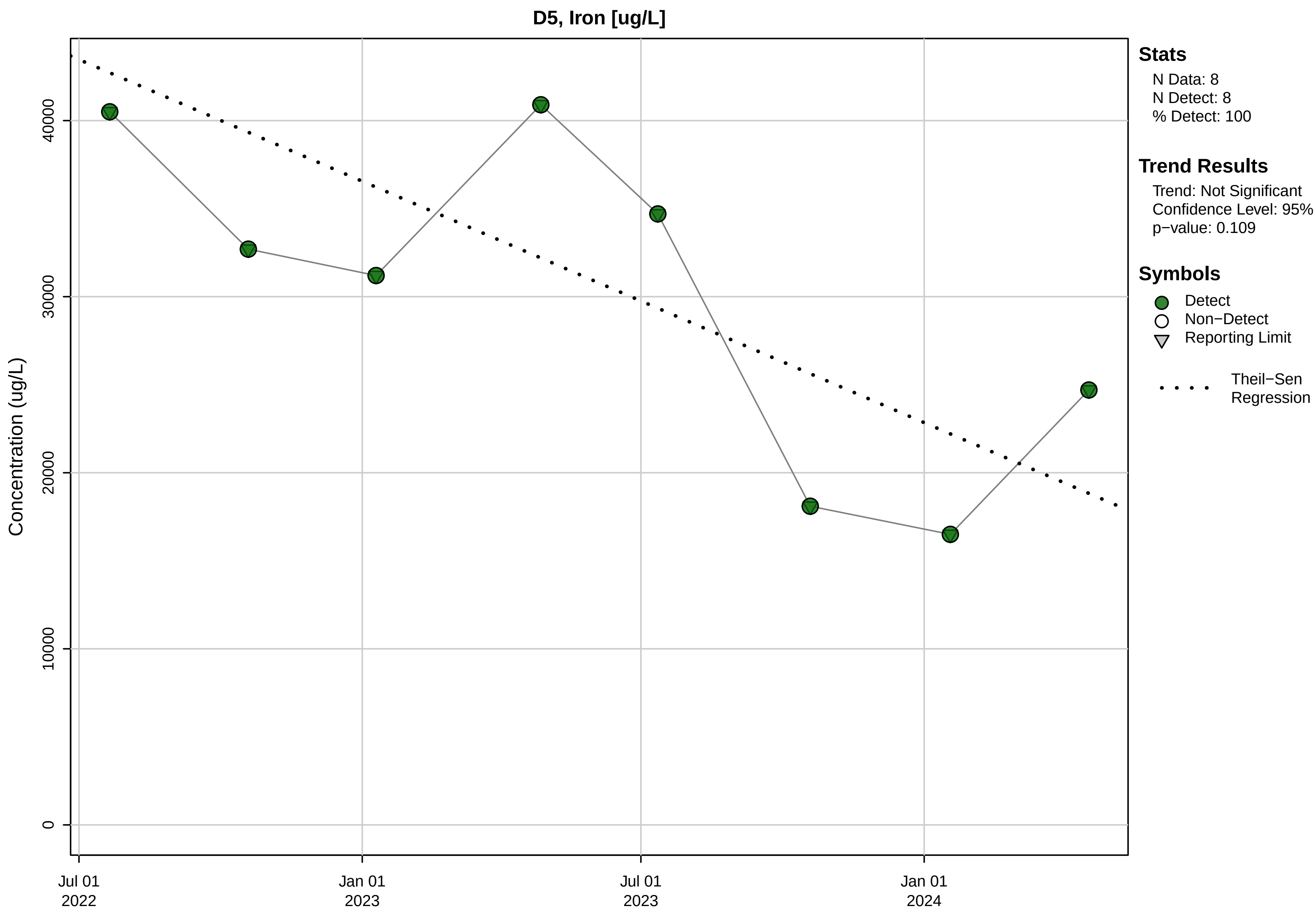
D5, Chromium [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

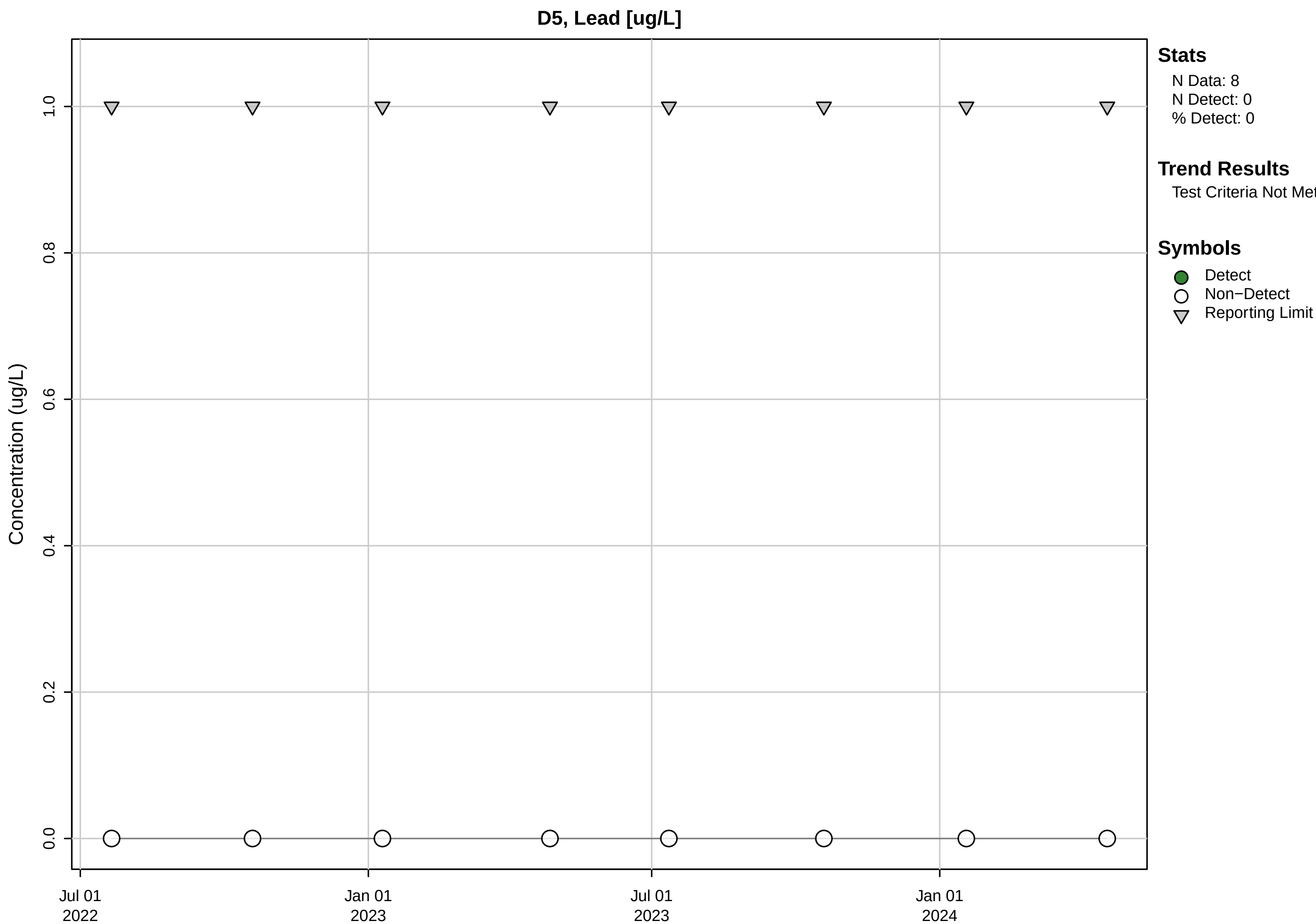

D5, Copper [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

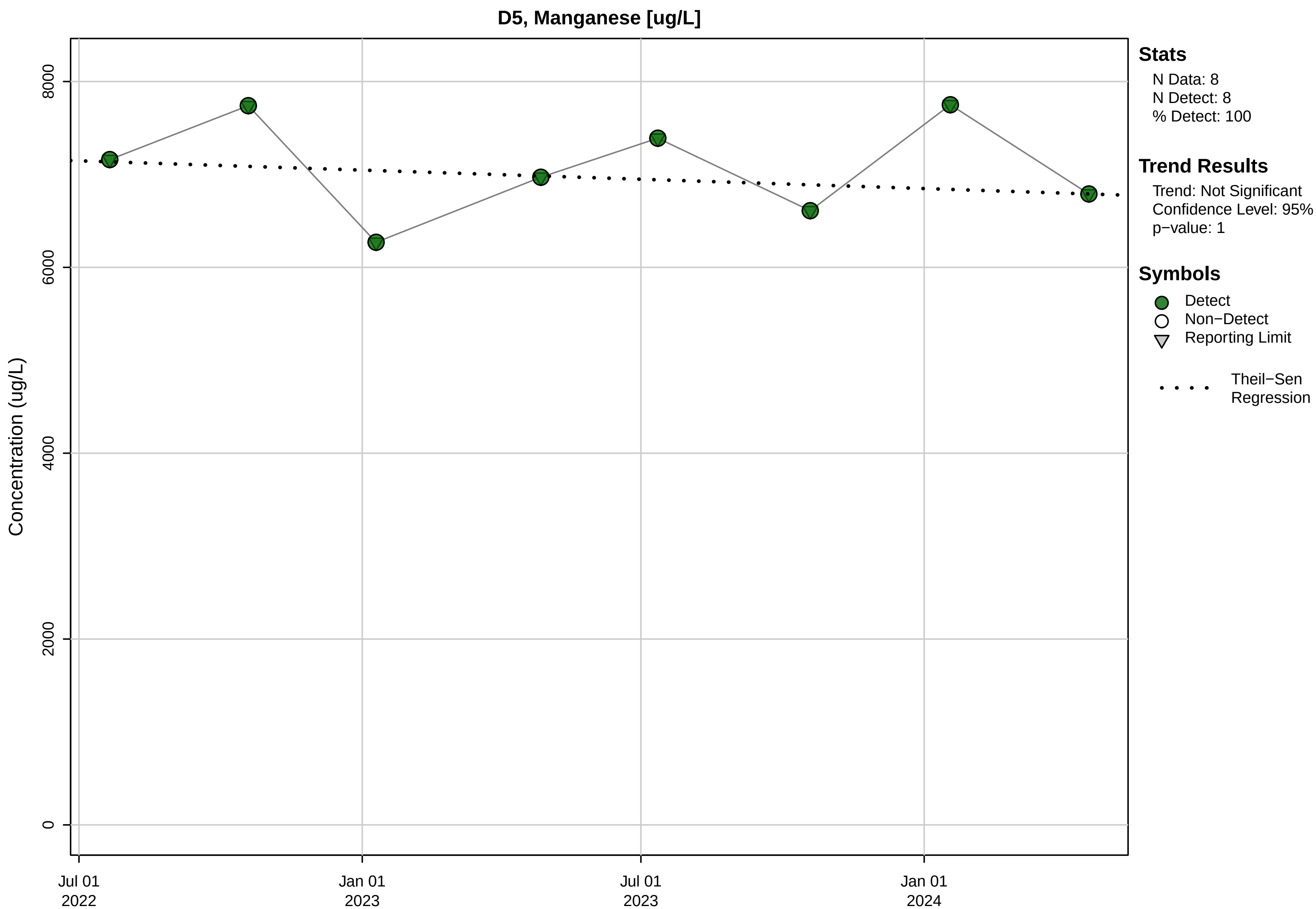


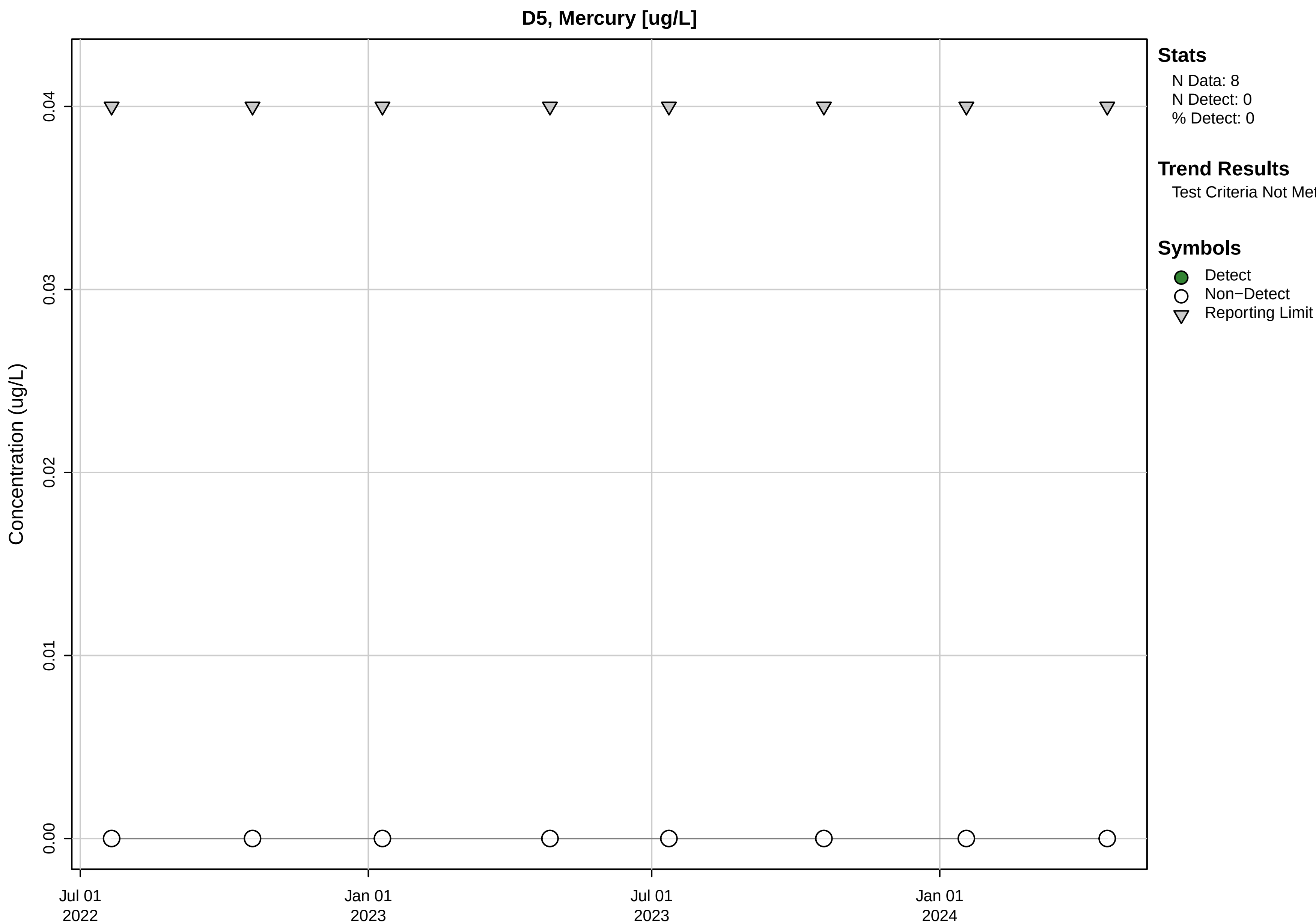
D5, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
200
400
600
800
1000
1200
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

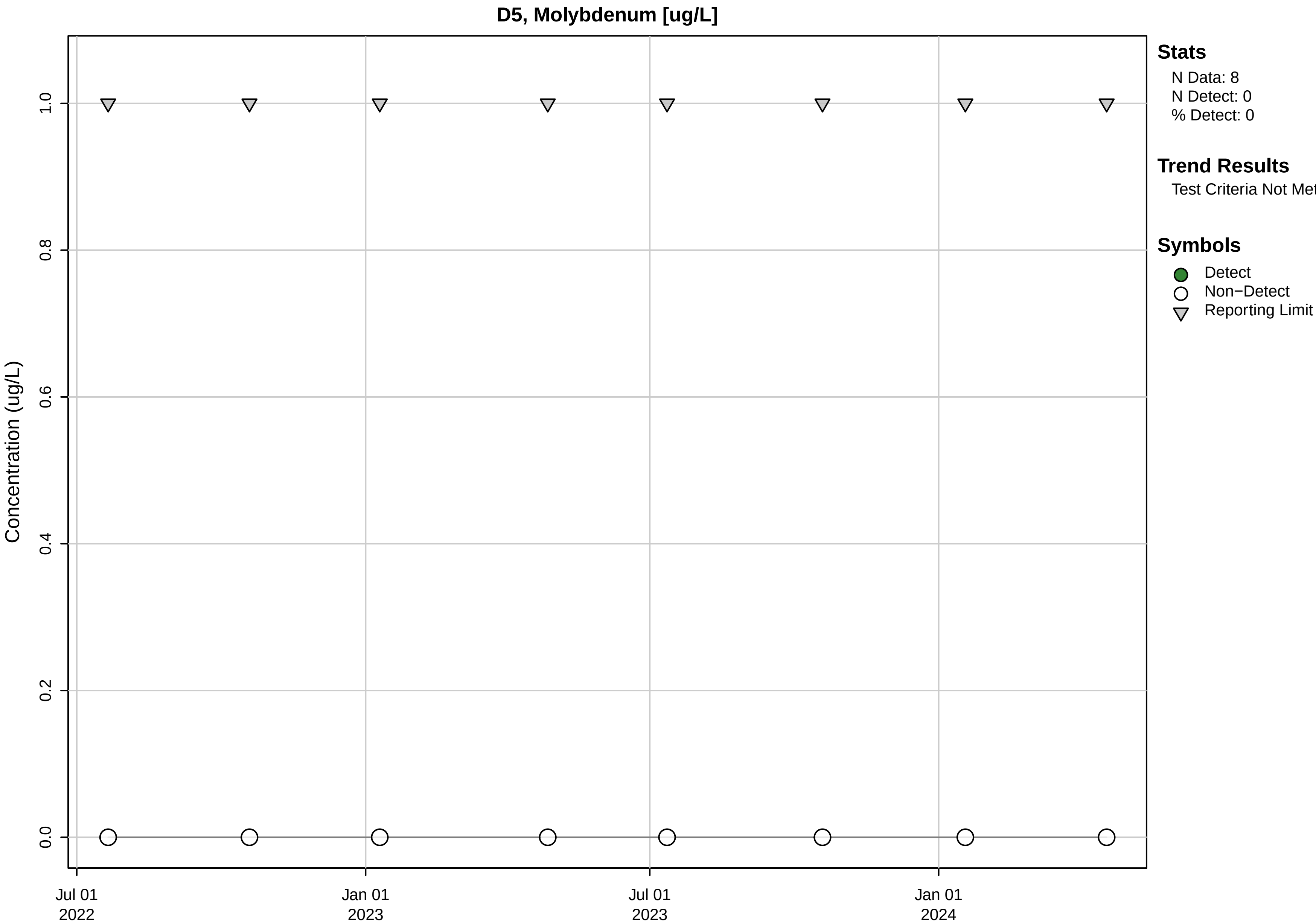

D5, Fluoride [mg/L]
Concentration (mg/L)
0.00
0.05
0.10
0.15
0.20
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

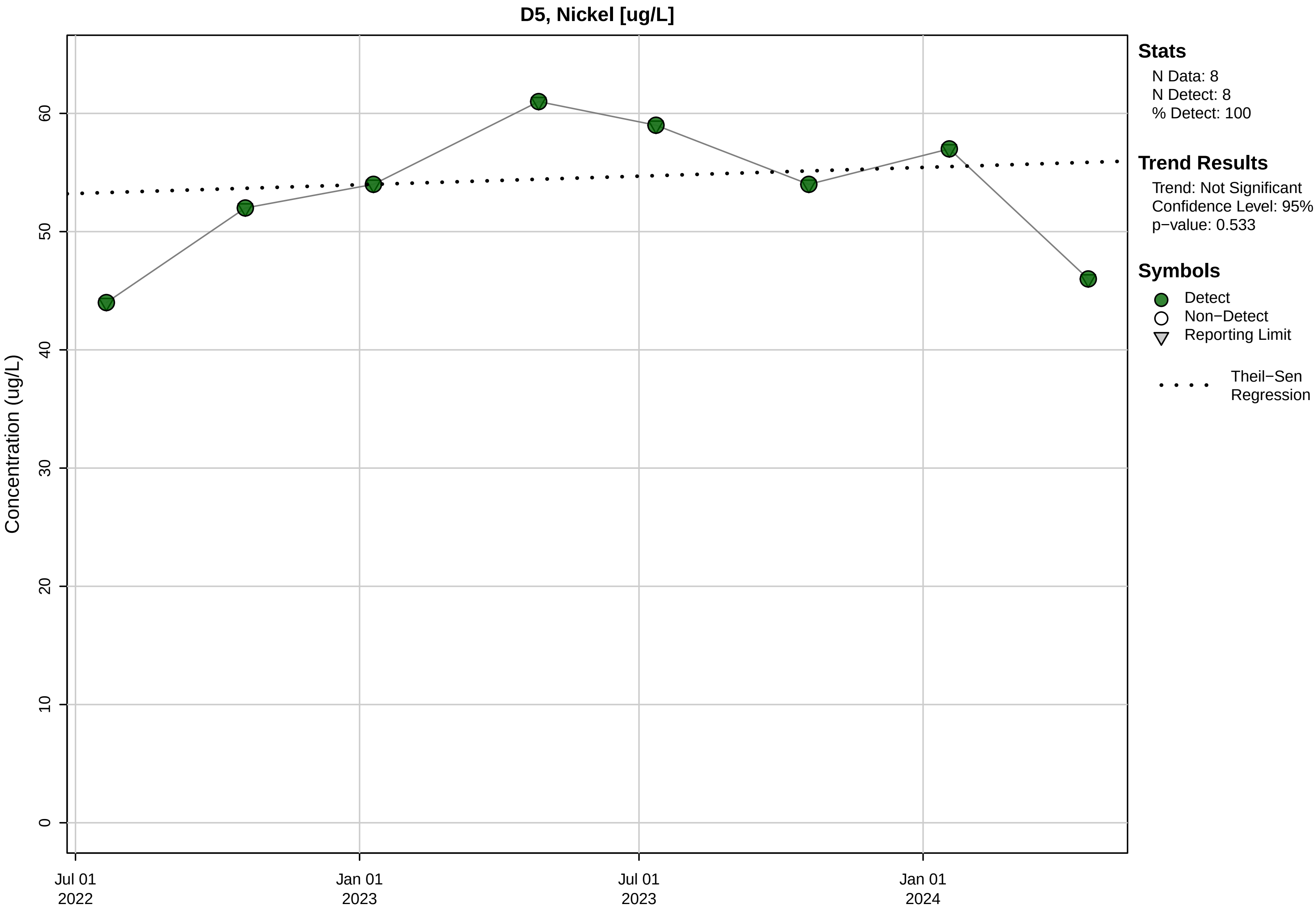

D5, Iron [ug/L]
Concentration (ug/L)
0
10000
20000
30000
40000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D5, Lead [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

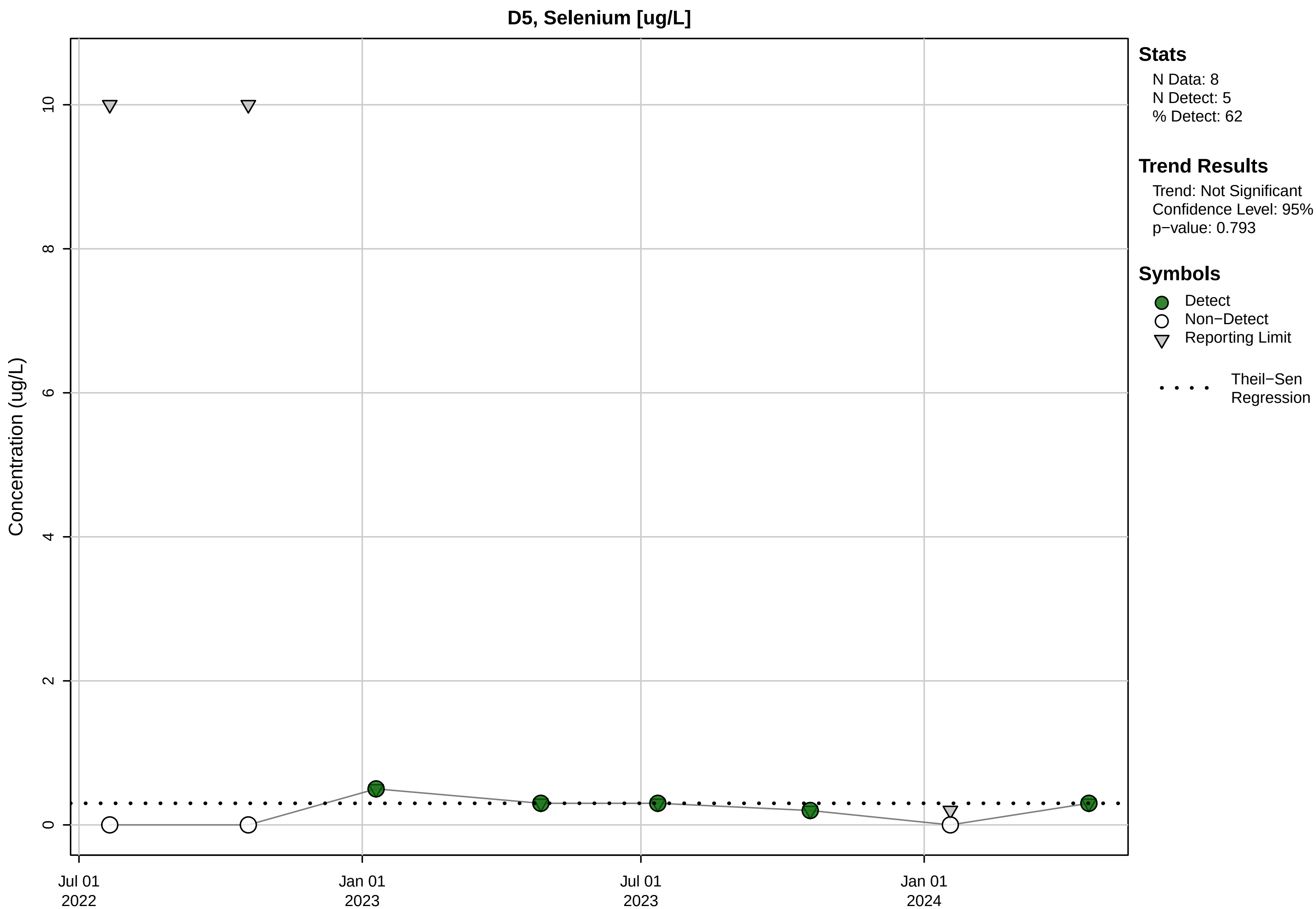

D5, Manganese [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 1
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

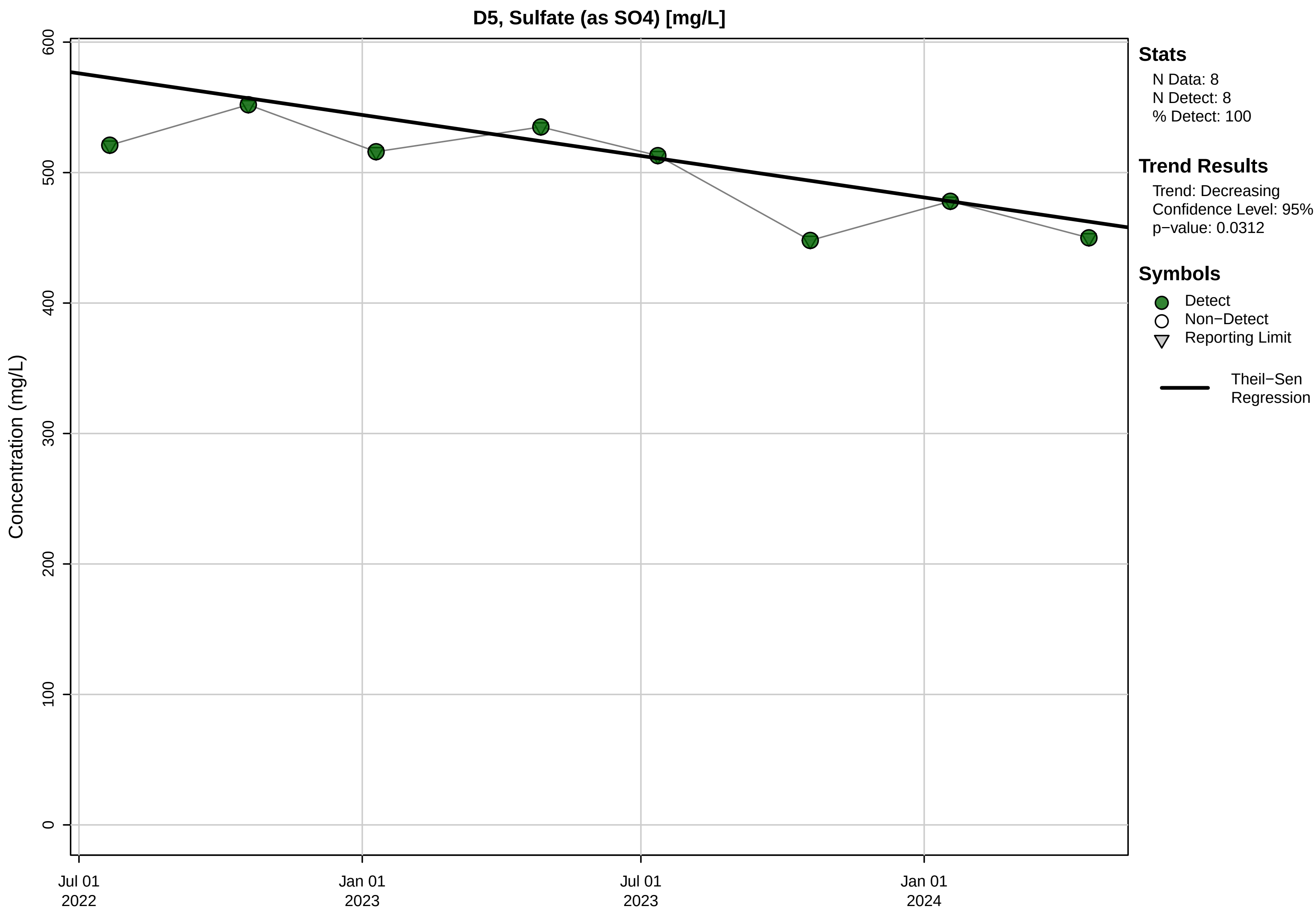

D5, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D5, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

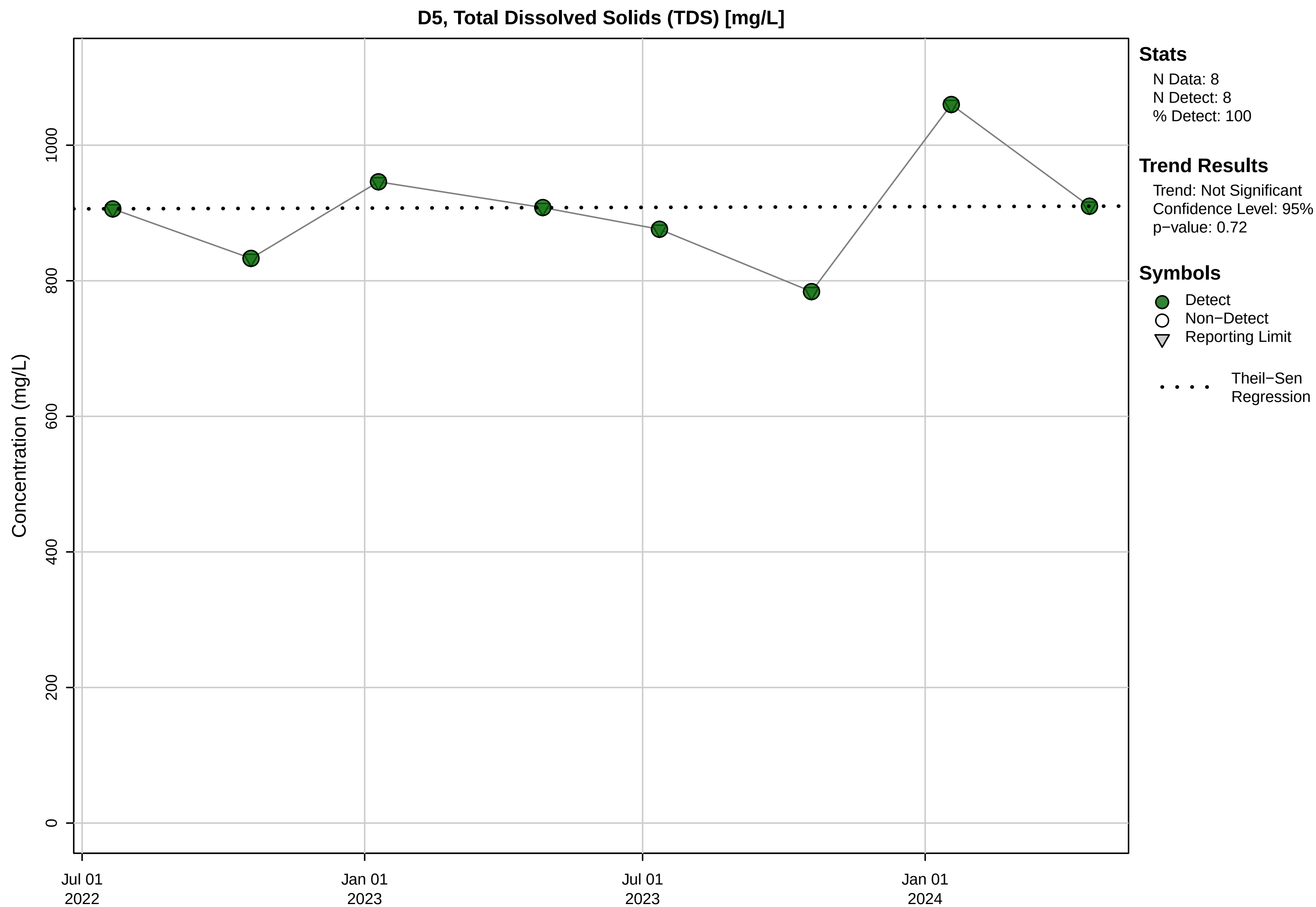


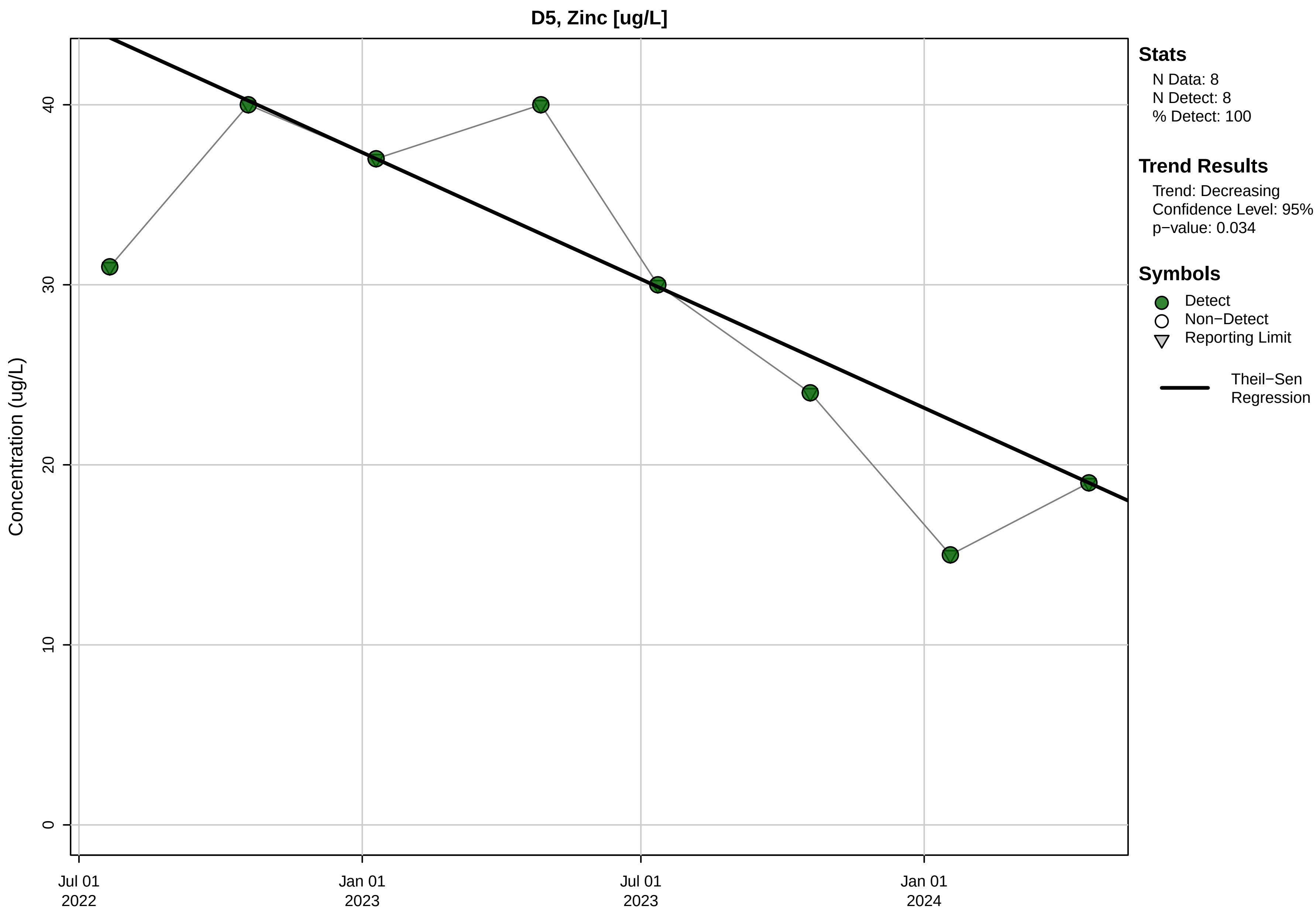
D5, Nickel [ug/L]
Concentration (ug/L)
0
10
20
30
40
50
60
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.533
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D5, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 5
% Detect: 62
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.793
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

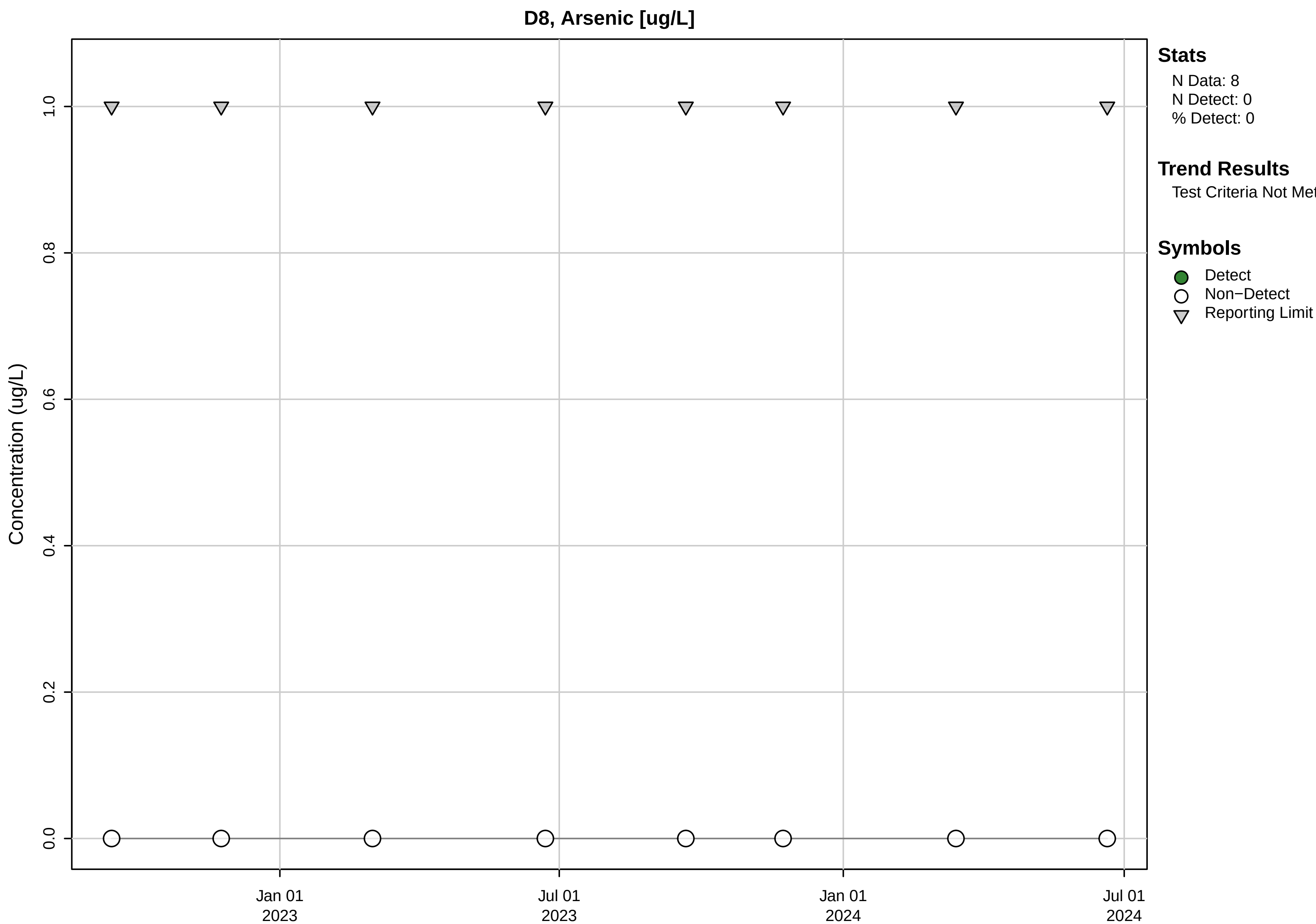


D5, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
600
500
400
300
200
100
0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0312
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

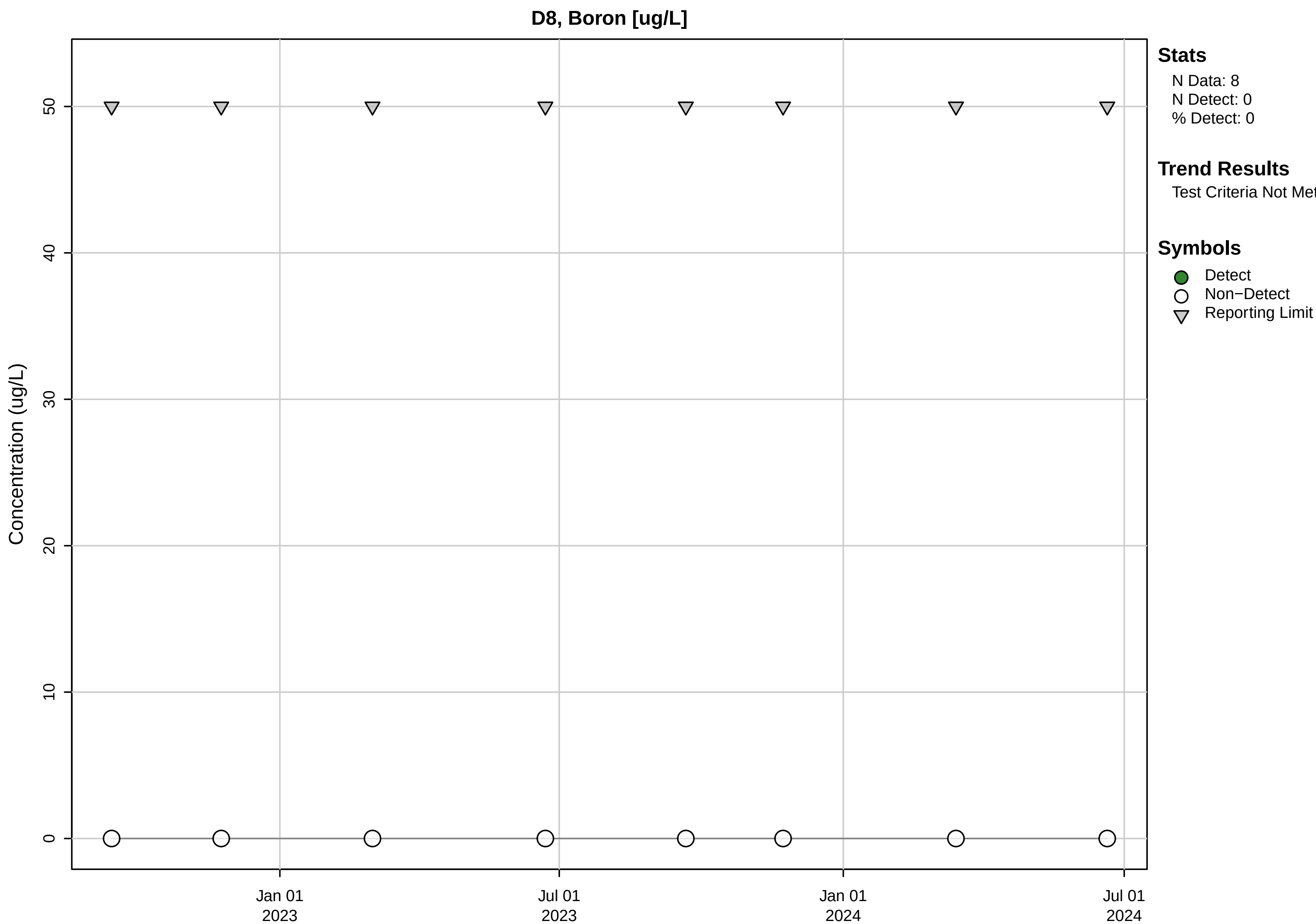

D5, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
200
400
600
800
1000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.72
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

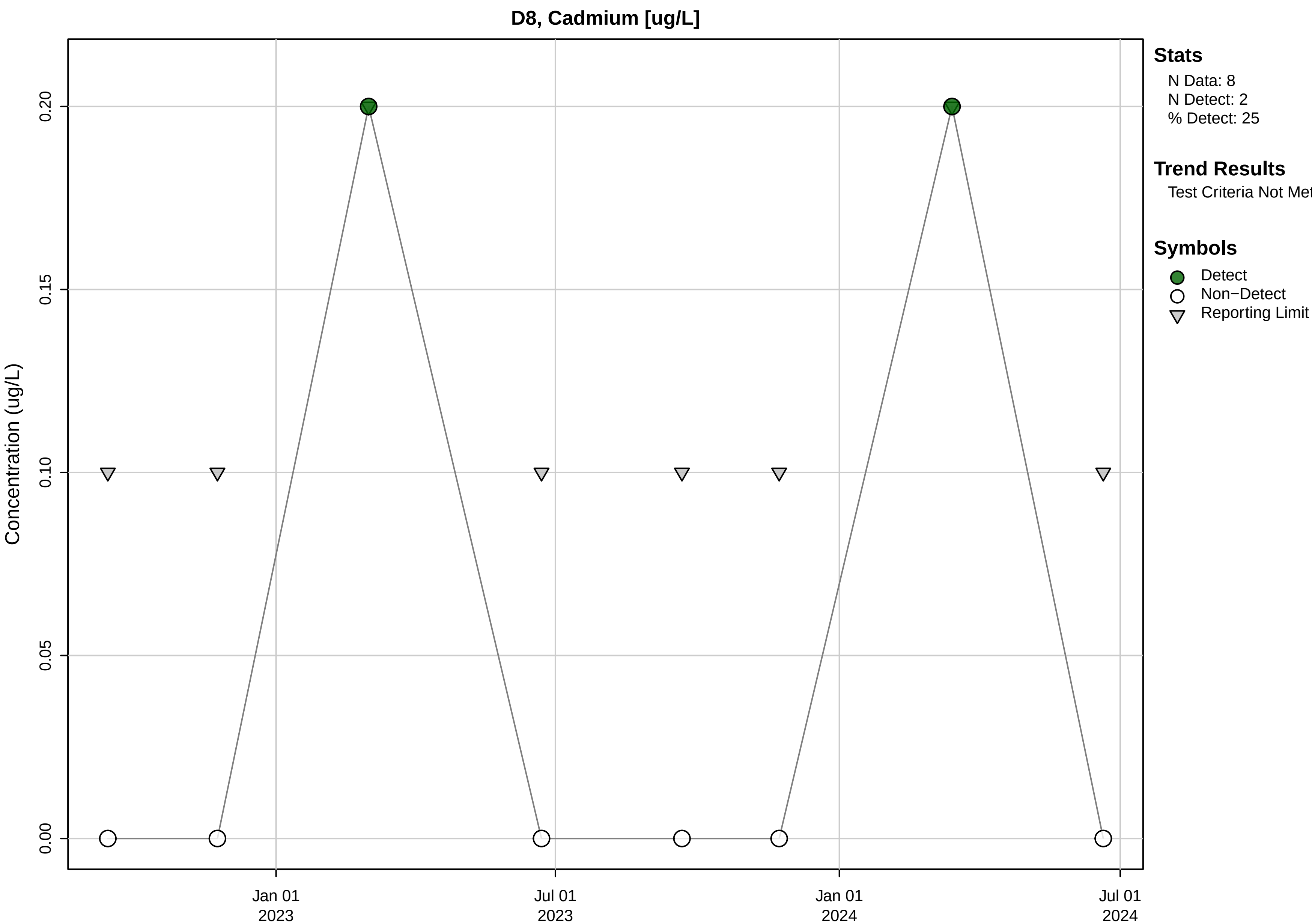


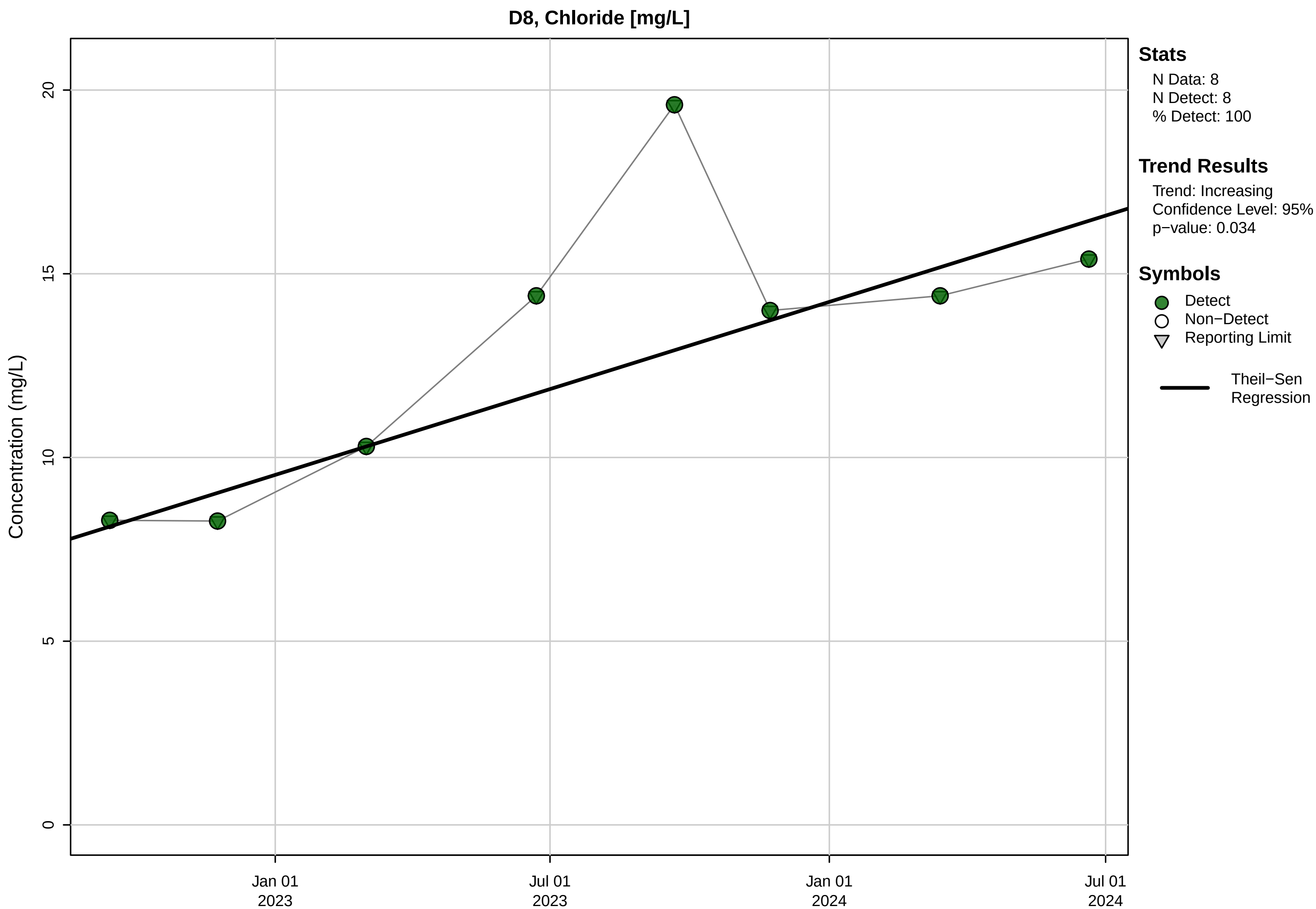
D5, Zinc [ug/L]
Concentration (ug/L)
0
10
20
30
40
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.034
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



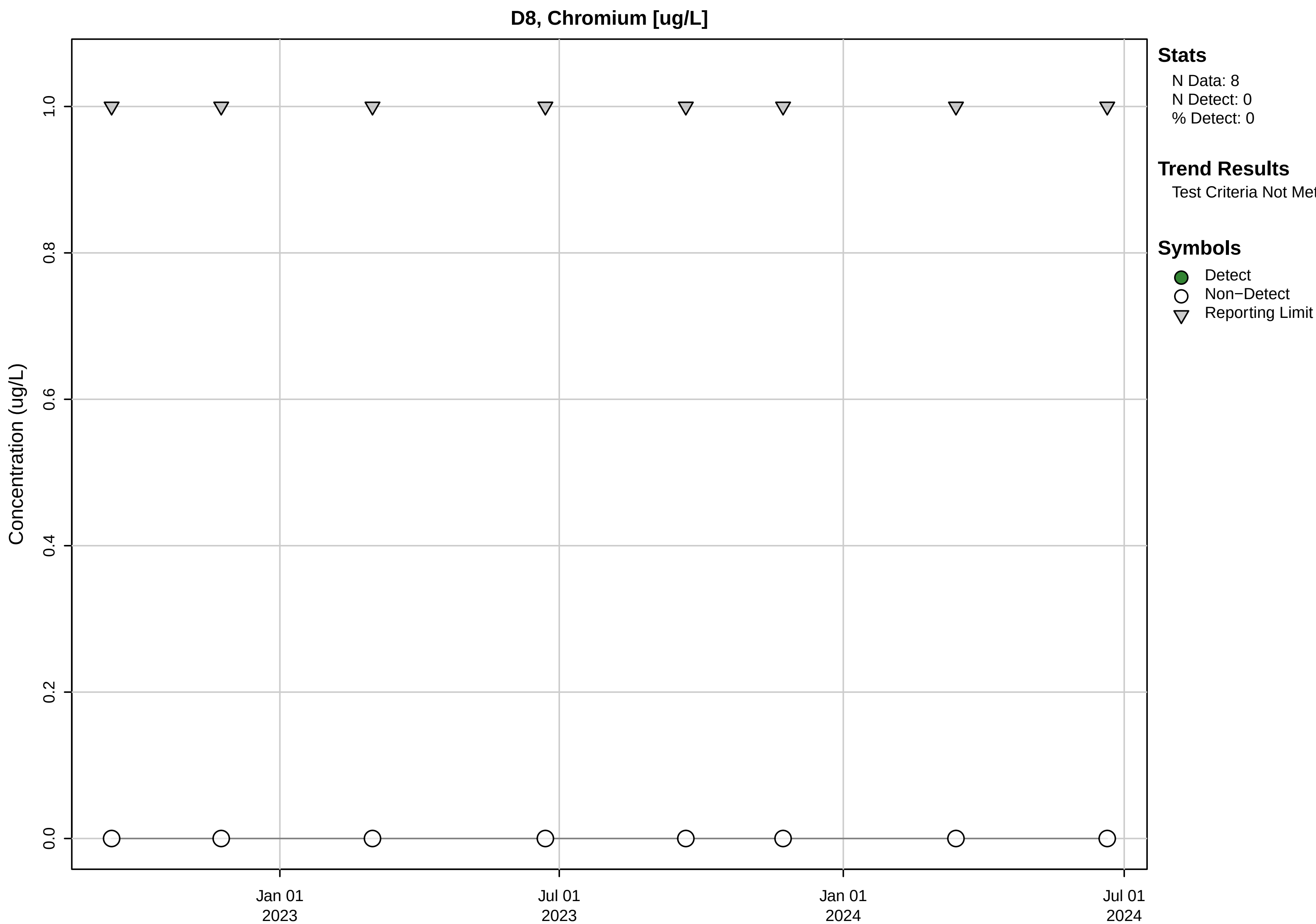
D8, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

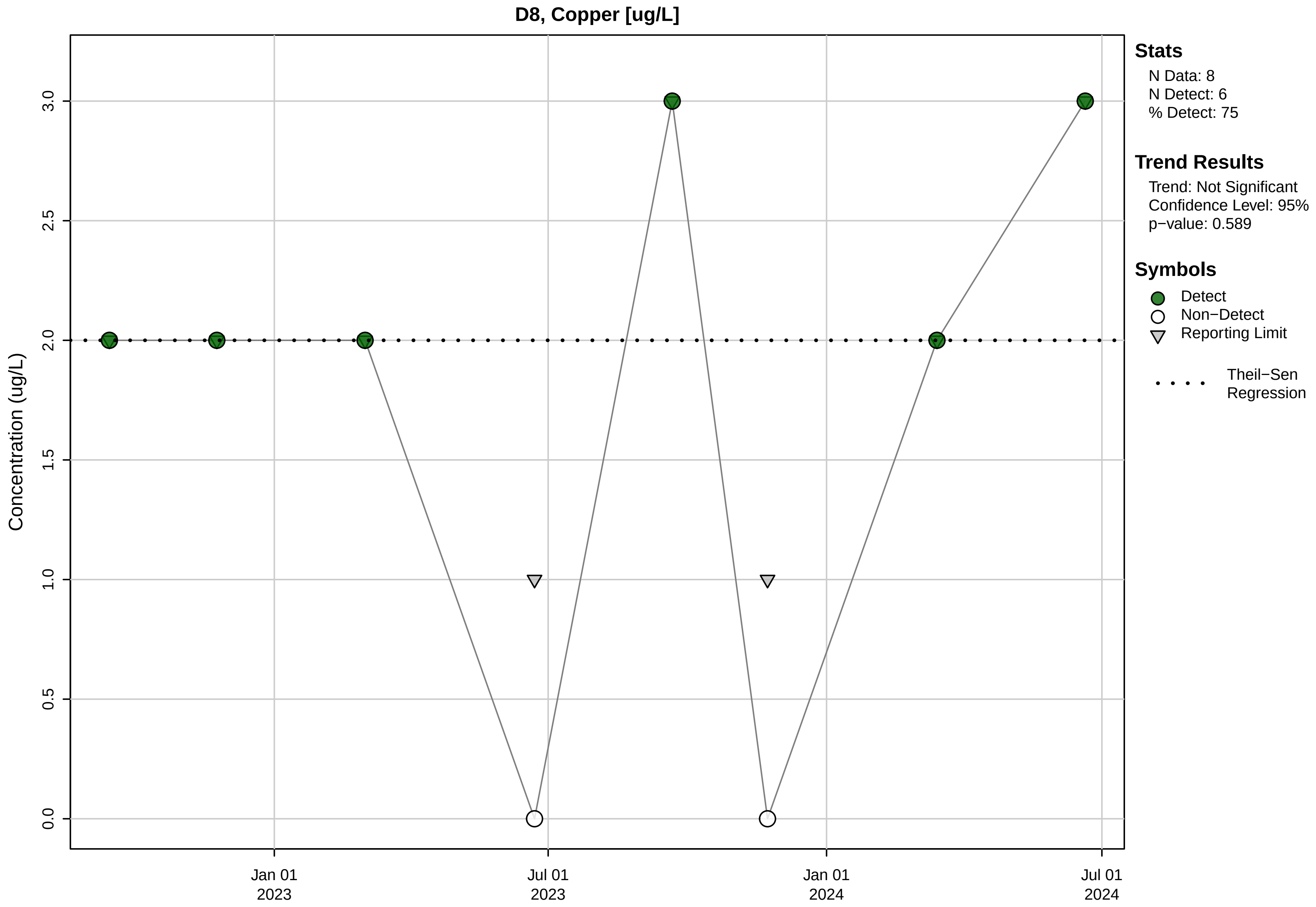

D8, Boron [ug/L]
Concentration (ug/L)
0
10
20
30
40
50
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D8, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.05
0.10
0.15
0.20
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

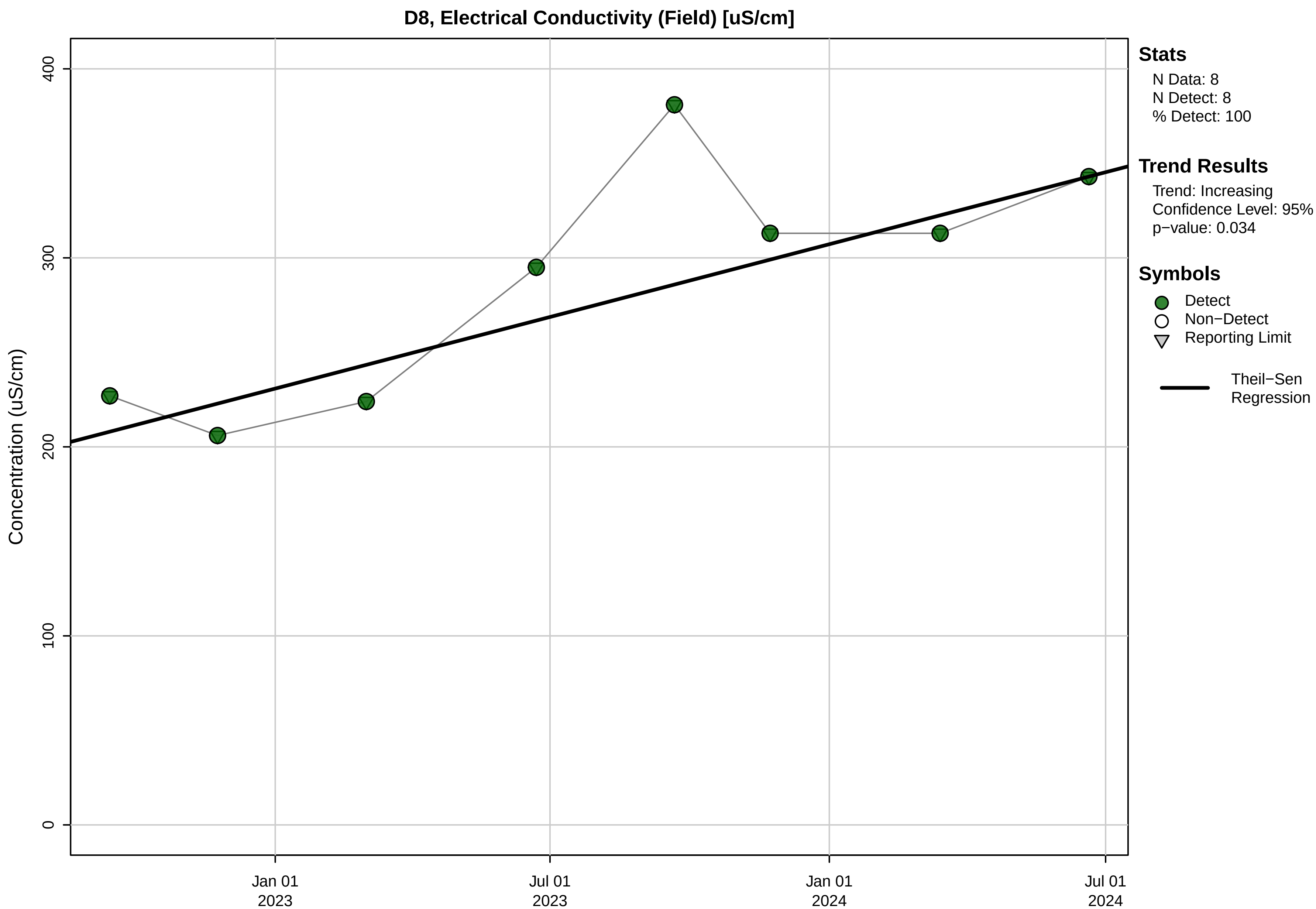


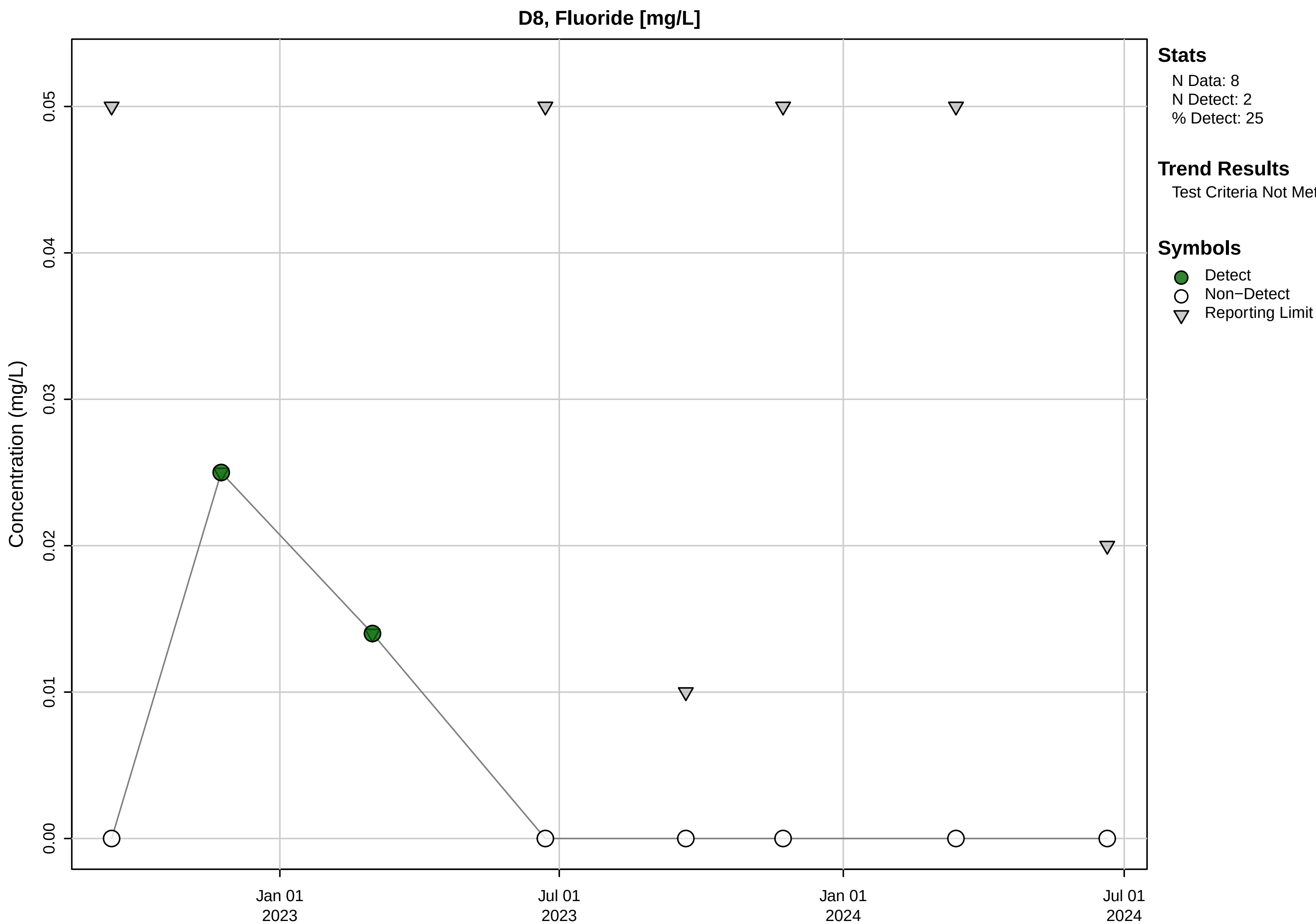
D8, Chloride [mg/L]
Concentration (mg/L)
0
5
10
15
20
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.034
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

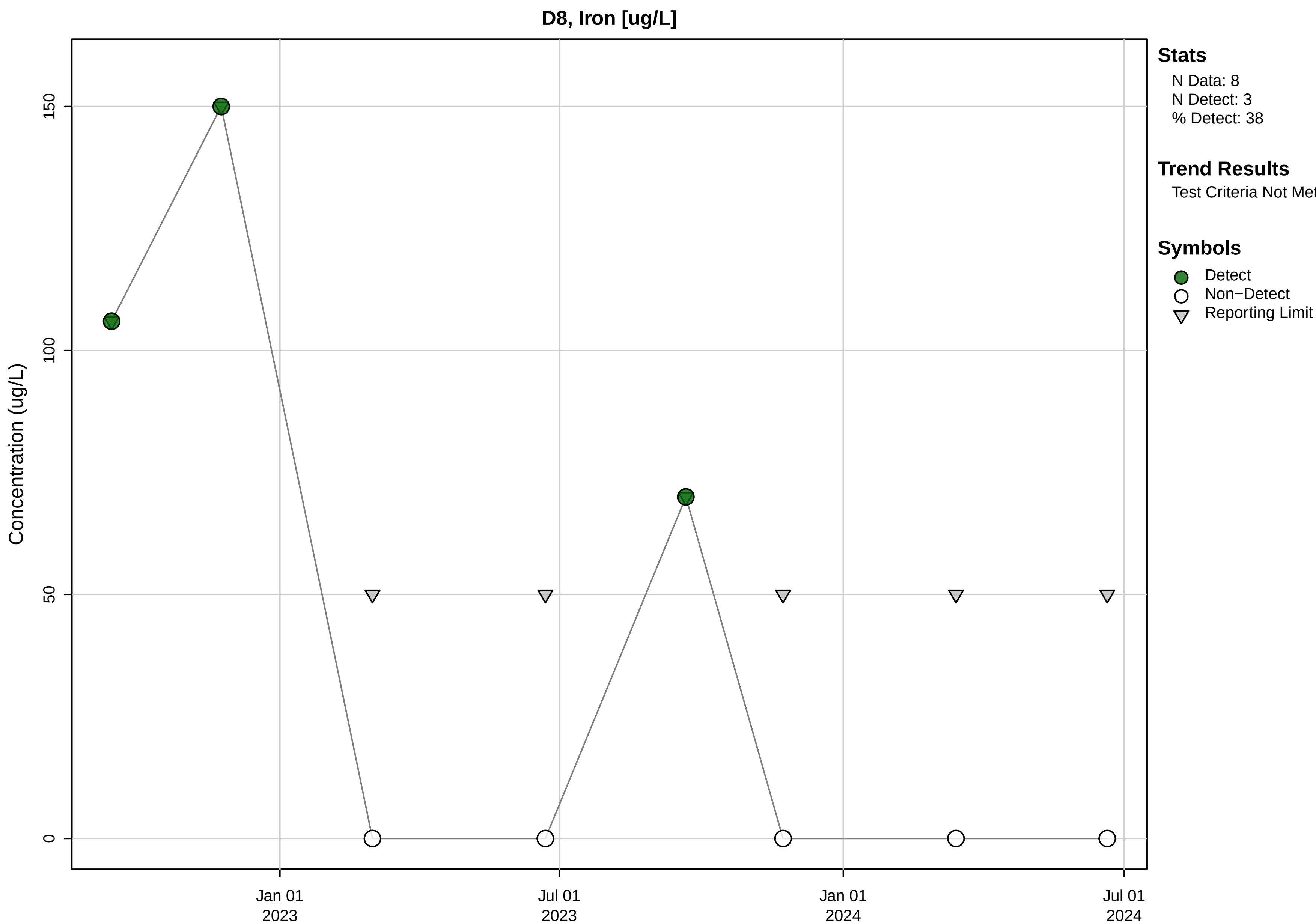

D8, Chromium [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



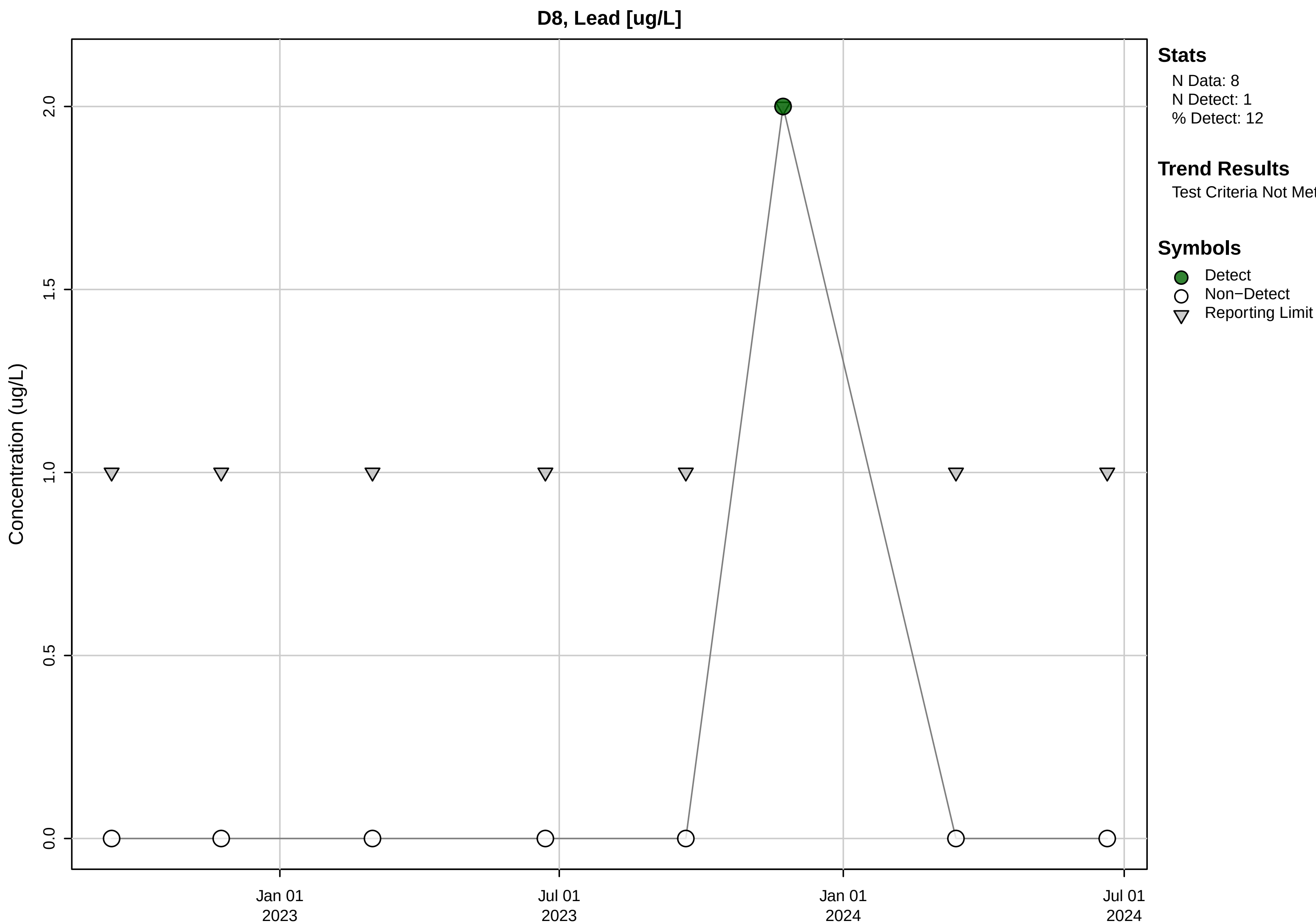
D8, Copper [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 6
% Detect: 75
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.589
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

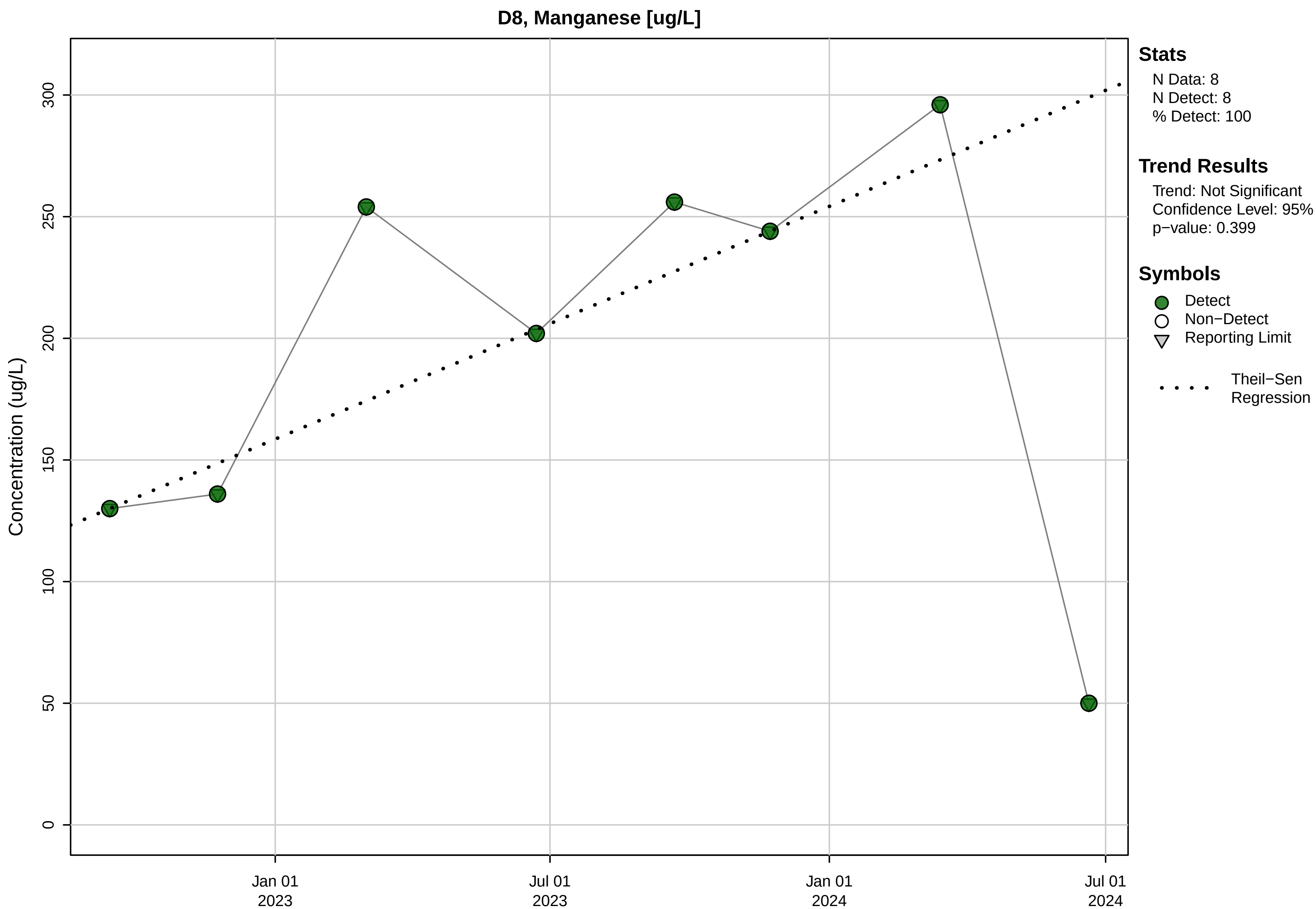

D8, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
100
200
300
400
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.034
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

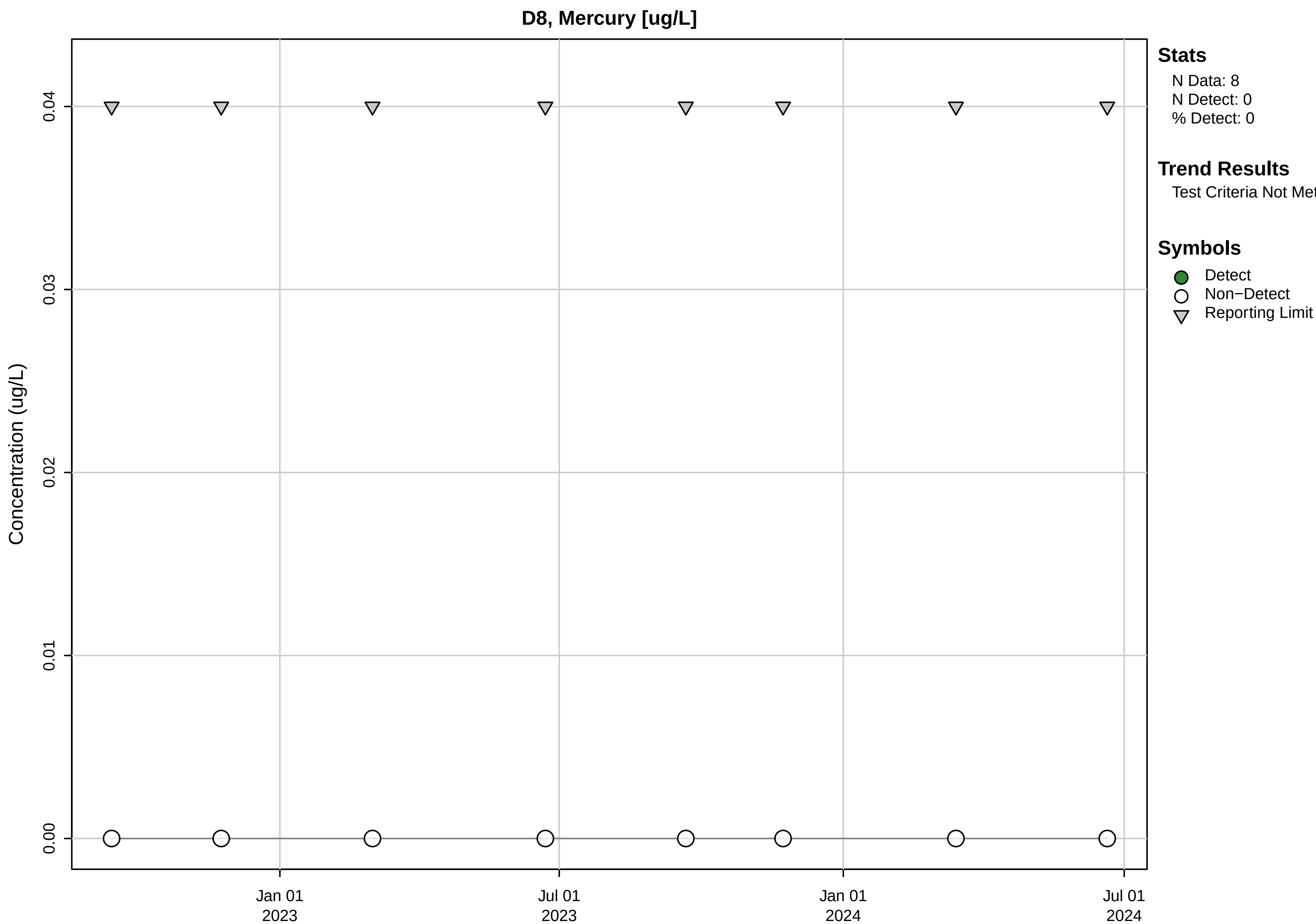

D8, Fluoride [mg/L]
Concentration (mg/L)
0.00
0.01
0.02
0.03
0.04
0.05
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

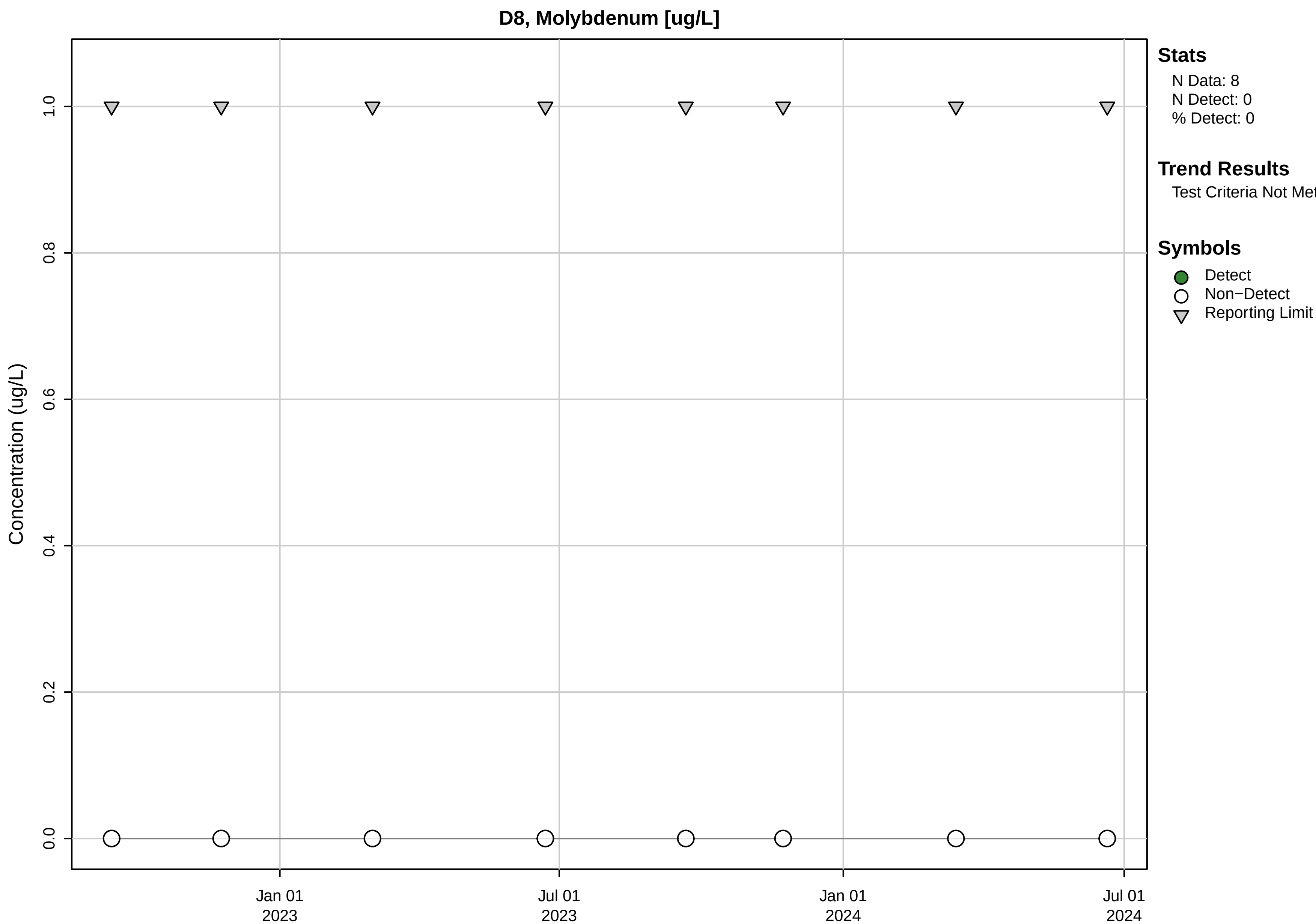


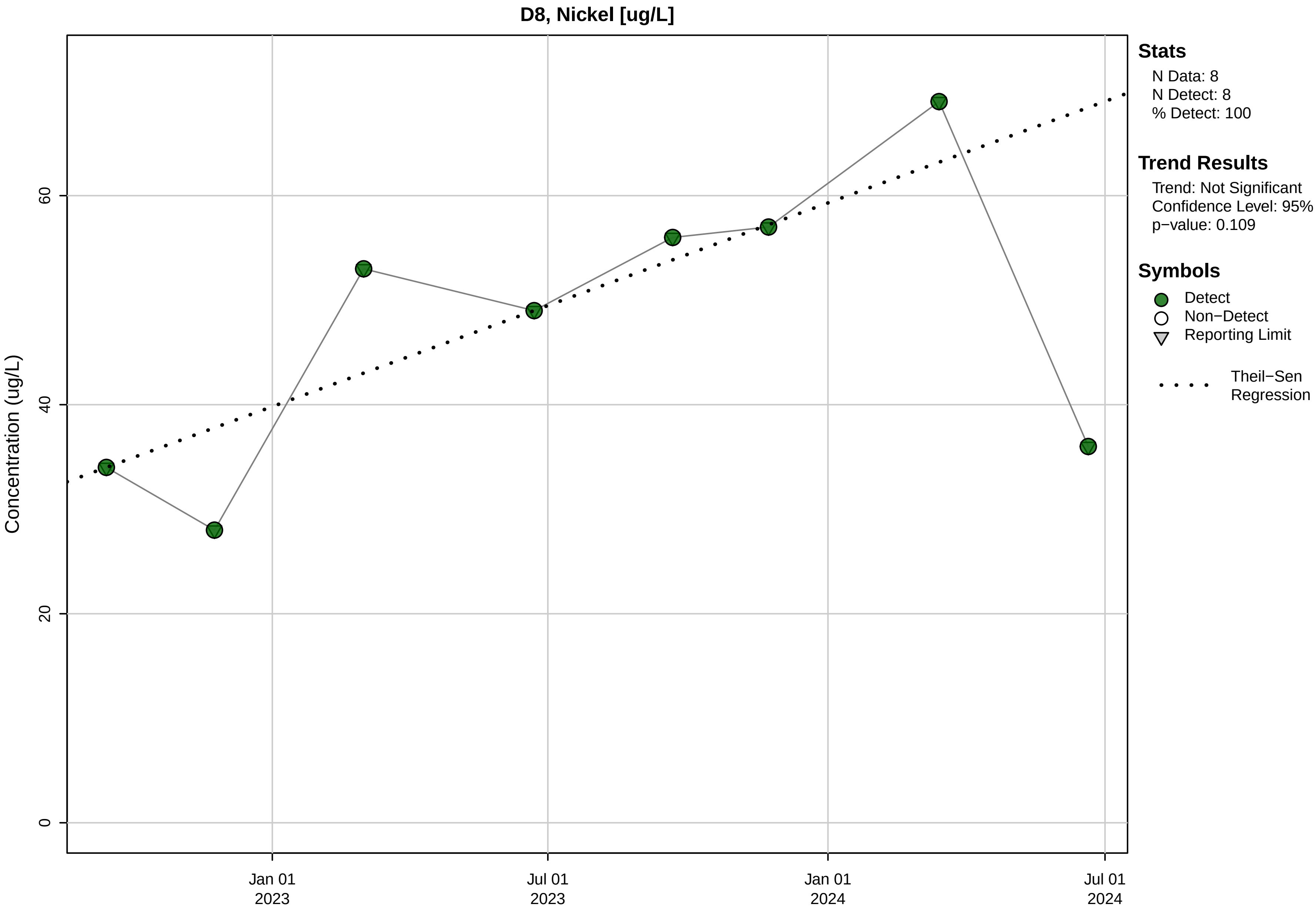
D8, Iron [ug/L]
Concentration (ug/L)
0
50
100
150
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

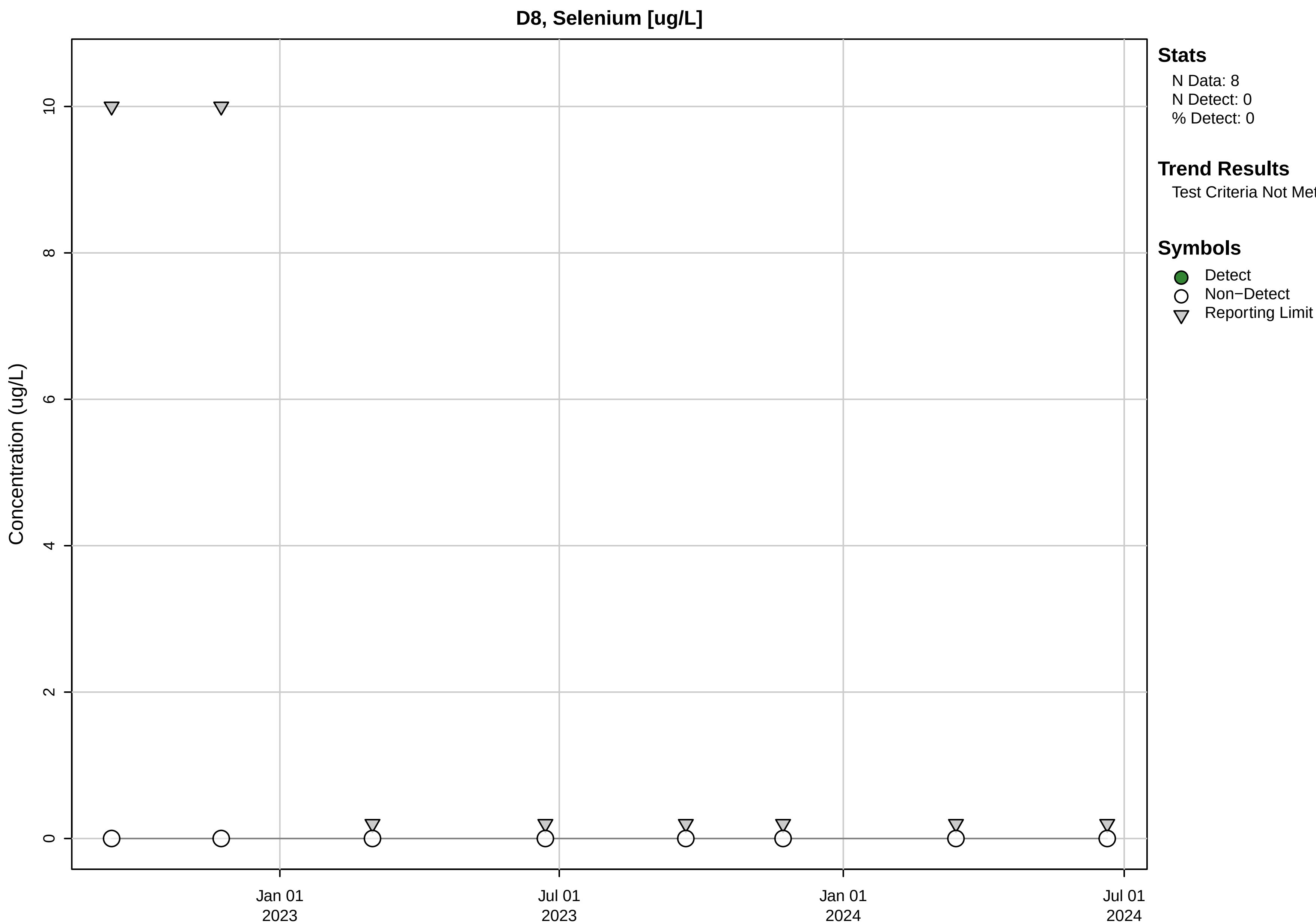

D8, Lead [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D8, Manganese [ug/L]
Concentration (ug/L)
0
50
100
150
200
250
300
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

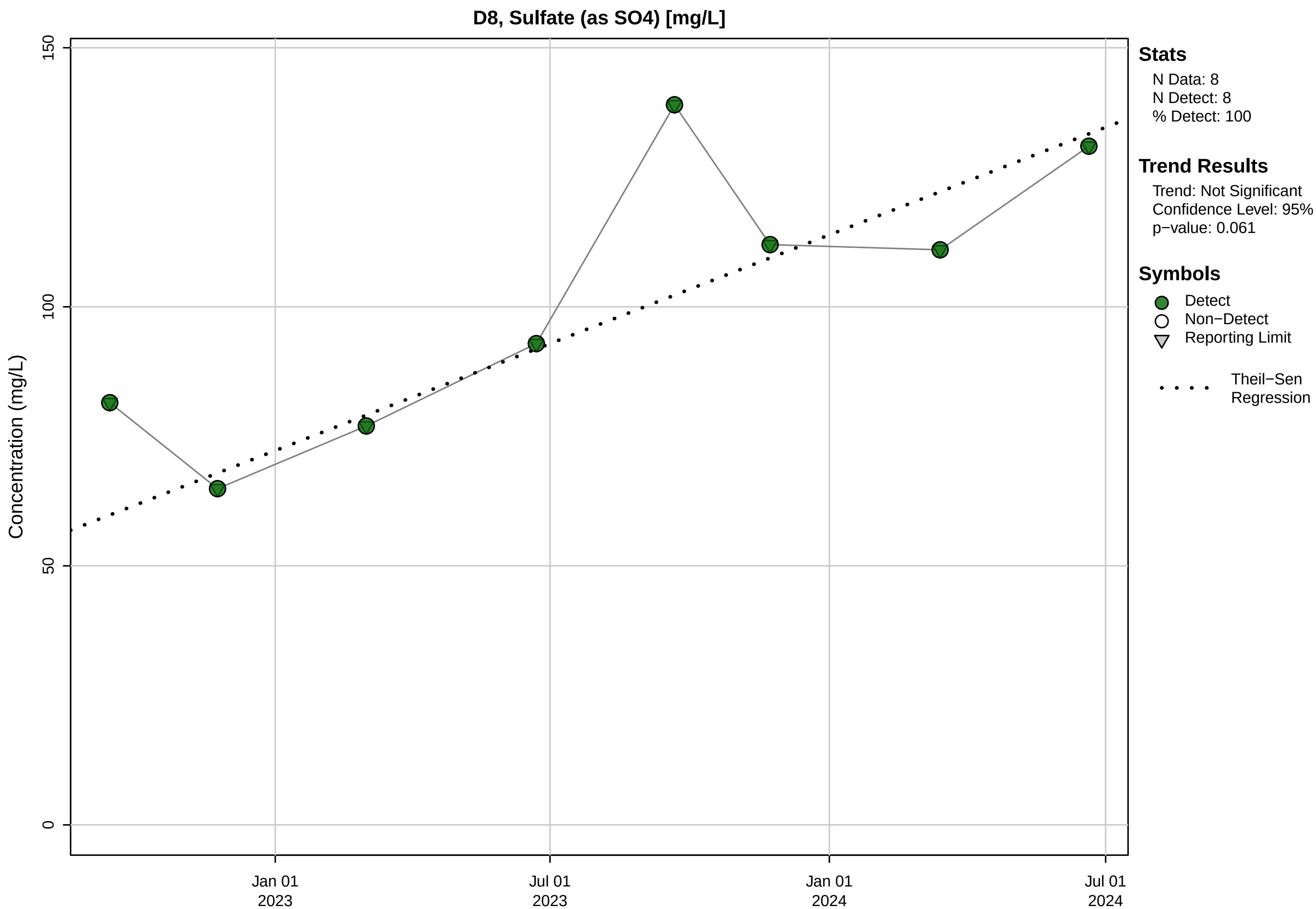

D8, Mercury [ug/L]
Concentration (ug/L)
0.00
0.01
0.02
0.03
0.04
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D8, Molybdenum [ug/L]
Concentration (ug/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

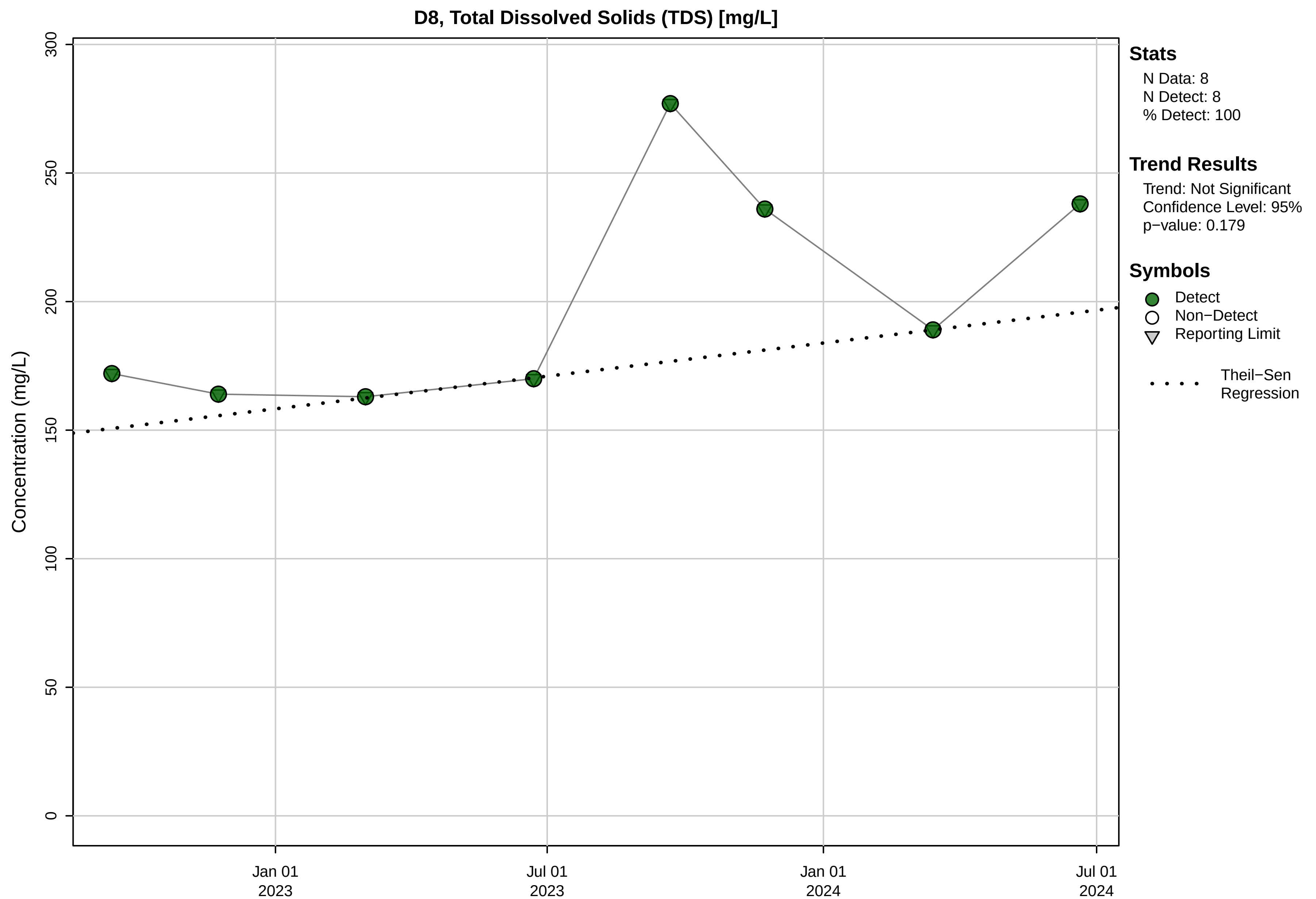

D8, Nickel [ug/L]
Concentration (ug/L)
0
20
40
60
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



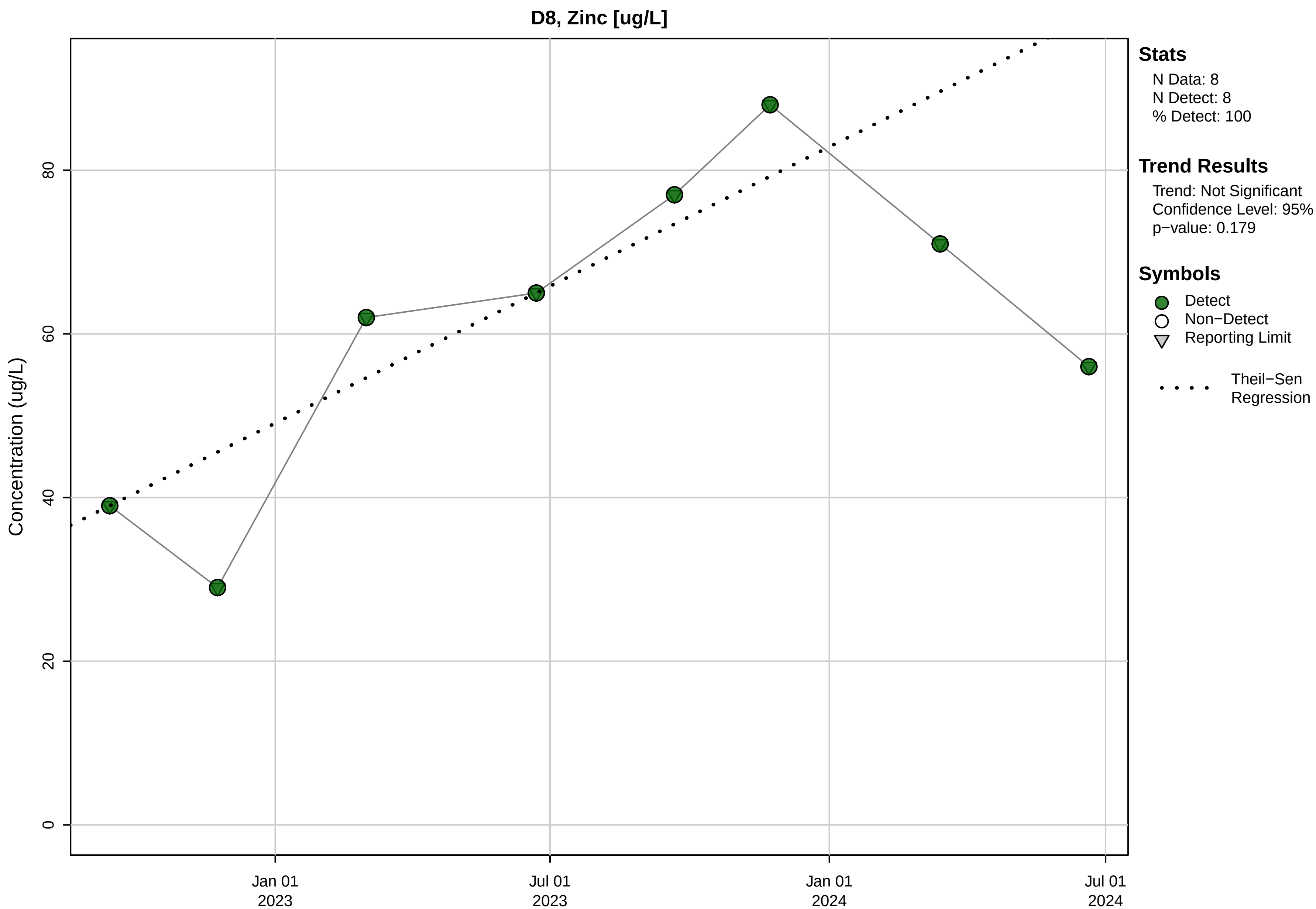
D8, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

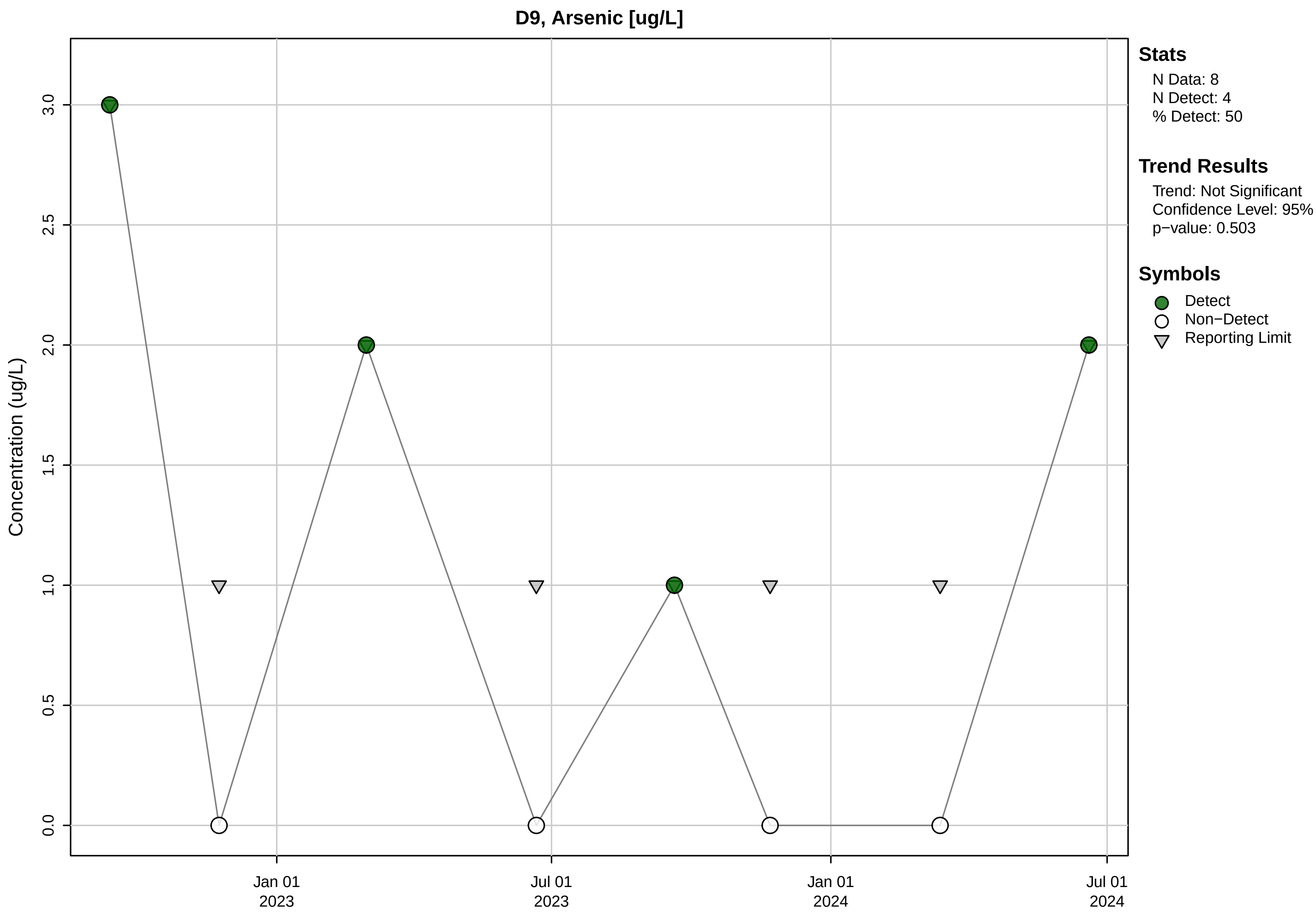


D8, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
150
100
50
0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.061
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

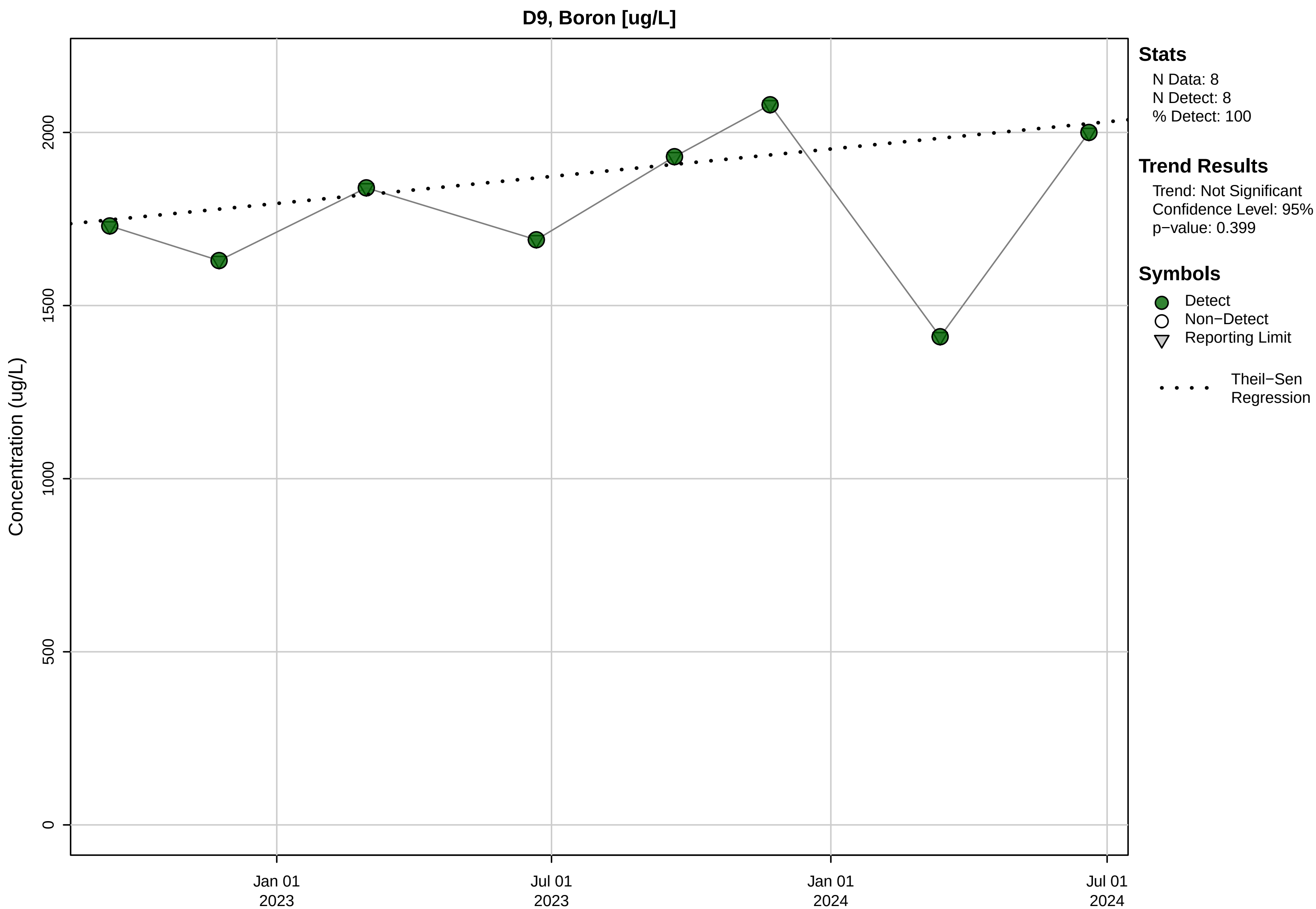


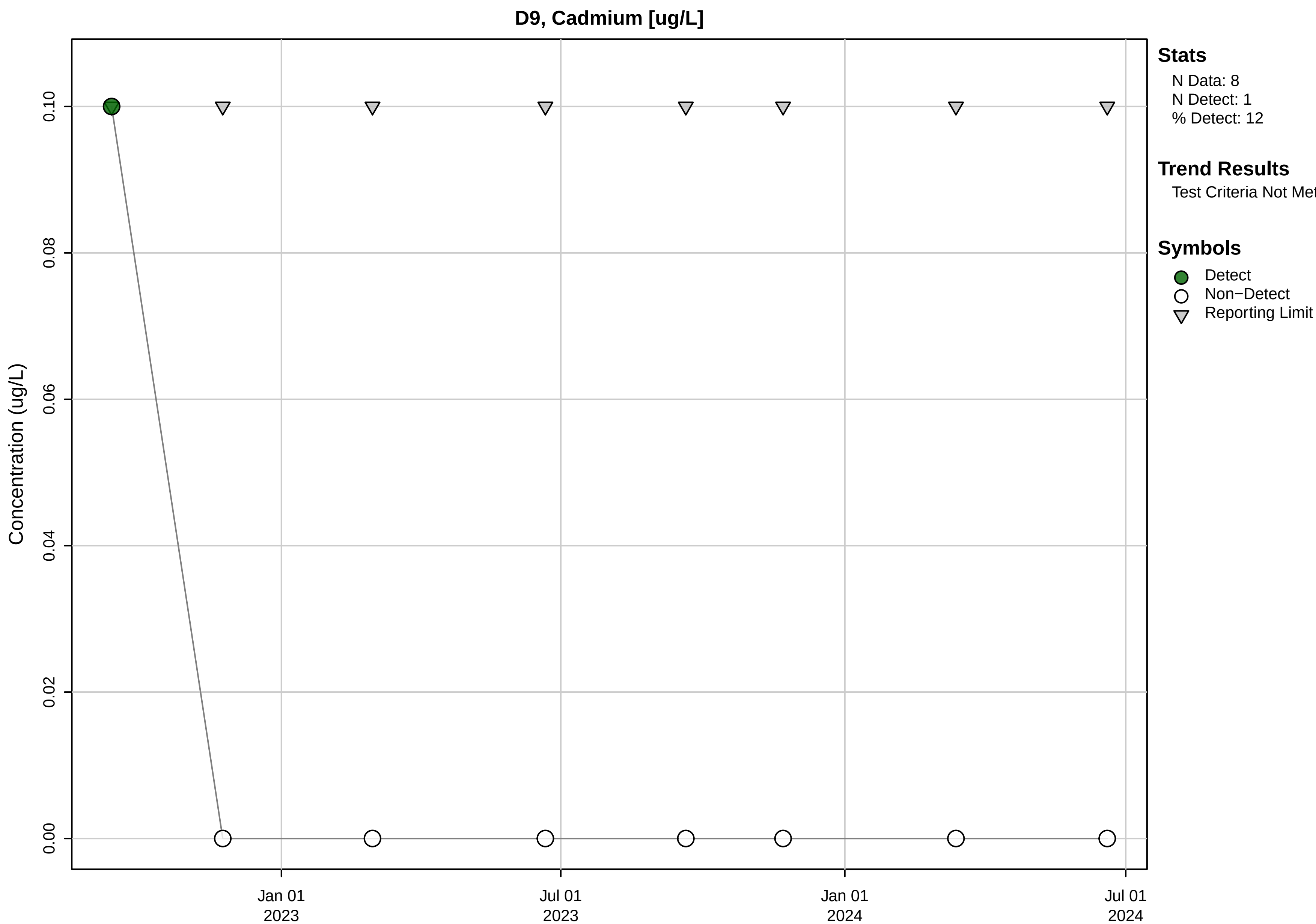
D8, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
50
100
150
200
250
300
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

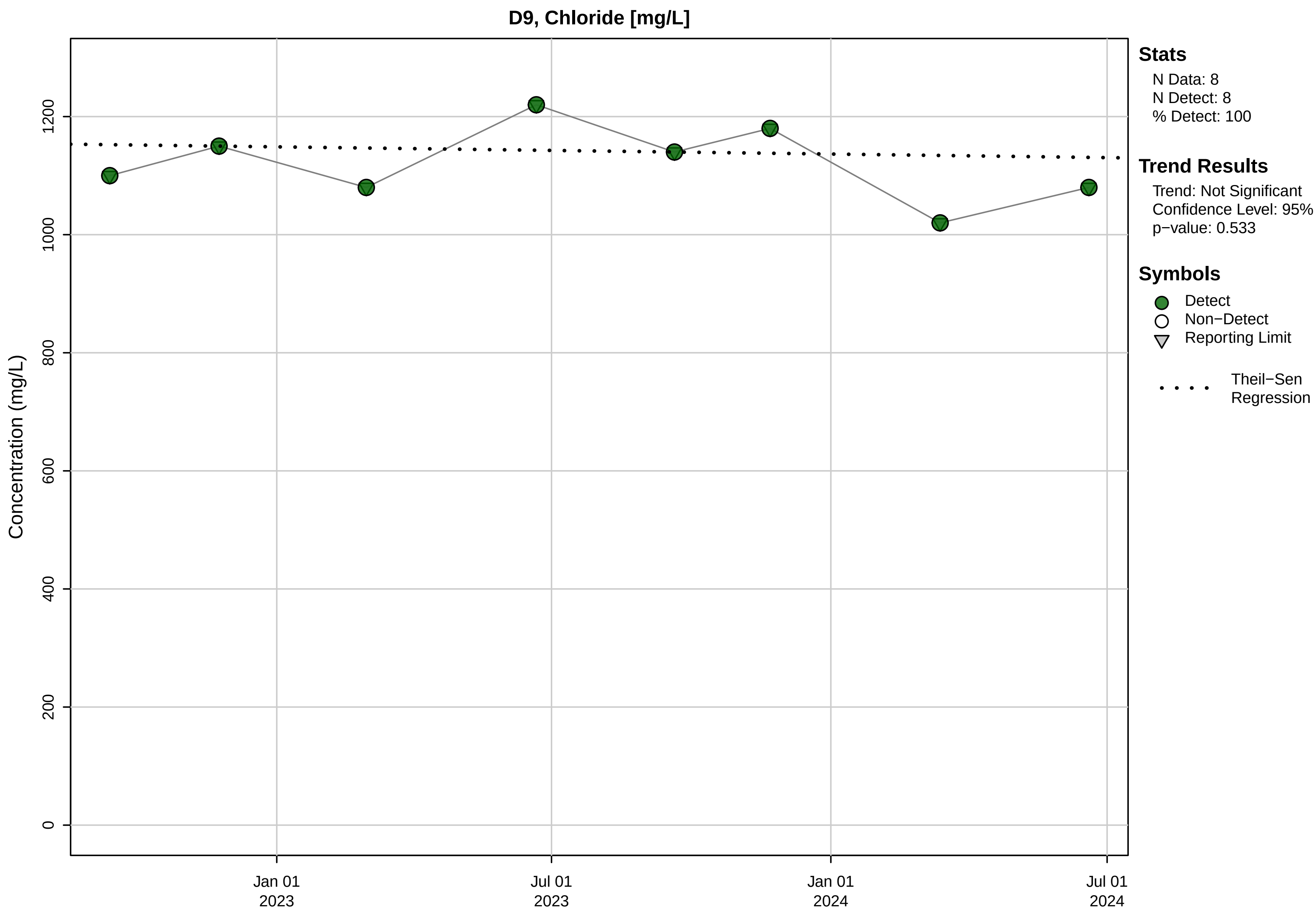

D8, Zinc [ug/L]
Concentration (ug/L)
0
20
40
60
80
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

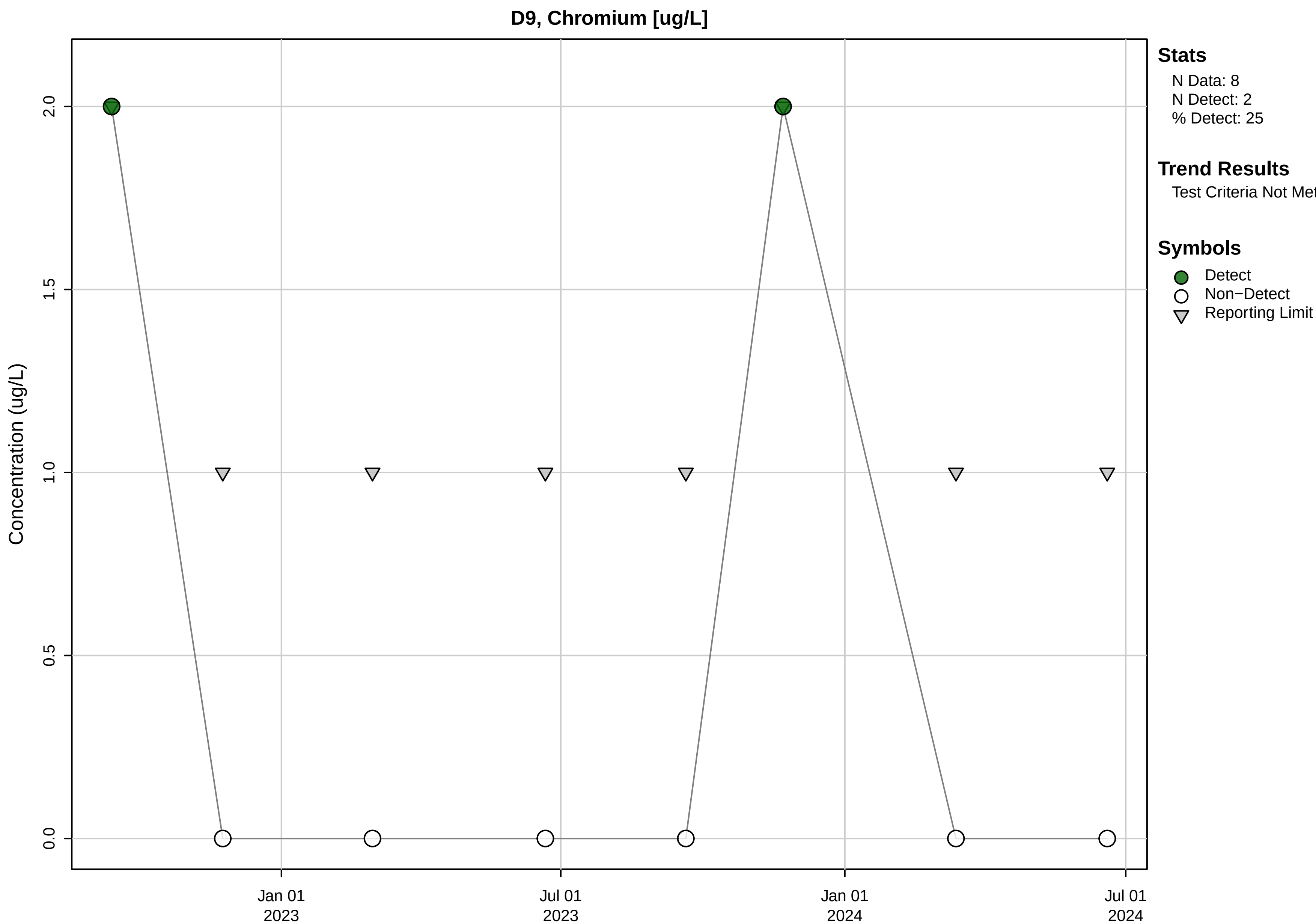


D9, Arsenic [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 4
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.503
Symbols
Detect
Non−Detect
Reporting Limit

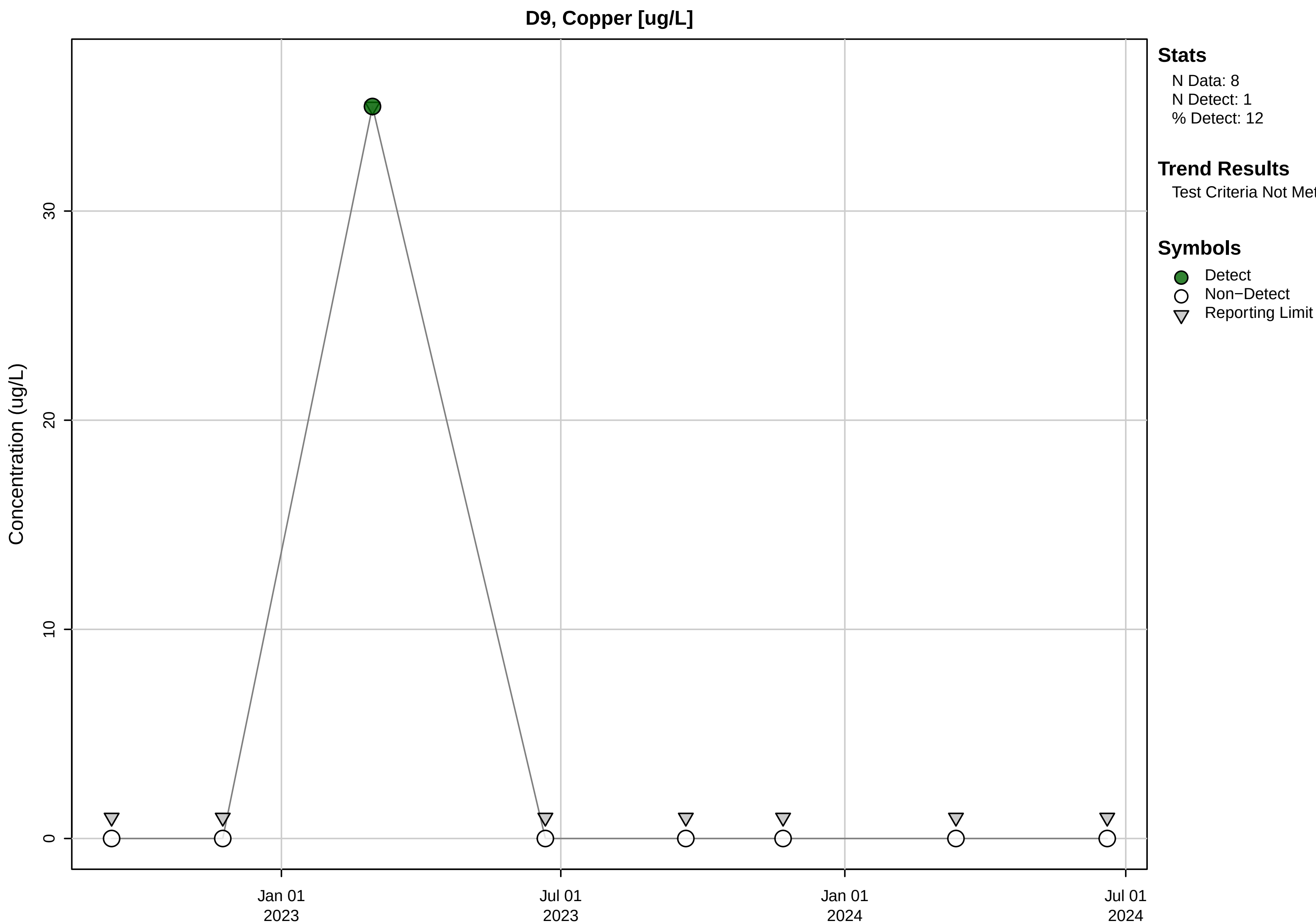

D9, Boron [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

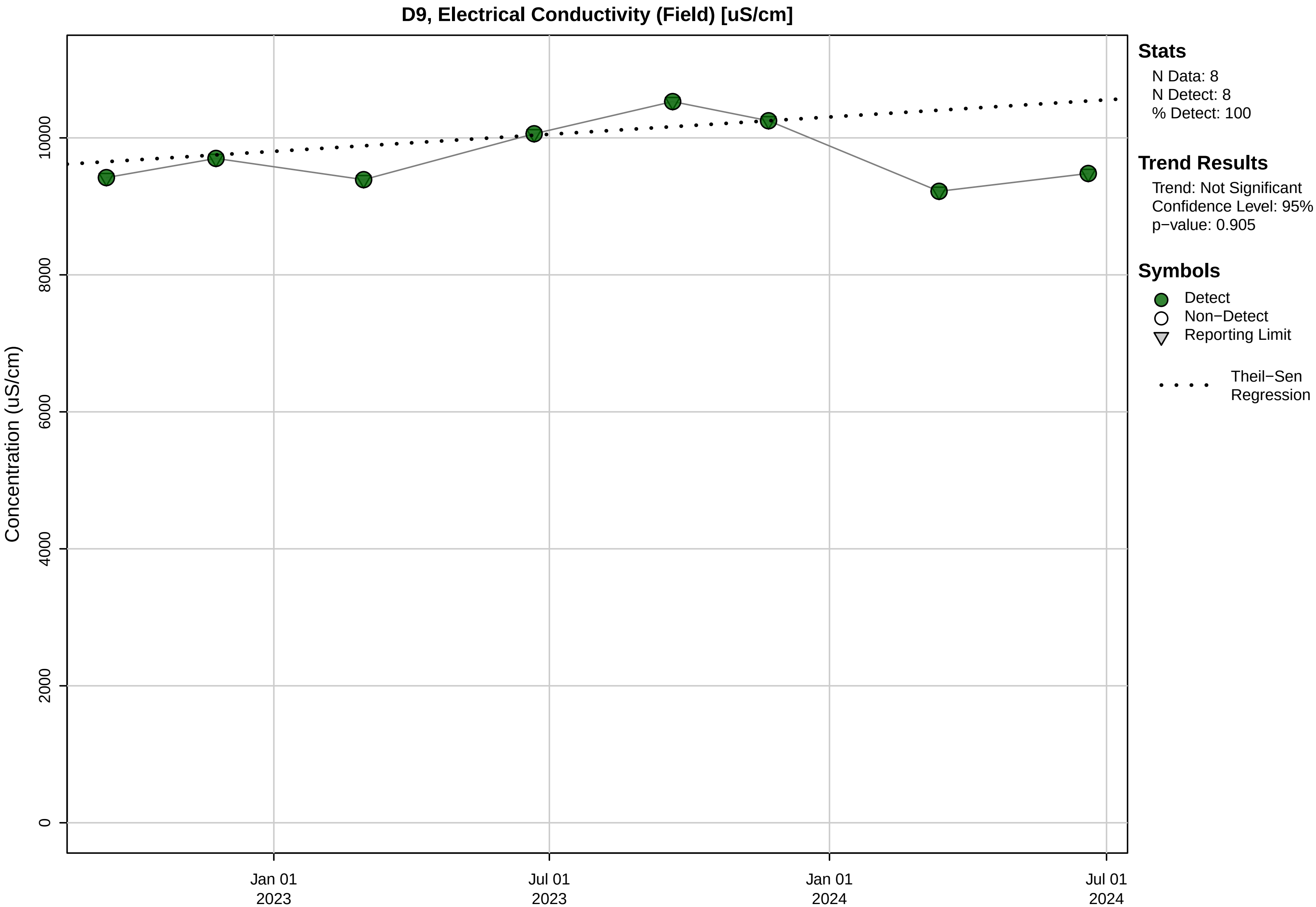

D9, Cadmium [ug/L]
Concentration (ug/L)
0.00
0.02
0.04
0.06
0.08
0.10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D9, Chloride [mg/L]
Concentration (mg/L)
0
200
400
600
800
1000
1200
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.533
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

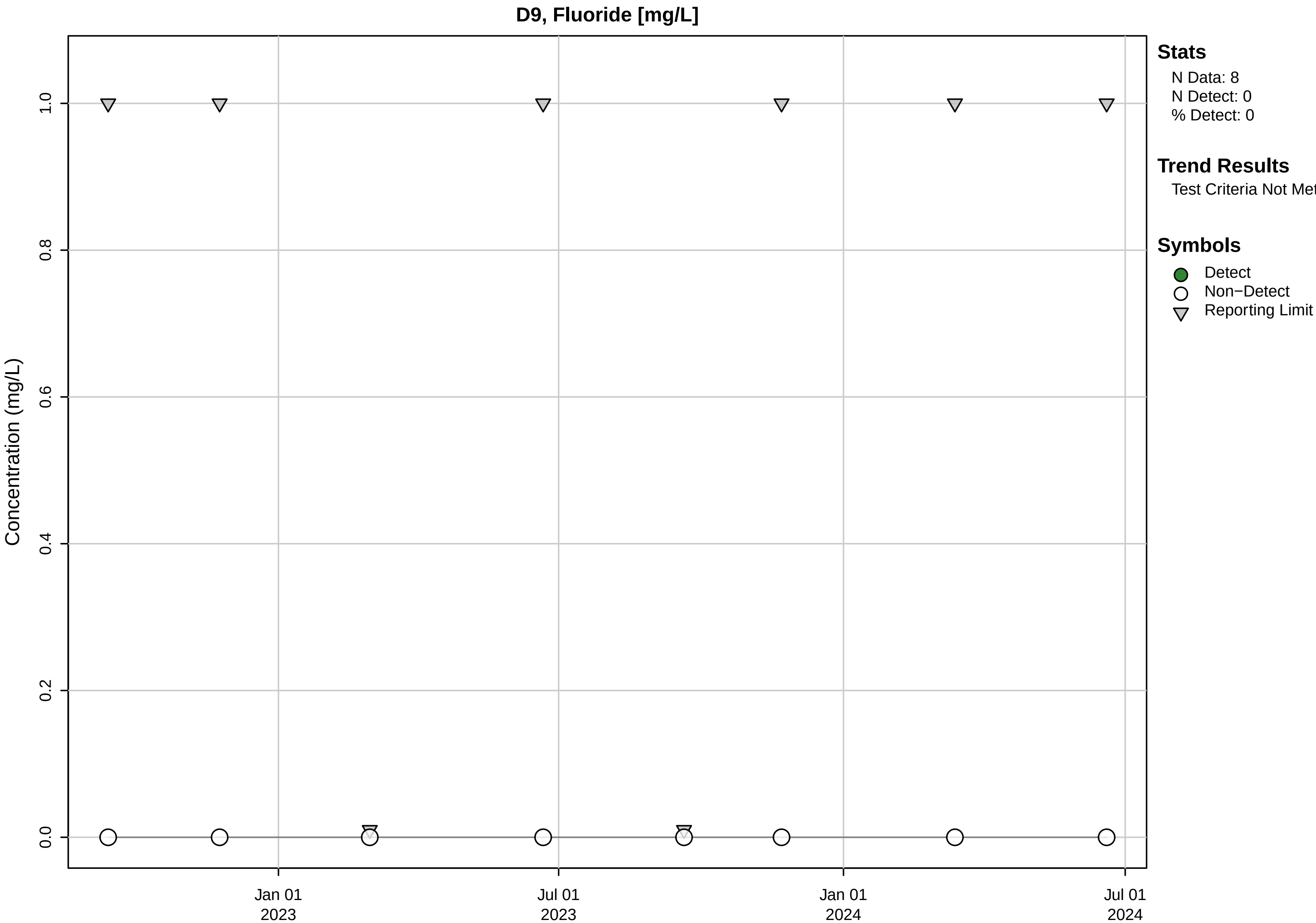


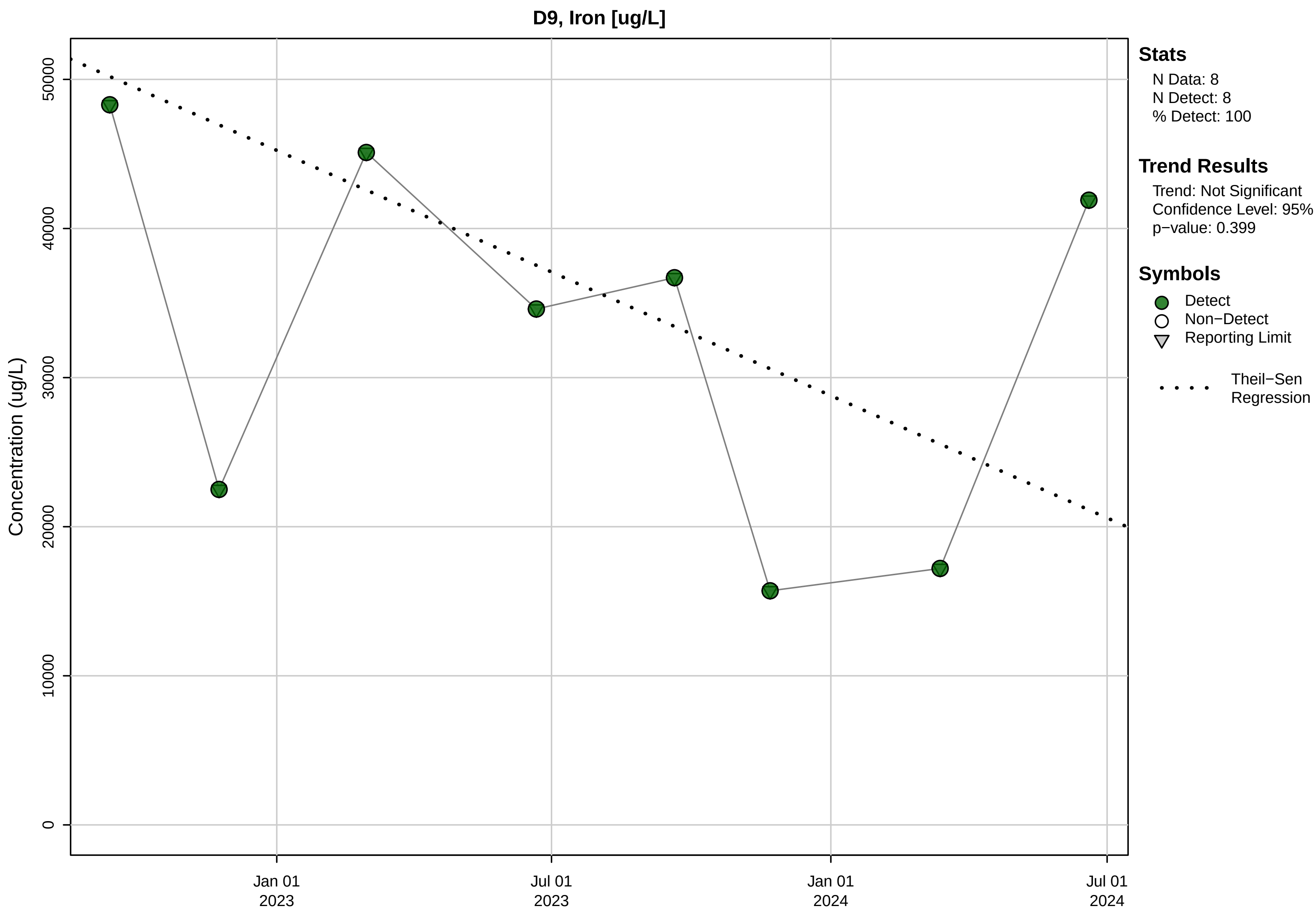
D9, Chromium [ug/L]
Concentration (ug/L)
2.0
1.5
1.0
0.5
0.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


D9, Copper [ug/L]
Concentration (ug/L)
0
10
20
30
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

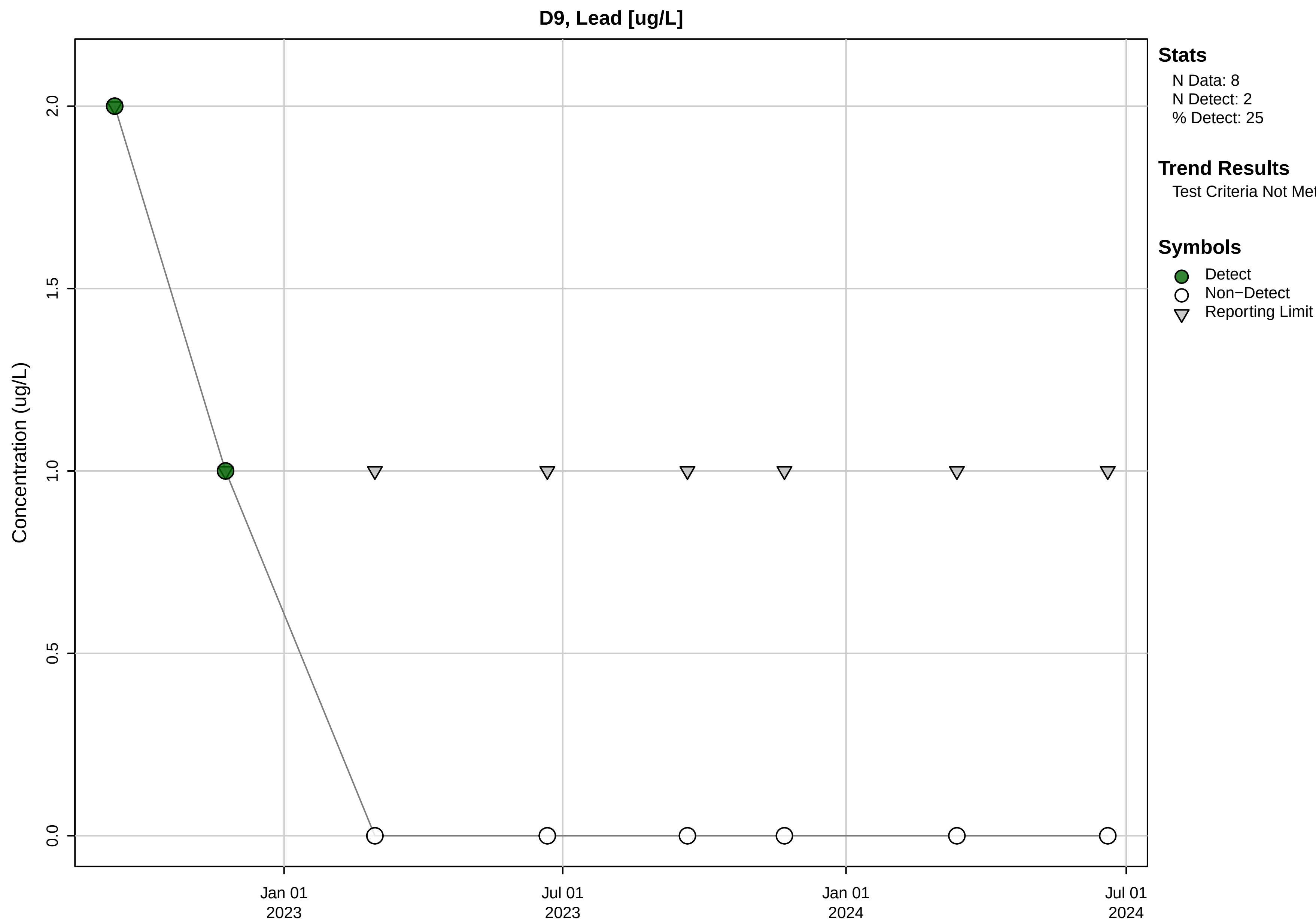


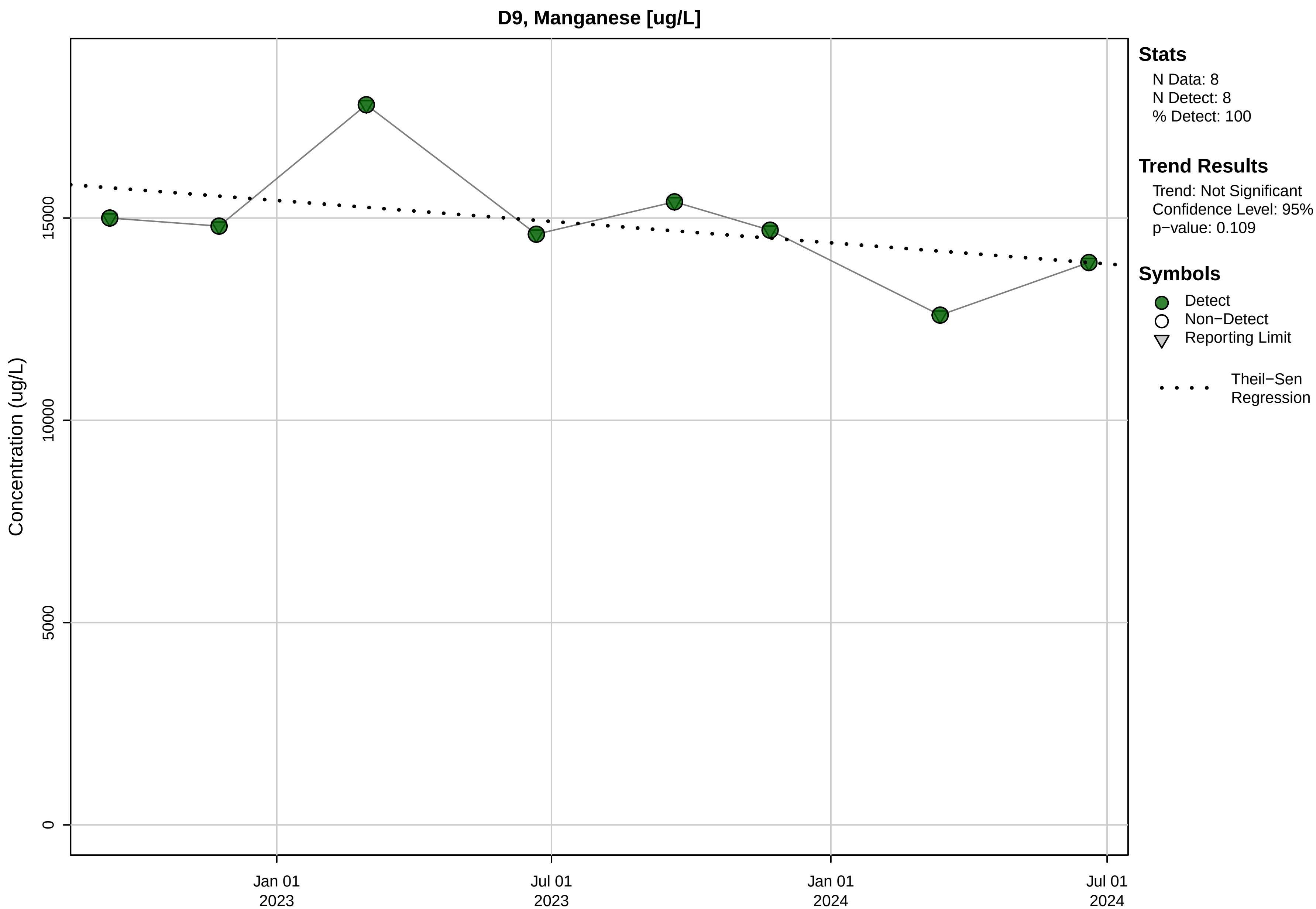
D9, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
2000
4000
6000
8000
10000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.905
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

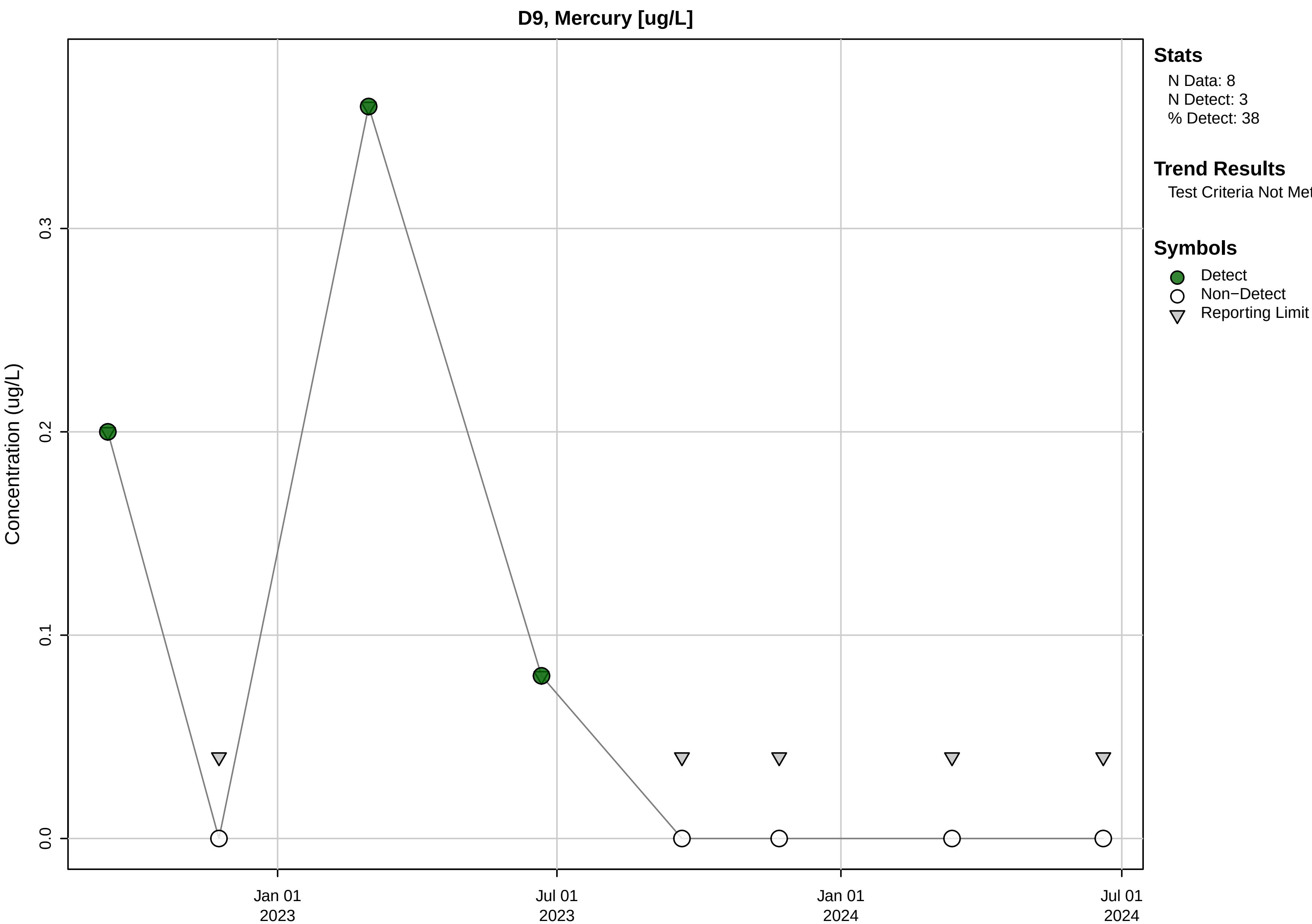

D9, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

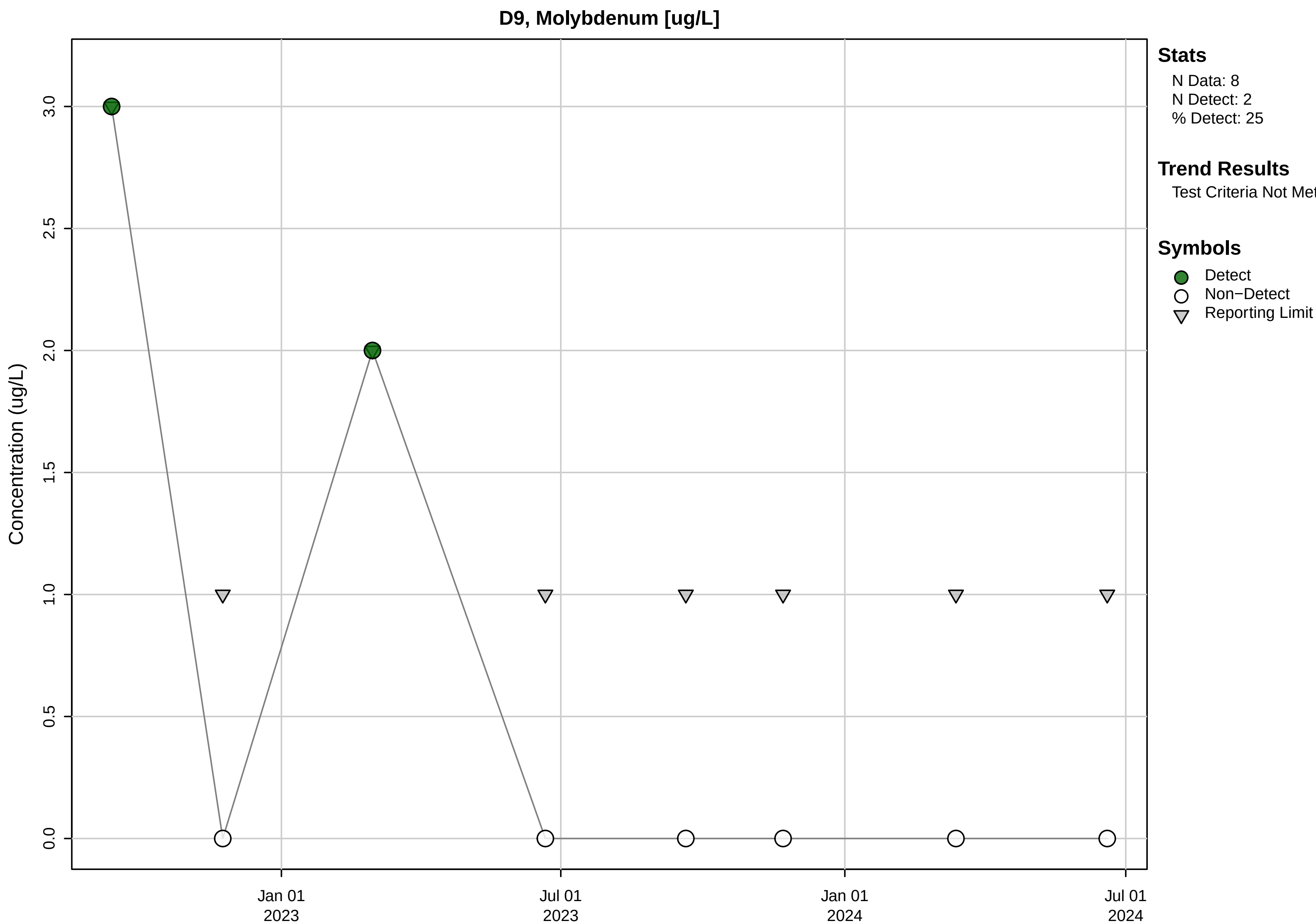


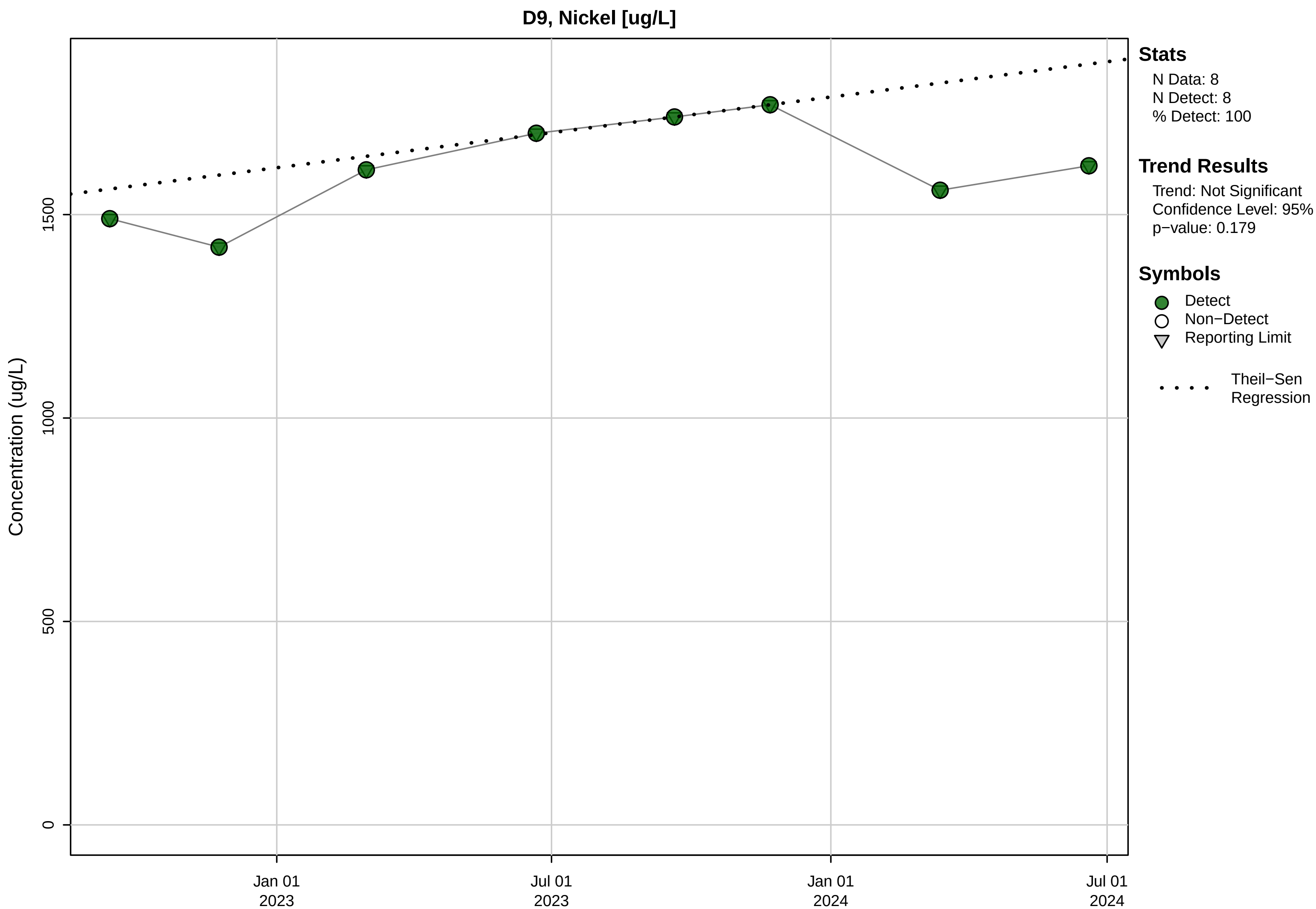
D9, Iron [ug/L]
Concentration (ug/L)
0
10000
20000
30000
40000
50000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.399
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

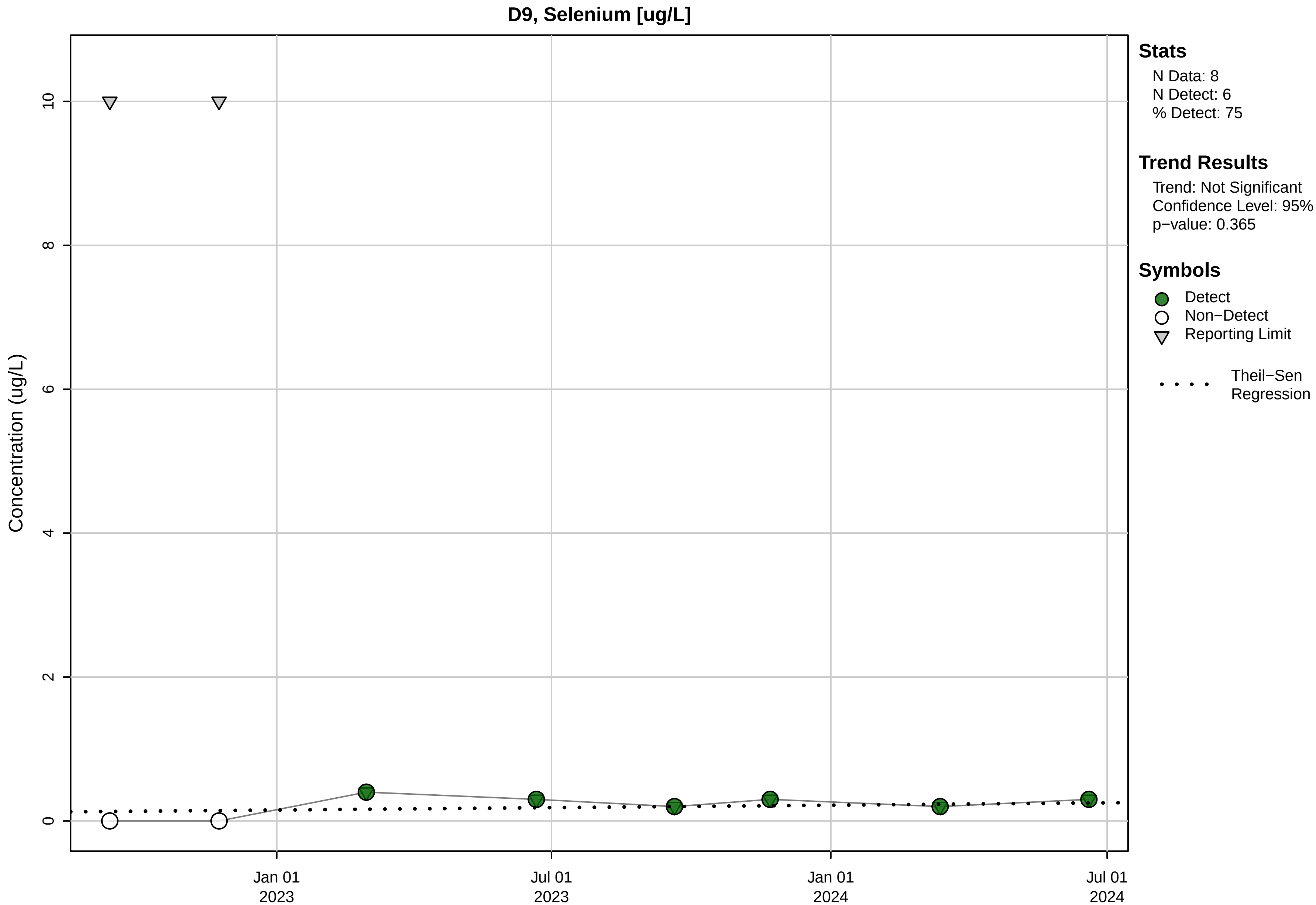

D9, Lead [ug/L]
Concentration (ug/L)
0.0
0.5
1.0
1.5
2.0
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

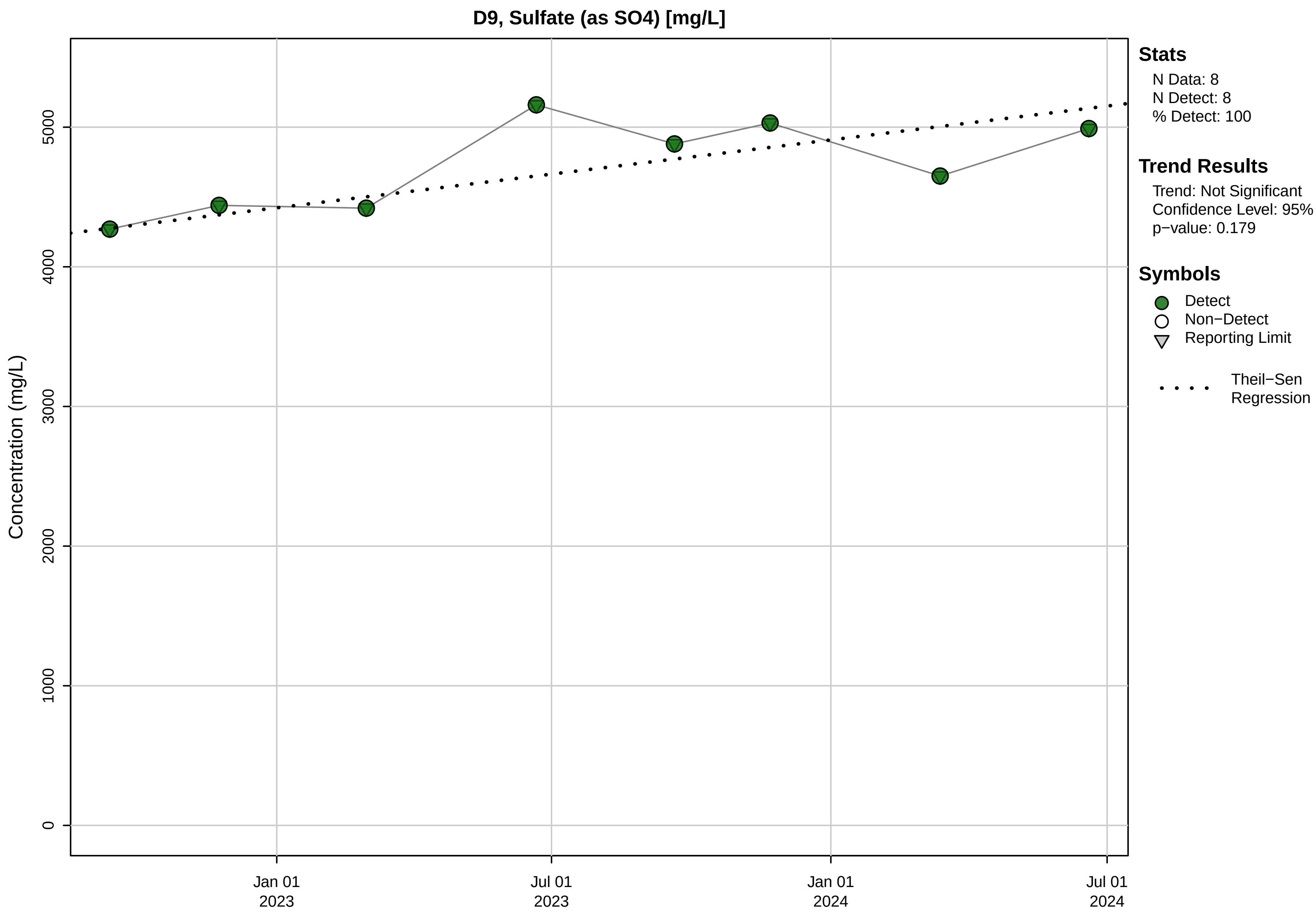

D9, Manganese [ug/L]
Concentration (ug/L)
0
5000
10000
15000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.109
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D9, Mercury [ug/L]
Concentration (ug/L)
0.0
0.1
0.2
0.3
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 3
% Detect: 38
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

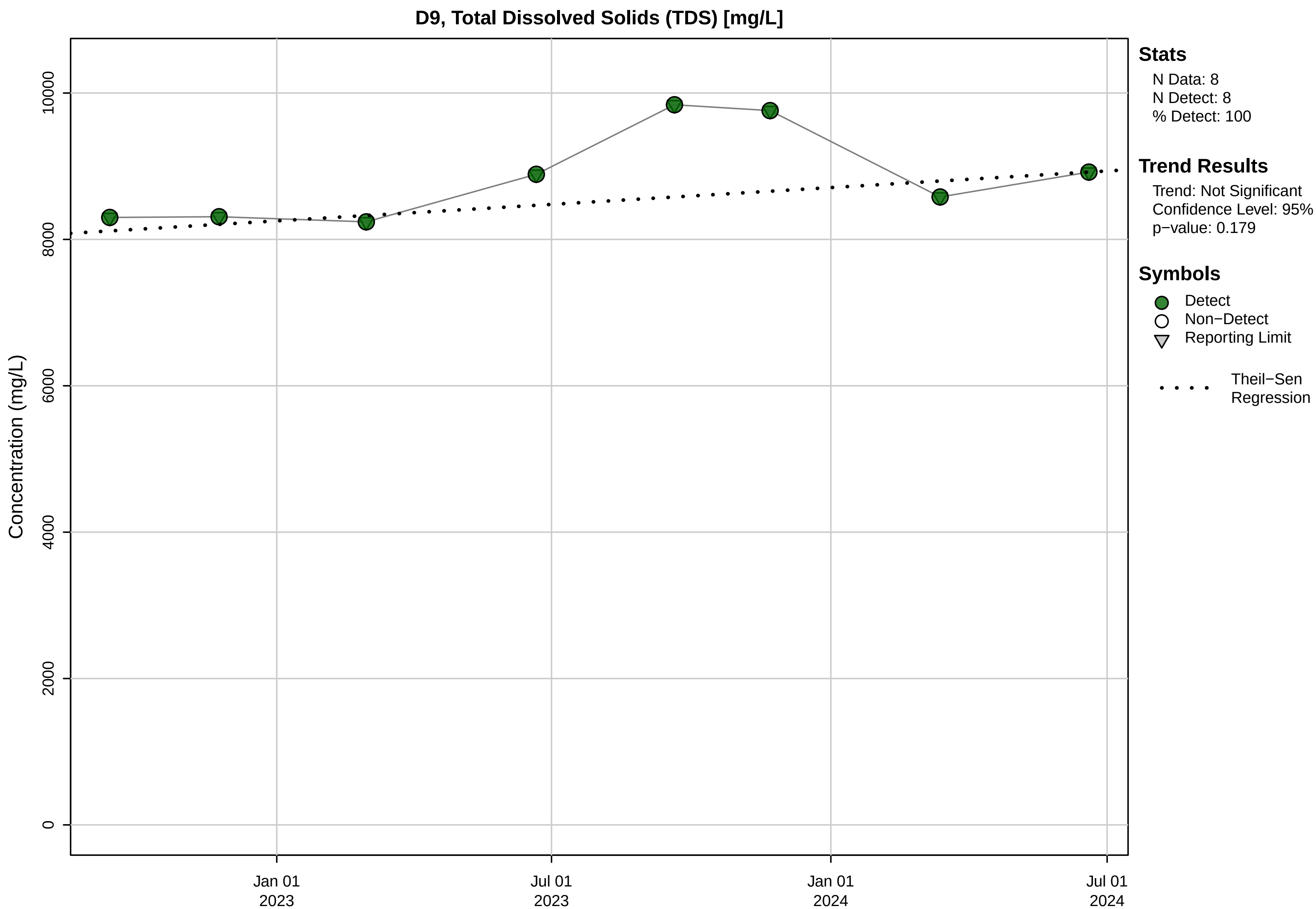

D9, Molybdenum [ug/L]
Concentration (ug/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 2
% Detect: 25
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

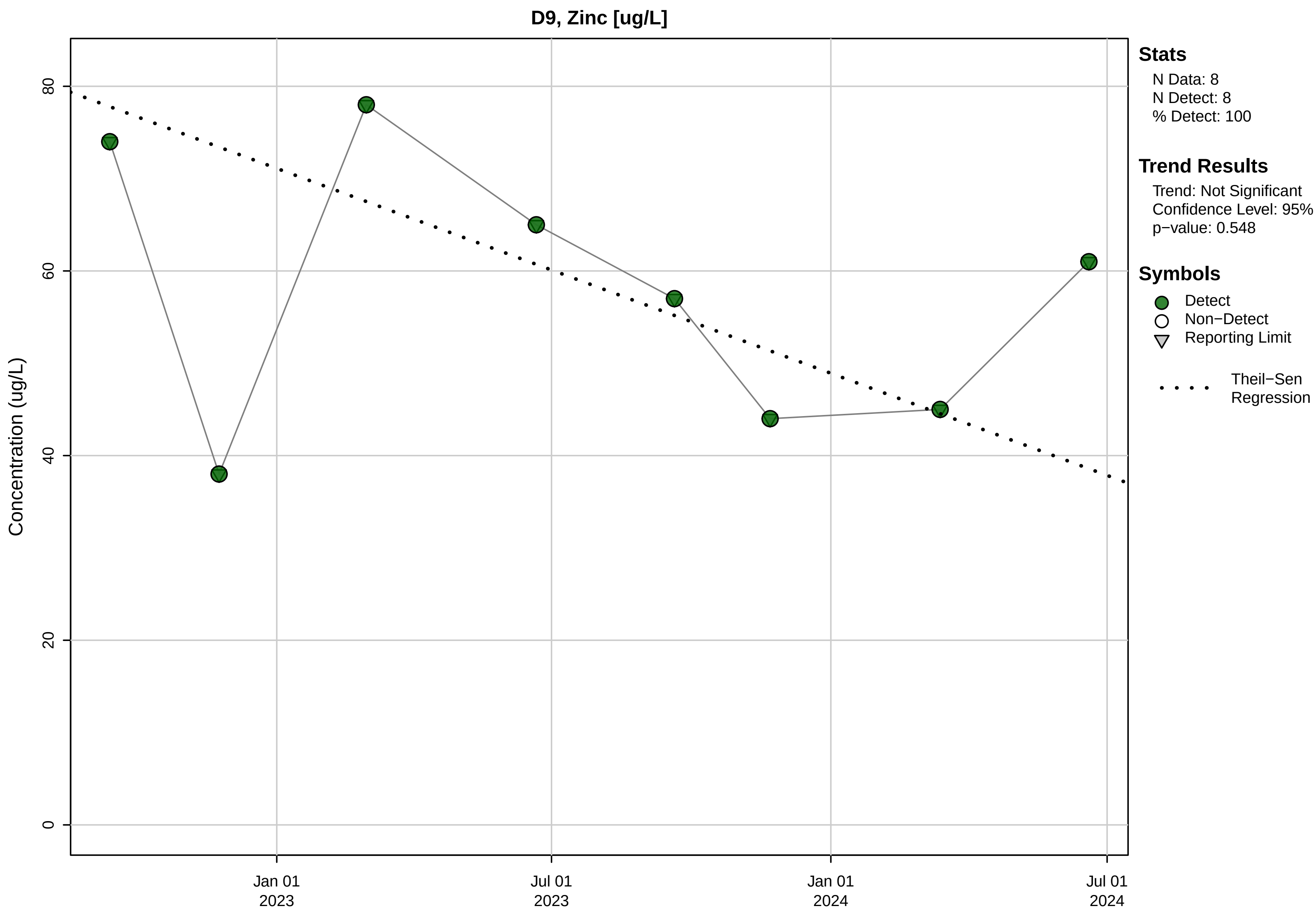

D9, Nickel [ug/L]
Concentration (ug/L)
0
500
1000
1500
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


D9, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 6
% Detect: 75
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.365
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

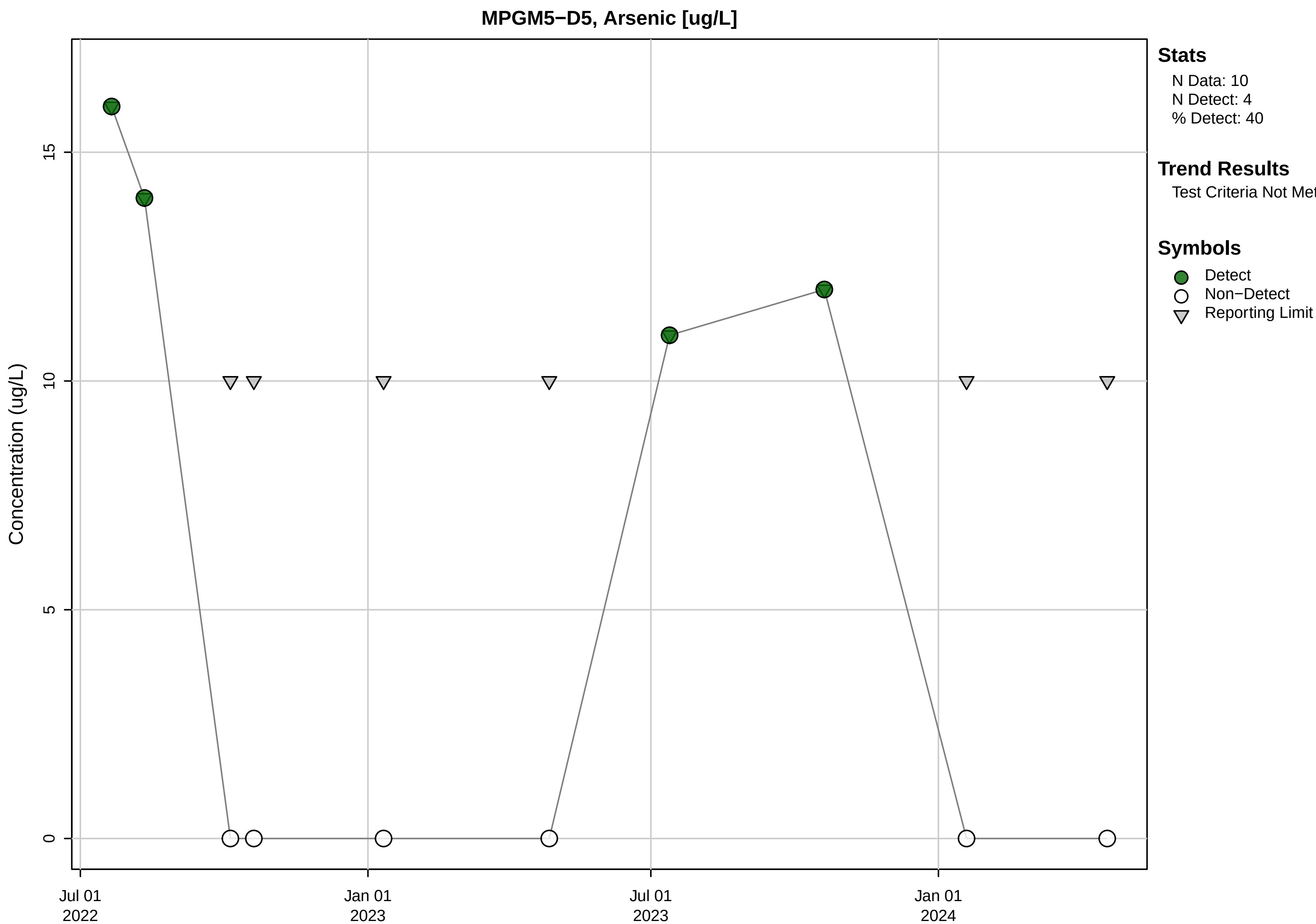


D9, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
1000
2000
3000
4000
5000
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

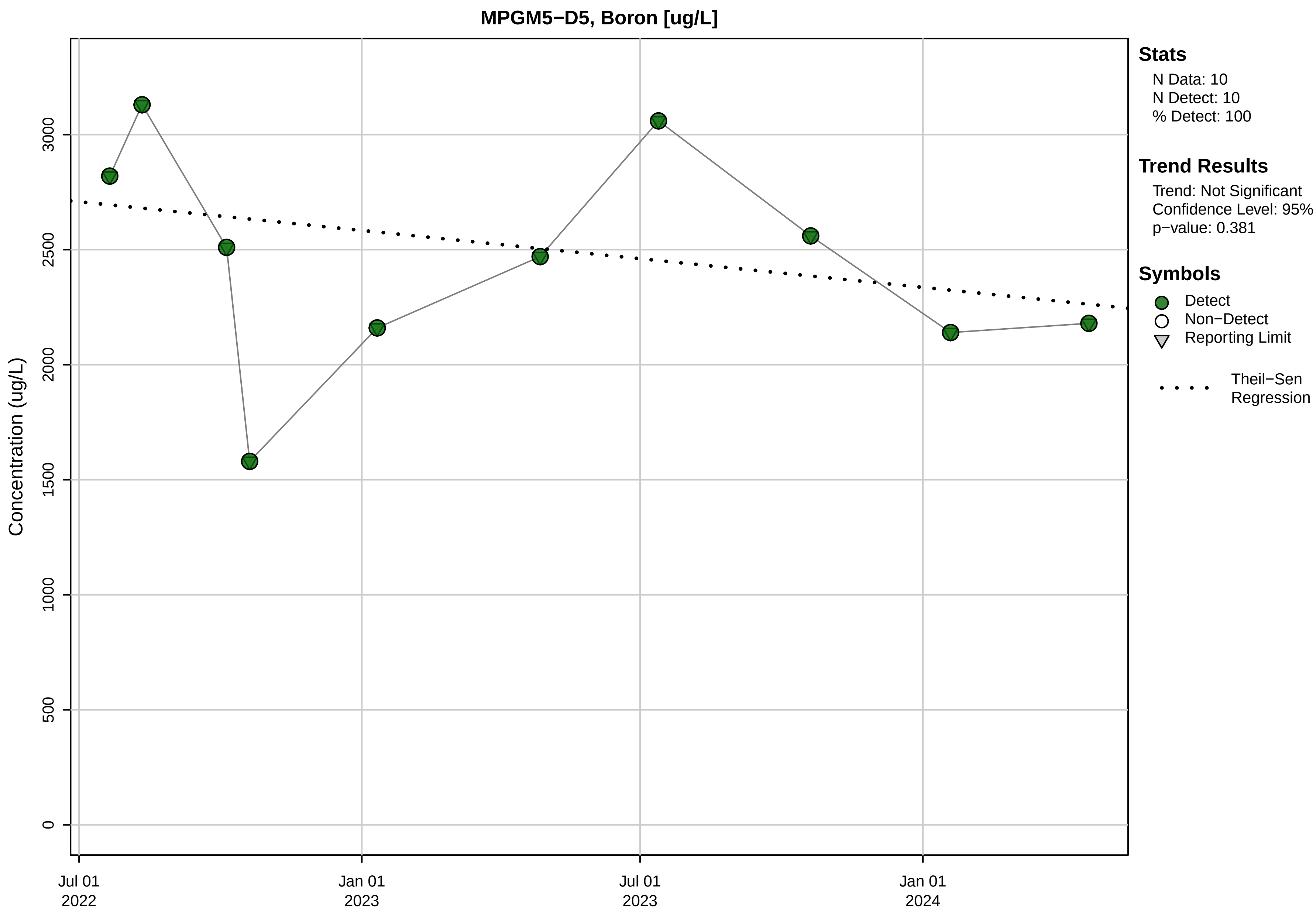

D9, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
10000
Jan 01
2023
Jul 01
2023
Jan 01
2024
Jul 01
2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



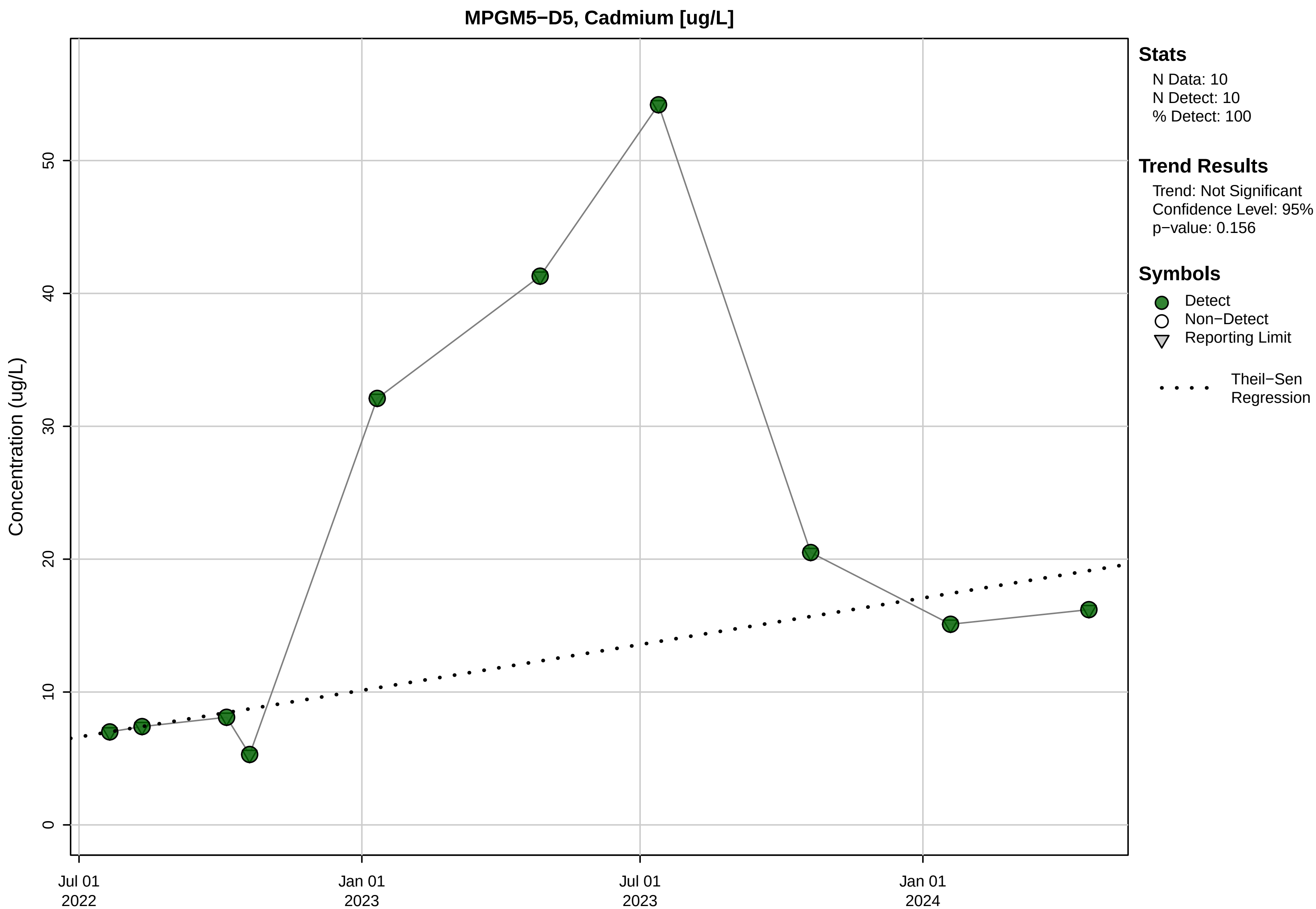
D9, Zinc [ug/L]
Concentration (ug/L)
0
20
40
60
80
Jan 01 2023
Jul 01 2023
Jan 01 2024
Jul 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.548
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

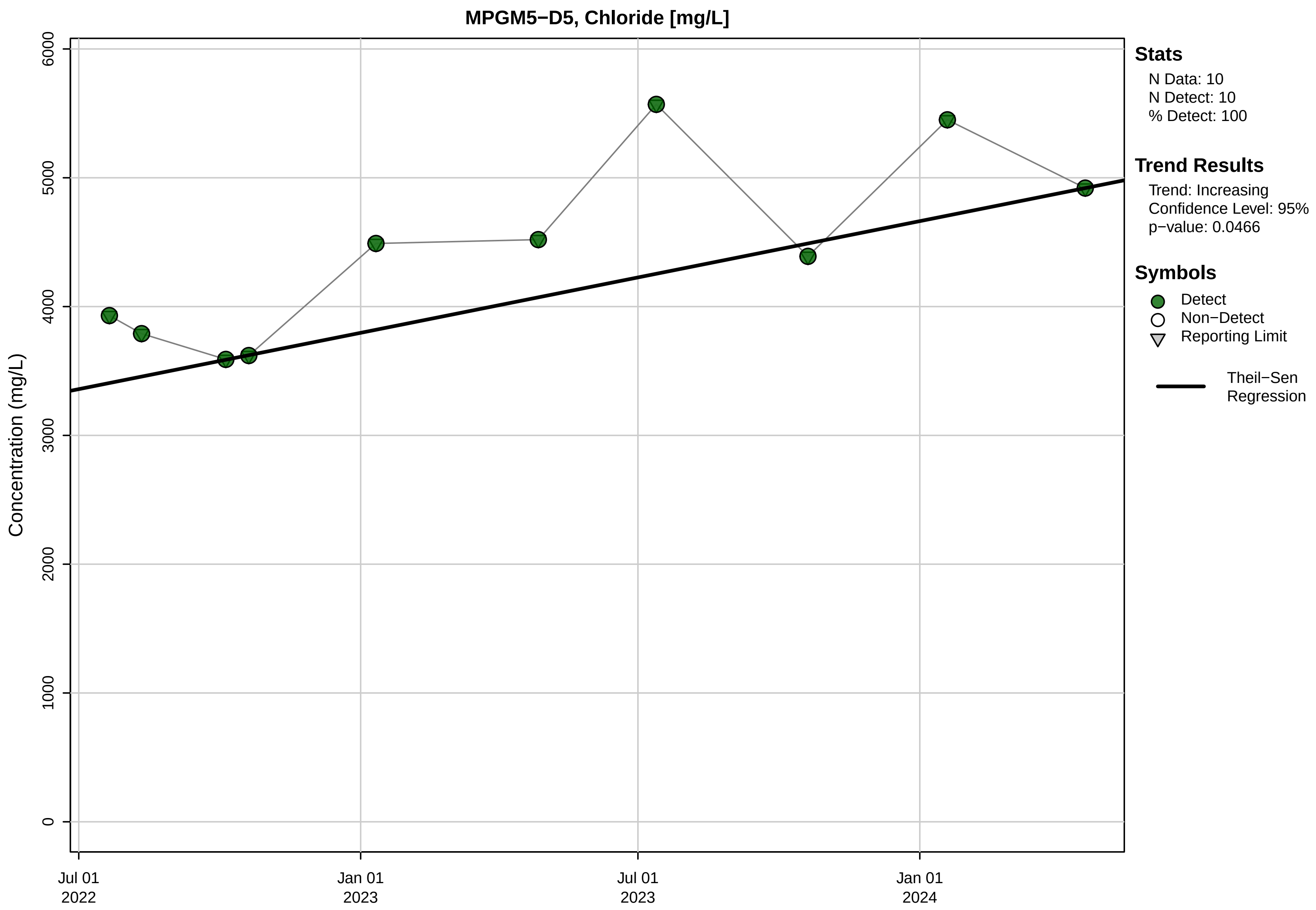


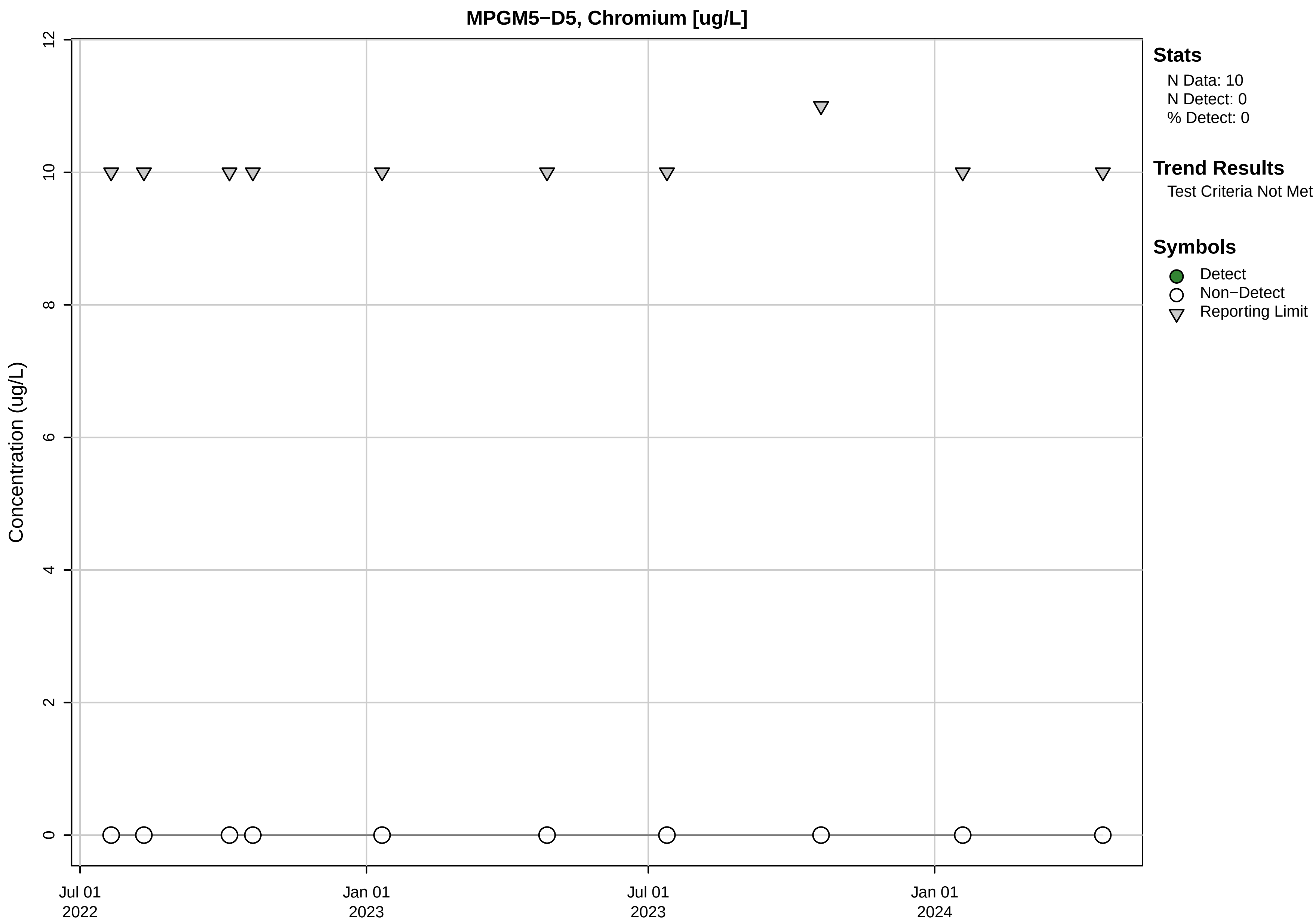
MPGM5−D5, Arsenic [ug/L]
Concentration (ug/L)
0
5
10
15
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 4
% Detect: 40
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

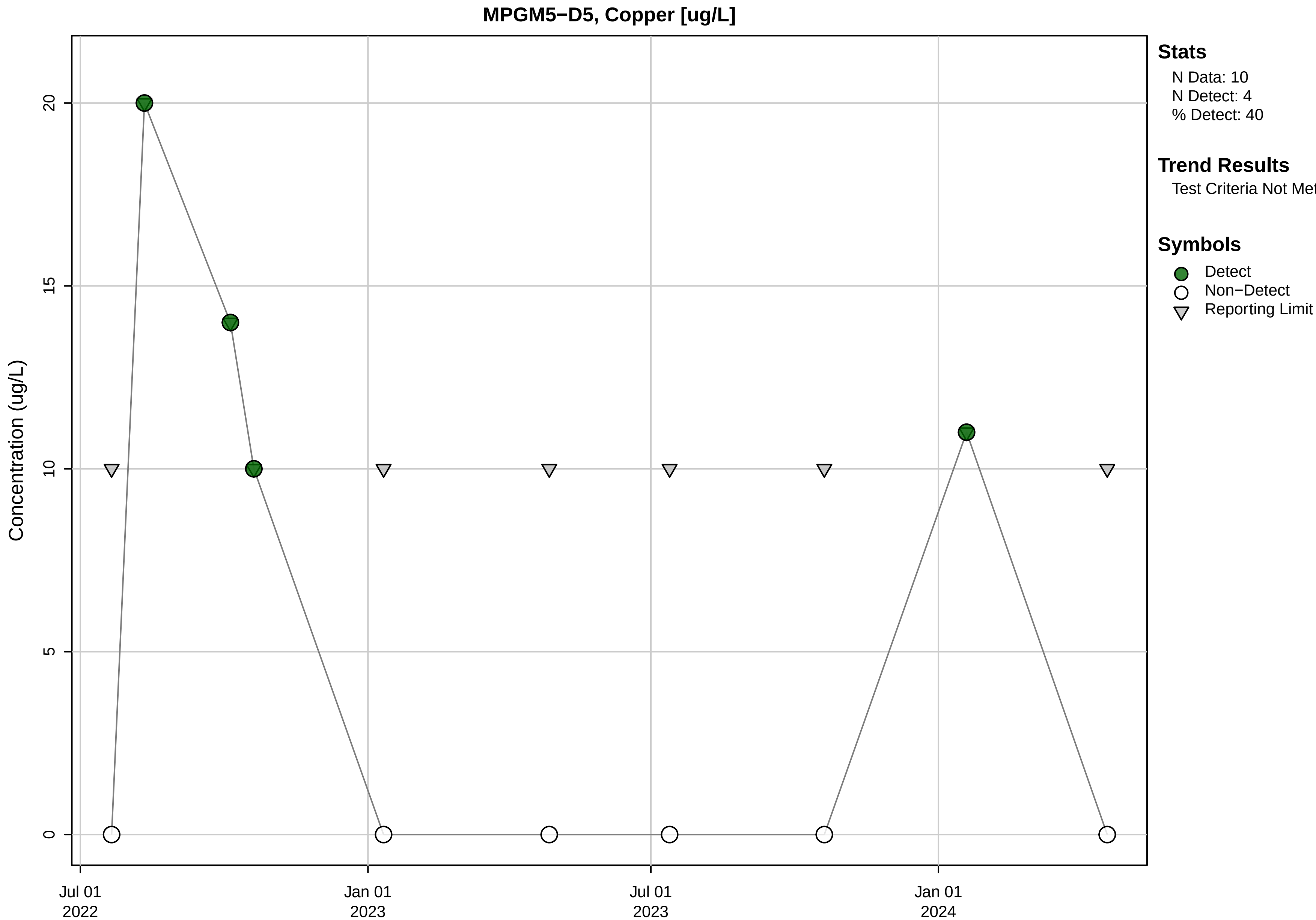


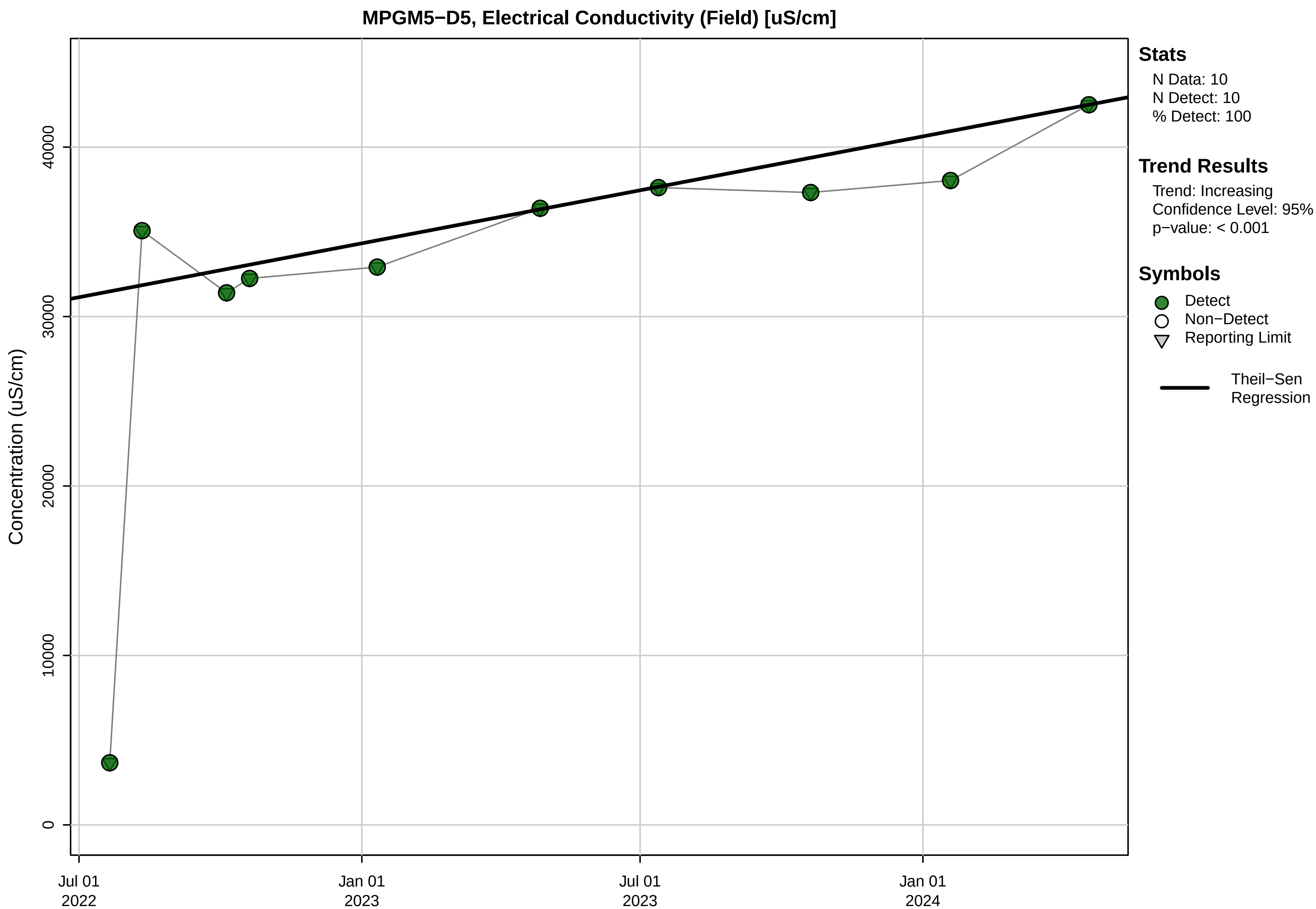
MPGM5−D5, Boron [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
2500
3000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.381
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


MPGM5−D5, Cadmium [ug/L]
Concentration (ug/L)
0
10
20
30
40
50
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.156
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

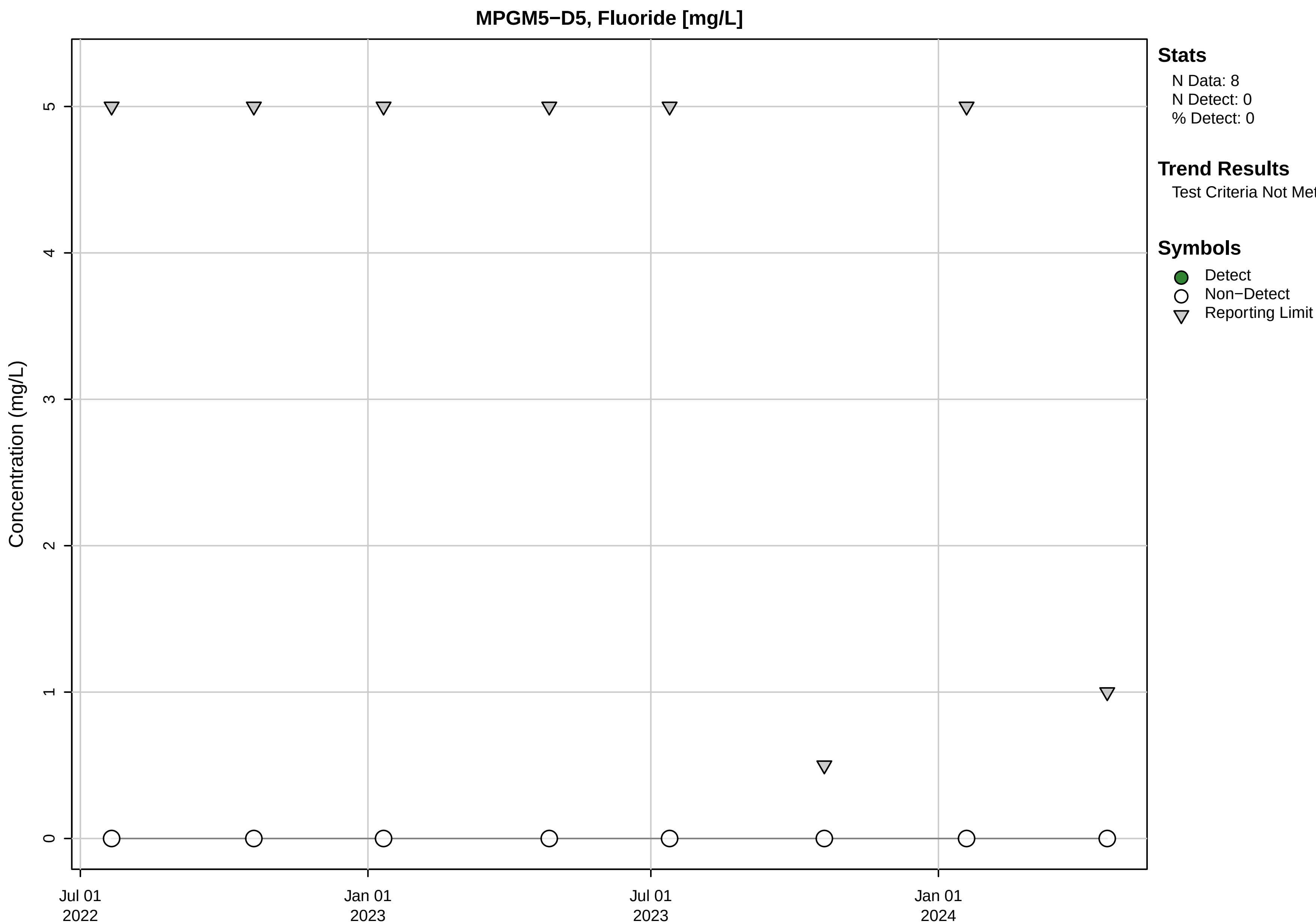

MPGM5−D5, Chloride [mg/L]
Concentration (mg/L)
0
1000
2000
3000
4000
5000
6000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0466
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

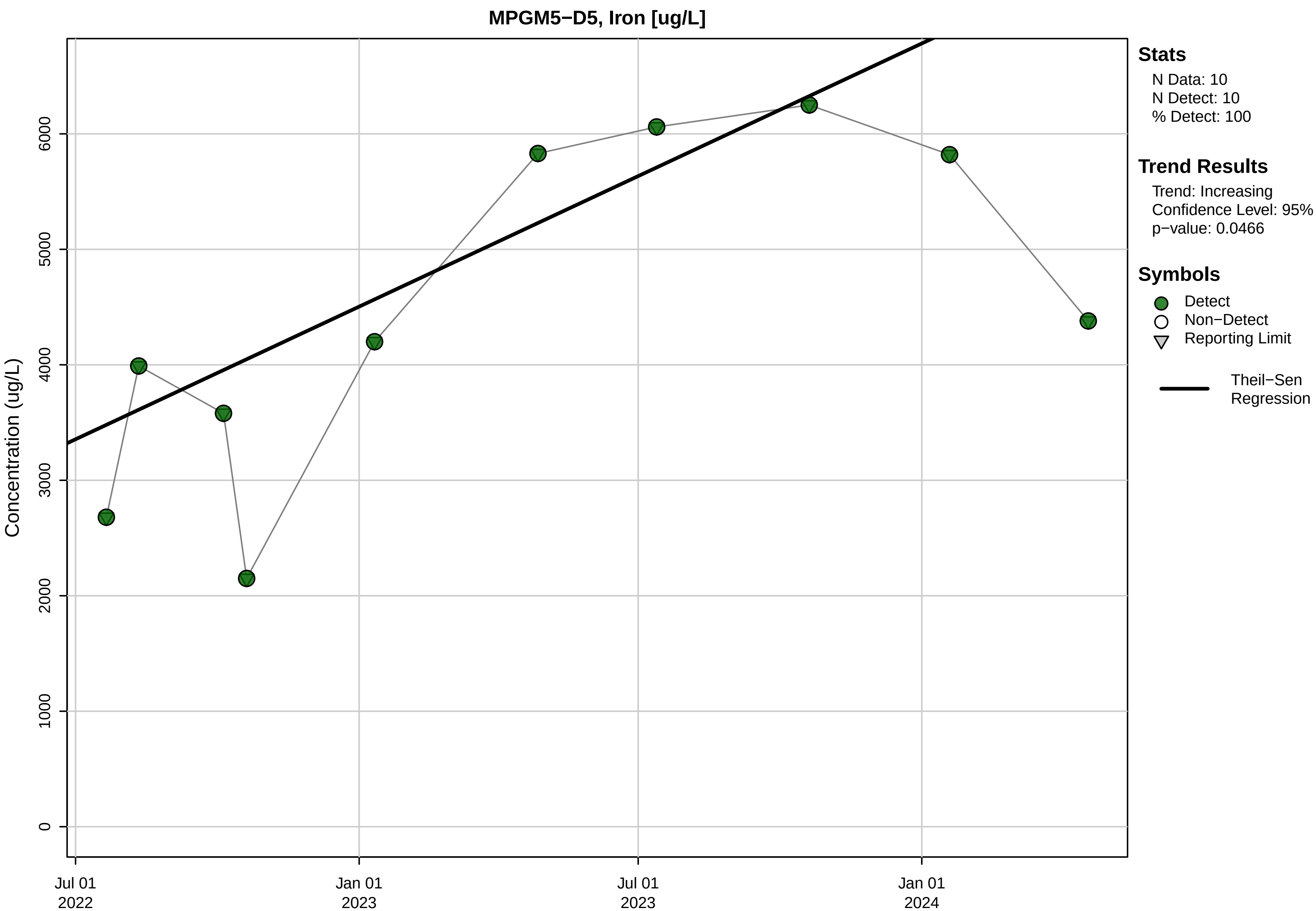

MPGM5−D5, Chromium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
12
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

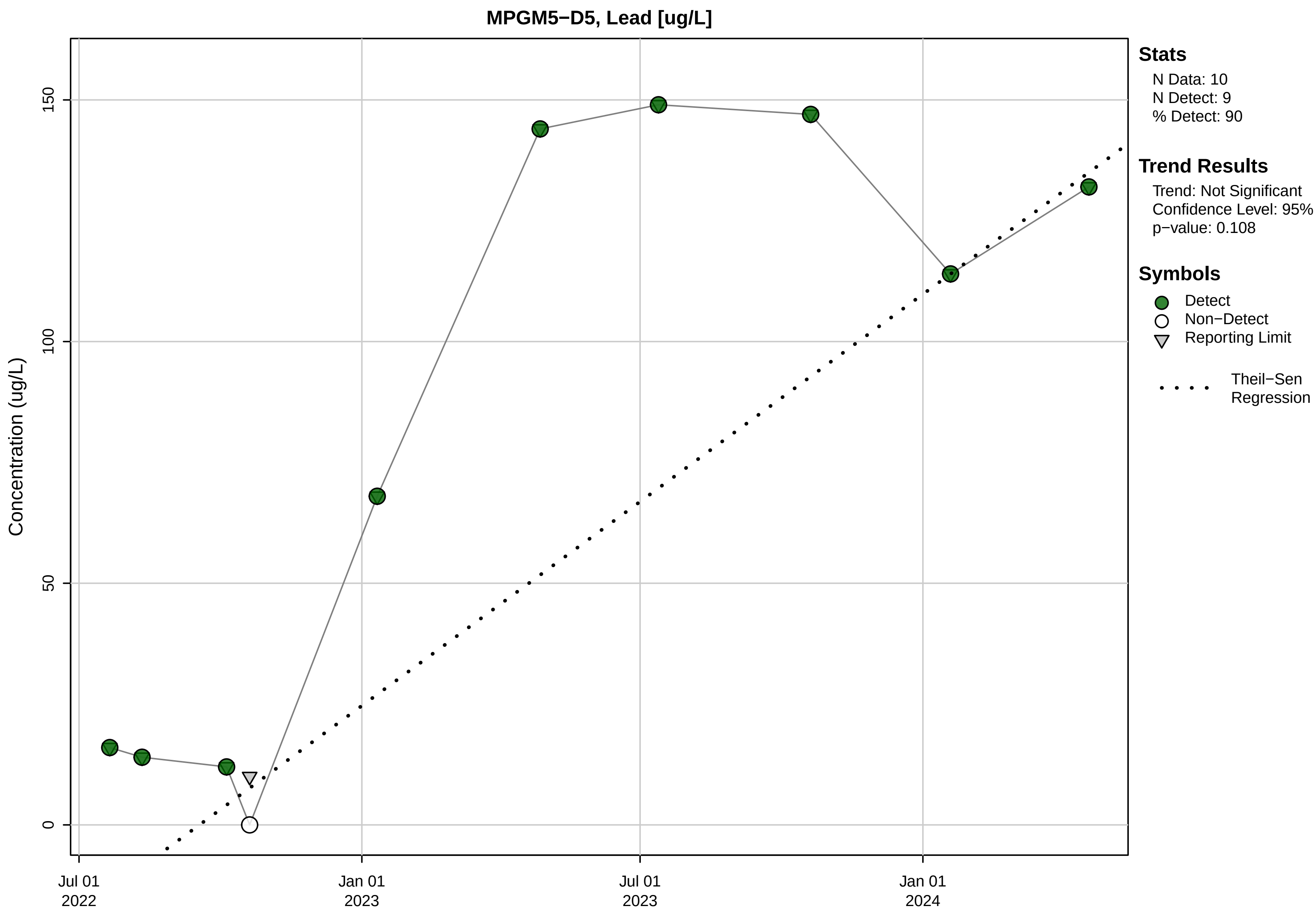

MPGM5−D5, Copper [ug/L]
Concentration (ug/L)
0
5
10
15
20
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 4
% Detect: 40
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

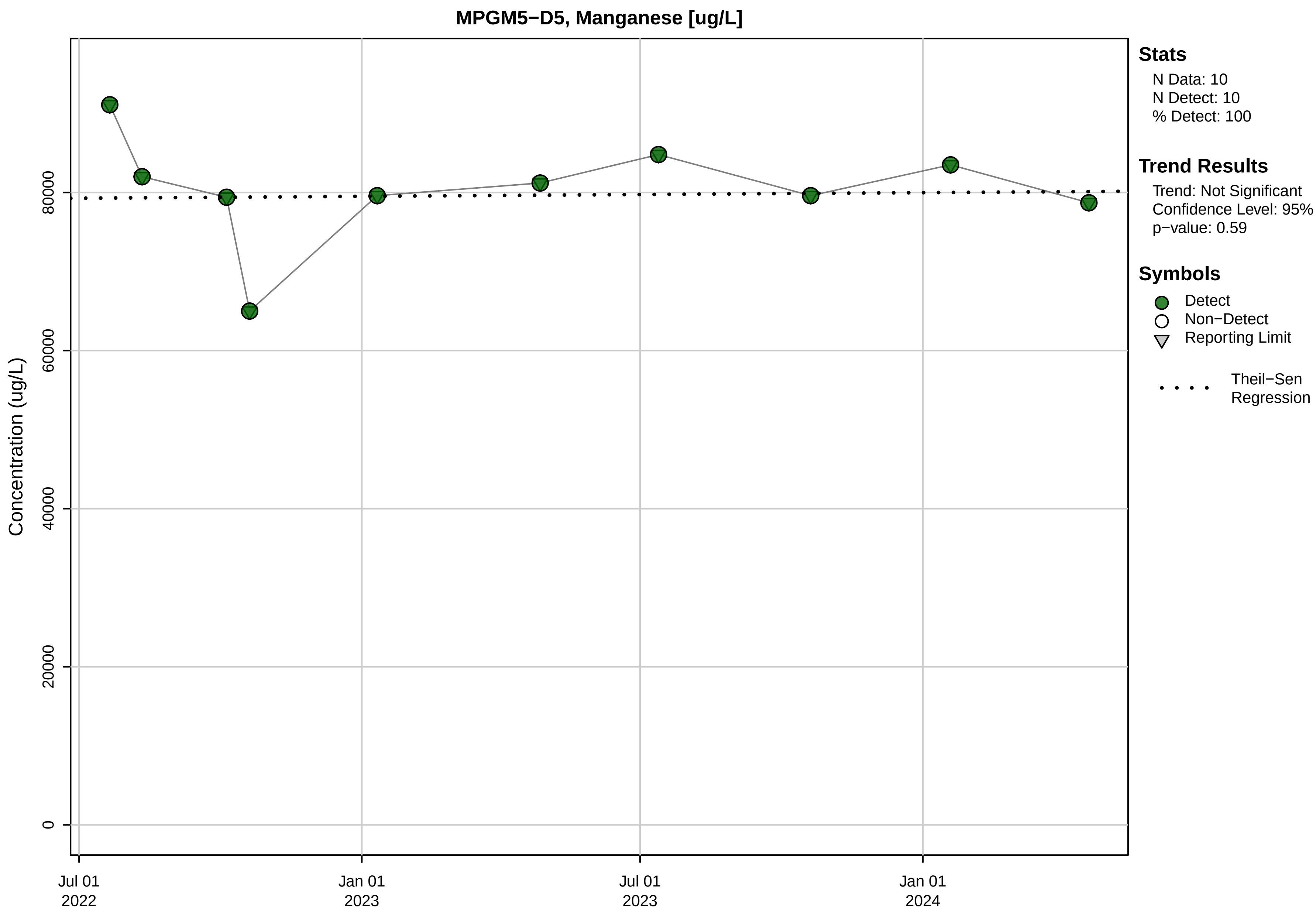


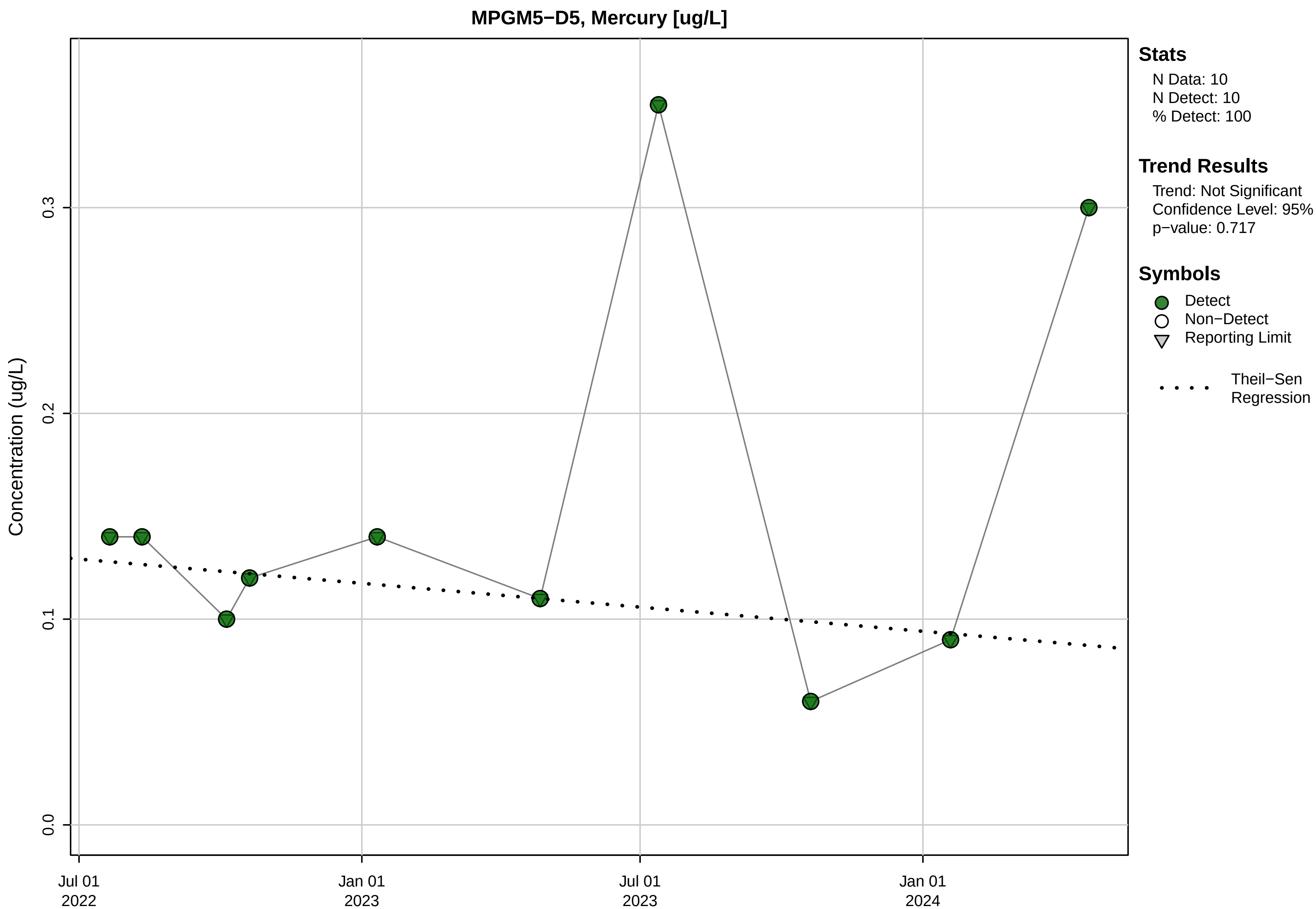
MPGM5−D5, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
0
10000
20000
30000
40000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: < 0.001
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

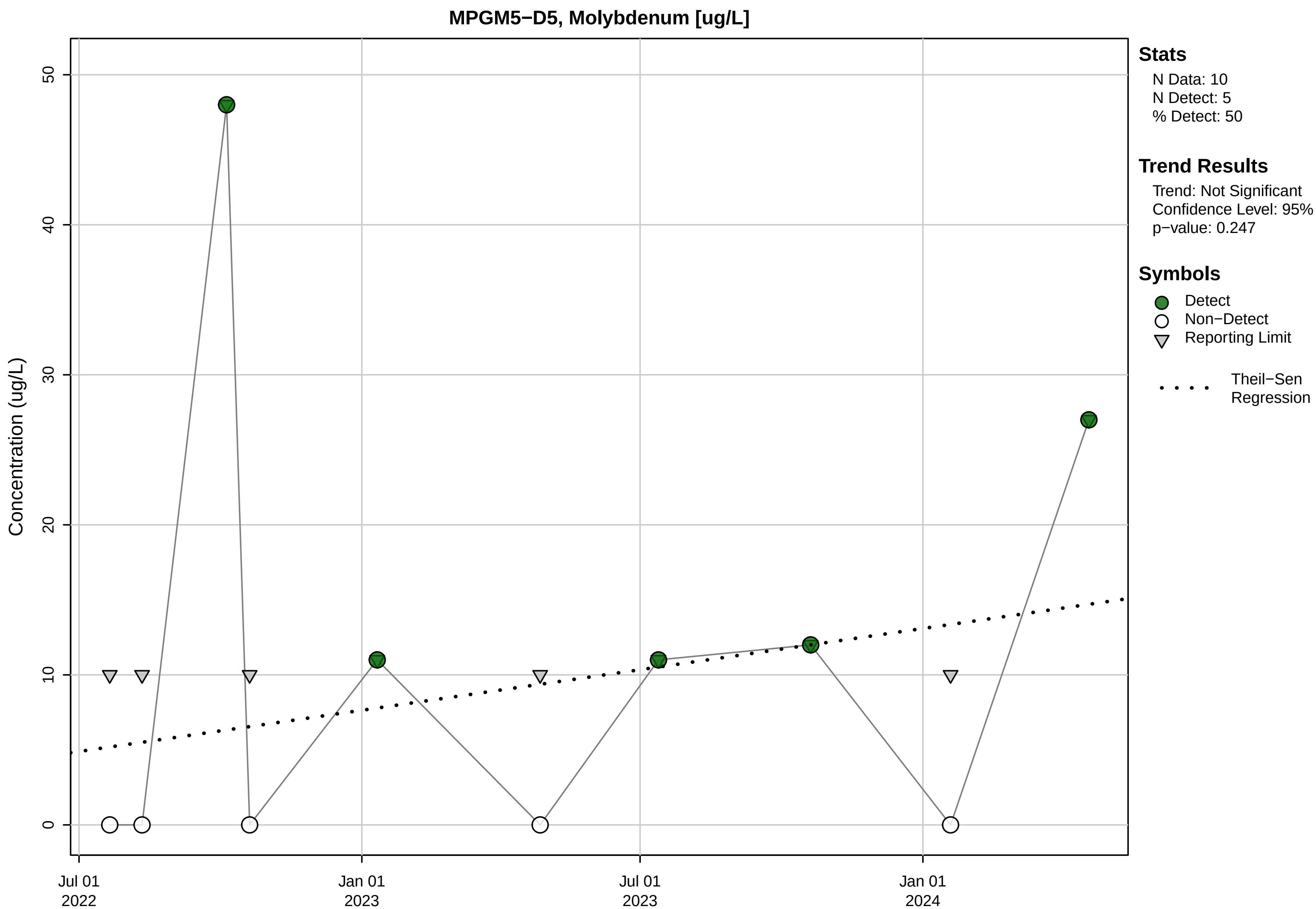

MPGM5−D5, Fluoride [mg/L]
Concentration (mg/L)
0
1
2
3
4
5
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


MPGM5−D5, Iron [ug/L]
Concentration (ug/L)
0
1000
2000
3000
4000
5000
6000
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0466
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

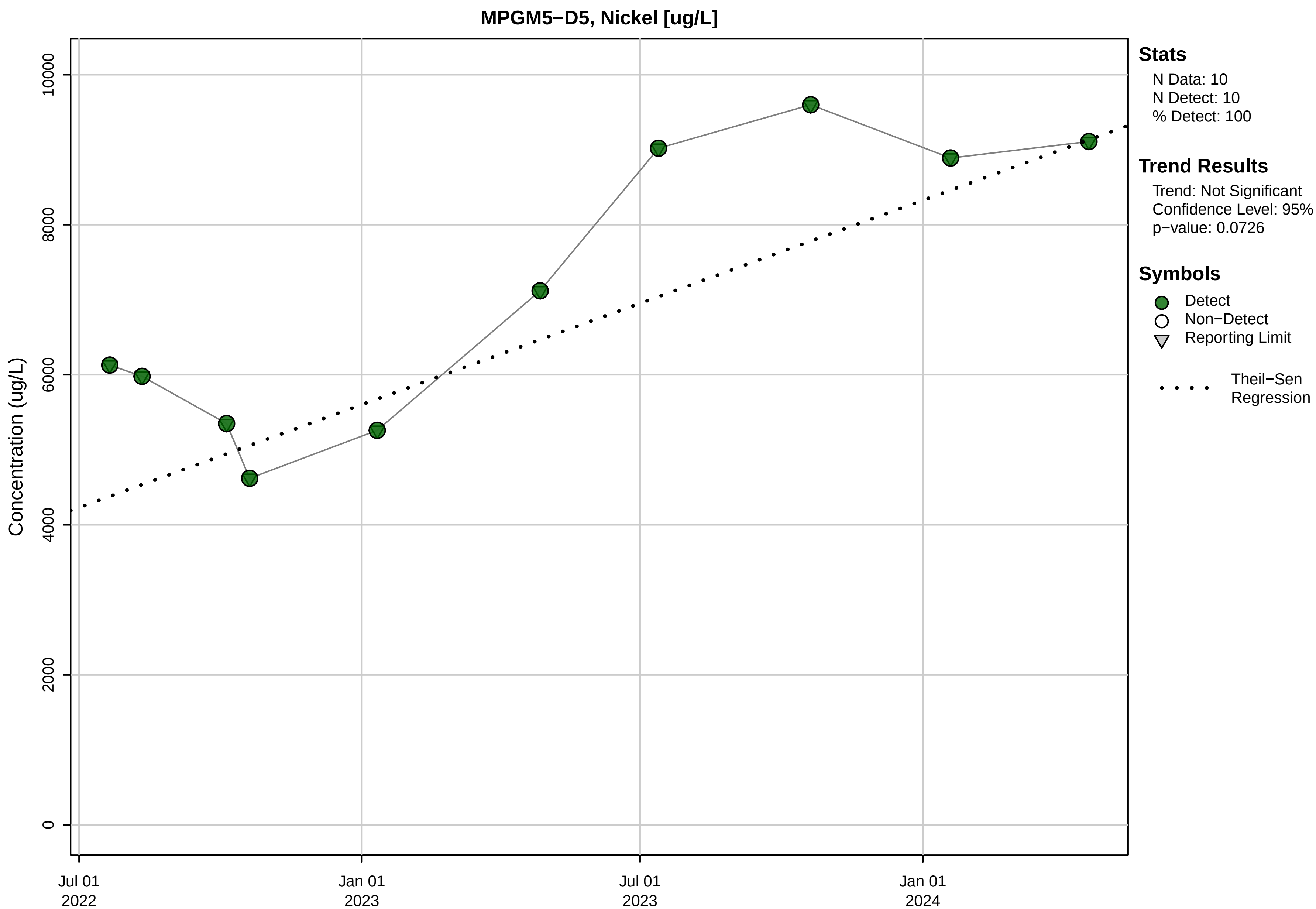

MPGM5−D5, Lead [ug/L]
Concentration (ug/L)
0
50
100
150
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 10
N Detect: 9
% Detect: 90
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.108
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

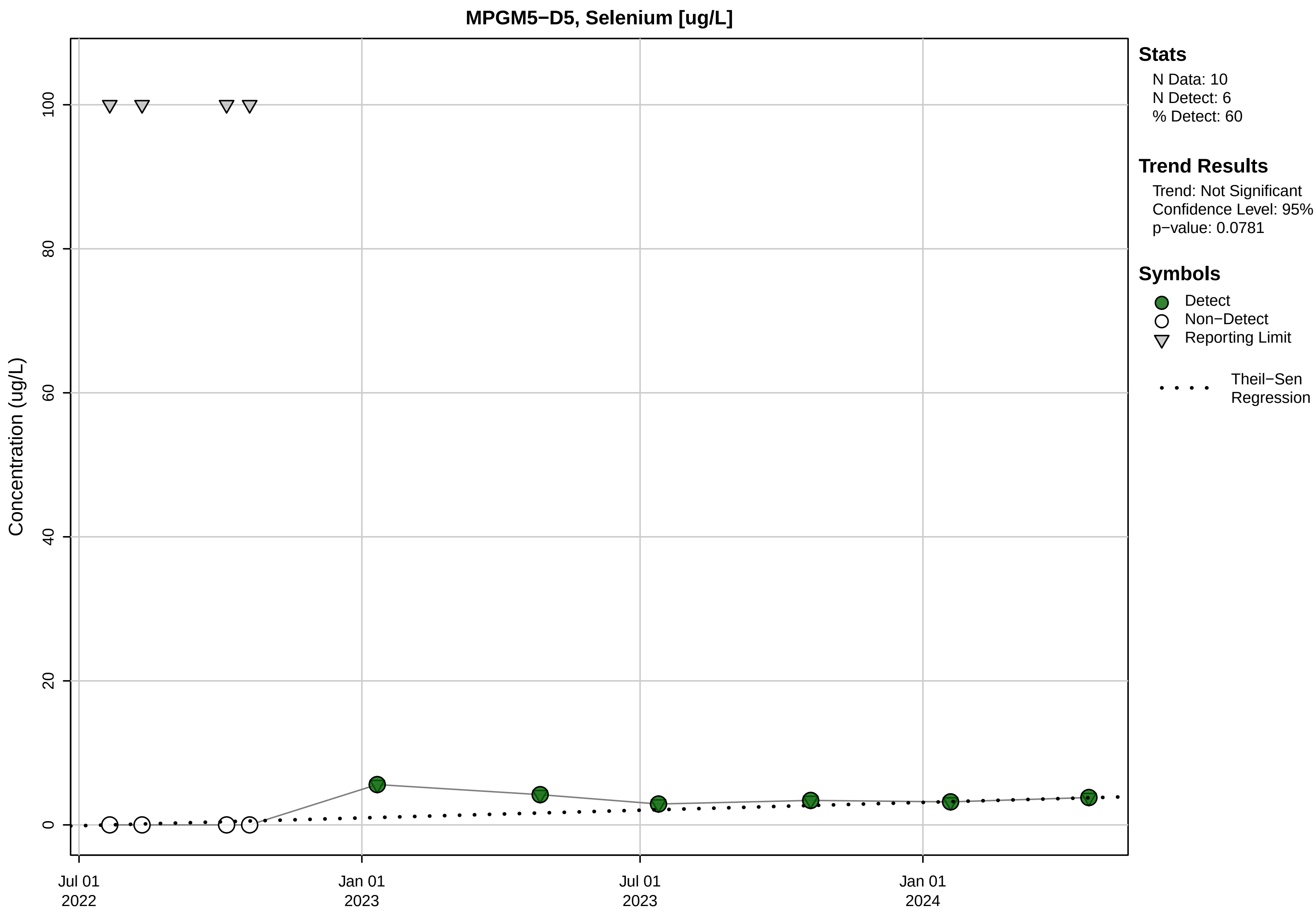

MPGM5−D5, Manganese [ug/L]
Concentration (ug/L)
0
20000
40000
60000
80000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.59
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

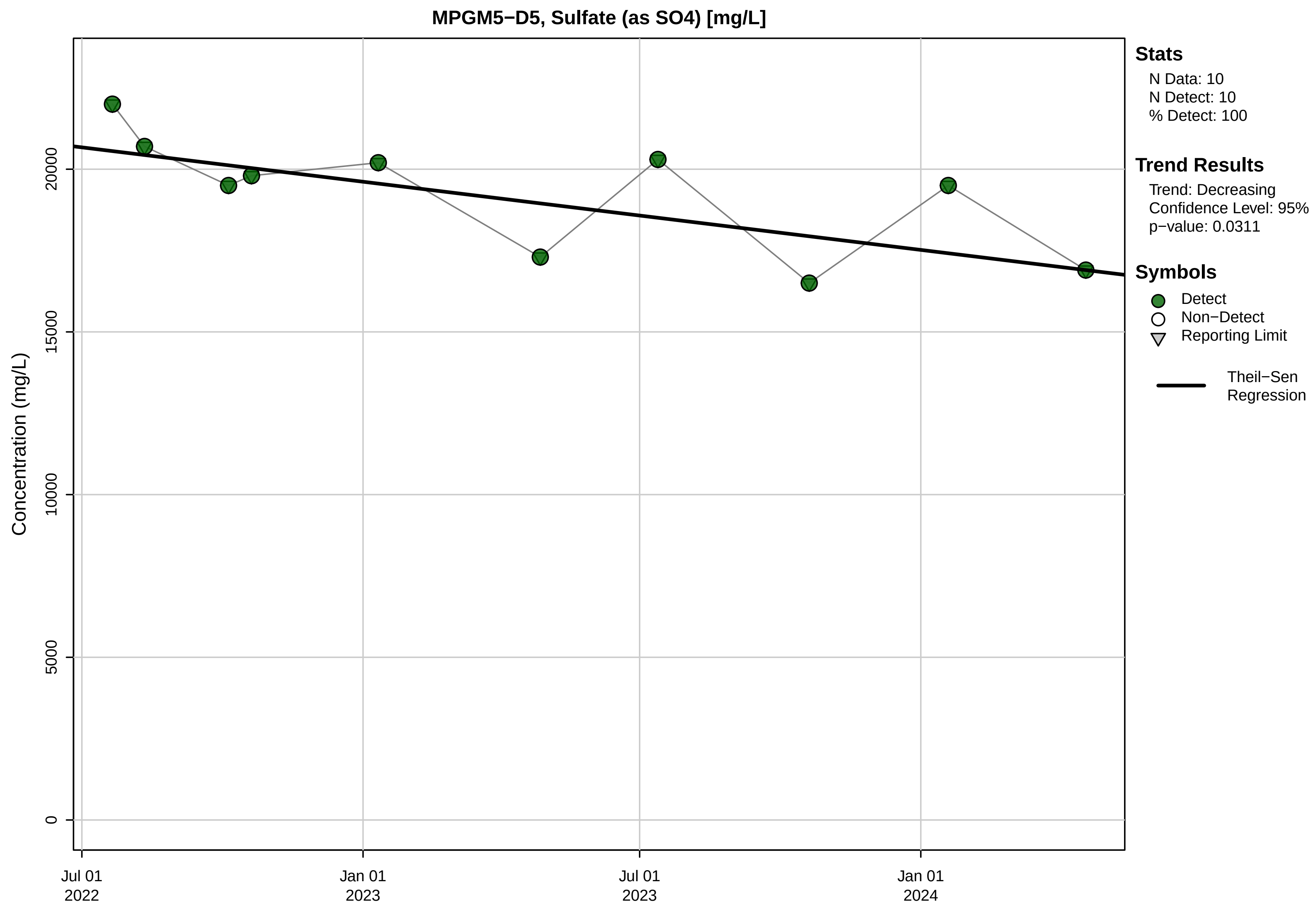

MPGM5−D5, Mercury [ug/L]
Concentration (ug/L)
0.0
0.1
0.2
0.3
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.717
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

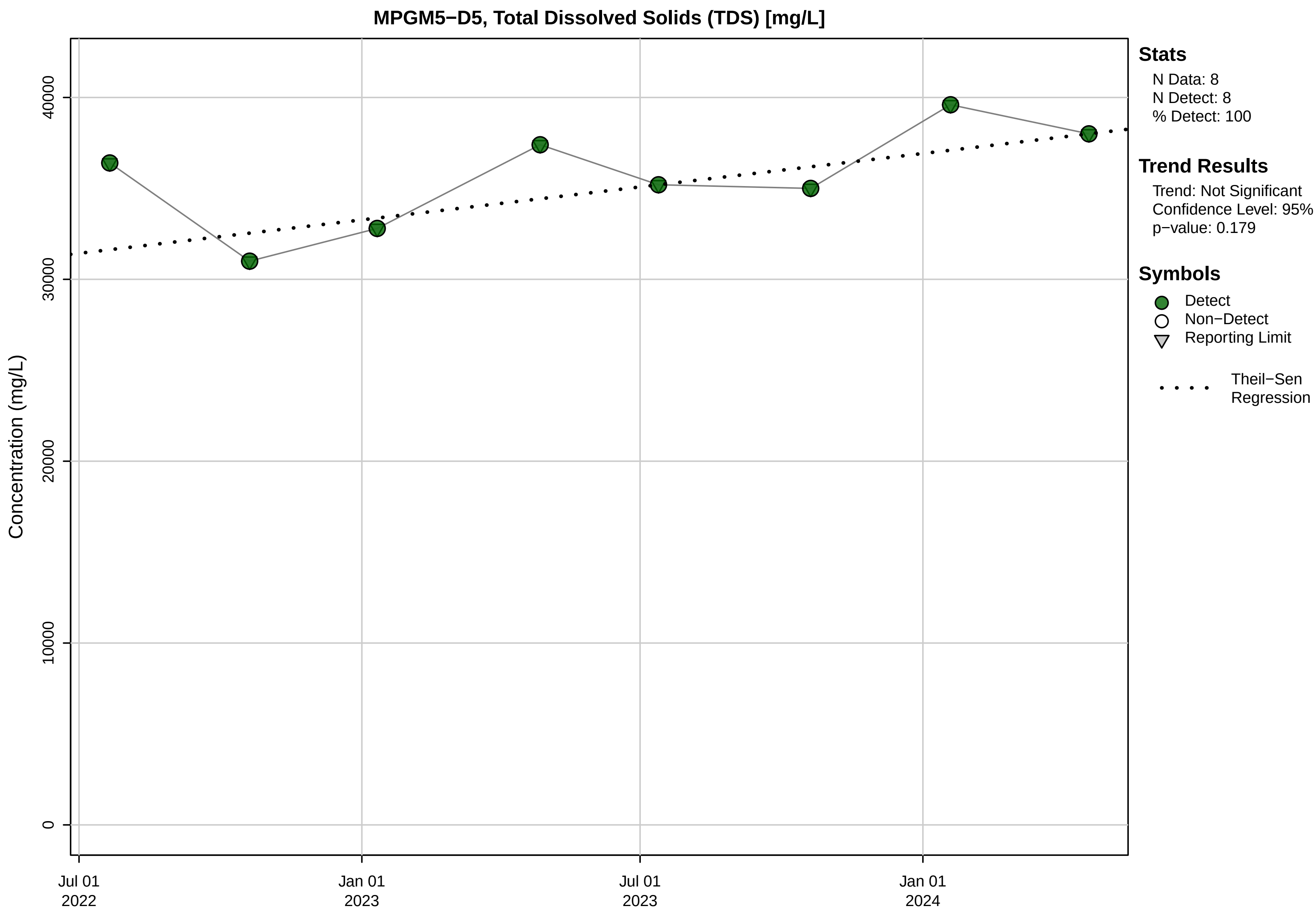


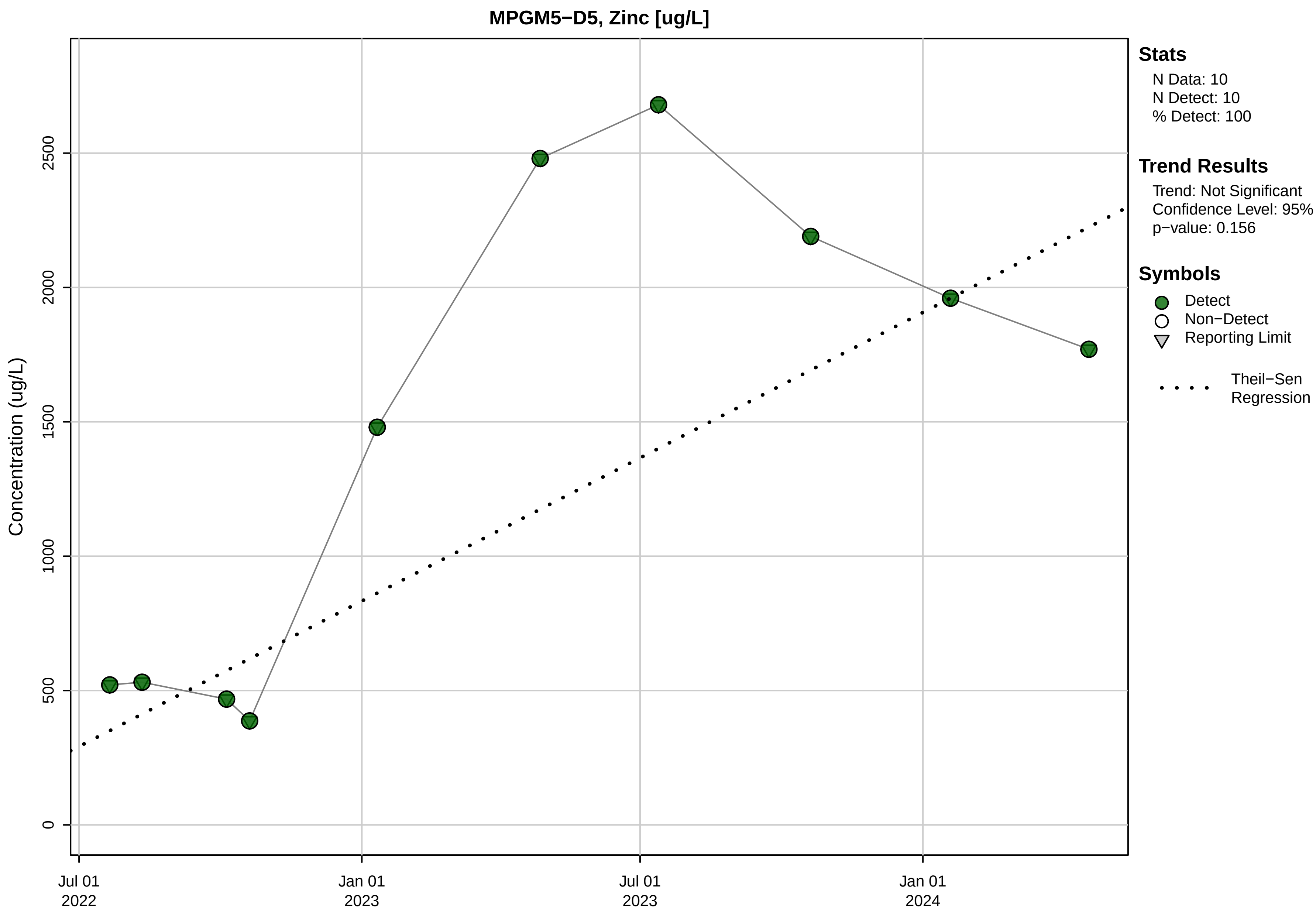
MPGM5−D5, Molybdenum [ug/L]
Concentration (ug/L)
0
10
20
30
40
50
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 5
% Detect: 50
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.247
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

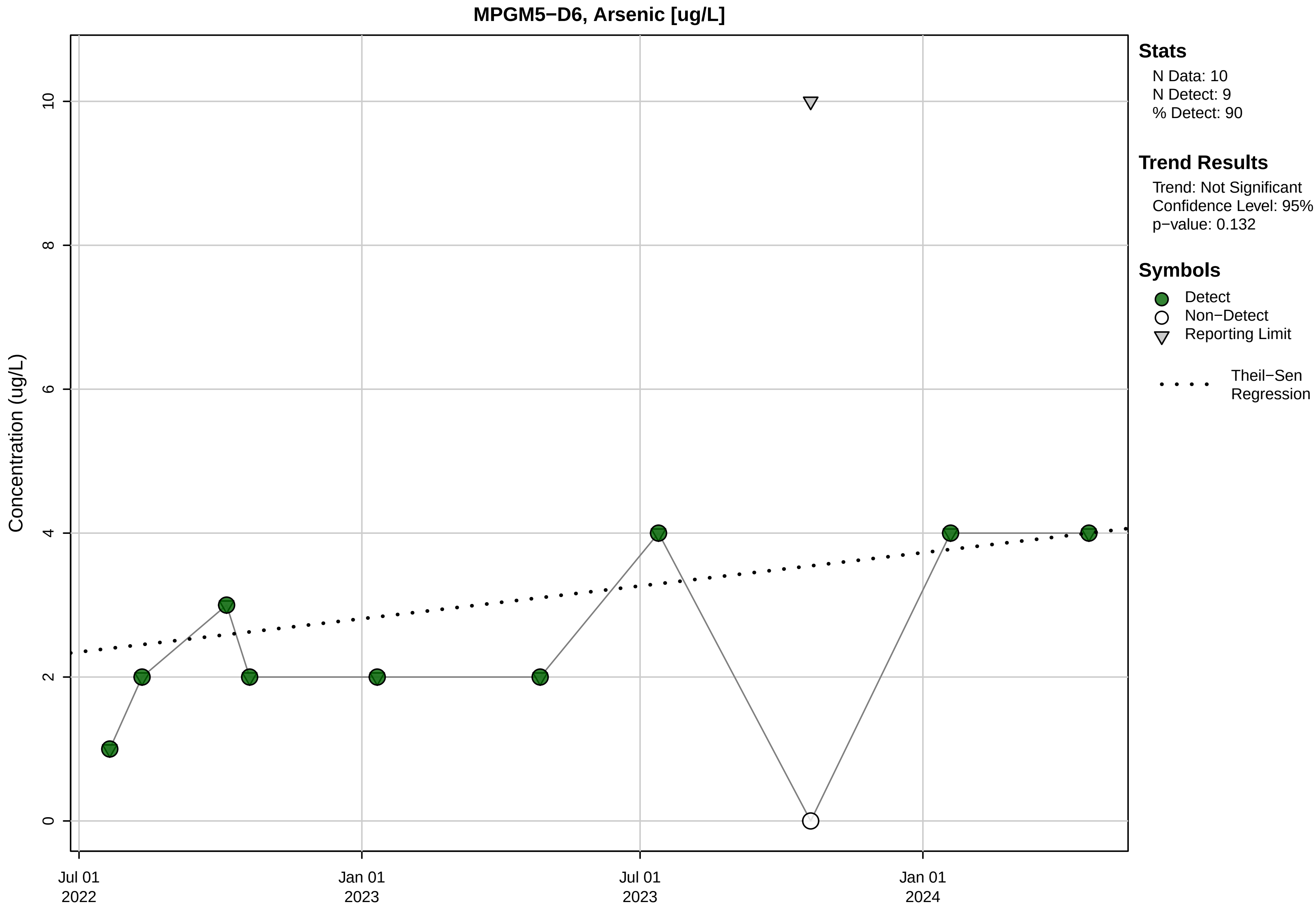

MPGM5−D5, Nickel [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
10000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0726
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


MPGM5−D5, Selenium [ug/L]
Concentration (ug/L)
0
20
40
60
80
100
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 10
N Detect: 6
% Detect: 60
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0781
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression

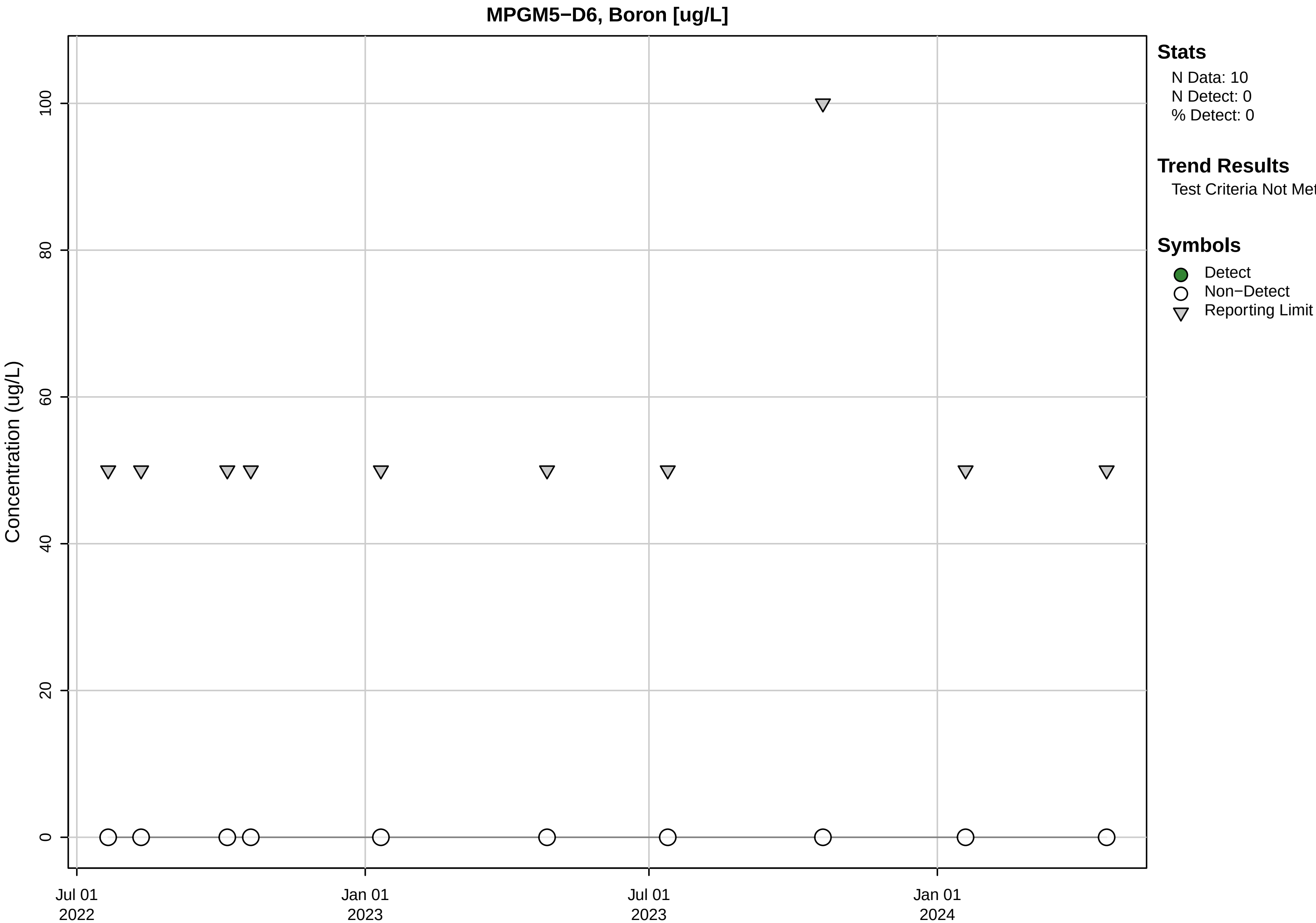

MPGM5−D5, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
5000
10000
15000
20000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.0311
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


MPGM5−D5, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
10000
20000
30000
40000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

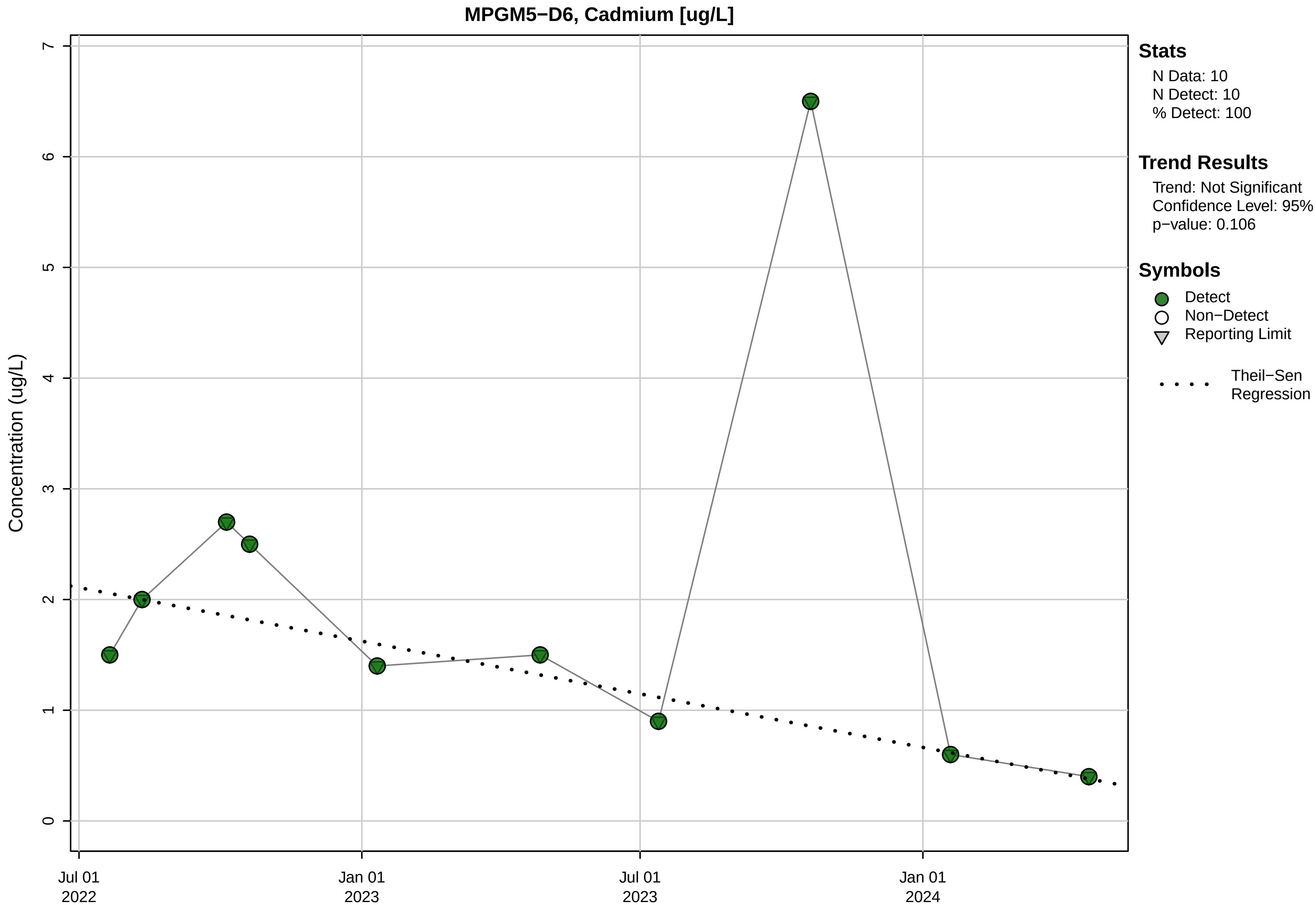

MPGM5−D5, Zinc [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
2500
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.156
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



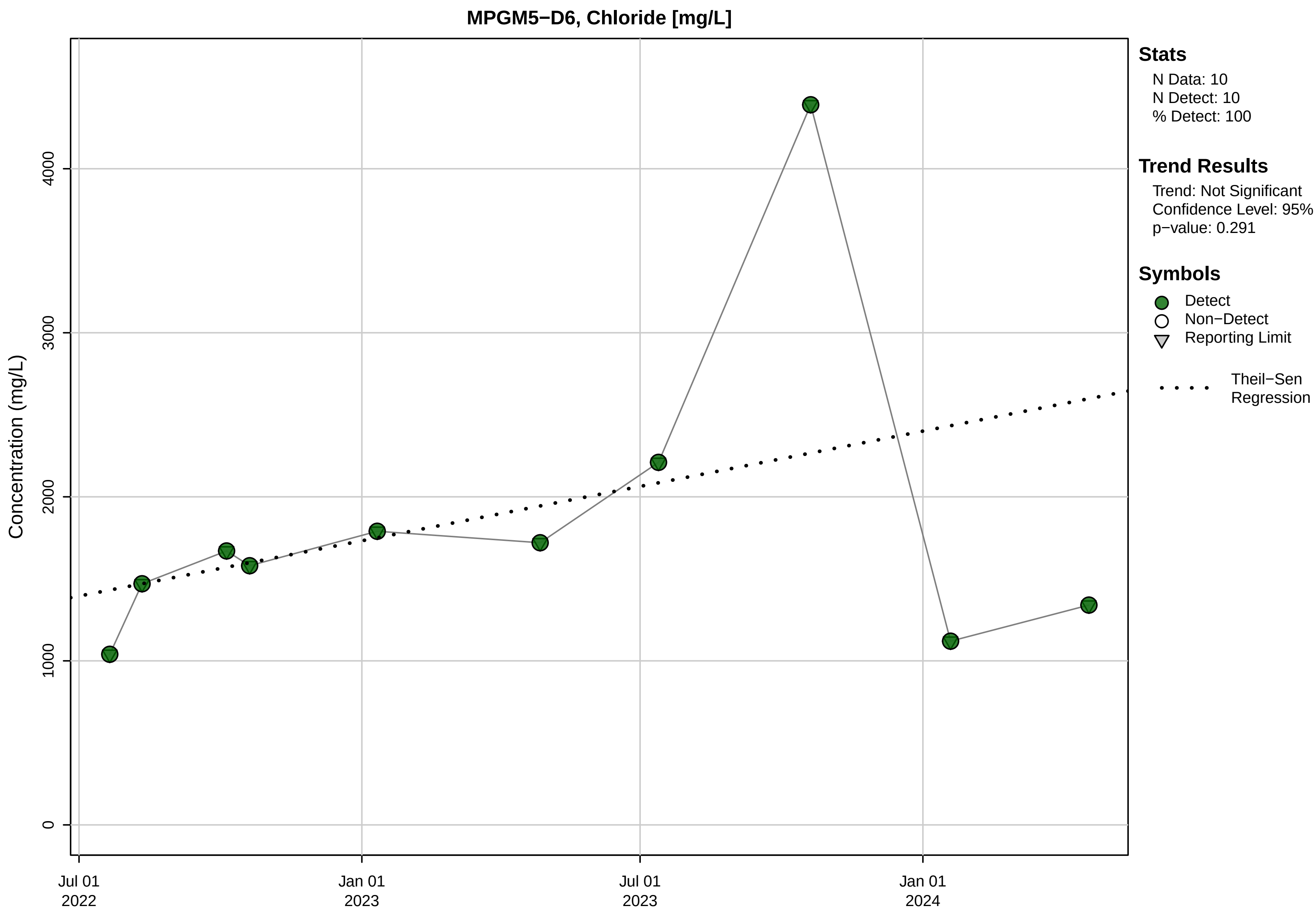
MPGM5−D6, Arsenic [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 9
% Detect: 90
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.132
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

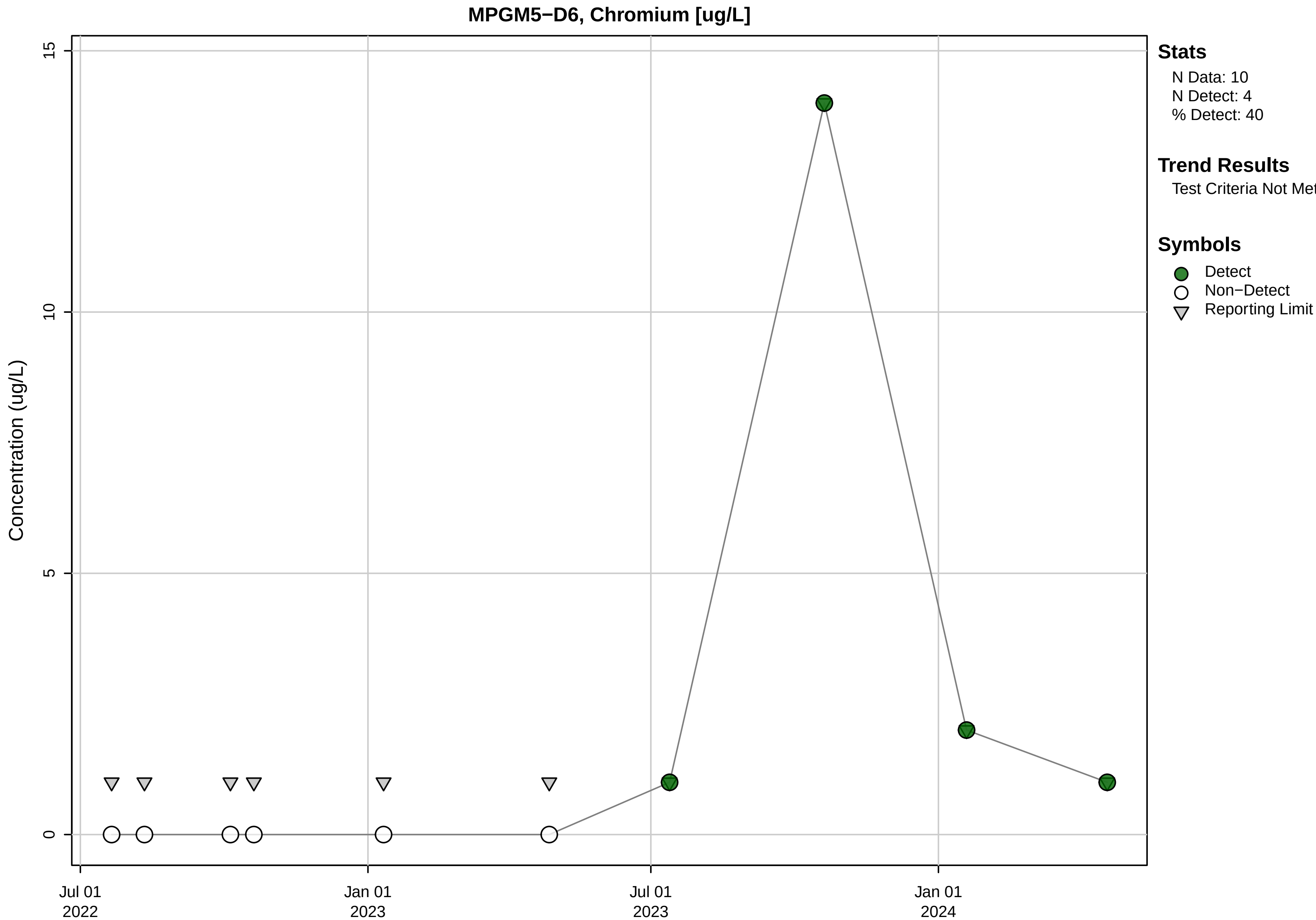


MPGM5−D6, Boron [ug/L]
Concentration (ug/L)
0
20
40
60
80
100
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 0
% Detect: 0
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

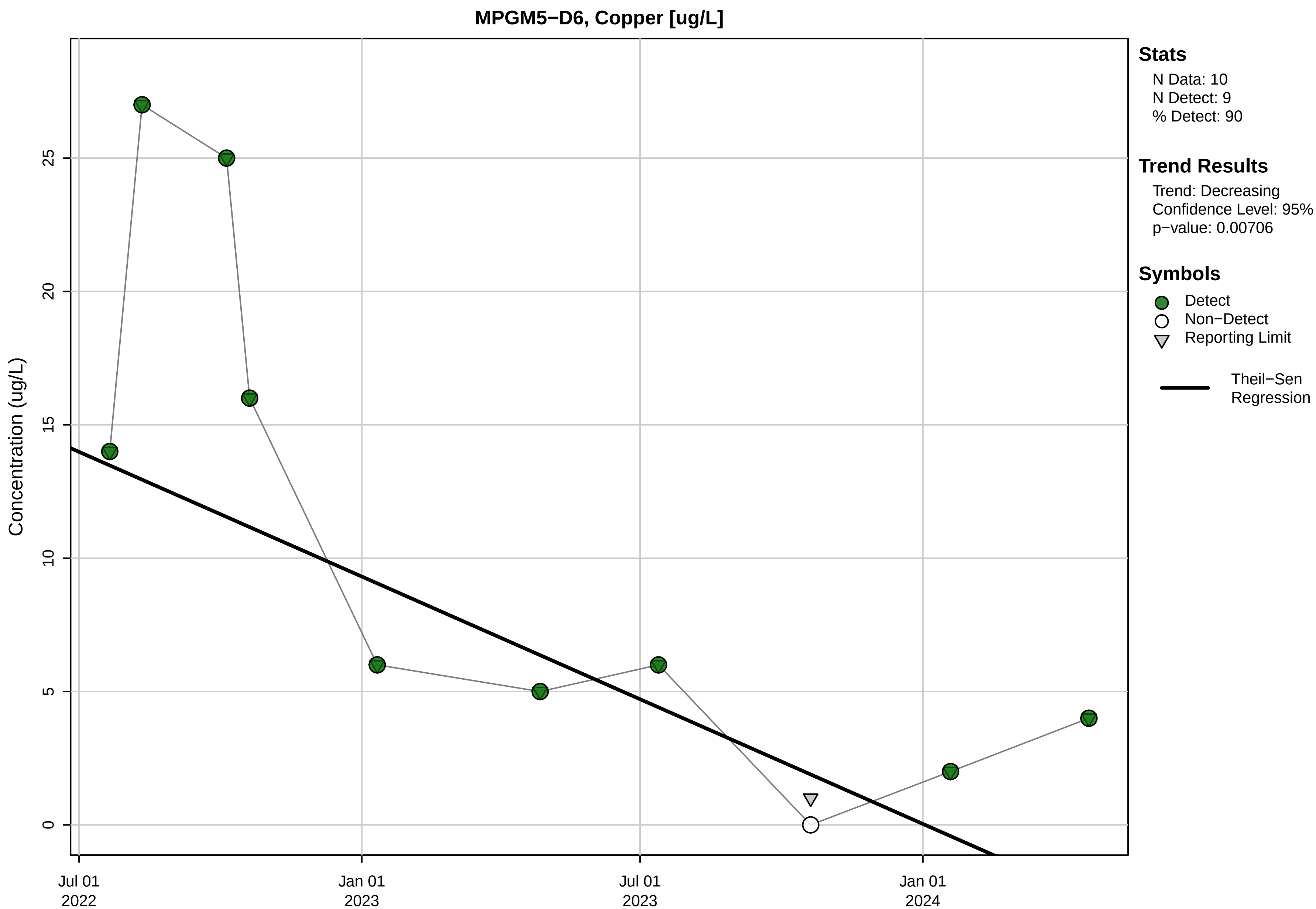


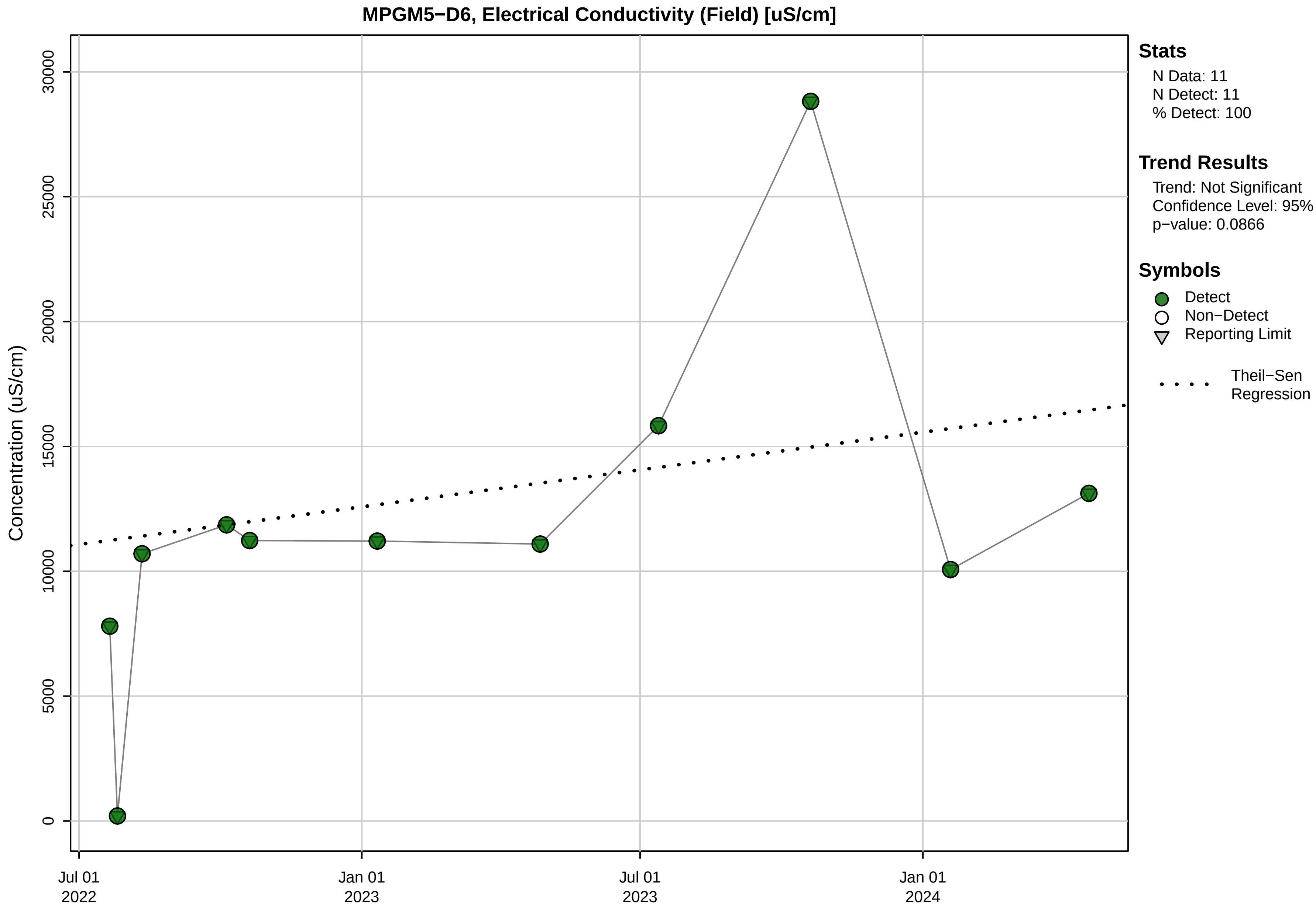
MPGM5−D6, Cadmium [ug/L]
Concentration (ug/L)
0
1
2
3
4
5
6
7
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.106
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


MPGM5−D6, Chloride [mg/L]
Concentration (mg/L)
0
1000
2000
3000
4000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.291
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

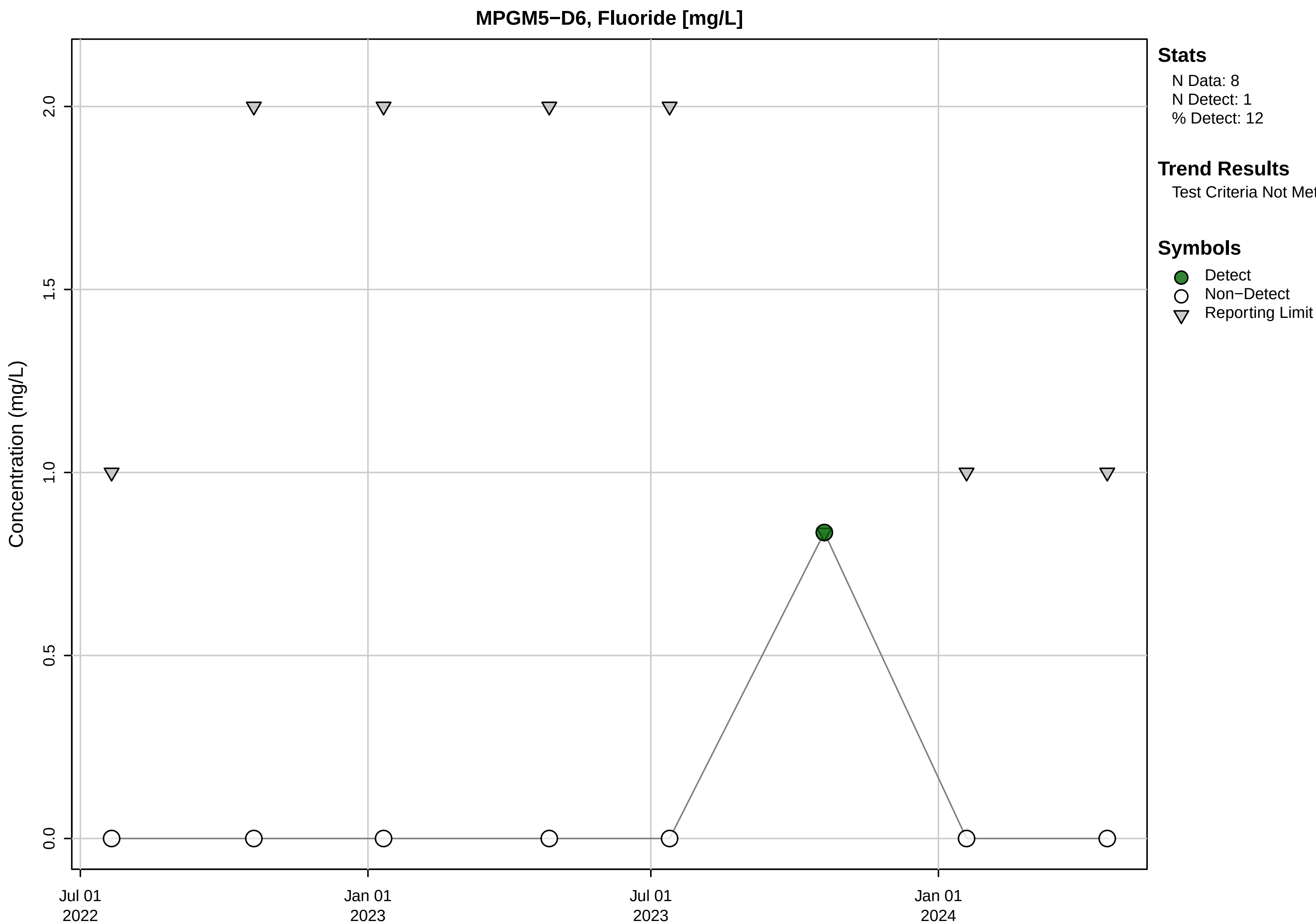


MPGM5−D6, Chromium [ug/L]
Concentration (ug/L)
0
5
10
15
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 4
% Detect: 40
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit

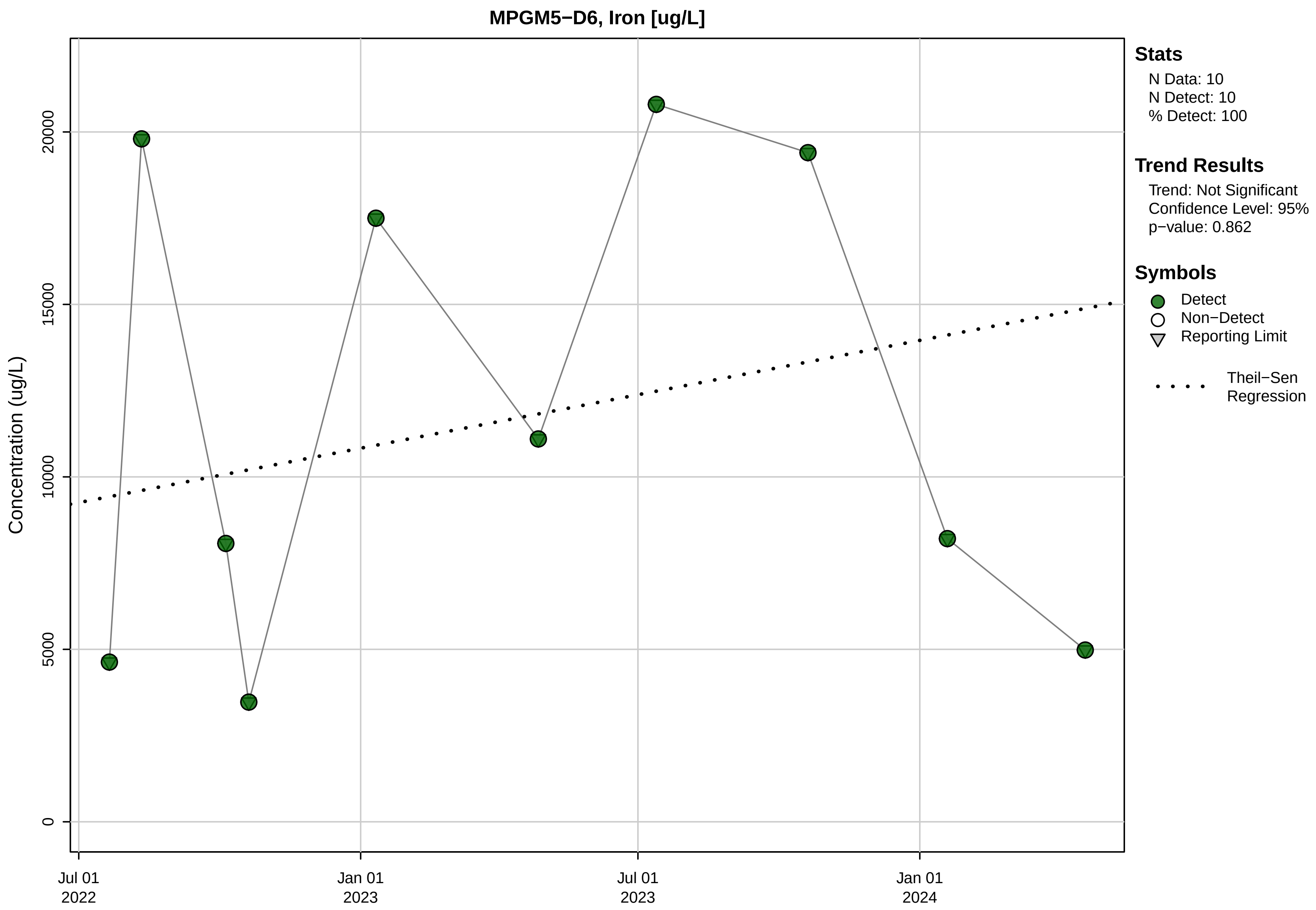

MPGM5−D6, Copper [ug/L]
Concentration (ug/L)
0
5
10
15
20
25
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 9
% Detect: 90
Trend Results
Trend: Decreasing
Confidence Level: 95%
p−value: 0.00706
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



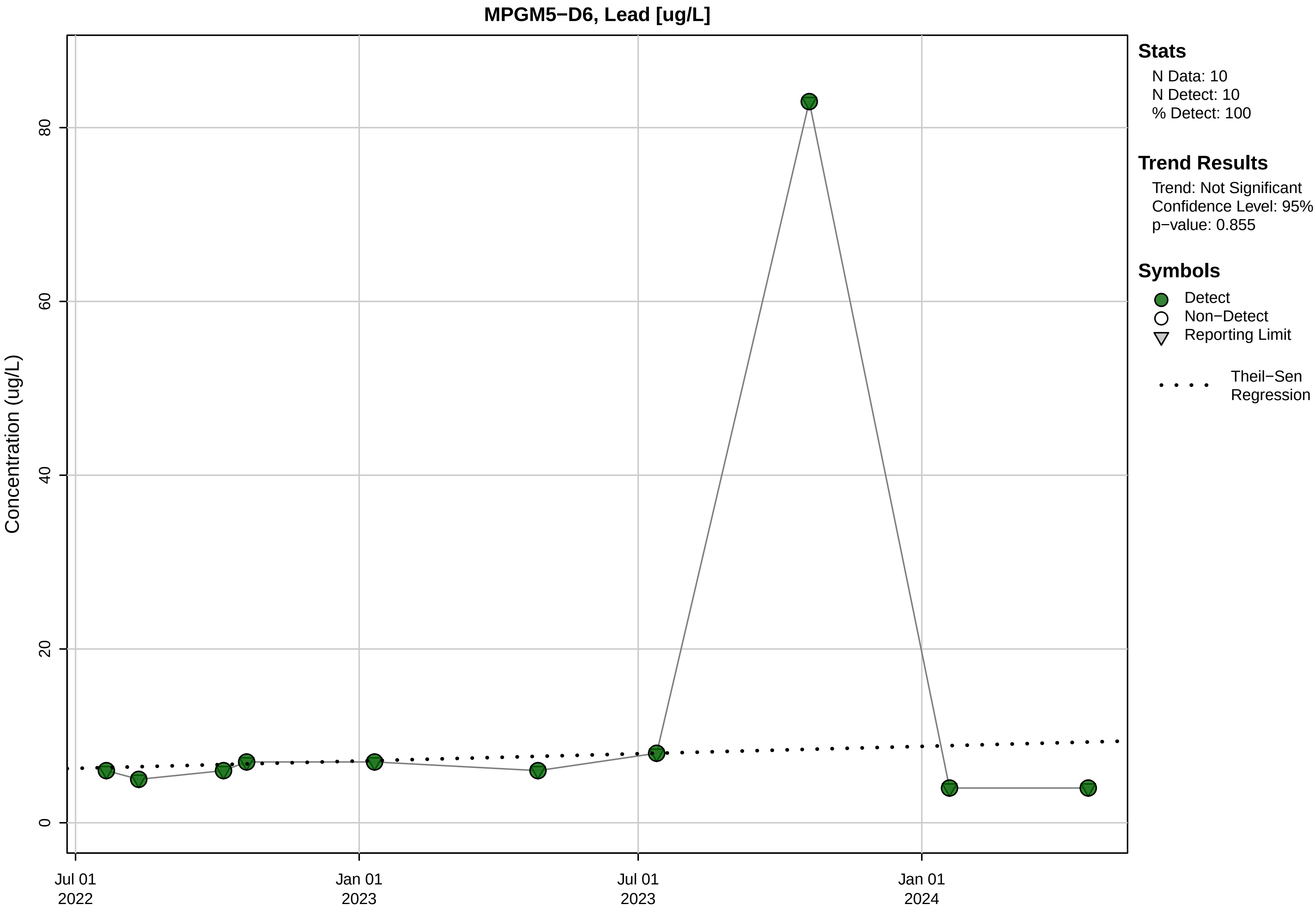
MPGM5−D6, Electrical Conductivity (Field) [uS/cm]
Concentration (uS/cm)
30000
25000
20000
15000
10000
5000
0
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 11
N Detect: 11
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.0866
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



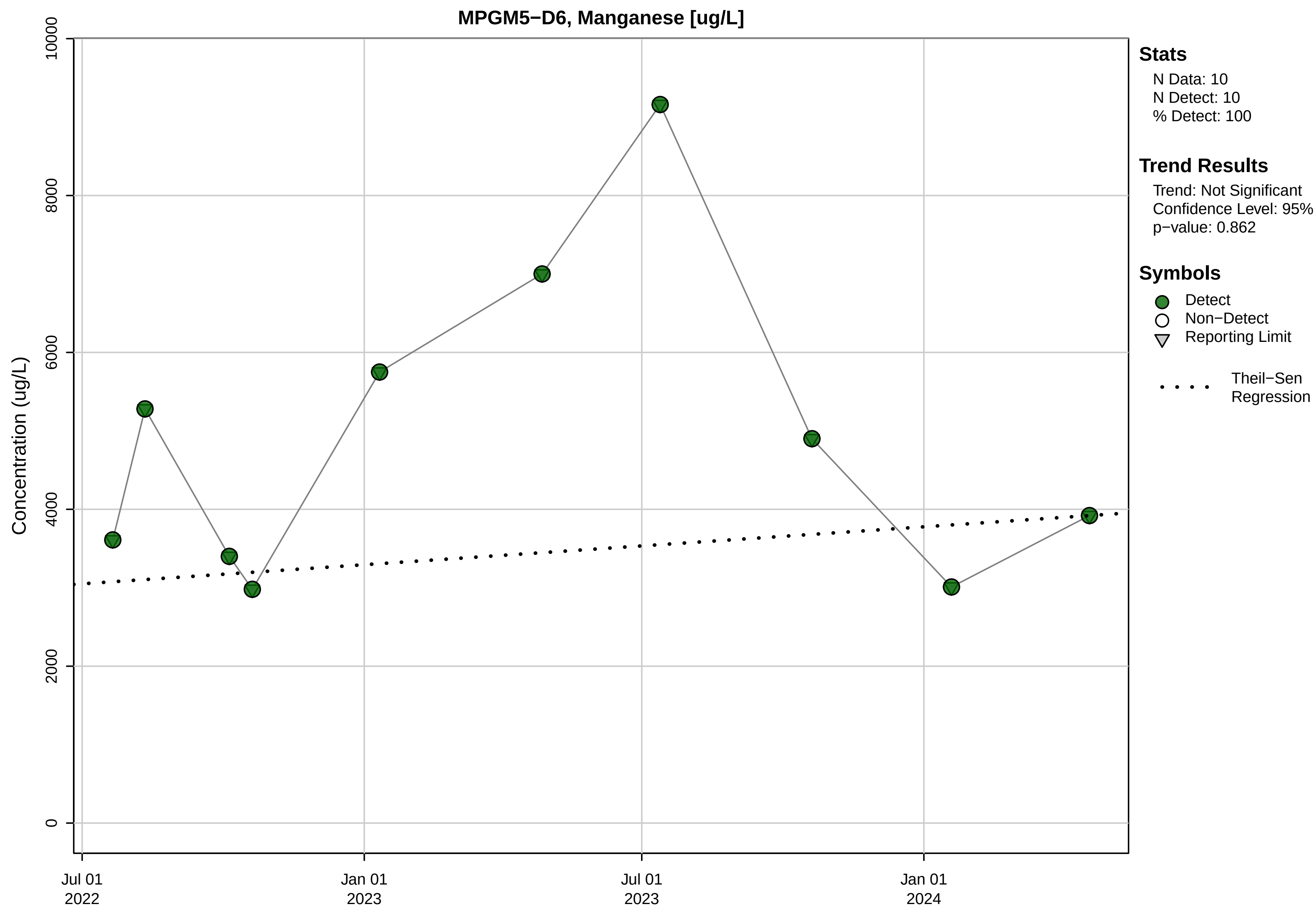
MPGM5−D6, Fluoride [mg/L]
Concentration (mg/L)
0.0
0.5
1.0
1.5
2.0
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 8
N Detect: 1
% Detect: 12
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit



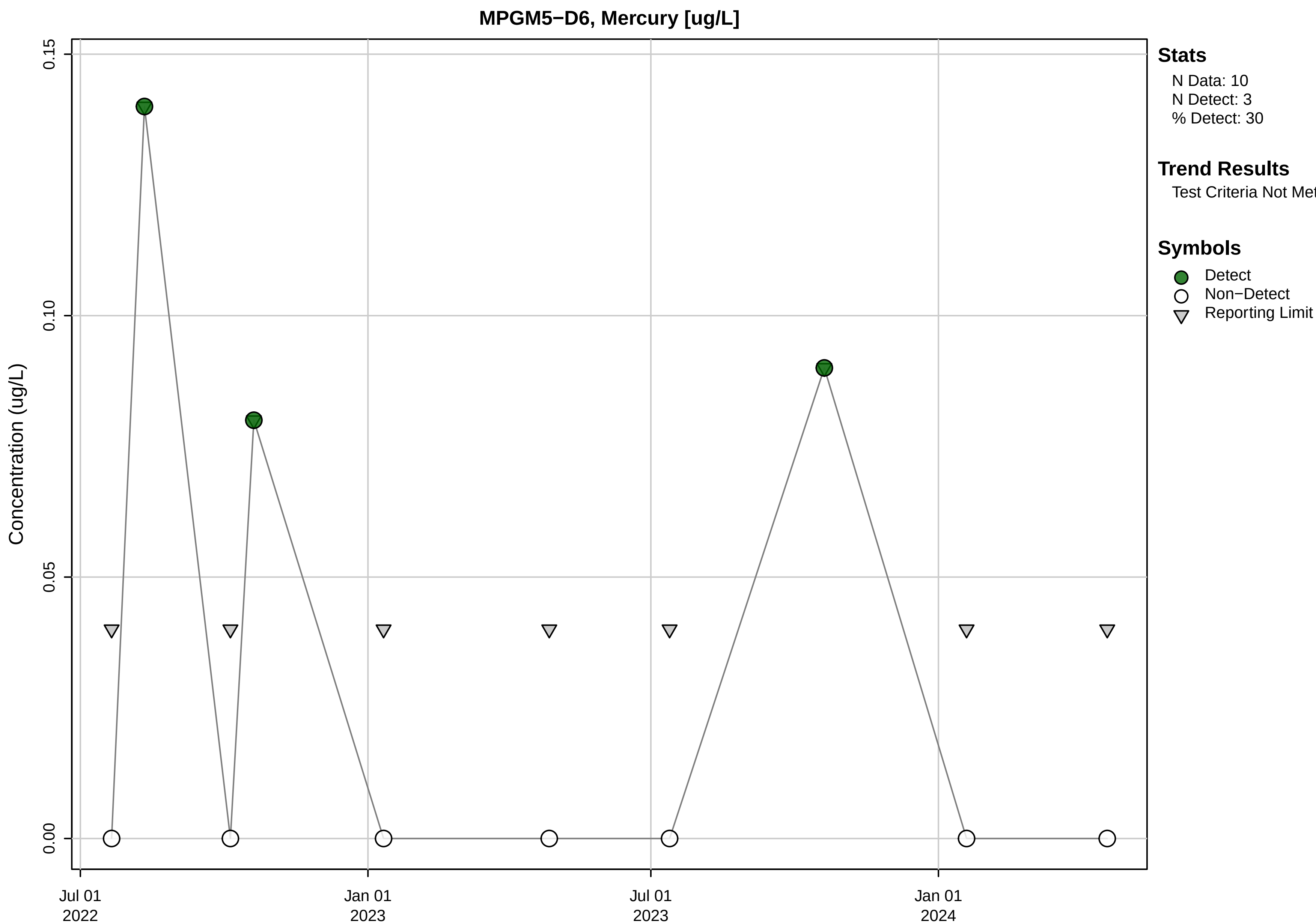
MPGM5−D6, Iron [ug/L]
Concentration (ug/L)
0
5000
10000
15000
20000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.862
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

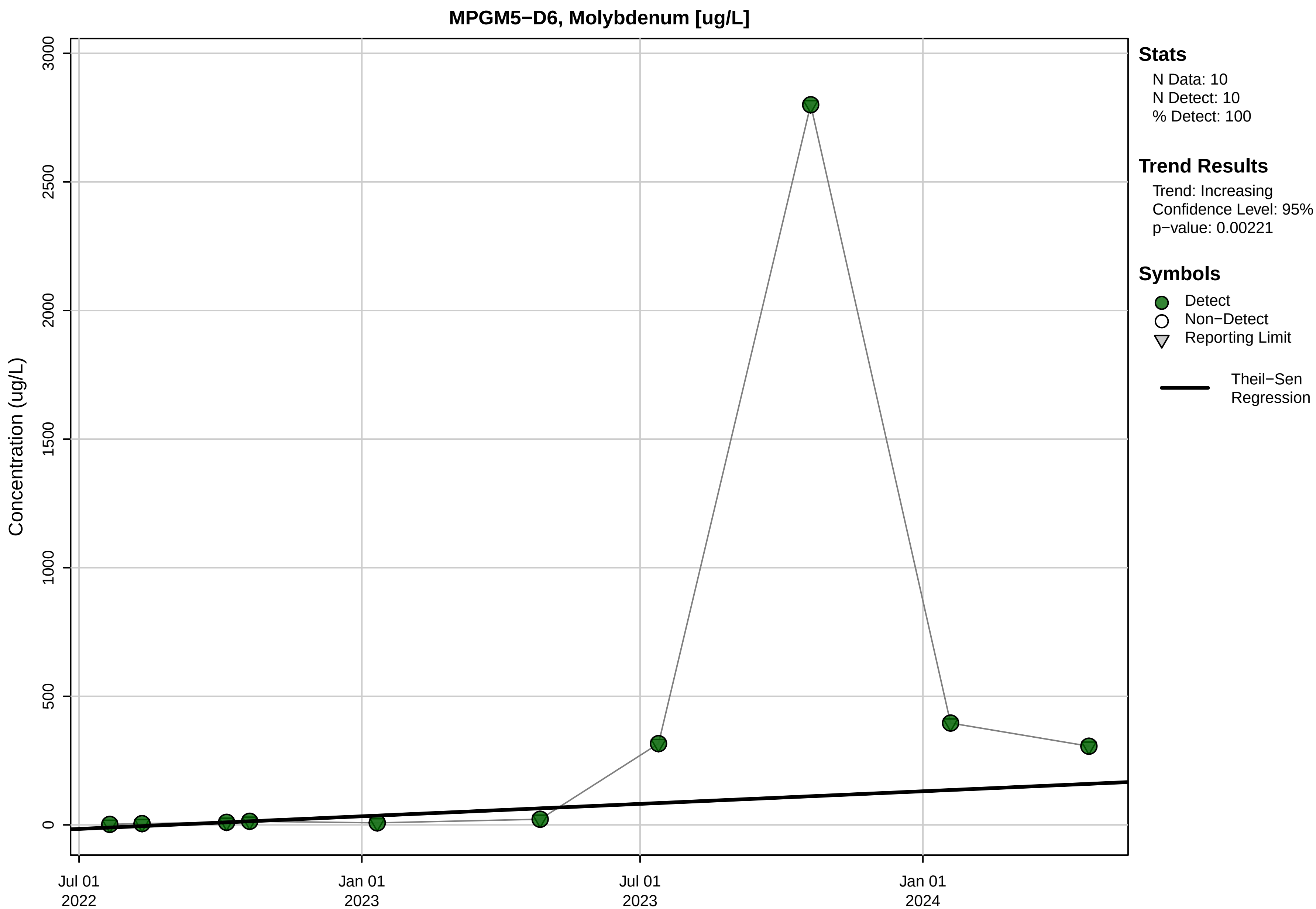


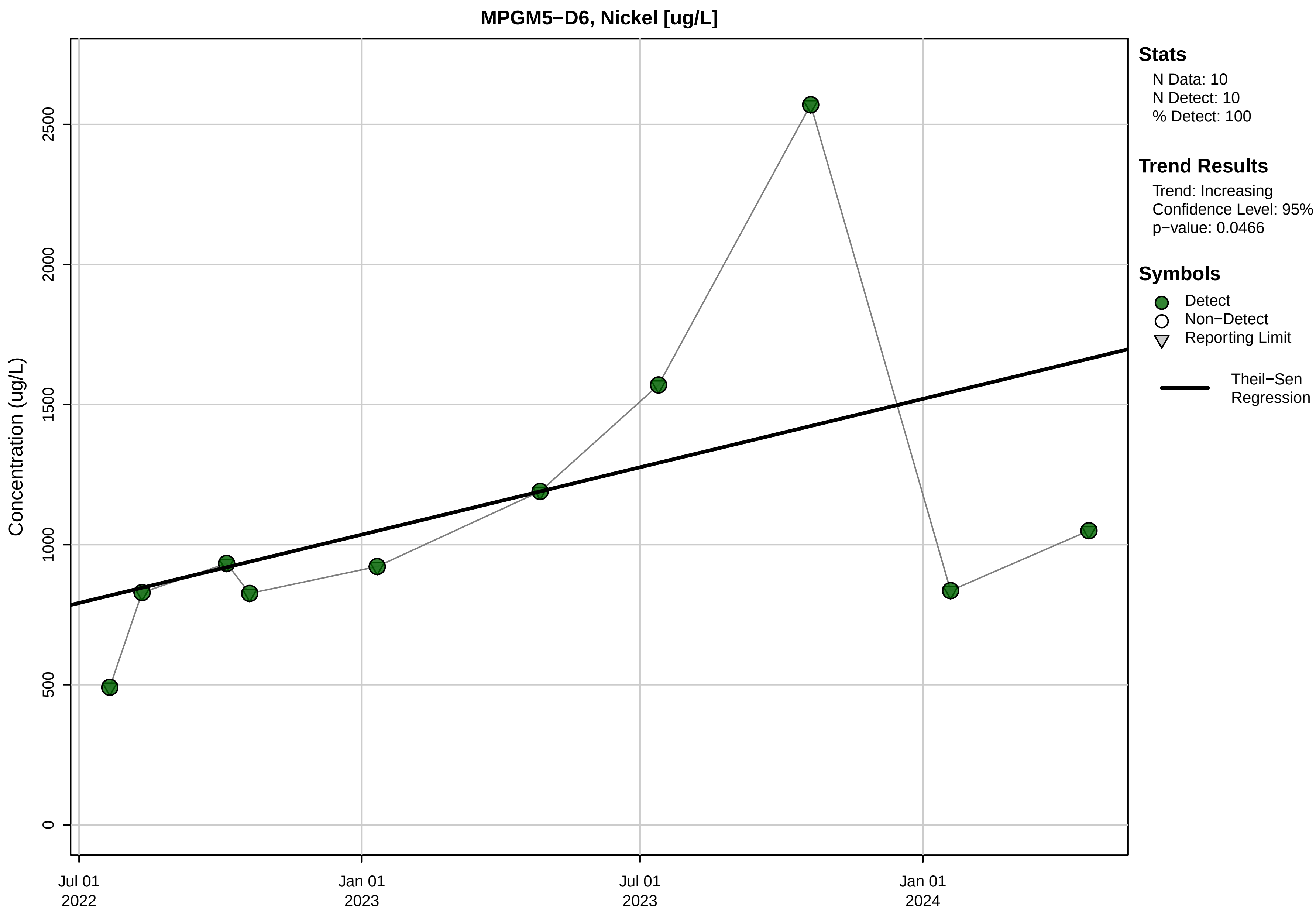
MPGM5−D6, Lead [ug/L]
Concentration (ug/L)
0
20
40
60
80
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.855
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

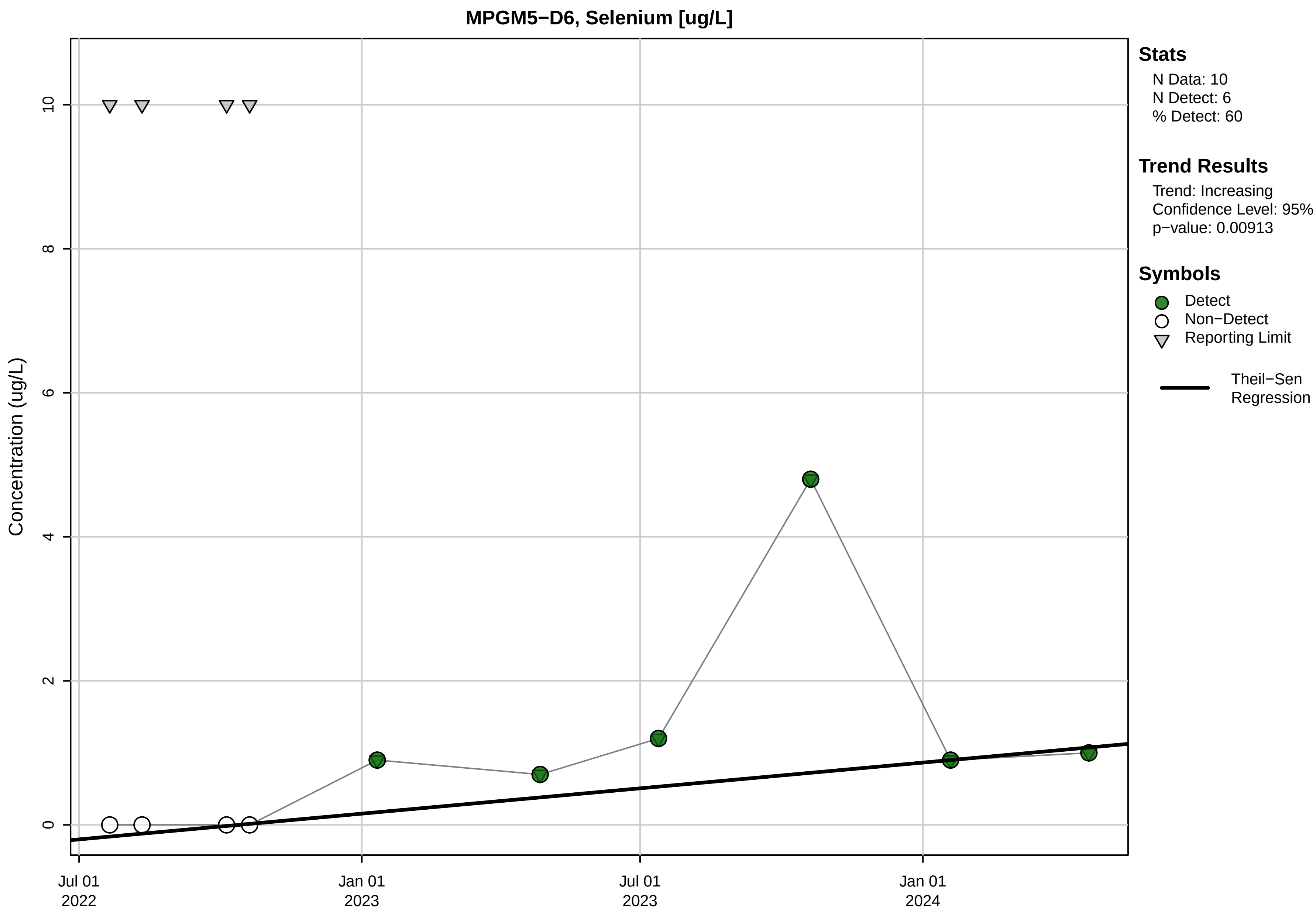


MPGM5−D6, Manganese [ug/L]
Concentration (ug/L)
0
2000
4000
6000
8000
10000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.862
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

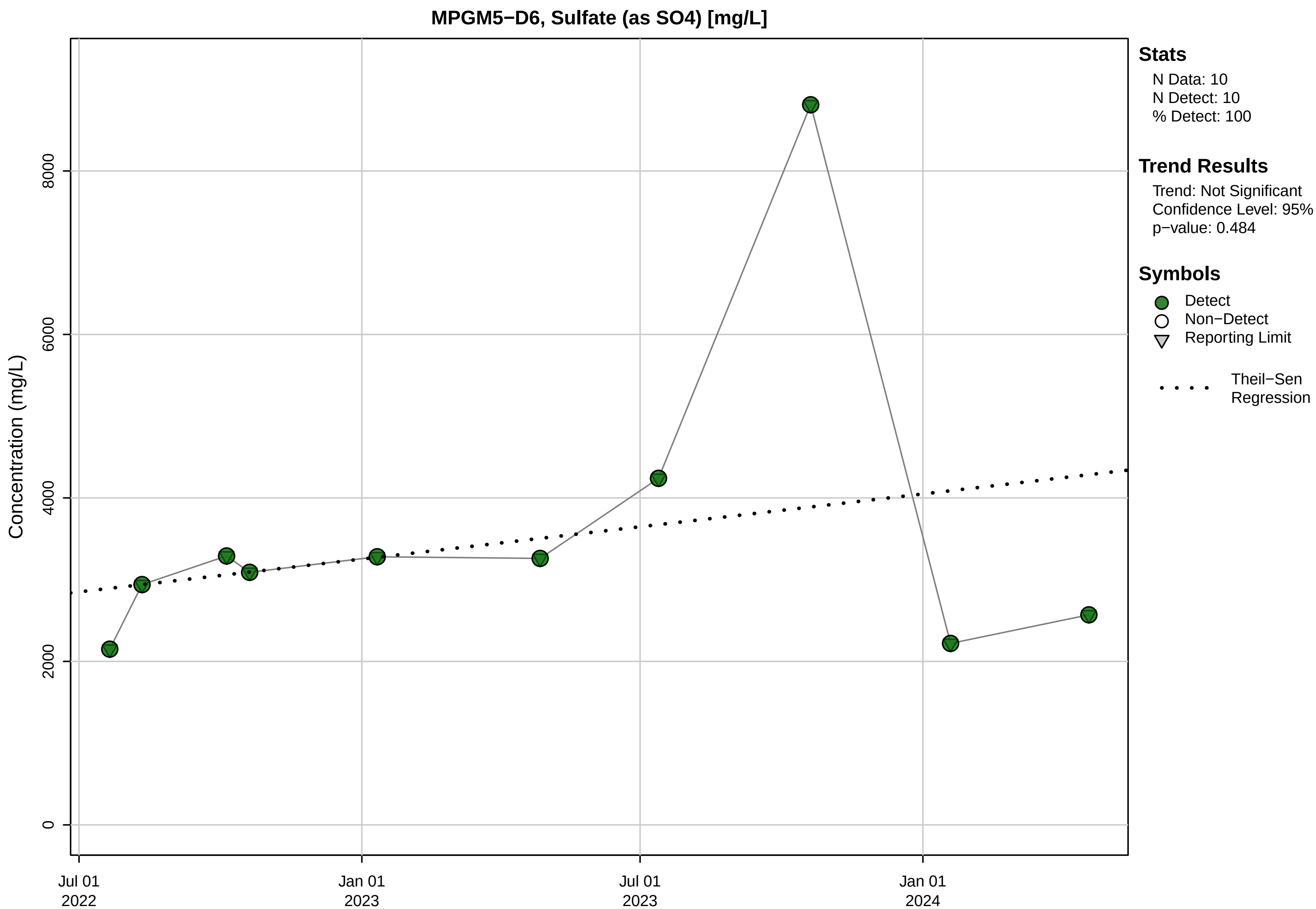

MPGM5−D6, Mercury [ug/L]
Concentration (ug/L)
0.00
0.05
0.10
0.15
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 3
% Detect: 30
Trend Results
Test Criteria Not Met
Symbols
Detect
Non−Detect
Reporting Limit


MPGM5−D6, Molybdenum [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
2500
3000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.00221
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

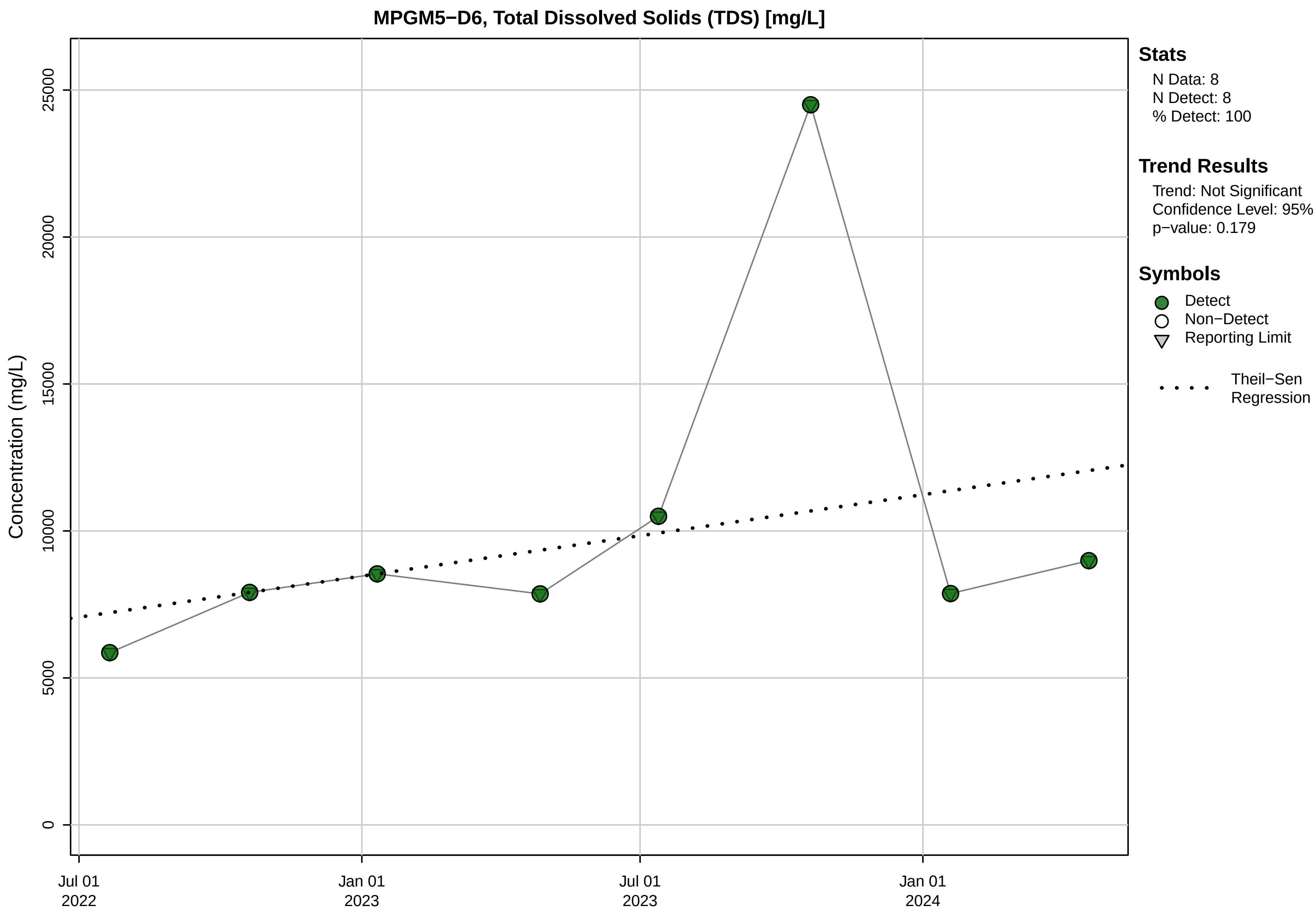

MPGM5−D6, Nickel [ug/L]
Concentration (ug/L)
0
500
1000
1500
2000
2500
Jul 01
2022
Jan 01
2023
Jul 01
2023
Jan 01
2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.0466
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen
Regression



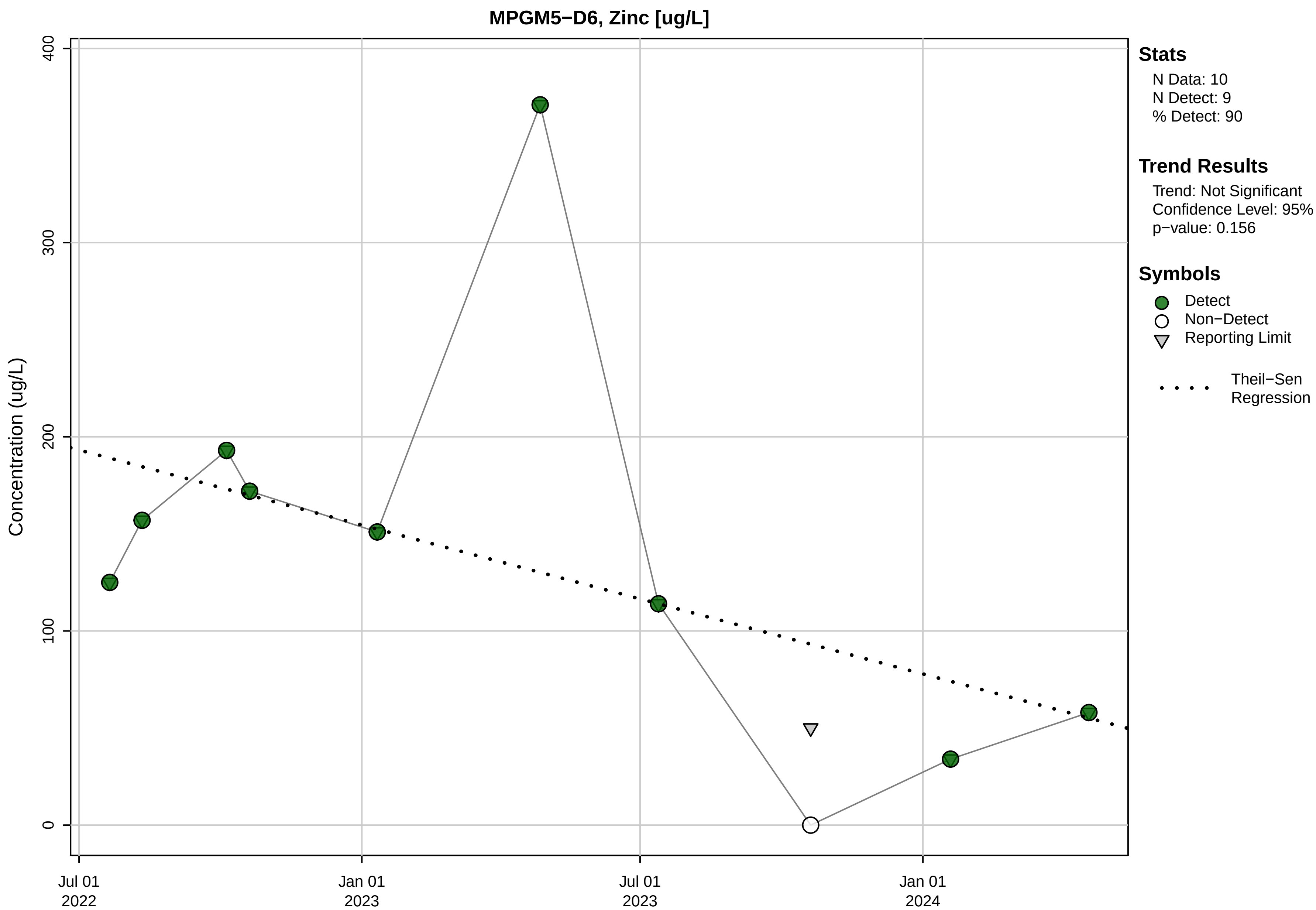
MPGM5−D6, Selenium [ug/L]
Concentration (ug/L)
0
2
4
6
8
10
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 6
% Detect: 60
Trend Results
Trend: Increasing
Confidence Level: 95%
p−value: 0.00913
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



MPGM5−D6, Sulfate (as SO4) [mg/L]
Concentration (mg/L)
0
2000
4000
6000
8000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 10
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.484
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression



MPGM5−D6, Total Dissolved Solids (TDS) [mg/L]
Concentration (mg/L)
0
5000
10000
15000
20000
25000
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 8
N Detect: 8
% Detect: 100
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.179
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression


MPGM5−D6, Zinc [ug/L]
Concentration (ug/L)
0
100
200
300
400
Jul 01 2022
Jan 01 2023
Jul 01 2023
Jan 01 2024
Stats
N Data: 10
N Detect: 9
% Detect: 90
Trend Results
Trend: Not Significant
Confidence Level: 95%
p−value: 0.156
Symbols
Detect
Non−Detect
Reporting Limit
Theil−Sen Regression

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APPENDIX N MANN-KENDALL METHODOLOGY

1. USER WARNINGS

tTrend 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 (MK_Input_20240724.xlsx) consists of samples from July 2022 to June 2024.
- The analysis includes 23 unique wells and 18 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 414 unique Groups.
- 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 414 Groups.
- 275 Groups have detection rates greater than or equal to 50 percent.
- 58 Groups have 100 percent non-detects.
- 215 Groups have 100 percent detects.
- 186 Groups follow a normal distribution (using Shapiro-Wilks Normality Test) and 24 Groups follow a log-normal distribution. 0 Groups follow a gamma distribution (using Anderson-Darling Normality Test). The remaining 204 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.
- 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 <= 0.05	Ho Rejected	Increasing
Negative	p <= 0.05	Ho Rejected	Decreasing
Positive or Negative	p > 0.05	Ho Accepted	Not Significant

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 414 Groups in the dataset.

- 264 Groups meet the data requirements of the trend test. Of those:
  - 27 Groups had a significant increasing trend,
  - 27 Groups had a significant decreasing trend,
  - 210 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.
- 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

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USEPA. 2015. ProUCL Version 5.1.002 Technical Guide: Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. Publication EPA/600/R-07/041, October.

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