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BHP Billiton Iron Ore

OB29 Hydraulic test 2023-2024

Hydraulic Test Analysis and Per- and Polyfluoroalkyl Substances (PFAS) Mixing Assessment

June 2024

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Table of contents

Contents (continued)

List of tables

List of figures

Contents (continued)

List of appendices

1 Project background

1.1 Introduction

BHP Billiton Iron Ore (BHP) engaged WSP Pty Ltd (WSP) to complete groundwater monitoring, sampling, and analyse data collected during a large-scale (seven months) aquifer pumping test at Orebody 29 (OB29). The study site is located southwest of Newman, Western Australia, approximately 12,000 km northeast of Perth. The entire area of the operations comprises the Whaleback Pit, OB29, OB30 and OB35, and the undeveloped area of Western Ridge. The study area is shown on Figure 1.1.

Some areas within the study site have been identified as potentially contaminated, with initial releases anticipated to have occurred several decades ago. Groundwater sampling since 2020 has found perfluorooctane sulfonate (PFOS) and the sum of PFOS and perfluorohexane sulfonate (PFHxS) at levels exceeding the drinking water criteria (NEMP, 2020). A few spatially isolated and small areas contained groundwater with PFOS+PFHxS at levels exceeding the non-potable use guidelines but below the recreational use guidelines (NEMP, 2020).

The project consisted of three main scopes. These were:

- **Scope 1:** Groundwater monitoring events before and during the pumping test (i.e. hydraulic test)
- **Scope 2:** Interpretation of monitoring results to inform and update the conceptual site model and hydrogeological understanding
- **Scope 3:** Update groundwater model and conduct a contaminant mixing assessment to evaluate the validity of the methodology to predict contaminant concentrations at dewatering bores.

This letter provides a summary of the hydraulic test and an interpretation based on the information collected and the results of the groundwater modelling mixing assessment.

1.2 Objectives

The key objectives of this stage of the modelling works are:

- improve the understanding of the hydrogeological conceptual site model (CSM) of the OB29/30/35 model domain, inclusive of PFAS source areas
- assess potential capture zone and preferential flow paths in the vicinity of PFAS source areas and (existing and future) dewatering bores
- predict PFAS concentrations at OB29 scheduled dewatering bores and conduct comparisons of modelled vs. actual PFAS concentrations to verify modelling outcomes and inform decisions relating to future modelling approaches
- assess impacts of scheduled/actual groundwater dewatering on PFAS plume concentrations and spatial extent.

1.3 Hydraulic test

The hydraulic test was conducted between June 2023 and January 2024. The three dewatering bores used were HWHB0051P, HWHB0057P and HWHB0060P. The layout of the dewatering bores and OB29 is shown on Figure 1.1. Additional surface water samples were taken at the discharge area of the Ophthalmia Dam (Figure 1.2). The analysis of the results of the hydraulic test supports all these scopes by evaluating the following:

- water level change
- downhole electrical conductivity measurement in selected monitoring bores

- water quality sampling for per- and polyfluoroalkyl substances (PFAS), and major and minor elements
- capture zone assessment from an updated groundwater model and evaluation of the PFAS mixing assessment by comparing the observed PFAS concentrations measured from dewatering bores with the modelled predictions.

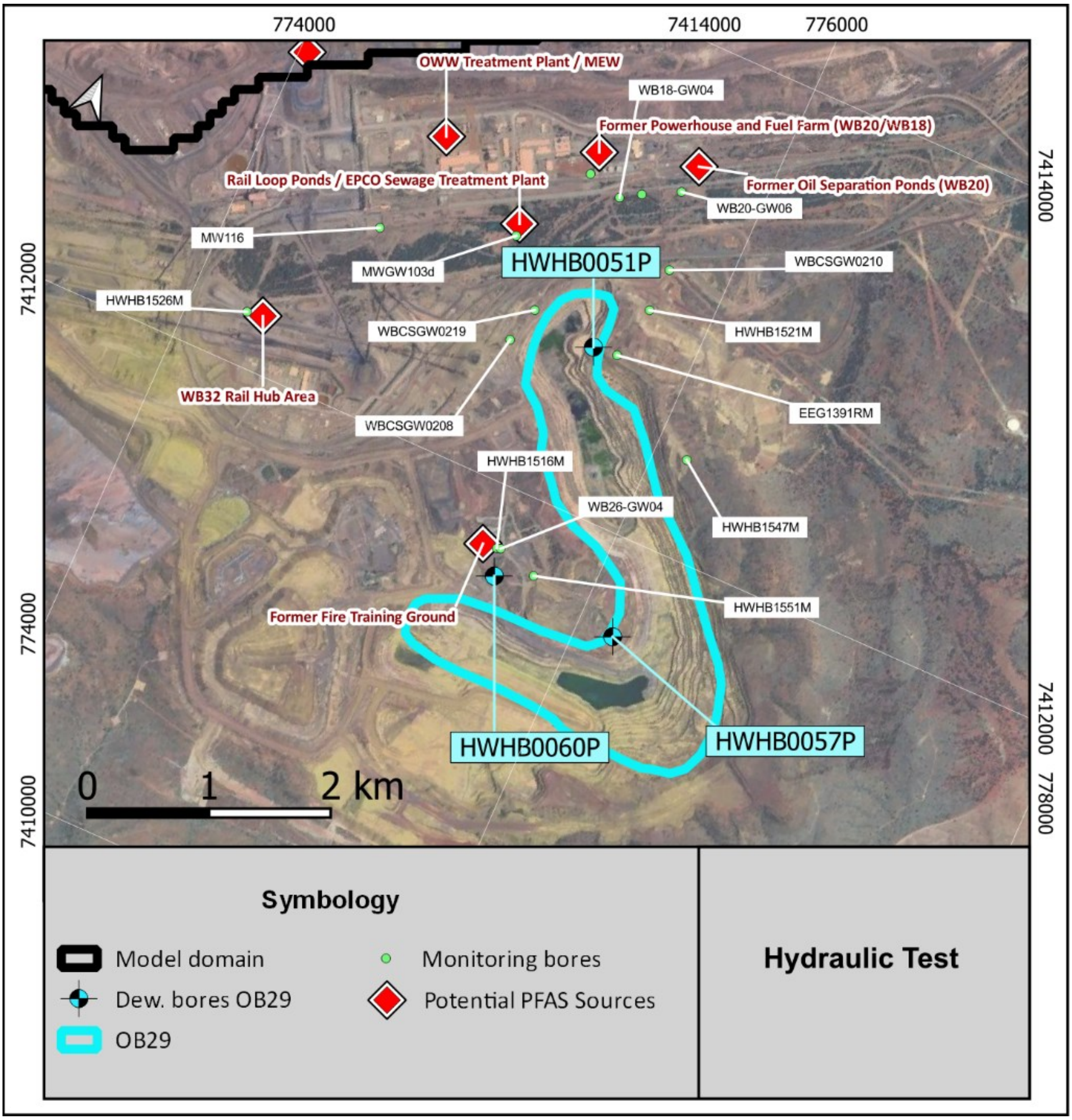

Figure 1.1 Hydraulic test plan view

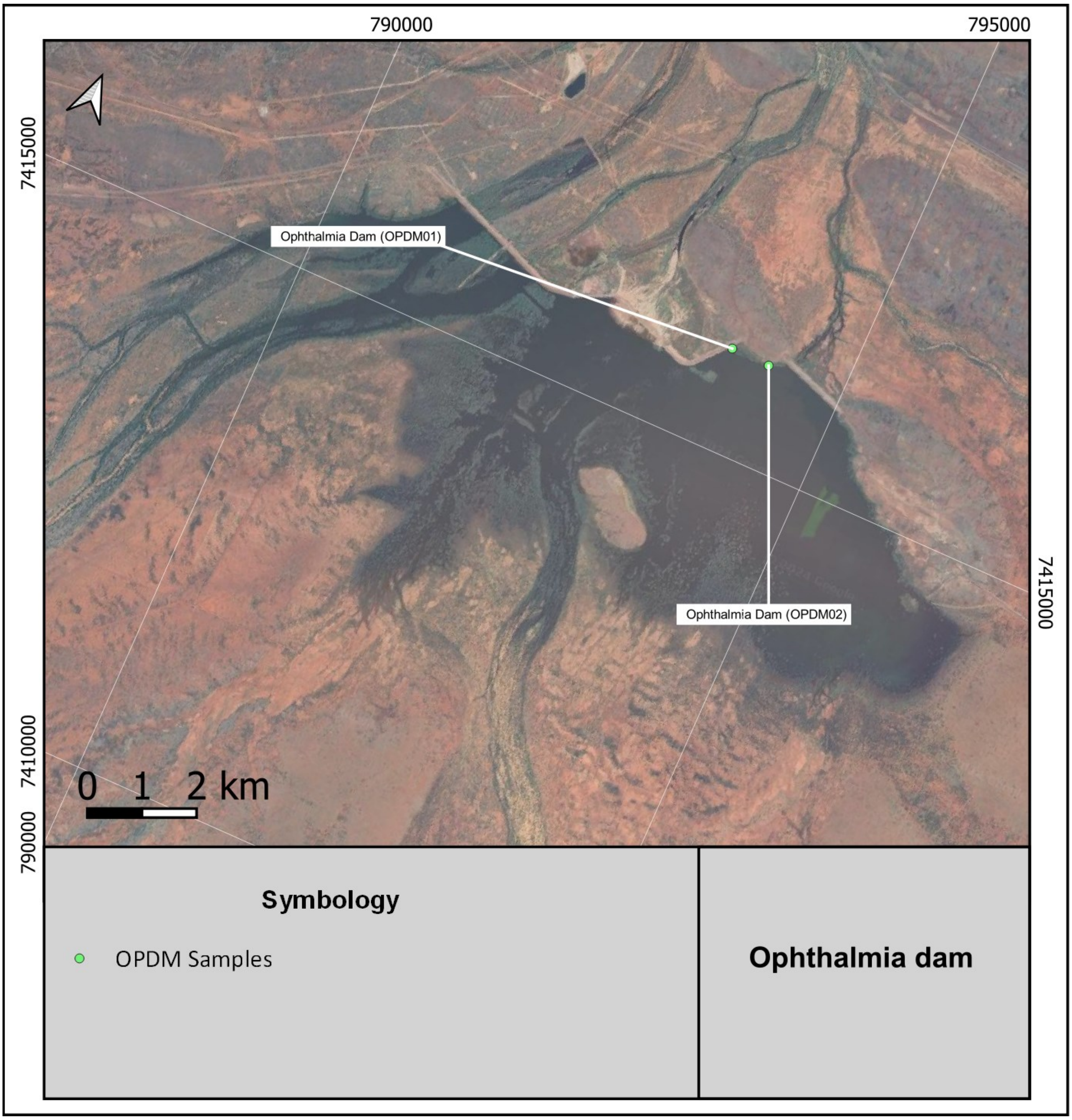

Figure 1.2 Ophthalmia dam sample locations

2 Groundwater monitoring

The groundwater monitoring during the hydraulic testing was conducted over 10 groundwater monitoring events (GMEs) between 29 May 2023 to 19 January 2024. Each GME consisted of the following tasks:

- water level measurements and deployment/retrieving of water level dataloggers,
- downhole electrical conductivity profiling in selected monitoring bores
- groundwater sampling using Hydrasleeves®.

GME 1 was used as the baseline to be compared with the later results. This report also incorporated the historical observed concentrations at monitoring bores to provide a more robust analysis.

An overview of these tasks is providing in the following sections.

2.1 Water level measurements

Groundwater levels were measured both manually and with electronic water level loggers. The manual measurements used an electronic 150 m heron dipper T meter. Water level dataloggers were deployed in monitoring bores to capture the groundwater level change during the hydraulic test. The dataloggers used for the GMEs were Insitu Aquatroll rugged 100.

The deployment of dataloggers was done by hanging the loggers on a twine and gently deploying them inside the bores' PVC casing at a specific water level. Retrieval of the logger was done on the following GME to capture the data by gently pulling the twine out of the bore. Dataloggers were deployed back into the monitoring bore once the data was recorded. The list of monitoring bore where dataloggers were installed is in Table 2.1.

The recording frequency was set to 5 seconds (GME 1 and GME 2), 1 minute (GME 4 to GME 7), and 5 minutes (GME 8 to GME 10). Groundwater levels were taken in the monitoring bores listed in Table 2.1.

Table 2.1 Groundwater level monitoring summary

Monitoring bore	Easting	Northing	Manual Measurement (Y) (N)	Datalogger Installed (Y) (N)
MW116	774599	7412755	Y	N
MWGW103D	775124	7412953	Y	Y
WB18-GW05	775527	7413318	Y	Y
WB18-GW04	775448	7413269	Y	Y
WB20-GW06	775670	7413396	Y	Y
WBCSGW0210	775757	7413080	Y	Y
WB18-GW03D	775291	7413312	Y	Y
WB26-GW04	775589	7411752	Y	Y
HWHB1516M	775573	7411748	Y	Y
HWHB1551M	775758	7411704	Y	Y
WBCSGW0208	775275	7412552	Y	Y

Monitoring bore	Easting	Northing	Manual Measurement (Y) (N)	Datalogger Installed (Y) (N)
WBCSGW0219	775318	7412705	Y	Y
EEG1391R	775703	7412673	Y	Y
HWHB1526M	774240	7412217	Y	N
MWGW103D	775124	7412953	Y	Y

2.2 Groundwater quality sampling

Selected groundwater monitoring bores were sampled using high density polyethylene (HDPE) Hydrasleeves® (Table 2.2). The HDPE Hydrasleeves® were set to target the monitoring bore screen interval, at approximately 1 m below the groundwater level when the groundwater level is below the screens. The HDPE Hydrasleeves® were then left for at least a 24-hour period to allow the groundwater to equilibrate. The HDPE Hydrasleeves® were then retrieved and the groundwater samples transferred into laboratory supplied bottles directly using Hydrasleeves® straws. New nitrile gloves were worn while preparing the HDPE Hydrasleeves® for deployment and during retrieval. Additionally, surface water samples from the Ophthalmia Dam were sampled using an extendable sampler attached to the laboratory-supplied bottles, while dewatering bores and XD57 tank were sampled directly from the tap to the laboratory supplied bottles.

Water quality physio-chemical parameters (pH, redox, conductivity, temperature and DO) were measured in the field using calibrated water quality meter. Field groundwater monitoring sheets are provided in Appendix A1. Calibration checks of the water quality meter were conducted twice daily (before and after sampling) to confirm that the calibration was within acceptable ranges. Calibration records are provided in Appendix A2.

Each groundwater sample was collected using new disposable nitrile gloves and dedicated HDPE Hydrasleeve® to minimise the potential for cross contamination. All samples were then collected in laboratory-supplied bottles, labelled, and placed in an ice box. The groundwater samples were then transported, under a Chain of Custody (CoC), to a NATA-accredited environmental testing laboratory (primary laboratory was ALS and secondary laboratory was Eurofins). CoC documentation is provided in Appendix A3. Groundwater sampling equipment were decontaminated between locations with PFAS-free and phosphate-free detergent (Liquinox®) and deionised water.

Table 2.2 Monitoring bores with groundwater quality samples

Monitoring bore	Easting	Northing	Groundwater Quality Sample (Y) (N)
MW116	774599	7412755	Y
MWGW103D	775124	7412953	Y
WB18-GW05	775527	7413318	Y
WB18-GW04	775448	7413269	Y
WB20-GW06	775670	7413396	Y
WBCSGW0210	775757	7413080	Y
WB18-GW03D	775291	7413312	Y
WB26-GW04	775589	7411752	Y
HWHB1551M	775758	7411704	Y

Monitoring bore	Easting	Northing	Groundwater Quality Sample (Y) (N)
WBCSGW0208	775275	7412552	Y
WBCSGW0219	775318	7412705	Y
EEG1391R	775703	7412673	Y
HWHB1526M	774240	7412217	Y
MWGW103D	775124	7412953	Y

2.2.1 PFAS sampling considerations

Due to the widespread use of PFAS compounds in everyday items, the following considerations were implemented by field staff prior and during the collection of samples:

- no new clothing, or clothing with rain or waterproof coatings/treated fabric
- no food or snack containers wrapped with non-compliant materials
- no teflon® containing or coated field equipment
- no teflon® lined lids on the laboratory supplied sample bottle
- no decon 90 or detergent decontamination solutions. liquinox® was used for decontaminating equipment
- no ice bricks for sample storage
- no pfas containing sun cream.

3 Hydraulic test

Groundwater level data gathered during the hydraulic test were analysed to improve the understanding of the hydrogeological CSM in the area around OB29.

3.1 Drawdown analysis

The drawdown analysis presented in this report is a high-level analysis of the measured drawdown in the OB29 monitoring bores. The analysis provided in this report is based on the maximum groundwater level change during the hydraulic test and the spatial distribution to hypothesize of the potential hydraulic connections in OB29. The high-level drawdown analysis was conducted using the measured groundwater levels during the 10 GMEs at the locations listed in Table 2.1 and shown in Figure 3.1.

The drawdowns were not analysed against the dewatering rates as the received monthly rates were not sufficiently detailed to perform a formal drawdown analysis to calculate hydraulic parameters.

The analysis presented in this report allows broad observations on the drawdown spatial distribution due to the hydraulic test, and therefore, to provide potential hypotheses regarding the hydraulic connection in OB29 and the potential PFAS sources to the north.

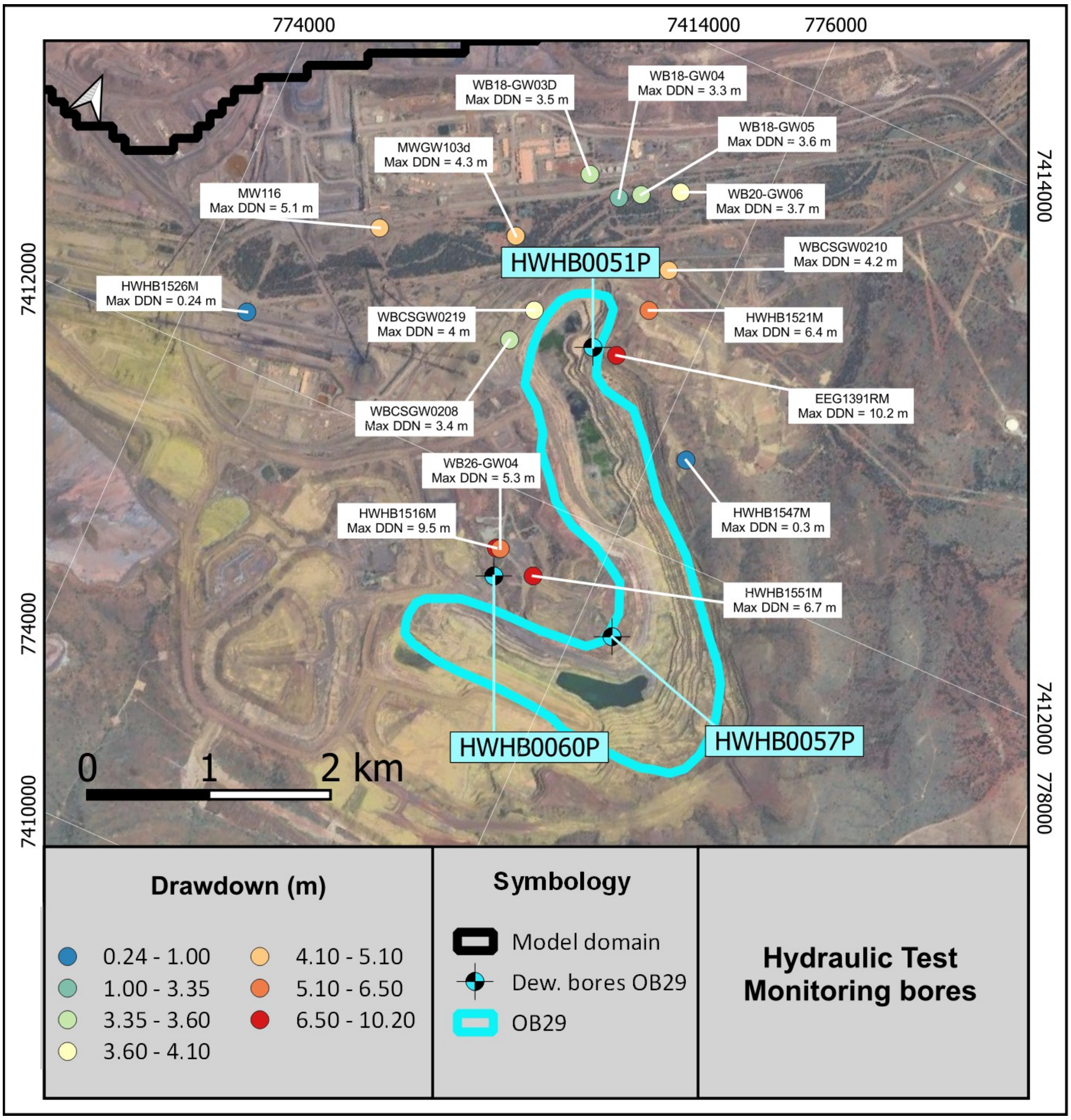

Figure 3.1 Groundwater level monitoring bores and maximum registered drawdown

3.1.1 Time series assessment

The maximum drawdown observed during the hydraulic tests were at the EEG1391RM bore (10.2 m), adjacent to the dewatering bore HWHB0051P, and HWHB1516M (9.5 m), adjacent to the dewatering bore HWHB0060P. The bore HWHB1551M had a drawdown of 6.7 m, as it is located between the dewatering bores HWHB0060P and HWHB0057P (Figure 3.1).

The bores HWHB1521M and WBCSGW0210 showed a smaller drawdown from the dewatering bore HWHB0051P, effectively defining the extension of the cone of depression in the north-east direction (Figure 3.1). In contrast, the cone of depression did not extend far to the south-east direction as the monitoring bore HWHB1547M only had a maximum drawdown of 0.3 m (Figure 3.1).

Similarly, the monitoring bore HWHB1526M located approximately 3 km west from OB29 did not record a notable drawdown (0.24 m, Figure 3.1 and Figure 3.2). More intermediate drawdowns (between 3.3 and 5.1 m) were observed in the PFAS sources area, north of OB29 (bores MW116, MWGW103D, WB18-GW03D, WB18-GW04, WB18-GW05 and WB20-GW06), and west of the dewatering bore HWHB0051P (bores WBCSGW0208 and WBCSGW0219) (Figure 3.1).

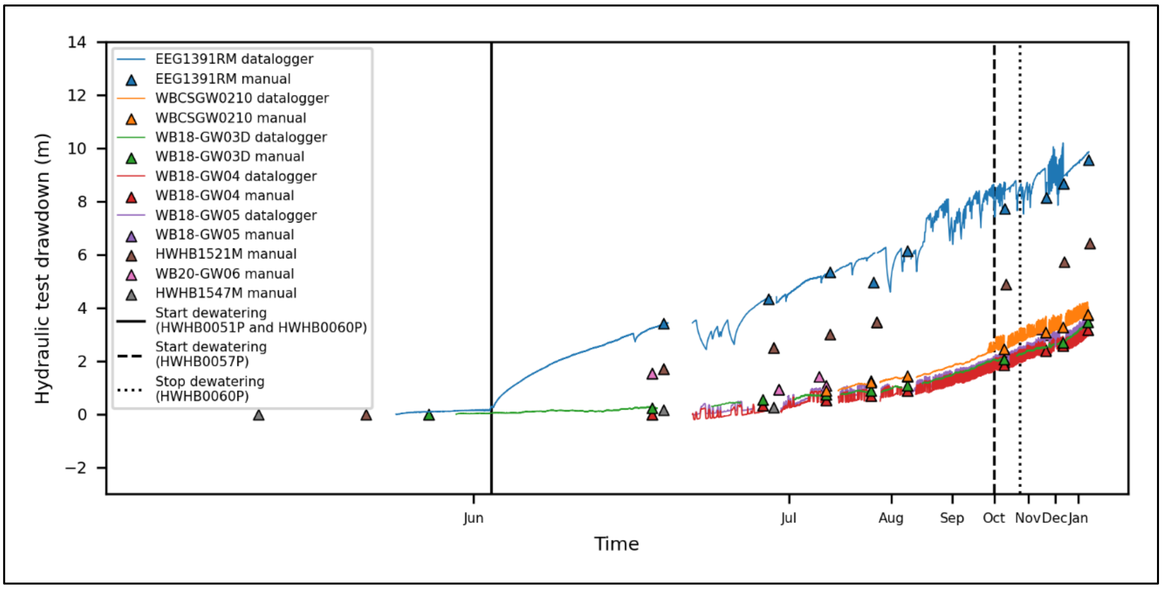

Figure 3.2 Drawdown induced by hydraulic test in the NE part of OB29.

The monitoring bore EGG1391RM, adjacent to the dewatering bore HWHB0051P, registered the descend of the water table at the beginning of June. During the test, this monitoring bore showed the groundwater table recovering, possibly due to the detention of the pumping or a drastic reduction in the dewatering rates (Figure 3.2). Nonetheless, the drawdown seemed to be consistent in the bore, without reaching a stable dynamic level. A similar trend, with slightly lower drawdown, was observed in the manual recordings taken at the monitoring bore HWHB1521M (Figure 3.2), which is located approximately 200 m north-east from EEG1391M (Figure 3.2).

The monitoring bores WB18-GW03D, WB18-GW04, WB18-GW05 and WB18-GW06, located approximately 600 m north from the dewatering bore HWHB0051P in the potential PFAS source area, registered a lower drawdown with maximum values between 3.3 m and 3.7 m (Figure 3.1). The drawdown breakthrough seems to have occurred in this location by the end of June Figure 3.2). This means that the cone of depression took about one month to extend at these locations.

The monitoring bores WBCSGW0208 and WBCSGW0219, located about 300 m west of the dewatering bore HWHB0051P also showed a late drawdown response, with a noticeable drop of the groundwater level after two weeks after the commencement of the hydraulic trial (Figure 3.2). Even though these bores are located nearer to HWHB0051P (Figure 3.1), the observed drawdown was similar to those observed in the monitoring bores north-east of HWHB0051P (Figure 3.2 and Figure 3.3).

This imply that there is either a lower hydraulic connection in this area than to the north-east, or that there is an additional source of water that buffered the drawdown. Both options could be explained by the presence of the OB29 pit lake, which could either prevent a hydraulic connection to the west or to provide an additional source from the pit lake (if existing during the hydraulic test).

The monitoring bore MW116 located about 1 km north-west from the dewatering bore HWHB0051P and the bore MWGW103D at about 600 m, registered a drawdown with maximum values of 5.1 m and 4.3 m, respectively (Figure 3.1). The drawdown in the bore MWGW103D showed that the groundwater drop started before the beginning of the hydraulic test (see drawdown at MWGW103D in comparison to EEG1391RM in Figure 3.3). Accordingly, it is possible that other stresses (e.g., legacy drawdown, OB35 dewatering, a local stress, or a combination of factors) may be affecting this area. This is also observed at MWGW103D showing an important recovery phase from early June to late July (also observed in the manual recordings in MW116) (Figure 3.3), supporting the hypothesis that the groundwater system in this area may be affected by local stresses that do not impact other areas.

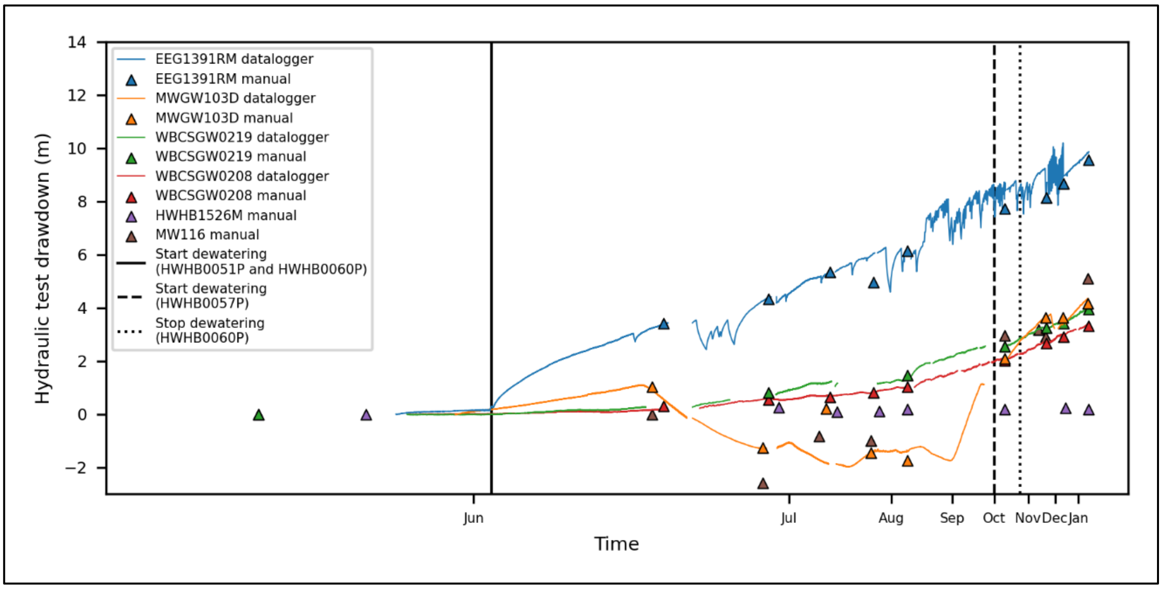

Figure 3.3 Drawdown induced by hydraulic test in the NW part of OB29 (including EEG1391RM for comparison).

The monitoring bores HWHB1516M, WB26-GW04 and HWHB1551M showed similar responses to the dewatering of HWHB0060P and HWHB0057P. The commencement of the hydraulic test (early June) was clearly recorded in the water level change in HWHB1516M (Figure 3.4). This bore registered an important recovery phase in late July, likely due to a change in the dewatering rates of HWHB0060P.

The commencement of the dewatering at HWHB0057P in October 2023 is not evidently registered in the monitoring bores. However, a slight increase in the drawdown slope can be observed at the bore HWHB1551M in October, possibly due the effects of the dewatering at HWHB0057P. On the other hand, the three bores registered the detention of the bore HWHB0060P in late October, showing a drastic recovery (Figure 3.4). It is also observed a slight drop of the groundwater levels since early December, likely because of the continuing dewatering at HWHB0057P (Figure 3.4).

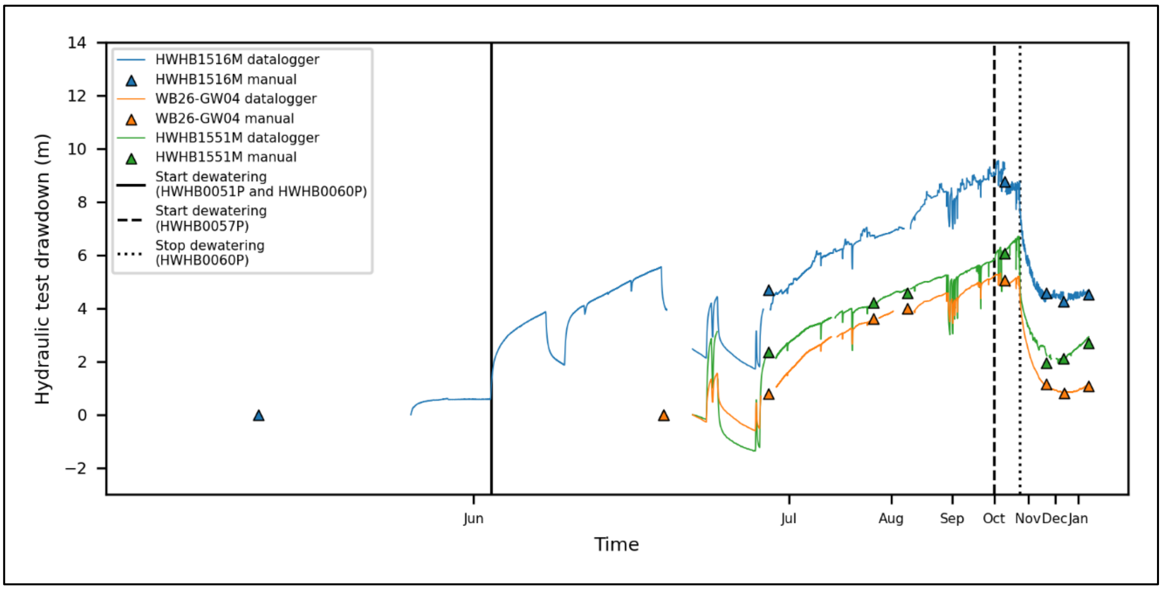

Figure 3.4 Drawdown induced by hydraulic test in the SW part of OB29.

3.2 Laboratory results

Water samples were sent for analysis to the ALS Laboratories. The results are presented in Appendix B. A Mann Kendal statistical analysis was conducted for the PFOS and PFOS+PFHxS to evaluate for potential trends (Appendix C).

3.2.1 PFAS concentrations at HWHB0051P

The measured PFOS concentrations at the dewatering bores HWHB0051P showed all values above the 99% species protection criterion (0.00023 µg/L). None of the samples exceeded the 95% species protection criterion (0.13 µg/L). Furthermore, the observed PFOS concentrations showed a probably decreasing trend (Mann Kendal statistic S = -51) with the most recent value equal to 0.0019 µg/L.

All samples showed values of PFOS+PFHxS below drinking water guideline (0.07 µg/L). PFOS+PFHxS concentrations at this bore showed stable trends with S = -20, with the most recent values of 0.004 µg/L. The trend showed a clear rise in concentrations in November, with concentrations of PFOS and PFOS+PFHxS of 0.0033 and 0.0056 µg/L, respectively, but decreasing by the end of the hydraulic test in January 2024 (Figure 3.5). Top plot in Figure 3.5 includes historical samples for comparison. Blue dashed square in the top plot shows the samples taken before and during the hydraulic test as part of this work. This period is illustrated in the bottom plot of Figure 3.5.

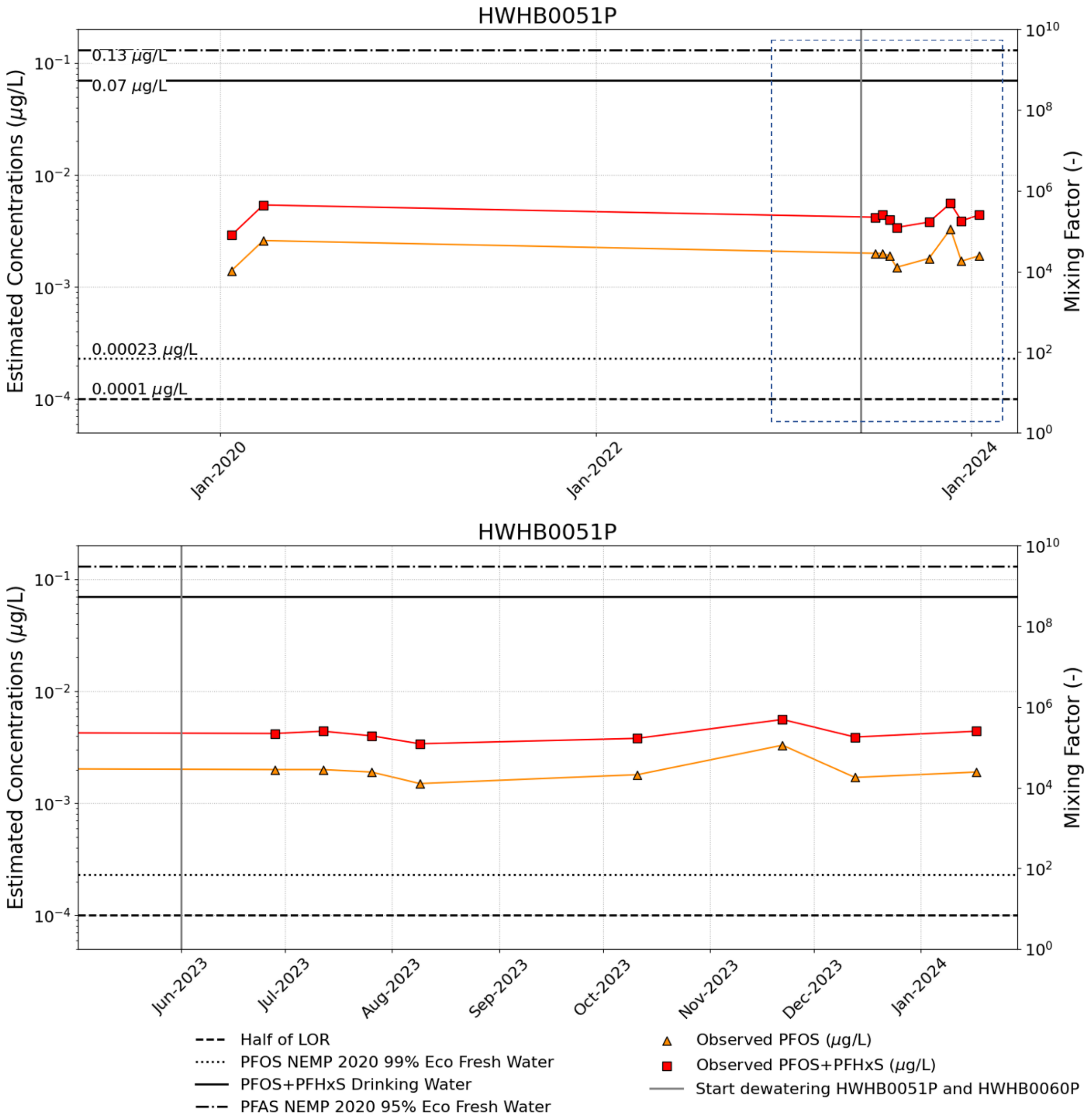

Figure 3.5 PFOS and PFOS+PFHxS at dewatering bore HWHB0051P.

Monitoring bore EEG1391RM, adjacent to dewatering bore HWHB0051P, showed a clear decreasing trend for PFOS and PFOS+PFHxS (S = -27 and -29), with the most recent concentrations below the limit of detection (0.0001 µg/L) (Figure 3.6). This bore did not reproduce the observed concentrations at the nearby dewatering bore. This is the result of the capture zone developed by the dewatering bore HWHB0051P as illustrated by the reversed particle traces in Figure 4.6.

The flow paths at the dewatering bore present a radial distribution which can reach north of OB29, to the potential PFAS source areas. The particle traces that reach monitoring bore EEG1391RM come only from east of OB29, where there have been low concentrations of PFAS as illustrated by the plume map (Figure 4.6), thus, effectively diluting the observed concentrations.

Similarly, monitoring bore HWHB1521M also shows a decreasing trend for PFOS and PFOS+PFHxS concentrations (S = -34 for both species) (Figure 3.7 and Appendix C) likely because the flow paths reaching this monitoring bore come from areas of mostly low concentrations of PFAS (Figure 4.6). Monitoring bore WBCSGW0210 shows an increasing trend for PFOS (S = 25) by the end of the hydraulic test (Appendix C). This is likely due to the withdraw of impacted groundwater to the east as illustrated by the particle traces (high concentrations observed at the bore HWHB1805M with PFOS+PFHxS = 1.29 µg/L in March 2020) (Appendix C).

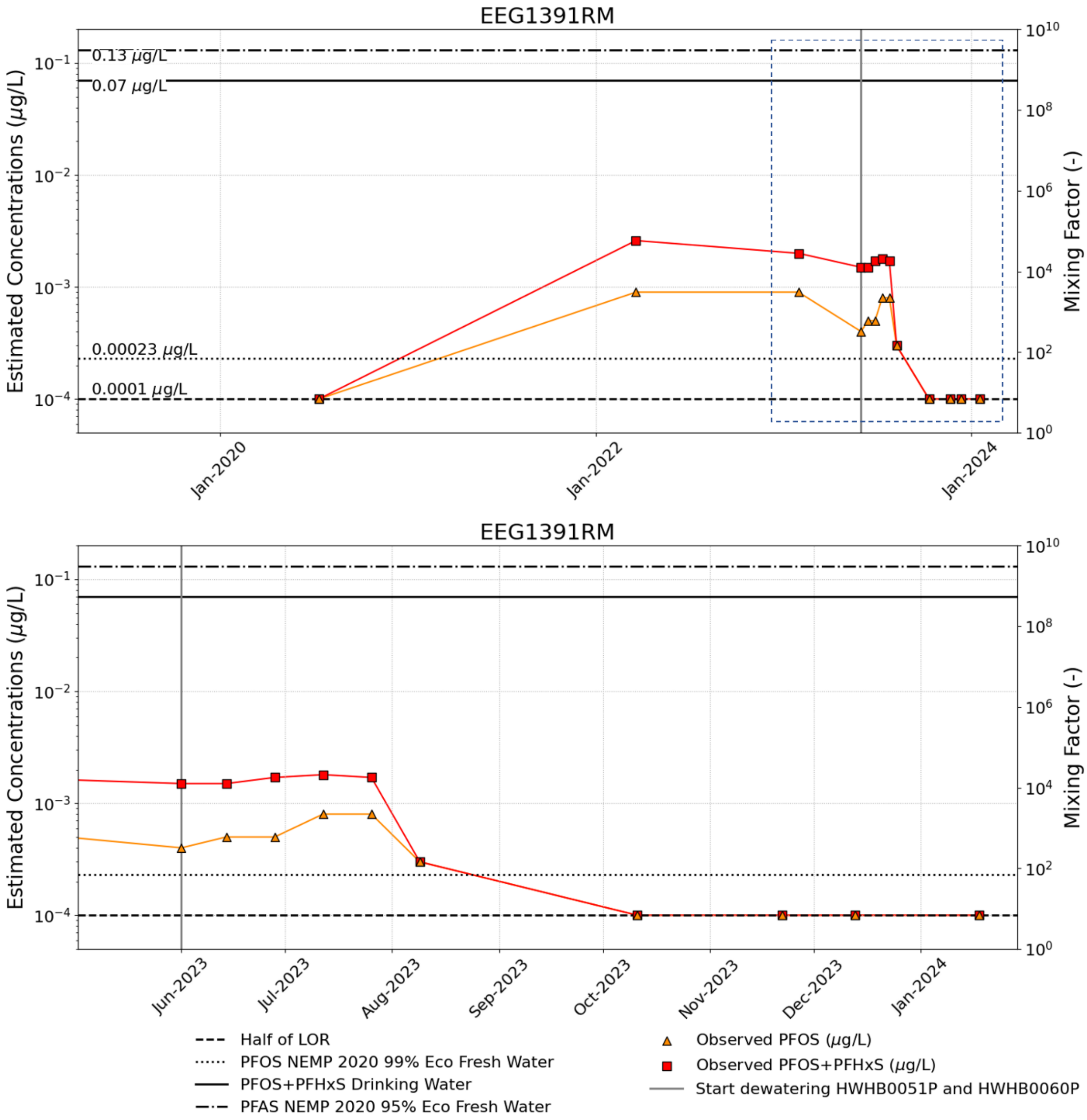

Figure 3.6 PFOS and PFOS+PFHxS at monitoring bore EEG1391RM.

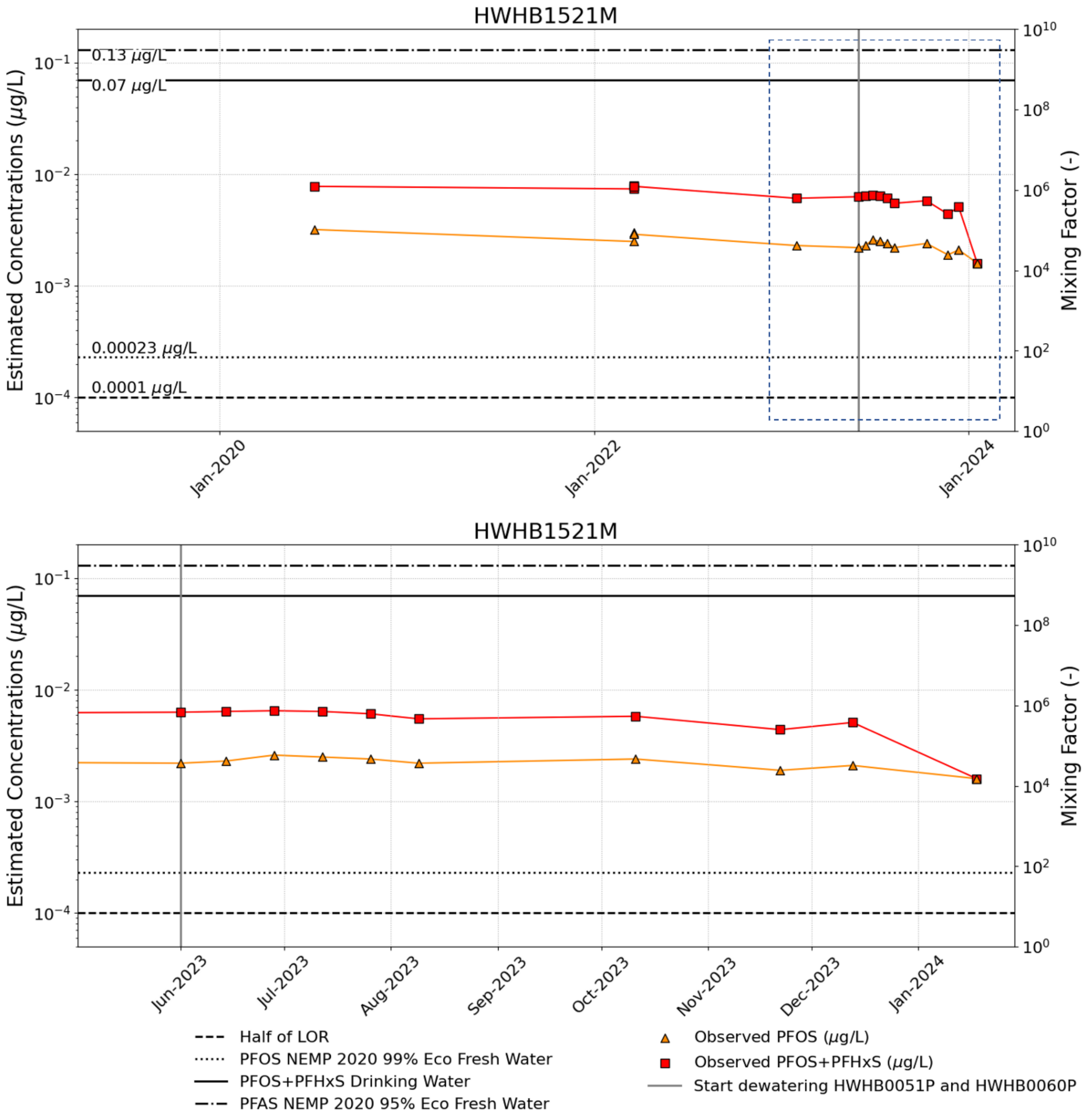

Figure 3.7 PFOS and PFOS+PFHxS at monitoring bore HWHB1521M.

Similar observations can be drawn for the different trends between nearby monitoring bores WBCSGW0208 and WBCSGW0219. Monitoring bore WBCSGW0208 shows a stable trend (S = -1) with concentrations below the limit of detection (Figure 3.8), monitoring bore WBCSGW0219 shows a clear increasing trend of PFOS and PFOS+PFHxS (S = 25 and 27, respectively, see Appendix C) (Figure 3.9), which is markedly rising since the beginning of the hydraulic test in June 2023.

This apparent conflicting observation is explained by the capture zone assessment, which shows that flow paths reaching bore WBCSGW0208 come only from an area where PFAS have not been detected, while the flow paths reaching bore WBCSGW0219 come from the potential PFAS source area to the north of OB29 (Figure 4.6). This is also observed in the NW part of the PFAS source area where MWGW103D and MW116 showed PFAS concentrations to slightly increase since the start of the hydraulic test despite the overall decreasing trend (Appendix C).

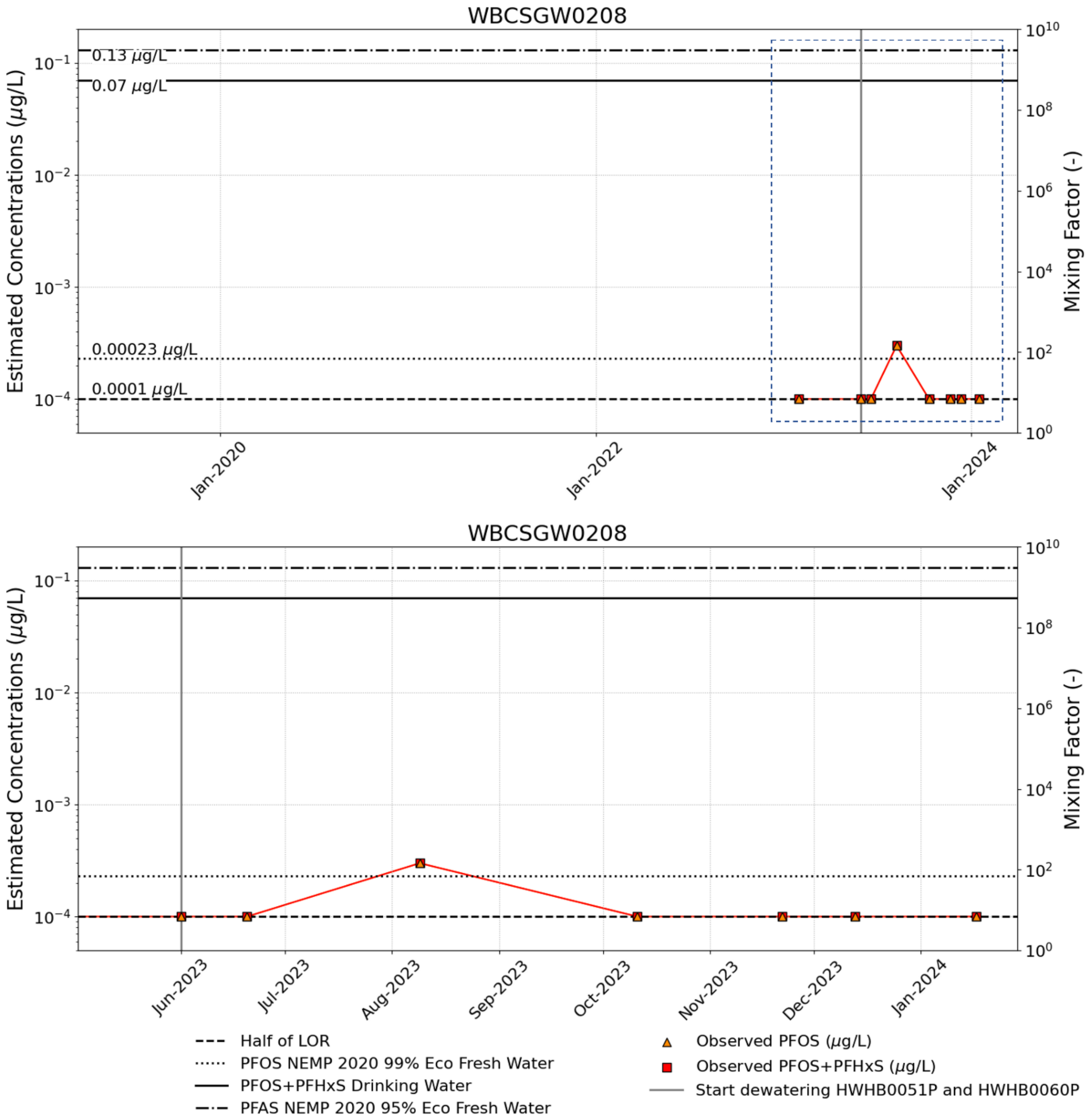

Figure 3.8 PFOS and PFOS+PFHxS at monitoring bore WBCSGW0208.

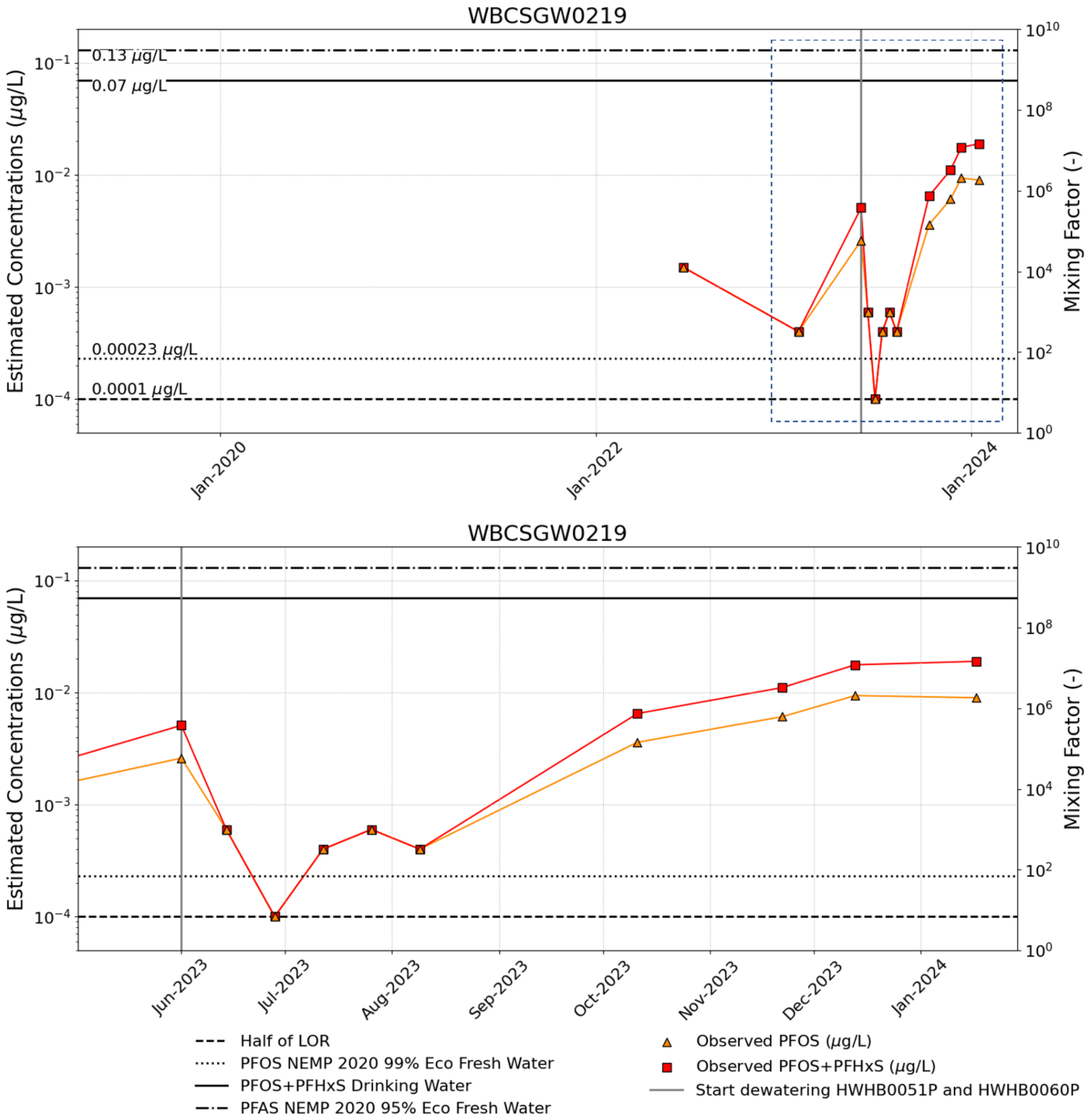

Figure 3.9 PFOS and PFOS+PFHxS at monitoring bore WBCSGW0219.

Additional trend plots for PFOS and PFOS+PFHxS are presented in Appendix C, with the Mann-Kendall statistics and their interpretation for all the samples including the surface water locations X57, OPDM1 and OPDM2.

3.2.2 PFAS concentrations at HWHB0060P

The observed PFOS concentrations at the dewatering bores HWHB0060P showed some values above the 99% species protection criterion (0.00023 µg/L) just after the commencement of the hydraulic test in June 2023 (Figure 3.10). However, none of the samples exceeded the 95% species protection criterion (0.13 µg/L). On the other hand, all samples showed values of PFOS+PFHxS below drinking water guideline (0.07 µg/L).

Observed PFAS concentrations at the dewatering bore HWHB0060P did not showed trend during the hydraulic test for PFOS and PFOS+PFHxS (S = -10 and -24). However, the latest two GMEs results showed values below the detections limit, implying a potential decreasing trend (note the negative values for the Mann-Kendall S-statistic). This is also supported by the capture zone analysis which shows that this bore abstracted diluted groundwater (see Section 4.4).

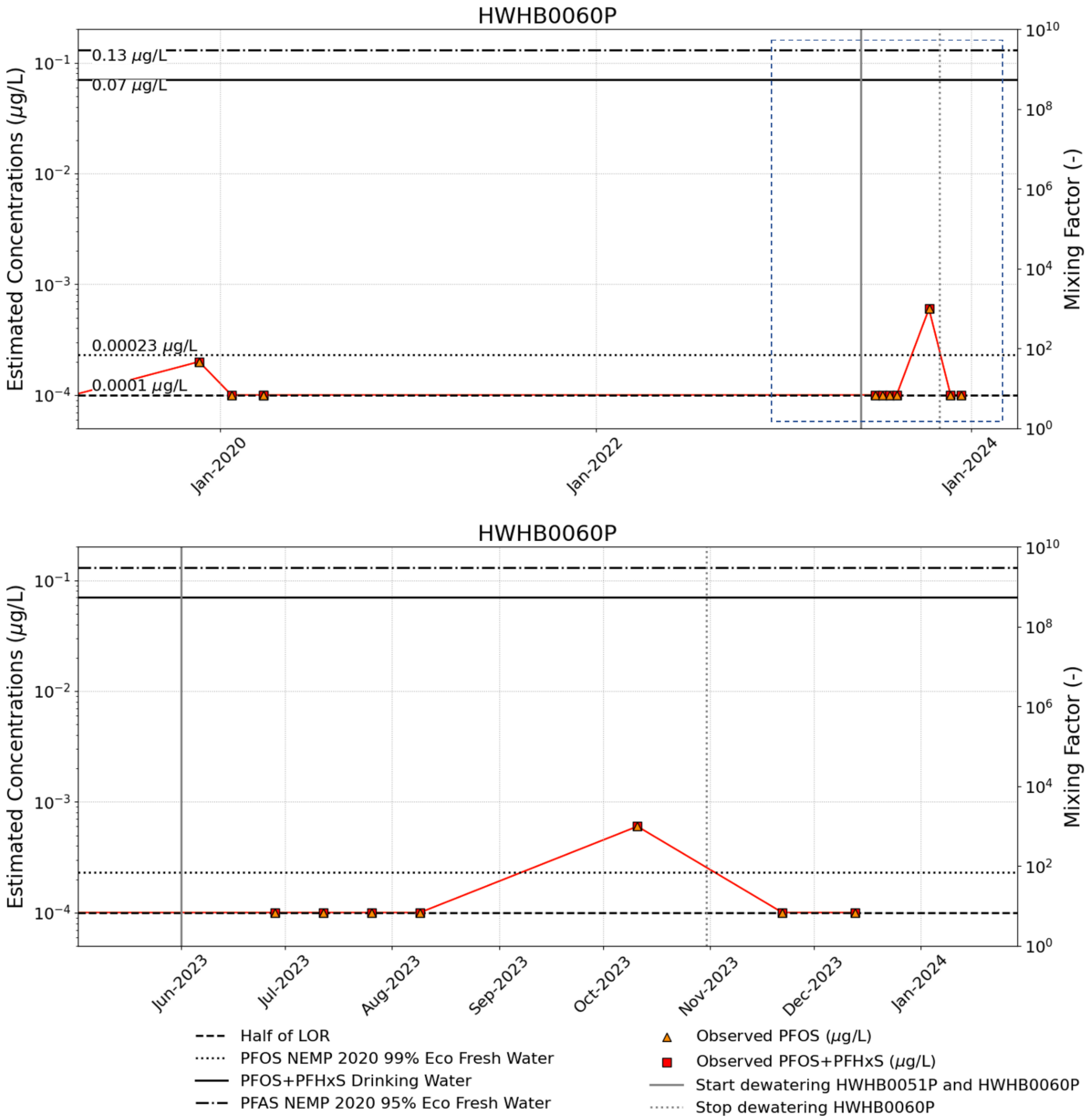

Figure 3.10 PFOS and PFOS+PFHxS at dewatering bore HWHB0060P.

The observed PFOS concentrations at monitoring bore WB26-GW04 showed all values below both the 99% and 95% species protection criterion (0.00023 µg/L and 0.13 µg/L, respectively) (Figure 3.10). All samples showed values of PFOS+PFHxS below drinking water guideline (0.07 µg/L).

Observed PFAS concentrations at monitoring bore WB26-GW04 did not show a trend during the hydraulic test for PFOS and PFOS+PFHxS (S = -27 and -13, respectively).

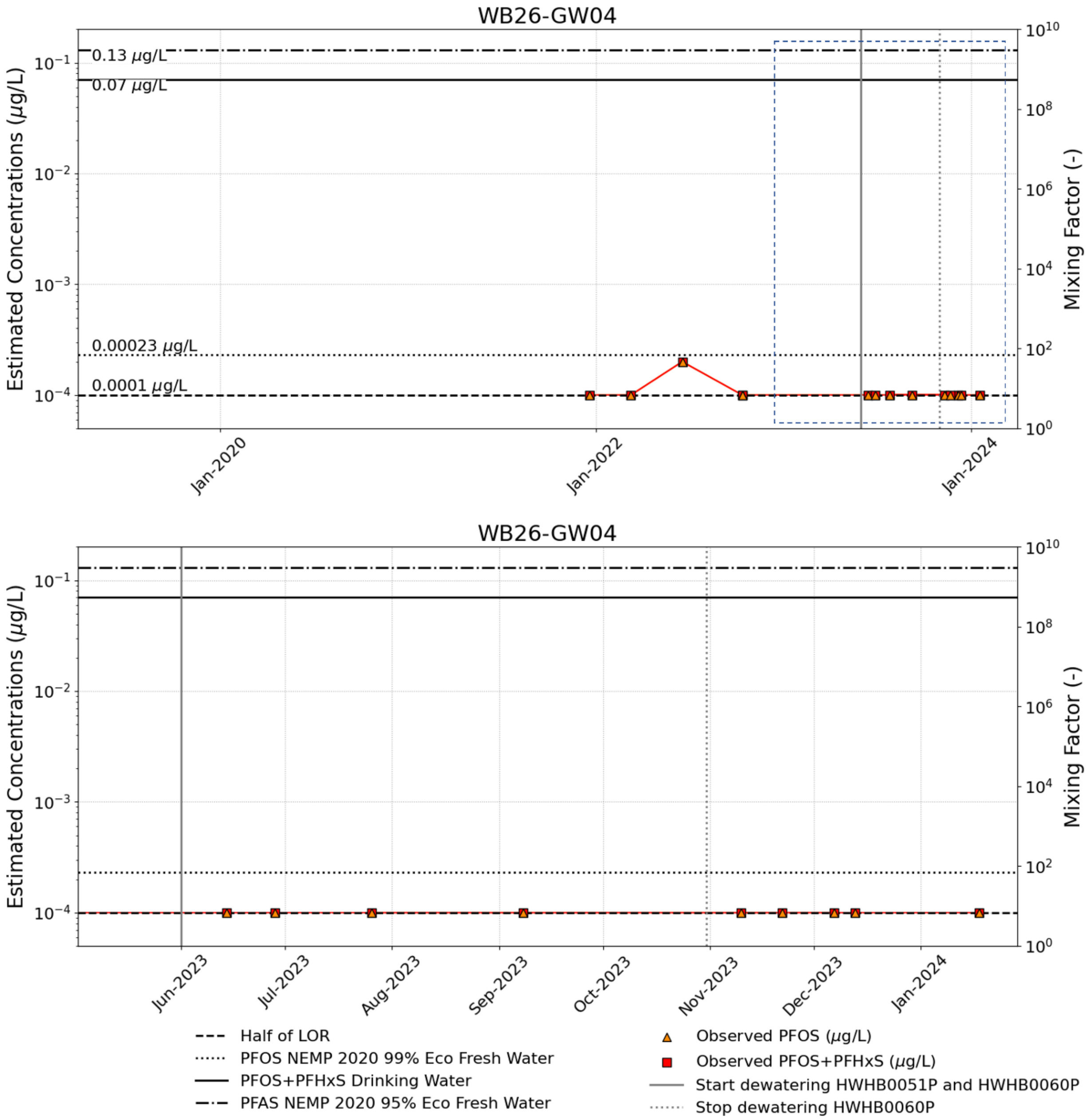

Figure 3.11 PFOS and PFOS+PFHxS at monitoring bore WB26-GW04.

3.2.3 PFAS concentrations at HWHB0057P

The observed PFOS concentrations at the dewatering bores HWHB0057P did not exceed the 99% and 95% species protection criterion (0.00023 and 0.13 µg/L). All samples showed values of PFOS+PFHxS below drinking water guideline (0.07 µg/L).

Observed PFAS concentrations at dewatering bore HWHB0057P showed a slight increase in December 2023 but returned to stable concentrations of PFOS and PFOS+PFHxS (S = 0 and 9, respectively) to values below the detection limit in January 2024 (Figure 3.12 and Appendix C).

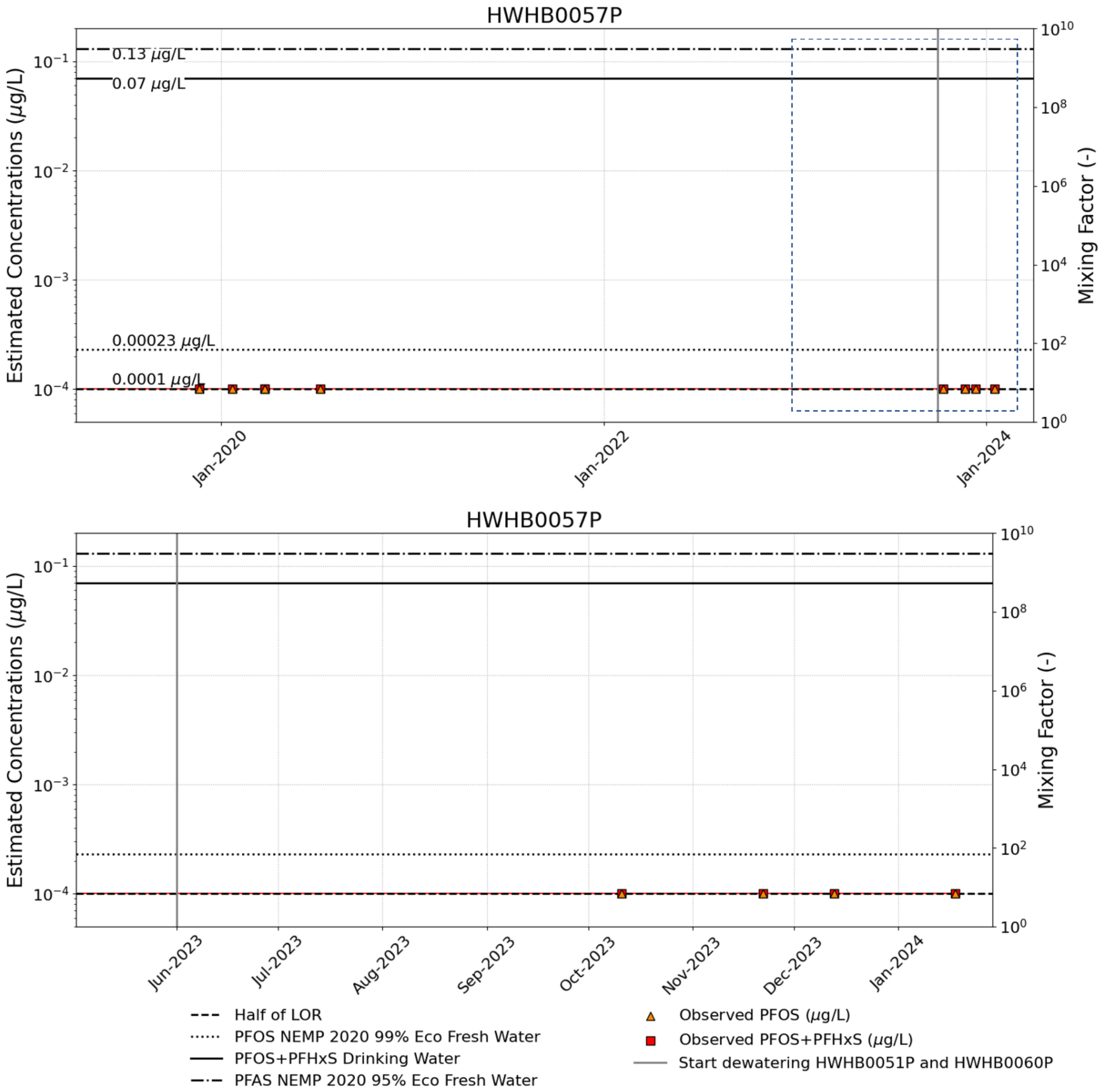

Figure 3.12 PFOS and PFOS+PFHxS at dewatering bore HWHB0057P.

3.2.4 *PFAS concentrations at combined dewatering (XD57)*

Samples were taken from the combined dewatering groundwater storage at location XD57. Most of the observed PFOS concentrations at this storage facility exceeded the 99% species protection criterion (0.00023 µg/L). However, all samples showed values of PFOS below the 95% species protection criterion (0.13 µg/L). PFOS+PFHxS concentrations were found below drinking water guideline (0.07 µg/L) (Figure 3.13).

Observed PFAS concentrations at location XD57 showed stable concentrations of PFOS and PFOS+PFHxS based on the Mann-Kendall analysis (Appendix C). However, their statistic values were estimated as S = -12 and -13; while their confidence factor as 87% and 89% for PFOS and PFOS+PFHxS, respectively. These results imply that it may be a masked decreasing trend as decreasing trends are defined for S < 0 and confidence levels > 90%).

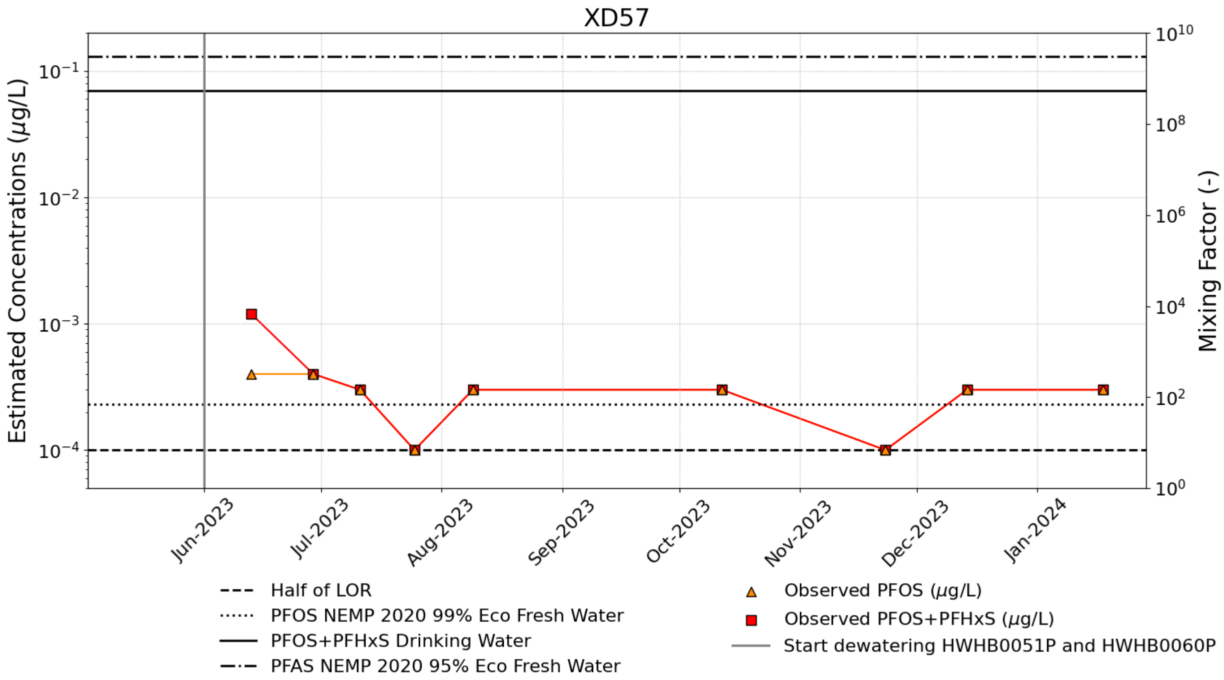

Figure 3.13 PFOS and PFOS+PFHxS at combined dewatering water storage XD57.

3.2.5 PFAS concentrations at discharge points (opdm1 and opdm2)

Samples were taken at the Ophthalmia dam discharge locations OPDM1 and OPDM2. PFOS concentrations at these locations exceeded the 99% species protection criterion (0.00023 µg/L). However, all samples showed values of PFOS below the 95% species protection criterion (0.13 µg/L). PFOS+PFHxS concentrations were found below drinking water guideline (0.07 µg/L). PFAS samples were taken in compliance of the Trigger Action Response Plan (TARP).

Observed PFAS concentrations at location OPDM1 showed stable concentrations of PFOS and PFOS+PFHxS (S = -3, for both species) (Figure 3.14 and Appendix C). On the other hand, observed PFAS concentrations at location OPDM2 showed decreasing concentrations of PFOS and PFOS+PFHxS (S = -18, for both species) (Figure 3.15 and Appendix C).

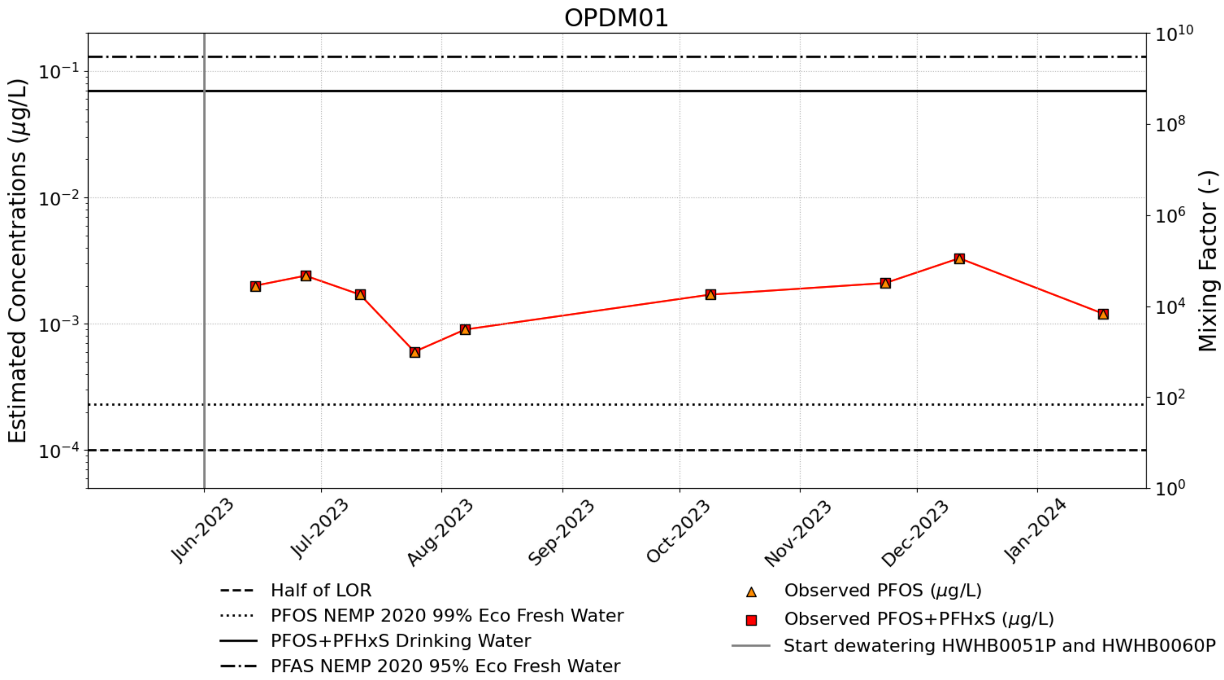

Figure 3.14 PFOS and PFOS+PFHxS at Ophthalmia Dam location 1 (OPDM01).

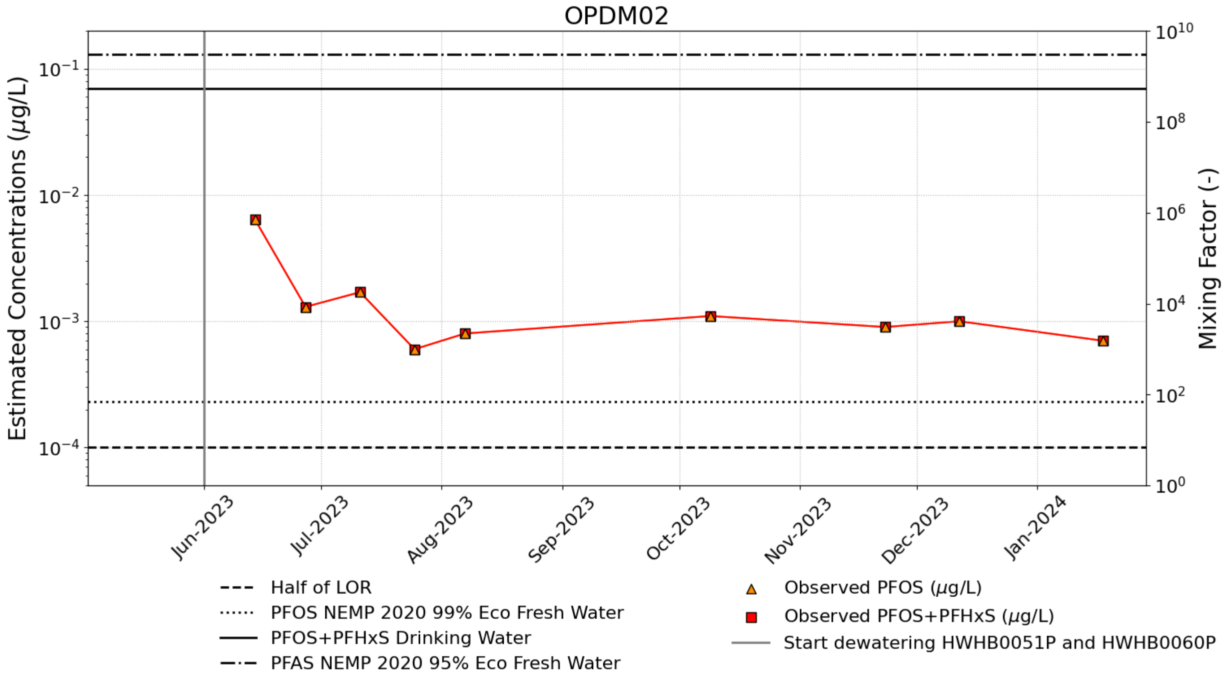

Figure 3.15 PFOS and PFOS+PFHxS at Ophthalmia Dam location 2 (OPDM02).

4 Groundwater modelling

4.1 Model setup

The groundwater numerical model used for this report corresponds to an updated version of the MODFLOW 2005 model defined as ‘Base Case’ by WSP (2022). The groundwater model includes the entire OB29, OB30, OB35 and the undeveloped area of Western Ridge, located to the southwest of OB35 (Figure 4.1). This model version included updates regarding the hydraulic properties during a previous calibration process (WSP, 2022). No other versions considering geological uncertainties were used in this report. This ‘Base Case’ model was then updated with the observed dewatering rates in addition to the projected rates until June 2025. This model is referred in this report as ‘Base Case 2024’. No attempts to calibrate the model were made; however, the observed water heads were compared with the model outputs to evaluate its validity under a low-intensity dewatering scheme. The groundwater modelling has been completed in a staged approach and builds on the previous scopes of work.

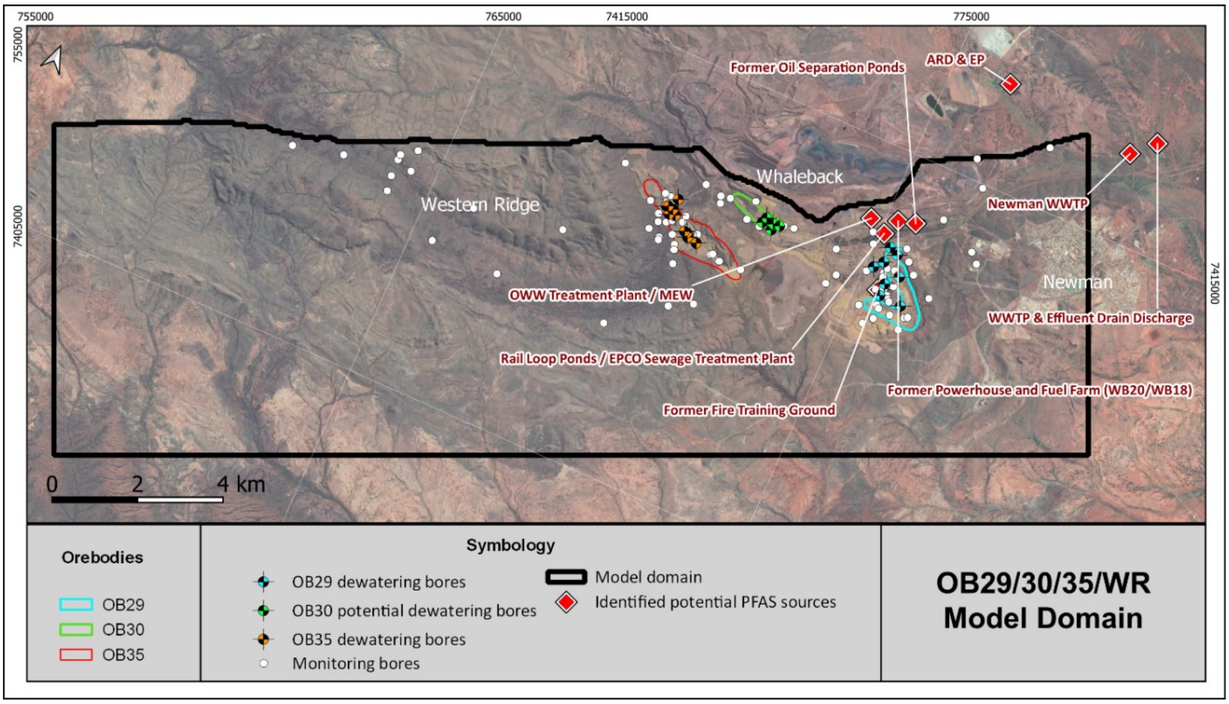

Figure 4.1 Model domain

4.2 Scheduled dewatering rates

The measured and projected dewatering rates for the individual dewatering bores were obtained directly from BHP. Figure 4.2 shows the total dewatering rates at both OB29 and OB35, while Figure 4.3 shows the monthly rates of the dewatering bores at OB29.

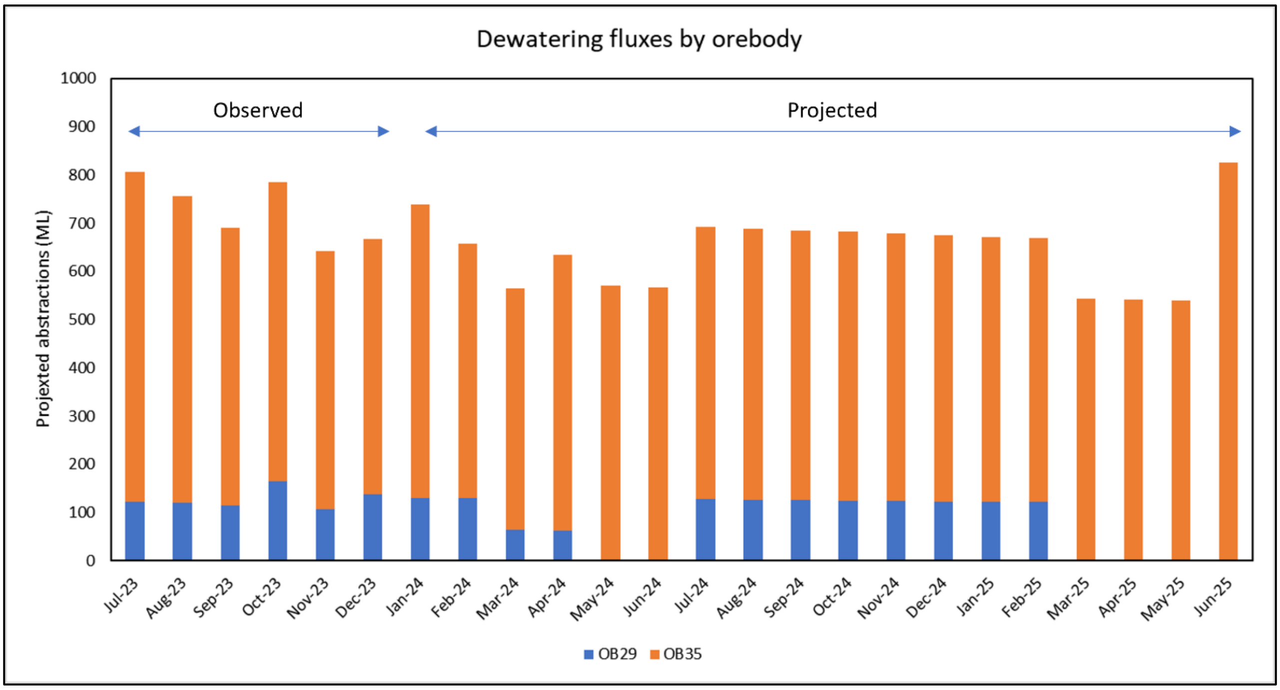

Figure 4.2 Observed and projected dewatering volumes by orebody.

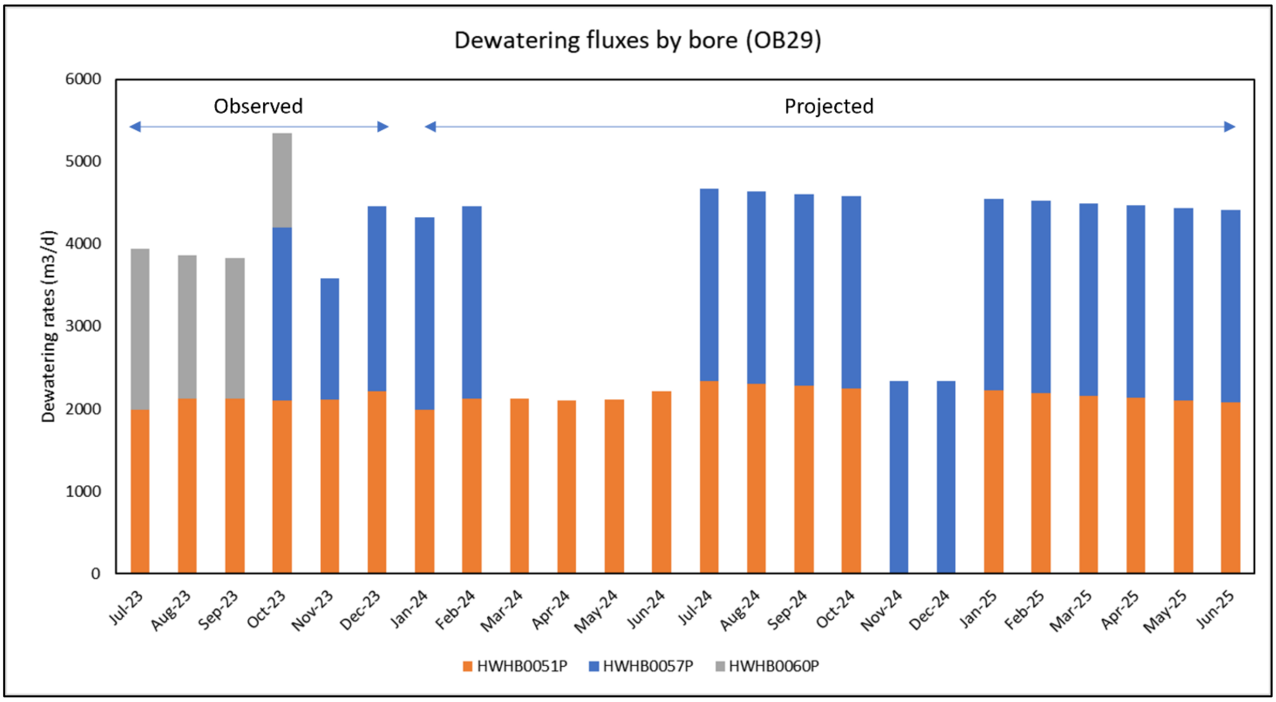

Figure 4.3 Observed and projected dewatering volumes by dewatering bore.

4.3 simulated drawdown evaluation

A comparison between the measured groundwater levels and the simulated heads using the groundwater model was conducted to evaluate the model under the hydraulic test. The average monthly pumping rates were appended to the simulated dewatering bores in the groundwater model to simulate the effects of the hydraulic test to the surrounding monitoring bores. Overall, the groundwater model results showed that the simulated heads are underestimated by approximately 2 to 10 m (Figure 4.4, Figure 4.5 and Appendix D).

This mismatch is likely due to the use of an initial groundwater level of 522 m AHD in the entire model area, which does not reproduce the initial groundwater heads at the individual bores (e.g. see HWHB1521M in Appendix D). Monitoring bores HWHB1526M and MWGW-103D showed the largest mismatch with simulated groundwater levels, with ~18 and ~28 m lower than the observed values, respectively (Appendix D).

Considering the effects of the initial conditions on this disagreement between model output and observations, a more appropriate comparison was carried out by using the induced drawdown. Overall, the simulated drawdowns did also not match the observed drawdowns at most of the monitoring locations (Figure 4.4, Figure 4.5 and Appendix D). The simulated drawdown showed a lower slope than the observed drawdowns across most of OB29. These results imply that while the model reproduce well the overall groundwater levels, it was not able to reproduce all the aquifer stress during the test.

The results of this comparison are relevant for the evaluation of the predicted PFAS concentrations as the mixing assessment is based on the groundwater fluxes resulting from the model hydraulic parameters, and therefore, the induced hydraulic gradients due to the orebody dewatering.

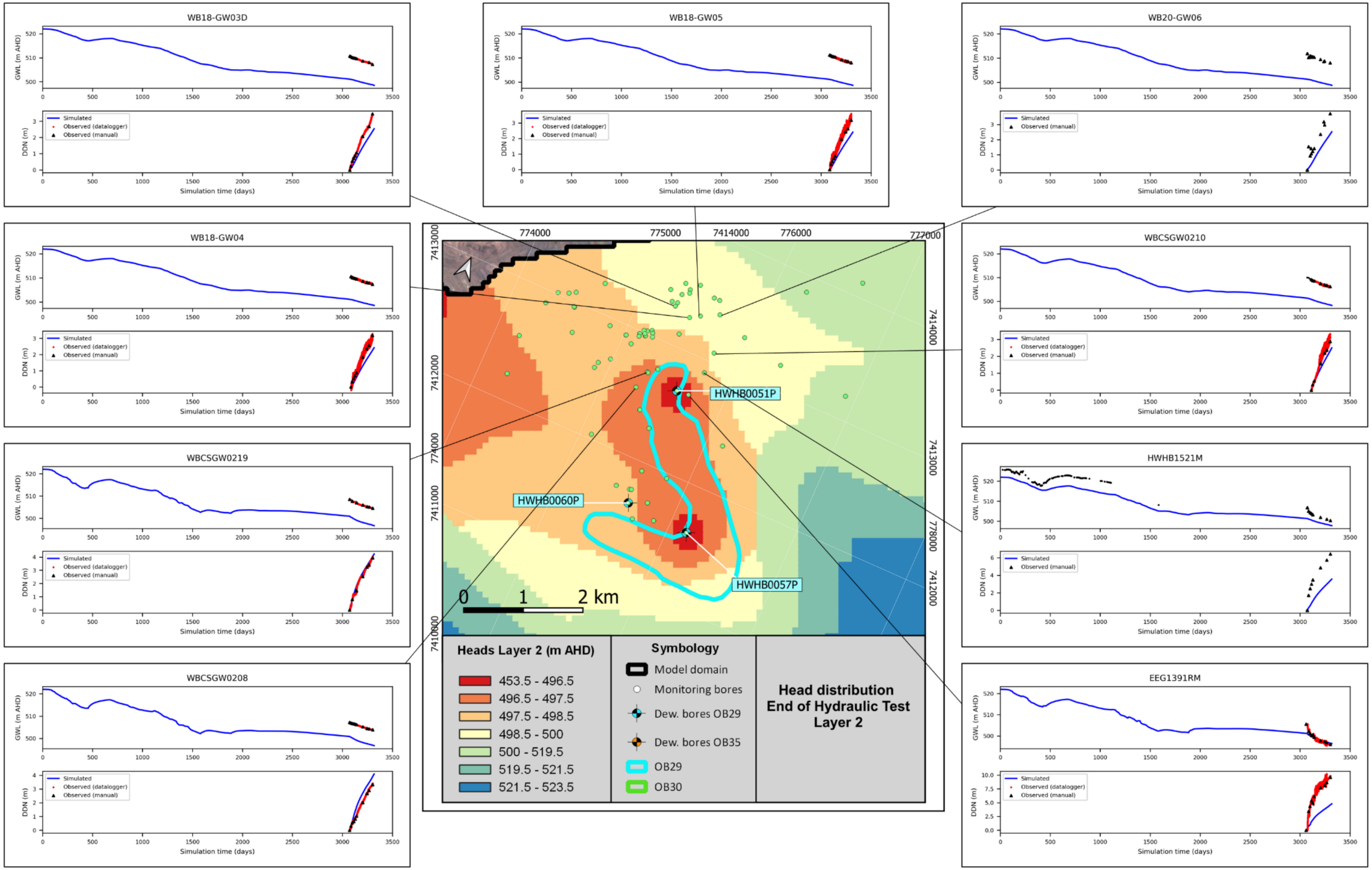

Figure 4.4 Measured vs simulated groundwater levels and drawdowns at selected monitoring bores north of OB29. GWL = Groundwater Levels = and DDN =Drawdown.

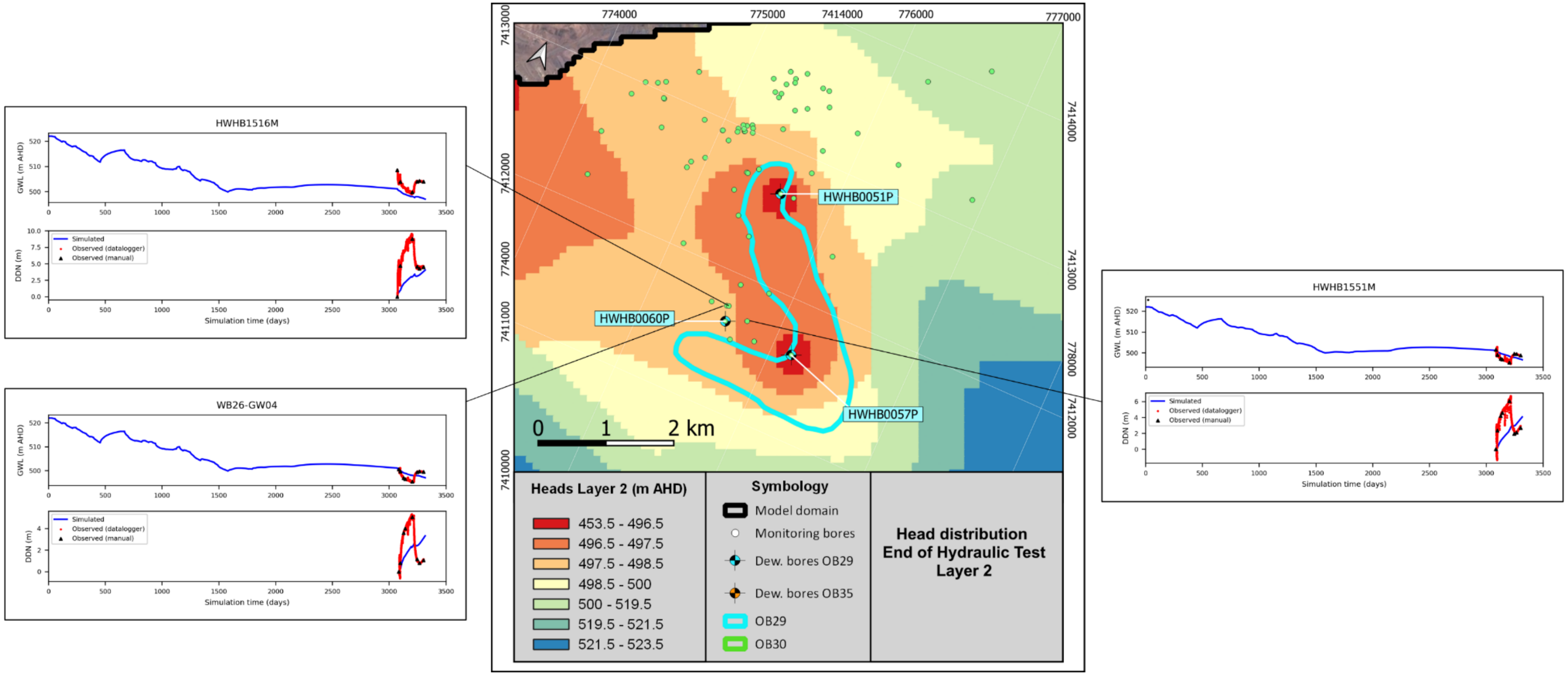

Figure 4.5 Measured vs simulated groundwater levels and drawdowns at selected monitoring bores locations at the southern part of OB29. GWL refers to Groundwater Levels (m AHD) and DDN to Drawdown (m).

4.4 Capture zone assessment

A capture zone is defined as the region from which water is withdrawn by one or more dewatering bores. After pumping is initiated, the capture zone grows with time. Particle tracking analyses are particularly useful for delineating capture zones of dewatering bores. Reverse advective particle tracking is a conventional method for capture zone delineation and is has been used in this assessment. In this current assessment stage, the capture zone analysis will help in the identification of potential pathways should the contaminants reach the monitoring and/or dewatering bores.

A forward simulation with the updated model was run to obtain the groundwater flow field and heads. The simulation period considered for the particle tracks model was from June 2023 to January 2024. Particles were placed at the model cells where dewatering bores HWHB0051P, HWHB0057P and HWHB0060P are located. This process was repeated for each layer where the bores were screened resulting in five particles evenly distributed within each layer from either the water table or the top of the layer to the bottom of the layer. Additional particles were placed at the eight surrounding cells and followed the vertical distribution described above to consider potential uncertainties. The particles were released in every stress period to identify any potential contamination path under the changing hydraulic gradient due to the dewatering.

The results of the reverse particle tracking are shown in Figure 4.6. Particles generally extend within the boundaries of the more transmissive units; however, they were able to cross the hydrogeological barrier that separate the PFAS sources areas and OB29 at some locations. Particles tracks generally showed a radial distribution. Nonetheless, it can be observed that bore HWHB0051P showed a capture zone more elongated to the north-north-east of OB29 than to the north-west. These trajectories support the observations of the PFAS trends at the monitoring locations.

The particle tracks reaching bore HWHB0057P showed a radial distribution elongated to the south-east. This suggests that concentrations of PFAS at this location will dilute due to an increasing capture zone. The particle tracks reaching bore HWHB0060P shows a favourable path to the south-west after the bore is stopped. This implies that while dewatering bore HWHB0057P continues dewatering, concentrations at HWHB0060P will benefit from an additional dilution supported by the capture zones generated by HBHW0057P.

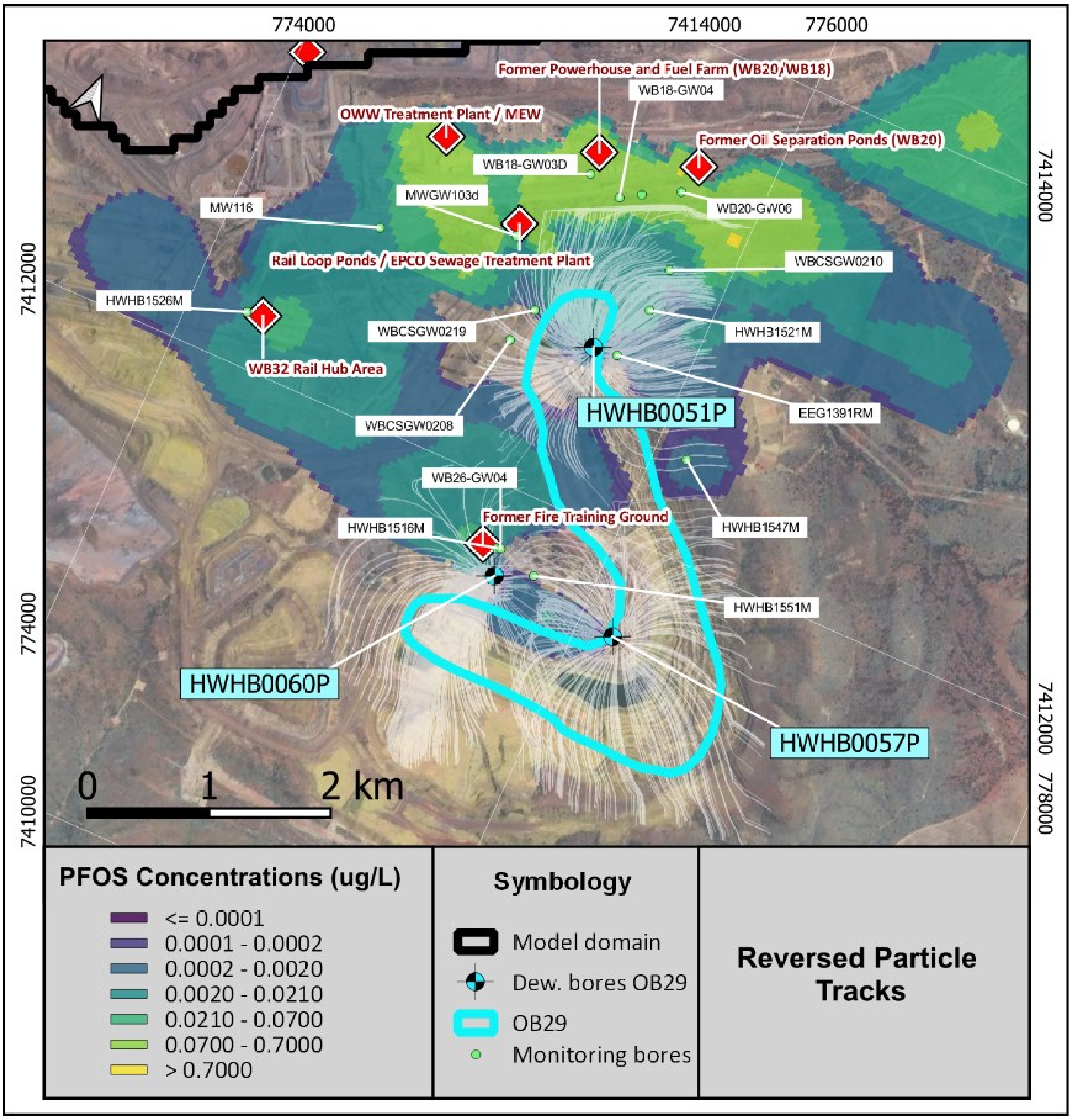

Figure 4.6 Capture zone assessment hydraulic test OB29 (Reversed particle tracks).

4.5 Contaminant plume

The contaminant plume used in the mixing assessment correspond to the plume developed as part of the works presented by WSP (2022). This plume was constructed using geostatistical krigging with the maximum historical concentrations at each sampling location until August 2022. Accordingly, this plume was used as a conservative initial condition for the mixing assessment and its predictions will be compared to the observed concentrations during the hydraulic test.

To compare the differences between the observed concentration and the previous plume maps, an update of the previously developed contaminant plume by WSP (2022) was developed as part of this work by a different approach that attempts to generate a more likely current state of the PFAS contaminant plume. To achieve this, Mann-Kendall statistical analyses (where appropriate) for evaluation of trends were conducted using all the historical samples, including the results from the recent GMEs (Appendix C). This was performed by dividing the time series into three types:

- Time series type (1): increasing and decreasing trends (five or more samples).

- Time series type (2) fluctuating trends, no recognised trends and time series with only three available samples (five or more samples).
- Time series type (3) time series with less than five available samples.

Using these types, a “most likely” PFAS concentration was defined at each sampling point to develop the 2D plumes to conduct the mixing assessment. These unique values were defined as follows:

- Latest available sample results for time series type (1).
- Median values for time series type (2).
- Average value for time series type (3).

The original plume maps used by WSP (2022) and the resulting 2D plume maps from this method are presented in Figure 4.7 and Figure 4.8 for PFOS and PFOS+PFHxS, respectively.

The comparisons show that, as a result of the increasing and decreasing trends at certain monitoring bores (e.g., WBCSGW0208, WBCSGE0219, WBCSGW0210, EEG1391RM and HWHB1521M), it seems that the plume has experienced transport. This can be observed in the upper left corner of the black squares illustrated in Figure 4.7 and Figure 4.8, where concentrations of PFOS and PFOS+PFHxS have increased towards OB29. On the other hand, at the right side of the squares, the lower concentrations have extended to the north, which could be due to the withdrawn of cleaner water due to the dewatering at HWHB0051P.

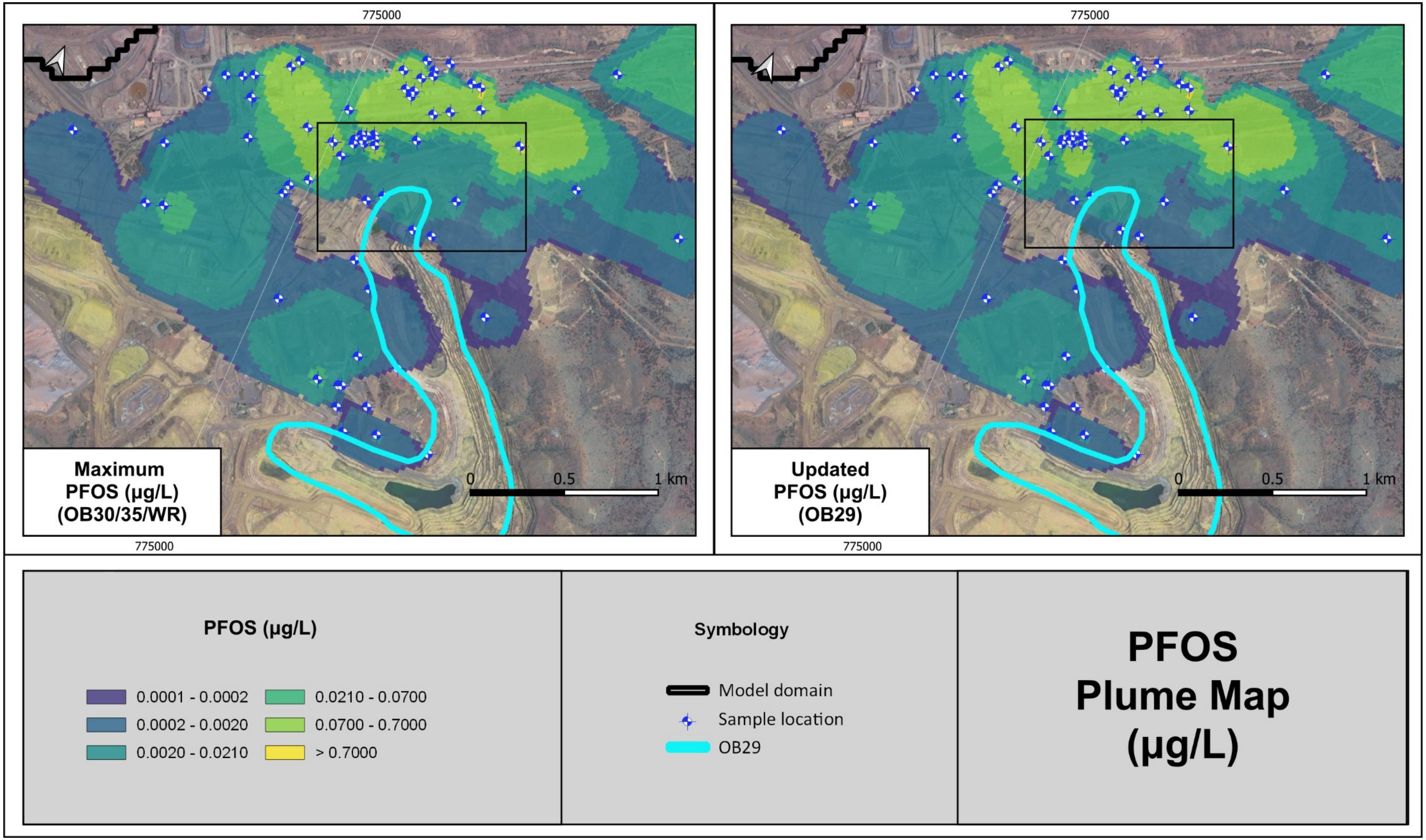

Figure 4.7 PFOS plume map. Black square shows the area with the most notable changes.

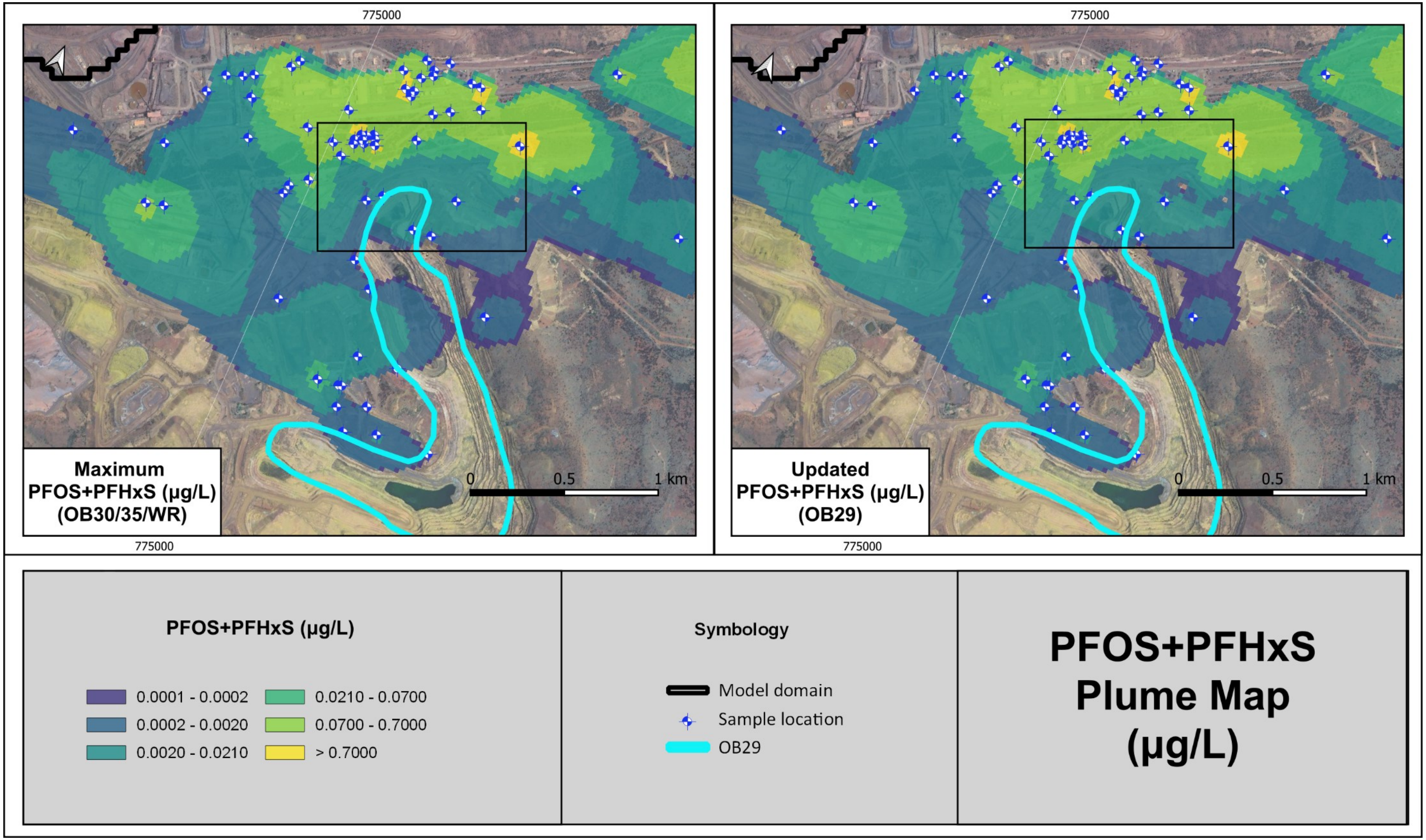

Figure 4.8 PFOS+PFHxS plume map

4.6 Mixing assessment

4.6.1 Overview

The mixing assessment method was applied to the ‘Base Case 2024’ model version to:

- evaluate the fitness of the model and mixing assessment to predict PFAS concentrations
- to provide a prediction of PFAS until June 2024 for dewatering bores HWHB0051P, HWHB0057P and HWHB0060P (OB29).

Overall, this method uses the flow budgets per each cell to calculate its contribution to a predefined destination cell (e.g., dewatering bores). In this way, FlowSource facilitates the calculation of the volumetric contribution for both impacted and clean areas, thus allowing for the assessment of the in-situ mixing. For a detailed description of the FlowSource methodology refer to WSP (2022). This methodology was peer reviewed by a Department of Water and Environmental Regulation accredited Contaminated Sites Auditor. The mixing assessment has been carried out using this method.

A groundwater model for an area containing OB29, OB30, OB35, and WR was developed by BHP to assess the dewatering volumes for the purpose of a 5C application (BHP 2020). The model was subsequently extended to include the latest observed dewatering rates, including the hydraulic test, and the head observations up to January 2024. Forward simulations were carried out to forecast groundwater flow in the region until June 2025. The groundwater model was developed by BHP (BHP, 2020) using MODFLOW 2005 (Harbaugh, 2005).

Geostatistical kriging methodology was used to develop a plume map of PFOS and PFOS+PFHxS. The plumes were developed using the maximum historical concentration for each species at all locations. Additional data was incorporated from recently installed monitoring bores during 2021 and 2022. This corresponds to the contaminant plume maps presented by WSP (2022), which represents a conservative initial condition, previous of the commencement of the hydraulic test. The results of the mixing assessment will represent an approximation of the plume transport and dilution from this initial state.

The mixing assessment assumes that the plume thickness in OB29 is 60 m based on previous results reported by WSP (2022). In this previous report, results from a vertical delineation field campaign in monitoring bores in OB29 during 2022 showed that PFOS and PFOS+PFHxS were detected at depths between 1m to 91 m below the water table (m BWT) in OB29. The deepest detection of PFOS and PFOS+PFHxS has been detected at the bore HWHB1549M (~91 m BWT), west of OB29, where concentrations of both PFOS and PFOS+PFHxS were relatively low (0.0003 µg/L, for both compounds). However, higher concentrations were found in the bore HWHB1521M, northeast of OB29, at a depth of ~54 m BWT (0.0029 and 0.0078 µg/L for PFOS and PFOS+PFHxS, respectively).

The 60 m thickness value was then underpinned by an analysis of data and a simple calibration exercise from the predicted concentrations (WSP, 2022). However, as this definition requires more support, an evaluation of the appropriateness of the use of this value for the plume thickness (and the entire methodology) is provided in this report based on the comparison between observed and simulated concentrations during the hydraulic test.

4.6.2 Assessment criteria

To evaluate the potential risk associated with PFAS in abstracted groundwater, the modelling results were compared to the following PFAS NEMP (2020) criteria:

- the 95% species protection for freshwater for PFOS which is 0.13 µg/L
- the 99% species protection for freshwater for PFOS which is 0.00023 µg/L.
- the drinking water criterion for PFOS+PFHxS which is 0.07 µg/L.

4.6.3 Results

The estimation of potential concentrations of PFOS and PFOX+PFHxS until June 2025 was completed for each of the dewatering bores at OB29 that were used during the hydraulic test, i.e., HWHB0051P, HWHB0057P and HWB0060P. The dewatering bore locations are showed in Figure 3.1. This process was conducted for the Base Case model defined in Section 4.1.

The assessment was carried out using the plume maps presented in Section 4.5 and assuming a constant source release mechanism. The plume thickness was defined as 60 m for OB29 (refer to Section 4.5 for justification). The results have been screened against the 95% and 99% species protection criterion (0.13 µg/L and 0.00023 µg/L, respectively) and drinking water guideline (0.07 µg/L) (HEPA, 2020). The main objective of this exercise is to evaluate the mixing assessment predictions in comparison to the observed concentrations during the hydraulic test.

The results of the individual bores HWHB0051P, HWHB0057P and HWHB0060P are presented in Figure 4.9, Figure 4.10 and Figure 4.11, respectively.

During the entire period of the hydraulic test and the extended predictive period until June 2025, the simulated concentrations did not exceed the drinking water guideline for PFOS+PFHxS (0.07 µg/L) neither the screening value for the 95% species protection for PFOS (0.13 µg/L) for the three dewatering bores (HWHB0051P, HWHB0057P and HWHB60P). However, it was simulated (and observed) that PFOS concentration exceeded the screening value for the 99% species protection (0.00023 µg/L) in particular for all the simulated period at the dewatering bore HWHB0051P, the predicted period since February 2024 at the dewatering bore HWHB0060P, and during the commencement of the hydraulic test in the dewatering bore HWHB0057P.

The following observations are made for the individual dewatering bores:

- For HWHB0051P (Figure 4.9), PFOS and PFOS+PFHxS concentrations are predicted to increase during the simulated period (until 2025). This is likely the result of an increasing capture zone following towards the north of OB29. PFOS concentrations are predicted above the 99% species protection (0.00023 µg/L) for the entire simulation period but below the value for the 95% species protection for PFOS (0.13 µg/L). The simulated concentrations overestimated the observed concentrations of PFOS and PFOS+PFHxS, which is the results of the conservative approach used by the pseudo-transient capture zones used by FlowSource.
- For HWHB0057P (Figure 4.10), PFOS and PFOS+PFHxS concentrations are predicted to increase during the simulated period (until 2025), particularly after March 2024. This is likely the result of an increasing capture zone and a plume not sufficiently depleted by this stage. PFOS concentrations are predicted above the 99% species protection (0.00023 µg/L) after March 2024 but below the value for the 95% species protection for PFOS (0.13 µg/L) for the entire simulation period. The simulated concentrations mostly overestimated the observed concentrations of PFOS and PFOS+PFHxS.
- For HWHB0060P (Figure 4.11), PFOS and PFOS+PFHxS concentrations are predicted to decrease during the simulated period (until 2025). This is likely the result of an enhanced dilution due to the aid from the dewatering bore HWHB0057P. PFOS concentrations are predicted above the 99% species protection (0.00023 µg/L) during the duration of the hydraulic test but below the value for the 95% species protection for PFOS (0.13 µg/L) for the entire simulation period. The simulated concentrations mostly overestimated the observed concentrations of PFOS and PFOS+PFHxS.

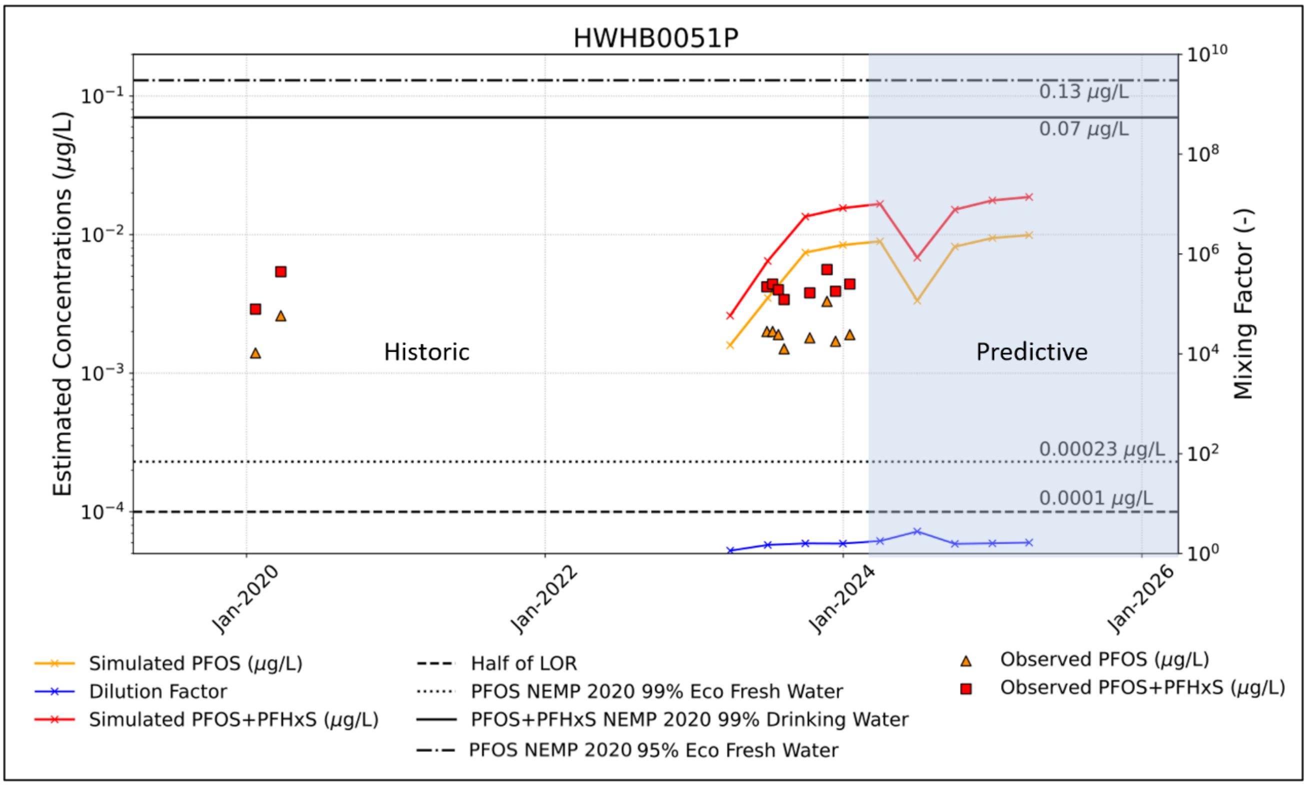

Figure 4.9 Mixing assessment results for PFOS and PFOS+PFHxS for the dewatering bore HWHB0051P.

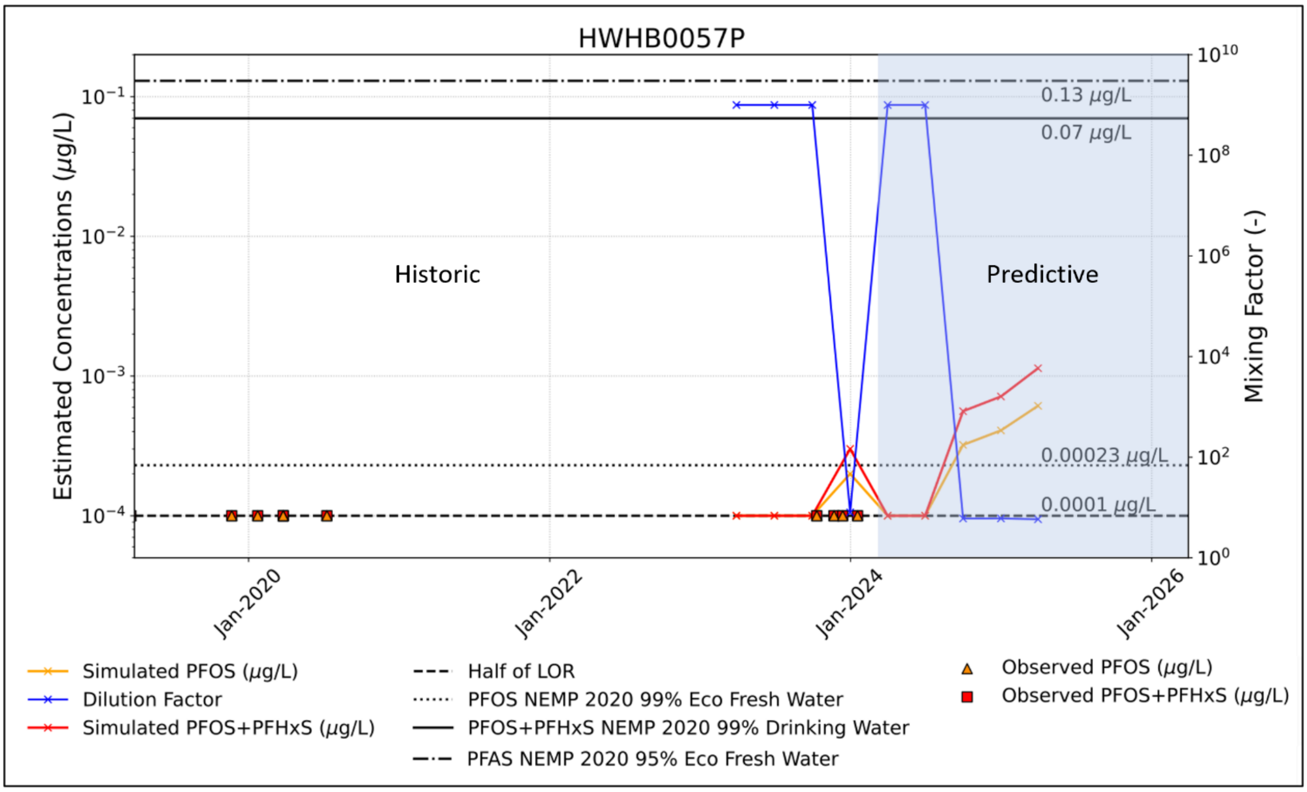

Figure 4.10 Mixing assessment results for PFOS and PFOS+PFHxS for the dewatering bore HWHB0057P.

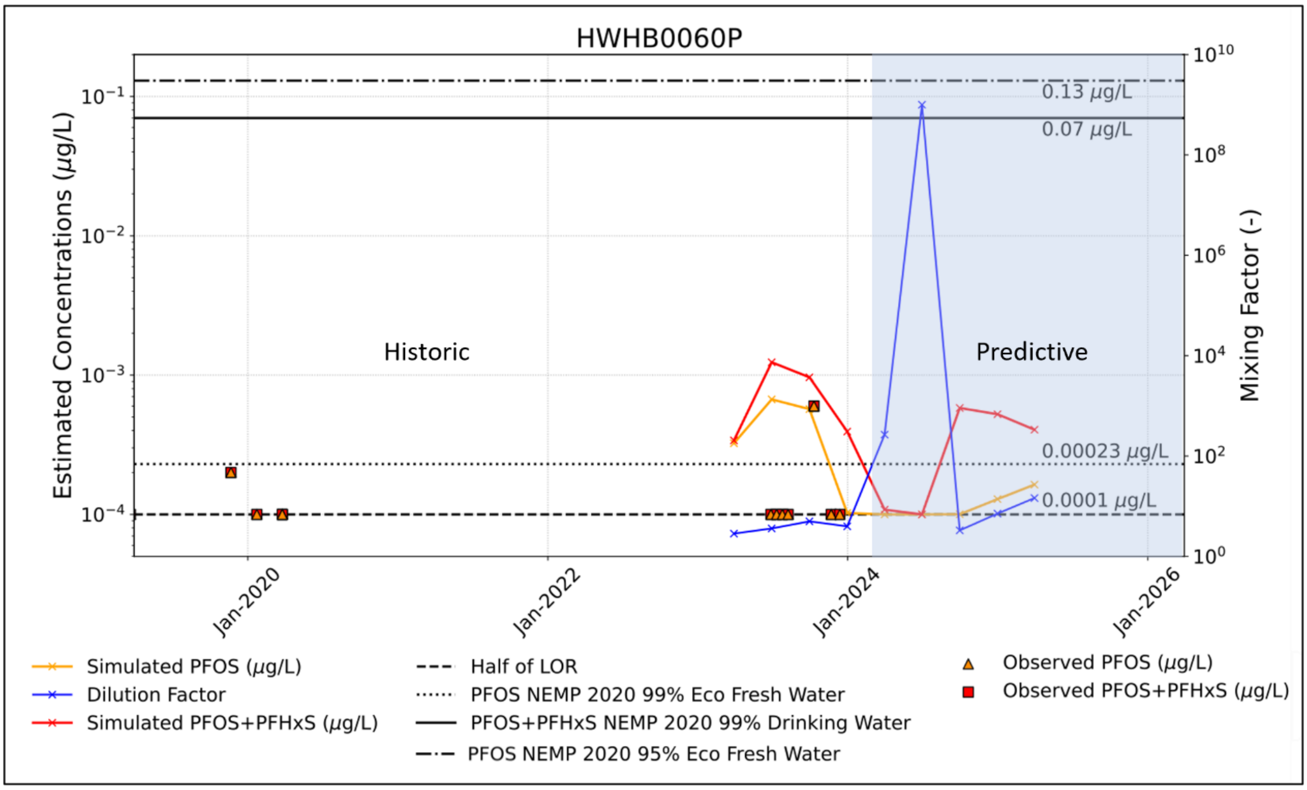

Figure 4.11 Mixing assessment results for PFOS and PFOS+PFHxS for the dewatering bore HWHB0060P.

5 Conclusions

BHP engaged WSP to undertake 10 GMEs to evaluate the impacts of a dewatering trial (hydraulic test) in OB29. Three dewatering bores (HWHB0051P, HWHB0057P and HWHB0060) were used for a seven month hydraulic test from June 2023 to January 2024. Drawdown was monitored at specific locations and water samples were taken across the site to evaluate the PFAS concentrations at the dewatering bores. Observed drawdown and concentrations trends were analysed to update the hydrogeological understanding of the site, in particular to identify potential pathways of PFAS from the source area to the north, to the dewatering bores. Additionally, the observed drawdowns and PFAS concentrations were evaluated against the predictions from the modelling outputs to assess the validity of the mixing assessment methodology. To this end, the groundwater model was updated using the observed monthly dewatering rates and the projected rates until June 2025.

The main conclusions drawn from this report are stated as follows:

Observed PFAS concentrations

- Observed PFOS+PFHxS concentrations at all the dewatering bores were below the drinking water guideline value (0.07 µg/L) during the hydraulic test.
- Observed PFOS concentrations at individual bores were above the 99% species protection (0.00023 µg/L). However, none of the samples exceeded the 95% species protection criterion (0.13 µg/L). In particular, dewatering bore HWHB0051P, the closest to the main PFAS source area to the north of OB29, showed values above the 99% species protection (0.00023 µg/L) for all its samples during the hydraulic test.
- None of the observed PFOS concentrations at dewatering bore HWHB0057P exceeded the 99% species protection criterion (0.00023 µg/L), while only one sample at HWHB0060P showed values above the 99% species protection criterion (0.00023 µg/L).

Simulated PFAS concentrations

- Simulated concentrations at the three dewatering bores overestimated the observed concentrations of PFOS and PFOS+PFHxS.
- Simulated PFOS and PFOS+PFHxS concentrations at dewatering bore HWHB0051P are predicted to increase during the simulated period (until Jun 2025).
- For HWHB0057P, the simulated PFOS and PFOS+PFHxS concentrations are predicted to increase during the simulated period (until Jun 2025), particularly after March 2024.
- For HWHB0060P, the simulated PFOS and PFOS+PFHxS concentrations are predicted to decrease during the simulated period (until 2025).

Validity of mixing assessment methodology

- Overall, the mixing assessment provided a slightly overestimated prediction of the PFOS and PFOS+PFHxS concentrations in the three dewatering bores. This is the result of the conservative approach delivered by the pseudo-transient capture zones used by FlowSource and assuming a constant source.

  Accordingly, although this method is not a formal contaminant fate and transport assessment, its results are suitable to provide conservative predictions of PFOS and PFOS+PFHxS concentrations in OB29 during dewatering activities at OB29.
- Therefore, the future observed PFAS concentrations at OB29 are likely to be below the values predicted by the mixing assessment.

Hydraulic connection between OB29 and PFAS source area

- The analysis of the measured groundwater levels showed that most monitoring bores registered drawdown influenced by the hydraulic test. This is a major finding that improves the understanding of the aquifer connectivity.

As it has been hypothesized, the aquifer at OB29 has some hydraulic connection to the north as dewatering bores have detected PFAS, probably coming from the main PFAS source areas to the north of OB29. However, as there is a low permeability formation between OB29 and the sources area to the north, this connection was not clear.

- The hydraulic connection has been evidenced by the drawdown observed in the monitoring bores MW116, MWGW103d (NW of sources area) and WB18-GW03D, WB18-GW04, WB18-GW05 and WB20-GW06 (NE of sources area). All these bores registered maximum drawdowns between 3.3 to 5.1 m during the hydraulic test, with the highest drawdown observed to the NW (MW116 and MWGW103).
- However, monitoring bore MWGW103D registered a drawdown that started before the beginning of the hydraulic trial as well as an important recovery phase from mid-June to mid July 2023, same as monitoring bore MW116. These changes were not observed in any of the other monitoring bores, which suggests that there may be additional stresses to the aquifer in the NW source area that do not affect the rest of the site.
- Accordingly, the drawdown analysis can conclude that there is a hydraulic connection between OB29 and the NE of the sources area.
- The drawdown analysis also showed that dewatering bore HWHB0051P had the highest impact to the east of OB29 than to the west as evidenced by the observed drawdowns in monitoring bores HWHB1521M and WBCSGW0219. There was no indication of the capture zone extending to the west (HWHB1526M) and east of OB29 (HWHB1547M). No monitoring bores were measured to the south of OB29.
- The observed drawdowns were compared to the simulated drawdowns by the groundwater model. In general, while the model tends to reproduce well the groundwater levels, it underestimated most of the drawdowns generated by the hydraulic test except for monitoring bores WBCSGW0208 and WBCSGW219, which showed the best match.

Additional evidence of connectivity and plume transport

- The observed concentrations at monitoring bores showed indications of plume transport between the source area and OB29.
- Monitoring bore WBCSGW0219 showed a clear increasing trend. These observations, in addition to the results of the capture zone assessment, suggest that impacted water may have been transported from the Rail Loop Ponds (identified as a potential PFAS sources), located 300 m north, towards WBCSGW0219.
- This suggest that some hydraulic connection as well as a PFAS pathway may exist through the NW part of the sources' area.

5.1 Limitations

As stated by WSP (2022) and previous mixing assessment reports, the results showed here are controlled by:

- the dewatering bores being active and their dewatering rates;
- the fitness of the groundwater model to reproduce the observations; and
- the PFAS plume maps, assumption of PFAS release at sources and plume depletion rate.

Accordingly, while this analysis is valid under the current dewatering schedule (hydraulic test), a more intense dewatering will likely provide different predictions. Furthermore, the calculated fluxes by the groundwater model probably differ from the reality as the simulated groundwater levels and drawdowns did not match the observations. Finally, the mixing assessment methodology considers that the plume will be depleted (contaminant being removed away from the identified sources, which are treated as constant release sources) during dewatering. This depletion is more evident in the predicted results by WSP (2022) after the simulation of more than two years of full-scale dewatering. However, the predictions presented in this report did not show evidence of a depletion occurring likely because the hydraulic test only last for seven months and that the dewatering rates were lower than the prediction showed by WSP (2022) in a full-scale dewatering schedule.

5.2 Recommendations

- It is recommended to continue monitoring the bores showed in this report during any future dewatering activities in OB29 as they can serve as informative sampling locations to anticipate the transport of PFAS compounds towards the dewatering bores. As no major changes were observed fortnightly or monthly, it is recommended to undertake GMEs bimonthly while dewatering occurs in OB29.
- It is recommended to continuously calibrate the groundwater model against the historical and new head and drawdown observations. This will ensure that the flux domain (or several realisations if considering parametric uncertainty) is well constrained by the observations to be used as a base for the mixing assessment.
- Mixing assessment can be appended to every calibration process to evaluate its validity to reproduce the observed PFAS concentrations under future dewatering.
- The mixing assessment results can be validated better under a more aggressive hydraulic test that simulates a full-scale dewatering that aims to reach the dewatering targets.
- Nonetheless, as the mixing assessment has important limitations, it is recommended to start the development of a preliminary fate and transport model. Such a model can provide more robust predictions as it can be run in transient mode in comparison to the conservative pseudo-transient approach of FlowSource. Additionally, a fate and transport model do not need to assume plume depletion rates, as the plume transport and its depletion is directly estimated by the model.

6 References

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Appendix A

Field sheets and records

A1 Field sheets

wsp

Contaminated Land Management

Standard Form 1.2.2:
Daily Field Record - Detailed

Project Information	
Date: 26/06/23	**Time:** Arrive 10:30 Depart 5:00
Client: BHP	**Project Number:** PS202448
Site Location: Mt. Whaleback	**Personnel:** CO/TM
Weather: Sunny	

Purpose of Visit

GME – PFAS Groundwater Modelling

Description of Works and People Met

Andrew - Site supervisor

Sampling Details				
Sampling Conducted:	Y	[✓ N]	NA	Summary of samples:
Matrix:	S	W	O	
COC Form Submitted	Y	N	NA	
Primary Lab:				Intra-Lab QA Pairs:
Secondary Lab:				Inter-Lab QA Pairs:

Field Equipment Used						
PID:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
FID/Eagle:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
LGA:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
IP:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
YSI/TPS:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
Pump:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
Other: Dipper	[✓ Y]	N	Calibrated/tested:	Y	N	NA
Other:	Y	N	Calibrated/tested:	Y	N	NA

Other Outstanding Actions

Version: B	**Reviewer: C. McKay**	**Date: 30/03/16**	**Approver: C. McKay**	**Date: 30/03/16**

Contaminated Land Management

Standard Form 1.2.2:

Daily Field Record - Detailed

Detailed record continued

	Well	DTW	DTB	Comments/ Stick up
11:45	WB18-GW03D	48.56	82.28	
12:15	WB18-GW04	45.25	104.15	0.62/variable terrain Sum.
12:45	WB18-GW05	44.49	92.52	0.56
14:15	MW116	46.93	102.92	stick up - 0.575
14:50	MNGW103D	23.45	35.82	stick up - 0.495
15:45	WBC5GW0210	50.11	69.61	0.57

- Arrive at Newman airport @ 8:40AM
- Go to IGA for breakfast + lunch
  - also pick up sandwich bags
- Go to Toll at 9:15AM
  - collect equipment
- Arrive to site at 10:00AM + meet with site supervisor - Andrew
  - → Fill out JHA

wsp

Contaminated Land Management

Standard Form 1.2.2: Daily Field Record - Detailed

Project Information

Date: 27/6/23	**Time:** Arrive 6:00 Depart 4:45 PM
Client: BHP	**Project Number:** PS202448
Site Location: Mt. Whaleback	**Personnel:** CO/TM
Weather: Sunny	

Purpose of Visit

GME - OB29
PFAS

Description of Works and People Met

Pre-start at dewatering at 6AM
Se was pit escort

Sampling Details

Sampling Conducted:	[✓ Y]	N	NA	Summary of samples: Dam samples + WB18-GW03D
Matrix:	S	[✓ W]	O	
COC Form Submitted	[✓ Y]	N	NA	
Primary Lab: ALS				Intra-Lab QA Pairs: —
Secondary Lab: Eurofins				Inter-Lab QA Pairs: —

Field Equipment Used

PID:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
FID/Eagle:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
LGA:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
IP:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
YSI/TPS:	[✓ Y]	N	Calibrated/tested:	[✓ Y]	N	NA
Pump:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
Other: Dipper	[✓ Y]	N	Calibrated/tested:	Y	N	[✓ NA]
Other:	Y	N	Calibrated/tested:	Y	N	NA

Other Outstanding Actions

Access to X57
Access to WB20-GW06

Detailed record continued

Well	DTW	DTB	Stick-Up
WB26-GW04	68.67	111.805	0.47
HWMB1516m	69.65	95.505	=
HWMB1551m	71.535	>150	–
WBCSGWD208	59.855	80.895	–
WBCSGW0219	62.04	87.33	–
EEG1391R	97.04	120.77	-

28/06/23 Gauging

HWMB152M	69.34	127.40	0.95

- Se was pt escort until lunch ~1pm
- After lunch went to WB18-GW03D, did YSI calibration + sampled @WB18-GW03D
- Contacted John to let him know we were leaving site to take samples from the dam (OPDM1 + OPDM2)

- left the dam at 16:45

- Tried to get access to X57, but no call back

Contaminated Land Management

Standard Form 1.2.2:

Daily Field Record - Detailed

Project Information	
Date: 28/6/23	Time: Arrive 6:00 Depart 4:50
Client: BHP	Project Number: PS202448
Site Location: Mt. Whaleback	Personnel: CO/TM
Weather: Sunny	

Purpose of Visit

GME - PFAS Groundwater Modelling
OB29

Description of Works and People Met

Pre-start @ dewatering @ 6AM
Will was pit escort until 1pm

Sampling Details				
Sampling Conducted:	[✓ Y]	N	NA	Summary of samples:
Matrix: Water	S	[✓ W]	O	Pit samples
COC Form Submitted	[✓ Y]	N	NA	
Primary Lab: ALS				Intra-Lab QA Pairs: QA01/280623
Secondary Lab: Eurofins				Inter-Lab QA Pairs: QA02/280623

Field Equipment Used						
PID:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
FID/Eagle:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
LGA:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
IP:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
YSI/TPS:	[✓ Y]	N	Calibrated/tested:	[✓ Y]	N	NA
Pump:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
Other: Dipper	[✓ Y]	N	Calibrated/tested:	Y	N	[✓ NA]
Other:	Y	N	Calibrated/tested:	Y	N	NA

Other Outstanding Actions

Detailed record continued

- Pre-start at dewatering @ 6AM
- Will was pit escort
- Break taken at 10 AM
- Lunch at 1PM
- Tried to call at 1:45 PM for X57 access
- Sampled MW116 + MWGW103D
- Took pictures of former rail loop points for Christian B.
- Tried to access WB20-GW06 → train blocking area
- Arranged X57 access w/ Tom for 29/06/23 morning
- Returned sample pull & got ice 15:30
- YSI calibration & rinsate samples taken off of dipper @ 16:00

Contaminated Land Management

Standard Form 1.2.2:
Daily Field Record - Detailed

Project Information

Date: 29/6/23	**Time:** Arrive 6 AM Depart 4:45
Client: BHP	**Project Number:** PS202448
Site Location: Mt. Whaleback	**Personnel:** CO/TM
Weather:	

Purpose of Visit

GME - Groundwater PFAS modelling

Description of Works and People Met

Pre-start at dewatering @ 6AM
Tom opened gate to X57

Sampling Details

Sampling Conducted:	[✓ Y]	N	NA	Summary of samples: X57, WB20-GW06, WB18-GW04, WB18-GW05, MWHB1526M
Matrix:	S	[✓ W]	O	
COC Form Submitted	[✓ Y]	N	NA	
Primary Lab: ALS				Intra-Lab QA Pairs: QA03|290623 → X57
Secondary Lab: Eurofins				Inter-Lab QA Pairs: QA04/29/0623 → X57

Field Equipment Used

PID:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
FID/Eagle:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
LGA:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
IP:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
YSI/TPS:	[✓ Y]	N	Calibrated/tested:	[✓ Y]	N	NA
Pump:	Y	[✓ N]	Calibrated/tested:	Y	N	NA
Other: Dipper	[✓ Y]	N	Calibrated/tested:	Y	N	[✓ NA]
Other:	Y	N	Calibrated/tested:	Y	N	NA

Other Outstanding Actions

Version: B	Reviewer: C. McKay	Date: 30/03/16	Approver: C. McKay	Date: 30/03/16

Detailed record continued

Well	DTW	DTB	Stick Up
MWHB1526M	43.34	88.57	0.91
WB20-GW06	44.235	100.12	0.55

6:45 AM

Tried to sample from MWHB1526M, top of bailer broke ~~[illegible]~~, other bailer leaked + lost one of the bailers due to twine snapping (possibly also due to to of bailer snapping).

1pm

Came back to MWHB1526M, tried zip tie to hold mini bailer, mini bailer only brought up a small amount of water.

Proceeded to use mini Hydrasleeve to receive sample.

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Project number:	PS202448	**Sampler initials:**	LO/TM
Client:	BHP	**PM initials**	EP
Site location:	Mt. Whaleback		

Well ID	WB18-GW03D		**Depth to Groundwater mBTOC (Before Sampling):**		48.56
Date	27/6/23		**Depth to top of sampler (mBTOC)**		60.5
QC sample	—		**Well Depth (mBTOC)**		82.28
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
14:40	7.14	25.9	1596	-129.4	1.25
Comments (odour, colour, turbidity, sheen)	Sulfur like odour, low turbidity, colourless, no sheen				

Well ID			**Depth to Groundwater mBTOC (Before Sampling):**		
Date			**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
Comments (odour, colour, turbidity, sheen)					

Well ID			**Depth to Groundwater mBTOC (Before Sampling):**		
Date			**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
Comments (odour, colour, turbidity, sheen)					

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB26 - GW04	**Depth to Groundwater mBTOC (Before Sampling):**	68.67
Date	28/6/23	**Depth to top of sampler (mBTOC)**	70.0
QC sample	QA01/280623 + QA02	**Well Depth (mBTOC)**	111.805

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
7.30	7.26	14.8	1199	229.7	4.98

Comments (odour, colour, turbidity, sheen): Slightly brown/yellow, medium turb., odourless, no sheen. PFAS bottles filled with Hydrasleeve, had to re-sample to fill rest of bottles

Well ID	HWHB0060P	**Depth to Groundwater mBTOC (Before Sampling):**	—
Date	28/6/23	**Depth to top of sampler (mBTOC)**	—
QC sample	—	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:30	7.50	25.3	982	169.9	6.05

Comments (odour, colour, turbidity, sheen): Colourless, odourless, low turb., no sheen

Well ID	HWHB155M	**Depth to Groundwater mBTOC (Before Sampling):**	71.535
Date	28/6/23	**Depth to top of sampler (mBTOC)**	91.0
QC sample	—	**Well Depth (mBTOC)**	>150

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:45	7.22	16.6	970	145.8	4.78

Comments (odour, colour, turbidity, sheen): Colourless, brown suspended particulates, low-medium turbidity, odourless

wsp

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Project number:	PS202448	**Sampler initials:**	CO/TM
Client:	BHP	**PM initials**	ER
Site location:	Mt. Whaleback		

Well ID	WBCSGW0219	**Depth to Groundwater mBTOC (Before Sampling):**	62.04
Date	28/06/23	**Depth to top of sampler (mBTOC)**	63.00
QC sample	—	**Well Depth (mBTOC)**	87.33

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:15	7.15	18.7	1042	135.4	3.12

Comments (odour, colour, turbidity, sheen) Colourless, low turb., odourless, no sheen

Well ID	HWMB0051P	**Depth to Groundwater mBTOC (Before Sampling):**	—
Date	28/06/23	**Depth to top of sampler (mBTOC)**	—
QC sample	—	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9.45	7.40	27.8	1039	116.7	2.32

Comments (odour, colour, turbidity, sheen) Colourless, odourless, low turb, no sheen

Well ID	HWMB1521M	**Depth to Groundwater mBTOC (Before Sampling):**	69.34
Date	28/6/23	**Depth to top of sampler (mBTOC)**	70.5
QC sample		**Well Depth (mBTOC)**	127.40

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
11:15	7.34	26.9	689.0	89.9	1.60

Comments (odour, colour, turbidity, sheen) Removed BHP data logger
Grey/brown colour, Med. turb., odourless, no sheen

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	EEG1391Rm	**Depth to Groundwater mBTOC (Before Sampling):**	97.04
Date	28/6/23	**Depth to top of sampler (mBTOC)**	99.00
QC sample	—	**Well Depth (mBTOC)**	120.77

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
11:45	7.32	27.8	1014	64.9	2.44

Comments (odour, colour, turbidity, sheen) Colourless, odourless, low turb., no sheen

Well ID	HWHB1547m	**Depth to Groundwater mBTOC (Before Sampling):**	115.85
Date	28/6/23	**Depth to top of sampler (mBTOC)**	—
QC sample	—	**Well Depth (mBTOC)**	> 150

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
12:15					

Comments (odour, colour, turbidity, sheen) lost Hydrasleeve in well, twine snapped

Well ID	MW116	**Depth to Groundwater mBTOC (Before Sampling):**	46.93
Date	28/6/23	**Depth to top of sampler (mBTOC)**	48.00
QC sample		**Well Depth (mBTOC)**	102.92

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
14:40	7.50	25.5	~~991.50~~ 1507	-121.3	1.10

Comments (odour, colour, turbidity, sheen) Hydrocarbon odour, low turbidity, clear, brown particulates

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Project number:	PS202448	**Sampler initials:**	CO/TM
Client:	BHP	**PM initials**	ER
Site location:	Mt. Whaleback		

Well ID	MWGW103D		**Depth to Groundwater mBTOC (Before Sampling):**		23.45
Date	28/6/23		**Depth to top of sampler (mBTOC)**		24.5
QC sample	–		**Well Depth (mBTOC)**		35.82
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
15:15	7.18	23.5	1934	10.3	1.54
Comments (odour, colour, turbidity, sheen)	Colourless, brown particulates, low-medium turbidity, odourless, no sheen				

Well ID	WBCSGW0210		**Depth to Groundwater mBTOC (Before Sampling):**		50.11
Date	28/6/23		**Depth to top of sampler (mBTOC)**		51.5
QC sample	–		**Well Depth (mBTOC)**		69.61
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
16:40	7.04	22.2	1218	132.1	1.66
Comments (odour, colour, turbidity, sheen)	Colourless, brown particulates, low-med. turb,				

Well ID			**Depth to Groundwater mBTOC (Before Sampling):**		
Date			**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
Comments (odour, colour, turbidity, sheen)					

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Project number:	B202448	**Sampler initials:**	CO/TM
Client:	BHP	**PM initials**	ER
Site location:	Mt. Whaleback		

Well ID	HWNB1526M		**Depth to Groundwater mBTOC (Before Sampling):**		43.34
Date	29/6/23		**Depth to top of sampler (mBTOC)**		—
QC sample	—		**Well Depth (mBTOC)**		88.57
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
✓ 7:45	7.65	22.0	1787.50	150.6	4.50
Comments (odour, colour, turbidity, sheen)	Bailer sample (mini) → mini Hydrasleeve, odourless, colourless, low turb, no sheen.				

Well ID	X57		**Depth to Groundwater mBTOC (Before Sampling):**		—
Date	29/6/23		**Depth to top of sampler (mBTOC)**		—
QC sample	QA03/290623, QA04/		**Well Depth (mBTOC)**		—
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:30	7.41	22.7	1049	450.1	5.01
Comments (odour, colour, turbidity, sheen)	colourless, odourless, low turb, no sheen				

Well ID	WB18-GW04		**Depth to Groundwater mBTOC (Before Sampling):**		45.25
Date	29/6/23		**Depth to top of sampler (mBTOC)**		46.5
QC sample	—		**Well Depth (mBTOC)**		104.15
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:50	6.97	16.8	1356	257.9	3.20
Comments (odour, colour, turbidity, sheen)	Low-med turbidity, colourless, odourless, no sheen, brown particulates First Hydrasleeve only filled PFAS bottles → "bailer" sample for rest of bottles				

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB18- GWD5	**Depth to Groundwater mBTOC (Before Sampling):**	44.49
Date	29/6/23	**Depth to top of sampler (mBTOC)**	46 m
QC sample		**Well Depth (mBTOC)**	92.52

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:15	6.90	21.3	1461	240.4	2.30

Comments (odour, colour, turbidity, sheen)	Colourless, odourless, medium turbidity, yellow particulates ^ /beige

Well ID	WB20-GWD6	**Depth to Groundwater mBTOC (Before Sampling):**	44.235
Date	29/6/23	**Depth to top of sampler (mBTOC)**	[illegible]
QC sample	–	**Well Depth (mBTOC)**	100.12

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
10:00	7.07	19.8	1543	201.5	3.65

Comments (odour, colour, turbidity, sheen)	'Bailer sample' as area was blocked by construction Colourless, odourless, low turbidity, no sheen

Well ID		**Depth to Groundwater mBTOC (Before Sampling):**	
Date		**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)

Comments (odour, colour, turbidity, sheen)	

wsp

Contaminated Land Management

Standard Form 3.3:
Surface Water Sampling Record

Job. number: P5202448	**Sampling Date:** 27/6/23
Client: BNP	**Sampling method:** Sample Pull
Site Location: Mt. Windeback	**Width of surface water body (m):**
	Water Quality Meter ID:
	Calibration Date: 27/6/23

Location	Sample ID.	Time	Water flow (l/s)	Field readings					Est. Depth (m)	Comments: including turbidity (plankton and/or sediment), colour, odour, water plants, water fowl etc.
				pH	EC (uS/cm)	Temp. (°C)	Redox (mV)	DO (ppm)		
OPDM1	OPDM1	16:00		8.25	550.1	15.9	38.1	6.66	Surface	Medium turbid, brown particulates,
										slightly brown/ (yellow), mostly clear, ~~odourless~~ organic decay odour
OPDM2	OPDM2	16:15		8.18	549.1	15.2	51.5	6.83	Surface	slightly green, medium turbidity, [illegible],
										organic material present

Sample treatment and preservation:	**QC Samples:**
Field Scientist:	**Project Manager:**

Version: B	Reviewer: C McKay	Date: 10/04/16	Approver: C McKay	Date: 15/04/16

WSP

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB18-GW04	**Depth to Groundwater mBTOC (Before Sampling):**	45.448
Date	13/7/23	**Depth to top of sampler (mBTOC)**	46.5
QC sample		**Well Depth (mBTOC)**	104.70

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:15	6.95	19.0	822	69.5	1.69

Comments (odour, colour, turbidity, sheen)	Clear, colourless, odourless

Well ID	MWGW103D	**Depth to Groundwater mBTOC (Before Sampling):**	24.903
Date	12/7/23	**Depth to top of sampler (mBTOC)**	26.00
QC sample		**Well Depth (mBTOC)**	34.30

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
4:00	7.29	23.8	1051	35.2	7.63

Comments (odour, colour, turbidity, sheen)	clear, [illegible] odourless, very light red colour

Well ID	MW116	**Depth to Groundwater mBTOC (Before Sampling):**	46.319
Date	12/7/23	**Depth to top of sampler (mBTOC)**	47.500
QC sample	—	**Well Depth (mBTOC)**	103.050

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
3:30	7.34	27.9	829	-99.8	0.99

Comments (odour, colour, turbidity, sheen)	clear, colourless, [illegible] hydrocarbon-like odour.

wsp

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Project number:	PS202448	**Sampler initials:**	
Client:	BHP	**PM initials**	
Site location:			

Well ID	WB18-GW030	**Depth to Groundwater mBTOC (Before Sampling):**	48.750
Date	13/7/23	**Depth to top of sampler (mBTOC)**	60.000
QC sample	R102 - Rinsate off twine	**Well Depth (mBTOC)**	82.510

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
4:30	7.00	27.3	1579	-161.5	1.02

Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 60 Logger retrieved (1077hs) Logger depth - 60.00 / Clear, colourless, sulphur like smell, low-med. turb, brown particulates

Well ID	WB20-GW06	**Depth to Groundwater mBTOC (Before Sampling):**	44.375
Date	13/7/23	**Depth to top of sampler (mBTOC)**	45.500
QC sample	—	**Well Depth (mBTOC)**	100.30

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:15	7.12	22.2	1672	29.9	2.97

Comments (odour, colour, turbidity, sheen)	clear, colourless, odourless.

Well ID	WB18-GW05	**Depth to Groundwater mBTOC (Before Sampling):**	44.705
Date	13/7/23	**Depth to top of sampler (mBTOC)**	46.000
QC sample	—	**Well Depth (mBTOC)**	92.52

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:45	6.90	24.2	1257	45.5	2.06

Comments (odour, colour, turbidity, sheen)	clear, colourless, odourless, low turb. logger depth - 65 m

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Project number:	PS202448	**Sampler initials:**	
Client:	BHP	**PM initials**	
Site location:			

Well ID	WB18-GW03D	**Depth to Groundwater mBTOC (Before Sampling):**	48.740
Date	~~[illegible]~~ 13/7/23	**Depth to top of sampler (mBTOC)**	60.000
QC sample	R102 - Rinsate off twine	**Well Depth (mBTOC)**	82.510

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
4:30	7.00	27.3	1579	-161.5	1.02

Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 60 Logger retrieved (10/7/23) Logger depth - 60.00	Clear, colourless, sulphur like smell, low-med. turb, brown particulates

Well ID	WB20-GW06	**Depth to Groundwater mBTOC (Before Sampling):**	44.375
Date	~~[illegible]~~ 13/7/23	**Depth to top of sampler (mBTOC)**	45.500
QC sample	—	**Well Depth (mBTOC)**	100.30

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:15	7.12	22.2	1672	29.9	2.99

Comments (odour, colour, turbidity, sheen)	clear, colourless, odourless.

Well ID	WB18-GW05	**Depth to Groundwater mBTOC (Before Sampling):**	44.705
Date	13/7/23	**Depth to top of sampler (mBTOC)**	46.000
QC sample	—	**Well Depth (mBTOC)**	92.52

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:45	6.90	24.2	1257	45.5	2.06

Comments (odour, colour, turbidity, sheen)	clear, colourless, odourless, low turb. logger depth - ~~[illegible]~~ 65 m

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WBCSGW0210		**Depth to Groundwater mBTOC (Before Sampling):**		50.445
Date	10/7/23		**Depth to top of sampler (mBTOC)**		51.5
QC sample	—		**Well Depth (mBTOC)**		68.765
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
7:30	7.11	19.8	1192	201.6	2.44
Comments (odour, colour, turbidity, sheen)	clear, colourless, odourless, some fine brown/red particles suspended. logger replaced - SN 1004433 - depth - 61m				

Well ID	HWMB1526M		**Depth to Groundwater mBTOC (Before Sampling):**		43.185
Date	13/7/23		**Depth to top of sampler (mBTOC)**		83.20
QC sample			**Well Depth (mBTOC)**		
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
10:00	6.99	27.0	1435	39.9	4.28
Comments (odour, colour, turbidity, sheen)	Bailer like sample w/ mini MS Clear, colourless, odourless.				

Well ID			**Depth to Groundwater mBTOC (Before Sampling):**		~~48.185~~
Date			**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
Comments (odour, colour, turbidity, sheen)					

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	HWHB0060P	**Depth to Groundwater mBTOC (Before Sampling):**	—
Date	12/7/23	**Depth to top of sampler (mBTOC)**	—
QC sample	Dup-GW100 Trip-GW101	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:30	7.14	28.1	988	100.7	5.32

Comments (odour, colour, turbidity, sheen)	Production bore - filled from tap. — clear, colourless, no odour.

Well ID	HWHB0051P	**Depth to Groundwater mBTOC (Before Sampling):**	—
Date	12/7/23	**Depth to top of sampler (mBTOC)**	—
QC sample	Dup-GW103 Trip-GW104	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
10:00	7.19	29.1	1069	68.9	3.00

Comments (odour, colour, turbidity, sheen)	Production bore - filled from tap clear, colourless, no odourless

Well ID		**Depth to Groundwater mBTOC (Before Sampling):**	
Date		**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)

Comments (odour, colour, turbidity, sheen)	

wsp

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	EEG1391R	**Depth to Groundwater mBTOC (Before Sampling):**	98.050
Date	11/7/23	**Depth to top of sampler (mBTOC)**	99.5
QC sample		**Well Depth (mBTOC)**	121.218

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
10:40	7.17	27.8	1079	62.0	3.72

Comments (odour, colour, turbidity, sheen)	Logger retrieved. Clear, colourless, odourless

Bailer

Well ID	HWHB1547M	**Depth to Groundwater mBTOC (Before Sampling):**	~~116.868~~ DRY
Date	11/7/23	**Depth to top of sampler (mBTOC)**	~~121.5~~ DRY
QC sample		**Well Depth (mBTOC)**	7150

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)

Comments (odour, colour, turbidity, sheen)	- Could not retrieve sample - well is DRY

Bailer

Well ID	HWHB1521M	**Depth to Groundwater mBTOC (Before Sampling):**	69.850
Date	11/7/23	**Depth to top of sampler (mBTOC)**	71.00
QC sample		**Well Depth (mBTOC)**	125.

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
12:30	7.12	28.8	1142	53.6	1.48

Comments (odour, colour, turbidity, sheen)	Clear, colourless, odourless, fine particles suspended.

Contaminated Land Management

Standard Form 3.3: Surface Water Sampling Record

Job. number: PS202448	**Sampling Date:** 11/7/23	
Client: BHP	**Sampling method:** Tap /Grab	**Water Quality Meter ID:**
Site Location: ~~[illegible]~~ ~~[illegible]~~ Newman	**Width of surface water body (m):**	**Calibration Date:**

Location	Sample ID.	Time	Water flow (l/s)	Field readings					Est. Depth (m)	Comments: Including turbidity (plankton and/or sediment), colour, odour, water plants, water fowl etc.
				pH	EC (uS/cm)	Temp. (°C)	Redox (mV)	DO (ppm)		
X057	X57	2:00pm		7.28	1086	27.6	610.8	3.42		chlorine-like odour, low turb,
										Colourless
	OPDM1	3:30		8.53	616	19.8	76.7	7.78		fine particles floating, colourless, low turbidity
										odourless
	OPDM2	3:50		8.44	617	17.0	82.8	7.36		few fine particles suspended, colourless,
										low turbidity, odourless.

Sample treatment and preservation:	**QC Samples:**
Field Scientist:	**Project Manager:**

Version: B	Reviewer: C McKay	Date: 15/04/16	Approver: C McKay	Date: 15/04/16

wsp

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB20-GW06	**Depth to Groundwater mBTOC (Before Sampling):**	44.533
Date	27/7/23	**Depth to top of sampler (mBTOC)**	46.00
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
11:20	6.99	27.2	1075	8.6	1.64

Comments (odour, colour, turbidity, sheen)	Clear, colourless, odourless -Bailer sample used -hydrasleeve empty.

Well ID	WBCSGW0210	**Depth to Groundwater mBTOC (Before Sampling):**	50.759
Date	27/7/23	**Depth to top of sampler (mBTOC)**	52.00
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:30	7.06	25.3	1065	21.9	1,77

Comments (odour, colour, turbidity, sheen)	clear, colourless, odourless

Well ID	MWGW103D	**Depth to Groundwater mBTOC (Before Sampling):**	23.257
Date	27/7/23	**Depth to top of sampler (mBTOC)**	25.00
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:00	7.13	20.3	2075	58.8	2.08

Comments (odour, colour, turbidity, sheen)	Colourless, odourless, brown particulates, low-med turbidity

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB18-GW03D	**Depth to Groundwater mBTOC (Before Sampling):**	48.883
Date	27/7/23	**Depth to top of sampler (mBTOC)**	60.00
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
11:45	7.10	25.0	1621	16.0	2.48

Comments (odour, colour, turbidity, sheen): Colourless, odourless, low turbidity

Well ID	WB18-GW04	**Depth to Groundwater mBTOC (Before Sampling):**	45.617
Date	27/7/23	**Depth to top of sampler (mBTOC)**	47.00
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
10:35	6.92	27.1	1477	31.2	2.27

Comments (odour, colour, turbidity, sheen): HS fell down well - wire snapped. Retrieved + sampled
Colourless, low turb.

Well ID	WB18-GW05	**Depth to Groundwater mBTOC (Before Sampling):**	44.87
Date	27/7/23	**Depth to top of sampler (mBTOC)**	46.00
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
10:30	6.88	28.0	1560	16.4	1.29

Comments (odour, colour, turbidity, sheen): Clear, colourless, odourless

WSP

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	HWHB1521M	**Depth to Groundwater mBTOC (Before Sampling):**	70.320
Date	26/7/23	**Depth to top of sampler (mBTOC)**	72.00
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
3:30	7.24	27.0	1071	14.2	2.74

Comments (odour, colour, turbidity, sheen)	clear, colourless, odourless, very fine black particles suspended.

Well ID	HWHB1526M	**Depth to Groundwater mBTOC (Before Sampling):**	43.215
Date	27/07/23	**Depth to top of sampler (mBTOC)**	44.5
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
7:15	6.97	20.7	2777	195.6	4.54

Comments (odour, colour, turbidity, sheen)	Colourless, odourless, low turb. "Bailer" sample w/ mini HS

Well ID	MW116	**Depth to Groundwater mBTOC (Before Sampling):**	48.528
Date	27/7/23	**Depth to top of sampler (mBTOC)**	50.00
QC sample		**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:40	7.43	21.3	1506	-92.9	1.65

Comments (odour, colour, turbidity, sheen)	clear, colourless, hydrocarbon like smell

wsp

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	HWHB0060P	**Depth to Groundwater mBTOC (Before Sampling):**	
Date	26/7/23	**Depth to top of sampler (mBTOC)**	
QC sample	Dup-GW200 Trip-GW201	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
7:45	7.18	28.8	988	67.5	3.67

Comments (odour, colour, turbidity, sheen)	Tap (production bore) Clear, colourless, odourless

Well ID	HWHB0051P	**Depth to Groundwater mBTOC (Before Sampling):**	
Date	26/7/23	**Depth to top of sampler (mBTOC)**	
QC sample	Dup-GW202 Trip-GW203	**Well Depth (mBTOC)**	R

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:10	7.~~[illegible]~~2	29.7	1114	34.2	2.49

Comments (odour, colour, turbidity, sheen)	Tap (production bore) clear, colourless, odourless

Well ID	EEG13A1R	**Depth to Groundwater mBTOC (Before Sampling):**	
Date	26/7/23	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:30	7.22	21.0	1054	21.8	3.78

Comments (odour, colour, turbidity, sheen)	Clear, colourless, odourless

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB26-GW04	**Depth to Groundwater mBTOC (Before Sampling):**	71.47
Date	26/7/23	**Depth to top of sampler (mBTOC)**	72.5
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
7:30	6.91	21.8	626	189.1	4.11

Comments (odour, colour, turbidity, sheen)	Clear, colourless, odourless

Well ID	HWHB1551M	**Depth to Groundwater mBTOC (Before Sampling):**	73.375
Date	26/7/23	**Depth to top of sampler (mBTOC)**	90.00
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:15	7.02	23.5	980	30.1	2.09

Comments (odour, colour, turbidity, sheen)	Colourless, low- turbidity, odourless

Well ID	WBCSGW0219	**Depth to Groundwater mBTOC (Before Sampling):**	62.468
Date	26/7/23	**Depth to top of sampler (mBTOC)**	63.5
QC sample	—	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:45	7.02	24.8	1171	30.1	2.01

Comments (odour, colour, turbidity, sheen)	Colourless, low turb., odourless

wsp

Contaminated Land Management

Standard Form 3.3:
Surface Water Sampling Record

Job. number: PS202448

Sampling Date: 25/7/23

Client: BHP

Sampling method: Sample Pull

Water Quality Meter ID: 20K104050

Site Location: Mt. Whaleback

Width of surface water body (m):

Calibration Date: 25/7/23

Location	Sample ID.	Time	Water flow (l/s)	Field readings					Est. Depth (m)	Comments: Including turbidity (plankton and/or sediment), colour, odour, water plants, water fowl etc.
				pH	EC (uS/cm)	Temp. (°C)	Redox (mV)	DO (ppm)		
OPDM1		14:00	–	8.73	644	17.0	23.6	6.27		
OPDM2		14:15	–	8.75	616	16.9	23.2	7.20		Clear, colourless, odourless
X57	X57	4:30		7.30	1046	27.8	513.2	4.36		clear, colourless, smell of chlorine

Sample treatment and preservation:

QC Samples:

Field Scientist:

Project Manager:

Version: B	Reviewer: C McKay	Date: 15/04/16	Approver: C McKay	Date: 15/04/16

WSP | PARSONS BRINCKERHOFF

Contaminated Land Management

Standard Form 3.3:
Surface Water Sampling Record

Job. number: PS202448	**Sampling Date:** 07/08/2023	
Client: BHP	**Sampling method:** Sample pole & Tap	**Water Quality Meter ID:** 20K104050
Site Location: Kellgiebeck/Jimble Bar	**Width of surface water body (m):** —	**Calibration Date:**

Location	Sample ID.	Time	Water flow (l/s)	Field readings: pH	EC (uS/cm)	Temp. (°C)	Redox (mV)	DO (ppm)	Est. Depth (m)	Comments: Including turbidity (plankton and/or sediment), colour, odour, water plants, water fowl etc.
	~~OPD~~									
	OPDM01	3:30		8.98	701	22.1	79.9	7.38		low turb, colourless, odourless.
	OPDM02	3:45		8.91	668	20.0	1.4	7.46		" "
										- low redox value? YSI moved around +
										new "sample" for YSI taken.

Sample treatment and preservation:

QC Samples:

Version: B	Reviewer: C McKay	Date: 15/04/16	Approver: C McKay	Date: 15/04/16

wsp

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB26 - GW04	**Depth to Groundwater mBTOC (Before Sampling):**	71.87
Date	09-08-23	**Depth to top of sampler (mBTOC)**	73.5
QC sample		**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
7:30	6.98	27.3	1188	7.0	1.75

Comments (odour, colour, turbidity, sheen)	Colourless, no odour, low turbidity

Well ID	HWHB0060P	**Depth to Groundwater mBTOC (Before Sampling):**	—
Date	09-08-23	**Depth to top of sampler (mBTOC)**	—
QC sample	dup - GW101 Triplicate - GW102	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:45	7.27	29.2	982	9.6	3.64

Comments (odour, colour, turbidity, sheen)	colourless, low turb, odourless

Well ID	HWHB1551M	**Depth to Groundwater mBTOC (Before Sampling):**	73.75
Date	9/8/23	**Depth to top of sampler (mBTOC)**	75.5
QC sample		**Well Depth (mBTOC)**	7150

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:30	6.96	28.2	515	-11.2	1.92

Comments (odour, colour, turbidity, sheen)	colourless, low-turb, odourless

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WBCSGW0208	**Depth to Groundwater mBTOC (Before Sampling):**	60.355
Date	9-8-23	**Depth to top of sampler (mBTOC)**	62.5
QC sample	—	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:45	6.99	23.0	987	-14.7	1.24

Comments (odour, colour, turbidity, sheen)	Clear, brown-black sediments at the bottom of hydrasleeve, no odour, medium turbidity.

Well ID	WBCSGW0219	**Depth to Groundwater mBTOC (Before Sampling):**	62.71
Date	9-8-23	**Depth to top of sampler (mBTOC)**	64.5
QC sample	—	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
10:25	6.99	28.9	625	-17.9	1.40

Comments (odour, colour, turbidity, sheen)	colourless, low-turb, odourless.

Well ID	HWHBODS1P	**Depth to Groundwater mBTOC (Before Sampling):**	—
Date	9-8-23	**Depth to top of sampler (mBTOC)**	—
QC sample	DUP-GW103 Triplicate- GW104	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
11:45	7.13	32.6	1182	-22.2	2.2

Comments (odour, colour, turbidity, sheen)	Colourless, low-turb, odourless

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	HWH151526M	**Depth to Groundwater mBTOC (Before Sampling):**	43.29
Date	8/8/23	**Depth to top of sampler (mBTOC)**	Bailer
QC sample	Lab duplicate	**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
11:00	6.87	28.9	2504	97.7	3.27

Comments (odour, colour, turbidity, sheen)	"Bailer" sample Colourless, low turb, odourless.

Well ID	MW116	**Depth to Groundwater mBTOC (Before Sampling):**	48.698
Date	8/8/23	**Depth to top of sampler (mBTOC)**	50.5
QC sample		**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
12:00	7.32	27.9	1364	-131.3	0.77

Comments (odour, colour, turbidity, sheen)	Clear, low turbidity, hydrocarbon odour,

Well ID	M14GW103D	**Depth to Groundwater mBTOC (Before Sampling):**	22.951
Date	08/08/23	**Depth to top of sampler (mBTOC)**	24.0
QC sample	—	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
12:40	7.01	26.2	2085	-28.8	1.56

Comments (odour, colour, turbidity, sheen)	no odour, low turbidity, clear

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WBCSGW0210	**Depth to Groundwater mBTOC (Before Sampling):**	50.99
Date	8/8/23	**Depth to top of sampler (mBTOC)**	52.5
QC sample		**Well Depth (mBTOC)**	-

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
2:30	6.97	31.9	580	-29.4	0.97

Comments (odour, colour, turbidity, sheen)	Colourless, low turb, odourless.

Well ID	HB20-GW106	**Depth to Groundwater mBTOC (Before Sampling):**	44.715
Date	08-08-23	**Depth to top of sampler (mBTOC)**	46.5
QC sample		**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
3:30	6.94	28.4	820	-33.7	2.70

Comments (odour, colour, turbidity, sheen)	colourless, low turb, odourless

Well ID	WB13-GW033	**Depth to Groundwater mBTOC (Before Sampling):**	49.079
Date	08-08-23	**Depth to top of sampler (mBTOC)**	60.5
QC sample		**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
4:00	6.89	29.6	1169	-44.3	0.75

Comments (odour, colour, turbidity, sheen)	colourless, low turb, odourless

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB18-GW04	**Depth to Groundwater mBTOC (Before Sampling):**	45.80
Date	9-8-23	**Depth to top of sampler (mBTOC)**	47.5
QC sample	—	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
3:30	6.85	29.4	736	102.8	1.01

Comments (odour, colour, turbidity, sheen)	colourless, low-turb, odourless.

Well ID	WB18-GW05	**Depth to Groundwater mBTOC (Before Sampling):**	45.05
Date	9-8-23	**Depth to top of sampler (mBTOC)**	46.5
QC sample	—	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
16:00	6-85	28-4	1516	62.2	1.43

Comments (odour, colour, turbidity, sheen)	odourless, medium turbidity, clear.

Well ID		**Depth to Groundwater mBTOC (Before Sampling):**	
Date		**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)

Comments (odour, colour, turbidity, sheen)	

WSP

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Project number:	B204448	**Sampler initials:**	S,B + C,O
Client:	BHP	**PM initials**	E.R
Site location:	OB29 - Newman		

Well ID	MWHB1521M	**Depth to Groundwater mBTOC (Before Sampling):**	
Date	9/8/23	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
12:15	7.16	30.7	1088	-28.1	1.94

Comments (odour, colour, turbidity, sheen) colourless, low-turb, odourless.

Well ID	EE G1391R	**Depth to Groundwater mBTOC (Before Sampling):**	98.885.
Date	9-8-23	**Depth to top of sampler (mBTOC)**	100-5
QC sample	—	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
13:30	7.03	30.2	1175	-17.2	1.52

Comments (odour, colour, turbidity, sheen) clear, colourless, low turbidity, odourless

Well ID	X57	**Depth to Groundwater mBTOC (Before Sampling):**	—
Date	9-8-23	**Depth to top of sampler (mBTOC)**	—
QC sample	—	**Well Depth (mBTOC)**	—

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
15:00	7.15	29.8	560	585.9	2.52

Comments (odour, colour, turbidity, sheen) Clear, odourless, low turbidity

Contaminated Land Management

Standard Form 3.2.1:
Groundwater Gauging Record

Job number:	PS202448 - GME7
Client:	BMP
Site location:	Mt. Whaleback
Date:	9/10/23
Person onsite:	TM + CO

Well ID	~~Location~~ TIME	Depth to water (mBTOC)	Depth to LNAPL (mBTOC)	LNAPL thickness (m)	Total well depth (mBTOC)	Comments Hydrasleeve Depth
9/10/23						
WB18-GW05	11:30	46.12	–	–	93.12	47.5
WB15-GW14	11:58	46.765	–	–	104.095	48.0
WB20-GW06	12:20	45.66	–	–	101.07	47.0
WB18-GW03D	12:50	50.08	–	–	82.49	60.0
WBLSGW0210	2:20	52.02	–	–	70.12	53.0
10/10/23						
WB26-GW04	8:10	72.93	–	–	113.49	74.0
HWHB1516M	8:20	73.73	–	–	96.42	80 - logger
HWHB1551M	8:50	75.74	–	–	71.50	91.0
WBLSGW0208	9:10	61.33	–	–	82.35	63.0
WBLSGW0219	9:35	63.78	–	–	93.02	65.0
EEG1391RM	10:55	100.43	–	–	121.96	111.5
MW16	13:20	52.465	–	–	103.54	–
MWGW103D	14:20	26.78	–	–	35.18	30.0 - logger
HWHB1526m	15:40	43.29	–	–	82.13	–
11/10/23						
HWHB1521m	15:05	71.72	–	–	117.24	
Project manager:						

Version: A	Reviewer: M. Hannan	Date:	Approver: C. Faull	Date: 11/12/14

wsp

Contaminated Land Management

Standard Form 3.2.1: Groundwater Gauging Record

Job number:	PS202448
Client:	BHP
Site location:	Whaleback
Date:	11/10/23
Person onsite:	TM/CO

Well ID	~~Location~~ Time	Depth to water (mBTOC)	Depth to LNAPL (mBTOC)	LNAPL thickness (m)	Total well depth (mBTOC)	Comments Logger Depth
Groundwater level – prior to installing loggers						
10/10 – MWGW1011	14:20	26.78	—	—	35.18	30.0
MWMB1516m	8:20	73.73	—	—	96.42	80.0
WM	[illegible]	[illegible]				
11/10 – WB26-GW04	9:35	73.00	—	—		90.0
MWMB1551m	10:40	75.30	—	—		95.0
MWMB1515m	12:35	83.33	—	—	142.17	100.0
	SN 1004927	, Standpipe = 0.375m				[illegible]
WBCSGW0208	13:45	61.32	—	—		70.0
WBCSGW0219	14:20	63.78	—	—		75.0
EE91391R	16:55	100.505	—	—		111.5
12-10 WBCSGW0210	7:55	52.105	—	—		60.0
WB18-GW03D	8:45	50.145	—	—		60.0
WB18-GW05	10:10	46.07	—	—		60.0
WB18-GW04	10:40	46.80	—	—		60.0

Project manager:

Version: A	Reviewer: M. Hannan	Date:	Approver: C. Faull	Date: 8/12/14

Contaminated Land Management

Standard Form 3.2.1:
Groundwater Gauging Record

Job number: P5202448
Client: BHP
Site location: Mt Whaleback
Date: 20/11/23
Person onsite: TM/CO

Well ID	~~Location~~ TIME	Depth to water (mBTOC)	Depth to LNAPL (mBTOC)	~~LNAPL thickness (m)~~ Hydrasleeve Install	Total well depth (mBTOC)	Comments
20/11/23						
MW116	10:30	52.425		54.0	102.17	
MWGW105D	10:55	28.34		29.5	35.15	
WB18-GW05	11:30	46.60	48.0 →	[illegible]	92.72	
WB18-GW04	12:05	47.29		48.5	104.94	
WB20-GW06	12:20	46.28		47.5	101.17	
WBCSGW0210	14:10	52.635		54.0	69.25	
WB18 GW05D	15:05	50.456		60.0	83.24	
21/11/23						
WB26-GW04	07:35	69.03		70.5	112.47	
HWMB1516M	7:35	69.525			95.77	80.0 - logger
HWMB1551M	8:15	71.12		91.0	7150	
WBCSGW0208	9:20	61.99		63.0	80.84	
WBCSGW0219	9:35	64.485		66.0	88.91	
EEG1391R	12:20	100.83		102.0	120.09	
HWMB1515M	15:00	76.725		78.0	140.23	
HWMB1506	15:40	55.05		5	56.285	

Project manager:

Version: A	Reviewer: M. Hannan	Date:	Approver: C. Faull	Date: 8/12/14

Contaminated Land Management

Standard Form 3.2.1:

Groundwater Gauging Record

Job number: PS202448

Pre- Logger Installation

Client: BMP

Site location: Mt. Whaleback

Date: 22/11/23

Person onsite: TM/CO

Well ID	Location	Depth to water (mBTOC)	Depth to LNAPL (mBTOC)	~~LNAPL thickness (m)~~ Logger Depth	Total well depth (mBTOC)	Comments Time
22/11/23						
HWMBS51M		71.05		100.0		10:00
HWMB1515M		76.43		100.0		12:15
WB26-GW04		68.93		90.0		13:20
WBCSGW0219		64.46		75.0		14:00
WBCSGW0208		61.97		70.0		15:15
HWMB1526M		72.21		–		15:40
EEG1391R		100.20		110.0		16:30
23/11/23						
WB18-GW03D		50.485		60.0		7:00
WBCSGW0210		52.65		60.0		10:00
MWGW103D		28.43		30.0		11:35
WB18-GW04		47.31		60.0		12:40
WB18-GW05		46.62		60.0		13:05

Project manager:

Version: A	Reviewer: M. Hannan	Date:	Approver: C. Faull	Date: 8/12/14

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Contaminated Land Management

Standard Form 3.2.1: Groundwater Gauging Record

Job number: PS202448	
Client: BHP	
Site location: Mt. Whaleback	
Date: 11/12/23	
Person onsite: CO/TM	

Well ID	~~Location~~ Time	Depth to water (mBTOC)	Depth to LNAPL (mBTOC)	LNAPL thickness (m)	Total well depth (mBTOC)	Comments Hydrasleeve Depth
11/12/23						
MW116	11:20	52.68	—	—	103.02	54.0
MWGW103D	11:50	28.32	—	—	33.34	29.5
WB18-GW05	12:15	46.805	—	—	92.65	48.0
WB18-GW04	12:45	47.50	—	—	104.23	48.5
WB20-GW06	13:45	46.49	—	—	100.71	47.5
WB18-GW03D	14:45	50.69	—	—	83.20	60.0
WBCSGW0210	15:25	52.82	—	—		54.0
12/12/23						
WB26-GW04	7:15	68.69	—	—	111.15	70.0
HWMB1516M	7:30	69.22	—	—	96.23	80.0 - logger
HWHB1551M	7:50	71.28	—	—	7150	91.0
WBCSGW0208	8:10	62.22	—	—	81.70	63.5
WBCSGW0219	8:40	~~[illegible]~~ 64.66	—	—	89.79	67.0
EEG1391R	10:15	101.37	—	—		102.5
~~[illegible]~~						
Project manager:						

Version: A	Reviewer: M. Hannan	Date:	Approver: C. Faull	Date: 8/12/14

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Contaminated Land Management

Standard Form 3.2.1: Groundwater Gauging Record

Job number:	PS202448	Pre-groundwater logger installation
Client:	BHP	
Site location:	Mt. Whaleback	
Date:	12/12/23	
Person onsite:	TM/CO	

Well ID	~~Location~~ Time	Depth to water (mBTOC)	Depth to LNAPL (mBTOC)	LNAPL thickness (m)	Total well depth (mBTOC)	Comments Logger Depth
12/12/23						
WB18-GW03D	13:35	50.71	–	–	–	70.0
13/12/23						
WB26-GW04	7:30	68.69	–	–	–	90.0
HWMB1551M	8:10	71.28	–	–	–	100.0
HWMB1515M	8:50	86.34	–	–	141.72	–
WBCSGW0208	11:40	62.25	–	–	–	70.0
WBCSGW0219	12:05	64.71	–	–	–	75.0
HWMB1541M	2:20	72.58	–	–	117.18	–
EEG1391R	15:20	101.40	–	–	105.48	110.0
14/12/23						
WB18-GW04	6:35	47.565	–	–	–	60.0
WB18-GW05	7:00	46.87	–	–	–	60.0
WBCSGW0210	7:50	52.87	–	–	–	60.0
HWMB1526M	8:45	43.33	–	–	83.76	–
MWGW103D	12:10	28.38	–	–	33.41	30.0
Project manager:						

Contaminated Land Management

Standard Form 3.2.1: Groundwater Gauging Record

Job number:	PS202448 Pre-Hydrasleeve Installation
Client:	BHP
Site location:	OB29 - Whaleback
Date:	15/01/24 + 16/01/24
Person onsite:	CI / TM

Well ID	Location TIME	Depth to water (mBTOC)	Depth to LNAPL (mBTOC)	LNAPL thickness (m)	Total well depth (mBTOC)	~~Comments~~ HS depth
15/01						
MW116	11:20	54.625	—	—	102.35	56.0
MWGW103D	12:00	28.87	—	—	33.35	30.0
WB18-GW03D	12:30	51.47	—	—	83.28	60.0
WB20-GW06	13:45	47.02	—	—	100.01	48.0
WB18-GW05	14:20	47.345	—	—	93.72	48.5
WB18-GW04	14:55	48.10	—	—	105.12	49.5
WB05GW0210	15.50	53.32	—	—		54.5
16/01						
WB26-GW04	7:25	68.95	—	—	110.87	70.0
HWHB1516M	7:40	69.475	—	—	95.845	80.0
HWHB1551M	8:00	71.855	—	—	7150	91.0
WB05GW0219	8:25	65.19	—	—	88.13	66.5
WB05GW0206	9:35	62.64	—	—	82.04	64.0
EEG1371R	10:15	102.27	—	—	120.83	103.5
HWHB1526M	13:15	43.27	—	—	83.16	BAILER
17/01						
HWHB1526M	7:00	44.035	—	—	—	BAILER

Project manager:

Version: A	**Reviewer: M. Hannan**	**Date:**	**Approver: C. Faull**	**Date: 8/12/14**

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Contaminated Land Management

Standard Form 3.2.1:
Groundwater Gauging Record

Job number:	PS202448	Pre-logger Installation
Client:	BHP	
Site location:	Mt. Whaleback	
Date:	17/01/24 + 18/01/24	
Person onsite:	CO/TM	

Well ID	~~Location~~ TIME	Depth to water (mBTOC)	Depth to LNAPL (mBTOC)	LNAPL thickness (m)	Total well depth (mBTOC)	Comments logger depth
17/01						
MWGW1035D	8:50	29.31	–	–		32
WB18-GW03D	10:05	51.50	–	–		60
WB18-GW05	10:30	47.39	–	–		60
WB18-GW04	11:15	48.135	–	–		60
WBLSGW0210	12:00	53.35	–	–	68.99	60
WBLSGW0268	15:40	62.66	–	–		70
WBLSGW0219	16:00	65.185	–	–		75
18/01						
EEG1391R	9:40	102.34	–	–		110.0
HWHB1521M	10:10	73.27	–	–	116.8	–
WB26-GW04	11:15	68.97	–	–		90.0
HWHB1551M	11:40	71.89	–	–		100.0

Project manager:

Version: A	Reviewer: M. Hannan	Date:	Approver: C. Faull	Date: 8/12/14

3/5/23

4
HWHB 15~~8~~AM - 7:40am
- Sunny/clear skies + hazy dust (heavy)

- GW level -
- well depth - X
- Hydrasleeve depth.

- logger present + secured in
- well can not be accessed

CEG 1307RGM - 8 am

- GW level -
- Depth - Y

Logger/telemetry unit install
- well cannot be accessed

HWHB 1507M - 8:10

- logger/telemetry present
- well cannot be accessed

HW HB1516M - 8:20

GW level - 64.964
- Depth of well = 95364
- Hydrasleeve (m.i.l) - 7968

31/5/23

EEG0917DM - 9:05

- logger / telemetry installed
  - well cannot be accessed

EEG1048DM - 9:10

- logger/telemetry system installed
  - well cannot be accessed

WBCSW ~~[illegible]~~ 9:45
0219

GW level - 61.240
Depth of well - 86.66
Hydrosleeve depth - 65m

WBCSW^{W}0208 - 10:20

GW level - 59.318
Depth of well - 7730
Hydrosleeve depth - ~~[illegible]~~ 63.0

EC logger - 1032

31/5/23

HWHB1502M - 1:15

- logger already deployed
- GW level - 51.695
- well depth - 87.60
- Hydrasleeve depth - 63.3

HWHB 1527

- logger telemetry system install
  - well can not be accessed

EX00008M

Telemetry system installed
- can not access logger

WBACSG
[illegible] WO210 - 3:00

GW level - 49.56
Well depth - 68.9
Hydrasleeve depth - 52.53
EC logger -

* logger (EC) - can't finish as wiring up (removed)

Don't put equipment in middle of road - truck come through + dust

1/6/23

- sunny/clear skies
- moderate dust haze

MWHB 1518M - 3:50

- logger telemetry system installed
  - can not access well

MWHB 1508 M - 4:20

- Well is buried underneath gravel
  - can not be accessed

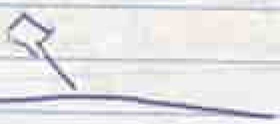
MWHB 1610 M - 7:20

- Telemetry system already installed
  - well can not be accessed.

EW0005DM - 7:45

- Telemetry system installed
  - well can not be accessed

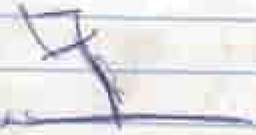
- well also damage
  (on an angle)



EL0006DM - 7:55

- Telemetry system installed
  - well can not be accessed

- well also damage
  (on angle)



1/6/23

HWMB1521M - 8:55

Sampling + logger deployment *: logger already present.

- sample - clear + no silt at bottom

YSI field parameters recorded.

Temp - 26.9°C
DO(%) - 17.8
DO(ppm) - 1.45
EC - 1108 (25°C µS/cm)
pH - 7.14
Redox - 22.8 mV.

EEG1391R - 9:35

- Sampling + logger deployment
not enough sample for YSI

- logger not named - not added to name
S/N 1009424
- already running.

depth - 110m
PFAS free rope not used - string used instead (wire)

HWMB1546M - 10:20

- logger already installed
- NO SAMPLE TAKEN
- Hydrasleeve did not fit!

1/6/23

HWMB1547M - 10:45

Sample + logger cleaning set installed

Sample ~~clear no silt at bottom~~ has some silt present - low

→YSI parameters.

Temp - 28.5°C
DO% - 14.4
DO mg/L - 0.95
EC - 1029
pH - 6.95
Redox - -132.6 mV

HWMA1526M - 11:30

GW level - 43.095 [illegible]
Depth of well - 83.995

Bailer used (due to past issues - losing equipment)

Water sample - translucent + silty (red/brown) - high turbidity

not enough sample could be collected
to fill bottles or for YSI field parameters.

V6/23

H00P0360 - 1:30

- Telemetry system installed
  - well can not be accessed

---

us
WB~~[illegible]~~WO219 - 2:125

- Collected sample telemetry logger.

logger S/N - 1004416 - rec every 5 mins.

logger depth - ~~[illegible]~~ 31 m

YSI field parameters

Temp - 30.2°C
DO% - 21.1
DO mg/L - 1.42
EC - 1089
pH - 7.00
Redox - -21.2

---

n BCSGW0208 - 2:50

Sample collection + logger deployment
+ baro

logger SN - 1004951 baro SN - 100~~[illegible]~~9467
depth - 80 m

used WBCSGW0210 instead

YSI field parameter
Temp - 20.5°C
pH - 7.01
EC - 1055

Redox - -40.1
DO mg/L - 1.07

1/6/23

HWMBH15/6M - 3:50

collect sample + deploy logger

logger SN - 1004928
logger depth - 85m

<u>No sample collected</u> - Hydrasleeve empty

WRCSGW0210 4:40

collect sample + deploy logger

logger SN - 1004452
logger depth - 70m
-logger setup from 1/1/1970
X 1/6/23 4:39:40pm = 6:01:34 AM 1/1/1970 X
✓ logger reset - start 5pm - 1/6/23 - 5 min fq

YSI field parameter

Temp - 29.1°C
DO% - 12.5
DO mg/L - 0.85
EC - 1065
pH - 6.99
Redox - 33.2 mV ✓

2/6/23

HWHB1546 m 7:40

-Sunny/clear skies
-low dust levels

- Bailer used to sample
  - Hydrasleeve ~~[illegible]~~ unsuccessful previous day.

GAUGE WRONG - GW NOT 102MBTOC

WELL=DRY

HWHB1502M - 12:10

Sample collection + logger already present.

mini hydrasleeve did not fill w water
 -40mm well
NO SAMPLE COLLECTED

MWGW 1030 - 12:23

Sample + deploy logger

SN- 1003918
 Depth - 49 m

B
WB18GW030 - 1:20 2/6/23

logger depth-con

GW level - 48.01
Total depth - 69.16 5 SN-1004476

sample clear, hydrocarbon like smell

WB 20GW06

GW level -43.30 5

Total depth 91.37

BHP OB29 30/5/23

EEW1391: 7:15 Am - arrive at well

- Sunny / clear skies photos taken
- light dust haze - lower in pit

GW Dip - 92.705 m bTOC
Well depth - ~~[illegible]~~ 119.70 mTOC

EC test - successful - readings downloaded

7:50 - EC ~~[illegible]~~ probe deployed - downloaded ~~[illegible]~~
8:15 - Hydrasleeve deployed - 95 mbTOC

- all equipment decontaminated

HWHP1546M - 8:25 am

- logger already present

- GW Dip - ~~[illegible]~~ 102.450 mbTOC
- Bottom of well -
- Hydrasleeve depth - 110 mbTOC
- EC deployed - 8:35

HWHB1521M - 9:15

-

- logger already present

GW dip - 66.85 mbTOC
- Bottom of well - 125.8 mbTOC
- Hydrasleeve depth - 70 mbTOC
- EC deployed - 930

30/5/23

HWHB1514SM : 300PM

GW level - DRY
- logger present
bottom of well - 49.350 mbTOC

3:20 - MWGW 1030

GW level - 24.708 mbTOC
Bottom of well - 34.50; mbTOC
Hydrasleeve - 28 m

wsp

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Project number:	PS202448	**Sampler initials:**	YF. SB. RG
Client:	BHP Iron Ore	**PM initials**	SH.
Site location:	Whaleback OB29. OB30		

Well ID	HWHB1547M	**Depth to Groundwater mBTOC (Before Sampling):**	115.596
Date	29/5/23	**Depth to top of sampler (mBTOC)**	121
QC sample	N/A	**Well Depth (mBTOC)**	>150

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO ~~(mg/L)~~ ppm
1045	6.95	28.5	129	-109	0.95

Comments (odour, colour, turbidity, sheen): no ~~smell~~ odour. no color. clear. /

Well ID	EEG1391R	**Depth to Groundwater mBTOC (Before Sampling):**	92.705
Date	30/5/23	**Depth to top of sampler (mBTOC)**	95
QC sample	NA	**Well Depth (mBTOC)**	119.7

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
0940	/	/	/	/	/

Comments (odour, colour, turbidity, sheen): Not enough sample for field mesements
Clear. no smell no colour

Well ID	HWHB1546M	**Depth to Groundwater mBTOC (Before Sampling):**	~~102.450~~ → Dry.
Date	30/5/23	**Depth to top of sampler (mBTOC)**	110
QC sample	N/A	**Well Depth (mBTOC)**	>150

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
1020	/	/	/	/	/

Comments (odour, colour, turbidity, sheen): No sample collected HS empty
Wrong ganging well Dry.
Bailered to -200m + no water.

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	HWHB15 21M	**Depth to Groundwater mBTOC (Before Sampling):**	66.880
Date	30/5/23	**Depth to top of sampler (mBTOC)**	70
QC sample	N/A	**Well Depth (mBTOC)**	125.8

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO ~~(mg/L)~~ ppm
0900	7.14	26.9.	1108	22.8	~~17.8~~

Comments (odour, colour, turbidity, sheen) Clear, no smell, no color +1.95-

Well ID	HWHB 15/9M	**Depth to Groundwater mBTOC (Before Sampling):**	N/A Dry
Date	30/5/23	**Depth to top of sampler (mBTOC)**	N/A
QC sample	N/A	**Well Depth (mBTOC)**	49.350

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
/	/	/	/	/	/

Comments (odour, colour, turbidity, sheen) /

Well ID	MMGW/103D	**Depth to Groundwater mBTOC (Before Sampling):**	24.70
Date	30/5/23	**Depth to top of sampler (mBTOC)**	27
QC sample	N/A	**Well Depth (mBTOC)**	34.505

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
1230	7.07	25.4	2087	55.4	2.86

Comments (odour, colour, turbidity, sheen)

wsp

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	HWB-1516M ~~EEG1307RGM~~		**Depth to Groundwater mBTOC (Before Sampling):**		64.964
Date	31/5/23		**Depth to top of sampler (mBTOC)**		~~95.364~~ 70
QC sample	N/A		**Well Depth (mBTOC)**		95.364
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
Comments (odour, colour, turbidity, sheen)		Empty HS			

Well ID	EEG1307RGM		**Depth to Groundwater mBTOC (Before Sampling):**		N/A
Date	31/5/23		**Depth to top of sampler (mBTOC)**		N/A
QC sample	N/A		**Well Depth (mBTOC)**		N/A
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
Comments (odour, colour, turbidity, sheen)					

pulled logger out

Well ID	EG0917DM		**Depth to Groundwater mBTOC (Before Sampling):**		N/A 69.33
Date	2 ~~31~~/6/23		**Depth to top of sampler (mBTOC)**		N/A
QC sample	NA		**Well Depth (mBTOC)**		N/A >100
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
0835	6.99	23.9	930	21	8.85
Comments (odour, colour, turbidity, sheen)		clear no odours.			

wsp

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

40mm.

Well ID	HWHB1502M	**Depth to Groundwater mBTOC (Before Sampling):**	59.695
Date	31/5/23 1/6/23	**Depth to top of sampler (mBTOC)**	63
QC sample	N/A	**Well Depth (mBTOC)**	87.6

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
1210					

Comments (odour, colour, turbidity, sheen) Mini-HS. empty

Well ID	HWHB1727M	**Depth to Groundwater mBTOC (Before Sampling):**	N/A
Date	31/5/23	**Depth to top of sampler (mBTOC)**	N/A
QC sample	N/A	**Well Depth (mBTOC)**	N/A

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)

Comments (odour, colour, turbidity, sheen)

Well ID	EXD 008	**Depth to Groundwater mBTOC (Before Sampling):**	N/A
Date	31/5/23	**Depth to top of sampler (mBTOC)**	N/A
QC sample	NA	**Well Depth (mBTOC)**	N/A

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)

Comments (odour, colour, turbidity, sheen)

wsp

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	EEG1048RM	**Depth to Groundwater mBTOC (Before Sampling):**	N/A
Date	31/5/23	**Depth to top of sampler (mBTOC)**	N/A
QC sample	N/A	**Well Depth (mBTOC)**	N/A

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)

Comments (odour, colour, turbidity, sheen)

No casing

Well ID	WBCSGW0219	**Depth to Groundwater mBTOC (Before Sampling):**	61240
Date	31/5/23	**Depth to top of sampler (mBTOC)**	~~86.66~~ 63
QC sample	N/A	**Well Depth (mBTOC)**	86-66

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO ~~(mg/L)~~
1420	7.00	30.6	1089	-21.2.	1.42

Comments (odour, colour, turbidity, sheen) no odour clear - low turb
no color

No casing

Well ID	WBCSGW0208	**Depth to Groundwater mBTOC (Before Sampling):**	59.318
Date	31/5/23	**Depth to top of sampler (mBTOC)**	63
QC sample	N/A	**Well Depth (mBTOC)**	77.30

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO ~~(mg/L)~~
1500	7.01	20.5	1055	-401	1.07

Comments (odour, colour, turbidity, sheen) no odour. clear. low turb

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WBCSGW0260		**Depth to Groundwater mBTOC (Before Sampling):**		49.56
Date	31/5/23		**Depth to top of sampler (mBTOC)**		53
QC sample	N/A		**Well Depth (mBTOC)**		68.9
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
1630	6.99	29.1	1065	63.2	0.89
Comments (odour, colour, turbidity, sheen)		clear no odour. no colour			

Well ID	HWHB1518M		**Depth to Groundwater mBTOC (Before Sampling):**		N/A
Date	31/5/23		**Depth to top of sampler (mBTOC)**		N/A
QC sample	N/A		**Well Depth (mBTOC)**		N/A
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
Comments (odour, colour, turbidity, sheen)					

Well ID	HWBW1526M		**Depth to Groundwater mBTOC (Before Sampling):**		43.095
Date	1/6/23		**Depth to top of sampler (mBTOC)**		N/A bailer
QC sample	N/A		**Well Depth (mBTOC)**		83.995
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
1150					
Comments (odour, colour, turbidity, sheen)		silty. high turb. yellow sediment bailer cannot go down well no sample for field parameters			

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

<table>
<tr><td>Well ID</td><td colspan="2">WB18-GW03D</td><td colspan="2">Depth to Groundwater mBTOC (Before Sampling):</td><td>48.01</td></tr>
<tr><td>Date</td><td colspan="2">2/6/23</td><td colspan="2">Depth to top of sampler (mBTOC)</td><td>61</td></tr>
<tr><td>QC sample</td><td colspan="2">N/A</td><td colspan="2">Well Depth (mBTOC)</td><td>69.165</td></tr>
<tr><td colspan="6">In situ downhole Parameters (collect prior to disturbing water column)</td></tr>
<tr><td>Time</td><td>pH</td><td>Temp (C)</td><td>EC (µS/cm)</td><td>Redox (mV)</td><td>DO (mg/L)</td></tr>
<tr><td>1330</td><td>7.25</td><td>28.8</td><td>1490</td><td>-196.4</td><td>1.90</td></tr>
<tr><td colspan="2">Comments (odour, colour, turbidity, sheen)</td><td colspan="4">organic smell. clear. low turb
no color</td></tr>
</table>

<table>
<tr><td>Well ID</td><td colspan="2">WB20-GW06</td><td colspan="2">Depth to Groundwater mBTOC (Before Sampling):</td><td>43.30</td></tr>
<tr><td>Date</td><td colspan="2">2/1/6/23</td><td colspan="2">Depth to top of sampler (mBTOC)</td><td>45</td></tr>
<tr><td>QC sample</td><td colspan="2">N/A</td><td colspan="2">Well Depth (mBTOC)</td><td>99.37</td></tr>
<tr><td colspan="6">In situ downhole Parameters (collect prior to disturbing water column)</td></tr>
<tr><td>Time</td><td>pH</td><td>Temp (C)</td><td>EC (µS/cm)</td><td>Redox (mV)</td><td>DO (mg/L)</td></tr>
<tr><td>1330</td><td>6.94
~~7.25~~</td><td>27.6
~~28.8~~</td><td>1753</td><td>2.8</td><td>12.77</td></tr>
<tr><td colspan="2">Comments (odour, colour, turbidity, sheen)</td><td colspan="4">no odour. no color. clear.</td></tr>
</table>

<table>
<tr><td>Well ID</td><td colspan="2"></td><td colspan="2">Depth to Groundwater mBTOC (Before Sampling):</td><td></td></tr>
<tr><td>Date</td><td colspan="2"></td><td colspan="2">Depth to top of sampler (mBTOC)</td><td></td></tr>
<tr><td>QC sample</td><td colspan="2"></td><td colspan="2">Well Depth (mBTOC)</td><td></td></tr>
<tr><td colspan="6">In situ downhole Parameters (collect prior to disturbing water column)</td></tr>
<tr><td>Time</td><td>pH</td><td>Temp (C)</td><td>EC (µS/cm)</td><td>Redox (mV)</td><td>DO (mg/L)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Comments (odour, colour, turbidity, sheen)</td><td colspan="4"></td></tr>
</table>

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB20-GW06	**Depth to Groundwater mBTOC (Before Sampling):**	44.835
Date	12/6/23 12:30	**Depth to top of sampler (mBTOC)**	4
QC sample		**Well Depth (mBTOC)**	100.39

In situ downhole Parameters (collect prior to disturbing water column)

15/6/23

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
12:15	6.99	27.9	1729	-42.7	0.97

Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 46m. ~~[illegible]~~ Clear, low turbs, no odour.

Stick up - 0.59m. -clear, no smell

Well ID	WB18GW05	**Depth to Groundwater mBTOC (Before Sampling):**	44.169
Date	12/6/23 12:53	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	~~[illegible]~~ ← 93.41

In situ downhole Parameters (collect prior to disturbing water column)

15/6/23

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
11:50	6.87	28.2	812	-22.6	1.34

Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 45.5 logger deployed - SN - 1004392 - 65m

Stickup - 0.56 m -clear, nosmell

Well ID	WB18-GW04	**Depth to Groundwater mBTOC (Before Sampling):**	44.925
Date	12/6/23 1:21	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	104.43

In situ downhole Parameters (collect prior to disturbing water column)

15/6/23

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
11:20	6.89	27.9	1443	-48.1	0.83

Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 46.5. Clear, low turbs, no odour logger deployed - 1004455 (SN) - 65m

Stickup - 0.59 m -clear, no smell

Contaminated Land Management

Standard Form 3.2.3

Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	MWGW1030		**Depth to Groundwater mBTOC (Before Sampling):**		25.734
Date	12/6/23 1:48		**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		~34.50
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:15	7.03	20.4	1995	200.5	1.97
Comments (odour, colour, turbidity, sheen)	Logger missing - found - Brown colour, high turb, no odour. Hydrasleeve depth - 27.5 (taken below screen [illegible])				

Stick up - 0.5m

Well ID	MW116		**Depth to Groundwater mBTOC (Before Sampling):**		49.519
Date	12/6/23 2:11		**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		102.90
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
14/6/23 2:10	7.32	27.8	1513	-142.8	1.17
Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 51 Retrieved - 14/6/23 @ 2:10 smell of hydrocarbons, clear, black particulates				

Stick up - 0.56m

Well ID	HWHB1521M		**Depth to Groundwater mBTOC (Before Sampling):**		44.921
Date	12/6/23 2:30		**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		83.995
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
14/4/23 2:30	6.93	28.0	2757	-157	4.86
Comments (odour, colour, turbidity, sheen)	- BAILER TO BE USED				

Stick up - 0.59

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB18-GW03D		**Depth to Groundwater mBTOC (Before Sampling):**		48.236
Date	12/6/25 3.30		**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		66.165
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
9:10	7.10	23.4	1660	-111.0	1.92
Comments (odour, colour, turbidity, sheen)		Hydrasleeve depth - 60m logger reinstalled (12/4/23)		Clear, low turb, gaseous odour	

Stick up - 0.52m

Well ID			**Depth to Groundwater mBTOC (Before Sampling):**		
Date			**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
Comments (odour, colour, turbidity, sheen)					

Well ID			**Depth to Groundwater mBTOC (Before Sampling):**		
Date			**Depth to top of sampler (mBTOC)**		
QC sample			**Well Depth (mBTOC)**		
In situ downhole Parameters (collect prior to disturbing water column)					
Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
Comments (odour, colour, turbidity, sheen)					

wsp

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WBCSG0219	**Depth to Groundwater mBTOC (Before Sampling):**	62.710
Date	13/6/23 9:00	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	86.66

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
14/6/23 10:20	7.07	26.0	215.6	15.8	2.37

Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 84.5 retrieved 14/6/23 - 10:20 Clear, no smell low turbidity

stick up 0.59m

Well ID	EEG1301R ~~[illegible]~~	**Depth to Groundwater mBTOC (Before Sampling):**	96.12
Date	13/6/23 9:58	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	~~[illegible]~~ 119.70

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
14/6/23 11:00	7.01	29.0	1090	9.3	1.43

Comments (odour, colour, turbidity, sheen)	hydrasleeve depth - 97.5 - retrieved 14/6/23 11:00 logger retrieved Clear, no smell, low turbidity

stick up - 0.88

Well ID	HWHB1542M ~~[illegible]~~	**Depth to Groundwater mBTOC (Before Sampling):**	115.746
Date	13/6/23 10:38	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	~~[illegible]~~ 102.450

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
14/6/23 11:30	6.08	29.6	2.0	122.5	2.33

Comments (odour, colour, turbidity, sheen)	hydrasleeve depth - 117.5 retrieved - 14/6/23 11:30 Clear, sulfur like smell

Stick up - 0.57 m

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	WB26-GW04	**Depth to Groundwater mBTOC (Before Sampling):**	67.896
Date	13/6/23 7:15	**Depth to top of sampler (mBTOC)**	
QC sample	QA01 (Dup) QA02 (Trip)	**Well Depth (mBTOC)**	112.07

In situ downhole Parameters (collect prior to disturbing water column)

14/6/23

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
7:50	7.07	24.4	709	38.5	2.64

Comments (odour, colour, turbidity, sheen)	hydrasleeve depth 69.5 retrieved 7:44 14/6/23 = Primary = duplicate - QA01 - Triplicate - QA02

Stick up - 0.5 - clear, no smell

Well ID	HWr15 1551 M	**Depth to Groundwater mBTOC (Before Sampling):**	69.175
Date	13/6/23 7:50	**Depth to top of sampler (mBTOC)**	
QC sample	QA03 (Dup) QA04 (Trip)	**Well Depth (mBTOC)**	71.50 m

In situ downhole Parameters (collect prior to disturbing water column)

14/6/23

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
8:41	7.02	25.8	1161	16.5	2.91

Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 91m (within screen) retrieved 8 40 14/6/23 = Primary duplicate - QA03

Stick up - 0.75 - clear, no smell - triplicate - QA04

Well ID	WBCSG0208	**Depth to Groundwater mBTOC (Before Sampling):**	59.621
Date	13/6/23 8:18	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	77.3

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
/	/	/	/	/	/

Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 61.5 Retrieved 9:40 14/6/23

Stick up - 0.48 m

NO SAMPLE TAKEN - water could not be retrieved.

WSP

Contaminated Land Management

Standard Form 3.2.3
Passive Diffusion Bag (PDB)/Hydrasleeve Sampling Record

Well ID	MWHB1521M	**Depth to Groundwater mBTOC (Before Sampling):**	68.561
Date	13/6/23 9:30	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	125.8m

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
14/6/23 12:00	7.05	30.6	1096	-35.6	1.13

Comments (odour, colour, turbidity, sheen)	Hydrasleeve depth - 70 retrieved - 14/6/23 12:00

Stick up - 0.95

Well ID	WBCSGW0210	**Depth to Groundwater mBTOC (Before Sampling):**	49.70
Date	1:07	**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	68.9

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)
14/6/23 1:30	6.97	29.9	586	-49.3	0.79

Comments (odour, colour, turbidity, sheen)	hydrasleeve depth - 51.5 - retrieved - 14/6/23 1:30 [illegible] retrieved. - clear with some sedimentation at bottom. + suspended red/brown sediment.

Stick up - 0.58m

Well ID		**Depth to Groundwater mBTOC (Before Sampling):**	
Date		**Depth to top of sampler (mBTOC)**	
QC sample		**Well Depth (mBTOC)**	~~68.9~~

In situ downhole Parameters (collect prior to disturbing water column)

Time	pH	Temp (C)	EC (µS/cm)	Redox (mV)	DO (mg/L)

Comments (odour, colour, turbidity, sheen)	

A2 Calibration records

Water Quality Meter Calibration Sheet

Job PS204448

Date and time 26/7/23 7:15

WQ meter make/model YSI QUATRO

Name S.R T.M

WQ meter serial number 20K104050

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	12.6	± 0.5°C	N	
pH	4	4.05	3.9 - 4.1	N	
	7	7.04	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.755	± 5 %	N	
	35 mS/cm@25°C	33.1	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.04	± 0 ppm	N	
	Ambient Air	10.8	± 0.5 ppm of value on Table A overleaf	N	
Redox	240 mV@ 20°C	247.7	± 10 mV	N	

Table A: Change in Dissolved Oxygen with Temperature at 100% Relative Humidity (Altitude: sea level)

Temperature (Celsius)	DO (100% R.H.) (ppm, mg/L)
0	14.6
1	14.19
2	13.81
3	13.44
4	13.09
5	12.75
6	12.43
7	12.12
8	11.83
9	11.55
10	11.27
11	11.01
12	10.76
13	10.52
14	10.29
15	10.07
16	9.85
17	9.65
18	9.45
19	9.26
20	9.07
21	8.9
22	8.72
23	8.56
24	8.4
25	8.24
26	8.09
27	7.95
28	7.81
29	7.67
30	7.54
31	7.41
32	7.28

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 25/7/23 7:00

Name SB/TM

WQ meter make/model YSI Professional Plus

WQ meter serial number 20K104 050

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	6.7	± 0.5°C	N	
pH	4	4.02	3.9 - 4.1	N	
	7	7.07	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.77	± 5 %	N	
	35 mS/cm@25°C	34.0	± 5 %	N	
Dissolved Oxygen	0% saturation solution	11.43	± 0 ppm	N	
	Ambient Air	0.05	± 0.5 ppm of value on Table A overleaf	N	
Redox	240 mV@ 20°C	246.1	± 10 mV		

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 27/7/23 7:00

WQ meter make/model YSI Professional Plus

Name SB / TM

WQ meter serial number 20K104050

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	10.9	±0.5°C	N	
pH	4	3.99	3.9 - 4.1	N	
	7	6.99	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.81	± 5 %	N	
	35 mS/cm@25°C	33.30	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.09	± 0 ppm	N	
	Ambient Air	10.61	± 0.5 ppm of value on Table A overleaf	N	
Redox	240 mV@ 20°C	245.2	± 10 mV	N	

GOLDER

Water Quality Meter Calibration Sheet

Job: PS202448

Date and time: 8/8/23 10:50

Name: S.B C.O

Signature:

Phase/Task Number:

WQ meter make/model:

WQ meter serial number: 20K104050

Certificate Number*:

* use unique identifier (e.g YYYYMMDD_"technician's initials")

Parameter	Standard Solution	Pre-calibration reading	Acceptable range	Calibration Required (Y/N)	Post Calibration Reading
Temperature	16.7 °C		± 0.5 °C		
pH	4	3.97	3.9 - 4.1	N	
	7	7.01	6.9 - 7.1	N	
	10		9.9 – 10.1	–	
Conductivity	0		0.0 - 0.1 mS/cm		
	2.76 mS/cm @ _____ °C	2.71	± 5%	N	
	_____ mS/cm @ _____ °C		± 5%		
Dissolved Oxygen	0% Saturation Solution	0.05	± 0.1 ppm	N	
	Ambient Air	9.71	± 0.5 ppm of value on Table A overleaf	N	
Redox	2289 mV @ _____ °C	229.2	± 10 MV	N	

Comments (including any additional repairs or services performed)

GAP Form No. 61 / RL1
February 2018

Water Quality Meter Calibration Sheet

GOLDER

Job: 15202448

Date and time: 9/8/23 7:10

Name: S.B C.D

Signature:

Phase/Task Number:

WQ meter make/model:

WQ meter serial number: 20K104050

Certificate Number*:

* use unique identifier (e.g YYYYMMDD_"technician's initials")

Parameter	Standard Solution	Pre-calibration reading	Acceptable range	Calibration Required (Y/N)	Post Calibration Reading
Temperature	13.6 °C		± 0.5 °C		
pH	4	4.02	3.9 - 4.1	N	
	7	7.01	6.9 - 7.1	N	
	10		9.9 – 10.1		
Conductivity	0		0.0 - 0.1 mS/cm		
	2.76 mS/cm @ ______ °C	2.83	± 5%	N	
	35 mS/cm @ ______ °C	35.12	± 5%	N	
Dissolved Oxygen	0% Saturation Solution	0.02	± 0.1 ppm	N	
	Ambient Air	10.49	± 0.5 ppm of value on Table A overleaf	N	
Redox	229 mV @ ______ °C	230.1	± 10 MV	N	

Comments (including any additional repairs or services performed)

GAP Form No. 61 / RL1
February 2018

GOLDER

Water Quality Meter Calibration Sheet

Job: PS202448

Date and time: 7/8/23 2:15

Name: S.B C.O

Signature:

Phase/Task Number:

WQ meter make/model:

WQ meter serial number: 20K104050

Certificate Number*:

* use unique identifier (e.g YYYYMMDD_"technician's initials")

Parameter	Standard Solution	Pre-calibration reading	Acceptable range	Calibration Required (Y/N)	Post Calibration Reading
Temperature	24.9 °C		± 0.5 °C		
pH	4	4.01	3.9 - 4.1	N	
	7	7.00	6.9 - 7.1	N	
	10		9.9 – 10.1	—	
Conductivity	0		0.0 - 0.1 mS/cm		
	2.76 mS/cm @ 24.9 °C	2.79	± 5%	N	
	35 mS/cm @ 24.9 °C	34.72	± 5%	N	
Dissolved Oxygen	0% Saturation Solution	0.03	± 0.1 ppm	N	
	Ambient Air	8.31	± 0.5 ppm of value on Table A overleaf	N	
Redox	229 mV @ 25 °C	219.8	± 10 MV	N	

Comments (including any additional repairs or services performed)

Water Quality Meter Calibration Sheet

wsp

Job [redacted]

Date and time 9/10/23

Name CO/TM

WQ meter make/model Pro Quatro

WQ meter serial number 21F105631

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	39.6	± 0.5°C	N	
pH	4	4.10	3.9 - 4.1	N	
	7	7.08	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.74	± 5 %	N	
	35 mS/cm@25°C	34.0	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.04	± 0 ppm	N	
	Ambient Air	5.13	± 0.5 ppm of value on Table A overleaf	N	
Redox	~~240~~ mV@ 20°C	206	± 10 mV		

218@30°C

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 10-10-23 11:40

WQ meter make/model YSI Pro Quatro

Name China Oguoma

WQ meter serial number 21F105631

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	35	± 0.5°C	N	
pH	4	4.05	3.9 - 4.1	N	
	7	7.05	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.96	± 5 %	N	
	35 mS/cm@25°C	35.01	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.1	± 0 ppm	N	
	Ambient Air 25°C	8.02	± 0.5 ppm of value on Table A overleaf	N	
Redox	240 mV@ 20°C @30	214	± 10 mV	N	

Redox 218 mV@ 30°C

Water Quality Meter Calibration Sheet

Job [redacted]

Date and time 11/10/23 8:10

WQ meter make/model Pro Quatro

Name TM/CO

WQ meter serial number 21F105631

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	23.7	± 0.5°C	N	
pH	4	4.00	3.9 - 4.1	N	
	7	7.09	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.76	± 5 %	N	
	35 mS/cm@25°C	33.7	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.10	± 0 ppm	N	
	Ambient Air	9.11	± 0.5 ppm of value on Table A overleaf	N	
Redox	~~240 mV@ 20°C~~ 218 @ 30°C	217.5	± 10 mV	N	

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 12-10-23 6:30 **WQ meter make/model** YSI Pro Quatro

Name China **WQ meter serial number** 21F105631

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	21.4	± 0.5°C	N	
pH	4	4.10	3.9 - 4.1	N	
	7	7.10	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.69	± 5 %	N	
	35 mS/cm@25°C	32.5	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.09	± 0 ppm	N	
	Ambient Air		± 0.5 ppm of value on Table A overleaf	N	
Redox	240 mV@ 20°C	226	± 10 mV	N	

Redox 226 @ 23°C
Conductivity 35ms/cm @23 – 32.5

Water Quality Meter Calibration Sheet

GOLDER

Job: PS202448

Phase/Task Number:

Date and time: 22-11-2023 6:30

WQ meter make/model: ProQuatro

Name: China Oguoma

WQ meter serial number: 21F105631

Signature: CO

Certificate Number*:

* use unique identifier (e.g YYYYMMDD_"technician's initials")

Parameter	Standard Solution	Pre-calibration reading	Acceptable range	Calibration Required (Y/N)	Post Calibration Reading
Temperature	27 °C		± 0.5 °C		
pH	4	4.03	3.9 - 4.1	N	
	7	7.07	6.9 - 7.1	N	
	10		9.9 – 10.1		
Conductivity	0		0.0 - 0.1 mS/cm		
	2.7 mS/cm @ 25 °C	2.85	± 5%	N	
	35 mS/cm @ 25 °C	34.87	± 5%	N	
Dissolved Oxygen	0% Saturation Solution	0.08	± 0.1 ppm	N	
	Ambient Air	-	± 0.5 ppm of value on Table A overleaf	-	
Redox	229 mV @ 25 °C	182.5	± 10 MV	Y	229

Comments (including any additional repairs or services performed)

Water Quality Meter Calibration Sheet

Table A: Change in Dissolved Oxygen with Temperature at 100% Relative Humidity (Altitude:sea level)

Temperature (Celsius)	DO (100% (ppm, mg/L)
0	14.6
1	14.19
2	13.81
3	13.44
4	13.09
5	12.75
6	12.43
7	12.12
8	11.83
9	11.55
10	11.27
11	11.01
12	10.76
13	10.52
14	10.29
15	10.07
16	9.85
17	9.65
18	9.45
19	9.26
20	9.07
21	8.9
22	8.72
23	8.56
24	8.4
25	8.24
26	8.09
27	7.95
28	7.81
29	7.67
30	7.54
31	7.41
32	7.28

Values are for pressure = 760 mm Hg for measurements at sea level.
For a given temperature, the concentration of dissolved oxygen concentration decreases by 0.3 mg/L with every 500 ft (152.4 m) increase in altitude.

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 12/12/23

WQ meter make/model Pro Quatro

Name TM

WQ meter serial number 21F105631

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	28.0	± 0.5°C	N	
pH	4	4.13	3.9 - 4.1	Y	4.02
	7	6.96	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.81	± 5 %	N	
	35 mS/cm@25°C	34.9	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.02	± 0 ppm	N	
	Ambient Air	8.19	± 0.5 ppm of value on Table A overleaf	N	
Redox	~~240 mV@20°C~~	225.6	± 10 mV	N	

218 mV @ 30°C

Water Quality Meter Calibration Sheet

Job P5202448

Date and time 6:45AM-13/12/23

WQ meter make/model Pro Quatro

Name TM

WQ meter serial number 21F105631

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	18.9	± 0.5°C	N	
pH	4	3.96	3.9 - 4.1	N	
	7	6.95	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.69	± 5 %	N	
	35 mS/cm@25°C	34.4	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.10	± 0 ppm	N	
	Ambient Air	9.62	± 0.5 ppm of value on Table A overleaf	N	
Redox	240 mV@ 20°C	246.3	± 10 mV	N	

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 6:10 14/12/23 **WQ meter make/model** Pro Quatro

Name TM **WQ meter serial number** 21F105631

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	24.3	± 0.5°C	N	
pH	4	4.02	3.9 - 4.1	N	
	7	7.01	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.70	± 5 %	N	
	35 mS/cm@25°C	33.8	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.10	± 0 ppm	N	
	Ambient Air	8.72	± 0.5 ppm of value on Table A overleaf	N	
Redox	~~240 mV@ 20°C~~	221.3	± 10 mV	N	

229mV @ 25°C

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 16/01/24 16:20 **WQ meter make/model** Pro Quatro

Name TM **WQ meter serial number** 22H102060

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	34.1	± 0.5°C	N	—
pH	4	4.04	3.9 - 4.1	N	—
	7	6.98	6.9 - 7.1	N	—
Conductivity	2.76 mS/cm@25°C	2.80	± 5 %	N	—
	35 mS/cm@25°C	34.3	± 5 %	N	—
Dissolved Oxygen	0% saturation solution	0.01	± 0 ppm	N	—
	Ambient Air		± 0.5 ppm of value on Table A overleaf	N	
Redox	~~240 mV@ 20°C~~	225.0	± 10 mV	N	—

229 mV @ 20°C

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 17-01-24 6:50 Am **WQ meter make/model** Pro Quatro

Name TM **WQ meter serial number** 22H102060

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	26.5	± 0.5°C	N	—
pH	4	4.02	3.9 - 4.1	N	—
	7	6.96	6.9 - 7.1	N	—
Conductivity	2.76 mS/cm@25°C	2.78	± 5 %	N	—
	35 mS/cm@25°C	34.0	± 5 %	N	—
Dissolved Oxygen	0% saturation solution	0.01	± 0 ppm	N	—
	Ambient Air		± 0.5 ppm of value on Table A overleaf	N	—
Redox	~~240 mV@ 20°C~~	227.6	± 10 mV	N	—

229 mV @ 25°C

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 17.00 17/01/24 **WQ meter make/model** Professional Plus

Name TM **WQ meter serial number** 19L102399

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	32.7	± 0.5°C	N	
pH	4	[illegible]	[illegible] 6.95 3.9 - 4.1	~~N~~ Y	ERROR
	7	6.98	6.9 - 7.1	N	—
Conductivity	2.76 mS/cm@25°C	2.81	± 5 %	N	—
	35 mS/cm@25°C	33.3	± 5 %	N	
Dissolved Oxygen	0% saturation solution	0.05	± 0 ppm	N	
	Ambient Air		± 0.5 ppm of value on Table A overleaf	N	
Redox	~~240 mV@ 20°C~~	219.4	± 10 mV	N	—

229 mV @ 25°C

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 18/01/24 6:45

WQ meter make/model Professional Plus

Name TM

WQ meter serial number 19L102399

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	29°C	± 0.5°C	N	
pH	4	Failed	3.9 - 4.1	N	
	7	7.01	6.9 - 7.1	N	
Conductivity	2.76 mS/cm@25°C	2.75	± 5 %	N	—
	35 mS/cm@25°C	35	± 5 %	N	—
Dissolved Oxygen	0% saturation solution	0.08	± 0 ppm	N	
	Ambient Air		± 0.5 ppm of value on Table A overleaf	N	
Redox	229 240 mV@25°C	222.4	± 10 mV	N	

pH out for both solutions
- tried to calibrate YSI but was not able to as reading was too different

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 13-06-23 14:20

WQ meter make/model YSI Pro Quatro

Name Chine Oguoma

WQ meter serial number 21C102770

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	18.5	± 0.5°C	N	
pH	4	3.99	3.9 - 4.1	N	
	7	6.94	6.9 - 7.1	N	—
Conductivity	2.76 mS/cm@25°C	2.620	± 5 %	N	—
	35 mS/cm@25°C	33.68	± 5 %	N	—
Dissolved Oxygen	0% saturation solution	-0.01	± 0 ppm	N	—
	Ambient Air	9.38	± 0.5 ppm of value on Table A overleaf	N	—
Redox	240 mV@ 20°C	207	± 10 mV	Y	240

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 14-06-23 7:20 **WQ meter make/model** YSI Pro Quatro

Name China Oguoma **WQ meter serial number** 21C102770

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	5.1	± 0.5°C	N	—
pH	4	406	3.9 - 4.1	N	—
	7	7.04	6.9 - 7.1	N	—
Conductivity	2.76 mS/cm@25°C 5°C	1.84	± 5 %	Y	Failed
	35 mS/cm@25°C 5°C	22.67	± 5 %	Y	Failed
Dissolved Oxygen	0% saturation solution	0.1	± 0 ppm	N	—
	Ambient Air	12.76	± 0.5 ppm of value on Table A overleaf	N	—
Redox	240 mV@ 20°C 5°C	263	± 10 mV	N	—

Temp = 5°C. Conductivity calibrations failed

Water Quality Meter Calibration Sheet

Job PS202448

Date and time 15-06-23

WQ meter make/model YSI Pro Quatro

Name China Oguoma

WQ meter serial number 21C102770

Parameter	Standard Solution	Pre-sampling reading	Acceptable range	Calibration Required (y/n)	Post-sampling Reading
Temperature	°C	9°C	± 0.5°C	N	—
pH	4	3.99	3.9 - 4.1	N	—
	7	6.90	6.9 - 7.1	N	—
Conductivity	2.76 mS/cm@25°C 7.9°c	2.037	± 5 %	Y	Failed
	35 mS/cm@25°C 7.4°c	24.5	± 5 %	Y	Failed
Dissolved Oxygen	0% saturation solution	0.1	± 0 ppm	N	—
	Ambient Air	11.50	± 0.5 ppm of value on Table A overleaf	N	—
Redox	240 mV@ 20°C 8°c	262	± 10 mV	N	—

A3 Chain of custody records

8116312116

eurofins | mgt

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Email: EnviroSampleVic@eurofins.com.au

CHAIN OF CUSTODY RECORD

Page 1 of 1

CLIENT DETAILS

Company Name: WSP	**Contact Name:**	Tara Meyers and China Oguoma	**Purchase Order:**	**COC Number:**	1
Office Address: 5 Spring Street, Perth, WA	**Project Manager:**	Eduardo Ruther	**PROJECT Number:** PS202448	**Eurofins | mgt quote ID:**	
	Email for results:	eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com,	**PROJECT Name:**	**Data output format:**	ESDAT

Special Directions & Comments:

Quote:

Eurofins | mgt DI water batch number:

Some common holding times (with correct preservation).
For further information contact the lab.

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous Iron	7 days	ASLP, TCLP	7 days

Analytes / **Containers:**

Sample ID	Date	Matrix	PFAS Extended Suite (Ultra Trace)	Dissolved Metals M17	Major Ions (Ca, Mg, Na, K, Cl, SO4, Alkalinity), Ionic Balance, pH	1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Total Bottles	Sample comments
QA02/280623	28/6/23	Water	X	X	X								4	
QA04/290623	29/6/23	Water	X	X	X								4	

Relinquished By:	**Received By:**	Hayley
Date & Time:	**Date & Time:**	30/6/23 9:15
Signature:	**Signature:**	

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☐ 10 DAY ☐ Other: ☐

Method Of Shipment
☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 17.8

Report number: 1003960

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT:
OFFICE:
PROJECT:
ORDER NUMBER:

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

PROJECT MANAGER: Eduardo Ruther
SAMPLER: Sachin Brennan
SAMPLER MOBILE: 0409 707 059
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default): ESDAT
Email Reports to (will default to PM if no other addresses are listed): sachin.brennan@wsp.com, daniel.kriel@wsp.com, pablo.ortega@wsp.com, eduardo.ruther@wsp.com tara.meyers@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

RELINQUISHED BY: Sachin Brennan
DATE/TIME: 13/7/23 3:00

RECEIVED BY:
DATE/TIME: 14/7 1/30

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS ultra trace long suite (EP231X-SUT)	Water quality parameters NT-01 & 02 and pH (EA005: pH)	Total metal W-03T						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	X57	11/7/23 14:00	W		4	X	X	X						
2	OPDM1	11/7/23 15:30	W		4	X	X	X						
3	OPDM2	11/7/23 16:00	W		4	X	X	X						
4	RJ01/110723	11/7/23 16:15	W		2	X								
5	WB26-GW04	12/7/23 8:00	W		6	X	X	X						Additional for internal QA/QC
6	HWHB0060P	12/7/23 8:30	W		4	X	X	X						
7	GW100	12/7/23	W		4	X	X	X						
8	HWHB1551M	12/7/23 9:00	W		6	X	X	X						Internal QA/QC (extra 2)
9	WBCSGW02/9	12/7/23 9:30	W		4	X	X	X						
10	HWHB0051P	12/7/23 10:00	W		4	X	X	X						
11	GW103	12/7/23			4	X	X	X						
12	EEG1391R	12/7/23 10:40	W		4	X	X	X						
13	HWHB1521M	12/7/23 12:30	W		6	X	X	X						Internal QA/QC (extra 2)
				TOTAL	[illegible]									

Environmental Division
Perth
Work Order Reference
EP2309615

Telephone : + 61-8-9406 1301

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com

☐BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

☐MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com

☐MELBOURNE 2-4 Westall Road Springvale VIC 3171
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☐MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

☐NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com

☐PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT:

OFFICE:

PROJECT:

ORDER NUMBER:

PROJECT MANAGER: Eduardo Ruther

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)

☒ Standard TAT (List due date):

☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

SAMPLER: Sachin Brennan

SAMPLER MOBILE: 0409 707 059

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default): ESDAT

Email Reports to (will default to PM if no other addresses are listed): sachin.brennan@wsp.com, daniel.kriel@wsp.com, pablo.ortega@wsp.com, eduardo.ruther@wsp.com , tara.meyers@wsp.com

Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

RELINQUISHED BY: Sachin Brennan
DATE/TIME: 13/7/23 3:00

RECEIVED BY:
DATE/TIME:

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS ultra trace long suite (EP231X-SUT)	Water quality parameters NT-01 & 02 and pH (EA005: pH)	Total metal W-03T						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
14	MW116	12/7/23 3:30	W		4	X	X	X						
15	MWHW103D	12/7/23 4:00	W		6	X	X	X						Internal QA/QC (extra two)
16	WB18-GW03D	12/7/23 4:30	W		4	X	X	X						
17	RI02/120723	12/7/23 4:45	W		2	X								
18	WBCSGW0210	13/7/23 7:30	W		4	X	X	X						
19	WB18-GW04	13/7/23 8:15	W		4	X	X	X						
20	WB18-GW05	13/7/23 8:40	W		4	X	X	X						
21	WB20-GW06	13/7/23 9:15	W		6	X	X	X						Internal QA/QC (extra 2)
22	HWHB1526M	13/7/23 10:00	W		4	X	X	X						
23	R103/130723	13/7/23 11:30	W		2	X								
24	TBW802				2	X								
				TOTAL	15									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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☐ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: EnviroSampleNSW@eurofins.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murarrie
Phone: +617 3902 4600
Email: EnviroSampleQLD@eurofins.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: EnviroSampleVic@eurofins.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Page 1 of 1

Company Name : WSP

Office Address : 5 Spring Street, Perth, WA

Contact Name: Tara Meyers and [redacted] Sachin Brennan

Project Manager : Eduardo Ruther

Email for results : eduardo.ruther@wsp.com, tara.meyers@wsp.com, [redacted] sachin.brennan@wsp.com

Purchase Order :

PROJECT Number : PS202440

PROJECT Name :

COC Number : 1

Eurofins | mgt quote ID :

Data output format: ESDAT

Special Directions & Comments :

Quote:

Eurofins | mgt DI water batch number:

Analytes

Sample ID	Date	Matrix	PFAS Extended Suite (Ultra Trace)	Dissolved Metals M17	major ions (Ca, Mg, Na, K, Cl, SO4, Alkalinity)	ionic balance, pH	1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Total Bottles	Sample comments:
GW101	12/7/23	830 W	X	X	X									4	
GW104	12/7/23	10:00 W	X	X	X									4	

Containers:

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous Iron	7 days	ASLP, TCLP	7 days

Relinquished By: Tara M
Date & Time: 13/7/23 3:00
Signature: Tara Meyers

Received By:
Date & Time: 09:25 14/07/23
Signature: 4.7°C

☐ 1 DAY ☐ 2 DAY ☐ 3 DAY
☐ 5 DAY ☐ 10 DAY Other: ☐

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number: 1007846

QS3009_R1 Issue Date: 22 August 2013 Page 1 of 1

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com
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Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & Sachin Brennan
SAMPLER MOBILE: 0410268727
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, sachin.brennan@wsp.com, daniel.kriel@wsp.com Pablo.Ortega@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY: Tara M
DATE/TIME: 3:00 27/7/23
RECEIVED BY:
DATE/TIME:
RELINQUISHED BY:
DATE/TIME:
RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	HWMB1521M	26/7/23 3:30	W		4	✓	X	X							
	RI02/260723	26/7/23 4:00	W		2	X									
	HWMB1526M	27/7/27 7:15	W		4	X	X	X							
	MWGW103D	27/7/23 8:00	W		6	X	X	X							Additional bottle for lab QAQC
	MW116	27/7/23 8:40	W		6	X	X	X							" "
	WBCGW02ID	27/7/23 9:15	W		6	X	X	X							" "
	WB18GW05	27/7/23 10:30	W		6	X	X	X							" "
	WB18-GW04	27/7/23 10:45	W		4	X	X	X							
	WB20-GW06	27/7/23 11:20	W		4	X	X	X							
	WB15-GW03D	27/7/23 11:45	W		4	X	X	X							
	RI03/270723	27/7/23 13:30	W		2	X									
	TBN866		W		2	X									
				TOTAL	50										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053
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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP

OFFICE: WSP Spring Street, Perth

PROJECT: PS202448

ORDER NUMBER:

PROJECT MANAGER: Eduardo Ruther **CONTACT PH:** +61 8 9213 4849

SAMPLER: Tara Meyers & Sachin Brennan **SAMPLER MOBILE:** 0410268727

COC emailed to ALS? (YES / NO) **EDD FORMAT (or default):**

Email Reports to (will default to PM if no other addresses are listed): **eduardo.ruther@wsp.com, tara.meyers@wsp.com, sachin.brennan@wsp.com, daniel.kriel@wsp.com Pablo.Ortega@wsp.com**

Email Invoice to (will default to PM if no other addresses are listed): **AU.AccountsPayable@wsp.com**

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)

COC:	1	2	3	4	5	6	7
OF:	1	2	3	4	5	6	7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tara M			
DATE/TIME: 27/7/23 7:00	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	X57	25/7/23 7:20	W		6	X	X	X						Extra bottles for lab QAQC
	OPDM1	25/7/23 2:00	W		6	X	X	X						" "
	OPDM2	25/7/23 2:15	W		4	X	X	X						
	R101/25/7/23	25/7/23	W		2	X								
	WB26-GW04	26/7/23 7:50	W		4	X	X	X						
	HWHB0060P	26/7/23 7:45	W		4	X	X	X						
	GW200	26/7/23	W		4	X	X	X						
	HWMB1551M	26/7/23 8:15	W		4	X	X	X						
	WBCSGW0219	26/7/23 8:45	W		4	X	X	X						
	HWHB0051P	26/7/23 9:15	W		4	X	X	X						
	GW202	26/7/23	W		4	X	X	X						
	EEG1391R	26/7/23 9:30	W		4	X	X	X						
				TOTAL	50									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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☐ **Sydney**
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☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: EnviroSampleVic@eurofins.com.au

CHAIN OF CUSTODY RECORD

Page 1 of 1

CLIENT DETAILS

Company Name : WSP
Office Address : 5 Spring Street, Perth, WA
Contact Name: Tara Meyers and Sachin Brennan
Project Manager : Eduardo Ruther
Email for results : pablo.ortega@wsp.com eduardo.ruther@wsp.com, tara.meyers@wsp.com, sachin.brennan@wsp.com,
Purchase Order :
PROJECT Number : PS202448
PROJECT Name :
COC Number : 1
Eurofins | mgt quote ID :
Data output format: ESDAT

Special Directions & Comments :
Quote:

Eurofins | mgt ID water batch number:

Analytes

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Sample ID	Date	Matrix	PFAS Extended Suite (Ultra Trace)	Dissolved Metals M17	Major Ions (Ca, Mg, Na, K, Cl, SO4, Alkalinity), Ionic Balance, pH	1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Total Bottles	Sample comments:
	GW201	26/7/23	W	X	X	X									
	GW203	26/7/23	W	X	X	X									

Relinquished By: Tara Meyers
Date & Time: 27/7/23 3:00
Signature: Tara M

Received By:
Date & Time:
Signature:

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☐ 10 DAY ☐ Other ☐

Method Of Shipment
☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number:

CS3009_R1 Issue Date: 22 August 2013 Page 1 of 1

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph 08 8359 0890 E: adelaide@alsglobal.com
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Ph. 02 6372 6735 E. mudgee.mail@alsglobal.com

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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph. 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
SAMPLER MOBILE: 0410268727, 0434585693
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, daniel.kriel@wsp.com, claudio.vergara@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY: Tara M
DATE/TIME: 12/10/23

RECEIVED BY:
DATE/TIME: 13/10 1230

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE LAB ID	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) SAMPLE ID	DATE / TIME	MATRIX	CONTAINER INFORMATION TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Additional Information Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	OPDM1	9/10/23 16:30	W		4	X	X	X						
2	OPDM2	9/10/23 16:45	W		4	X	X	X						
3	RI01	9/10/23 16:45	W		2	X								
4	MW116	10/10/23 13:30	W		4	X	X	X						
5	MWGM03D	10/10/23 14:30	W		4	X	X	X						
6	HWMB1526m	10/10/23 15:45	W		4	X	X	X						
7	RI02	10/10/23 16:00	W		2	X								
8	WBL5GW0208	11/10/23 8:40	W		4	X	X	X						
9	WB26-GW04	11/10/23 9:15	W		4	X	X	X						
10	HWMB0060P	11/10/23 9:45	W		4	X	X	X						
11	GW100	11/10/23	W		4	X	X	X						Please forward to Eurofins
/	GW101	11/10/23	W		4	X	X	X						
				TOTAL	44									

Environmental Division
Perth
Work Order Reference
EP2314412

Telephone : + 61-8-9406 1301

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
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Ph: 07 7471 5600 E: gladstone@alsglobal.com

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☐MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
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☐NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
SAMPLER MOBILE: 0410268727, 0434585693
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
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☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tara M			
DATE/TIME: 12/10/23	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc. Additional for lab QA/QC
12	HWMB155IM	11/10/23 10:30	W		6	X	X	X						" "
13	HWMB0057P	11/10/23 12:10	W		8	X	X	X						" "
14	WBCSGW0219	11/10/23 14:15	W		6	X	X	X						
15	HWMB0051P	11/10/23 14:40	W		4	X	X	X						
16	GW102	11/10/23	W		4	X	X	X						Please forward to Eurofins
/	GW103	11/10/23	W		4	X	X	X						
17	HNMB1521M	11/10/23 15:13	W		4	X	X	X						
18	EEG1391R	11/10/23 16:50	W		4	X	X	X						
19	RI03	11/10/23 17:20	W		2	X								
20	X57	12/10/23 7:15	W		4	X	X	X						
21	WBLSGW0210	12/10/23 8:00	W		4	X	X	X						
22	WB18-GW03D	12/10/23 8:40	W		4	X	X	X						
				TOTAL	54									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph. 02 4225 3125 E. portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
SAMPLER MOBILE: 0410268727, 0434585693
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ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tara M			
DATE/TIME: 12/10/23	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
23	WB18-GW05	12/10/23 10:15	W		4	X	X	X						
24	WB18-GW04	12/10/23 10:40	W		4	X	X							
25	WB20-GW06	12/10/23 11:15	W		4	X	X	X						
26	RI04	12/10/23 11:15	W		2	X								
27	TBW 1421		W		2	X								
				TOTAL	16									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

eurofins | mgt

☐ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: EnviroSampleNSW@eurofins.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murarrie
Phone: +617 3902 4600
Email: EnviroSampleQLD@eurofins.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: EnviroSampleVic@eurofins.com.au

CHAIN OF CUSTODY RECORD

Page 1 of 1

CLIENT DETAILS

Company Name : WSP
Office Address : 5 Spring Street, Perth, WA
Contact Name: Tara Meyers and China Oguoma
Project Manager : Eduardo Ruther
Email for results : eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com,
Purchase Order :
PROJECT Number : PS202448
PROJECT Name :
COC Number : 1
Eurofins | mgt quote ID :
Data output format: ESDAT

Special Directions & Comments :

Quote:

Eurofins | mgt DI water batch number:

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, O/G	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Analytes / Containers:

Sample ID	Date	Matrix	PFAS Extended Suite (Ultra Trace)	Dissolved Metals M17	Major Ions (Ca, Mg, Na, K, Cl, SO4, Alkalinity), Ionic Balance, pH	1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Total Bottles	Sample comments:
GW101	11/10/23	W	X	X	✓								4	
GW103	11/10/23	W	X	X	✓								4	

Relinquished By: Tara Meyers
Date & Time: 12/10/23
Signature: Tara M

Received By: Mayies
Date & Time: 17/10/23 16:54
Signature:

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☐ 10 DAY ☐ Other: ☐

Method Of Shipment
☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 9.8

Report number:

QS3009_R1 Issue Date: 22 August 2013 Page 1 of 1

#1035757

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph 08 8359 0890 E. adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
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Ph: 07 7471 5600 E gladstone@alsglobal.com

☐MACKAY 78 Harbour Road Mackay QLD 4740
Ph 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171
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☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
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Ph 08 9209 7655 E samples.perth@alsglobal.com

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Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
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Ph: 07 4796 0600 E townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph 02 4225 3126 E portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
SAMPLER MOBILE: 0410268727, 0434585693
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COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

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ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tara M			
DATE/TIME: 23/11/23 15:00	DATE/TIME: 24/11 1435	DATE/TIME:	DATE/TIME:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	WBCSGW0208	22/11/23 7:30	W		4	X	X	X						
2	WB26-GW04	22/11/23 7:50	W		4	X	X	X						
3	HWHB1551M	22/11/23 10:00	W		6	X	X	X						Additional for lab QA/QC
4	HWHB1519M	22/11/23 11:30	W		4	X	X	X						
5	HWHB0057P	22/11/23 12:45	W		4	X	X	X						
6	HWHB0060P	22/11/23 13:00	W		8	X	X	X						Additional for lab QA/QC
7	WBCSGW0219	22/11/23 14:00	W		6	X	X	X						" "
8	HWHB0051P	22/11/23 15:30	W		4	X	X	X						
9	HWHB1526M	22/11/23 16:00	W		4	X	X	X						
10	EEG1391R	22/11/23 16:15	W		4	X	X	X						
11	RI01/221123	22/11/23 17:00	W		2	X								
12	WB18-GW03D	22/11/23 7:00	W		4	X	X	X						
TOTAL														

Environmental Division
Perth
Work Order Reference
EP2316729
Telephone : +61-8-9406 1301

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
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ALS Environmental

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Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP

OFFICE: WSP Spring Street, Perth

PROJECT: PS202448

ORDER NUMBER:

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)

☐ Standard TAT (List due date):

☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free Ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comment:

PROJECT MANAGER: Eduardo Ruther

CONTACT PH: +61 8 9213 4849

SAMPLER: Tara Meyers & China Oguoma

SAMPLER MOBILE: 0410268727, 0434585693

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, claudio.vergara@wsp.com

Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

RELINQUISHED BY: Tara M

DATE/TIME: 23/11/23 15:00

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
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13	MW116	23/11/23 7:20	W		4	X	X	X						
14	X57	23/11/23 8:00	W		4	X	X	X						
15	GW100	23/11/23 8:00	W		4	X	X	X						
ARL	GW101	23/11/23 8:00	W		4	X	X	X						Please forward to Eurofins
16	NBLSGW0210	23/11/23 8:15	W		4	X	X	X						
17	OPDM1	23/11/23 8:55	W		4	X	X	X						
18	OPDM2	23/11/23 9:00	W		4	X	X	X						
19	GW102	23/11/23 9:00	W		4	X	X	X						
ARL	GW103	23/11/23 9:00	W		4	X	X	X						Please forward to Eurofins
20	MWGW103D	23/11/23 11:15	W		4	X	X	X						
21	WB18-GW04	23/11/23 12:45	W		4	X	X	X						
22	WB18-GW05	23/11/23 13:15	W		4	X	X	X						
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph 08 8359 0890 E adelaide@alsglobal.com

☐BRISBANE 32 Shand Street Stafford QLD 4053
Ph. 07 3243 7222 E. samples.brisbane@alsglobal.com

☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680
Ph 07 7471 5600 E gladstone@alsglobal.com

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Ph. 07 4944 0177 E: mackay@alsglobal.com

☐MELBOURNE 2-4 Westall Road Springvale VIC 3171
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Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

☐NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph 024423 2063 E: nowra@alsglobal.com

☐PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

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Ph: 02 8784 8555 E. samples.sydney@alsglobal.com

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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP

OFFICE: WSP Spring Street, Perth

PROJECT: PS202448

ORDER NUMBER:

PROJECT MANAGER: Eduardo Ruther

CONTACT PH: +61 8 9213 4849

SAMPLER: Tara Meyers & China Oguoma

SAMPLER MOBILE: 0410268727, 0434585693

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, claudio.vergara@wsp.com

Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)

☐ Standard TAT (List due date):

☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)

COC:	1	2	3	4	5	6	7
OF:	1	2	3	4	5	6	7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tara M			
DATE/TIME: 23/11/23 15:00	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
23	WB20-GW06	23/11/23 12:15	W		4	X	X	X						
24	RI02/231123	23/11/23 13:30	W		2	X								
25	TBW1620		W		2	X								
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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☐ **Sydney**
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Phone: +612 9900 8400
Email: EnviroSampleNSW@eurofins.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murarrie
Phone: +617 3902 4600
Email: EnviroSampleQLD@eurofins.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: EnviroSampleVic@eurofins.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page 1 of 1

Company Name: WSP

Office Address: 5 Spring Street, Perth, WA

Contact Name: Tara Meyers and China Oguoma

Project Manager: Eduardo Ruther

Email for results: eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com,

Purchase Order:

PROJECT Number: PS202448

PROJECT Name:

COC Number: 1

Eurofins | mgt quote ID:

Data output format: ESDAT

Special Directions & Comments:

Quote:

Eurofins | mgt DI water batch number:

Some common holding times (with correct preservation)
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Analytes

Sample ID	Date	Matrix	PFAS Extended Suite (Ultra Trace)	Dissolved Metals M13	Major Ions (Ca, Mg, Na, K, Cl, SO4, Alkalinity), Ionic Balance, pH	Containers: 1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Total Bottles	Sample comments
GW101	23/11/23 8:00	W	X	X	X								4	
GW103	23/11/23 9:00	W	X	X	X								4	

Relinquished By: Tara Meyers
Date & Time: 23/11/23 15:00
Signature: Jana M

Received By: Uayles
Date & Time: 28/11/23 14:40
Signature:

☐ 1 DAY ☐ 2 DAY ☐ 3 DAY
☐ 5 DAY ☐ 10 DAY Other ☐

Method Of Shipment
☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment #:

Temperature on arrival: 11.3

Report number: 1048809

QS3009_R1 Issue Date: 22 August 2013 Page 1 of 1

ALS Environmental

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☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
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☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
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☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
SAMPLER MOBILE: 0410268727, 0434585693
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, claudio.vergara@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jana M			
DATE/TIME: 14/12/23 15:00	DATE/TIME: 15/12 1220	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Paramaters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	MWGW103D	13:00 12/12/23	W		4	X	X	X						
2	WB18-GW03D	13:35 12/12/23	W		6	X	X	X						Additional bottles for lab QA/QC
3	WBCSGW0210	14:30 12/12/23	W		4	X	X	X						
4	OPDM1	15:20 12/12/23	W		4	X	X	X						
5	OPDM2	15:45 12/12/23	W		4	X	X	X						
6	RI01/121223	15:45 12/12/23	W		2	X								
7	WB26-GW04	7:30 13/12/23	W		4	X	X	X						
8	HWHB0060P	7:50 13/12/23	W		6	X	X	X						Additional bottles for lab QA/QC
9	HWHB1551M	8:15 13/12/23	W		4	X	X	X						
10	HWHB005TP	8:30 13/12/23	W		6	X	X	X						Additional bottles for lab QA/QC
11	GW100/131223	8:30 13/12/23	W		4	X	X	X						
ARL	GW101/131223	8:30 13/12/23	W		4	X	X	X						Please forward to Eurofins
				TOTAL										

Environmental Division
Perth
Work Order Reference
EP2317978

Telephone : +61-8-9406 1301

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
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Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
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Ph: 08 9209 7655 E: samples.perth@alsglobal.com

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Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
SAMPLER MOBILE: 0410268727, 0434585693
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, daniel.kriel@wsp.com, claudio.vergara@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☐ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:	°C		
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tara M			
DATE/TIME: 14/12/23 15:00	DATE/TIME: 15/12 1235	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
12	WBCSGW0208	11:40 13/12/23	W		6	X	X	X						Additional bottles for lab QA/QC
13	WBCSGW0219	12:00 13/12/23	W		4	X	X	X						
14	HWHB0051P	12:30 13/12/23	W		6	X	X	X						Additional bottles for lab QA/QC
15	GW102/131223	12:30 13/12/23	W		4	X	X	X						
ARL	GW103/131223	12:30 13/12/23	W		4	X	X	X						Please forward to Eurofins
16	EEG1391R	13:00 13/12/23	W		4	X	X	X						
17	HWHB1521M	14:15 13/12/23	W		4	X	X	X						
18	RI02/131223	16:30 13/12/23	W		2	X								
19	WB18-GW04	6:40 14/12/23	W		4	X	X	X						
20	WB18-GW05	7:00 14/12/23	W		4	X	X	X						
21	WB20-GW06	7:30 14/12/23	W		4	X	X	X						
22	X57	8:20 14/12/23	W		4	X	X	X						
				TOTAL	48									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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ase tick →

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Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
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COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, claudio.vergara@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☐ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	**RECEIVED BY:**	**RELINQUISHED BY:**	**RECEIVED BY:**
Tara M			
DATE/TIME: 15:00 14/12/23	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
23	HWHB1526M	9:00 14/12/13	W		4	X	X	X							
24	MW116	11:45 14/12/13	W		4	X	X	X							
25	RI03/141223	12:15 14/12/23	W		2 ~~4~~	X									
26	TBW1736		W		2	X									
					TOTAL 12										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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☐ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: EnviroSampleNSW@eurofins.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murarrie
Phone: +617 3902 4600
Email: EnviroSampleQLD@eurofins.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: EnviroSampleVic@eurofins.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page 1 of 1

Company Name : WSP	Contact Name: Tara Meyers and China Oguoma	Purchase Order :	COC Number : 1
Office Address : 5 Spring Street, Perth, WA	Project Manager : Eduardo Ruther	PROJECT Number : PS202448	Eurofins | mgt quote ID :
	Email for results : eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com,	PROJECT Name :	Data output format: ESDAT

Special Directions & Comments :

Quote:

Eurofins | mgt ID water batch number:

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous Iron	7 days	ASLP, TCLP	7 days

Analytes

	Sample ID	Date	Matrix	PFAS Extended Suite (Ultra Trace)	Dissolved Metals M17	Major Ions (Ca, Mg, Na, K, Cl, SO4, Alkalinity) Ionic Balance, pH	1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Total Bottles	Sample comments:
	GW101/131223 8:30	13/12/23	water	X	X	X									
	GW103/131223	12:30 13/12/23	W	X	X	X									

Containers:

Relinquished By: Tara Meyers	Received By: MS
Date & Time: 15:00 14/12/23	Date & Time: 19/12 1415
Signature: Tara M	Signature: 1055491

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☐ 10 DAY ☐ Other: ☐

Method Of Shipment:
☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 9.4

Report number:

QS3009_R Issue Date: 22 August 2013 Page 1 of 1

ALS Environmental

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TODY
aboratory:
ase tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
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☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
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☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther **CONTACT PH:** +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma **SAMPLER MOBILE:** 0410268727, 0434585693
COC emailed to ALS? (YES / NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): **eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, claudio.vergara@wsp.com**
Email Invoice to (will default to PM if no other addresses are listed): **AU.AccountsPayable@wsp.com**

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☐ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tara M	SO		
DATE/TIME: 3pm 18/01/24	DATE/TIME: 19/1 13:05	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	GW100/170124	16:30 17/01/24	W		4	X	X	X						
	~~[illegible]~~	~~[illegible]~~			~~[illegible]~~									~~Please forward to Eurofins~~
2	RI02/170124	16:35 17/01/24	W		2	X								
3	X57	7:15 18/01/24	W		4	X	X	X						
4	GW102/180124	7:15 18/01/24	W		4	X	X	X						
	~~[illegible]~~	~~[illegible]~~			~~[illegible]~~									~~[illegible] Eurofins~~
5	OPDM1	8:00 18/01/24	W		4	X	X	X						
6	OPDM2	8:10 18/01/24	W		4	X	X	X						
7	EEG1391R	9:45 18/01/24	W		4	X	X	X						
8	HWHB1521M	10:20 18/01/24	W		4	X	X	X						
9	WB26-GW04	11:15 18/01/24	W		6	X	X	X						Additional bottles for lab QA/QC
10	HWHB1552M	11:45 18/01/24	W		4	X	X	X						
				TOTAL	40									

Environmental Division
Perth
Work Order Reference
EP2400745

Telephone : +61-8-9406 1301

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

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☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
SAMPLER MOBILE: 0410268727, 0434585693
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, claudio.vergara@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☐ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Tara M			
DATE/TIME: 3PM 18/01/24	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
11	MW116	15:30 16/01/24	W		4	X	X	X						
12	WB20-GW06	16:10 16/01/24	W		4	X	X	X						
13	RI01/160124	16:25 16/01/24	W		2	X								
14	HWHB1526M	7:00 17/01/24	W		4	X	X	X						
15	MWGW103D	8:40 17/01/24	W		4	X	X	X						
16	WB18-GW03D	10:00 17/01/24	W		6	X	X	X						Additional bottles for lab QA/QC
17	WB18-GW05	10:30 17/01/24	W		4	X	X	X						
18	WB18-GW04	11:15 17/01/24	W		6	X	X	X						Additional bottles for lab QA/QC
19	WBCSGW0210	14:00 17/01/24	W		6	X	X	X						Additional bottles for lab QA/QC (additi
20	WBCSGW0208	15:40 17/01/24	W		4	X	X	X						
21	WBCSGW0219	16:00 17/01/24	W		4	X	X	X						
22	HWHB0051P	16:30 17/01/24	W		4	X	X	X						
				TOTAL	52									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
SAMPLER MOBILE: 0410268727, 0434585693
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, claudio.vergara@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☐ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY: Tara M
DATE/TIME: 3PM 18/01/24

RECEIVED BY:
DATE/TIME:

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
23	HWHB0057P	12:00 18/01/24	W		4	X	X	X							
24	RI03/180124	12:30 18/01/24	W		2	X									
25	TBW167		W		2	X									
				TOTAL	8										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

8116851882

eurofins | mgt

☐ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: EnviroSampleNSW@eurofins.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murarrie
Phone: +617 3902 4600
Email: EnviroSampleQLD@eurofins.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: EnviroSampleVic@eurofins.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Page 1 of 1

Company Name : WSP

Office Address : 5 Spring Street, Perth, WA

Contact Name: Tara Meyers and China Oguoma

Project Manager : Eduardo Ruther

Email for results : eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, claudio.vergara@wsp.com

Purchase Order :

PROJECT Number PS203448

PROJECT Name :

COC Number : 1

Eurofins | mgt quote ID :

Data output format: ESDAT

Special Directions & Comments :

Quote:

Eurofins | mgt DI water batch number :

Analytes

Sample ID	Date	Matrix	PFAS Extended Suite (Ultra Trace)	Dissolved Metals M17	Major Ions (Ca, Mg, Na, K, Cl, SO4, Alkalinity), Ionic Balance, pH	1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Total Bottles	Sample comments:
GW101/170124	17/01/24	Water	X	X	X								4	
GW103/180124	18/01	Water	X	X	X								4	

Containers:

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Relinquished By: Tara Meyers
Date & Time: 3pm 18/01/24
Signature: Tara M

Received By: Hayley
Date & Time: 19/1/24 10:10
Signature:

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☐ 10 DAY ☐ Other: ☐

Method Of Shipment
☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 22.7

Report number: 1060937

QS0009_R1 Issue Date: 22 August 2013 Page 1 of 1

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Golder Associates WA

OFFICE/Site: Mount Whaleback Mine

SITE CODE: (leave blank)

PROJECT Program Code: ~~PS134766~~ PS202448 **(Not for EDMS)**

PURCHASE ORDER:

PROJECT MANAGER: ~~Christian Budimuljono~~ shane.hyde

CONTACT PH: 08 9213 7414 shane.hyde@wsp.com

SAMPLER: ~~China Oguoma, Tara Meyers~~ Yvette Feng

SAMPLER MOBILE: ~~0434536695, 0410769727~~ 0421673164

COC emailed to ALS? (YES)

EDD FORMAT (or default): BMA Envirosys

Email Reports: christian.budimuljono@wsp.com; ~~china.oguoma@wsp.com; tara.meyers@wsp.com~~ shane.hyde@wsp.com.

Email Invoice: auaccounts@golder.com.au Yvette.Feng@wsp.com.

TURNAROUND REQUIREMENTS : ☐ Standard - 5 day TAT

(Standard TAT may be longer for some tests eg. Ultra Trace Organics) ☐ Non Standard TAT (List due date):

ALS QUOTE NO.:

ALS Project Manager: Kelly Schafer +61 7 4978 7944

COC SEQUENCE NUMBER (Circle)

COC: [✓ 1] 2 3 4 5 6 7

OF: [✓ 1] 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen icebricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Yvette Feng			
DATE/TIME: 2/6/23 1630	DATE/TIME: 6/6 1240	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS							ANALYSIS REQUIRED including SUITES						Field Data				Additional Information
LAB ID	SAMPLE ID	DATE / TIME		MATRIX	SUBMATRIX (Do not change this column)	CONTAINER TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL NO. CONTAINERS	PFAS Extended Suite (Ultra Trace)	metals ~~TRH (C6-40)/BTEX/PAH (W-7)~~	~~TRH (C6-C40) (EP080/071)~~	~~Natural Attenuation Indicators (W-28)~~	~~Nutrients (NT-5)~~	~~Total Coliform & E. Coli~~	~~Dissolved Oxygen (mg/L)~~ physical parameters	major ions EC	pH (pH units)	Free Chlorine (mg/L)	- Comments on likely contamination, dilutions samples for QC analysis etc.
1	TB602	n.d.		Water	ADHOC		2	X	~~X~~					~~X~~				
2	RS01	2/6/23	1500	Water	ADHOC		2	X	~~X~~					~~X~~				
3	EEG0917DM/S0020623		1/6/23 0925		ADHOC		4	X	X					X				
4	HWHB1547M	1/6/23	1050	Water	ADHOC		4	X	X					X				
5	MGW103D	2/6/22	1230	Water	ADHOC		4	X	X					X				
6	WB20-GW06/S0020623		2/6/23	Water	ADHOC		4	X	X					X				
7	WBCSGW0219	1/6/23	1420	Water	ADHOC		4	X	X					X				
8	HWHB1521M	1/6/23	0900	Water	ADHOC		4	X	X					X				
9	WB18-GW03D	2/6/23	1330	Water	ADHOC		4	X	X					X				
10	EEG1391R	1/6/23	0940	Water	ADHOC		4	X	X					X				
11	WBCSGW0208	1/6/22	1500	Water	ADHOC		4	X	X					X				
12	WBCSGW0210	1/6/23	1630	Water	ADHOC		4	X	X					X				
13	HWHB1526M	1/6/23	1140	Water	ADHOC		4	X	X					X				
				Water	ADHOC			~~X~~	~~X~~					X				
				Water	ADHOC									~~X~~				
				Water	ADHOC													
						TOTAL	48											

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic

V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;

Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
Perth
Work Order Reference
EP2307401

Telephone : +61-8-9406 1301

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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Ph: 07 4944 0177 E: mackay@alsglobal.com

☐MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

☐MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

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☐NOWRA 4/13 Geary Place North Nowra NSW 2541
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☐PERTH 10 Hod Way Malaga WA 6090
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☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: Spring St Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
SAMPLER: Sachin Brennan
SAMPLER MOBILE: 0409 707 059
COC emailed to ALS? ([✓ YES] / NO)
EDD FORMAT (or default): ESDAT
Email Reports to (will default to PM if no other addresses are listed): sachin.brennan@wsp.com, daniel.kriel@wsp.com, pablo.ortega@wsp.com, eduardo.ruther@wsp.com, China-oguama@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 [✓ 2] 3 4 5 6 7

FOR LABORAT
Custody Seal Intac
Free ice / frozen ic receipt?
Random Sample T
Other comment:

RELINQUISHED BY: Sachin Brennan
DATE/TIME:

RECEIVED BY:
DATE/TIME: 16/6 11am

RELINQUISHED BY:
DATE/TIME:

Environmental Division
Perth
Work Order Reference
EP2308079
Telephone : - 61-8-9406 1301

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract s Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS ultra trace long suite (EP231X-SUT)	Water quality parameters NT-01 & 02 and pH (EA005: pH)	Total metal W-03T						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	WBCSGW0210	14/6/23 1:30	W		6	Y	X	X						extra PFAS for Lab
2	MW116	14/6/23 2:10	W		4	X	X	X						
3	HWHB1520M	14/6/23 2:20	W		4	X	X	X						
4	~~R002~~ R102	14/6/23 2:30	W		2	X								
5	OPDM01	14/6/23 3:45	W		4	X	X	X						
6	OPDM02	14/6/23 4:00	W		4	X	X	X						
7	MWGW103D	15/6/23 8:15	W		4	X	X	X						
8	WB18-GW03D	15/6/23 9:10	W		6	X	X	X						Extra PFAS for Lab Duplicate.
9	WB18-GW04	15/6/23 11:20	W		4	X	X	X						
10	WB18-GW05	15/6/23 11:50	W		4	X	X	X						
11	WB20-GW06	15/6/23 12:20	W		4	X	X	X						
12	R103	15/6/23	W		2	X								
				TOTAL	15									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com

☐BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

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Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: WSP
OFFICE: Springs Street Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 [✓ 2] 3 4 5 6 7
OF: 1 [✓ 2] 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

SAMPLER: Sachin Brennan
SAMPLER MOBILE: 0409 707 059
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default): ESDAT
Email Reports to (will default to PM if no other addresses are listed): sachin.brennan@wsp.com, daniel.kriel@wsp.com, pablo.ortega@wsp.com, eduardo.ruther@wsp.com, China.Oguoma@wsp.com
Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

RELINQUISHED BY: Sachin Brennan
DATE/TIME: 15-06-23

RECEIVED BY:
DATE/TIME:

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS ultra trace long suite (EP231X-SUT)	Water quality parameters NT-01 & 02 and pH (EA005: pH)	Total metal W-03T						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	X57	13/6/23 14:00	W		4	X	X	X						
14	R101	13/6/23 14:30	W		2	X	~~X~~	~~X~~						
15	WB26-GW04	14/6/23 7:30	W		4	X	X	X						
16	QA01	14/6/23 7:50	W		4	X	X	X						
17	HWHB1551M	14/6/23 8:40	W		4	X	X	X						
18	QA03	14/6/23 8:40	W		4	X	X	X						
19	WBCSGW0219	14/6/23 10:20	W		6	X	X	X						Extra PFAS for Lab
20	EEG1391R	14/6/23 11:00	W		4	X	X	X						
21	HWHB1547M	14/6/23 11:30	W		4	X	X	X						
22	HWHB1521M	14/6/23 12:00	W		4	X	X	X						
23	TBW720		W		2									
					~~42~~									
				TOTAL	42									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY RECORD

☐ Sydney Laboratory

☐ Brisbane Laboratory

☐ Perth Laboratory

☐ Melbourne Laboratory

Company: WSP

Address: Level 3, Mia Yellagonga Tower 2, 5 Spring Street, Perth WA 6000

Contact Name: Sachin Brennan

Phone №: +61 400 737 059

Special Directions:

Purchase Order:

Quote ID №:

Project №: PS202445

Project Name: BHP OB29

Project Manager: Eduardo Cutler

EDD Format: Esdat

Sampler(s): Sachin Brennan

Handed over by: Sachin Brennan

Email for Invoice: sachin.brennan@wsp.com, AU.AccountsPayable@wsp.com

Email for Results: sachin.brennan@wsp.com, daniel.ariel@wsp.com, pablo.ortega@wsp.com

Analyses

No	Client Sample ID	Depth (m)	Sampled Date/Time	Matrix	PFAS ultra trace long suite (EP231X-SUT)	Water quality parameters NT-01 & 02 and pH (EA005: pH)	Total metals [illegible]
1	QA02		14/6/23	W	X	X	X
2	QA64		14/6/23	W	X	X	X

Containers: 500mL Plastic; 250mL Plastic; 125mL Plastic; 200mL Amber Glass; 40mL VOA Vial; 500mL PFAS Bottle; Jar (Glass or HDPE); Other (Asbestos in Soil Bags, [illegible])

Required Turnaround Time (TAT)

* Surcharge will apply

☐ Overnight (reporting by 9am)*

☐ Same day* ☐ 1 day*

☐ 2 days* ☐ 3 days*

☒ 5 days (Standard)

☐ Other (   )

Sample Comments / Dangerous Goods Hazard Warning

Total Counts

Method of Shipment: ☐ Courier (#   ) ☐ Hand Delivered ☐ Postal

Name: Sachin Brennan

Signature: SB

Date:

Time:

Laboratory Use Only

Received By: Raphaella

SYD | BNE | MEL | PER | ADL | NTL | DRW

Signature: ellor

Date: 16/6/23

Time: 09:20

Temperature: 7.9°C

Report №:

Received By:

SYD | BNE | MEL | PER | ADL | NTL | DRW

Signature:

Date:

Time:

100176S

Eurofins Environment Testing Australia Pty Ltd

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
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Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
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Ph: 08 9209 7655 E: samples.perth@alsg

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
Bohle QLD 4818
mental@alsglobal.com
Wollongong NSW 2500
sglobal.com

Environmental Division
Perth
Work Order Reference
EP2308844

Telephone : + 61-8-9406 1301

No N/A
No N/A
°C

D BY:

IE:

CLIENT: WSP

OFFICE: WSP Spring Street, Perth

PROJECT: PS202448

ORDER NUMBER:

PROJECT MANAGER: Eduardo Ruther

CONTACT PH: +61 8 9213 4849

SAMPLER: Tara Meyers & China Oguoma

SAMPLER MOBILE: 0410268727, 0434585693

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, daniel.kriel@wsp.com Pablo.Ortega@wsp.com

Email Invoice to (will default to PM if no other addresses are listed): AU.AccountsPayable@wsp.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☐ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6
OF: 1 2 3 4 5 6

RELINQUISHED BY: Tara M
DATE/TIME: 29/6/23 3:00

RECEIVED BY:
DATE/TIME: 30/6 11am

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	WB18-GW03D	27/6/23 14:40	W		4	X	X	X						
2	OPDM1	27/6/23 16:00	W		4	X	X	X						
3	OPDM2	27/6/23 16:55	W		4	X	X	X						
4	R101/270623	27/6/23 16:30	W		2	X								
5	WB26-GW04	28/6/23 7:30	W		4	X	X	X						
6	QA01/280623	28/6/23	W		4	X	X	X						
7	HWMB0060P	28/6/23 8:30	W		6	X	X	X						Additional bottles for lab QA/QC
8	HWMB1551M	28/6/23 8:45	W		6	X	X	X						" "
9	WBCSGW0219	28/06/23 9:15	W		4	X	X	X						
10	HWMB0051P	28/06/23 9:45	W		6	X	X	X						Additional bottles for lab QA/QC
11	HWMB1521M	28/06/23 11:15	W		4	X	X	X						
12	EEG1391RM	28/06/23 11:45	W		4	X	X	X						
				TOTAL	52									

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

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CLIENT: WSP
OFFICE: WSP Spring Street, Perth
PROJECT: PS202448
ORDER NUMBER:
PROJECT MANAGER: Eduardo Ruther
CONTACT PH: +61 8 9213 4849
SAMPLER: Tara Meyers & China Oguoma
SAMPLER MOBILE: 0410268727, 0434585693
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): eduardo.ruther@wsp.com, tara.meyers@wsp.com, china.oguoma@wsp.com, daniel.kriel@wsp.com Pablo.Ortega@wsp.com
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(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY: Tara M
DATE/TIME: 29/6/23 3:00

RECEIVED BY:
DATE/TIME:

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	PFAS Ultra Trace	Water Quality Parameters NT 01 & 02 & pH	Dissolved Metals W-3						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	MW16	28/6/23 14:40	W		4	X	X	X						
14	MWGW103D	28/6/23 15:15	W		4	X	X	X						
15	R102/280623	28/6/23 16:00	W		2	X								
16	WBCSGW0210	28/6/23 16:40	W		4	X	X	X						
17	X5T	29/6/23 8:30	W		4	X	X	X						
18	QA03/290623	29/6/23	W		4	X	X	X						
19	WB18-GW04	29/6/23 8:50	W		4	X	X	X						
20	WB18-GW05	29/6/23 9:15	W		4	X	X	X						
21	WB20-GW06	29/6/23 10:00	W		4	X	X	X						
22	R103/290623	29/6/23 10:00	W		2	X								
23	TBW803	29/6/23	W		2	X								
24	HWHB1526M	29/6/23 12:45	W		4	X	X	X						
				TOTAL	42									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Appendix B

Laboratory results

				Inorganics	Major Ions					Per- and polyfluoroalkyl substances (PFAS)																											
				Sulfate as SO4 - Turbidimetric (filtered)	Sodium (filtered)	Potassium (filtered)	Calcium (filtered)	Magnesium (filtered)	Chloride	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS (lab reported)	Sum of WA DER PFAS (n=10)	Sum of PFAS	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluoropentanoic acid (PFPeA)	Perfluorobutane sulfonic acid (PFBS)	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	Arsenic	Arsenic (filtered)	Barium	Barium (filtered)	Beryllium	Beryllium (filtered)	Boron	Boron (filtered)	Cadmium
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				1	1	1	1	1	1	0.0005	0.0002	0.0005	0.0002	0.0002	0.0002	0.002	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.05	0.05	0.0001
PFAS NEMP 2.0 2020 95% Eco Fresh Water										220	0.13																						
PFAS NEMP 2.0 2020 99% Eco Fresh Water										19	0.00023																						
PFAS NEMP 2.0 2020 Drinking Water										0.56	0.07	0.07	0.07																				
PFAS NEMP 2.0 2020 Recreational Water										10	2	2	2																				
Location Code	**Field ID**	**Date**	**Lab Report Number**																														
EEG0917DM	**EEG0917DM/50020623**	**02 Jun 2023**	**EP2307401**	42	70	4	39	32	94	<0.0005	0.0003	<0.0005	0.0003	0.0003	0.0003	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.023	0.021	<0.001	<0.001	0.15	0.18	<0.0001
EEG1391RM	**EEG1391RM**	**01 Jun 2023**	**EP2307401010**	59	72	5	65	57	75	<0.0005	0.0004	0.0011	0.0015	0.0042	0.0042	<0.002	0.0012	<0.0005	0.001	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.01	0.009	<0.001	<0.001	0.19	0.19	<0.0001
		14 Jun 2023	**EP2308079020**	49	62	5	39	42	56	<0.0005	0.0005	0.001	0.0015	0.003	0.003	<0.002	0.0007	<0.0005	0.0008	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.008		<0.001		0.16	
		28 Jun 2023	**EP2308844012**	66	69	4	62	58	88	<0.0005	0.0005	0.0012	0.0017	0.003	0.003	<0.002	0.0007	<0.0005	0.0006	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.007		<0.001		0.18	
		12 Jul 2023	**EP2309615012**	62	74	5	66	63	85	<0.0005	0.0008	0.001	0.0018	0.0028	0.0028	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.008		<0.001		0.17	
		26 Jul 2023	**EP2310242012**	78	72	5	70	64	89	<0.0005	0.0008	0.0009	0.0017	0.0031	0.0031	<0.002	0.0007	<0.0005	0.0007	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.008		<0.001		0.18	
		09 Aug 2023	**EP2311014020**	85	74	5	70	64	124	<0.0005	0.0003	<0.0005	0.0003	0.0003	0.0003	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.009		<0.001		0.12	
		11 Oct 2023	**EP2314412018**	37.5	79	4	72	63	139	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.009		<0.001		0.14	
		22 Nov 2023	**EP2316729010**	84	77	5	68	68	136	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.01		<0.001		0.18	
		13 Dec 2023	**EP2317978016**	78	75	5	72	68	136	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.009		<0.001		0.19	
		18 Jan 2024	**EP2400745007**	79	73	5	71	68	136	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.011		<0.001		0.21	
HWHB0051P	**HWHB0051P**	**28 Jun 2023**	**EP2308844010**	67	70	4	65	61	97	<0.0005	0.002	0.0022	0.0042	0.0064	0.0069	<0.002	0.0008	<0.0005	0.0008	0.0006	<0.001	<0.001	<0.001	<0.001		<0.001		0.011		<0.001		0.19	
		12 Jul 2023	**EP2309615010**	63	72	4	66	62	94	<0.0005	0.002	0.0024	0.0044	0.0062	0.0062	<0.002	0.0009	<0.0005	0.0009	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.013		<0.001		0.17	
		26 Jul 2023	**EP2310242010**	75	70	4	65	62	91	<0.0005	0.0019	0.0021	0.004	0.0058	0.0058	<0.002	0.0009	<0.0005	0.0009	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.011		<0.001		0.16	
		09 Aug 2023	**EP2311014017**	73	70	4	64	62	98	<0.0005	0.0015	0.0019	0.0034	0.0051	0.0051	<0.002	0.0009	<0.0005	0.0008	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.012		<0.001		0.13	
		11 Oct 2023	**EP2314412015**	30.5	74	4	69	59	106	<0.0005	0.0018	0.002	0.0038	0.0069	0.0069	<0.002	0.001	0.0007	0.0009	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.012		<0.001		0.14	
		22 Nov 2023	**EP2316729008**	70	73	5	63	66	103	0.0011	0.0033	0.0023	0.0056	0.0226	0.0238	<0.002	0.0066	0.0025	0.0061	0.0007	<0.001	<0.001	<0.001	<0.001		<0.001		0.014		<0.001		0.19	
		13 Dec 2023	**EP2317978014**	64	71	4	66	64	95	<0.0005	0.0017	0.0022	0.0039	0.0069	0.0069	<0.002	0.0011	<0.0005	0.0008	0.0006	<0.001	<0.001	<0.001	<0.001		<0.001		0.012		<0.001		0.19	
		17 Jan 2024	**EP2400745022**	61	70	4	67	63	103	<0.0005	0.0019	0.0025	0.0044	0.0081	0.0081	<0.002	0.0012	0.0006	0.0013	0.0006	<0.001	<0.001	<0.001	<0.001		<0.001		0.013		<0.001		0.22	
HWHB0057P	**HWHB0057P**	**11 Oct 2023**	**EP2314412013**	24	68	5	58	47	118	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.024		<0.001		0.18	
		22 Nov 2023	**EP2316729005**	52	62	5	51	49	109	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.023		<0.001		0.22	
		13 Dec 2023	**EP2317978010**	49	62	5	52	49	106	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.024		<0.001		0.22	
		18 Jan 2024	**EP2400745023**	52	62	5	55	49	108	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.025		<0.001		0.26	
HWHB0060P	**HWHB0060P**	**28 Jun 2023**	**EP2308844007**	60	80	5	60	49	110	<0.0005	<0.0002	<0.0005	0.0005	0.0005	0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.021		<0.001		0.18	
		12 Jul 2023	**EP2309615006**	56	78	5	55	48	107	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.021		<0.001		0.16	
		26 Jul 2023	**EP2310242006**	64	77	5	60	49	106	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.019		<0.001		0.16	
		09 Aug 2023	**EP2311014012**	61	73	5	54	46	108	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.02		<0.001		0.11	
		11 Oct 2023	**EP2314412010**	23.5	75	5	56	45	112	<0.0005	0.0006	<0.0005	0.0006	0.0006	0.0006	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.018		<0.001		0.15	
		22 Nov 2023	**EP2316729006**	54	63	5	54	50	113	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.025		<0.001		0.21	
		13 Dec 2023	**EP2317978008**	51	62	5	53	48	108	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.024		<0.001		0.22	
HWHB1151M	**HWHB1151M**	**14 Jun 2023**	**EP2308079**	72	84	7	54	52	135	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.24	
HWHB1521M	**HWHB1521M**	**01 Jun 2023**	**EP2307401008**	53	72	4	67	58	73	0.0006	0.0022	0.0041	0.0063	0.0227	0.0236	0.004	0.0046	0.0021	0.0039	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.016	0.009	<0.001	<0.001	0.2	0.2	<0.0001
		14 Jun 2023	**EP2308079022**	56	72	4	68	61	75	0.0006	0.0023	0.0041	0.0064	0.0217	0.0226	0.0035	0.0039	0.0018	0.0044	0.0011	<0.001	<0.001	<0.001	<0.001		<0.001		0.009		<0.001		0.18	
		28 Jun 2023	**EP2308844011**	62	71	4	70	61	90	0.0007	0.0026	0.0039	0.0065	0.0229	0.0236	0.0031	0.0048	0.002	0.0047	0.0011	<0.001	<0.001	<0.001	<0.001		<0.001		0.01		<0.001		0.2	
		12 Jul 2023	**EP2309615013**	58	74	4	70	65	75	0.0007	0.0025	0.0039	0.0064	0.0219	0.0226	0.0034	0.0041	0.002	0.0043	0.001	<0.001	<0.001	<0.001	<0.001		<0.001		0.01		<0.001		0.18	
		26 Jul 2023	**EP2310242013**	68	71	4	68	63	88	0.0006	0.0024	0.0037	0.0061	0.0216	0.0224	0.0036	0.004	0.0017	0.0045	0.0011	<0.001	<0.001	<0.001	<0.001		<0.001		0.012		<0.001		0.19	
		09 Aug 2023	**EP2311014019**	70	71	4	68	62	90	<0.0005	0.0022	0.0033	0.0055	0.0186	0.0192	0.003	0.0039	0.0016	0.0031	0.001	<0.001	<0.001	<0.001	<0.001		<0.001		0.012		<0.001		0.16	
		11 Oct 2023	**EP2314412017**	27	73	4	68	58	97	<0.0005	0.0024	0.0034	0.0058	0.0185	0.0192	0.0033	0.0036	0.0017	0.0031	0.001	<0.001	<0.001	<0.001	<0.001		<0.001		0.013		<0.001		0.16	
		22 Nov 2023	**EP2316729009**	52	72	4	63	66	91	<0.0005	0.0019	0.0025	0.0044	0.0166	0.0174	0.0024	0.0032	0.0013	0.0036	0.0012	<0.001	<0.001	<0.001	<0.001		<0.001		0.014		<0.001		0.2	
		13 Dec 2023	**EP2317978017**	56	71	4	66	64	87	0.0006	0.0021	0.003	0.0051	0.0169	0.0175	0.003	0.0033	0.0013	0.0025	0.0011	<0.001	<0.001	<0.001	<0.001		<0.001		0.012		<0.001		0.21	
		18 Jan 2024	**EP2400745008**	56	68	4	66	62	88	0.0032	0.0032	0.0032	0.0032	0.0024	0.003	0.0024	0.0032	0.0032	0.0032	0.0032	0.003	0.003	<0.001	<0.001		<0.001		0.014		<0.001		0.24	
HWHB1526M	**HWHB1526M**	**01 Jun 2023**	**EP2307401013**	338	258	4	144	118	552	0.006	0.0021	0.04	0.0421	0.198	0.212	0.0111	0.0571	0.011	0.0256	0.0185	<0.001	0.027	<0.001	<0.001	<0.001	<0.001	0.05	0.038	<0.001	<0.001	0.44	0.48	<0.0001
		14 Jun 2023	**EP2308079003**	325	256	4	144	120	534	0.0029	0.0016	0.0292	0.0308	0.129	0.14	0.0086	0.03	0.0064	0.0174	0.0161	<0.001	0.017	<0.001	<0.001		<0.001		0.034		<0.001		0.44	
		29 Jun 2023	**EP2308844024**	319	256	4	146	124	522	0.0026	0.0011	0.0257	0.0268	0.116	0.127	0.0066	0.0296	0.006	0.0162	0.0146	<0.001	0.014	<0.001	<0.001		<0.001		0.033		<0.001		0.45	
		13 Jul 2023	**EP2309615022**	312	266	4	142	125	520	0.0024	0.0012	0.0243	0.0255	0.111	0.122	0.0078	0.0257	0.0058	0.0162	0.0132	<0.001	0.014	<0.001	<0.001		<0.001		0.034		<0.001		0.45	
		27 Jul 2023	**EP2310242015**	340	252	4	144	121	536	0.0021	0.0018	0.0212	0.023	0.109	0.119	0.0074	0.0276	0.0064	0.0166	0.0128	<0.001	0.013	<0.001	<0.001		<0.001		0.035		<0.001		0.46	
		08 Aug 2023	**EP2311014004**	330	244	4	132	118	558	0.0017	0.0008	0.0177	0.0185	0.0816	0.0891	0.0056	0.0216	0.0049	0.0112	0.0101	<0.001	0.008	<0.001	<0.001		<0.001		0.032		<0.001		0.44	
		10 Oct 2023	**EP2314412006**	157.5	254	4	139	111	553	0.0019	0.0011	0.0179	0.019	0.0772	0.0838	0.0057	0.0185	0.0051	0.0102	0.0088	<0.001	0.008	<0.001	<0.001		<0.001		0.031		<0.001		0.43	
		14 Dec 2023	**EP2317978023**	346	247	4	129	116	500	0.0022	0.0011	0.0178	0.0189	0.0764	0.089	0.0056	0.0181	0.0045	0.0097	0.0094	<0.001	0.008	<0.001	<0.001		<0.001		0.031		<0.001		0.5	
		17 Jan 2024	**EP2400745014**	315	237	4	126	113	494	0.0024	0.001	0.0208	0.0218	0.0849	0.0924	0.0066	0.0189	0.0054	0.0138	0.009	<0.001	0.007	<0.001	<0.001		<0.001		0.034		<0.001		0.53	
HWHB1547M	**HWHB1547M**	**01 Jun 2023**	**EP2307401**	137	70	5	44	18	92	0.0191	0.0006	<0.0005	0.0006	0.0793	0.0811	0.0173	0.0082	0.0054	0.008	0.0037	<0.001	0.017	<0.001	<0.001	0.004	0.002	0.036	0.027	<0.001	<0.001	0.79	0.47	<0.0001
		14 Jun 2023	**EP2308079**	112	51	5	43	17	74	0.015	0.0012	<0.0005	0.0012	0.052	0.0541	<0.002	0.0067	0.0044	0.0087	<0.0090	<0.001	0.016	<0.001	<0.001		0.004		0.03		<0.001		0.62	
HWHB1551M	**HWHB1551M**	**28 Jun 2023**	**EP2308844008**	68	78	6	60	52	119	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.009		<0.001		0.24	
		12 Jul 2023	**EP2309615008**	61	74	6	56	50	109	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.01		<0.001		0.2	
		26 Jul 2023	**EP2310242008**	64	70	5	57	49	99	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.011		<0.001		0.18	
		09 Aug 2023	**EP2311014014**	61	68	5	52	47	108	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.011		<0.001		0.15	
		11 Oct 2023	**EP2314412012**	39.5	69	5	57	45	108	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.012		<0.001		0.17	
		22 Nov 2023	**EP2316729003**	71	77	5	54	53	121	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.012		<0.001		0.25	
		13 Dec 2023	**EP2317978009**	72	84	6	55	55	137	0.0035	<0.0002	<0.0005	<0.0002	0.0084	0.0084	<0.002	0.0007	<0.0005	0.0006	0.0006	<0.001	0.003	<0.001	<0.001		<0.001		0.008		<0.001		0.27	
		18 Jan 2024	**EP2400745010**	76	82	6	56	53	143	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.003		<0.001		0.31	
MW116	**MW116**	**14 Jun 2023**	**EP2308079002**	66	188	14	47	54	220	0.0006	0.0051	0.0026	0.0077	0.01	0.01	0.012	<0.0005	<0.0005	0.001	0.0007	<0.001	<0.001	<0.001	<0.001		0.002		0.282		<0.001		0.39	
		28 Jun 2023	**EP2308844013**	87	182	14	49	54	233	0.0009	0.0052	0.0024	0.0076	0.0124	0.0124	<0.002	0.0007	0.0016	0.001	0.0006	<0.001	<0.001	<0.001	<0.001		<0.001		0.269		<0.001		0.38	
		12 Jul 2023	**EP2309615014**	77	201	15	49	56	236	0.0007	0.0049	0.0028	0.0077	0.0114	0.0114	0.006	0.0006	0.0006	0.0012	0.0006	<0.001	<0.001	<0.001	<0.001		0.002		0.261		<0.001		0.42	
		27 Jul 2023	**EP2310242017**	83	179	15	47	53	230	0.0006	0.0048	0.0023	0.0071	0.0108	0.0108	0.005	<0.0005	0.0006	0.0013	0.0007	<0.001	<0.001	<0.001	<0.001		0.002		0.331		<0.001		0.37	
		08 Aug 2023	**EP2311014005**	94	181	14	46	54	246	0.0008	0.005	0.0009	0.0059	0.009	0.009	0.0078	<0.0005	0.0006	0.0012	<0.0005	<0.001	<0.001	<0.001	<0.001		0.002		0.339		<0.001		0.34	
		10 Oct 2023	**EP2314412004**	41	187	14	51	55	237	<0.0005	0.0046	0.002	0.0066	0.0084	0.0084	0.002	<0.0005	0.0005	0.0007	0.0006	<0.001	<0.001	<0.001	<0.001		0.003		0.149		<0.001		0.4	
		23 Nov 2023	**EP2316729013**	93	197	14	46	59	248	0.0012	0.0061	0.0019	0.008	0.02	0.02	0.0048	0.0012	0.001	0.0026	0.0012	<0.001	<0.001	<0.001	<0.001		0.004		0.127		<0.001		0.45	
		14 Dec 2023	**EP2317978024**	102	197	16	48	61	239	0.0014	0.0055	0.0028	0.0083	0.0252	0.0262	0.0059	0.0029	0.0023	0.0035	0.0009	<0.001	<0.001	<0.001	<0.001		0.004		0.212		<0.001		0.48	
		16 Jan 2024	**EP2400745011**	99	178	16	48	59	232	0.0014	0.0044	0.0027	0.0071	0.0211	0.0211	0.0052	0.0018	0.0016	0.0032	0.0008	<0.001	<0.001	<0.001	<0.001		0.005		0.183		<0.001		0.5	
MWGW103d	**MWGW103d**	**02 Jun 2023**	**EP2307401005**	87	63	2	183	106	464	0.0308	0.019	0.337	0.356	1.96	2.06	0.217	0.502	0.205	0.561	0.0853	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.043	0.043	<0.001	<0.001	0.12	0.14	<0.0001
		15 Jun 2023	**EP2308079007**	89	60	2	182	109	435	0.0303	0.0167	0.327	0.344	2.33	2.42	0.246	0.63	0.255	0.735	0.087	<0.001	<0.001	<0.001	<0.001		<0.001		0.037		<0.001		0.12	
		28 Jun 2023	**EP2308844014**	101	59	2	169	104	422	0.032	0.0171	0.308	0.325	2.12	2.22	0.266	0.446	0.234	0.731	0.0853	<0.001	<0.001	<0.001	<0.001		<0.001		0.042		<0.001		0.14	
		12 Jul 2023	**EP2309615015**	96	62	2	179	111	425	0.0306	0.0149	0.314	0.329	2.14	2.23	0.237	0.516	0.261	0.699	0.0689	<0.001	<0.001	<0.001	<0.001		<0.001		0.038		<0.001		0.11	
		27 Jul 2023	**EP2310242016**	99	62	2	179	107	460	0.0234	0.0166	0.327	0.344	2.32	2.42	0.273	0.598	0.263	0.74	0.0791	<0.001	<0.001	<0.001	<0.001		<0.001		0.038		<0.001		0.11	
		08 Aug 2023	**EP2311014006**	96	60	2	173	107	457	0.0275	0.0169	0.309	0.326	2.06	2.16	0.236	0.598	0.257	0.544	0.0727	0.002	<0.001	<0.001	<0.001		<0.001		0.038		<0.001		0.08	
		10 Oct 2023	**EP2314412005**	48.5	62	2	188	106	470	0.0316	0.0178	0.248	0.266	1.8	1.91	0.186	0.485	0.269	0.467	0.0959	<0.001	<0.001	<0.001	<0.001		<0.001		0.056		<0.001		0.1	
		23 Nov 2023	**EP2316729020**	127	59	2	159	110	428	0.0381	0.022	0.301	0.323	2.26	2.4	0.235	0.617	0.28	0.642	0.121	<0.001	<0.001	<0.001	<0.001		<0.001		0.042		<0.001		0.13	
		12 Dec 2023	**EP2317978001**	133	56	2	163	104	404	0.0333	0.0128	0.289	0.302	2.24	2.34	0.293	0.603	0.309	0.633	0.0648	<0.001	<0.001	<0.001	<0.001		<0.001		0.036		<0.001		0.12	
		17 Jan 2024	**EP2400745015**	130	55	2	157	100	378	0.0465	0.0187	0.342	0.361	2.4	2.5	0.306	0.514	0.364	0.735	0.0711	<0.001	<0.001	<0.001	<0.001		<0.001		0.043		<0.001		0.16	
OPDM01	**OPDM01**	**14 Jun 2023**	**EP2308079005**	44	43	8	33	25	65	<0.0005	0.002	<0.0005	0.002	0.0176	0.0176	0.0102	<0.0005	<0.0005	0.0054	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.042		<0.001		0.12	
		27 Jun 2023	**EP2308844002**	53	43	8	33	25	84	<0.0005	0.0024	<0.0005	0.0024	0.0024	0.0024	0.008	0.0016	<0.0005	0.0016	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.042		<0.001		0.14	
		11 Jul 2023	**EP2309615002**	52	49	8	35	27	84	<0.0005	0.0017	<0.0005	0.0017	0.0065	0.0065	<0.002	<0.0005	<0.0005	0.0048	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.039		<0.001		0.14	
		25 Jul 2023	**EP2310242002**	62	48	8	33	28	87	<0.0005	0.0006	<0.0005	0.0006	0.0049	0.0049	0.0081	<0.0005	<0.0005	0.0043	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.032		<0.001		0.13	
		07 Aug 2023	**EP2311014001**	64	52	8	31	30	102	<0.0005	0.0009	<0.0005	0.0009	0.0009	0.0009	0.0078	0.0016	0.0016	0.0016	<0.0005	0.002	<0.001	<0.001	<0.001		<0.001		0.02		<0.001		0.14	
		09 Oct 2023	**EP2314412001**	29	68	6	14	32	134	<0.0005	0.0017	<0.0005	0.0017	0.0029	0.0029	0.0081	0.0012	0.0005	0.0016	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.014		<0.001		0.14	
		23 Nov 2023	**EP2316729017**	78	87	8	16	44	177	<0.0005	0.0021	<0.0005	0.0021	0.0021	0.0021	0.0079	0.0016	<0.0005	0.0016	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.018		<0.001		0.21	
		12 Dec 2023	**EP2317978004**	80	106	11	18	50	217	<0.0005	0.0033	<0.0005	0.0033	0.0033	0.0033	0.0081	<0.0005	<0.0005	0.0016	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.026		<0.001		0.22	
		18 Jan 2024	**EP2400745005**	108	130	14	18	64	272	<0.0005	0.0012	<0.0005	0.0012	0.0012	0.0012	0.0159	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.027		<0.001		0.28	
OPDM02	**OPDM02**	**14 Jun 2023**	**EP2308079006**	44	42	8	33	24	65	<0.0005	0.0064	<0.0005	0.0064	0.0154	0.0154	0.004	<0.0005	<0.0005	0.005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.04		<0.001		0.11	
		27 Jun 2023	**EP2308844003**	52	43	8	34	24	84	<0.0005	0.0013	<0.0005	0.0013	0.0013	0.0013	0.0079	0.0016	<0.0005	0.0016	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.044		<0.001		0.13	
		11 Jul 2023	**EP2309615003**	53	48	8	36	28	86	<0.0005	0.0017	<0.0005	0.0017	0.0066	0.0066	<0.002	<0.0005	<0.0005	0.0049	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.037		<0.001		0.13	
		25 Jul 2023	**EP2310242003**	60	49	8	34	28	88	<0.0005	0.0006	<0.0005	0.0006	0.0049	0.0049	0.0082	<0.0005	<0.0005	0.0043	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.032		<0.001		0.13	
		07 Aug 2023	**EP2311014002**	63	53	8	30	30	102	<0.0005	0.0008	<0.0005	0.0008	0.0008	0.0008	0.0078	0.0016	<0.0005	0.0016	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.022		<0.001		0.14	
		09 Oct 2023	**EP2314412002**	28.5	67	6	15	33	131	<0.0005	0.0011	<0.0005	0.0011	0.0025	0.0025	0.008	0.0014	<0.0005	0.0016	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.012		<0.001		0.14	
		23 Nov 2023	**EP2316729018**	70	86	8	16	45	177	<0.0005	0.0009	<0.0005	0.0009	0.0009	0.0009	0.0078	0.0016	<0.0005	0.0016	0.001	<0.001	<0.001	<0.001	<0.001		<0.001		0.019		<0.001		0.2	
		12 Dec 2023	**EP2317978005**	61	130	43	19	63	282	<0.0005	0.001	<0.0005	0.001	0.001	0.001	0.0167	<0.0005	<0.0005	0.0033	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.047		<0.001		0.28	
		18 Jan 2024	**EP2400745006**	104	126	13	17	62	267	<0.0005	0.0007	<0.0005	0.0007	0.0007	0.0007	0.0163	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.029		<0.001		0.28	

				Inorganics	Major Ions					Per- and polyfluoroalkyl substances (PFAS)																							
				Sulfate as SO4 - Turbidimetric (filtered)	Sodium (filtered)	Potassium (filtered)	Calcium (filtered)	Magnesium (filtered)	Chloride	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS (lab reported)	Sum of WA DER PFAS (n=10)	Sum of PFAS	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluoropentanoic acid (PFPeA)	Perfluorobutane sulfonic acid (PFBS)	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	Arsenic	Arsenic (filtered)	Barium	Barium (filtered)	Beryllium	Beryllium (filtered)	Boron	Boron (filtered)	Cadmium
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				1	1	1	1	1	1	0.0005	0.0002	0.0005	0.0002	0.0002	0.0002	0.002	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.05	0.05	0.0001
PFAS NEMP 2.0 2020 95% Eco Fresh Water										220	0.13																						
PFAS NEMP 2.0 2020 99% Eco Fresh Water										19	0.00023																						
PFAS NEMP 2.0 2020 Drinking Water										0.56	0.07	0.07	0.07																				
PFAS NEMP 2.0 2020 Recreational Water										10	2	2	2																				
Location Code	**Field ID**	**Date**	**Lab Report Number**																														
WB18-GW03D	**WB18-GW03D**	**02 Jun 2023**	**EP2307401009**	92	117	3	93	74	254	0.0151	0.106	0.152	0.258	0.61	0.697	0.0758	0.06	0.0598	0.0679	0.0229	<0.001	0.051	<0.001	<0.001	<0.001	<0.001	0.009	0.002	<0.001	<0.001	0.29	0.31	<0.0001
		15 Jun 2023	**EP2308079008**	68	114	3	93	77	216	0.0174	0.128	0.159	0.287	0.705	0.803	0.0846	0.0687	0.0735	0.0985	0.0281	<0.001	0.047	<0.001	<0.001		<0.001		0.003		<0.001		0.28	
		27 Jun 2023	**EP2308844001**	100	111	3	93	75	249	0.0157	0.101	0.162	0.263	0.647	0.739	0.0782	0.0683	0.068	0.0897	0.0222	<0.001	0.042	<0.001	<0.001		<0.001		0.003		<0.001		0.29	
		12 Jul 2023	**EP2309615016**	86	119	3	100	82	255	0.0143	0.108	0.15	0.258	0.559	0.651	0.0697	0.0439	0.0517	0.0707	0.0221	<0.001	0.029	<0.001	<0.001		<0.001		0.002		<0.001		0.27	
		27 Jul 2023	**EP2310242022**	105	106	3	93	76	248	0.0115	0.102	0.126	0.228	0.497	0.578	0.0604	0.0427	0.0476	0.0649	0.0233	<0.001	0.019	<0.001	<0.001		<0.001		0.002		<0.001		0.26	
		08 Aug 2023	**EP2311014009**	96	108	3	92	76	253	0.0134	0.0994	0.145	0.244	0.544	0.633	0.0768	0.0492	0.054	0.0636	0.0224	<0.001	0.02	<0.001	<0.001		<0.001		0.002		<0.001		0.22	
		12 Oct 2023	**EP2314412022**	45	121	3	105	77	262	0.0144	0.111	0.132	0.243	0.586	0.686	0.0974	0.0478	0.0575	0.0818	0.0239	<0.001	0.02	<0.001	<0.001		<0.001		0.004		<0.001		0.26	
		22 Nov 2023	**EP2316729012**	96	112	3	87	80	269	0.0134	0.106	0.111	0.217	0.534	0.623	0.0636	0.0526	0.0494	0.0855	0.038	<0.001	0.014	<0.001	<0.001		<0.001		0.003		<0.001		0.29	
		12 Dec 2023	**EP2317978002**	86	113	3	92	78	256	0.0176	0.101	0.151	0.252	0.61	0.718	0.0862	0.06	0.0675	0.0746	0.0264	<0.001	0.026	<0.001	<0.001		<0.001		0.004		<0.001		0.29	
		17 Jan 2024	**EP2400745016**	100	107	2	95	79	262	0.0171	0.0966	0.193	0.29	0.691	0.81	0.0946	0.0578	0.0724	0.112	0.0288	<0.001	0.019	<0.001	<0.001		<0.001		0.002		<0.001		0.32	
WB18-GW04	**WB18-GW04**	**15 Jun 2023**	**EP2308079009**	76	82	3	102	77	154	0.0049	0.11	0.0904	0.2	0.274	0.312	0.0092	0.0176	0.0126	0.0155	0.0139	<0.001	<0.001	<0.001	<0.001		<0.001		0.004		<0.001		0.2	
		29 Jun 2023	**EP2308844019**	90	82	3	104	77	168	0.0051	0.0802	0.084	0.164	0.239	0.277	0.0085	0.0181	0.0119	0.0151	0.0131	<0.001	0.003	<0.001	<0.001		<0.001		0.003		<0.001		0.22	
		13 Jul 2023	**EP2309615019**	82	85	3	105	80	171	0.005	0.102	0.0888	0.191	0.258	0.298	0.0089	0.0148	0.011	0.0153	0.0124	<0.001	<0.001	<0.001	<0.001		<0.001		0.002		<0.001		0.2	
		27 Jul 2023	**EP2310242020**	111	91	3	105	82	192	0.009	0.197	0.13	0.327	0.54	0.598	0.0233	0.0564	0.0375	0.0644	0.0219	<0.001	<0.001	<0.001	<0.001		<0.001		0.002		<0.001		0.18	
		09 Aug 2023	**EP2311014022**	92	81	3	99	77	173	0.0043	0.0922	0.0772	0.169	0.23	0.264	0.0076	0.015	0.011	0.0113	0.0119	<0.001	<0.001	<0.001	<0.001		<0.001		0.002		<0.001		0.14	
		12 Oct 2023	**EP2314412024**	47.5	84	3	105	73	169	0.0052	0.066	0.0665	0.132	0.208	0.24	0.0149	0.0139	0.0132	0.0163	0.0116	<0.001	<0.001	<0.001	<0.001		<0.001		0.003		<0.001		0.18	
		23 Nov 2023	**EP2316729021**	87	81	2	92	80	177	0.0054	0.0938	0.0868	0.181	0.254	0.294	0.0094	0.0167	0.0141	0.0146	0.0134	<0.001	<0.001	<0.001	<0.001		<0.001		0.002		<0.001		0.21	
		14 Dec 2023	**EP2317978019**	84	82	3	98	80	167	0.0055	0.0816	0.0811	0.163	0.23	0.265	0.0101	0.0161	0.013	0.0107	0.0119	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.22	
		17 Jan 2024	**EP2400745018**	68	64	2	94	73	147	0.0052	0.0716	0.0874	0.159	0.227	0.259	0.0095	0.0126	0.0125	0.0141	0.0138	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.21	
WB18-GW05	**WB18-GW05**	**15 Jun 2023**	**EP2308079010**	94	99	3	100	80	189	0.0105	0.172	0.171	0.343	0.558	0.618	0.0253	0.0581	0.038	0.0575	0.026	<0.001	<0.001	<0.001	<0.001		<0.001		0.002		<0.001		0.23	
		29 Jun 2023	**EP2308844020**	108	99	3	102	80	195	0.0101	0.16	0.18	0.34	0.545	0.61	0.0224	0.0579	0.0337	0.0539	0.0252	<0.001	0.002	<0.001	<0.001		<0.001		0.002		<0.001		0.24	
		13 Jul 2023	**EP2309615020**	97	103	3	105	84	196	0.0111	0.178	0.176	0.354	0.558	0.624	0.0244	0.0523	0.0342	0.0549	0.0265	<0.001	<0.001	<0.001	<0.001		<0.001		0.002		<0.001		0.22	
		27 Jul 2023	**EP2310242019**	114	96	3	102	80	198	0.0098	0.188	0.153	0.341	0.551	0.616	0.0229	0.0571	0.0355	0.0579	0.0261	<0.001	<0.001	<0.001	<0.001		<0.001		0.004		<0.001		0.2	
		09 Aug 2023	**EP2311014023**	113	97	3	96	80	198	0.0094	0.182	0.157	0.339	0.514	0.572	0.0212	0.0512	0.0303	0.0385	0.0232	<0.001	<0.001	<0.001	<0.001		<0.001		0.002		<0.001		0.14	
		12 Oct 2023	**EP2314412023**	49.5	106	3	110	83	191	0.0099	0.182	0.15	0.332	0.543	0.609	0.0339	0.0527	0.0335	0.0541	0.0265	<0.001	<0.001	<0.001	<0.001		<0.001		0.004		<0.001		0.2	
		23 Nov 2023	**EP2316729022**	110	98	3	93	85	205	0.0124	0.167	0.179	0.346	0.549	0.621	0.0227	0.0547	0.0372	0.0489	0.0274	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.23	
		14 Dec 2023	**EP2317978020**	103	98	3	100	85	205	0.011	0.162	0.152	0.314	0.505	0.568	0.0274	0.0509	0.0318	0.0438	0.0258	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.26	
		17 Jan 2024	**EP2400745017**	104	92	2	96	78	194	0.0127	0.185	0.205	0.39	0.621	0.703	0.0288	0.0554	0.0405	0.0674	0.0265	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.27	
WB20-GW06	**WB20-GW06**	**02 Jun 2023**	**EP2307401006**	116	112	4	121	91	208	0.0056	0.0493	0.0757	0.125	0.301	0.325	0.0345	0.0451	0.0317	0.0456	0.0136	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	0.003	<0.001	<0.001	0.21	0.22	<0.0001
		15 Jun 2023	**EP2308079011**	104	107	4	113	93	190	0.005	0.0453	0.0734	0.119	0.272	0.297	0.0279	0.0357	0.0258	0.0414	0.0175	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.19	
		29 Jun 2023	**EP2308844021**	109	108	3	119	93	182	0.0054	0.0625	0.0746	0.137	0.305	0.336	0.0266	0.0438	0.0266	0.0487	0.0168	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.21	
		13 Jul 2023	**EP2309615021**	105	107	3	117	94	209	0.0046	0.0489	0.0736	0.122	0.263	0.29	0.0248	0.0325	0.021	0.0406	0.0168	<0.001	<0.001	<0.001	<0.001		<0.001		0.004		<0.001		0.18	
		27 Jul 2023	**EP2310242021**	125	106	3	118	93	210	0.0045	0.0595	0.0655	0.125	0.289	0.318	0.0253	0.0407	0.0268	0.0501	0.0166	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.17	
		08 Aug 2023	**EP2311014008**	108	92	3	102	83	192	0.004	0.0434	0.0633	0.107	0.212	0.237	0.0156	0.0272	0.0179	0.026	0.0145	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.13	
		12 Oct 2023	**EP2314412025**	61.5	100	3	111	80	198	0.0044	0.045	0.0724	0.117	0.236	0.265	0.0174	0.0332	0.0218	0.026	0.0154	<0.001	<0.001	<0.001	<0.001		<0.001		0.013		<0.001		0.16	
		23 Nov 2023	**EP2316729023**	152	129	3	116	105	296	0.0078	0.0595	0.0852	0.145	0.383	0.416	0.0388	0.0651	0.0443	0.0643	0.0177	<0.001	<0.001	<0.001	<0.001		<0.001		0.004		<0.001		0.21	
		14 Dec 2023	**EP2317978021**	143	128	4	124	107	291	0.0053	0.0356	0.0664	0.102	0.265	0.292	0.0295	0.0418	0.024	0.0391	0.02	<0.001	0.003	<0.001	<0.001		<0.001		0.006		<0.001		0.22	
		16 Jan 2024	**EP2400745012**	141	114	3	117	97	265	0.0069	0.0574	0.102	0.159	0.358	0.399	0.0249	0.0447	0.0358	0.0678	0.0188	<0.001	<0.001	<0.001	<0.001		<0.001		0.007		<0.001		0.25	
WB26-GW04	**WB26-GW04**	**14 Jun 2023**	**EP2308079015**	54	103	8	60	53	168	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.25	
		28 Jun 2023	**EP2308844005**	64	86	7	58	53	154	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.004		<0.001		0.26	
		12 Jul 2023	**EP2309615005**	64	107	8	61	55	178	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.009		<0.001		0.27	
		26 Jul 2023	**EP2310242005**	68	89	8	58	57	152	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		<0.001		<0.001		0.24	
		09 Aug 2023	**EP2311014011**	70	97	8	56	51	181	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.007		<0.001		0.21	
		11 Oct 2023	**EP2314412009**	29	89	7	62	51	191	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.002		<0.001		0.23	
		22 Nov 2023	**EP2316729002**	62	87	7	53	54	177	<0.0005	<0.0002	<0.0005	<0.0002	0.005	0.005	<0.002	0.0017	0.0015	0.0013	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.26	
		13 Dec 2023	**EP2317978007**	64	103	8	55	54	180	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.27	
		18 Jan 2024	**EP2400745009**	62	99	7	55	54	186	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.007		<0.001		0.31	
WBC5GWD208	**WBC5GWD208**	**01 Jun 2023**	**EP2307401011**	66	75	4	65	55	74	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	0.004	<0.001	<0.001	0.17	0.18	<0.0001
		09 Aug 2023	**EP2311014015**	78	74	4	60	58	90	<0.0005	0.0003	<0.0005	0.0003	0.0003	0.0003	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.11	
		11 Oct 2023	**EP2314412008**	33	77	4	67	56	96	<0.0005	0.001	<0.0005	0.001	0.001	0.001	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.14	
		22 Nov 2023	**EP2316729001**	73	74	4	60	60	92	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.008		<0.001		0.22	
		13 Dec 2023	**EP2317978012**	71	74	4	64	61	86	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.18	
		17 Jan 2024	**EP2400745020**	76	70	4	64	58	90	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.007		<0.001		0.21	
WBCSGW0210	**WBCSGW0210**	**01 Jun 2023**	**EP2307401012**	53	69	4	68	59	83	<0.0005	0.0003	0.0033	0.0036	0.0108	0.0123	<0.002	0.0021	0.0018	0.0011	0.0022	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.16	0.154	<0.001	<0.001	0.17	0.18	<0.0001
		14 Jun 2023	**EP2308079001**	54	66	4	67	60	79	<0.0005	<0.0002	0.0024	0.0024	0.0079	0.0091	<0.002	0.0017	0.0013	0.0009	0.0016	<0.001	<0.001	<0.001	<0.001		<0.001		0.131		<0.001		0.14	
		28 Jun 2023	**EP2308844016**	67	64	4	64	58	89	<0.0005	0.0004	0.0018	0.0022	0.0063	0.0074	<0.002	0.0009	0.001	0.0008	0.0014	<0.001	<0.001	<0.001	<0.001		<0.001		0.099		<0.001		0.17	
		13 Jul 2023	**EP2309615018**	56	68	4	69	62	91	<0.0005	<0.0002	0.0024	0.0024	0.0067	0.0076	<0.002	0.0011	0.0011	0.0007	0.0014	<0.001	<0.001	<0.001	<0.001		<0.001		0.091		<0.001		0.15	
		27 Jul 2023	**EP2310242018**	66	65	4	68	60	88	<0.0005	0.0003	0.002	0.0023	0.0076	0.0083	<0.002	0.0014	0.0013	0.001	0.0016	<0.001	<0.001	<0.001	<0.001		<0.001		0.087		<0.001		0.14	
		08 Aug 2023	**EP2311014007**	66	63	4	64	59	96	<0.0005	0.0005	0.0021	0.0026	0.0082	0.0089	<0.002	0.0018	0.0014	0.0009	0.0015	<0.001	<0.001	<0.001	<0.001		0.002		0.075		<0.001		0.12	
		12 Oct 2023	**EP2314412021**	26.5	69	4	71	59	102	<0.0005	0.0006	0.0021	0.0027	0.0077	0.0084	<0.002	0.0015	0.0011	0.0008	0.0016	<0.001	<0.001	<0.001	<0.001		0.001		0.055		<0.001		0.13	
		23 Nov 2023	**EP2316729016**	54	68	4	63	65	97	<0.0005	0.0004	0.0021	0.0025	0.0084	0.0098	<0.002	0.0016	0.0011	0.0009	0.0023	<0.001	<0.001	<0.001	<0.001		<0.001		0.054		<0.001		0.17	
		12 Dec 2023	**EP2317978003**	54	67	4	65	64	98	<0.0005	0.0004	0.0026	0.003	0.0099	0.0112	<0.002	0.0018	0.0014	0.0007	0.003	<0.001	<0.001	<0.001	<0.001		<0.001		0.062		<0.001		0.17	
		17 Jan 2024	**EP2400745019**	58	64	3	67	61	100	<0.0005	0.0004	0.0031	0.0035	0.0112	0.0128	<0.002	0.0022	0.0019	0.0015	0.0021	<0.001	<0.001	<0.001	<0.001		<0.001		0.044		<0.001		0.2	
WBCSGW0219	**WBCSGW0219**	**01 Jun 2023**	**EP2307401007**	74	74	4	70	57	72	<0.0005	0.0026	0.0025	0.0051	0.0051	0.0051	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.008	0.007	<0.001	<0.001	0.18	0.19	<0.0001
		14 Jun 2023	**EP2308079019**	66	74	4	64	59	74	<0.0005	0.0006	<0.0005	0.0006	0.0006	0.0006	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.007		<0.001		0.15	
		28 Jun 2023	**EP2308844009**	74	79	4	73	65	88	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.19	
		12 Jul 2023	**EP2309615009**	72	77	4	69	63	85	<0.0005	0.0004	<0.0005	0.0004	0.0004	0.0004	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.16	
		26 Jul 2023	**EP2310242009**	87	73	4	70	61	83	<0.0005	0.0006	<0.0005	0.0006	0.0006	0.0006	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.16	
		09 Aug 2023	**EP2311014016**	80	73	4	63	60	92	<0.0005	0.0004	<0.0005	0.0004	0.0004	0.0004	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.12	
		11 Oct 2023	**EP2314412014**	33	76	4	70	59	95	<0.0005	0.0036	0.0029	0.0065	0.0065	0.0065	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.14	
		22 Nov 2023	**EP2316729007**	76	73	4	62	62	94	<0.0005	0.0061	0.005	0.0111	0.013	0.0146	<0.002	<0.0005	<0.0005	<0.0005	0.0014	<0.001	<0.001	<0.001	<0.001		<0.001		0.007		<0.001		0.18	
		13 Dec 2023	**EP2317978013**	65	74	4	65	63	89	0.0007	0.0094	0.0083	0.0177	0.021	0.0243	<0.002	0.0006	0.0006	<0.0005	0.0014	<0.001	<0.001	<0.001	<0.001		<0.001		0.008		<0.001		0.2	
		17 Jan 2024	**EP2400745021**	67	69	4	66	60	91	0.001	0.009	0.01	0.019	0.0235	0.0271	<0.002	0.0007	0.0008	0.0006	0.0014	<0.001	<0.001	<0.001	<0.001		<0.001		0.009		<0.001		0.22	
XD57	**XD57**	**13 Jun 2023**	**EP2308079013**	50	68	6	68	58	93	<0.0005	0.0004	0.0008	0.0012	0.0012	0.0012	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.2	
		29 Jun 2023	**EP2308844017**	59	66	6	71	58	106	<0.0005	0.0004	<0.0005	0.0004	0.0004	0.0004	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.21	
		11 Jul 2023	**EP2309615001**	55	68	6	71	59	97	<0.0005	0.0003	<0.0005	0.0003	0.0003	0.0003	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.23	
		25 Jul 2023	**EP2310242001**	63	62	6	69	56	97	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.004		<0.001		0.18	
		09 Aug 2023	**EP2311014021**	61	64	6	64	57	106	<0.0005	0.0003	<0.0005	0.0003	0.0003	0.0003	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.005		<0.001		0.14	
		12 Oct 2023	**EP2314412020**	23.5	68	6	72	55	112	<0.0005	0.0003	<0.0005	0.0003	0.0003	0.0003	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.16	
		23 Nov 2023	**EP2316729014**	61	71	6	65	63	117	<0.0005	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.22	
		14 Dec 2023	**EP2317978022**	51	62	6	65	57	100	<0.0005	0.0003	<0.0005	0.0003	0.0003	0.0003	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.007		<0.001		0.22	
		18 Jan 2024	**EP2400745003**	53	61	6	67	57	102	<0.0005	0.0003	<0.0005	0.0003	0.0003	0.0003	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001		<0.001		0.006		<0.001		0.25	

				Heavy Metals																					Sample Quality Parameters												
				Cadmium (filtered)	Chromium	Chromium (filtered)	Cobalt	Cobalt (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Selenium	Selenium (filtered)	Vanadium	Vanadium (filtered)	Zinc	Zinc (filtered)	pH (Lab)	Sulphate (as SO4) (filtered)	Bicarbonate Alkalinity (as CaCO3)	Bicarbonate Alkalinity as (HCO3)	Carbonate Alkalinity (as CaCO3)	Hydroxide Alkalinity (as CaCO3)	Total Alkalinity (as CaCO3)	Total Anions		Total Cations		Ionic Balance (Lab)	Ionic Balance (Lab)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH_Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	meq/L	meq/L	%	%
EQL				0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.0001	0.001	0.001	0.01	0.01	0.01	0.01	0.005	0.005	0.01	1	1		1	1	1	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 2020 95% Eco Fresh Water																																					
PFAS NEMP 2.0 2020 99% Eco Fresh Water																																					
PFAS NEMP 2.0 2020 Drinking Water																																					
PFAS NEMP 2.0 2020 Recreational Water																																					
Location Code	Field ID	Date	Lab Report Number																																		
EEG0917DM	EEG0917DM/50020623	02 Jun 2023	EP2307401	<0.0001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	0.067	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	7.58		283	345.26	<1	<1	283	9.18	9.18	7.73	7.73	8.6	8.6
EEG1391RM	EEG1391RM	01 Jun 2023	EP2307401010	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.017	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	0.009	<0.005	7.68	59	404	492.88	<1	<1	404	11.4	11.4	11.2	11.2	0.98	0.98
		14 Jun 2023	EP2308079020	<0.0001		<0.001		<0.001		<0.001		<0.001		0.006		<0.0001		<0.001		<0.01		<0.01		<0.005	7.7	49	302	368.44	<1	<1	302	8.63	8.63	8.23	8.23	2.41	2.41
		28 Jun 2023	EP2308844012	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.73	66	391	477.02	<1	<1	391	11.7	11.7	11	11	3.08	3.08
		12 Jul 2023	EP2309615012	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.8	62	399	486.78	<1	<1	399	11.7	11.7	11.8	11.8	0.7	0.7
		26 Jul 2023	EP2310242012	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		0.007	7.43	78	398	485.56	<1	<1	398	12.1	12.1	12	12	0.28	0.28
		09 Aug 2023	EP2311014020	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005		85	369	450.18	<1	<1	369	12.6	12.6	12.1	12.1	2.15	2.15
		11 Oct 2023	EP2314412018	0.0001		<0.000		<0.000		<0.000		<0.000		<0.000		<0.0000		<0.001		<0.01		<0.01		<0.005	7.52	37.5	354	215.94	<1	<1	354	12.6	12.6	12.3	12.3	0.96	0.96
		22 Nov 2023	EP2316729010	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	8.06	84	366		<1	<1	366	12.9	12.9	12.5	12.5	1.7	1.7
		13 Dec 2023	EP2317978016	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.78	78	382		<1	<1	382	13.1	13.1	12.6	12.6	2	2
		18 Jan 2024	EP2400745007	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.3	79	358		<1	<1	358	12.6	12.6	12.4	12.4	0.76	0.76
HWHB0051P	HWHB0051P	28 Jun 2023	EP2308844010	<0.0001		<0.001		<0.001		0.007		<0.001		0.017		<0.0001		<0.001		<0.01		<0.01		<0.005	7.9	67	387	472.14	<1	<1	387	11.9	11.9	11.4	11.4	1.94	1.94
		12 Jul 2023	EP2309615010	<0.0001		<0.001		<0.001		0.002		<0.001		0.013		<0.0001		<0.001		<0.01		<0.01		<0.005	7.73	63	391	477.02	<1	<1	391	11.8	11.8	11.6	11.6	0.62	0.62
		26 Jul 2023	EP2310242010	<0.0001		<0.001		<0.001		<0.001		<0.001		0.012		<0.0001		<0.001		<0.01		<0.01		<0.005	7.63	75	389	474.58	<1	<1	389	11.9	11.9	11.5	11.5	1.74	1.74
		09 Aug 2023	EP2311014017	<0.0001		<0.001		<0.001		0.002		<0.001		0.012		<0.0001		<0.001		<0.01		<0.01		<0.005		73	386	470.92	<1	<1	386	12	12	11.4	11.4	2.36	2.36
		11 Oct 2023	EP2314412015	<0.0001		<0.001		<0.001		0.003		<0.001		0.011		<0.0001		<0.001		<0.01		<0.01		<0.005	7.84	30.5	376	229.36	<1	<1	376	11.8	11.8	11.6	11.6	0.65	0.65
		22 Nov 2023	EP2316729008	<0.0001		<0.001		<0.001		0.008		<0.001		0.088		<0.0001		<0.001		<0.01		<0.01		0.014	7.88	70	380		<1	<1	380	12	12	11.9	11.9	0.32	0.32
		13 Dec 2023	EP2317978014	<0.0001		<0.001		<0.001		<0.001		<0.001		0.011		<0.0001		<0.001		<0.01		<0.01		<0.005	7.92	64	402		<1	<1	402	12	12	11.8	11.8	1.23	1.23
		17 Jan 2024	EP2400745022	<0.0001		<0.001		<0.001		<0.001		<0.001		0.013		<0.0001		<0.001		<0.01		<0.01		<0.005	7.58	61	377		<1	<1	377	11.7	11.7	11.7	11.7	0.14	0.14
HWHB0057P	HWHB0057P	11 Oct 2023	EP2314412013	<0.0001		<0.001		<0.001		<0.001		<0.001		0.004		<0.0001		<0.001		<0.01		<0.01		0.005	7.59	24	274	167.14	<1	<1	274	9.8	9.8	9.85	9.85	0.23	0.23
		22 Nov 2023	EP2316729005	<0.0001		<0.001		<0.001		<0.001		<0.001		0.013		<0.0001		0.002		<0.01		<0.01		0.394	8.17	52	280		<1	<1	280	9.75	9.75	9.4	9.4	1.82	1.82
		13 Dec 2023	EP2317978010	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		0.021	7.99	49	292		<1	<1	292	9.84	9.84	9.45	9.45	2.03	2.03
		18 Jan 2024	EP2400745023	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		0.024	7.71	52	289		<1	<1	289	9.9	9.9	9.6	9.6	1.54	1.54
HWHB0060P	HWHB0060P	28 Jun 2023	EP2308844007	<0.0001		<0.001		<0.001		<0.001		<0.001		0.003		<0.0001		<0.001		<0.01		<0.01		0.006	7.76	60	318	387.96	<1	<1	318	10.7	10.7	10.6	10.6	0.33	0.33
		12 Jul 2023	EP2309615006	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.71	56	319	389.18	<1	<1	319	10.6	10.6	10.2	10.2	1.65	1.65
		26 Jul 2023	EP2310242006	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.66	64	311	379.42	<1	<1	311	10.5	10.5	10.5	10.5	0.15	0.15
		09 Aug 2023	EP2311014012	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005		61	309	376.98	<1	<1	309	10.5	10.5	9.78	9.78	3.48	3.48
		11 Oct 2023	EP2314412010	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.59	23.5	296	180.56	<1	<1	296	10	10	9.89	9.89	0.82	0.82
		22 Nov 2023	EP2316729006	<0.0001		<0.001		<0.001		<0.001		<0.001		0.004		<0.0001		<0.001		<0.01		<0.01		<0.005	7.82	54	280		<1	<1	280	9.91	9.91	9.68	9.68	1.16	1.16
		13 Dec 2023	EP2317978008	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		0.006	7.8	51	294		<1	<1	294	9.98	9.98	9.42	9.42	2.9	2.9
HWHB1151M	HWHB1151M	14 Jun 2023	EP2308079	<0.0001		0.004		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.61		289	352.58	<1	<1	289	11.1	11.1	10.8	10.8	1.25	1.25
HWHB1521M	HWHB1521M	01 Jun 2023	EP2307401008	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.984	0.259	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	7.63	53	426	519.72	<1	<1	426	11.7	11.7	11.4	11.4	1.4	1.4
		14 Jun 2023	EP2308079022	<0.0001		<0.001		<0.001		<0.001		<0.001		0.293		<0.0001		<0.001		<0.01		<0.01		<0.005	7.74	56	403	491.66	<1	<1	403	11.3	11.3	11.6	11.6	1.37	1.37
		28 Jun 2023	EP2308844011	<0.0001		<0.001		<0.001		<0.001		<0.001		0.132		<0.0001		<0.001		<0.01		<0.01		<0.005	7.61	62	413	503.86	<1	<1	413	12.1	12.1	11.7	11.7	1.58	1.58
		12 Jul 2023	EP2309615013	<0.0001		<0.001		<0.001		<0.001		<0.001		0.212		<0.0001		<0.001		<0.01		<0.01		<0.005	7.69	58	417	508.74	<1	<1	417	11.6	11.6	12.2	12.2	2.14	2.14
		26 Jul 2023	EP2310242013	<0.0001		<0.001		<0.001		<0.001		<0.001		0.25		<0.0001		<0.001		<0.01		<0.01		<0.005	7.66	68	422	514.84	<1	<1	422	12.3	12.3	11.8	11.8	2.33	2.33
		09 Aug 2023	EP2311014019	<0.0001		<0.001		<0.001		<0.001		<0.001		0.27		<0.0001		<0.001		<0.01		<0.01		<0.005		70	403	491.66	<1	<1	403	12	12	11.7	11.7	1.52	1.52
		11 Oct 2023	EP2314412017	<0.0001		<0.001		<0.001		<0.001		<0.001		0.266		<0.0001		<0.001		<0.01		<0.01		<0.005	7.56	27	394	240.34	<1	<1	394	11.7	11.7	11.4	11.4	1.24	1.24
		22 Nov 2023	EP2316729009	<0.0001		<0.001		<0.001		<0.001		<0.001		0.307		<0.0001		<0.001		<0.01		<0.01		<0.005	7.81	52	405		<1	<1	405	11.7	11.7	11.8	11.8	0.29	0.29
		13 Dec 2023	EP2317978017	<0.0001		<0.001		<0.001		<0.001		<0.001		0.297		<0.0001		<0.001		<0.01		<0.01		<0.005	7.65	56	423		<1	<1	423	12.1	12.1	11.8	11.8	1.34	1.34
		18 Jan 2024	EP2400745008	<0.0001		<0.001		<0.001		<0.001		<0.001		0.322		<0.0001		<0.001		<0.01		<0.01		<0.005	7.31	56	399		<1	<1	399	11.6	11.6	11.4	11.4	0.71	0.71
HWHB1526M	HWHB1526M	01 Jun 2023	EP2307401013	<0.0001	0.017	0.003	<0.001	<0.001	0.005	<0.001	<0.001	<0.001	0.14	<0.001	0.0005	<0.0001	0.009	0.002	<0.01	<0.01	<0.01	<0.01	0.032	0.008	7.57	338	323	394.06	<1	<1	323	29.1	29.1	28.2	28.2	1.47	1.47
		14 Jun 2023	EP2308079003	<0.0001		0.003		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.47	325	306	373.32	<1	<1	306	27.9	27.9	28.3	28.3	0.63	0.63
		29 Jun 2023	EP2308844024	<0.0001		0.003		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.62	319	316	385.52	<1	<1	316	27.7	27.7	28.7	28.7	1.86	1.86
		13 Jul 2023	EP2309615022	<0.0001		0.003		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		0.006	7.69	312	321	391.62	<1	<1	321	27.6	27.6	29	29	2.59	2.59
		27 Jul 2023	EP2310242015	<0.0001		0.003		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.41	340	320	390.4	<1	<1	320	28.6	28.6	28.2	28.2	0.68	0.68
		08 Aug 2023	EP2311014004	<0.0001		0.003		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005		330	318	387.96	<1	<1	318	29	29	27	27	3.48	3.48
		10 Oct 2023	EP2314412006	<0.0001		0.002		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.34	157.5	308	187.88	<1	<1	308	28.3	28.3	27.2	27.2	1.96	1.96
		14 Dec 2023	EP2317978023	<0.0001		0.003		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.71	346	332		<1	<1	332	27.9	27.9	26.8	26.8	2.03	2.03
		17 Jan 2024	EP2400745014	<0.0001		0.003		<0.001		0.002		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.28	315	313		<1	<1	313	26.7	26.7	26	26	1.42	1.42
HWHB1547M	HWHB1547M	01 Jun 2023	EP2307401	<0.0001	0.006	<0.001	0.008	0.008	0.004	0.002	<0.001	<0.001	0.435	0.354	<0.0001	<0.0001	0.009	0.009	<0.01	<0.01	<0.01	<0.01	0.018	<0.005	6.95		97	118.34	<1	<1	97	7.38	7.38	6.85	6.85	3.76	3.76
		14 Jun 2023	EP2308079	<0.0001		<0.001		0.006		0.002		<0.001		0.37		<0.0001		0.009		<0.01		<0.01		<0.005	7.04		77	93.94	<1	<1	77	5.96	5.96	5.89	5.89	0.56	0.56
HWHB1551M	HWHB1551M	28 Jun 2023	EP2308844008	<0.0001		0.003		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.66	68	297	362.34	<1	<1	297	10.7	10.7	10.8	10.8	0.53	0.53
		12 Jul 2023	EP2309615008	<0.0001		0.002		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.51	61	306	373.32	<1	<1	306	10.4	10.4	10.3	10.3	0.85	0.85
		26 Jul 2023	EP2310242008	<0.0001		0.002		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.52	64	294	358.68	<1	<1	294	10	10	10	10	0.25	0.25
		09 Aug 2023	EP2311014014	<0.0001		0.002		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005		61	294	358.68	<1	<1	294	10.2	10.2	9.55	9.55	3.25	3.25
		11 Oct 2023	EP2314412012	<0.0001		0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.34	39.5	290	176.9	<1	<1	290	10.5	10.5	9.68	9.68	4.01	4.01
		22 Nov 2023	EP2316729003	<0.0001		0.003		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.95	71	293		<1	<1	293	10.7	10.7	10.5	10.5	1	1
		13 Dec 2023	EP2317978009	<0.0001		0.003		<0.001		<0.001		<0.001		0.02		<0.0001		<0.001		<0.01		<0.01		<0.005	7.55	72	309		<1	<1	309	11.5	11.5	11.1	11.1	2.03	2.03
		18 Jan 2024	EP2400745010	<0.0001		0.005		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.35	76	286		<1	<1	286	11.3	11.3	10.9	10.9	2.04	2.04
MW116	MW116	14 Jun 2023	EP2308079002	<0.0001		<0.001		<0.001		<0.001		<0.001		0.601		<0.0001		<0.001		<0.01		<0.01		<0.005	7.84	66	377	459.94	<1	<1	377	15.1	15.1	15.3	15.3	0.7	0.7
		28 Jun 2023	EP2308844013	<0.0001		<0.001		<0.001		<0.001		<0.001		0.58		<0.0001		<0.001		<0.01		<0.01		<0.005	7.87	87	392	478.24	<1	<1	392	16.2	16.2	15.2	15.2	3.35	3.35
		12 Jul 2023	EP2309615014	<0.0001		<0.001		<0.001		<0.001		<0.001		0.592		<0.0001		<0.001		<0.01		<0.01		<0.005	7.87	77	392	478.24	<1	<1	392	16.1	16.1	16.2	16.2	0.27	0.27
		27 Jul 2023	EP2310242017	<0.0001		<0.001		<0.001		<0.001		<0.001		0.528		<0.0001		<0.001		<0.01		<0.01		<0.005	7.85	83	380	463.6	<1	<1	380	15.8	15.8	14.9	14.9	3.04	3.04
		08 Aug 2023	EP2311014005	<0.0001		<0.001		<0.001		<0.001		<0.001		0.589		<0.0001		<0.001		<0.01		<0.01		<0.005		94	375	457.5	<1	<1	375	16.4	16.4	15	15	4.52	4.52
		10 Oct 2023	EP2314412004	<0.0001		<0.001		0.002		0.006		<0.002		0.576		<0.0001		<0.001		<0.01		<0.01		<0.005	7.64	41	372	226.92	<1	<1	372	15.8	15.8	15.6	15.6	0.83	0.83
		23 Nov 2023	EP2316729013	<0.0001		<0.001		<0.001		<0.001		<0.001		0.568		<0.0001		0.002		<0.01		<0.01		<0.005	8.06	93	393		<1	<1	393	16.8	16.8	16.1	16.1	2.15	2.15
		14 Dec 2023	EP2317978024	<0.0001		<0.001		<0.001		<0.001		<0.001		0.692		<0.0001		<0.001		<0.01		<0.01		<0.005	7.92	102	414		<1	<1	414	17.1	17.1	16.4	16.4	2.22	2.22
		16 Jan 2024	EP2400745011	<0.0001		<0.001		<0.001		<0.001		<0.001		0.685		<0.0001		<0.001		<0.01		<0.01		<0.005	7.59	99	377		<1	<1	377	16.1	16.1	15.4	15.4	2.33	2.33
MWGW103d	MWGW103d	02 Jun 2023	EP2307401005	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.03	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	7.42	87	287	350.14	<1	<1	287	20.6	20.6	20.6	20.6	0.03	0.03
		15 Jun 2023	EP2308079007	<0.0001		<0.001		<0.001		<0.001		<0.001		0.005		<0.0001		<0.001		<0.01		<0.01		<0.005	7.53	89	282	344.04	<1	<1	282	19.8	19.8	20.7	20.7	2.36	2.36
		28 Jun 2023	EP2308844014	<0.0001		<0.001		<0.001		<0.001		<0.001		0.005		<0.0001		<0.001		<0.01		<0.01		<0.005	7.59	101	293	357.46	<1	<1	293	19.9	19.9	19.6	19.6	0.64	0.64
		12 Jul 2023	EP2309615015	<0.0001		<0.001		<0.001		<0.001		<0.001		0.009		<0.0001		<0.001		<0.01		<0.01		<0.005	7.54	96	298	363.56	<1	<1	298	19.9	19.9	20.8	20.8	2.14	2.14
		27 Jul 2023	EP2310242016	<0.0001		<0.001		<0.001		<0.001		<0.001		0.004		<0.0001		<0.001		<0.01		<0.01		<0.005	7.51	99	278	339.16	<1	<1	278	20.6	20.6	20.5	20.5	0.26	0.26
		08 Aug 2023	EP2311014006	<0.0001		<0.001		<0.001		<0.001		<0.001		0.004		<0.0001		<0.001		<0.01		<0.01		<0.005		96	277	337.94	<1	<1	277	20.4	20.4	20.1	20.1	0.8	0.8
		10 Oct 2023	EP2314412005	<0.0001		<0.001		<0.001		<0.001		<0.001		0.018		<0.0001		<0.001		<0.01		<0.01		<0.005	7.36	48.5	296	180.56	<1	<1	296	21.2	21.2	20.8	20.8	0.8	0.8
		23 Nov 2023	EP2316729020	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.83	127	355		<1	<1	355	21.8	21.8	19.6	19.6	5.32	5.32
		12 Dec 2023	EP2317978001	<0.0001		<0.001		<0.001		<0.001		<0.001		0.01		<0.0001		<0.001		<0.01		<0.01		<0.005	7.56	133	315		<1	<1	315	20.4	20.4	19.2	19.2	3.22	3.22
		17 Jan 2024	EP2400745015	<0.0001		<0.001		<0.001		<0.001		<0.001		0.006		<0.0001		0.002		<0.01		<0.01		<0.005	7.41	130	305		<1	<1	305	19.5	19.5	18.5	18.5	2.52	2.52
OPDM01	OPDM01	14 Jun 2023	EP2308079005	<0.0001		<0.001		<0.001		<0.001		<0.001		0.065		<0.0001		<0.001		<0.01		<0.01		<0.005	7.99	44	127	154.94	<1	<1	127	5.29	5.29	5.78	5.78	4.45	4.45
		27 Jun 2023	EP2308844002	<0.0001		<0.001		<0.001		<0.001		<0.001		0.024		<0.0001		<0.001		<0.01		<0.01		<0.005	8.21	53	134	163.48	<1	<1	134	6.15	6.15	5.78	5.78	3.11	3.11
		11 Jul 2023	EP2309615002	<0.0001		<0.001		<0.001		<0.001		<0.001		0.005		<0.0001		<0.001		<0.01		<0.01		<0.005	8.29	52	141	172.02	<1	<1	141	6.27	6.27	6.3	6.3	0.28	0.28
		25 Jul 2023	EP2310242002	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	8.61	62	126	153.72	11	<1	138	6.5	6.5	6.24	6.24	2.03	2.03
		07 Aug 2023	EP2311014001	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		<0.005		64	121	147.62	15	<1	136	6.93	6.93	6.48	6.48	3.32	3.32
		09 Oct 2023	EP2314412001	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	9.83	29	40	24.4	56	<1	96	6.9	6.9	6.44	6.44	3.46	3.46
		23 Nov 2023	EP2316729017	<0.0001		<0.001		<0.001		<0.001		<0.001		0.005		<0.0001		<0.001		<0.01		<0.01		<0.005	9.41	78	74		41	<1	115	8.91	8.91	8.41	8.41	2.92	2.92
		12 Dec 2023	EP2317978004	<0.0001		<0.001		<0.001		<0.001		<0.001		0.003		<0.0001		<0.001		<0.01		<0.01		<0.005	9.92	80	20		116	<1	136	10.5	10.5	9.9	9.9	2.93	2.93
		18 Jan 2024	EP2400745005	<0.0001		<0.001		<0.001		<0.001		<0.001		0.005		<0.0001		<0.001		<0.01		<0.01		<0.005	9.1	108	116		33	<1	148	12.9	12.9	12.2	12.2	2.79	2.79
OPDM02	OPDM02	14 Jun 2023	EP2308079006	<0.0001		<0.001		<0.001		<0.001		<0.001		0.017		<0.0001		<0.001		<0.01		<0.01		<0.005	8.11	44	125	152.5	<1	<1	125	5.25	5.25	5.65	5.65	3.73	3.73
		27 Jun 2023	EP2308844003	<0.0001		<0.001		<0.001		<0.001		<0.001		0.038		<0.0001		<0.001		<0.01		<0.01		<0.005	8.2	52	133	162.26	<1	<1	133	6.11	6.11	5.75	5.75	3.06	3.06
		11 Jul 2023	EP2309615003	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	8.39	53	138	168.36	5	<1	142	6.37	6.37	6.39	6.39	0.21	0.21
		25 Jul 2023	EP2310242003	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	8.62	60	125	152.5	12	<1	137	6.47	6.47	6.34	6.34	1.03	1.03
		07 Aug 2023	EP2311014002	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005		63	117	142.74	18	<1	135	6.89	6.89	6.48	6.48	3.07	3.07
		09 Oct 2023	EP2314412002	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	10.3	28.5	12	7.32	86	<1	99	6.86	6.86	6.53	6.53	2.45	2.45
		23 Nov 2023	EP2316729018	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	9.82	70	47		69	<1	116	8.77	8.77	8.45	8.45	1.86	1.86
		12 Dec 2023	EP2317978005	<0.0001		<0.001		<0.001		<0.001		<0.001		0.1		<0.0001		<0.001		<0.01		<0.01		<0.005	7.32	61	236		<1	<1	236	13.9	13.9	12.9	12.9	3.92	3.92
		18 Jan 2024	EP2400745006	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	9.46	104	84		57	<1	141	12.5	12.5	11.8	11.8	3.09	3.09

				Heavy Metals																					Sample Quality Parameters													
				Cadmium (filtered)	Chromium	Chromium (filtered)	Cobalt	Cobalt (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Selenium	Selenium (filtered)	Vanadium	Vanadium (filtered)	Zinc	Zinc (filtered)	pH (Lab)	Sulphate (as SO4) (filtered)	Bicarbonate Alkalinity (as CaCO3)	Bicarbonate Alkalinity as (HCO3)	Carbonate Alkalinity (as CaCO3)	Hydroxide Alkalinity (as CaCO3)	Total Alkalinity (as CaCO3)	Total Anions		Total Cations		Ionic Balance (Lab)	Ionic Balance (Lab)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH_Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	meq/L	meq/L	%	%
EQL				0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.0001	0.001	0.001	0.01	0.01	0.01	0.01	0.005	0.005	0.01	1	1		1	1	1	0.01	0.01	0.01	0.01	0.01	0.01
PFAS NEMP 2.0 2020 95% Eco Fresh Water																																					
PFAS NEMP 2.0 2020 99% Eco Fresh Water																																					
PFAS NEMP 2.0 2020 Drinking Water																																					
PFAS NEMP 2.0 2020 Recreational Water																																					
Location Code	Field ID	Date	Lab Report Number																																		
WB18-GW03D	WB18-GW03D	02 Jun 2023	EP2307401009	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.072	0.01	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	7.54	92	386	470.92	<1	<1	386	16.8	16.8	15.9	15.9	2.74	2.74
		15 Jun 2023	EP2308079008	<0.0001		<0.001		<0.001		<0.001		<0.001		0.069		<0.0001		<0.001		<0.01		<0.01		<0.005	7.53	68	325	396.5	<1	<1	325	14	14	16	16	6.7	6.7
		27 Jun 2023	EP2308844001	<0.0001		<0.001		<0.001		<0.001		<0.001		0.066		<0.0001		<0.001		<0.01		<0.01		<0.005	7.47	100	376	458.72	<1	<1	376	16.6	16.6	15.7	15.7	2.78	2.78
		12 Jul 2023	EP2309615016	<0.0001		<0.001		<0.001		<0.001		<0.001		0.051		<0.0001		<0.001		<0.01		<0.01		<0.005	7.41	86	379	462.38	<1	<1	379	16.6	16.6	17	17	1.3	1.3
		27 Jul 2023	EP2310242022	<0.0001		<0.001		<0.001		<0.001		<0.001		0.035		<0.0001		<0.001		<0.01		<0.01		<0.005	7.56	105	376	458.72	<1	<1	376	16.7	16.7	15.6	15.6	3.44	3.44
		08 Aug 2023	EP2311014009	<0.0001		<0.001		<0.001		<0.001		<0.001		0.083		<0.0001		<0.001		<0.01		<0.01		<0.005		96	363	442.86	<1	<1	363	16.4	16.4	15.6	15.6	2.4	2.4
		12 Oct 2023	EP2314412022	<0.0001		<0.001		<0.001		<0.001		<0.001		0.069		<0.0001		<0.001		<0.01		<0.01		<0.005	7.46	45	356	217.16	<1	<1	356	16.4	16.4	16.9	16.9	1.62	1.62
		22 Nov 2023	EP2316729012	<0.0001		<0.001		<0.001		<0.001		<0.001		0.063		<0.0001		<0.001		<0.01		<0.01		<0.005	7.64	96	368		<1	<1	368	16.9	16.9	15.9	15.9	3.25	3.25
		12 Dec 2023	EP2317978002	<0.0001		<0.001		<0.001		<0.001		<0.001		0.079		<0.0001		<0.001		<0.01		<0.01		0.008	7.59	86	387		<1	<1	387	16.7	16.7	16	16	2.26	2.26
		17 Jan 2024	EP2400745016	<0.0001		<0.001		<0.001		<0.001		<0.001		0.057		<0.0001		<0.001		<0.01		<0.01		<0.005	7.28	100	365		<1	<1	365	16.8	16.8	15.9	15.9	2.5	2.5
WB18-GW04	WB18-GW04	15 Jun 2023	EP2308079009	<0.0001		<0.001		<0.001		<0.001		<0.001		0.008		<0.0001		<0.001		<0.01		<0.01		<0.005	7.5	76	424	517.28	<1	<1	424	14.4	14.4	15.1	15.1	2.28	2.28
		29 Jun 2023	EP2308844019	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		<0.005	7.66	90	434	529.48	<1	<1	434	15.3	15.3	15.2	15.2	0.37	0.37
		13 Jul 2023	EP2309615019	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.44	82	442	539.24	<1	<1	442	15.4	15.4	15.6	15.6	0.76	0.76
		27 Jul 2023	EP2310242020	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.47	111	418	509.96	<1	<1	418	16.1	16.1	16	16	0.17	0.17
		09 Aug 2023	EP2311014022	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		<0.005		92	431	525.82	<1	<1	431	15.4	15.4	14.9	14.9	1.75	1.75
		12 Oct 2023	EP2314412024	<0.0001		<0.001		<0.001		<0.001		<0.001		0.007		<0.0001		<0.001		<0.01		<0.01		<0.005	7.49	47.5	419	255.59	<1	<1	419	15.1	15.1	15	15	0.46	0.46
		23 Nov 2023	EP2316729021	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.78	87	431		<1	<1	431	15.4	15.4	14.7	14.7	2.21	2.21
		14 Dec 2023	EP2317978019	<0.0001		<0.001		<0.001		<0.001		<0.001		0.007		<0.0001		<0.001		<0.01		<0.01		<0.005	7.69	84	452		<1	<1	452	15.5	15.5	15.1	15.1	1.22	1.22
		17 Jan 2024	EP2400745018	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.24	68	421		<1	<1	421	14	14	13.5	13.5	1.6	1.6
WB18-GW05	WB18-GW05	15 Jun 2023	EP2308079010	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.51	94	413	503.86	<1	<1	413	15.5	15.5	16	16	1.32	1.32
		29 Jun 2023	EP2308844020	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.61	108	423	516.06	<1	<1	423	16.2	16.2	16	16	0.44	0.44
		13 Jul 2023	EP2309615020	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.55	97	439	535.58	<1	<1	439	16.3	16.3	16.7	16.7	1.18	1.18
		27 Jul 2023	EP2310242019	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.45	114	432	527.04	<1	<1	432	16.6	16.6	15.9	15.9	2.04	2.04
		09 Aug 2023	EP2311014023	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005		113	415	506.3	<1	<1	415	16.2	16.2	15.7	15.7	1.75	1.75
		12 Oct 2023	EP2314412023	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.41	49.5	405	247.05	<1	<1	405	15.5	15.5	17	17	4.51	4.51
		23 Nov 2023	EP2316729022	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		<0.005	7.81	110	423		<1	<1	423	16.5	16.5	16	16	1.69	1.69
		14 Dec 2023	EP2317978020	<0.0001		<0.001		<0.001		<0.001		<0.001		0.003		<0.0001		<0.001		<0.01		<0.01		<0.005	7.66	103	454		<1	<1	454	17	17	16.3	16.3	2.02	2.02
		17 Jan 2024	EP2400745017	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.2	104	420		<1	<1	420	16	16	15.3	15.3	2.45	2.45
WB20-GW06	WB20-GW06	02 Jun 2023	EP2307401006	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.051	0.008	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	7.5	116	542	661.24	<1	<1	542	19.1	19.1	18.5	18.5	1.62	1.62
		15 Jun 2023	EP2308079011	<0.0001		<0.001		<0.001		<0.001		<0.001		0.003		<0.0001		<0.001		<0.01		<0.01		<0.005	7.55	104	490	597.8	<1	<1	490	17.3	17.3	18	18	2.08	2.08
		29 Jun 2023	EP2308844021	<0.0001		<0.001		<0.001		<0.001		<0.001		0.008		<0.0001		<0.001		<0.01		<0.01		<0.005	7.77	109	477	581.94	<1	<1	477	16.9	16.9	18.4	18.4	4.06	4.06
		13 Jul 2023	EP2309615021	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		<0.005	7.68	105	486	592.92	<1	<1	486	17.8	17.8	18.3	18.3	1.42	1.42
		27 Jul 2023	EP2310242021	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.48	125	467	569.74	<1	<1	467	17.8	17.8	18.2	18.2	1.03	1.03
		08 Aug 2023	EP2311014008	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005		108	446	544.12	<1	<1	446	16.6	16.6	16	16	1.77	1.77
		12 Oct 2023	EP2314412025	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.42	61.5	435	265.35	<1	<1	435	16.8	16.8	16.5	16.5	0.86	0.86
		23 Nov 2023	EP2316729023	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		<0.005	7.88	152	465		<1	<1	465	20.8	20.8	20.1	20.1	1.68	1.68
		14 Dec 2023	EP2317978021	<0.0001		<0.001		<0.001		<0.001		<0.001		0.004		<0.0001		<0.001		<0.01		<0.01		<0.005	7.64	143	481		<1	<1	481	20.8	20.8	20.7	20.7	0.32	0.32
		16 Jan 2024	EP2400745012	<0.0001		<0.001		<0.001		<0.001		<0.001		0.003		<0.0001		<0.001		<0.01		<0.01		<0.005	7.16	141	446		<1	<1	446	19.3	19.3	18.8	18.8	1.22	1.22
WB26-GW04	WB26-GW04	14 Jun 2023	EP2308079015	<0.0001		0.004		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.64	54	292	356.24	<1	<1	292	11.7	11.7	12	12	1.45	1.45
		28 Jun 2023	EP2308844005	<0.0001		0.003		<0.001		<0.001		<0.001		0.003		<0.0001		<0.001		<0.01		<0.01		<0.005	7.7	64	297	362.34	<1	<1	297	11.6	11.6	11.2	11.2	1.91	1.91
		12 Jul 2023	EP2309615005	<0.0001		<0.001		<0.001		<0.001		<0.001		0.036		<0.0001		<0.001		<0.01		<0.01		<0.005	7.66	64	309	376.98	<1	<1	309	12.5	12.5	12.4	12.4	0.39	0.39
		26 Jul 2023	EP2310242005	<0.0001		0.004		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		<0.005	7.46	68	311	379.42	<1	<1	311	11.9	11.9	11.7	11.7	1.08	1.08
		09 Aug 2023	EP2311014011	<0.0001		<0.001		<0.001		<0.001		<0.001		0.035		<0.0001		<0.001		<0.01		<0.01		<0.005		70	293	357.46	<1	<1	293	12.4	12.4	11.4	11.4	4.2	4.2
		11 Oct 2023	EP2314412009	<0.0001		<0.001		<0.001		<0.001		<0.001		1.035		<0.0001		<0.001		<0.01		<0.01		<0.005	7.46	29	285	173.85	<1	<1	285	12.3	12.3	11.3	11.3	4.01	4.01
		22 Nov 2023	EP2316729002	<0.0001		0.003		<0.001		<0.001		<0.001		0.003		<0.0001		<0.001		<0.01		<0.01		<0.005	7.7	62	296		<1	<1	296	12.2	12.2	11	11	4.93	4.93
		13 Dec 2023	EP2317978007	<0.0001		0.003		<0.001		<0.001		<0.001		<0.001		<0.0001		0.005		<0.01		<0.01		<0.005	7.71	64	303		<1	<1	303	12.5	12.5	11.9	11.9	2.42	2.42
		18 Jan 2024	EP2400745009	<0.0001		0.004		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.35	62	285		<1	<1	285	12.2	12.2	11.7	11.7	2.33	2.33
WBC5GWD208	WBC5GWD208	01 Jun 2023	EP2307401011	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.088	0.021	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	7.56	66	385	469.7	<1	<1	385	11.2	11.2	11.1	11.1	0.08	0.08
		09 Aug 2023	EP2311014015	<0.0001		<0.001		<0.001		<0.001		<0.001		0.308		<0.0001		<0.001		<0.01		<0.01		<0.005		78	365	445.3	<1	<1	365	11.4	11.4	11.1	11.1	1.63	1.63
		11 Oct 2023	EP2314412008	<0.0001		<0.001		<0.001		<0.001		<0.001		0.351		<0.0001		<0.001		<0.01		<0.01		<0.005	7.42	33	365	222.65	<1	<1	365	11.4	11.4	11.4	11.4	0.13	0.13
		22 Nov 2023	EP2316729001	<0.0001		<0.001		<0.001		<0.001		<0.001		0.366		<0.0001		<0.001		<0.01		<0.01		<0.005	7.91	73	372		<1	<1	372	11.5	11.5	11.2	11.2	1.29	1.29
		13 Dec 2023	EP2317978012	<0.0001		<0.001		<0.001		<0.001		<0.001		0.334		<0.0001		<0.001		<0.01		<0.01		<0.005	7.74	71	393		<1	<1	393	11.8	11.8	11.5	11.5	0.95	0.95
		17 Jan 2024	EP2400745020	<0.0001		<0.001		<0.001		<0.001		<0.001		0.432		<0.0001		<0.001		<0.01		<0.01		<0.005	7.39	76	372		<1	<1	372	11.6	11.6	11.1	11.1	1.94	1.94
WBCSGW0210	WBCSGW0210	01 Jun 2023	EP2307401012	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.479	0.298	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	7.42	53	403	491.66	<1	<1	403	11.5	11.5	11.4	11.4	0.63	0.63
		14 Jun 2023	EP2308079001	<0.0001		<0.001		<0.001		<0.001		<0.001		0.386		<0.0001		<0.001		<0.01		<0.01		<0.005	7.55	54	371	452.62	<1	<1	371	10.8	10.8	11.2	11.2	2.22	2.22
		28 Jun 2023	EP2308844016	<0.0001		<0.001		<0.001		<0.001		<0.001		0.151		<0.0001		<0.001		<0.01		<0.01		<0.005	7.73	67	382	466.04	<1	<1	382	11.5	11.5	10.8	10.8	3.06	3.06
		13 Jul 2023	EP2309615018	<0.0001		<0.001		<0.001		<0.001		<0.001		0.085		<0.0001		<0.001		<0.01		<0.01		<0.005	7.58	56	385	469.7	<1	<1	385	11.4	11.4	11.6	11.6	0.78	0.78
		27 Jul 2023	EP2310242018	<0.0001		<0.001		<0.001		<0.001		<0.001		0.048		<0.0001		<0.001		<0.01		<0.01		<0.005	7.56	66	379	462.38	<1	<1	379	11.4	11.4	11.3	11.3	0.74	0.74
		08 Aug 2023	EP2311014007	<0.0001		<0.001		<0.001		<0.001		<0.001		0.04		<0.0001		<0.001		<0.01		<0.01		<0.005		66	377	459.94	<1	<1	377	11.6	11.6	10.9	10.9	3.21	3.21
		12 Oct 2023	EP2314412021	<0.0001		<0.001		<0.001		<0.001		<0.001		0.003		<0.0001		<0.001		<0.01		<0.01		<0.005	7.54	26.5	365	222.65	<1	<1	365	11.3	11.3	11.5	11.5	1	1
		23 Nov 2023	EP2316729016	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		<0.005	7.84	54	379		<1	<1	379	11.4	11.4	11.6	11.6	0.52	0.52
		12 Dec 2023	EP2317978003	<0.0001		<0.001		<0.001		<0.001		<0.001		0.002		<0.0001		<0.001		<0.01		<0.01		<0.005	7.69	54	399		<1	<1	399	11.9	11.9	11.5	11.5	1.42	1.42
		17 Jan 2024	EP2400745019	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.39	58	377		<1	<1	377	11.6	11.6	11.2	11.2	1.48	1.48
WBCSGW0219	WBCSGW0219	01 Jun 2023	EP2307401007	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.339	0.297	<0.0001	<0.0001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	7.61	74	404	492.88	<1	<1	404	11.6	11.6	11.5	11.5	0.6	0.6
		14 Jun 2023	EP2308079019	<0.0001		<0.001		<0.001		<0.001		<0.001		0.213		<0.0001		<0.001		<0.01		<0.01		<0.005	7.77	66	381	464.82	<1	<1	381	11.1	11.1	11.4	11.4	1.32	1.32
		28 Jun 2023	EP2308844009	<0.0001		<0.001		<0.001		<0.001		<0.001		0.185		<0.0001		<0.001		<0.01		<0.01		<0.005	7.73	74	388	473.36	<1	<1	388	11.8	11.8	12.5	12.5	3.11	3.11
		12 Jul 2023	EP2309615009	<0.0001		<0.001		<0.001		<0.001		<0.001		0.327		<0.0001		<0.001		<0.01		<0.01		<0.005	7.63	72	396	483.12	<1	<1	396	11.8	11.8	12.1	12.1	1.13	1.13
		26 Jul 2023	EP2310242009	<0.0001		<0.001		<0.001		<0.001		<0.001		0.351		<0.0001		<0.001		<0.01		<0.01		<0.005	7.64	87	399	486.78	<1	<1	399	12.1	12.1	11.8	11.8	1.39	1.39
		09 Aug 2023	EP2311014016	<0.0001		<0.001		<0.001		<0.001		<0.001		0.331		<0.0001		<0.001		<0.01		<0.01		<0.005		80	382	466.04	<1	<1	382	11.9	11.9	11.4	11.4	2.29	2.29
		11 Oct 2023	EP2314412014	<0.0001		<0.001		<0.001		<0.001		<0.001		0.129		<0.0001		<0.001		<0.01		<0.01		<0.005	7.49	33	381	232.41	<1	<1	381	11.7	11.7	11.8	11.8	0.39	0.39
		22 Nov 2023	EP2316729007	<0.0001		<0.001		<0.001		<0.001		<0.001		0.058		<0.0001		<0.001		<0.01		<0.01		<0.005	7.74	76	388		<1	<1	388	12	12	11.5	11.5	2.18	2.18
		13 Dec 2023	EP2317978013	<0.0001		<0.001		<0.001		<0.001		<0.001		0.285		<0.0001		<0.001		<0.01		<0.01		<0.005	7.74	65	412		<1	<1	412	12.1	12.1	11.7	11.7	1.45	1.45
		17 Jan 2024	EP2400745021	<0.0001		<0.001		<0.001		<0.001		<0.001		0.696		<0.0001		<0.001		<0.01		<0.01		<0.005	7.43	67	386		<1	<1	386	11.7	11.7	11.3	11.3	1.47	1.47
XD57	XD57	13 Jun 2023	EP2308079013	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.9	50	358	436.76	<1	<1	358	10.8	10.8	11.3	11.3	2.08	2.08
		29 Jun 2023	EP2308844017	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.95	59	363	442.86	<1	<1	363	11.5	11.5	11.3	11.3	0.57	0.57
		11 Jul 2023	EP2309615001	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.9	55	370	451.4	<1	<1	370	11.3	11.3	11.5	11.5	1.04	1.04
		25 Jul 2023	EP2310242001	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.73	63	379	462.38	<1	<1	379	11.6	11.6	10.9	10.9	3.19	3.19
		09 Aug 2023	EP2311014021	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005		61	368	448.96	<1	<1	368	11.6	11.6	10.8	10.8	3.52	3.52
		12 Oct 2023	EP2314412020	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.84	23.5	346	211.06	<1	<1	346	11	11	11.2	11.2	0.81	0.81
		23 Nov 2023	EP2316729014	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	8.15	61	363		<1	<1	363	11.8	11.8	11.7	11.7	0.65	0.65
		14 Dec 2023	EP2317978022	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	8	51	370		<1	<1	370	11.3	11.3	10.8	10.8	2.22	2.22
		18 Jan 2024	EP2400745003	<0.0001		<0.001		<0.001		<0.001		<0.001		<0.001		<0.0001		<0.001		<0.01		<0.01		<0.005	7.54	53	350		<1	<1	350	11	11	10.8	10.8	0.61	0.61

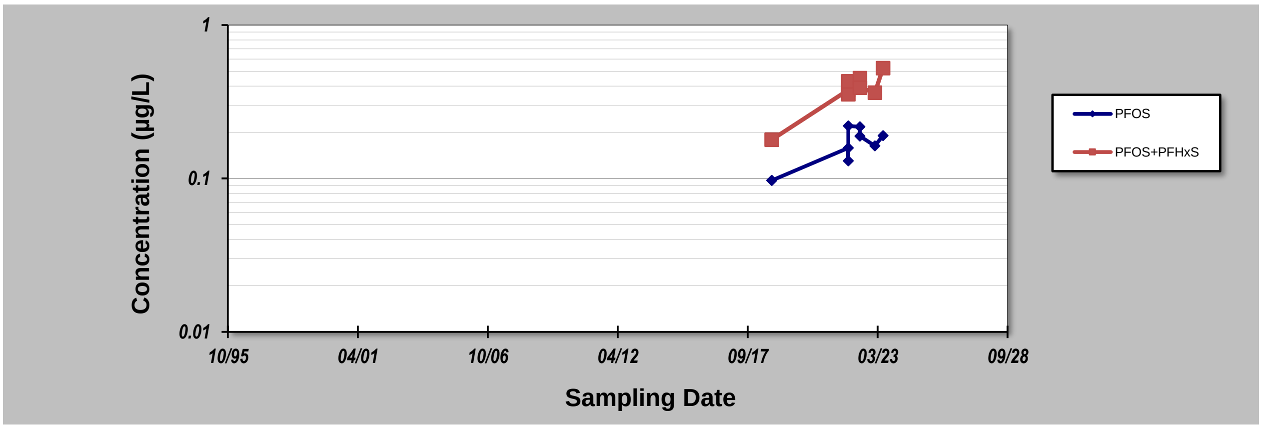
Appendix C

Historical trends and Mann-Kendall analyses

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:		**Job ID:**	
Facility Name:	EX305	**Constituent:**	
Conducted By:		**Concentration Units:**	µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	29-Sep-18	0.097	0.179					
2	29-Sep-18	0.097	0.179					
3	19-Dec-21	0.158	0.378					
4	19-Dec-21	0.130	0.354					
5	19-Dec-21	0.220	0.430					
6	15-Jun-22	0.217	0.450					
7	15-Jun-22	0.189	0.390					
8	31-Jan-23	0.163	0.362					
9	6-Jun-23	0.190	0.523					
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.29	0.32					
Mann-Kendall Statistic (S):		17	21					
Confidence Factor:		95.1%	98.3%					
Concentration Trend:		Increasing	Increasing					



Notes:

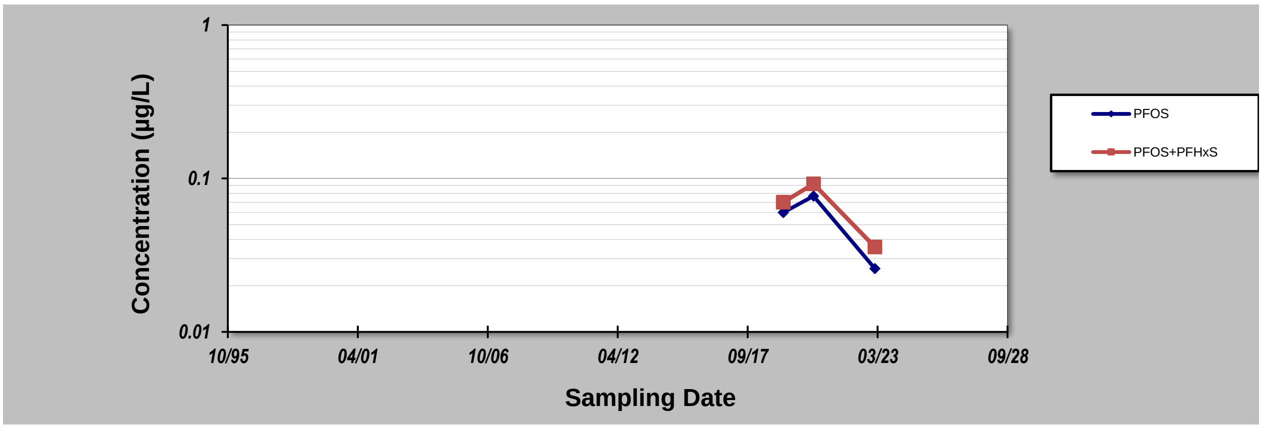
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1514M
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
	Sampling Point ID:	PFOS	PFOS+PFHxS					
1	25-Mar-19	0.06	0.07					
2	26-Mar-19	0.06	0.07					
3	1-Jul-20	0.0768	0.0922					
4	1-Feb-23	0.0259	0.0358					
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.38	0.35					
	Mann-Kendall Statistic (S):	-1	-1					
	Confidence Factor:	50.0%	50.0%					
	Concentration Trend:	Stable	Stable					



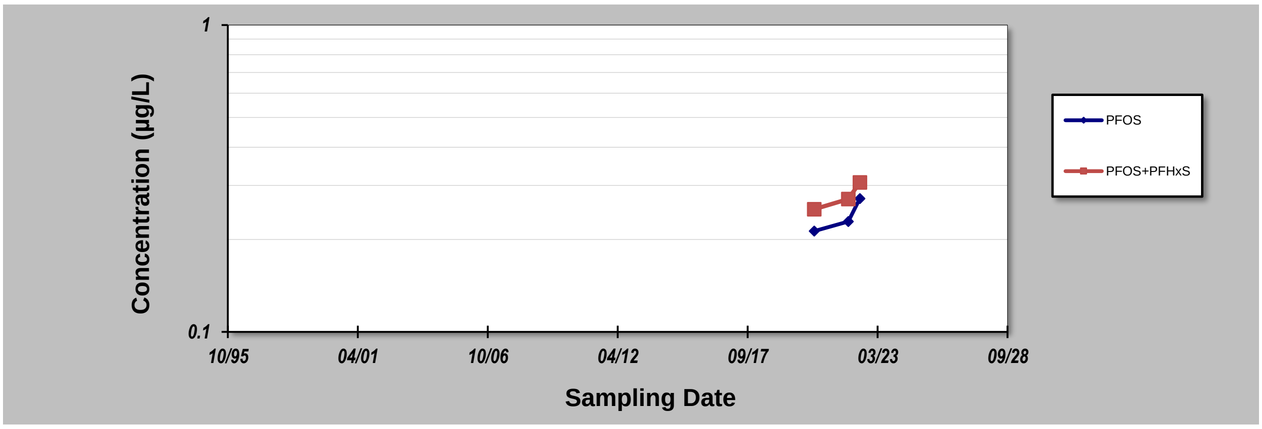
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1815
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	13-Jul-20	**0.213**	**0.251**					
2	18-Dec-21	**0.229**	**0.271**					
3	15-Jun-22	**0.272**	**0.307**					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.13	0.10					
Mann-Kendall Statistic (S):		3	3					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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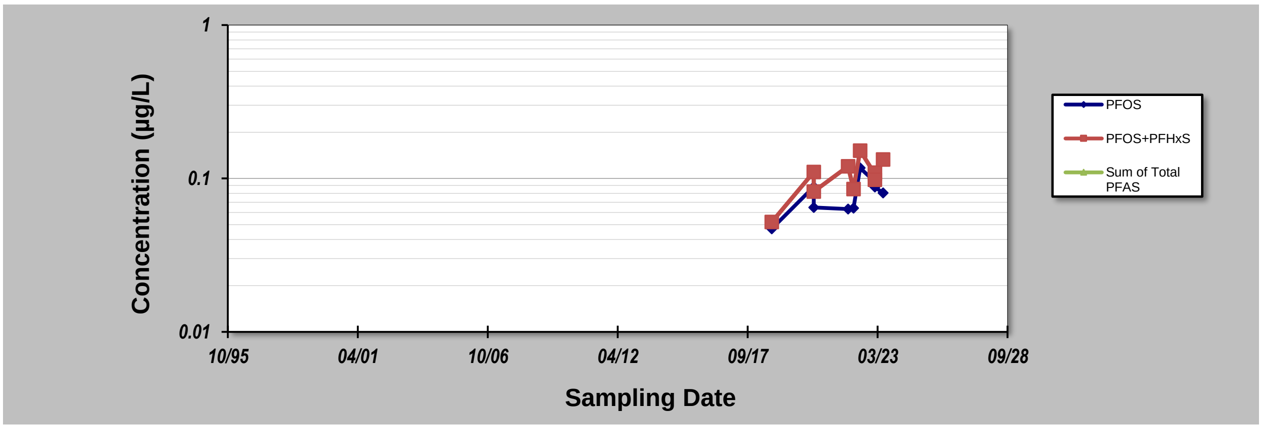
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: MWGW001 aka WBCSGW173
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS	Sum of Total				
1	29-Sep-18	0.047	0.052					
2	6-Jul-20	0.0882	0.1100					
3	6-Jul-20	0.0648	0.0821					
4	17-Dec-21	0.0632	0.1200					
5	10-Mar-22	0.0641	0.0854					
6	19-Jun-22	0.1170	0.1520					
7	31-Jan-23	0.0951	0.1070					
8	31-Jan-23	0.0954	0.1090					
9	31-Jan-23	0.0880	0.0980					
10	6-Jun-23	0.0806	0.1330					
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.26	0.27					
Mann-Kendall Statistic (S):		13	15					
Confidence Factor:		85.4%	89.2%					
Concentration Trend:		No Trend	No Trend					



Notes:

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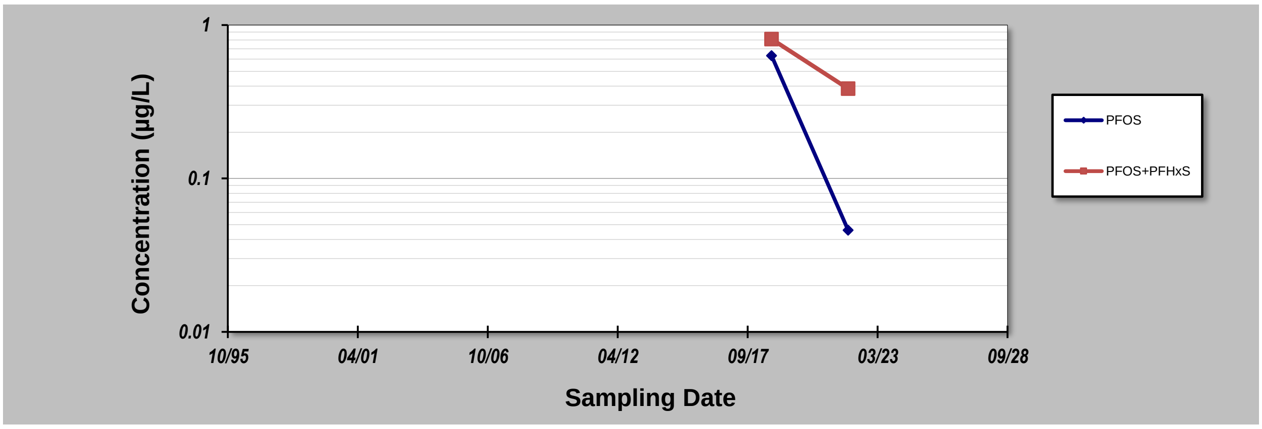
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: MWGW003
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
	Sampling Point ID:	PFOS	PFOS+PFHxS					
1	25-Sep-18	0.632	0.811					
2	17-Dec-21	0.046	0.385					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	1.22	0.50					
	Mann-Kendall Statistic (S):	-1	-1					
	Confidence Factor:							
	Concentration Trend:							



Notes:

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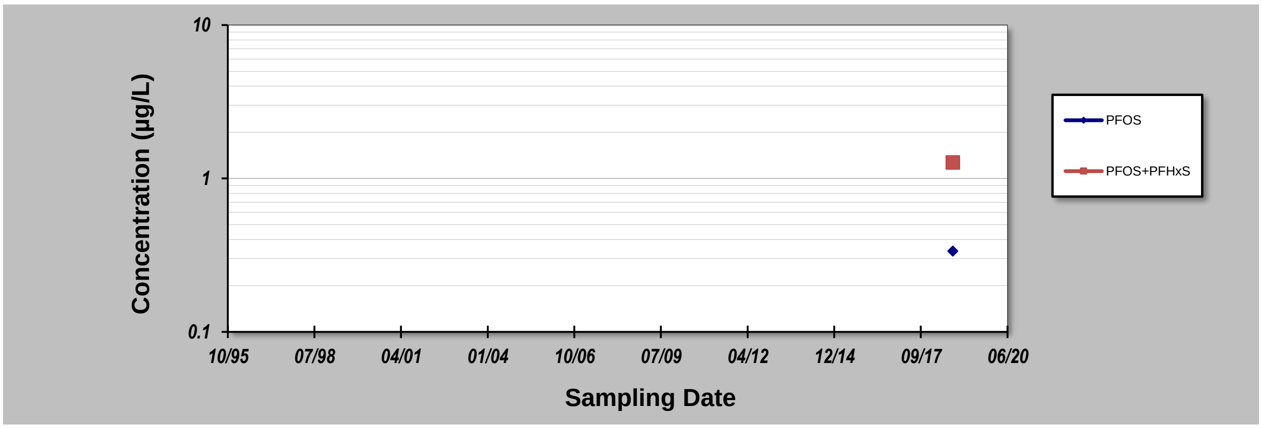
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: MWGW004
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		**PFOS**	**PFOS+PFHxS**					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	26-Sep-18	**0.336**	**1.27**					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



Notes:

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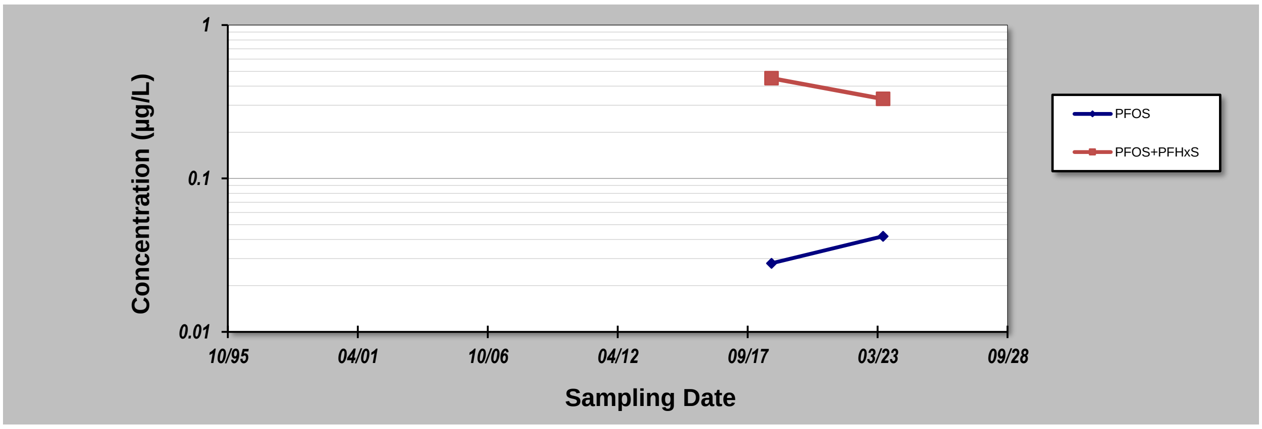
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: MWGW102d
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**					
1	26-Sep-18	**0.028**	**0.45**					
2	6-Jun-23	**0.042**	**0.33**					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.28	0.22					
	Mann-Kendall Statistic (S):	1	-1					
	Confidence Factor:							
	Concentration Trend:							



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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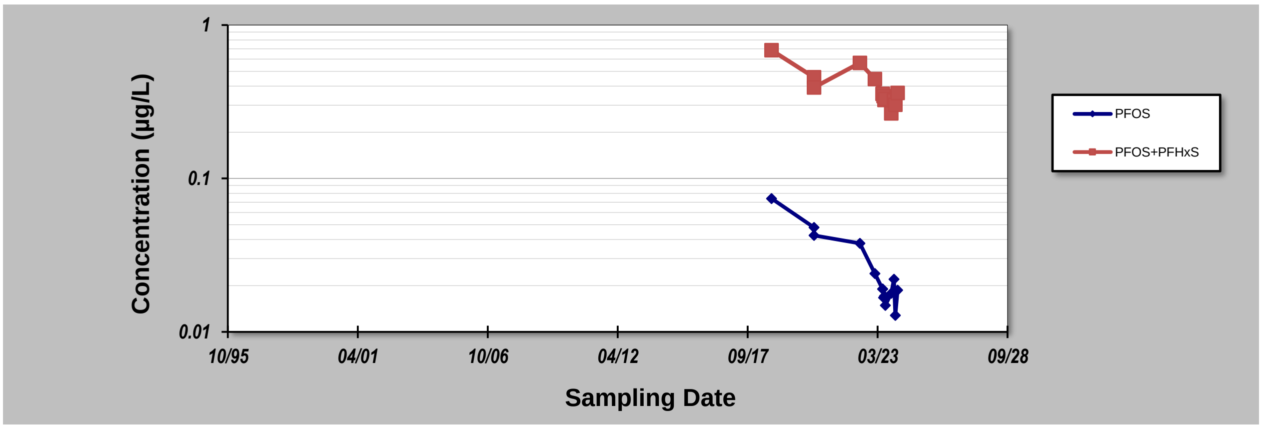
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: MWGW103d
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
		PFOS	PFOS+PFHxS
1	26-Sep-18	0.074	0.685
2	8-Jul-20	0.048	0.457
3	8-Jul-20	0.0425	0.392
4	15-Jun-22	0.0378	0.566
5	31-Jan-23	0.024	0.444
6	2-Jun-23	0.019	0.356
7	2-Jun-23	0.019	0.356
8	15-Jun-23	0.0167	0.344
9	28-Jun-23	0.0171	0.325
10	12-Jul-23	0.0149	0.329
11	27-Jul-23	0.0166	0.344
12	8-Aug-23	0.0169	0.326
13	10-Oct-23	0.0178	0.2660
14	23-Nov-23	0.022	0.3230
15	12-Dec-23	0.0128	0.3020
16	17-Jan-24	0.0187	0.3610
17			
18			
19			
20			
	Coefficient of Variation:	0.63	0.29
	Mann-Kendall Statistic (S):	-47	-51
	Confidence Factor:	99.5%	99.8%
	Concentration Trend:	Decreasing	Decreasing



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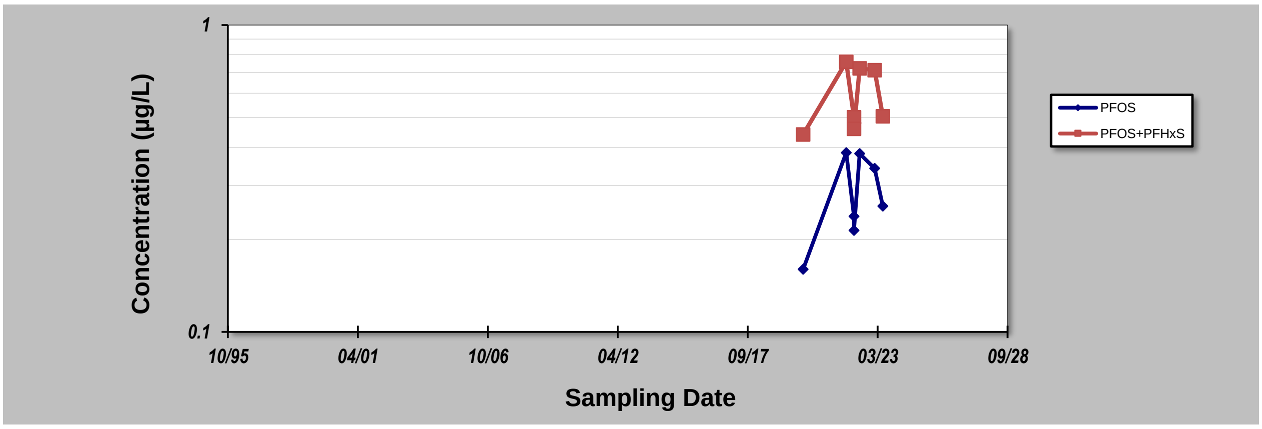
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB18-GW01D
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	25-Jan-20	**0.16**	**0.44**					
2	19-Nov-21	**0.384**	**0.759**					
3	17-Mar-22	**0.238**	**0.501**					
4	17-Mar-22	**0.214**	**0.459**					
5	13-Jun-22	**0.381**	**0.722**					
6	29-Jan-23	**0.341**	**0.712**					
7	4-Jun-23	**0.257**	**0.504**					
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.31	0.24					
Mann-Kendall Statistic (S):		3	3					
Confidence Factor:		61.4%	61.4%					
Concentration Trend:		No Trend	No Trend					



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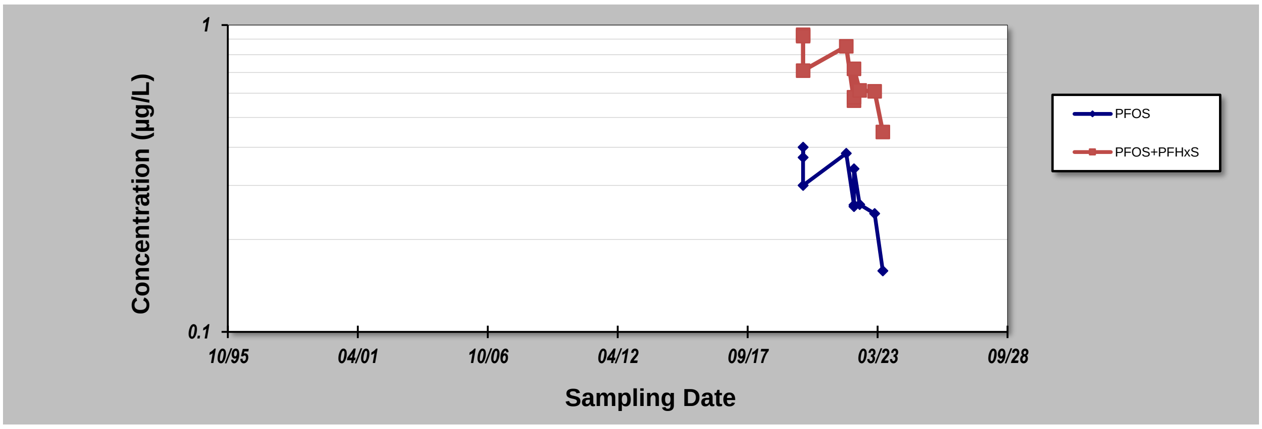
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB18-GW01S
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		**PFOS**	**PFOS+PFHxS**					
1	24-Jan-20	**0.37**	**0.93**					
2	25-Jan-20	**0.4**	**0.92**					
3	25-Jan-20	**0.3**	**0.71**					
4	19-Nov-21	**0.382**	**0.852**					
5	17-Mar-22	**0.259**	**0.567**					
6	17-Mar-22	**0.256**	**0.582**					
7	17-Mar-22	**0.34**	**0.72**					
8	13-Jun-22	**0.26**	**0.612**					
9	29-Jan-23	**0.243**	**0.608**					
10	4-Jun-23	**0.158**	**0.448**					
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.26	0.23					
Mann-Kendall Statistic (S):		-29	-27					
Confidence Factor:		99.5%	99.2%					
Concentration Trend:		Decreasing	Decreasing					



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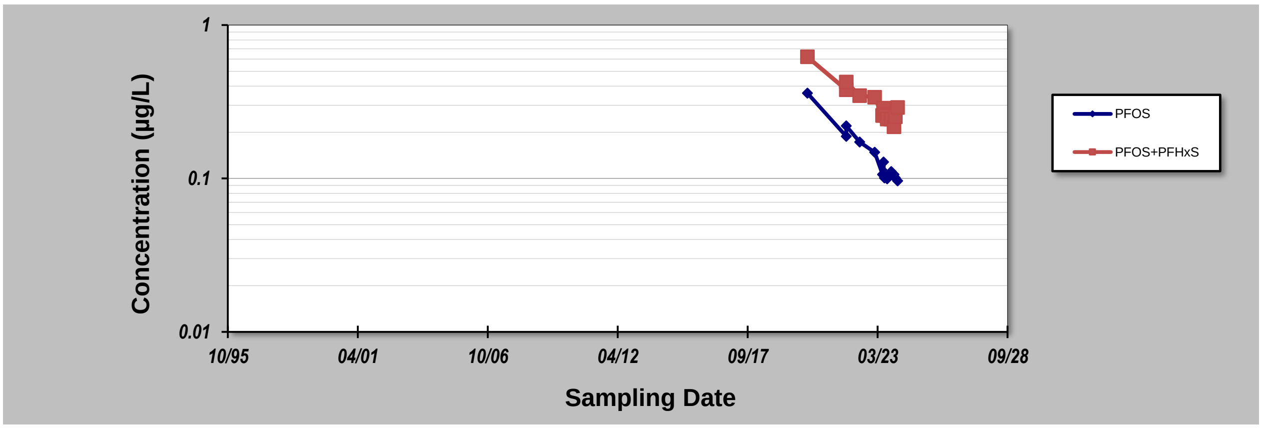
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB18-GW03D
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
		PFOS	PFOS+PFHxS
1	30-Mar-20	0.36	0.62
2	19-Nov-21	0.188	0.379
3	19-Nov-21	0.22	0.425
4	14-Jun-22	0.173	0.346
5	29-Jan-23	0.148	0.338
6	2-Jun-23	0.106	0.258
7	02-Jun-23	0.106	0.258
8	15-Jun-23	0.128	0.287
9	27-Jun-23	0.101	0.263
10	12-Jul-23	0.108	0.258
11	27-Jul-23	0.102	0.228
12	8-Aug-23	0.0994	0.244
13	12-Oct-23	0.1110	0.243
14	23-Nov-23	0.1060	0.217
15	12-Dec-23	0.1010	0.252
16	17-Jan-24	0.0966	0.290
17			
18			
19			
20			
Coefficient of Variation:		0.49	0.33
Mann-Kendall Statistic (S):		-68	-63
Confidence Factor:		>99.9%	99.9%
Concentration Trend:		Decreasing	Decreasing



Notes:

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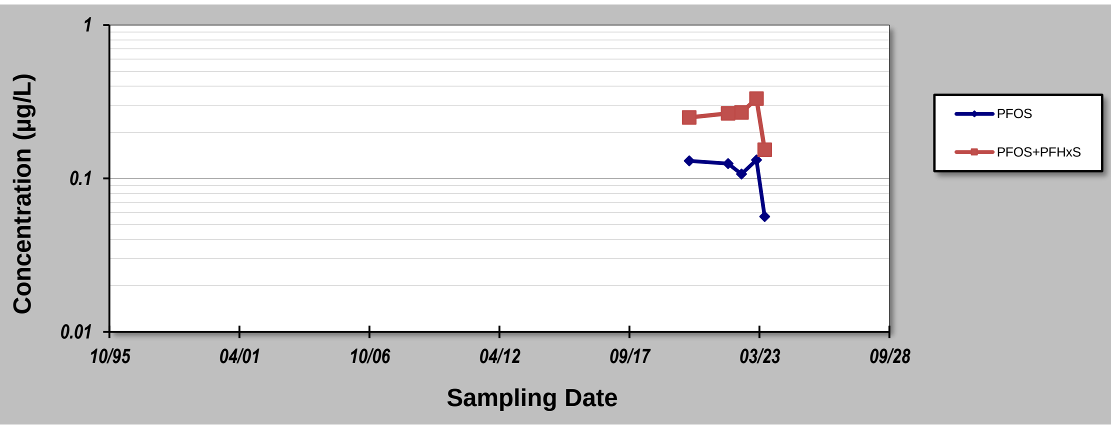
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB18-GW03S
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	30-Mar-20	**0.13**	**0.25**					
2	19-Nov-21	**0.125**	**0.266**					
3	13-Jun-22	**0.107**	**0.269**					
4	29-Jan-23	**0.132**	**0.331**					
5	4-Jun-23	**0.0564**	**0.154**					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.29	0.25					
Mann-Kendall Statistic (S):		-4	2					
Confidence Factor:		75.8%	59.2%					
Concentration Trend:		Stable	No Trend					



Notes:

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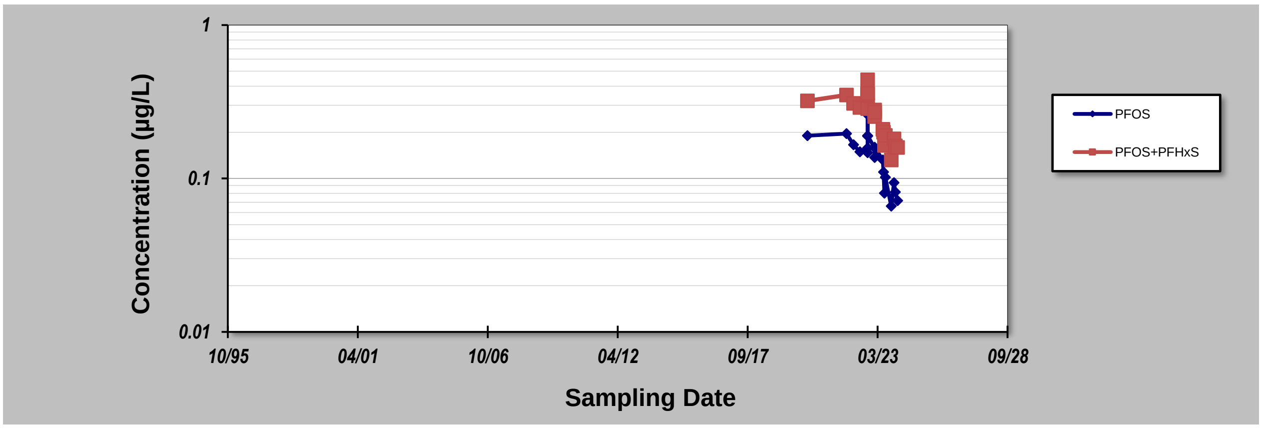
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB18-GW04
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	29-Mar-20	**0.190**	**0.320**					
2	20-Nov-21	**0.196**	**0.350**					
3	10-Mar-22	**0.166**	**0.309**					
4	16-Jun-22	**0.149**	**0.290**					
5	12-Oct-22	**0.158**	**0.300**					
6	12-Oct-22	**0.147**	**0.285**					
7	12-Oct-22	**0.189**	**0.356**					
8	12-Oct-22	**0.260**	**0.440**					
9	12-Oct-22	**0.190**	**0.359**					
10	29-Jan-23	**0.158**	**0.280**					
11	29-Jan-23	**0.137**	**0.253**					
12	29-Jan-23	**0.160**	**0.270**					
13	4-Jun-23	**0.132**	**0.209**					
14	15-Jun-23	**0.110**	**0.20**					
15	29-Jun-23	**0.0802**	**0.164**					
16	13-Jul-23	**0.102**	**0.191**					
17	27-Jul-23	**0.197**	**0.327**					
18	9-Aug-23	**0.0922**	**0.169**					
19	12-Oct-23	**0.066**	**0.132**					
20	23-Nov-23	**0.0938**	**0.181**					
21	14-Dec-23	**0.0816**	**0.163**					
22	17-Jan-24	**0.0716**	**0.159**					
23								
24								
25								
Coefficient of Variation:		0.36	0.32					
Mann-Kendall Statistic (S):		-103	-111					
Confidence Factor:		>99.9%	>99.9%					
Concentration Trend:		Decreasing	Decreasing					



Notes:

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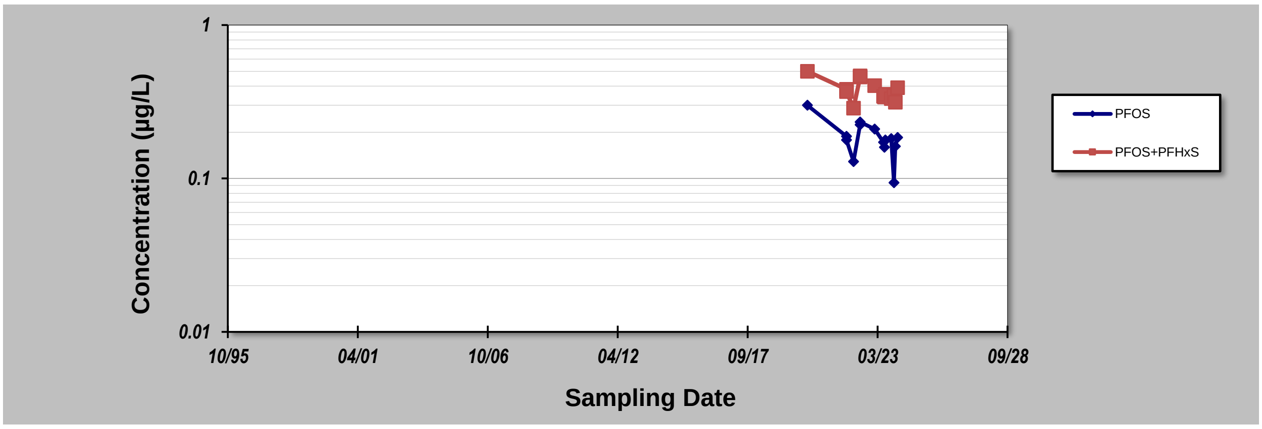
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB18-GW05
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS | PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	29-Mar-20	0.3	0.5					
2	20-Nov-21	0.188	0.381					
3	20-Nov-21	0.178	0.368					
4	10-Mar-22	0.129	0.287					
5	19-Jun-22	0.224	0.459					
6	19-Jun-22	0.233	0.466					
7	28-Jan-23	0.21	0.403					
8	15-Jun-23	0.172	0.343					
9	29-Jun-23	0.16	0.34					
10	13-Jul-23	0.178	0.354					
11	27-Jul-23	0.188	0.341					
12	9-Aug-23	0.182	0.339					
13	12-Oct-23	0.1820	0.33					
14	23-Nov-23	0.0938	0.346					
15	14-Dec-23	0.1620	0.314					
16	17-Jan-24	0.1850	0.390					
17								
18								
19								
20								
Coefficient of Variation:		0.26	0.16					
Mann-Kendall Statistic (S):		-17	-20					
Confidence Factor:		80.6%	84.8%					
Concentration Trend:		Stable	Stable					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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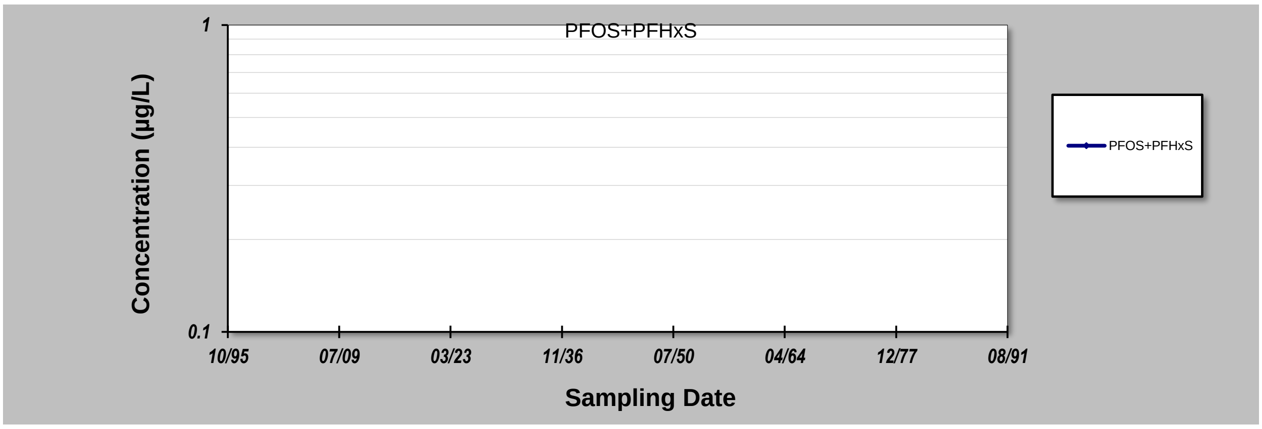
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB20-GW01
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
Sampling Point ID:		**PFOS**	**PFOS+PFHxS**
1	25-Jan-20	**0.38**	**0.75**
2	21-Nov-21	**0.368**	**0.768**
3	17-Mar-22	**0.254**	**0.532**
4	17-Mar-22	**0.403**	**0.685**
5	13-Jun-22	**0.209**	**0.513**
6	29-Jan-23	**0.208**	**0.496**
7	4-Jun-23	**0.16**	**0.384**
8	4-Jun-23	**0.159**	**0.391**
9	4-Jun-23	**0.14**	**0.36**
10	4-Jun-23	**0.14**	**0.36**
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
Coefficient of Variation:		0.41	0.29
Mann-Kendall Statistic (S):		-21	-21
Confidence Factor:		98.3%	98.3%
Concentration Trend:		Decreasing	Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date:

Facility Name: WB20-GW02

Conducted By:

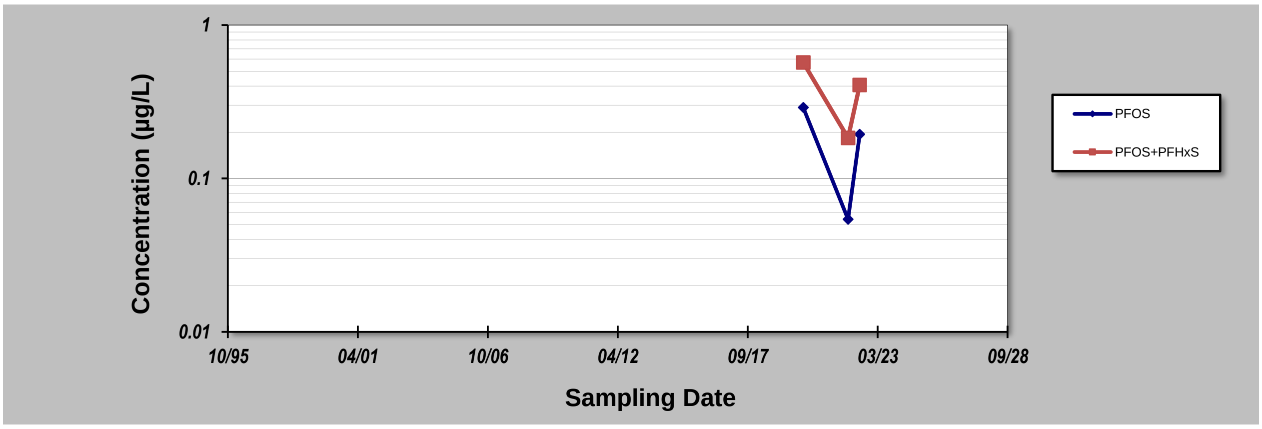
Job ID:

Constituent:

Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	PFOS	PFOS+PFHxS					
		CONCENTRATION (µg/L)						
1	26-Jan-20	0.29	0.57					
2	17-Dec-21	0.0542	0.184					
3	14-Jun-22	0.194	0.407					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.66	0.50					
Mann-Kendall Statistic (S):		-1	-1					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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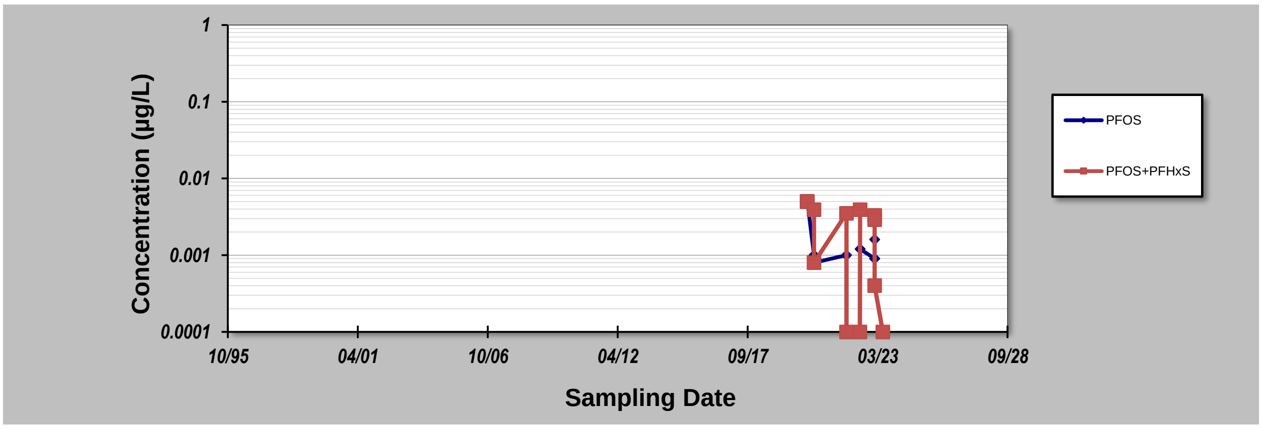
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB20-GW03
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)							
		PFOS	PFOS+PFHxS						
1	27-Mar-20	0.005	0.005						
2	27-Mar-20	0.005	0.005						
3	27-Mar-20	0.005	0.005						
4	30-Mar-20	0.005	0.005						
5	8-Jul-20	0.001	0.0039						
6	8-Jul-20	0.0008	0.0008						
7	20-Nov-21	0.001	0.0035						
8	20-Nov-21	0.0001	0.0001						
9	16-Jun-22	0.0001	0.0001						
10	20-Jun-22	0.0012	0.0039						
11	28-Jan-23	0.0009	0.0032						
12	28-Jan-23	0.0016	0.0033						
13	28-Jan-23	0.0009	0.0029						
14	29-Jan-23	0.0004	0.0004						
15	4-Jun-23	0.0001	0.0001						
16									
17									
18									
19									
20									
Coefficient of Variation:		1.07	0.70						
Mann-Kendall Statistic (S):		-52	-61						
Confidence Factor:		99.5%	99.9%						
Concentration Trend:		Decreasing	Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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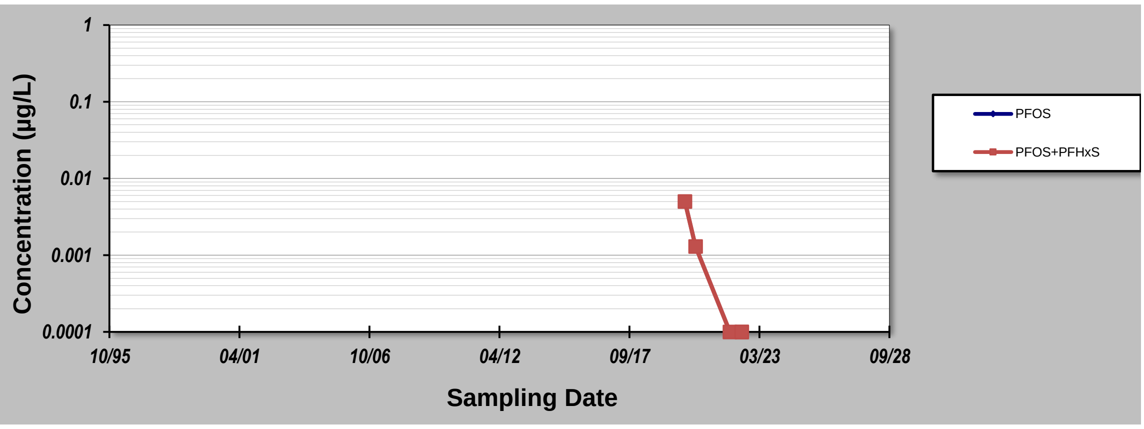
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB20-GW04
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
Sampling Point ID:		PFOS	PFOS+PFHxS
1	24-Jan-20	0.005	0.005
2	7-Jul-20	0.0013	0.0013
3	17-Dec-21	0.0001	0.0001
4	16-Jun-22	0.0001	0.0001
5	16-Jun-22	0.0001	0.0001
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
Coefficient of Variation:		1.61	1.61
Mann-Kendall Statistic (S):		-7	-7
Confidence Factor:		92.1%	92.1%
Concentration Trend:		Prob. Decreasing	Prob. Decreasing



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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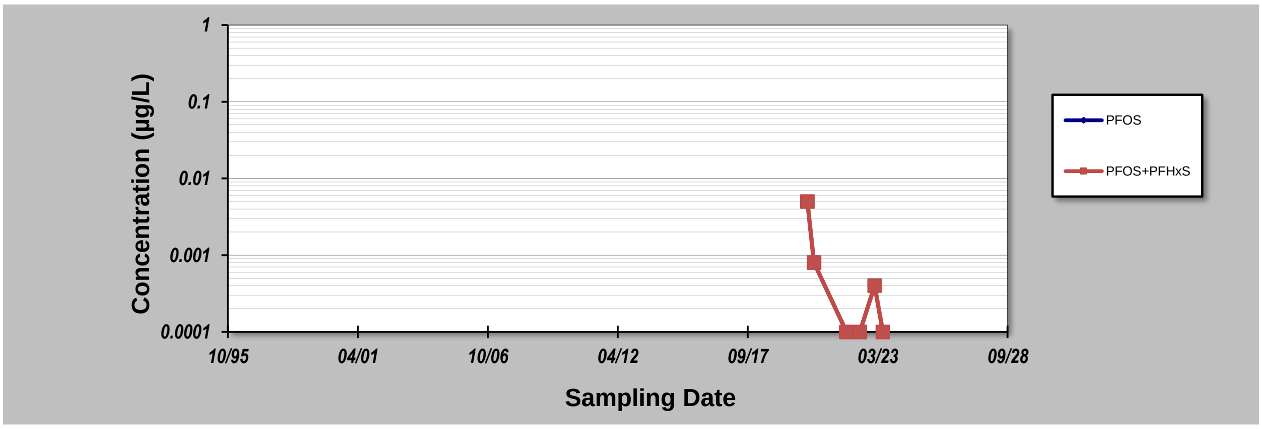
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB20-GW05
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	30-Mar-20	0.005	0.005					
2	8-Jul-20	0.0008	0.0008					
3	20-Nov-21	0.0001	0.0001					
4	16-Jun-22	0.0001	0.0001					
5	29-Jan-23	0.0004	0.0004					
6	4-Jun-23	0.0001	0.0001					
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.79	1.79					
Mann-Kendall Statistic (S):		-8	-8					
Confidence Factor:		89.8%	89.8%					
Concentration Trend:		No Trend	No Trend					



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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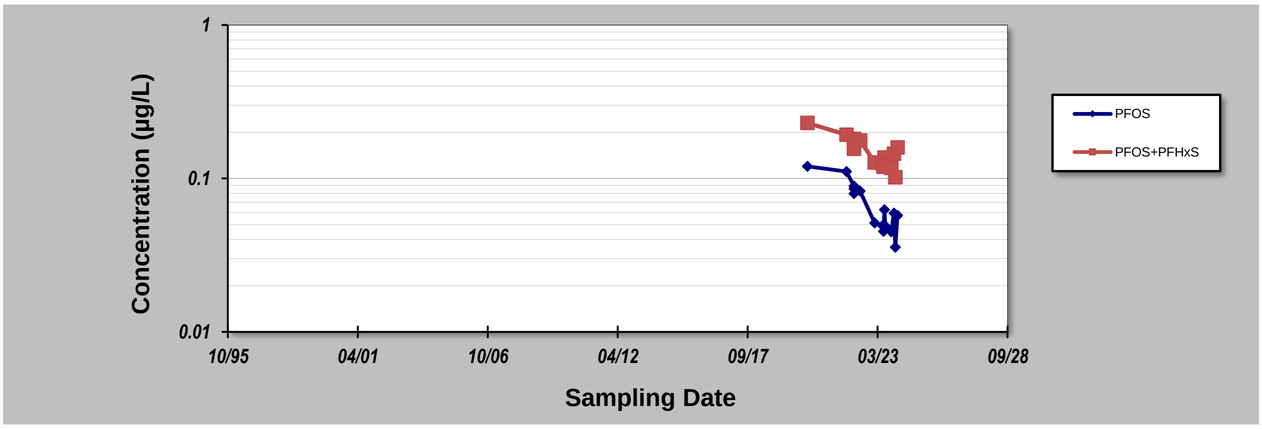
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB20-GW06
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	29-Mar-20	**0.12**	**0.23**					
2	20-Nov-21	**0.111**	**0.193**					
3	18-Mar-22	**0.0892**	**0.181**					
4	18-Mar-22	**0.0855**	**0.171**					
5	18-Mar-22	**0.0796**	**0.156**					
6	19-Jun-22	**0.0827**	**0.177**					
7	29-Jan-23	**0.0513**	**0.127**					
8	2-Jun-23	**0.0493**	**0.125**					
9	2-Jun-23	**0.0493**	**0.125**					
10	15-Jun-23	**0.0453**	**0.119**					
11	29-Jun-23	**0.0625**	**0.137**					
12	13-Jul-23	**0.0489**	**0.122**					
13	27-Jul-23	**0.0595**	**0.125**					
14	8-Aug-23	**0.0434**	**0.107**					
15	12-Oct-23	**0.0450**	**0.117**					
16	23-Nov-23	**0.0595**	**0.145**					
17	14-Dec-23	**0.0356**	**0.102**					
18	16-Jan-24	**0.0574**	**0.159**					
19								
20								
Coefficient of Variation:		0.37	0.23					
Mann-Kendall Statistic (S):		-66	-56					
Confidence Factor:		99.9%	99.4%					
Concentration Trend:		Decreasing	Decreasing					



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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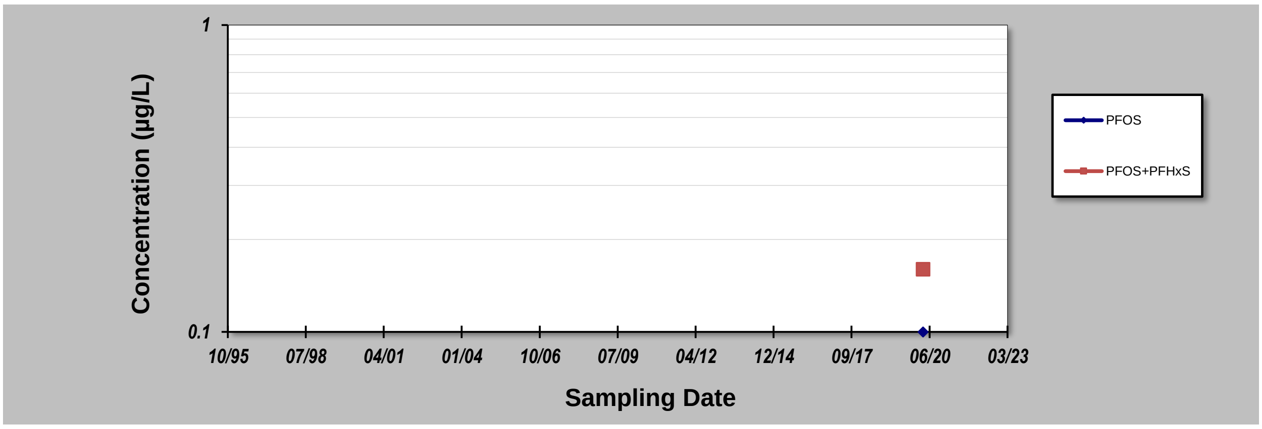
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBAQRT017
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	27-Mar-20	0.1	0.16					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:							
	Mann-Kendall Statistic (S):							
	Confidence Factor:							
	Concentration Trend:							



Notes:

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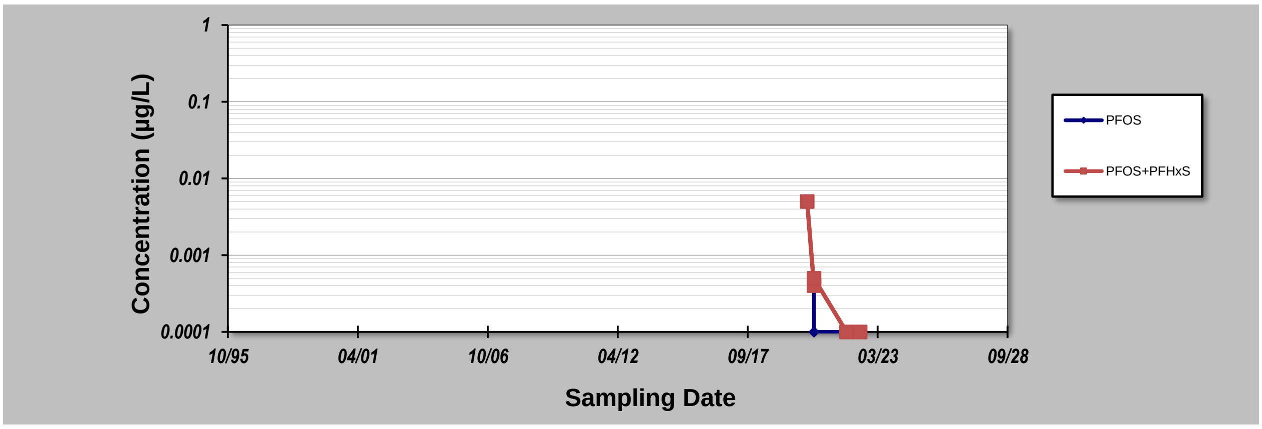
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW159
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS						
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**							
1	27-Mar-20	0.005	0.005						
2	8-Jul-20	0.0004	0.0004						
3	8-Jul-20	0.0001	0.0005						
4	20-Nov-21	0.0001	0.0001						
5	20-Jun-22	0.0001	0.0001						
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Coefficient of Variation:		1.90	1.74						
Mann-Kendall Statistic (S):		-7	-7						
Confidence Factor:		92.1%	92.1%						
Concentration Trend:		Prob. Decreasing	Prob. Decreasing						



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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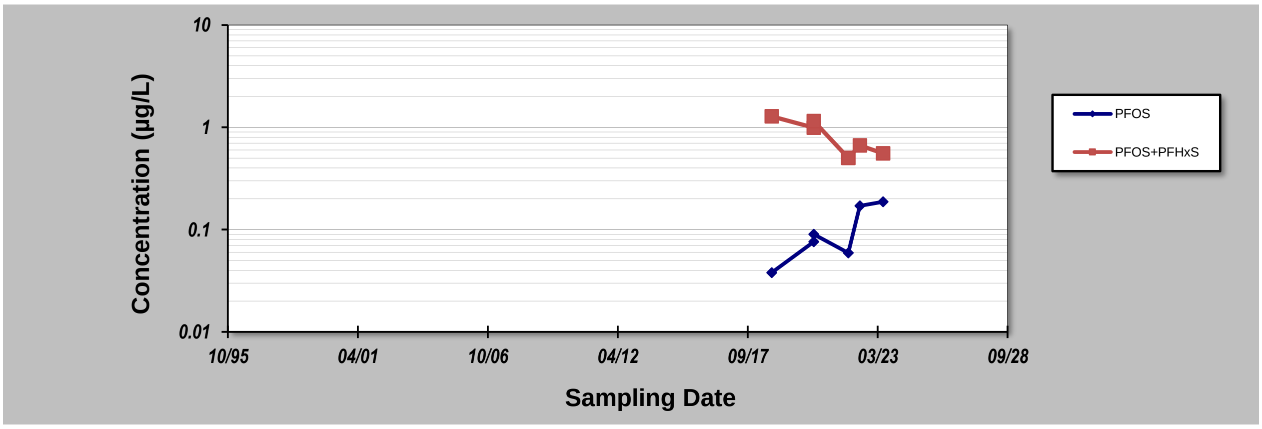
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW171
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)							
Sampling Point ID:		PFOS	PFOS+PFHxS						
1	29-Sep-18	0.038	1.28						
2	6-Jul-20	0.076	0.992						
3	6-Jul-20	0.0902	1.15						
4	19-Dec-21	0.0591	0.502						
5	15-Jun-22	0.171	0.665						
6	6-Jun-23	0.187	0.556						
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Coefficient of Variation:		0.59	0.38						
Mann-Kendall Statistic (S):		11	-9						
Confidence Factor:		97.2%	93.2%						
Concentration Trend:		Increasing	Prob. Decreasing						



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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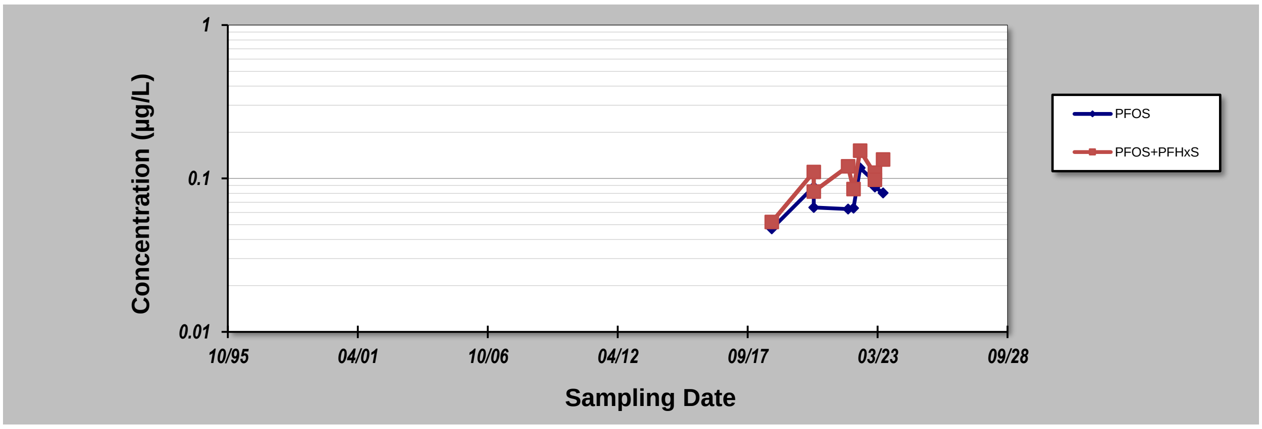
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW173 aka MWGW001
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)							
		PFOS	PFOS+PFHxS						
1	29-Sep-18	0.047	0.052						
2	6-Jul-20	0.0882	0.1100						
3	6-Jul-20	0.0648	0.0821						
4	17-Dec-21	0.0632	0.1200						
5	10-Mar-22	0.0641	0.0854						
6	19-Jun-22	0.1170	0.1520						
7	31-Jan-23	0.0951	0.1070						
8	31-Jan-23	0.0954	0.1090						
9	31-Jan-23	0.0880	0.0980						
10	6-Jun-23	0.0806	0.1330						
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Coefficient of Variation:		0.26	0.27						
Mann-Kendall Statistic (S):		13	15						
Confidence Factor:		85.4%	89.2%						
Concentration Trend:		No Trend	No Trend						



Notes:

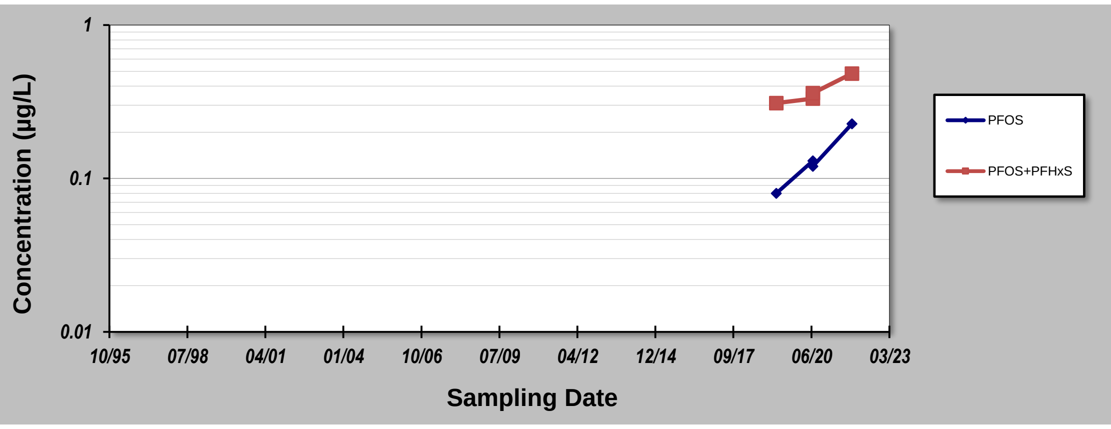
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW191
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	26-Mar-19	0.08	0.31					
2	8-Jul-20	0.13	0.332					
3	8-Jul-20	0.12	0.36					
4	20-Nov-21	0.227	0.483					
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.45	0.21					
Mann-Kendall Statistic (S):		4	6					
Confidence Factor:		83.3%	95.8%					
Concentration Trend:		No Trend	Increasing					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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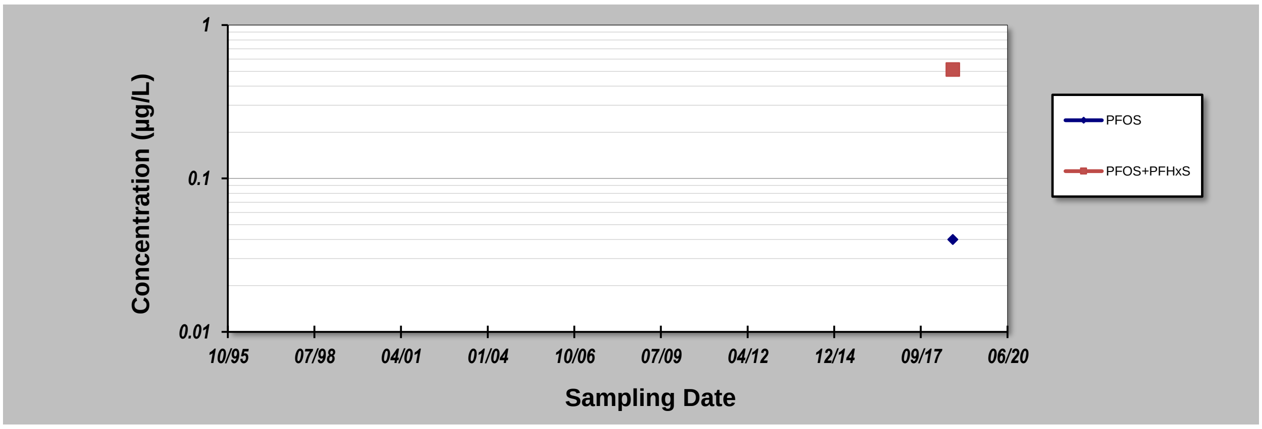
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBGW003
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	26-Sep-18	0.04	0.513					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



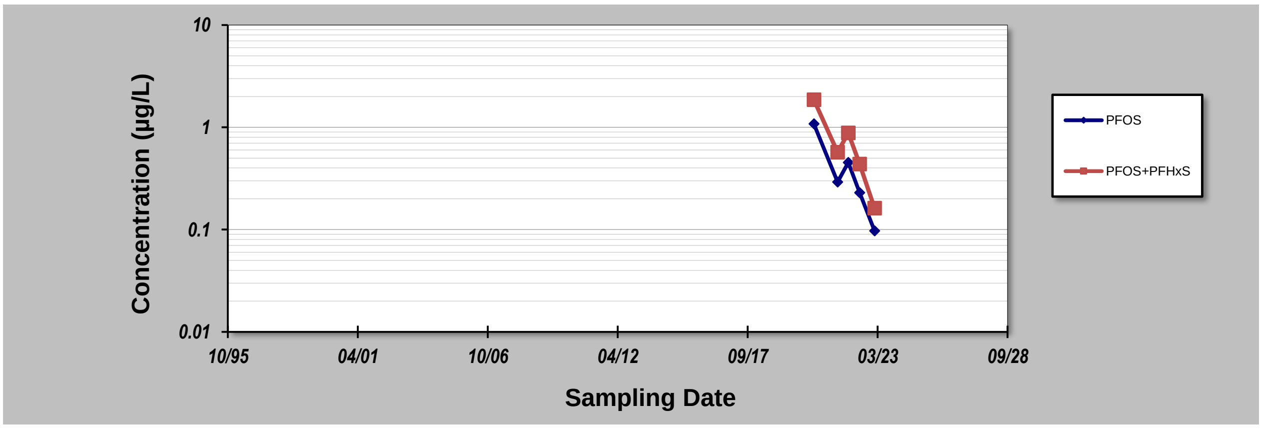
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBGW006
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	8-Jul-20	1.08	1.86					
2	9-Jul-21	0.292	0.57					
3	21-Dec-21	0.454	0.883					
4	14-Jun-22	0.23	0.438					
5	28-Jan-23	0.0972	0.162					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.89	0.84					
	Mann-Kendall Statistic (S):	-8	-8					
	Confidence Factor:	95.8%	95.8%					
	Concentration Trend:	Decreasing	Decreasing					



Notes:

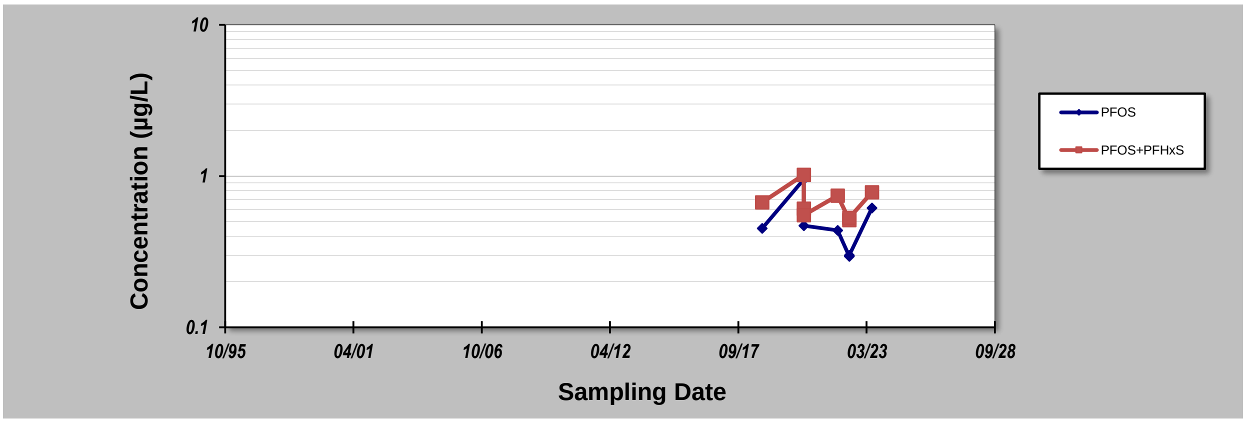
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBGW053d
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	29-Sep-18	**0.451**	**0.671**					
2	8-Jul-20	**0.951**	**1.02**					
3	8-Jul-20	**0.536**	**0.608**					
4	8-Jul-20	**0.47**	**0.551**					
5	17-Dec-21	**0.437**	**0.742**					
6	19-Jun-22	**0.294**	**0.512**					
7	19-Jun-22	**0.3**	**0.53**					
8	6-Jun-23	**0.616**	**0.782**					
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.41	0.25					
Mann-Kendall Statistic (S):		-8	-6					
Confidence Factor:		80.1%	72.6%					
Concentration Trend:		Stable	Stable					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*

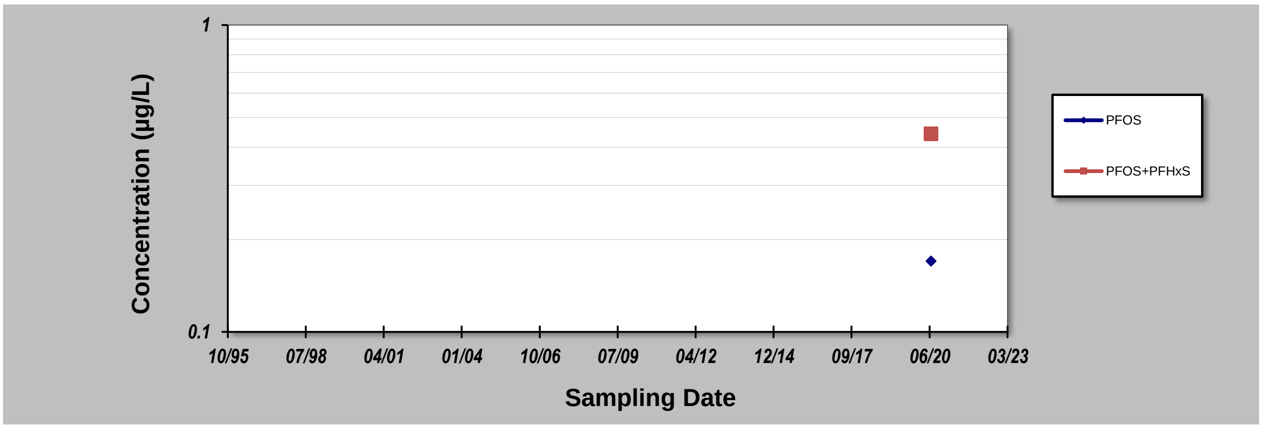
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.

3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EEX0745M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	7-Jul-20	**0.17**	**0.442**					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:							
	Mann-Kendall Statistic (S):							
	Confidence Factor:							
	Concentration Trend:							



Notes:

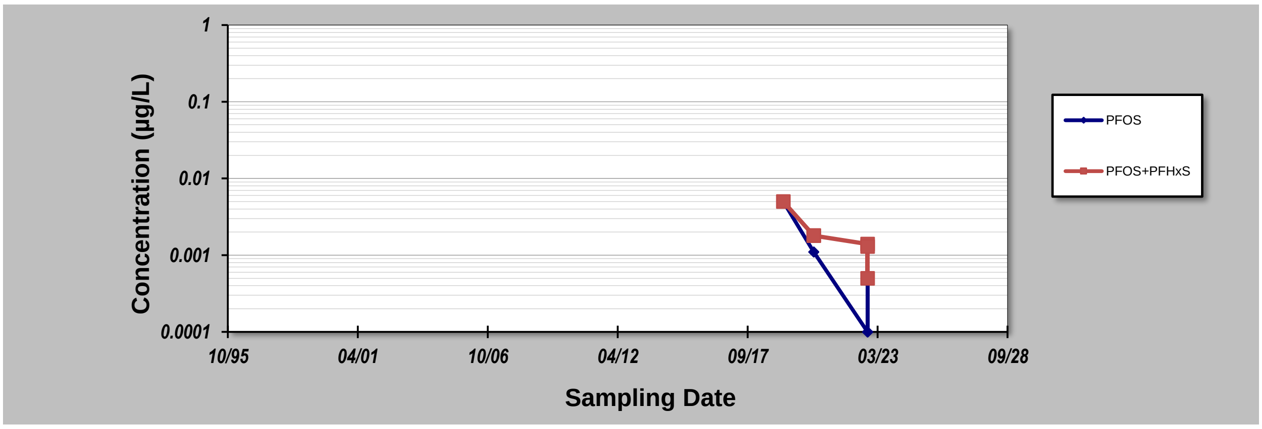
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEOP0384M
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	25-Mar-19	0.005	0.005					
2	6-Jul-20	0.0011	0.0018					
3	6-Jul-20	0.0011	0.0018					
4	12-Oct-22	0.0001	0.0014					
5	12-Oct-22	0.0001	0.0013					
6	12-Oct-22	0.0001	0.0014					
7	12-Oct-22	0.0005	0.0005					
8	12-Oct-22	0.0001	0.0013					
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.65	0.79					
Mann-Kendall Statistic (S):		-15	-7					
Confidence Factor:		95.8%	86.4%					
Concentration Trend:		Decreasing	Stable					



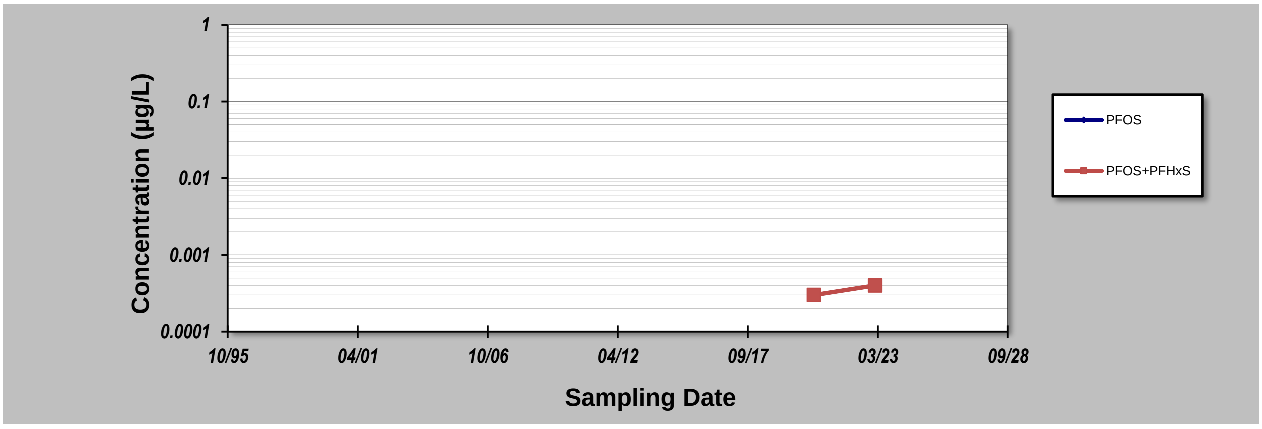
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0637M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	PFOS	PFOS+PFHxS					
		CONCENTRATION (µg/L)						
1	6-Jul-20	**0.0003**	**0.0003**					
2	1-Feb-23	**0.0004**	**0.0004**					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.20	0.20					
Mann-Kendall Statistic (S):		1	1					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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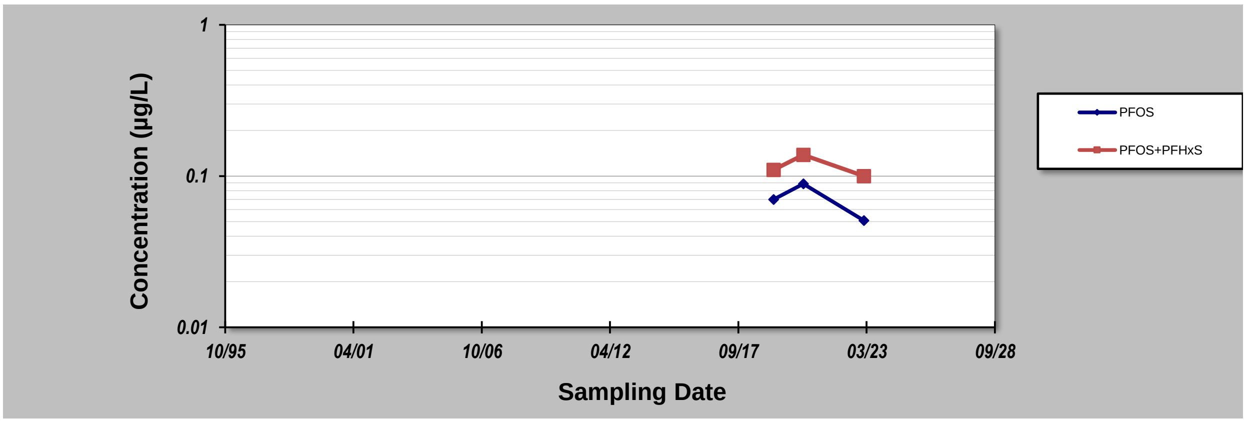
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBGW007
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	25-Mar-19	**0.07**	**0.11**					
2	1-Jul-20	**0.0888**	**0.138**					
3	1-Feb-23	**0.0508**	**0.1**					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.27	0.17					
Mann-Kendall Statistic (S):		-1	-1					
Confidence Factor:								
Concentration Trend:								



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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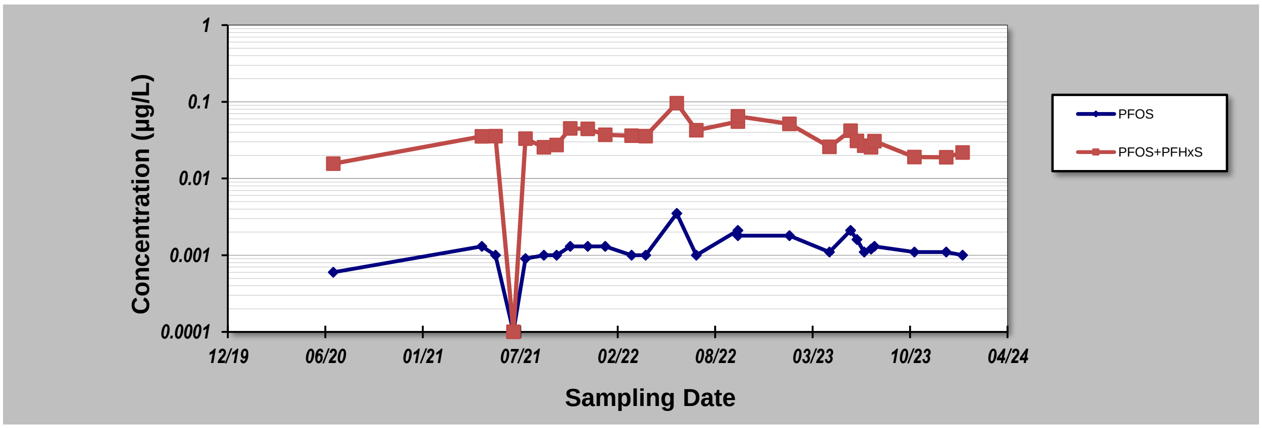
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1526M Primary samples only
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
Sampling Point ID:		PFOS	PFOS+PFHxS
1	4-Jul-20	0.0006	0.0156
2	5-May-21	0.0013	0.0355
3	2-Jun-21	0.001	0.0356
4	9-Jul-21	0.0001	0.0001
5	2-Aug-21	0.0009	0.0330
6	9-Sep-21	0.001	0.0256
7	5-Oct-21	0.001	0.0274
8	2-Nov-21	0.0013	0.0450
9	8-Dec-21	0.0013	0.0443
10	13-Jan-22	0.0013	0.0371
11	8-Mar-22	0.001	0.0361
12	6-Apr-22	0.001	0.0356
13	9-Jun-22	0.004	0.0961
14	19-Jul-22	0.001	0.0426
15	12-Oct-22	0.002	0.0551
16	12-Oct-22	0.002	0.0645
17	26-Jan-23	0.002	0.0516
18	18-Apr-23	0.001	0.0259
19	1-Jun-23	0.0021	0.0421
20	14-Jun-23	0.0016	0.031
21	29-Jun-23	0.0011	0.0268
22	13-Jul-23	0.0012	0.0255
23	20-Jul-23	0.0013	0.0307
24	27-Jul-23	0.0018	0.023
25	8-Aug-23	0.0008	0.0185
26	10-Oct-23	0.0011	0.0190
27			
28	14-Dec-23	0.0011	0.0189
29	17-Jan-24	0.0010	0.0218
30			
Coefficient of Variation:		0.48	0.51
Mann-Kendall Statistic (S):		113	7
Confidence Factor:		99.4%	55.2%
Concentration Trend:		Increasing	No Trend



Notes:

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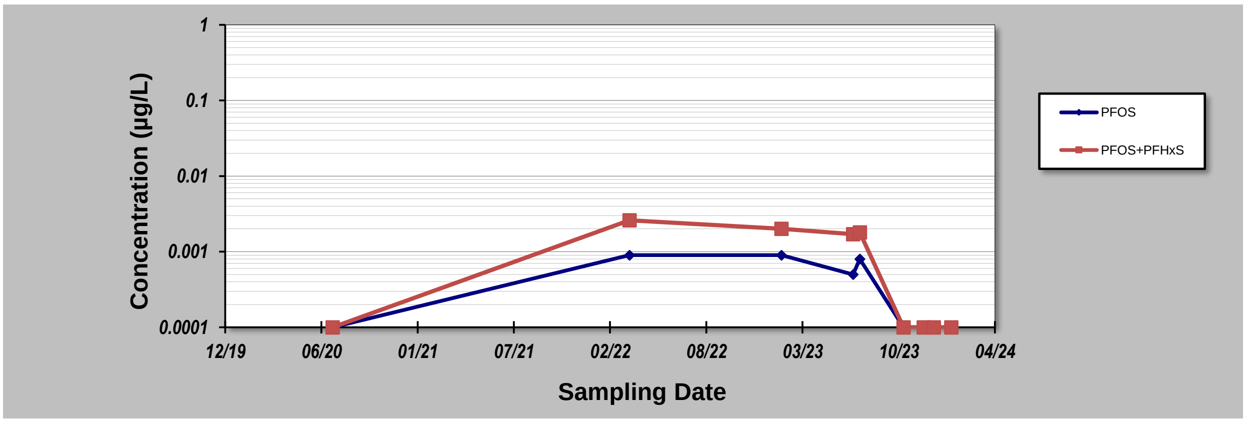
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EEG1391R
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
Sampling Point ID:		**PFOS**	**PFOS+PFHxS**					
1	11-Jul-20	0.0001	0.0001					
2	20-Mar-22	0.0009	0.0026					
3	30-Jan-23	0.0009	0.002					
4	1-Jun-23	0.0004	0.0015					
5	14-Jun-23	0.0005	0.0015					
6	28-Jun-23	0.0005	0.0017					
7	12-Jul-23	0.0008	0.0018					
8	26-Jul-23	0.0008	0.0017					
9	9-Aug-23	0.0003	0.0003					
10	11-Oct-23	0.0001	0.0001					
11	22-Nov-23	0.0001	0.0001					
12	13-Dec-23	0.0001	0.0001					
13	18-Jan-24	0.0001	0.0001					
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.87	1.00					
Mann-Kendall Statistic (S):		-27	-29					
Confidence Factor:		>99.9%	100.0%					
Concentration Trend:		Decreasing	Decreasing					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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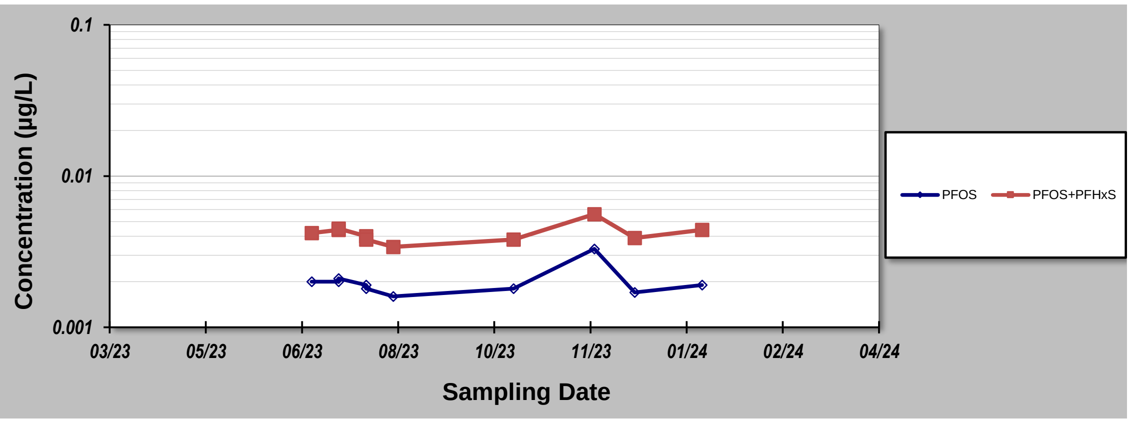
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0051P
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	28-Jun-23	0.002	0.0042					
2	12-Jul-23	0.002	0.0044					
3	12-Jul-23	0.0021	0.0045					
4	26-Jul-23	0.0019	0.004					
5	26-Jul-23	0.0018	0.0038					
6	09-Aug-23	0.0016	0.0034					
7	11-Oct-23	0.0018	0.0038					
8	22-Nov-23	0.0033	0.0056					
9	13-Dec-23	0.0017	0.0039					
10	17-Jan-24	0.0019	0.0044					
11								
12								
13								
14								
15								
16								
17								
18								
19	4/04/2018							
20	4/04/2025							
Coefficient of Variation:		0.24	0.14					
Mann-Kendall Statistic (S):		-12	-3					
Confidence Factor:		83.2%	56.9%					
Concentration Trend:		Stable	Stable					



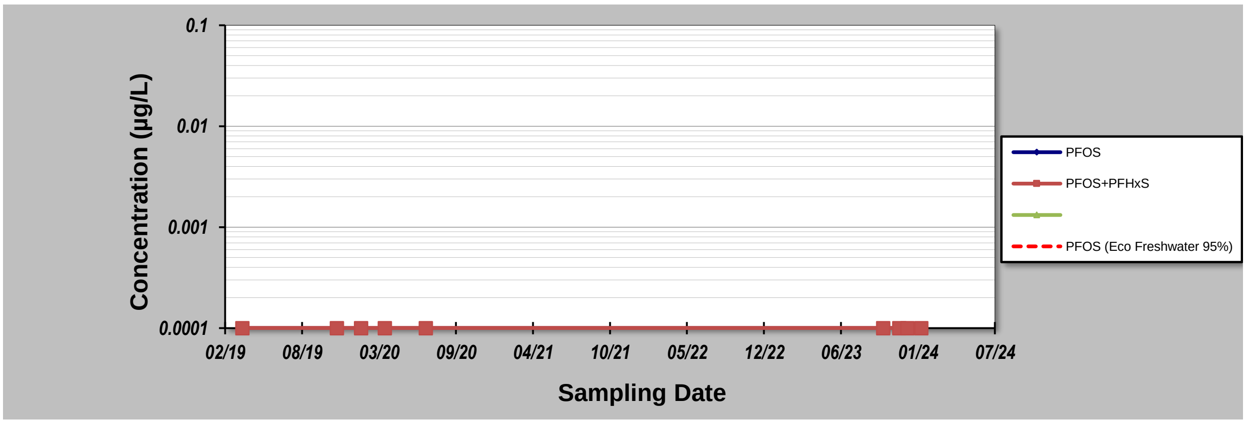
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0057P
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS		PFOS (Eco	NEMP 2020		
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	21-Mar-19	0.0001	0.0001					
2	21-Nov-19	0.0001	0.0001					
3	23-Jan-20	0.0001	0.0001					
4	25-Mar-20	0.0001	0.0001					
5	9-Jul-20	0.0001	0.0001					
6	11-Oct-23	0.0001	0.0001					
7	22-Nov-23	0.0001	0.0001					
8	13-Dec-23	0.0001	0.0001					
9	18-Jan-24	0.0001	0.0001					
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		46.0%	46.0%					
Concentration Trend:		Stable	Stable					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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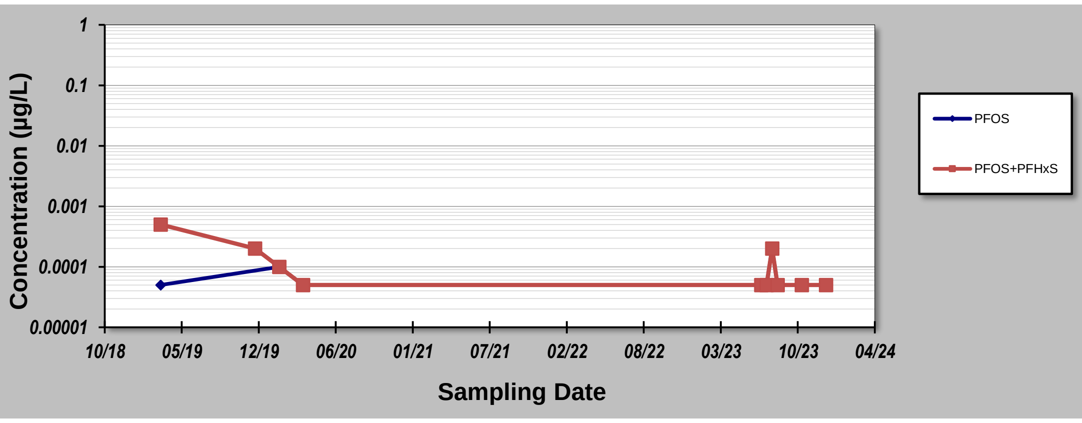
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0060P
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
		PFOS	PFOS+PFHxS
1	21-Mar-19	0.0001	0.0005
2	21-Nov-19	0.0002	0.0002
3	23-Jan-20	0.0001	0.0001
4	25-Mar-20	0.0001	0.0001
5	28-Jun-23	0.0001	0.0001
6	12-Jul-23	0.0001	0.0001
7	26-Jul-23	0.0002	0.0002
8	09-Aug-23	0.0001	0.0001
9	11-Oct-23	0.0001	0.0001
10	13-Dec-23	0.0001	0.0001
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
Coefficient of Variation:		0.70	1.11
Mann-Kendall Statistic (S):		-10	-21
Confidence Factor:		82.1%	96.4%
Concentration Trend:		Stable	Decreasing



Notes:

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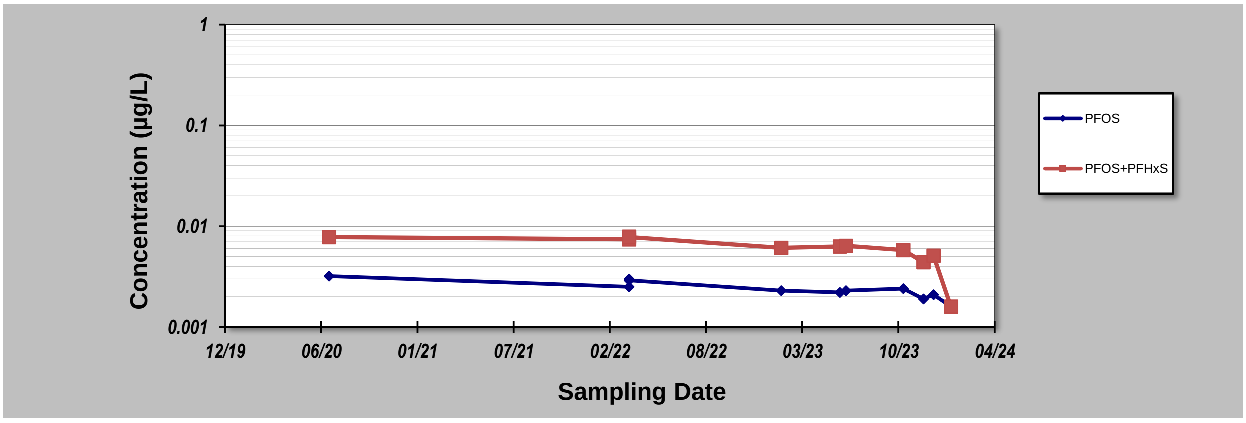
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1521M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**
1	4-Jul-20	**0.0032**	**0.0078**
2	20-Mar-22	**0.0025**	**0.0074**
3	20-Mar-22	**0.003**	**0.0079**
4	20-Mar-22	**0.0029**	**0.0078**
5	30-Jan-23	**0.0023**	**0.0061**
6	1-Jun-23	**0.0022**	**0.0063**
7	14-Jun-23	**0.0023**	**0.0064**
8	28-Jun-23	**0.0026**	**0.0065**
9	12-Jul-23	**0.0025**	**0.0064**
10	26-Jul-23	**0.0024**	**0.0061**
11	09-Aug-23	**0.0022**	**0.0055**
12	11-Oct-23	**0.0024**	**0.0058**
13	22-Nov-23	**0.0019**	**0.0044**
14	13-Dec-23	**0.0021**	**0.0051**
15	18-Jan-24	**0.0016**	**0.0016**
16			
17			
18			
19			
20			
	Coefficient of Variation:	0.20	0.31
	Mann-Kendall Statistic (S):	-34	-34
	Confidence Factor:	99.6%	99.6%
	Concentration Trend:	Decreasing	Decreasing



Notes:

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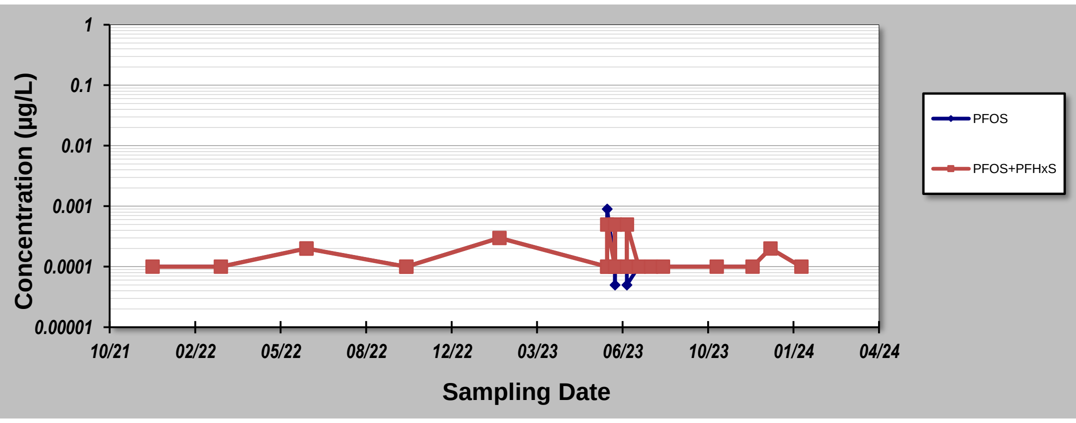
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB26-GW04
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	20-Dec-21	0.0001	0.0001					
2	10-Mar-22	0.0001	0.0001					
3	18-Jun-22	0.0002	0.0002					
4	18-Jun-22	0.0002	0.0002					
5	13-Oct-22	0.0001	0.0001					
6	13-Oct-22	0.0001	0.0001					
7	30-Jan-23	0.0003	0.0003					
8	5-Jun-23	0.0001	0.0001					
9	5-Jun-23	0.0001	0.0001					
10	5-Jun-23	0.0009	0.0005					
11	14-Jun-23	0.0001	0.0001					
12	14-Jun-23	0.0001	0.0005					
13	14-Jun-23	0.0001	0.0001					
14	28-Jun-23	0.0001	0.0001					
15	28-Jun-23	0.0001	0.0001					
16	28-Jun-23	0.00005	0.0005					
17	12-Jul-23	0.0001	0.0001					
18	26-Jul-23	0.0001	0.0001					
19	9-Aug-23	0.0001	0.0001					
20	11-Oct-23	0.0001	0.0001					
21	22-Nov-23	0.0001	0.0001					
22	13-Dec-23	0.0002	0.0002					
23	18-Jan-24	0.0001	0.0001					
24								
25								
Coefficient of Variation:		1.13	0.80					
Mann-Kendall Statistic (S):		-27	-13					
Confidence Factor:		75.2%	62.3%					
Concentration Trend:		No Trend	Stable					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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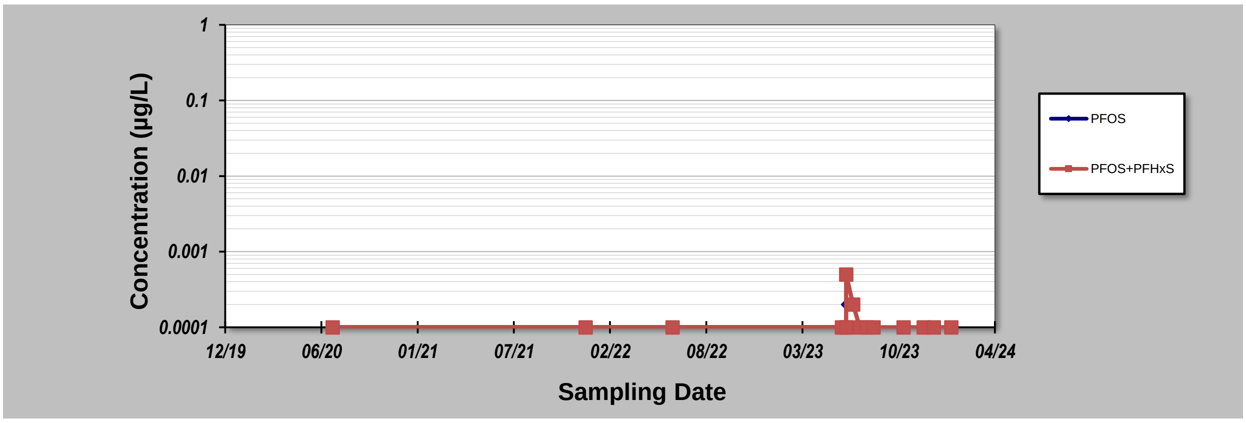
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1551M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
		PFOS	PFOS+PFHxS
1	5-Jun-23	0.0001	0.0001
2	11-Jul-20	0.0001	0.0001
3	18-Jun-22	0.0001	0.0001
4	19-Dec-21	0.0001	0.0001
5	14-Jun-23	0.0001	0.0001
6	14-Jun-23	0.0001	0.0001
7	14-Jun-23	0.0002	0.0005
8	28-Jun-23	0.0002	0.0002
9	12-Jul-23	0.0001	0.0001
10	26-Jul-23	0.0001	0.0001
11	9-Aug-23	0.0001	0.0001
12	11-Oct-23	0.0001	0.0001
13	22-Nov-23	0.0001	0.0001
14	13-Dec-23	0.0001	0.0001
15	18-Jan-24	0.0001	0.0001
16			
17			
18			
19			
20			
Coefficient of Variation:		0.31	0.78
Mann-Kendall Statistic (S):		-2	-3
Confidence Factor:		52.0%	53.9%
Concentration Trend:		Stable	Stable



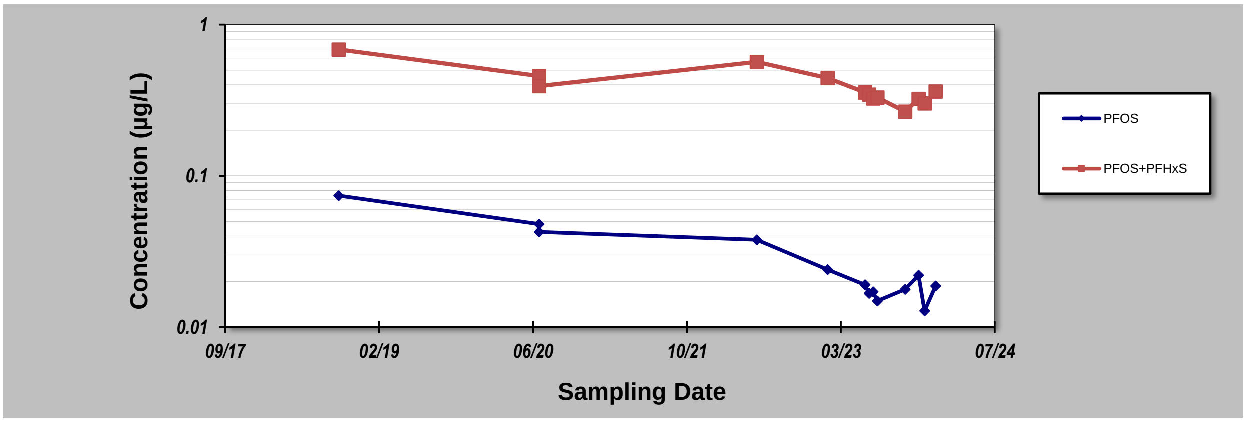
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: MWGW103D
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
	Sampling Point ID:	PFOS	PFOS+PFHxS					
1	26-Sep-18	0.074	0.685					
2	8-Jul-20	0.048	0.457					
3	8-Jul-20	0.0425	0.392					
4	15-Jun-22	0.0378	0.566					
5	31-Jan-23	0.024	0.444					
6	2-Jun-23	0.019	0.356					
7	2-Jun-23	0.019	0.356					
8	15-Jun-23	0.0167	0.344					
9	28-Jun-23	0.0171	0.325					
10	12-Jul-23	0.0149	0.329					
11	27-Jul-23	0.0166	0.344					
12	8-Aug-23	0.0169	0.326					
13	10-Oct-23	0.0178	0.2660					
14	23-Nov-23	0.022	0.3230					
15	12-Dec-23	0.0128	0.3020					
16	17-Jan-24	0.0187	0.3610					
17								
18								
19								
20								
Coefficient of Variation:		0.63	0.29					
Mann-Kendall Statistic (S):		-47	-51					
Confidence Factor:		99.5%	99.8%					
Concentration Trend:		Decreasing	Decreasing					



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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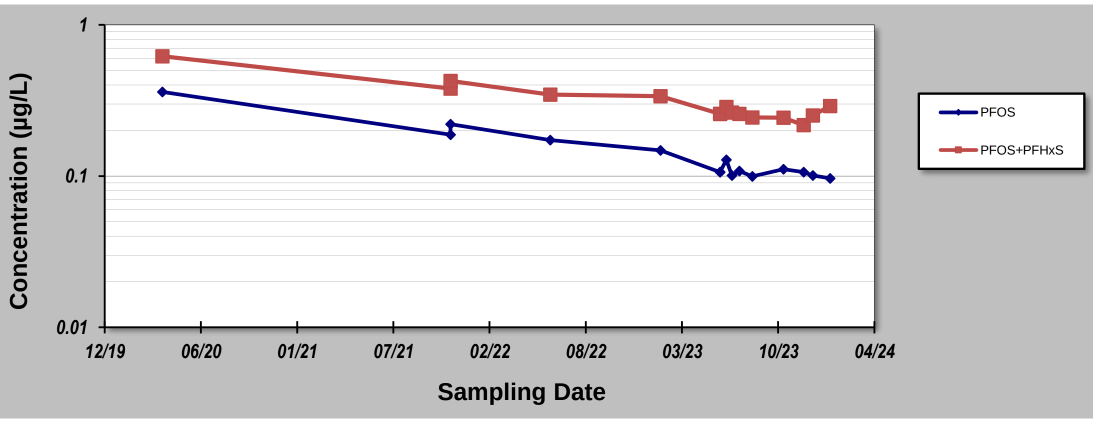
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB18-GW03D
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
Sampling Point ID:		**PFOS**	**PFOS+PFHxS**
1	30-Mar-20	**0.36**	**0.62**
2	19-Nov-21	**0.188**	**0.379**
3	19-Nov-21	**0.22**	**0.425**
4	14-Jun-22	**0.173**	**0.346**
5	29-Jan-23	**0.148**	**0.338**
6	2-Jun-23	**0.106**	**0.258**
7	02-Jun-23	**0.106**	**0.258**
8	15-Jun-23	**0.128**	**0.287**
9	27-Jun-23	**0.101**	**0.263**
10	12-Jul-23	**0.108**	**0.258**
11	27-Jul-23	**0.102**	**0.228**
12	8-Aug-23	**0.0994**	**0.244**
13	12-Oct-23	**0.1110**	**0.243**
14	23-Nov-23	**0.1060**	**0.217**
15	12-Dec-23	**0.1010**	**0.252**
16	17-Jan-24	**0.0966**	**0.290**
17			
18			
19			
20			
Coefficient of Variation:		0.49	0.33
Mann-Kendall Statistic (S):		-68	-63
Confidence Factor:		>99.9%	99.9%
Concentration Trend:		Decreasing	Decreasing



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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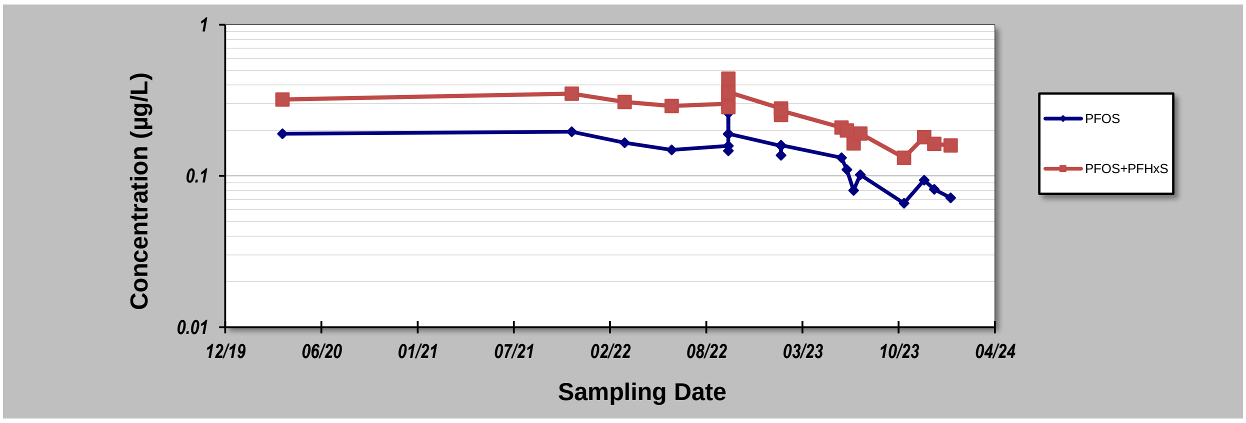
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB18-GW04
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	29-Mar-20	0.190	0.320					
2	20-Nov-21	0.196	0.350					
3	10-Mar-22	0.166	0.309					
4	16-Jun-22	0.149	0.290					
5	12-Oct-22	0.158	0.300					
6	12-Oct-22	0.147	0.285					
7	12-Oct-22	0.189	0.356					
8	12-Oct-22	0.260	0.440					
9	12-Oct-22	0.190	0.359					
10	29-Jan-23	0.158	0.280					
11	29-Jan-23	0.137	0.253					
12	29-Jan-23	0.160	0.270					
13	4-Jun-23	0.132	0.209					
14	15-Jun-23	0.110	0.20					
15	29-Jun-23	0.0802	0.164					
16	13-Jul-23	0.102	0.191					
17	27-Jul-23	0.197	0.327					
18	9-Aug-23	0.0922	0.169					
19	12-Oct-23	0.066	0.132					
20	23-Nov-23	0.0938	0.181					
21	14-Dec-23	0.0816	0.163					
22	17-Jan-24	0.0716	0.159					
23								
24								
25								
Coefficient of Variation:		0.36	0.32					
Mann-Kendall Statistic (S):		-103	-111					
Confidence Factor:		>99.9%	>99.9%					
Concentration Trend:		Decreasing	Decreasing					



Notes:

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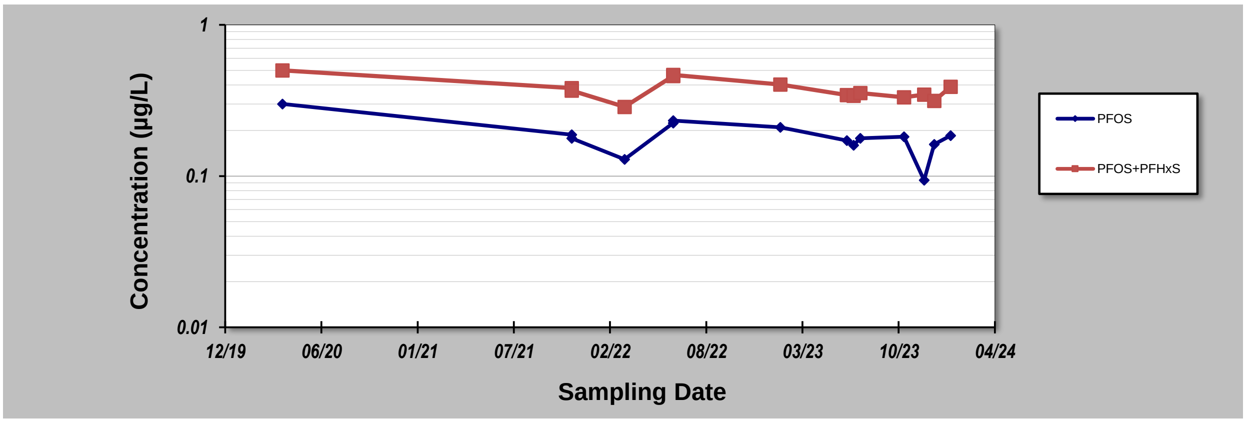
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB18-GW05
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	29-Mar-20	0.3	0.5	0.89				
2	20-Nov-21	0.188	0.381	0.646				
3	20-Nov-21	0.178	0.368					
4	10-Mar-22	0.129	0.287					
5	19-Jun-22	0.224	0.459					
6	19-Jun-22	0.233	0.466					
7	28-Jan-23	0.21	0.403					
8	15-Jun-23	0.172	0.343					
9	29-Jun-23	0.16	0.34					
10	13-Jul-23	0.178	0.354					
11	27-Jul-23	0.188	0.341					
12	9-Aug-23	0.182	0.339					
13	12-Oct-23	0.1820	0.33					
14	23-Nov-23	0.0938	0.346					
15	14-Dec-23	0.1620	0.314					
16	17-Jan-24	0.1850	0.390					
17								
18								
19								
20								
Coefficient of Variation:		0.26	0.16	0.22				
Mann-Kendall Statistic (S):		-17	-20	-1				
Confidence Factor:		80.6%	84.8%					
Concentration Trend:		Stable	Stable					



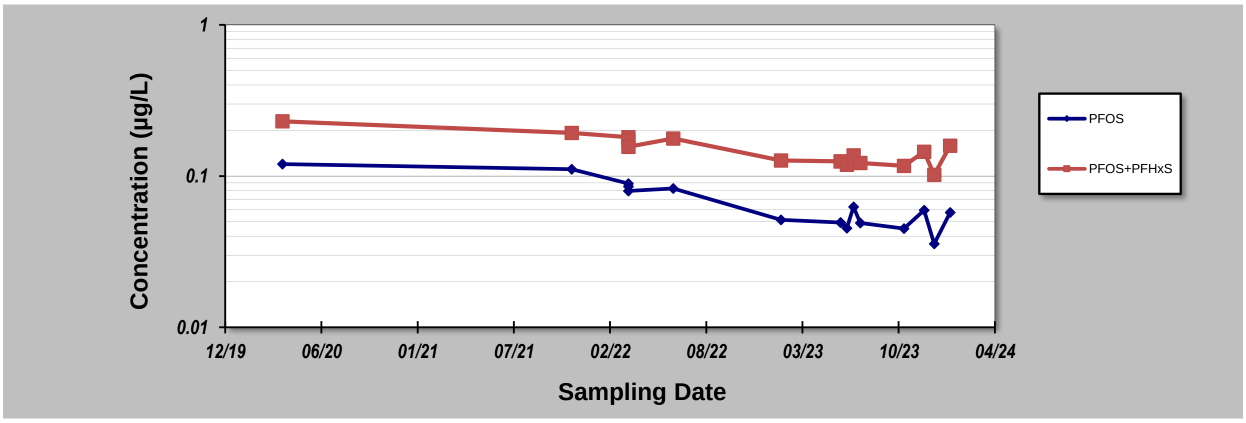
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB20-GW06
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)							
Sampling Point ID:		**PFOS**	**PFOS+PFHxS**						
1	29-Mar-20	0.12	0.23						
2	20-Nov-21	0.111	0.193						
3	18-Mar-22	0.0892	0.181						
4	18-Mar-22	0.0855	0.171						
5	18-Mar-22	0.0796	0.156						
6	19-Jun-22	0.0827	0.177						
7	29-Jan-23	0.0513	0.127						
8	2-Jun-23	0.0493	0.125						
9	2-Jun-23	0.0493	0.125						
10	15-Jun-23	0.0453	0.119						
11	29-Jun-23	0.0625	0.137						
12	13-Jul-23	0.0489	0.122						
13	27-Jul-23	0.0595	0.125						
14	8-Aug-23	0.0434	0.107						
15	12-Oct-23	0.0450	0.117						
16	23-Nov-23	0.0595	0.145						
17	14-Dec-23	0.0356	0.102						
18	16-Jan-24	0.0574	0.159						
19									
20									
Coefficient of Variation:		0.37	0.23						
Mann-Kendall Statistic (S):		-66	-56						
Confidence Factor:		99.9%	99.4%						
Concentration Trend:		Decreasing	Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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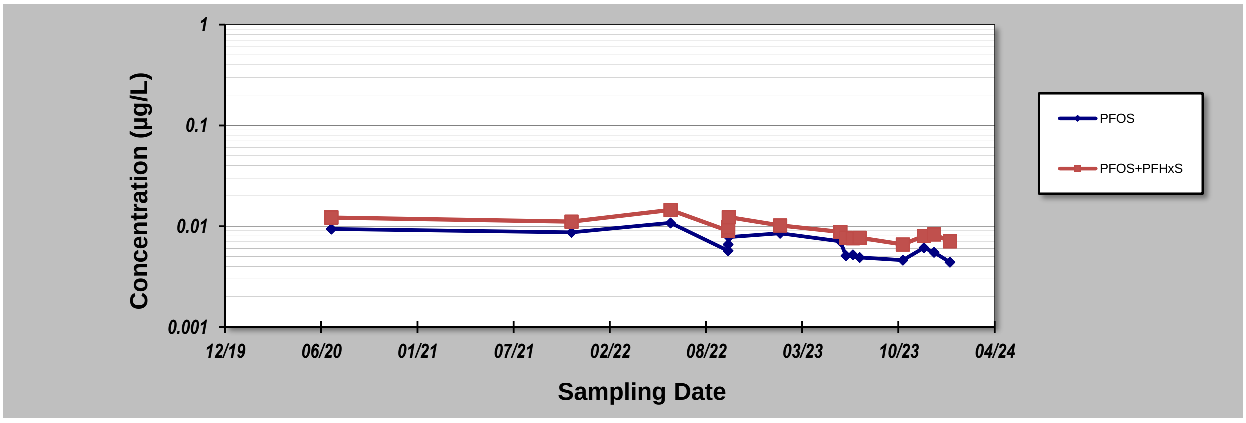
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: MW116
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	9-Jul-20	0.0094	0.0123					
2	9-Jul-20	0.0094	0.0122					
3	20-Nov-21	0.0087	0.0111					
4	14-Jun-22	0.0108	0.0145					
5	12-Oct-22	0.0057	0.009					
6	12-Oct-22	0.0066	0.0098					
7	13-Oct-22	0.0078	0.0123					
8	28-Jan-23	0.0085	0.0102					
9	2-Jun-23	0.0071	0.0088					
10	14-Jun-23	0.0051	0.0077					
11	28-Jun-23	0.0052	0.0076					
12	12-Jul-23	0.0049	0.0077					
13	27-Jul-23	0.0048	0.0071					
14	8-Aug-23	0.005	0.0059					
15	10-Oct-23	0.0046	0.0066					
16	23-Nov-23	0.0061	0.008					
17	14-Dec-23	0.0055	0.0083					
18	16-Jan-24	0.0044	0.0071					
19								
20								
	Coefficient of Variation:	0.29	0.24					
	Mann-Kendall Statistic (S):	-60	-61					
	Confidence Factor:	99.7%	99.8%					
	Concentration Trend:	Decreasing	Decreasing					



Notes:

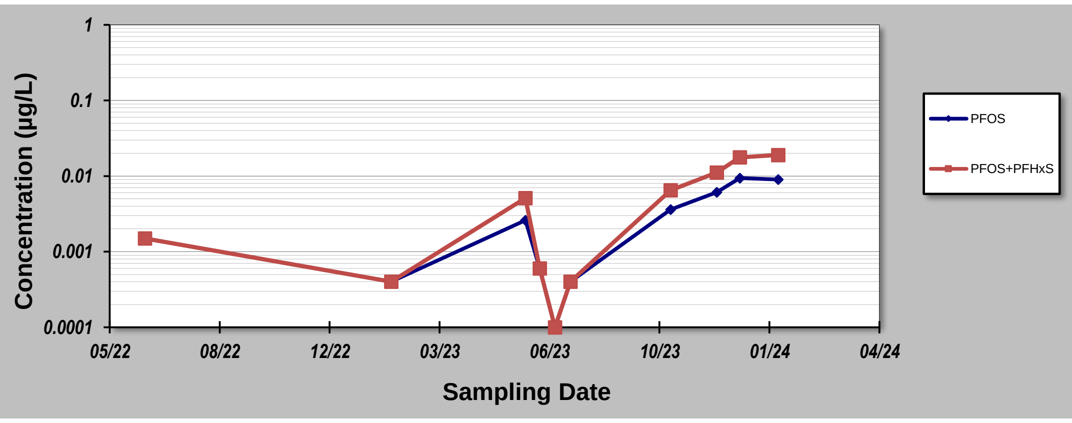
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW0219
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
		PFOS	PFOS+PFHxS
1	20-Jun-22	0.0015	0.0015
2	30-Jan-23	0.0004	0.0004
3	1-Jun-23	0.0026	0.0051
4	14-Jun-23	0.0006	0.0006
5	28-Jun-23	0.0001	0.0001
6	12-Jul-23	0.0004	0.0004
7	26-Jul-23	0.0006	0.0006
8	9-Aug-23	0.0004	0.0004
9	11-Oct-23	0.0036	0.0065
10	22-Nov-23	0.0061	0.0111
11	13-Dec-23	0.0094	0.0177
12	17-Jan-24	0.009	0.019
13			
14			
15			
16			
17			
18			
19			
20			
Coefficient of Variation:		1.06	1.17
Mann-Kendall Statistic (S):		25	27
Confidence Factor:		98.6%	99.2%
Concentration Trend:		Increasing	Increasing



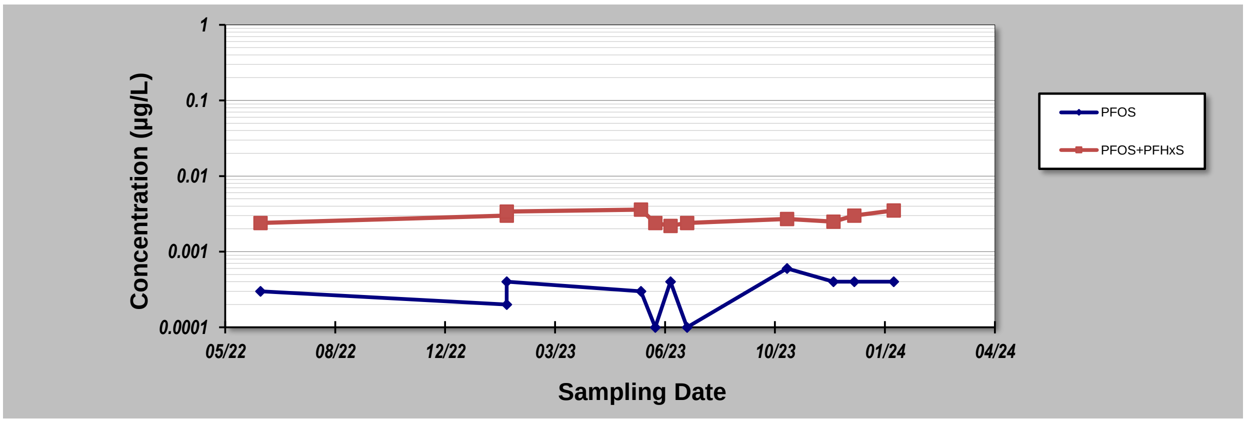
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW0210
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	20-Jun-22	0.0003	0.0024					
2	30-Jan-23	0.0002	0.003					
3	30-Jan-23	0.0004	0.0034					
4	1-Jun-23	0.0003	0.0036					
5	14-Jun-23	0.0001	0.0024					
6	28-Jun-23	0.0004	0.0022					
7	13-Jul-23	0.0001	0.0024					
8	27-Jul-23	0.0003	0.0023					
9	8-Aug-23	0.0005	0.0026					
10	12-Oct-23	0.0006	0.0027					
11	23-Nov-23	0.0004	0.0025					
12	12-Dec-23	0.0004	0.0030					
13	17-Jan-24	0.0004	0.0035					
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.47	0.18					
Mann-Kendall Statistic (S):		17	8					
Confidence Factor:		92.2%	72.9%					
Concentration Trend:		Prob. Increasing	No Trend					



Notes:

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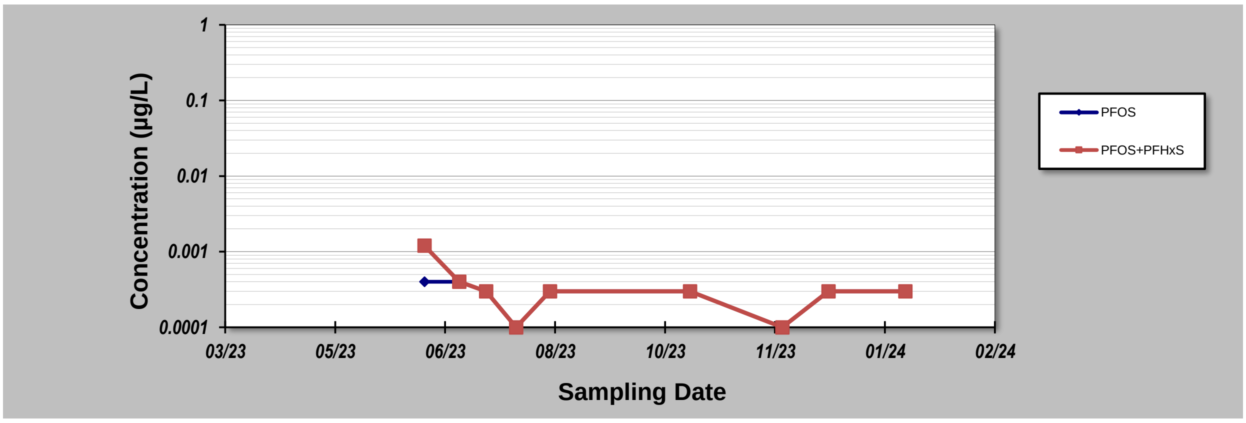
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: X57
Conducted By:
Job ID:
Constituent:
Concentration Units: μg/L

Sampling Event	Sampling Date	CONCENTRATION (μg/L)							
	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**						
1	13/06/2023	**0.0004**	**0.0012**						
2	29/06/2023	**0.0004**	**0.0004**						
3	11/07/2023	**0.0003**	**0.0003**						
4	25/07/2023	**0.0001**	**0.0001**						
5	9/08/2023	**0.0003**	**0.0003**						
6	12/10/2023	**0.0003**	**0.0003**						
7	23/11/2023	**0.0001**	**0.0001**						
8	14/12/2023	**0.0003**	**0.0003**						
9	18/01/2024	**0.0003**	**0.0003**						
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
	Coefficient of Variation:	0.39	0.89						
	Mann-Kendall Statistic (S):	-12	-13						
	Confidence Factor:	87.0%	89.0%						
	Concentration Trend:	Stable	Stable						



Notes:

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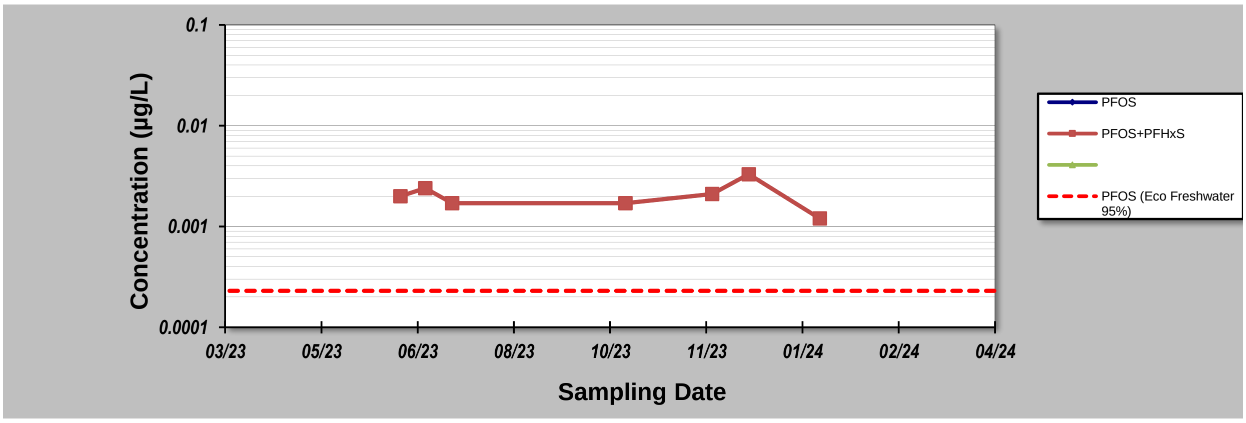
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: OPDM1
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS		PFOS (Eco	NEMP 2020		
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	14-Jun-23	0.002	0.002					
2	27-Jun-23	0.0024	0.0024					
3	11-Jul-23	0.0017	0.0017					
4	25-Jul-23	0.0006	0.0006					
5	7-Aug-23	0.0009	0.0009					
6	9-Oct-23	0.0017	0.0017					
7	23-Nov-23	0.0021	0.0021					
8	12-Dec-23	0.0033	0.0033					
9	18-Jan-24	0.0012	0.0012					
10								
11								
12								
13								
14								
15								
16								
17								
18								
19	4/04/2018				0.0002	0.0700		
20	4/04/2025				0.0002	0.0700		
Coefficient of Variation:		0.32	0.32		0.00	0.00		
Mann-Kendall Statistic (S):		-3	-3		0	0		
Confidence Factor:		61.4%	61.4%					
Concentration Trend:		Stable	Stable					



Notes:

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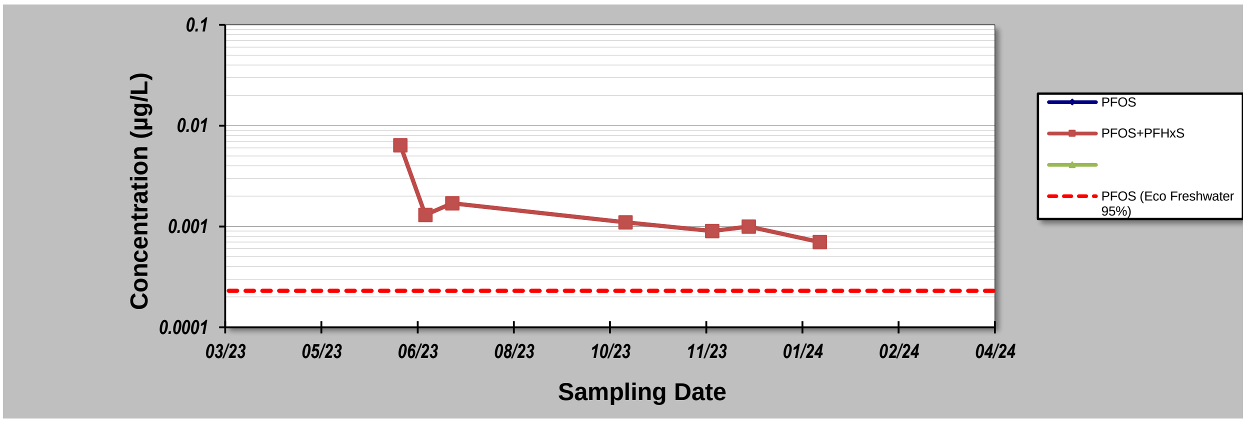
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: OPDM2
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		**PFOS**	**PFOS+PFHxS**		**PFOS (Eco**	**NEMP 2020**		
1	14-Jun-23	**0.0064**	**0.0064**					
2	27-Jun-23	**0.0013**	**0.0013**					
3	11-Jul-23	**0.0017**	**0.0017**					
4	25-Jul-23	**0.0006**	**0.0006**					
5	7-Aug-23	**0.0008**	**0.0008**					
6	9-Oct-23	**0.0011**	**0.0011**					
7	23-Nov-23	**0.0009**	**0.0009**					
8	12-Dec-23	**0.0010**	**0.0010**					
9	18-Jan-24	**0.0007**	**0.0007**					
10								
11								
12								
13								
14								
15								
16								
17								
18								
19	4/04/2018				0.0002	0.0700		
20	4/04/2025				0.0002	0.0700		
Coefficient of Variation:		1.08	1.08		0.00	0.00		
Mann-Kendall Statistic (S):		-18	-18		0	0		
Confidence Factor:		99.7%	99.7%					
Concentration Trend:		Decreasing	Decreasing					



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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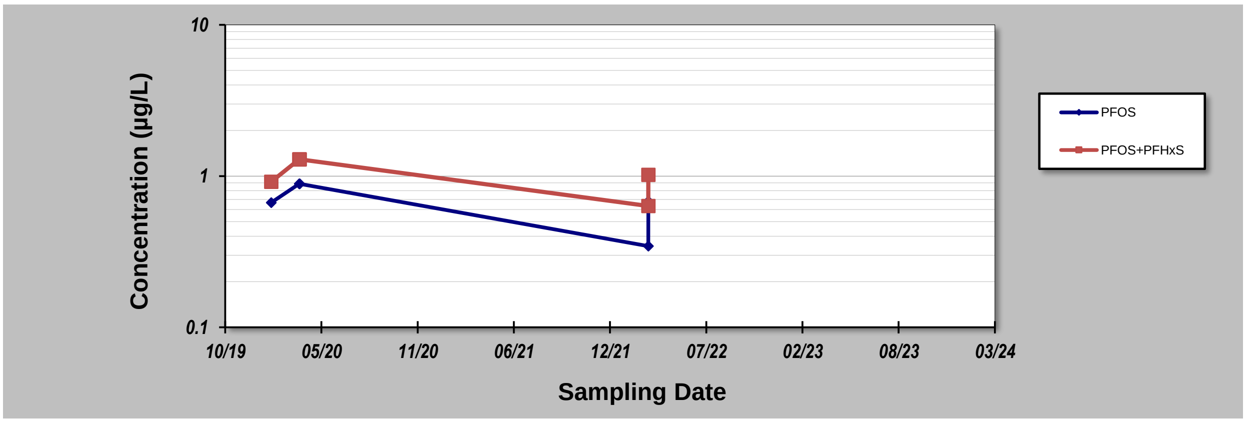
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 0-Jan-00
Facility Name: HWHB1805M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	25-Jan-20	0.668	0.916					
2	24-Mar-20	0.888	1.29					
3	24-Mar-20	0.888	1.29					
4	19-Mar-22	0.344	0.634					
5	19-Mar-22	0.682	1.02					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.32	0.27					
Mann-Kendall Statistic (S):		-1	-1					
Confidence Factor:		50.0%	50.0%					
Concentration Trend:		Stable	Stable					



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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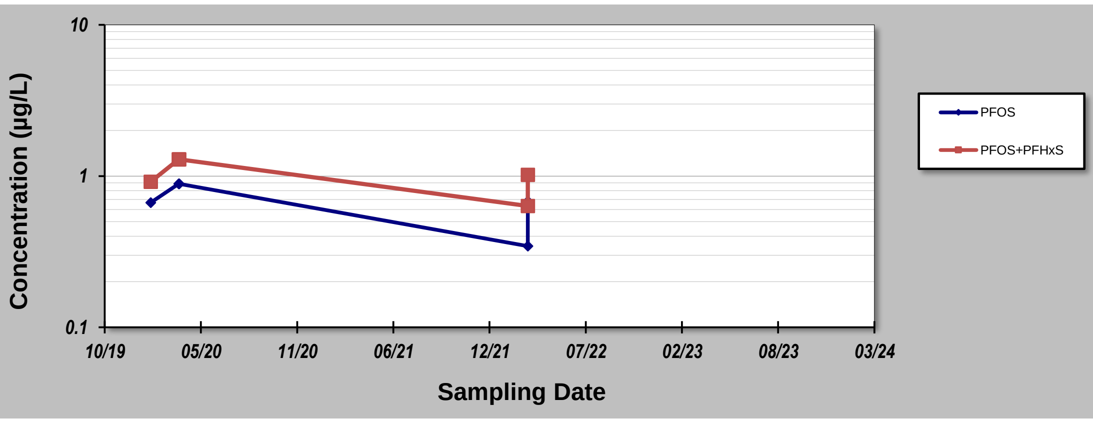
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 0-Jan-00
Facility Name: HWHB1805M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	25-Jan-20	0.668	0.916					
2	24-Mar-20	0.888	1.29					
3	24-Mar-20	0.888	1.29					
4	19-Mar-22	0.344	0.634					
5	19-Mar-22	0.682	1.02					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.32	0.27					
Mann-Kendall Statistic (S):		-1	-1					
Confidence Factor:		50.0%	50.0%					
Concentration Trend:		Stable	Stable					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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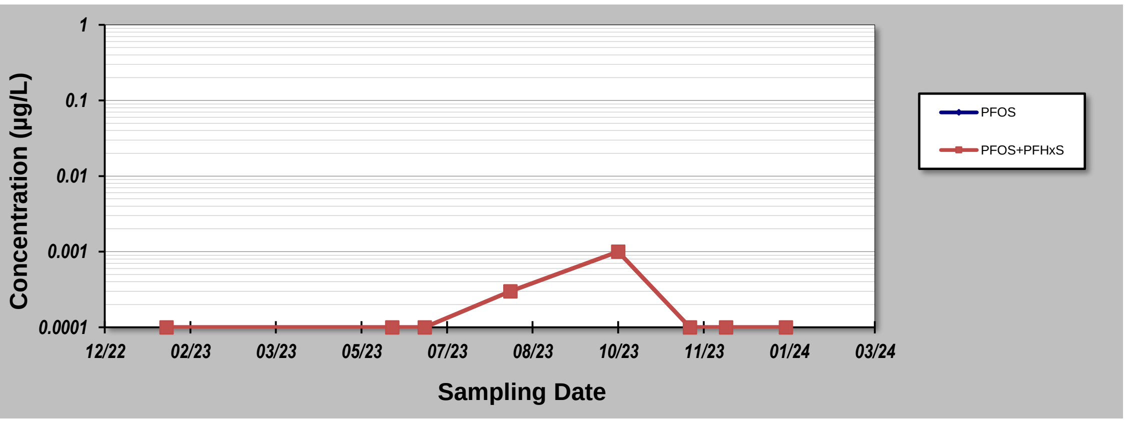
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 0-Jan-00
Facility Name: WBCSGW0208
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	20-Jan-23	0.0001	0.0001					
2	1-Jun-23	0.0001	0.0001					
3	20-Jun-23	0.0001	0.0001					
4	9-Aug-23	0.0003	0.0003					
5	11-Oct-23	0.001	0.001					
6	22-Nov-23	0.0001	0.0001					
7	13-Dec-23	0.0001	0.0001					
8	17-Jan-24	0.0001	0.0001					
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.33	1.33					
Mann-Kendall Statistic (S):		1	1					
Confidence Factor:		50.0%	50.0%					
Concentration Trend:		No Trend	No Trend					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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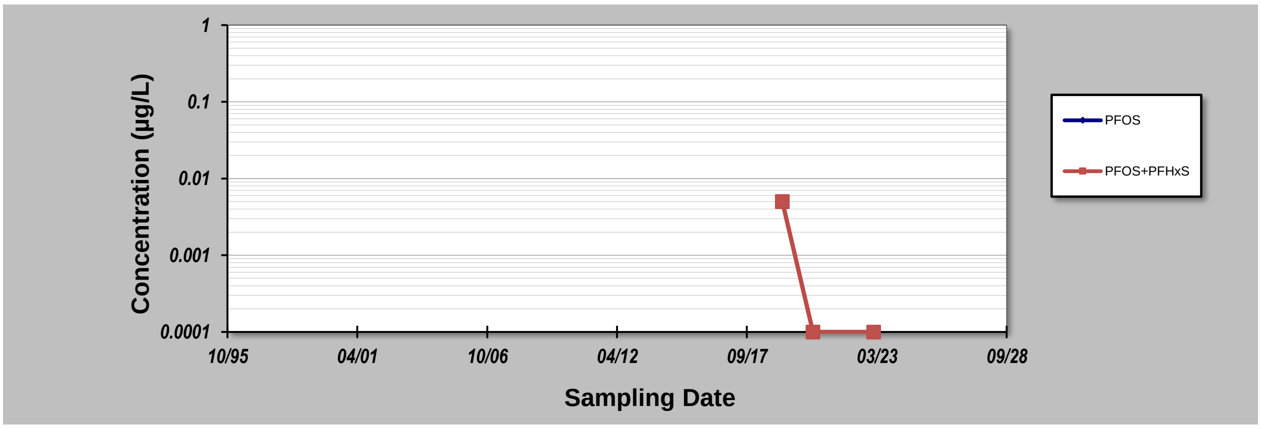
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEK0003P
Conducted By: NT
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	22-Mar-19	0.005	0.005					
2	22-Mar-19	0.005	0.005					
3	4-Jul-20	0.0001	0.0001					
4	25-Jan-23	0.0001	0.0001					
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.11	1.11					
Mann-Kendall Statistic (S):		-4	-4					
Confidence Factor:		83.3%	83.3%					
Concentration Trend:		No Trend	No Trend					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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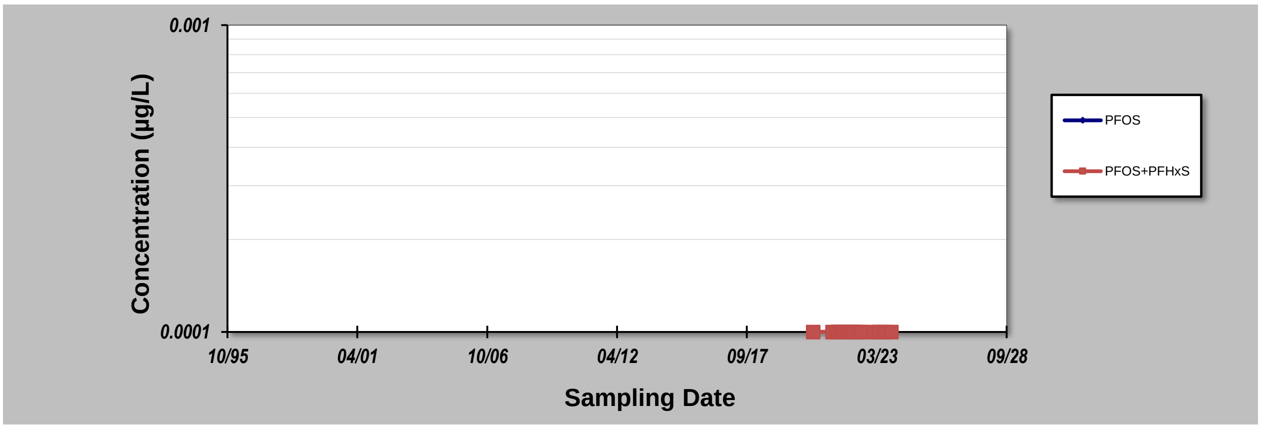
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEK0004P
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**					
Sampling Point ID:		PFOS	PFOS+PFHxS				
1	9-Jul-20	0.0001	0.0001				
2	3-May-21	0.0001	0.0001				
3	31-May-21	0.0002	0.0002				
4	8-Jul-21	0.0001	0.0001				
5	3-Aug-21	0.0001	0.0001				
6	10-Sep-21	0.0001	0.0001				
7	5-Oct-21	0.0001	0.0001				
8	2-Nov-21	0.0001	0.0001				
9	7-Dec-21	0.0001	0.0001				
10	12-Jan-22	0.0001	0.0001				
11	8-Feb-22	0.0001	0.0001				
12	9-Mar-22	0.0001	0.0001				
13	7-Apr-22	0.0001	0.0001				
14	9-Jun-22	0.0001	0.0001				
15	18-Jul-22	0.0001	0.0001				
16	11-Oct-22	0.0001	0.0006				
17	25-Jan-23	0.0001	0.0001				
18	20-Apr-23	0.0001	0.0001				
19	19-Jul-23	0.0001	0.0001				
20	25-Oct-23	0.0001	0.0001				
21							
22							
23							
24							
25							
Coefficient of Variation:		0.00	0.00				
Mann-Kendall Statistic (S):		-16	-5				
Confidence Factor:		71.3%	56.4%				
Concentration Trend:		Stable	Stable				



Notes:

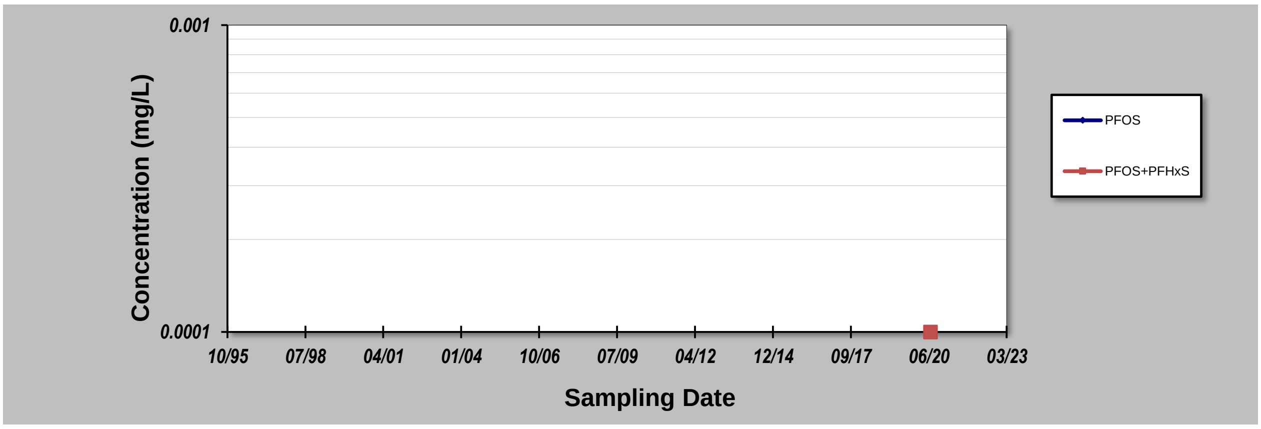
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEK0005P
Conducted By:
Job ID:
Constituent:
Concentration Units: mg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (mg/L)						
		PFOS	PFOS+PFHxS					
1	9-Jul-20	0.0001	0.0001					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



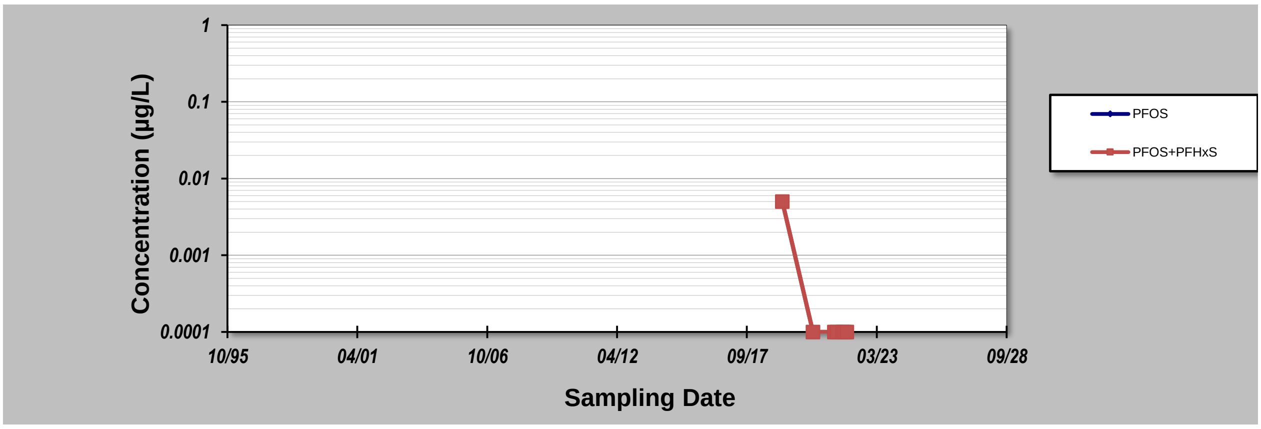
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEK0006P
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	22-Mar-19	0.005	0.005					
2	4-Jul-20	0.0001	0.0001					
3	31-May-21	0.0001	0.0001					
4	8-Jul-21	0.0001	0.0001					
5	5-Oct-21	0.0001	0.0001					
6	2-Nov-21	0.0001	0.0001					
7	7-Dec-21	0.0001	0.0001					
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:		40.8%	40.8%					
Concentration Trend:		Stable	Stable					



Notes:

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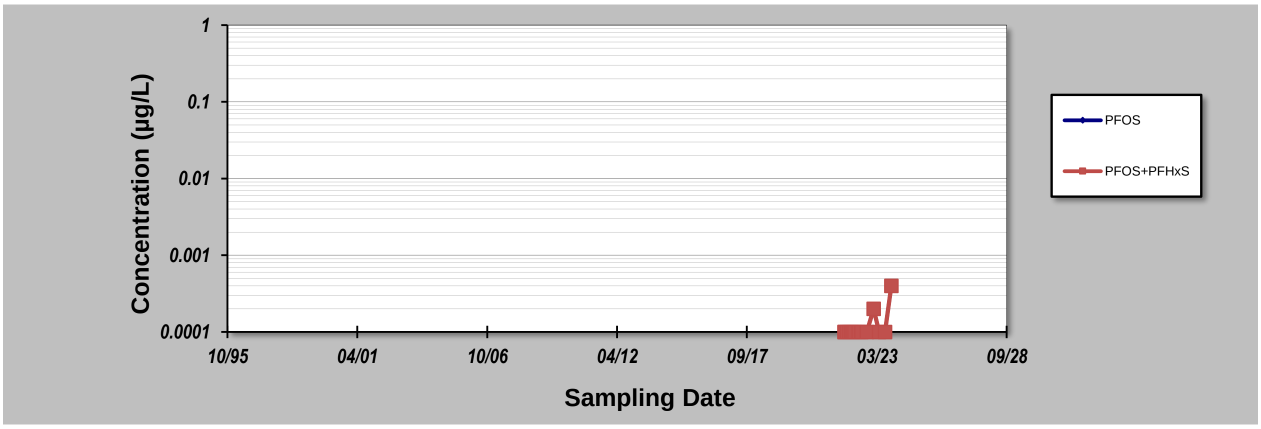
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEL0101M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	3-Nov-21	0.0001	0.0001					
2	4-Nov-21	0.0001	0.0001					
3	8-Dec-21	0.0001	0.0001					
4	12-Jan-22	0.0001	0.0001					
5	11-Feb-22	0.0001	0.0001					
6	10-Mar-22	0.0001	0.0001					
7	7-Apr-22	0.0001	0.0001					
8	9-Jun-22	0.0001	0.0001					
9	19-Jul-22	0.0001	0.0001					
10	13-Oct-22	0.0001	0.0001					
11	26-Jan-23	0.0002	0.0002					
12	20-Apr-23	0.0001	0.0001					
13	19-Jul-23	0.0001	0.0001					
14	25-Oct-23	0.0004	0.0004					
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.64	0.64					
	Mann-Kendall Statistic (S):	21	21					
	Confidence Factor:	86.0%	86.0%					
	Concentration Trend:	No Trend	No Trend					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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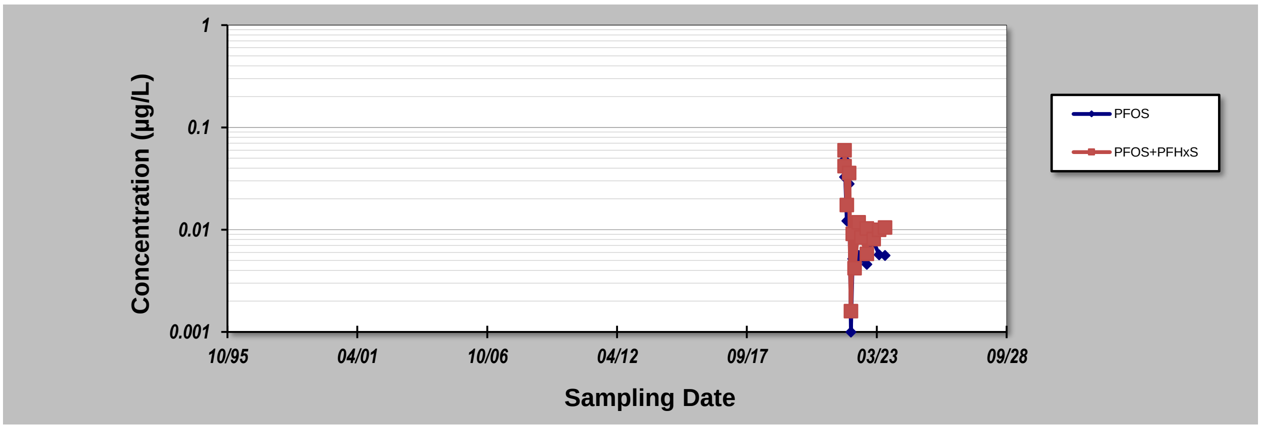
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEL0102M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	3-Nov-21	0.0328	0.0419					
2	4-Nov-21	0.0484	0.0597					
3	7-Dec-21	0.0122	0.0174					
4	12-Jan-22	0.0280	0.0358					
5	11-Feb-22	0.0010	0.0016					
6	10-Mar-22	0.0052	0.0091					
7	7-Apr-22	0.0042	0.0042					
8	9-Jun-22	0.0056	0.0118					
9	19-Jul-22	0.0053	0.0084					
10	13-Oct-22	0.0046	0.0058					
11	13-Oct-22	0.0064	0.0103					
12	26-Jan-23	0.0076	0.01					
13	19-Apr-23	0.0057	0.01					
14	19-Jul-23	0.0056	0.0105					
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	1.13	1.01					
	Mann-Kendall Statistic (S):	-18	-25					
	Confidence Factor:	82.1%	90.4%					
	Concentration Trend:	No Trend	Prob. Decreasing					



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date:

Facility Name: HEL0103M

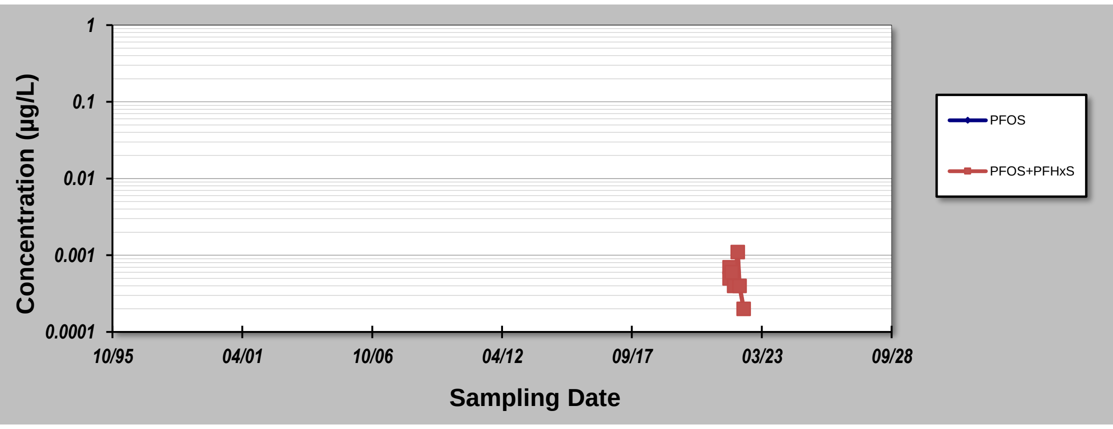
Conducted By:

Job ID:

Constituent:

Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	3-Nov-21	0.0007	0.0007					
2	4-Nov-21	0.0005	0.0005					
3	9-Dec-21	0.0006	0.0006					
4	12-Jan-22	0.0004	0.0004					
5	9-Mar-22	0.0011	0.0011					
6	6-Apr-22	0.0004	0.0004					
7	9-Jun-22	0.0002	0.0002					
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.52	0.52					
Mann-Kendall Statistic (S):		-10	-10					
Confidence Factor:		90.7%	90.7%					
Concentration Trend:		Prob. Decreasing	Prob. Decreasing					



Notes:

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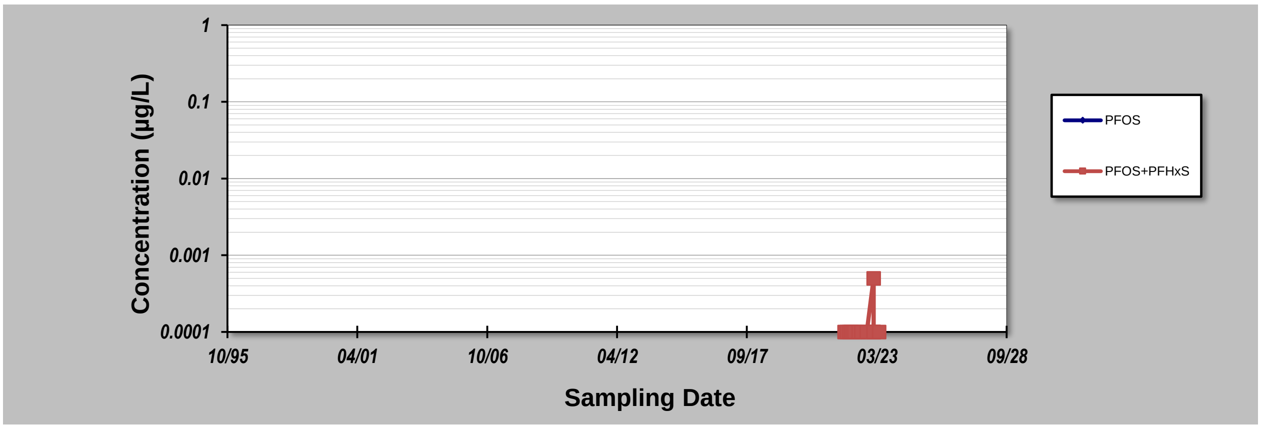
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEL0104M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	4-Nov-21	0.0001	0.0001					
2	4-Nov-21	0.0003	0.0003					
3	9-Dec-21	0.0001	0.0001					
4	12-Jan-22	0.0001	0.0001					
5	11-Feb-22	0.0001	0.0001					
6	11-Feb-22	0.0001	0.0001					
7	11-Feb-22	0.0001	0.0001					
8	10-Mar-22	0.0001	0.0001					
9	6-Apr-22	0.0001	0.0001					
10	8-Jun-22	0.0001	0.0001					
11	19-Jul-22	0.0001	0.0001					
12	12-Oct-22	0.0001	0.0001					
13	26-Jan-23	0.0001	0.0005					
14	26-Jan-23	0.0001	0.0001					
15	26-Jan-23	0.0001	0.0001					
16	26-Jan-23	0.0001	0.0001					
17	19-Apr-23	0.0001	0.0001					
18								
19								
20								
Coefficient of Variation:		0.00	0.80					
Mann-Kendall Statistic (S):		-7	-7					
Confidence Factor:		61.5%	60.5%					
Concentration Trend:		Stable	Stable					



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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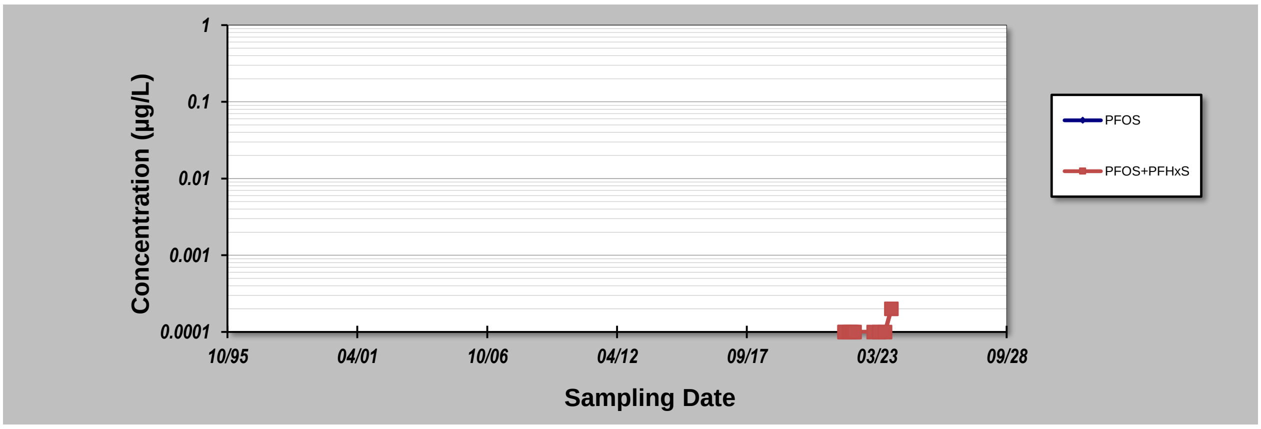
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEL0105M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	3-Nov-21	0.0001	0.0001					
2	4-Nov-21	0.0001	0.0001					
3	8-Dec-21	0.0003	0.0003					
4	12-Jan-22	0.0001	0.0001					
5	11-Feb-22	0.0001	0.0001					
6	10-Mar-22	0.0001	0.0001					
7	7-Apr-22	0.0001	0.0001					
8	26-Jan-23	0.0001	0.0001					
9	19-Apr-23	0.0001	0.0001					
10	19-Jul-23	0.0001	0.0001					
11	25-Oct-23	0.0002	0.0002					
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.29	0.29					
Mann-Kendall Statistic (S):		3	3					
Confidence Factor:		56.9%	56.9%					
Concentration Trend:		No Trend	No Trend					



Notes:

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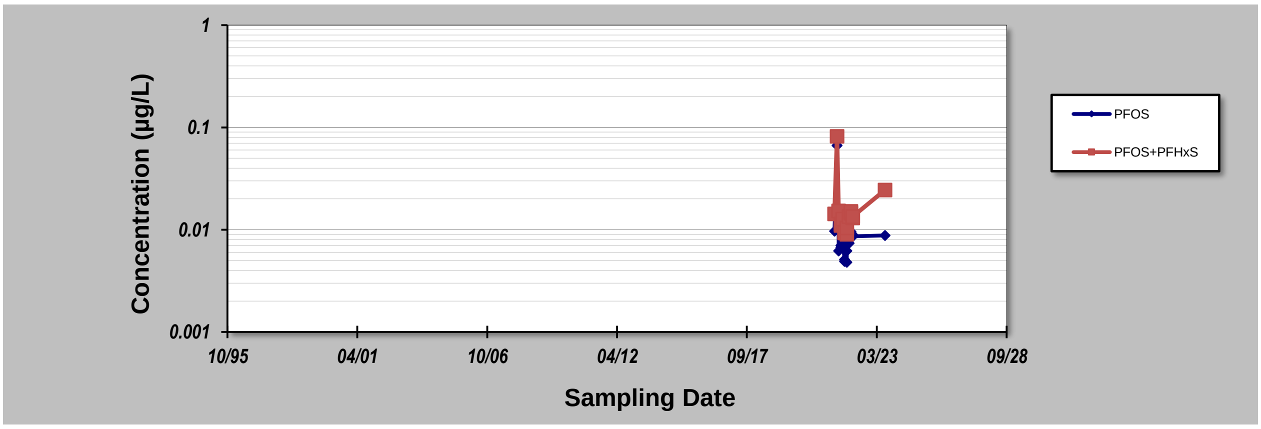
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0802M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	1-Jun-21	0.0097	0.0143					
2	10-Jul-21	0.0665	0.0817					
3	5-Aug-21	0.0098	0.0153					
4	5-Aug-21	0.0062	0.0152					
5	9-Sep-21	0.0070	0.0114					
6	9-Sep-21	0.0067	0.0110					
7	6-Oct-21	0.0067	0.0111					
8	6-Oct-21	0.0078	0.0127					
9	4-Nov-21	0.0051	0.0095					
10	4-Nov-21	0.0049	0.0093					
11	8-Dec-21	0.0048	0.0090					
12	8-Dec-21	0.0062	0.0104					
13	12-Jan-22	0.0079	0.0134					
14	12-Jan-22	0.0074	0.0134					
15	11-Feb-22	0.0096	0.0145					
16	11-Feb-22	0.0094	0.0151					
17	10-Mar-22	0.0089	0.0130					
18	10-Mar-22	0.0086	0.0134					
19	19-Jul-23	0.0088	0.0244					
20								
21								
22								
23								
24								
25								
Coefficient of Variation:		1.27	0.94	0.05				
Mann-Kendall Statistic (S):		-14	-14	1				
Confidence Factor:		65.1%	65.1%					
Concentration Trend:		No Trend	Stable					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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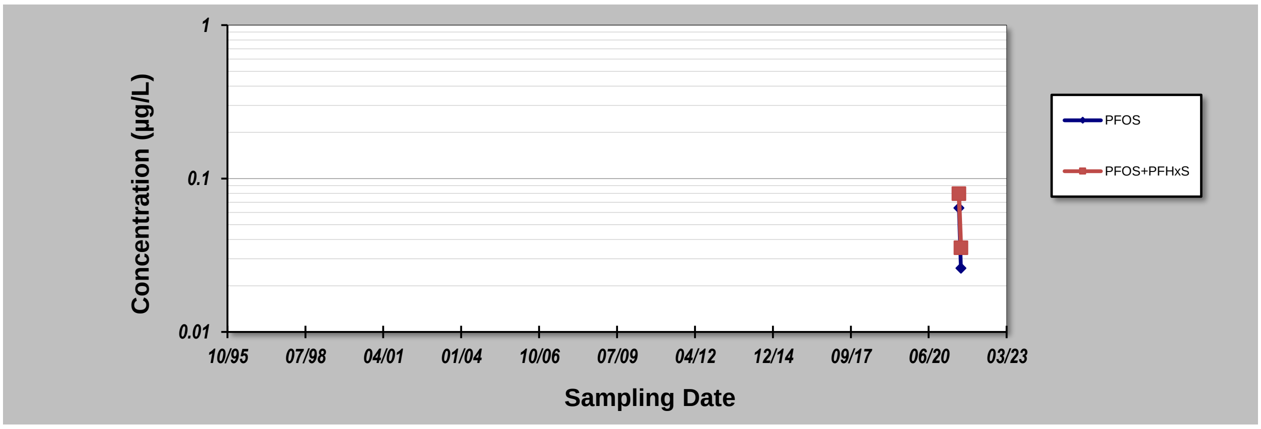
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0802M D
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
1	10-Jul-21	**0.0644**	**0.0798**					
2	5-Aug-21	**0.0261**	**0.0354**					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.60	0.55					
Mann-Kendall Statistic (S):		-1	-1					
Confidence Factor:								
Concentration Trend:								



Notes:

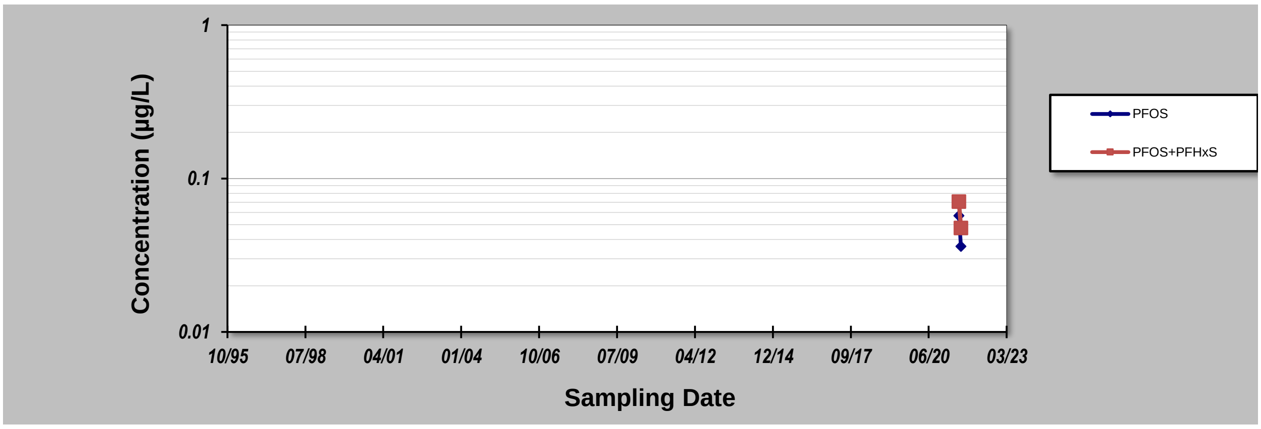
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0802M I
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
	Sampling Point ID:	PFOS	PFOS+PFHxS					
1	10-Jul-21	**0.0572**	**0.0707**					
2	5-Aug-21	**0.0361**	**0.0476**					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.32	0.28					
Mann-Kendall Statistic (S):		-1	-1					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:

Facility Name: HWHB0802M S

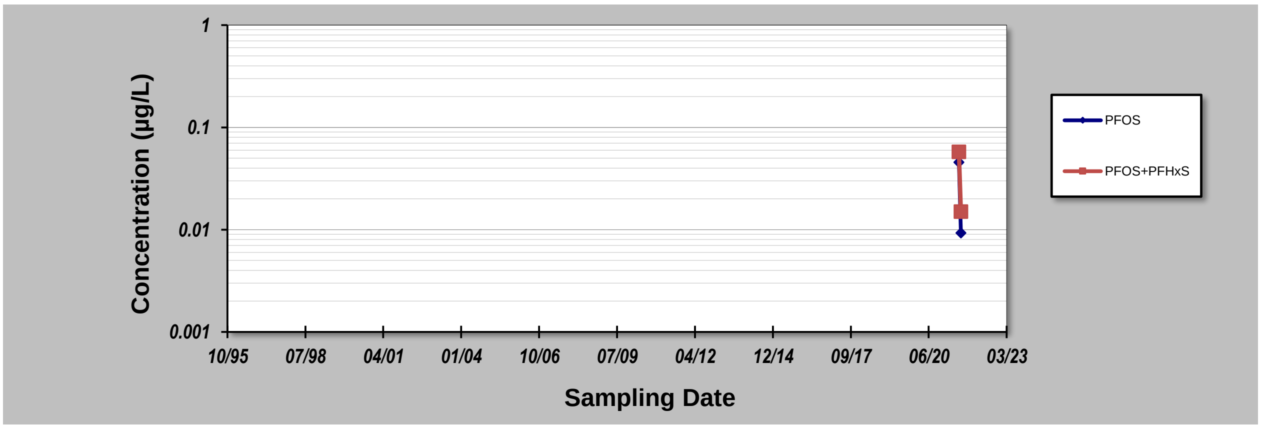
Conducted By:

Job ID:

Constituent:

Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	10-Jul-21	0.0457	0.0577					
2	5-Aug-21	0.0093	0.015					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.94	0.83					
Mann-Kendall Statistic (S):		-1	-1					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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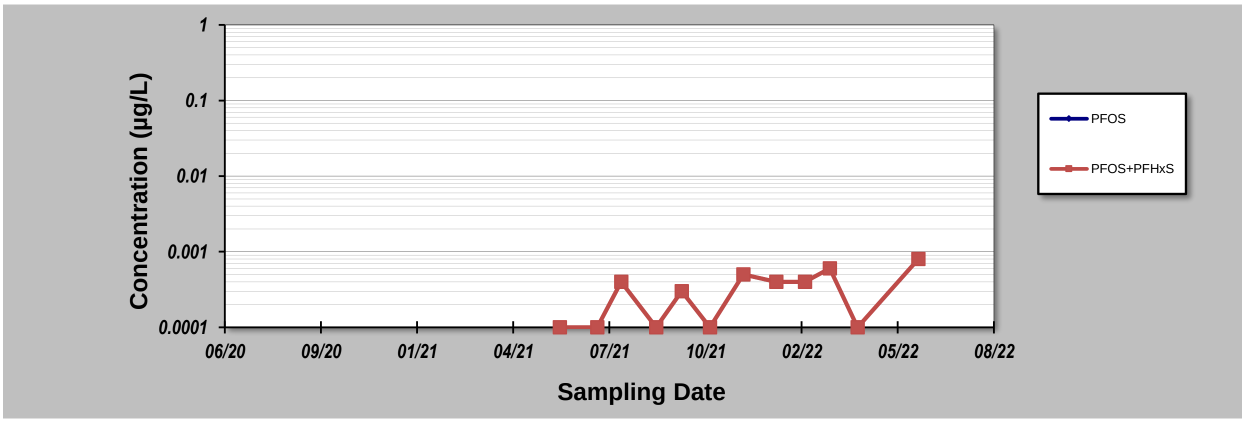
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1607M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS | PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	1-Jun-21	0.0001	0.0001					
2	10-Jul-21	0.0001	0.0001					
3	4-Aug-21	0.0004	0.0004					
4	9-Sep-21	0.0001	0.0001					
5	6-Oct-21	0.0003	0.0003					
6	4-Nov-21	0.0001	0.0001					
7	9-Dec-21	0.0005	0.0005					
8	12-Jan-22	0.0004	0.0004					
9	11-Feb-22	0.0004	0.0004					
10	9-Mar-22	0.0006	0.0006					
11	7-Apr-22	0.0001	0.0001					
12	9-Jun-22	0.0008	0.0008					
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.72	0.72					
	Mann-Kendall Statistic (S):	29	29					
	Confidence Factor:	97.4%	97.4%					
	Concentration Trend:	Increasing	Increasing					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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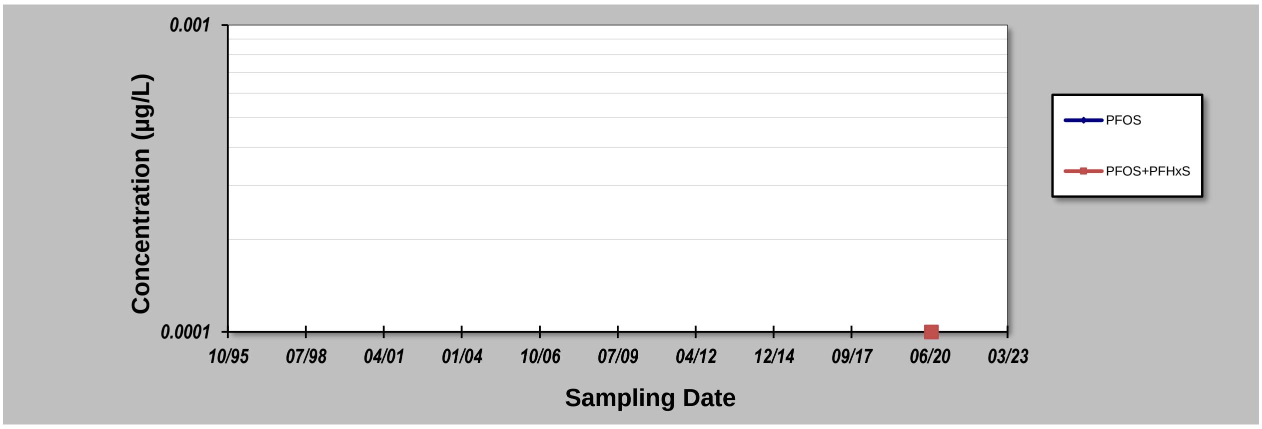
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EL0006DM
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	11-Jul-20	0.0001	0.0001					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



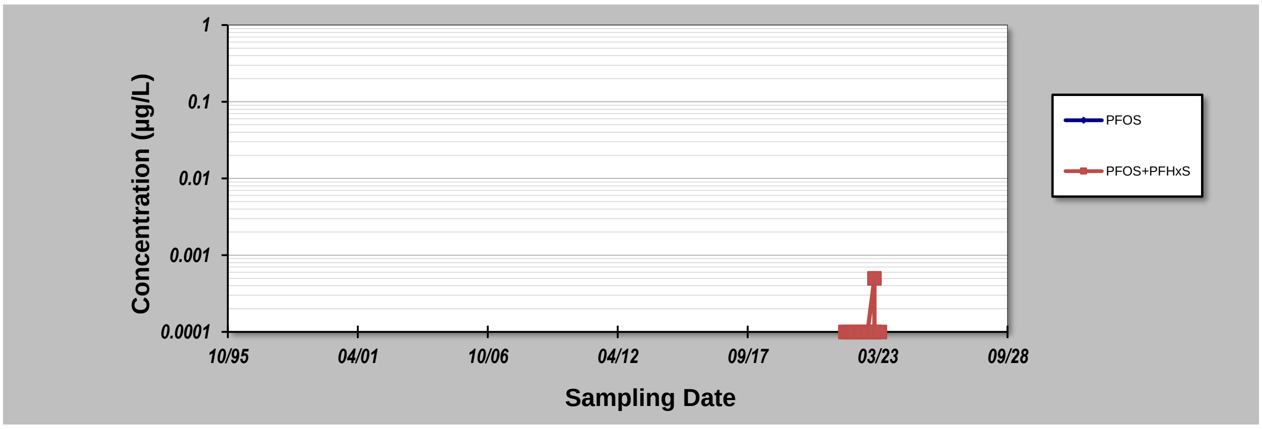
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEL0104M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	4-Nov-21	0.0001	0.0001	0.0015				
2	4-Nov-21	0.0003	0.0003	0.0027				
3	9-Dec-21	0.0001	0.0001	0.0011				
4	12-Jan-22	0.0001	0.0001	0.0001				
5	11-Feb-22	0.0001	0.0001	0.0001				
6	11-Feb-22	0.0001	0.0001	0.0001				
7	11-Feb-22	0.0001	0.0001	0.0001				
8	10-Mar-22	0.0001	0.0001	0.0001				
9	6-Apr-22	0.0001	0.0001	0.0001				
10	8-Jun-22	0.0001	0.0001	0.0001				
11	19-Jul-22	0.0001	0.0001	0.0001				
12	12-Oct-22	0.0001	0.0001	0.0001				
13	26-Jan-23	0.0001	0.0005	0.0025				
14	26-Jan-23	0.0001	0.0001	0.0001				
15	26-Jan-23	0.0001	0.0001	0.0001				
16	26-Jan-23	0.0001	0.0001	0.0001				
17	19-Apr-23	0.0001	0.0001	0.0001				
18								
19								
20								
Coefficient of Variation:		0.00	0.80	2.36				
Mann-Kendall Statistic (S):		-7	-7	-38				
Confidence Factor:		61.5%	60.5%	97.9%				
Concentration Trend:		Stable	Stable	Decreasing				



Notes:

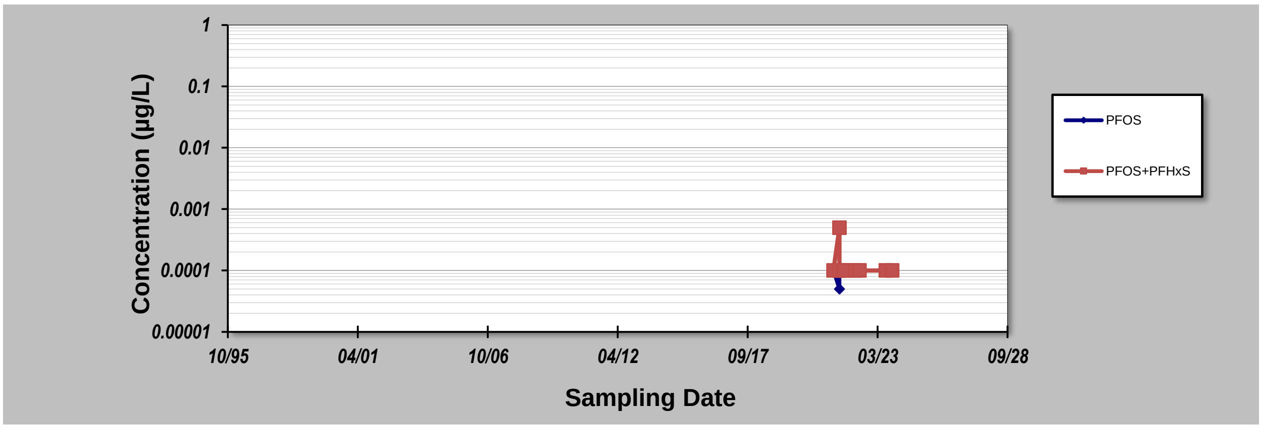
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1608M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**					
1	5-May-21	**0.0001**	**0.0001**					
2	2-Jun-21	**0.0004**	**0.0004**					
3	4-Aug-21	**0.00005**	**0.0005**					
4	4-Aug-21	**0.0001**	**0.0001**					
5	4-Aug-21	**0.0001**	**0.0001**					
6	9-Sep-21	**0.0002**	**0.0002**					
7	6-Oct-21	**0.0001**	**0.0001**					
8	4-Nov-21	**0.0001**	**0.0001**					
9	9-Dec-21	**0.0002**	**0.0002**					
10	12-Jan-22	**0.0003**	**0.0003**					
11	7-Apr-22	**0.0001**	**0.0001**					
12	9-Jun-22	**0.0001**	**0.0001**					
13	19-Jul-23	**0.0001**	**0.0001**					
14	25-Oct-23	**0.0001**	**0.0001**					
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.17	0.90					
	Mann-Kendall Statistic (S):	0	-14					
	Confidence Factor:	45.6%	87.3%					
	Concentration Trend:	Stable	Stable					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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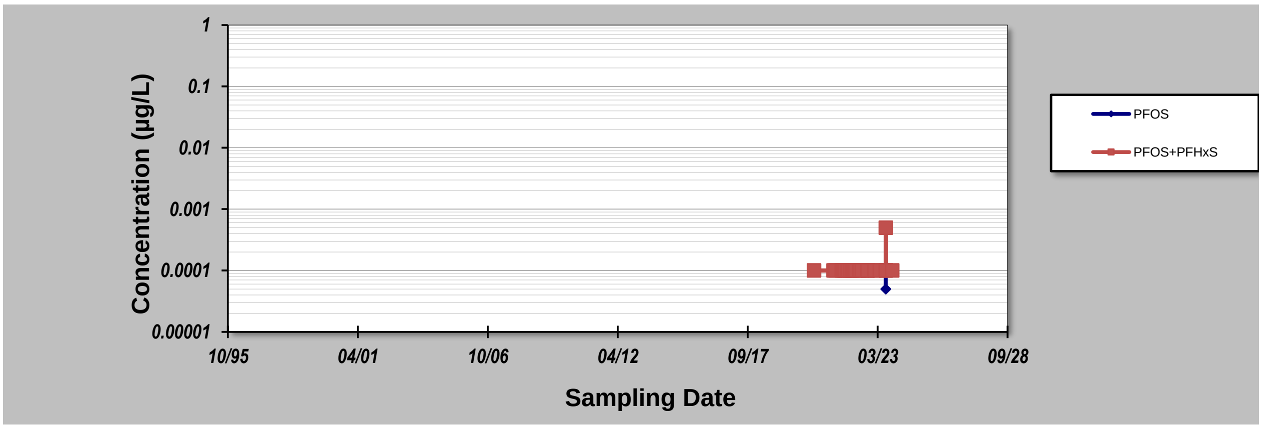
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1609M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	11-Jul-20	0.0001	0.0001					
2	5-May-21	0.0001	0.0001					
3	2-Jun-21	0.0001	0.0001					
4	4-Aug-21	0.0012	0.0018					
5	9-Sep-21	0.0001	0.0001					
6	6-Oct-21	0.0001	0.0001					
7	2-Nov-21	0.0001	0.0001					
8	9-Dec-21	0.0001	0.0001					
9	12-Jan-22	0.0001	0.0001					
10	11-Feb-22	0.0001	0.0001					
11	10-Mar-22	0.0001	0.0001					
12	7-Apr-22	0.0001	0.0001					
13	8-Jun-22	0.0001	0.0001					
14	19-Jul-22	0.0001	0.0001					
15	13-Oct-22	0.0001	0.0001					
16	13-Oct-22	0.0001	0.0001					
17	14-Oct-22	0.0001	0.0001					
18	26-Jan-23	0.0001	0.0001					
19	19-Apr-23	0.0001	0.0001					
20	19-Jul-23	0.0001	0.0001					
21	19-Jul-23	0.0001	0.0005					
22	19-Jul-23	0.0001	0.0001					
23	25-Oct-23	0.0001	0.0001					
24								
25								
	Coefficient of Variation:	0.11	0.72					
	Mann-Kendall Statistic (S):	-33	1					
	Confidence Factor:	81.4%	50.0%					
	Concentration Trend:	Stable	No Trend					



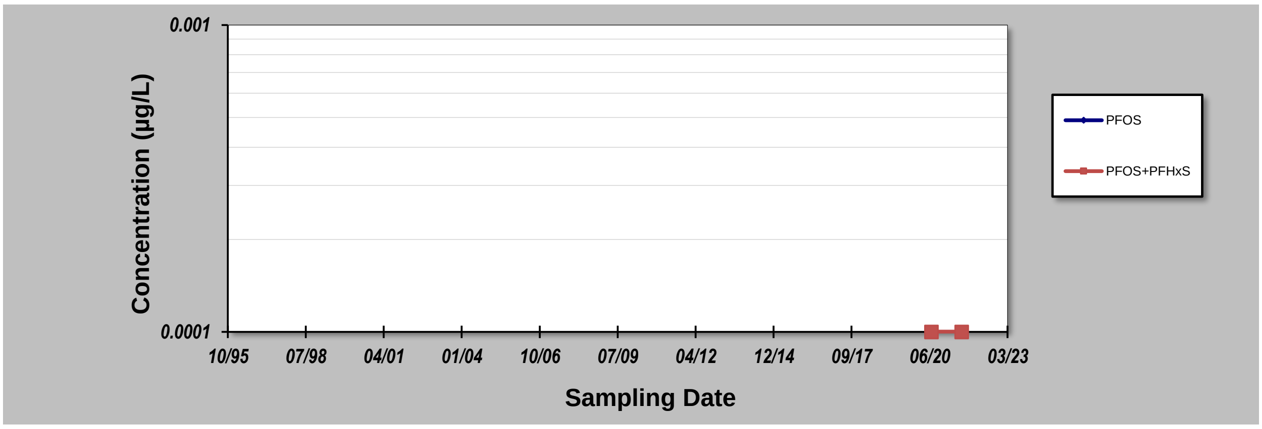
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1610M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	11-Jul-20	0.0001	0.0001					
2	4-Aug-21	0.0001	0.0001					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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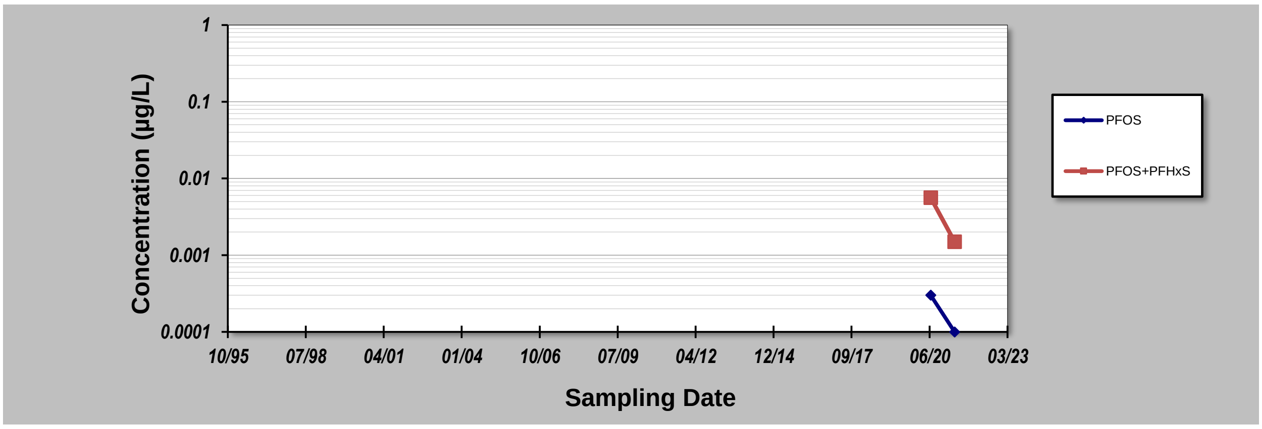
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1616M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	3-Jul-20	**0.0003**	**0.0056**					
2	5-May-21	**0.0001**	**0.0015**					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		**0.71**	**0.82**					
Mann-Kendall Statistic (S):		**-1**	**-1**					
Confidence Factor:								
Concentration Trend:								



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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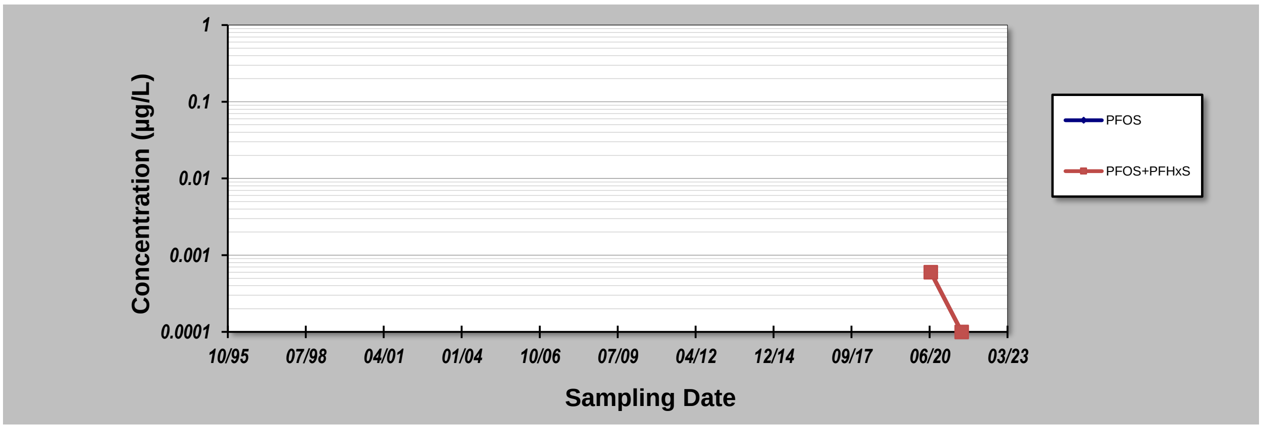
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1631M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS | PFOS+PFHxS

Sampling Event	Sampling Date	PFOS	PFOS+PFHxS					
		CONCENTRATION (µg/L)						
1	3-Jul-20	**0.0006**	**0.0006**					
2	4-Aug-21	**0.0001**	**0.0001**					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.01	1.01					
Mann-Kendall Statistic (S):		-1	-1					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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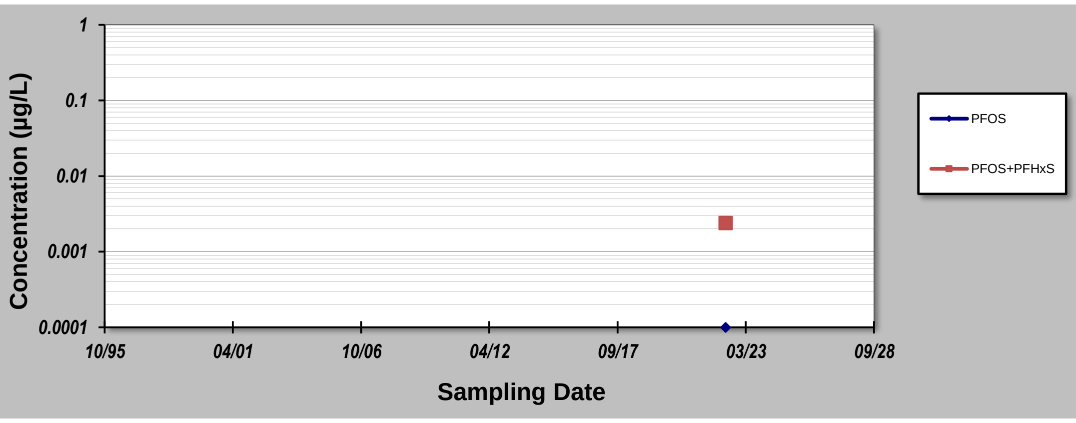
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW0216
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	3-May-22	0.0001	0.0024					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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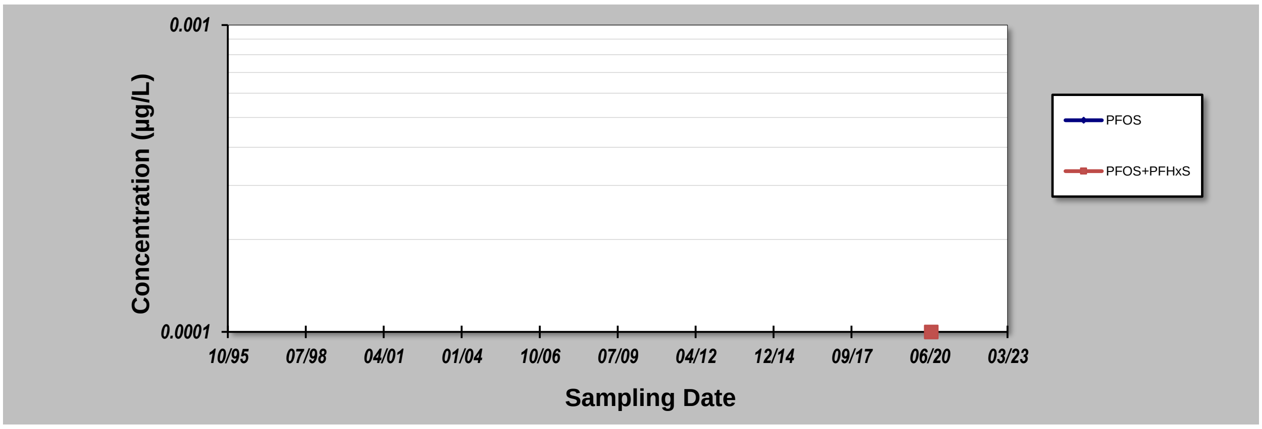
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1524M Primary samples only
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	9-Jul-20	0.0001	0.0001					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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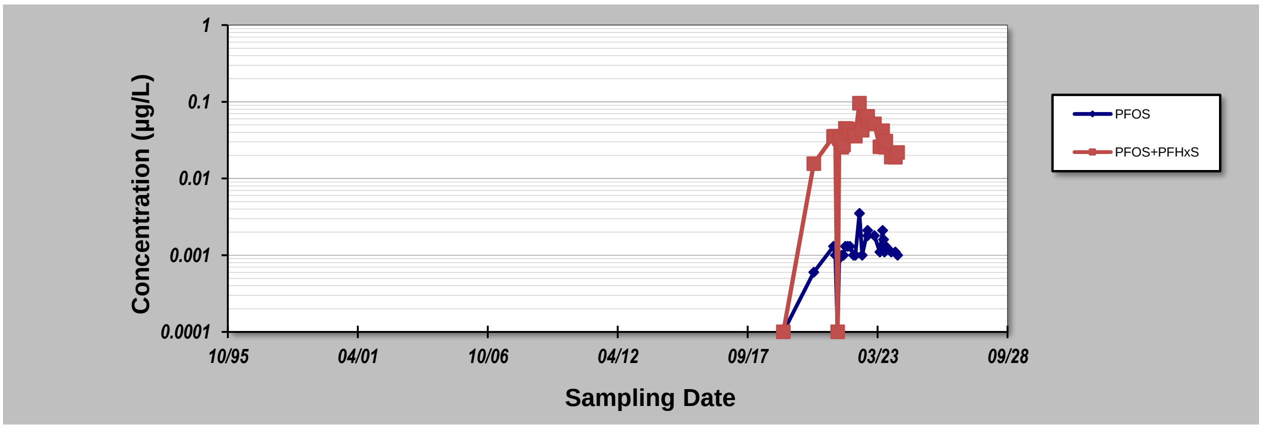
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1526M Primary samples only
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	26-Mar-19	0.0001	0.0001					
2	4-Jul-20	0.0006	0.0156					
3	5-May-21	0.0013	0.0355					
4	2-Jun-21	0.001	0.0356					
5	9-Jul-21	0.0001	0.0001					
6	2-Aug-21	0.0009	0.0330					
7	9-Sep-21	0.001	0.0256					
8	5-Oct-21	0.001	0.0274					
9	2-Nov-21	0.0013	0.0450					
10	8-Dec-21	0.0013	0.0443					
11	13-Jan-22	0.0013	0.0371					
12	8-Mar-22	0.001	0.0361					
13	6-Apr-22	0.001	0.0356					
14	9-Jun-22	0.004	0.0961					
15	19-Jul-22	0.001	0.0426					
16	12-Oct-22	0.002	0.0551					
17	12-Oct-22	0.002	0.0645					
18	26-Jan-23	0.002	0.0516					
19	18-Apr-23	0.001	0.0259					
20	1-Jun-23	0.0021	0.0421					
21	14-Jun-23	0.0016	0.031					
22	29-Jun-23	0.0011	0.0268					
23	13-Jul-23	0.0012	0.0255					
24	20-Jul-23	0.0013	0.0307					
25	27-Jul-23	0.0018	0.023					
26	8-Aug-23	0.0008	0.0185					
27	10-Oct-23	0.0011	0.0190					
28	14-Dec-23	0.0011	0.0189					
29	17-Jan-24	0.0010	0.0218					
30								
Coefficient of Variation:		0.52	0.56					
Mann-Kendall Statistic (S):		140	34					
Confidence Factor:		99.9%	75.3%					
Concentration Trend:		Increasing	No Trend					



Notes:

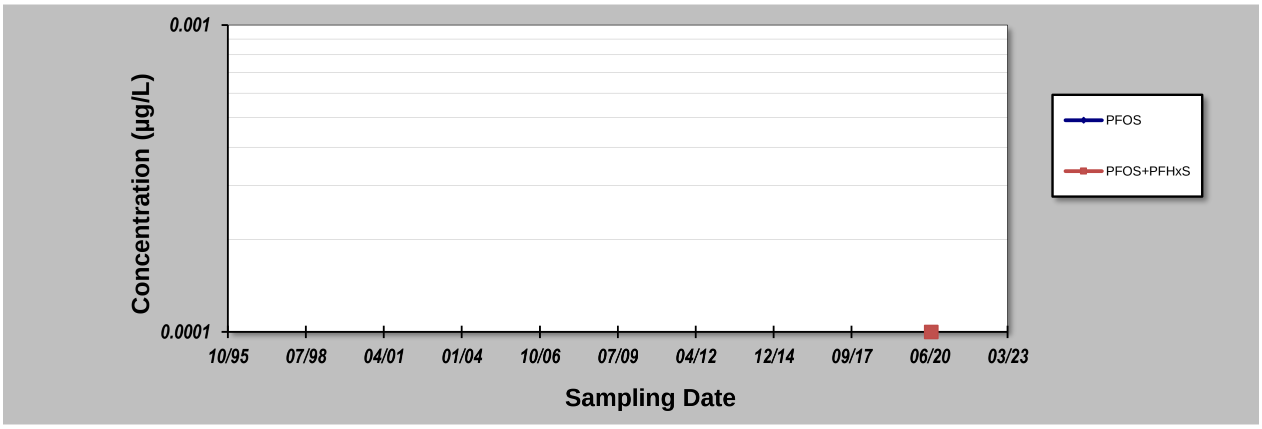
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1528
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	9-Jul-20	0.0001	0.0001					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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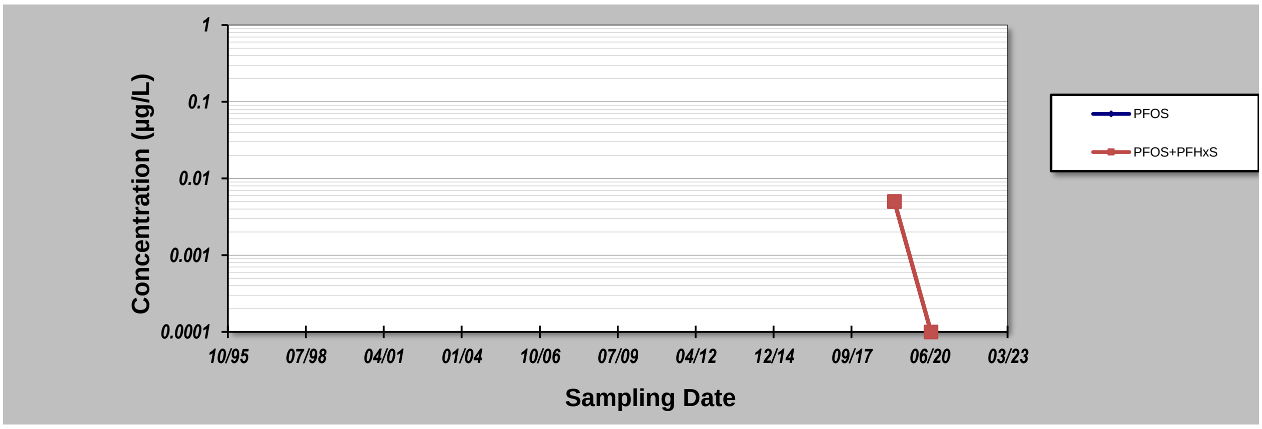
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBSGW183
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	26-Mar-19	0.005	0.005					
2	26-Mar-19	0.005	0.005					
3	6-Jul-20	0.0001	0.0001					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.84	0.84					
Mann-Kendall Statistic (S):		-2	-2					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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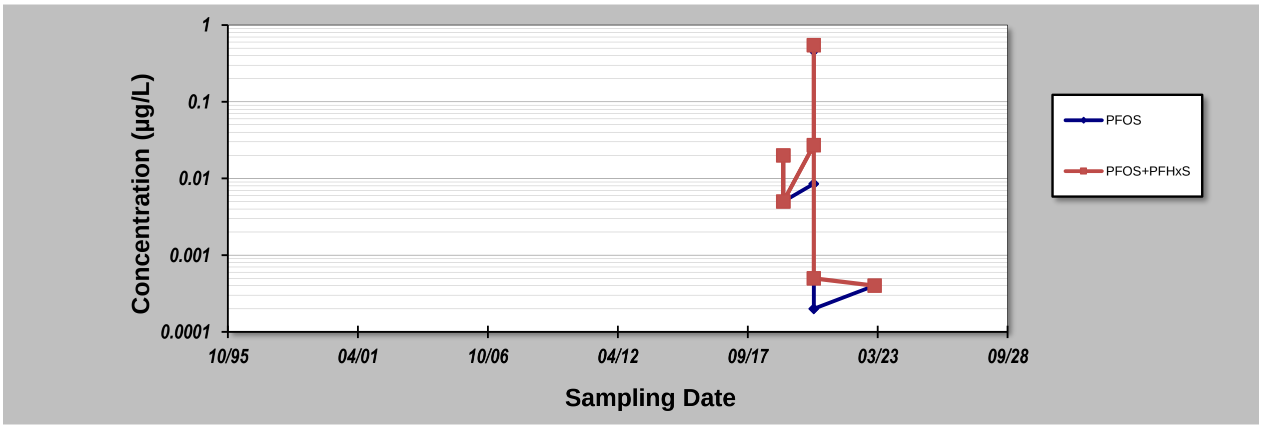
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1526M Primary samples only
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
	Sampling Point ID:	PFOS	PFOS+PFHxS					
1	26-Mar-19	**0.020**	**0.020**					
2	26-Mar-19	**0.005**	**0.005**					
3	7-Jul-20	**0.0085**	**0.0271**					
4	7-Jul-20	**0.461**	**0.545**					
5	7-Jul-20	**0.0002**	**0.001**					
6	28-Jan-23	**0.0004**	**0.0004**					
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	2.25	2.19					
	Mann-Kendall Statistic (S):	-5	-5					
	Confidence Factor:	76.5%	76.5%					
	Concentration Trend:	No Trend	No Trend					



Notes:

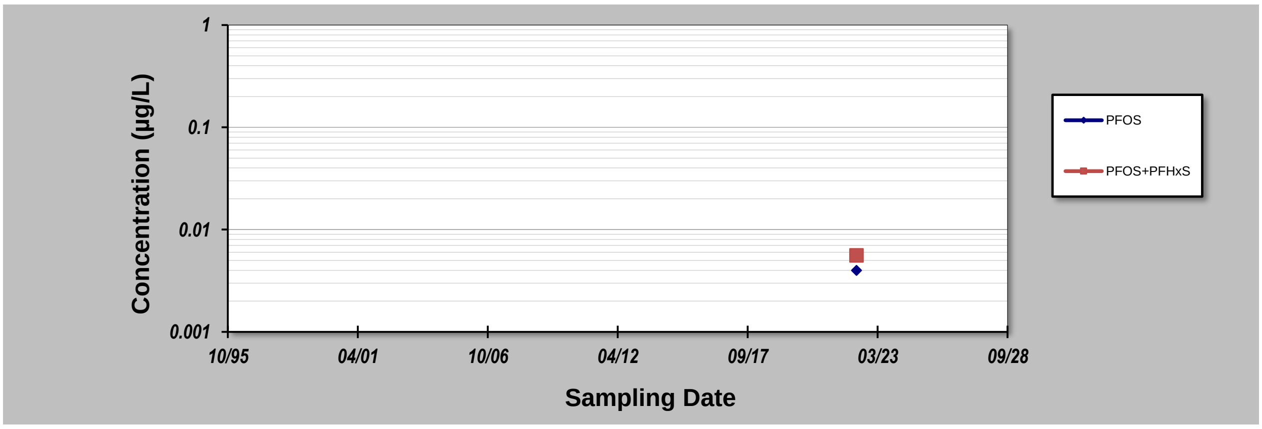
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW0214
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**					
1	24-Apr-22	**0.004**	**0.0056**					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:							
	Mann-Kendall Statistic (S):							
	Confidence Factor:							
	Concentration Trend:							



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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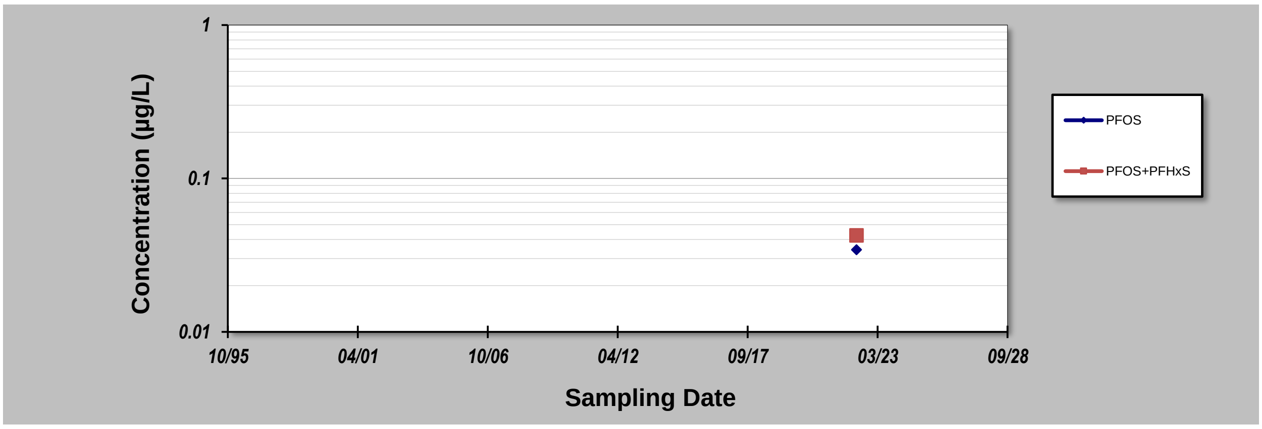
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW0215
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

		Sampling Point ID:					
		PFOS	PFOS+PFHxS				
Sampling Event	Sampling Date	CONCENTRATION (µg/L)					
1	24-Apr-22	**0.0343**	**0.0425**				
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:							
Mann-Kendall Statistic (S):							
Confidence Factor:							
Concentration Trend:							



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

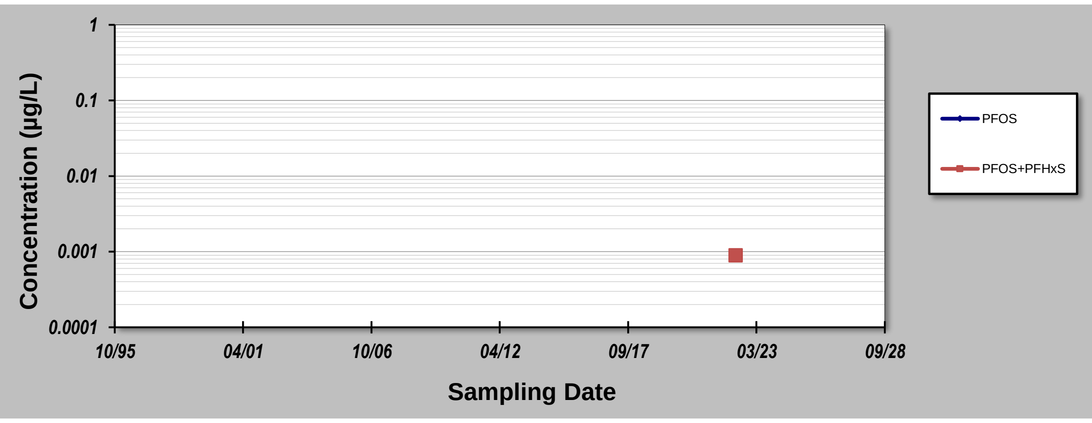
GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date:
Facility Name: WBCSGW0218
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	24-Apr-22	**0.0009**	**0.0009**					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date:

Facility Name: EEG0917DM

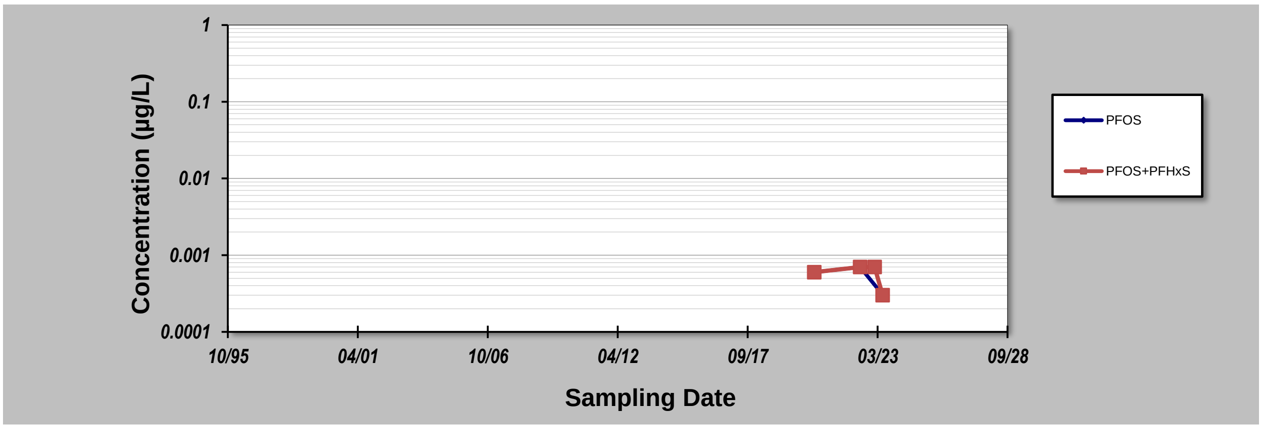
Conducted By:

Job ID:

Constituent:

Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	11-Jul-20	0.0006	0.0006					
2	18-Jun-22	0.0007	0.0007					
3	30-Jan-23		0.0007					
4	2-Jun-23	0.0003	0.0003					
5	9-Jun-23	0.0003	0.0003					
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.39	0.33					
Mann-Kendall Statistic (S):		0	3					
Confidence Factor:			72.9%					
Concentration Trend:			No Trend					



Notes:

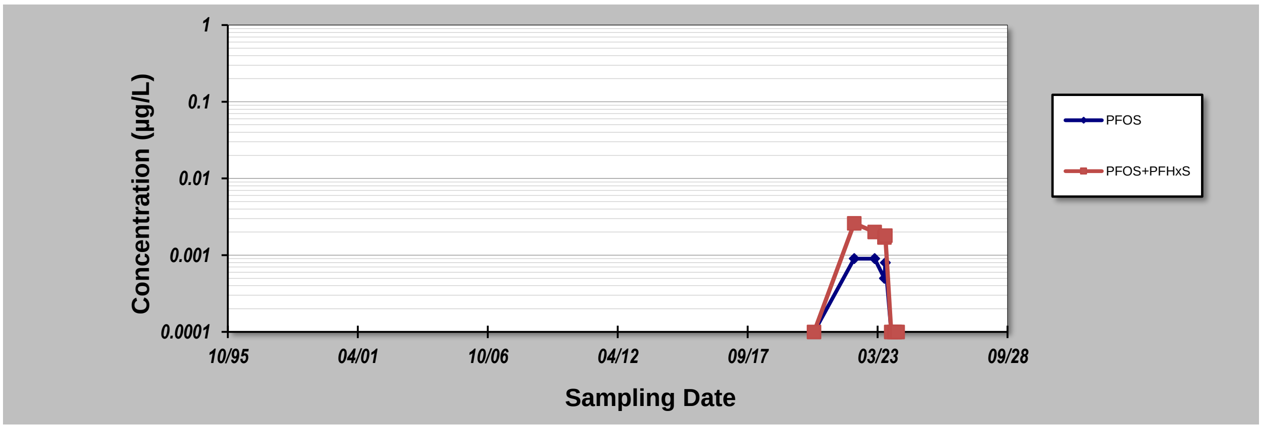
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EEG1391RM
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	11-Jul-20	0.0001	0.0001					
2	20-Mar-22	0.0009	0.0026					
3	30-Jan-23	0.0009	0.002					
4	1-Jun-23	0.0004	0.0015					
5	14-Jun-23	0.0005	0.0015					
6	28-Jun-23	0.0005	0.0017					
7	12-Jul-23	0.0008	0.0018					
8	26-Jul-23	0.0008	0.0017					
9	9-Aug-23	0.0003	0.0003					
10	11-Oct-23	0.0001	0.0001					
11	22-Nov-23	0.0001	0.0001					
12	13-Dec-23	0.0001	0.0001					
13	18-Jan-24	0.0001	0.0001					
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.94	1.09					
Mann-Kendall Statistic (S):		-19	-21					
Confidence Factor:		97.0%	98.3%					
Concentration Trend:		Decreasing	Decreasing					



Notes:

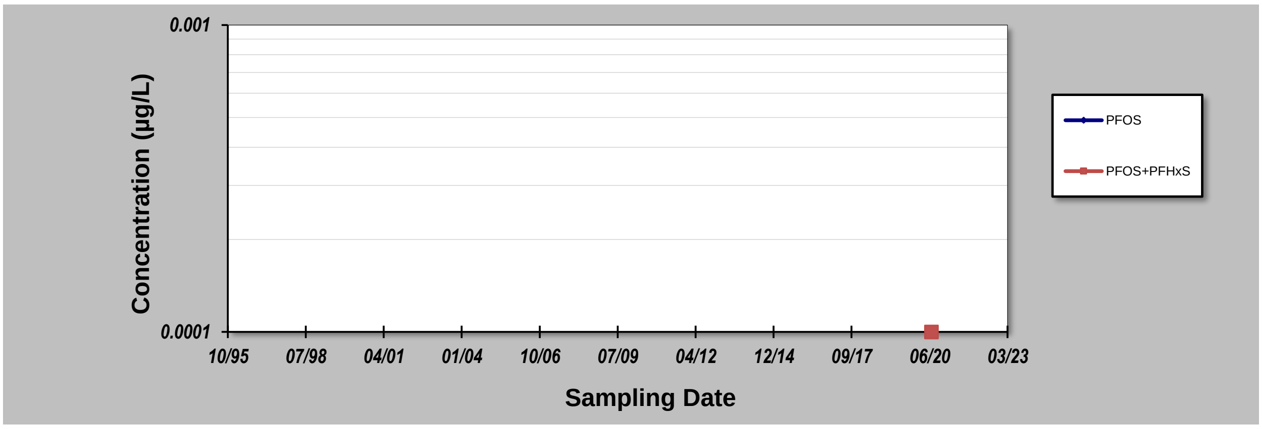
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EEG1451RM
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**					
Sampling Point ID:		**PFOS**	**PFOS+PFHxS**				
1	12-Jul-20	**0.0001**	**0.0001**				
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:							
Mann-Kendall Statistic (S):							
Confidence Factor:							
Concentration Trend:							



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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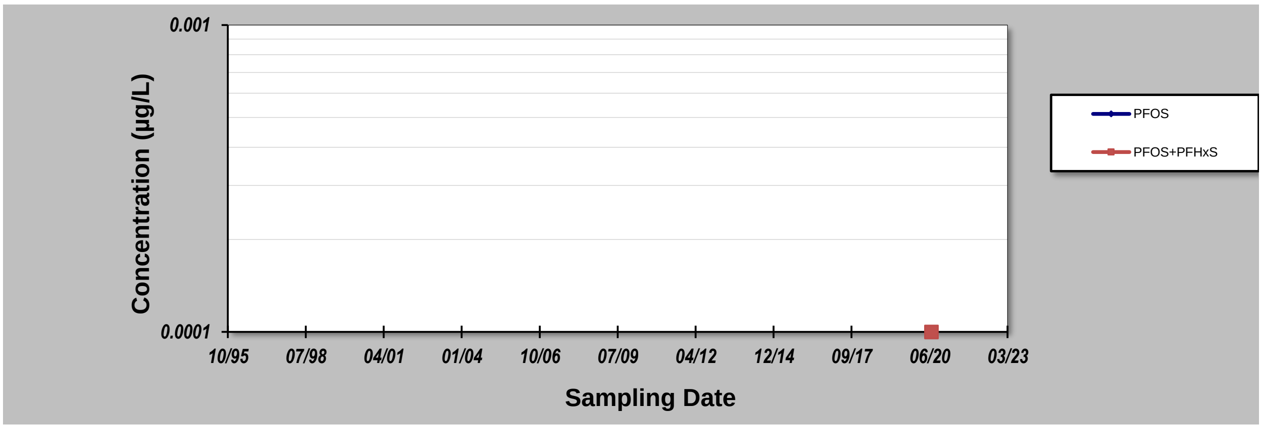
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EEG1460RM
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	12-Jul-20	**0.0001**	**0.0001**					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:							
	Mann-Kendall Statistic (S):							
	Confidence Factor:							
	Concentration Trend:							



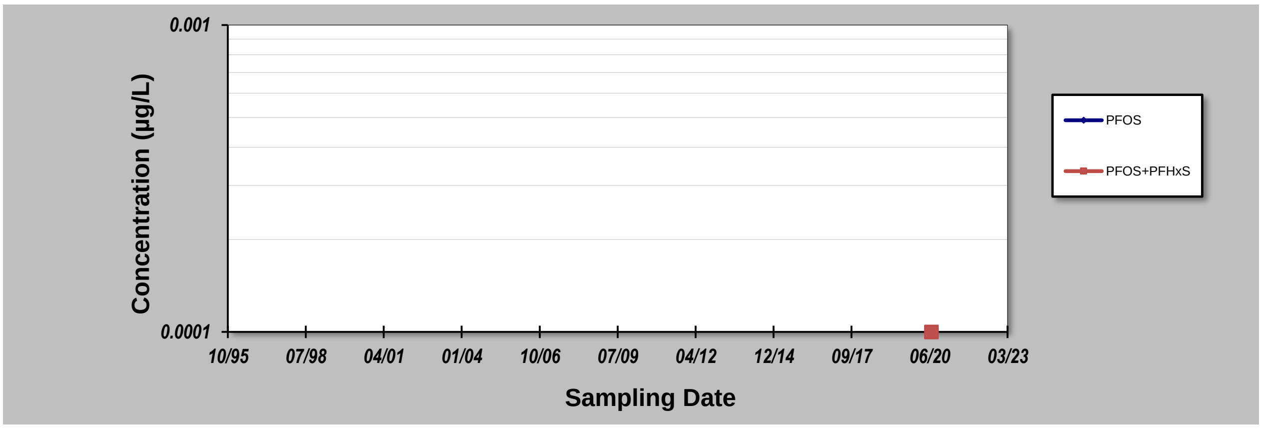
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EEG1469RM
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		**PFOS**	**PFOS+PFHxS**					
1	12-Jul-20	**0.0001**	**0.0001**					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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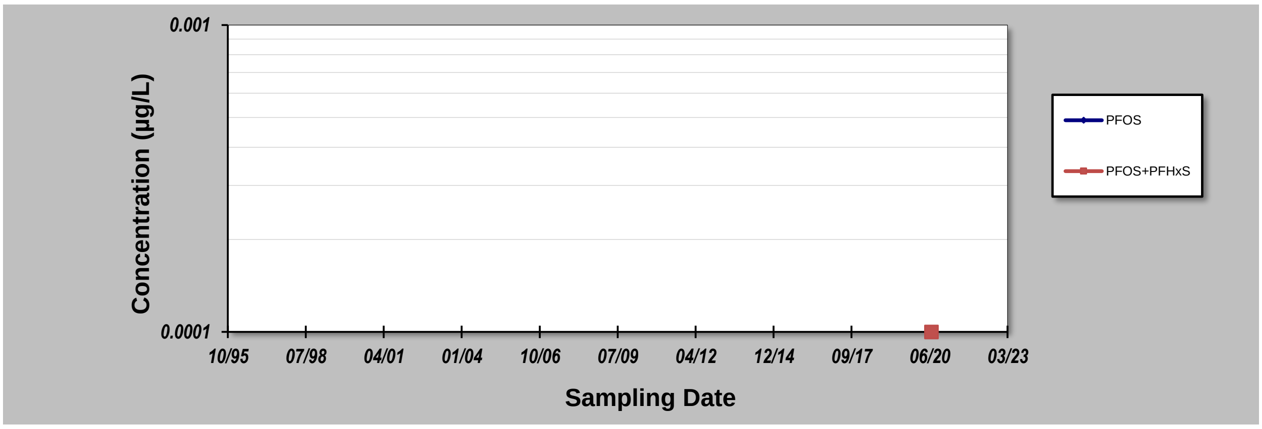
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EEG1494RM
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	12-Jul-20	0.0001	0.0001					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



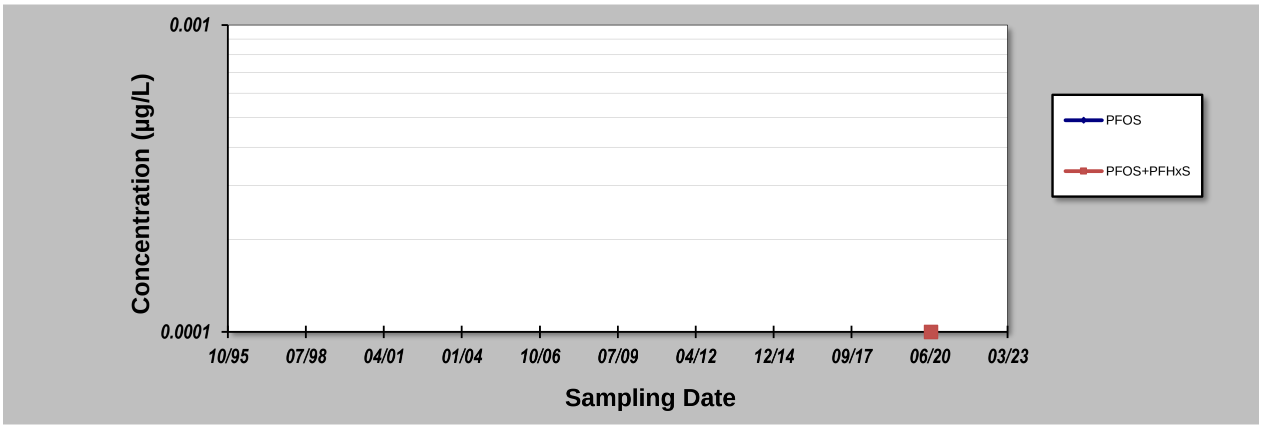
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EEG1572RM
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	7-Jul-20	0.0001	0.0001					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:							
	Mann-Kendall Statistic (S):							
	Confidence Factor:							
	Concentration Trend:							



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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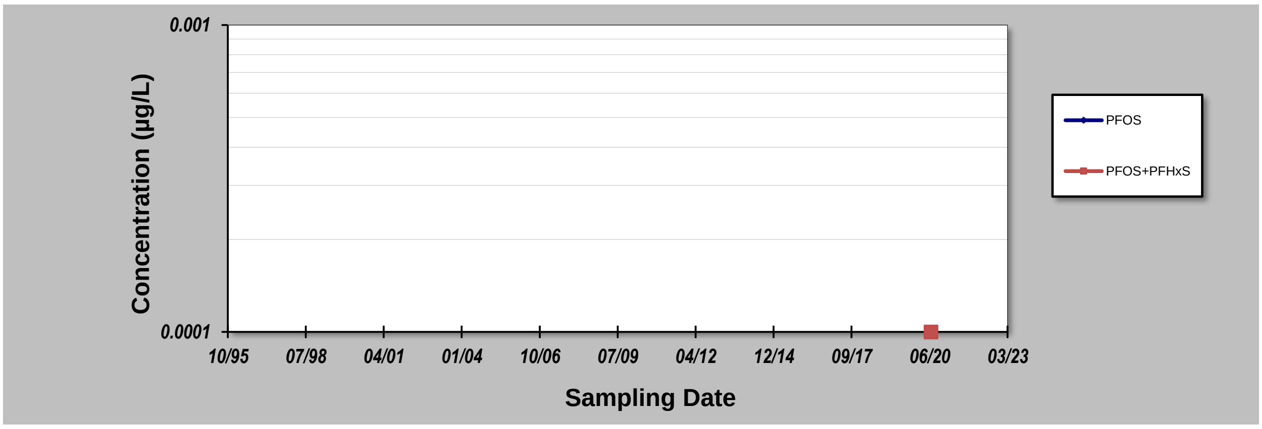
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EEG1577RM
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	5-Jul-20	0.0001	0.0001					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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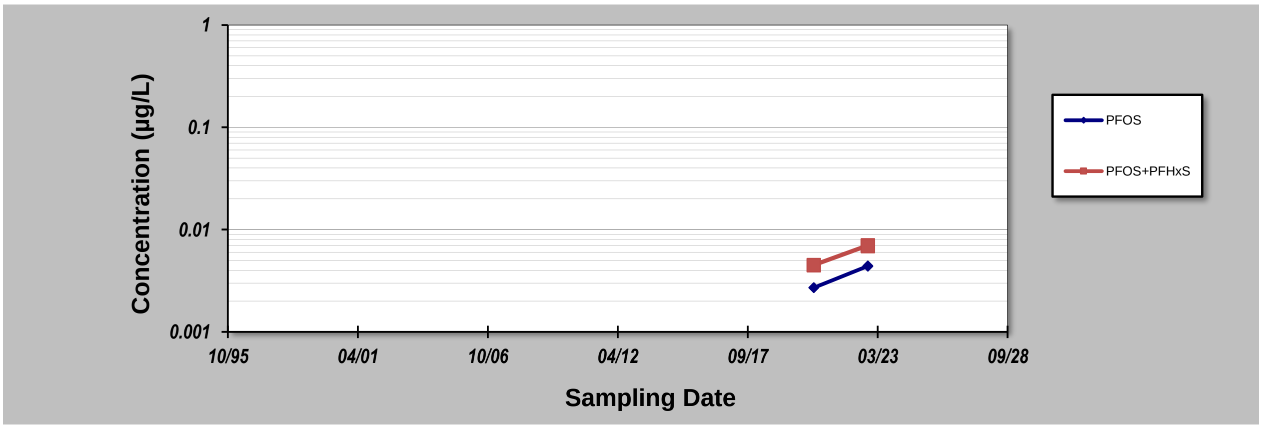
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: EXD0008M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	5-Jul-20	**0.0027**	**0.0045**					
2	14-Oct-22	**0.0044**	**0.007**					
3	14-Oct-22	**0.0044**	**0.0069**					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.26	0.23					
Mann-Kendall Statistic (S):		2	1					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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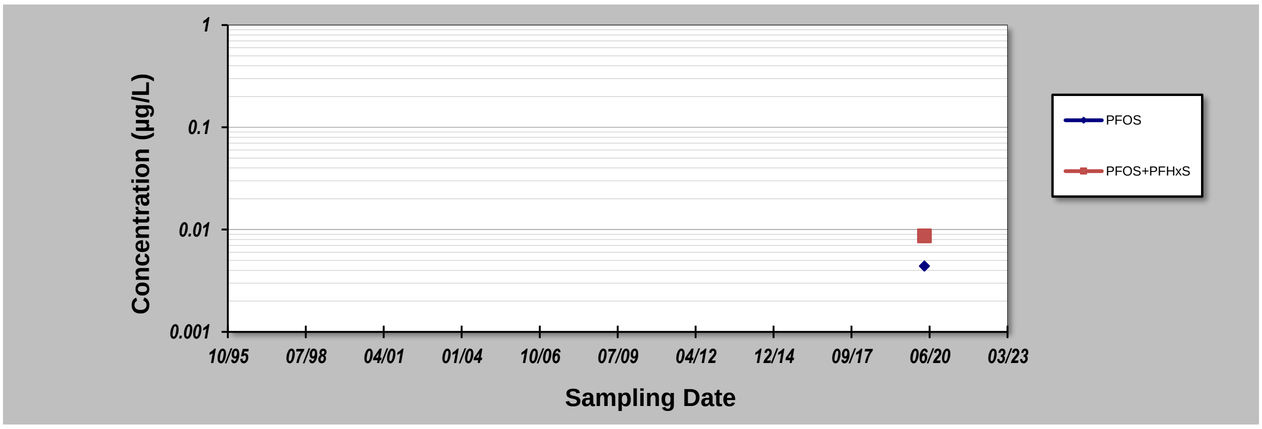
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HEOP0808P
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	14-Apr-20	**0.0044**	**0.0087**					
2	14-Apr-20	**0.0044**	**0.0087**					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.00	0.00					
	Mann-Kendall Statistic (S):	0	0					
	Confidence Factor:							
	Concentration Trend:							



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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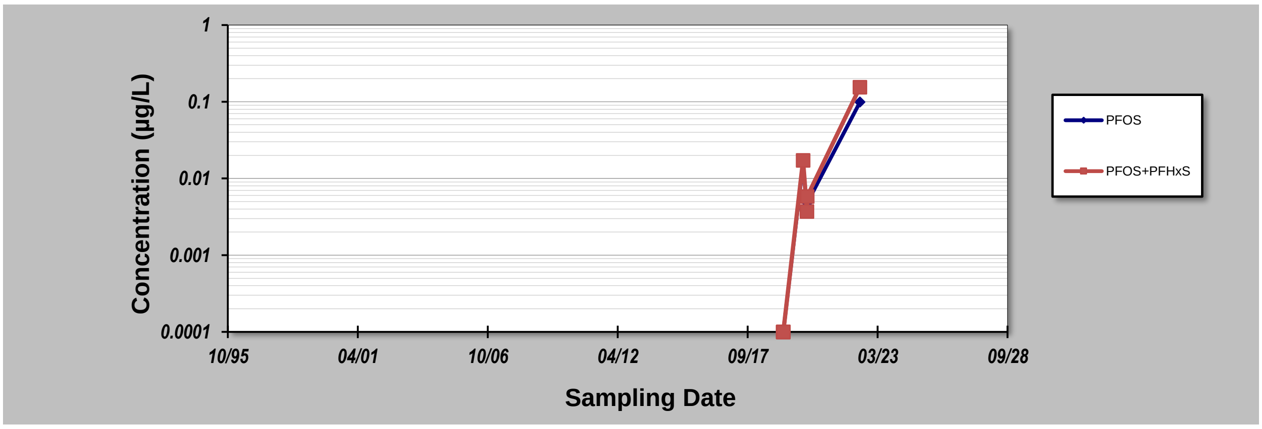
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0052P
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**				
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**					
1	22-Mar-19	**0.0001**	**0.0001**				
2	24-Mar-19	**0.0001**	**0.0001**				
3	24-Mar-19	**0.0001**	**0.0001**				
4	23-Jan-20	**0.0158**	**0.0172**				
5	25-Mar-20	**0.0037**	**0.0037**				
6	25-Mar-20	**0.0048**	**0.0058**				
7	17-Jun-22	**0.0989**	**0.155**				
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
	Coefficient of Variation:	2.06	2.20				
	Mann-Kendall Statistic (S):	14	14				
	Confidence Factor:	97.5%	97.5%				
	Concentration Trend:	Increasing	Increasing				



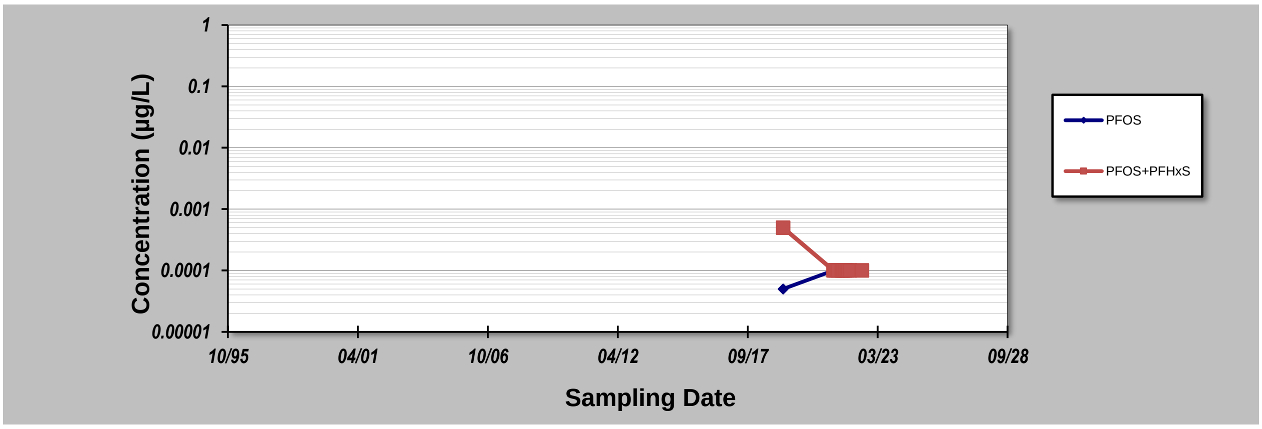
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0058P
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	21-Mar-19	0.00005	0.0005					
2	3-May-20	0.0045	0.0096					
3	5-May-21	0.0001	0.0001					
4	2-Jun-21	0.0001	0.0001					
5	8-Jul-21	0.0001	0.0001					
6	4-Aug-21	0.0002	0.0002					
7	9-Sep-21	0.0001	0.0001					
8	5-Oct-21	0.0001	0.0001					
9	4-Nov-21	0.0001	0.0001					
10	9-Dec-21	0.0001	0.0001					
11	12-Jan-22	0.0001	0.0001					
12	18-Jul-22	0.0001	0.0001					
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.17	0.90					
Mann-Kendall Statistic (S):		-2	-20					
Confidence Factor:		53.5%	95.5%					
Concentration Trend:		Stable	Decreasing					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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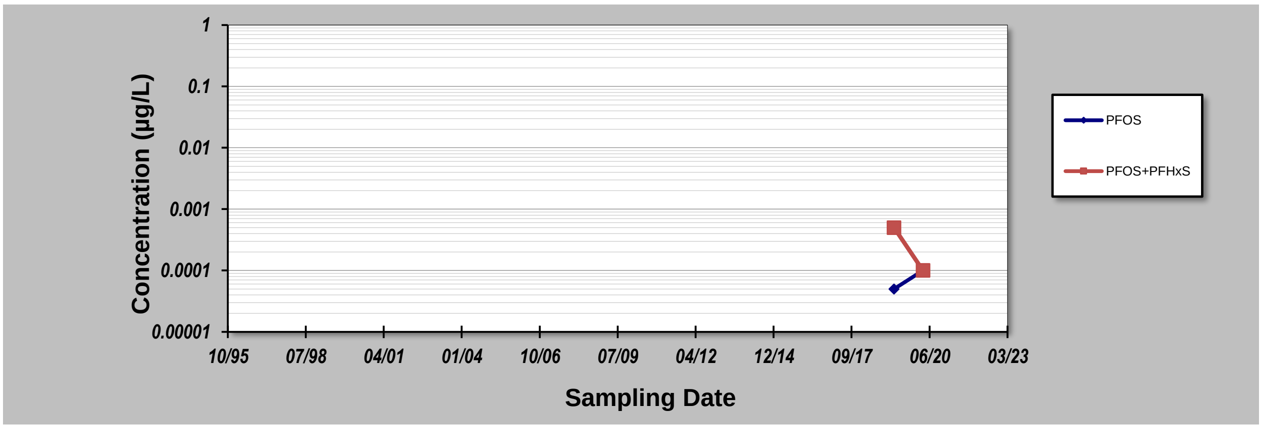
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB0059P
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	21-Mar-19	0.00005	0.0005					
2	26-Mar-20	0.0001	0.0001					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.47	0.94					
Mann-Kendall Statistic (S):		1	-1					
Confidence Factor:								
Concentration Trend:								



Notes:

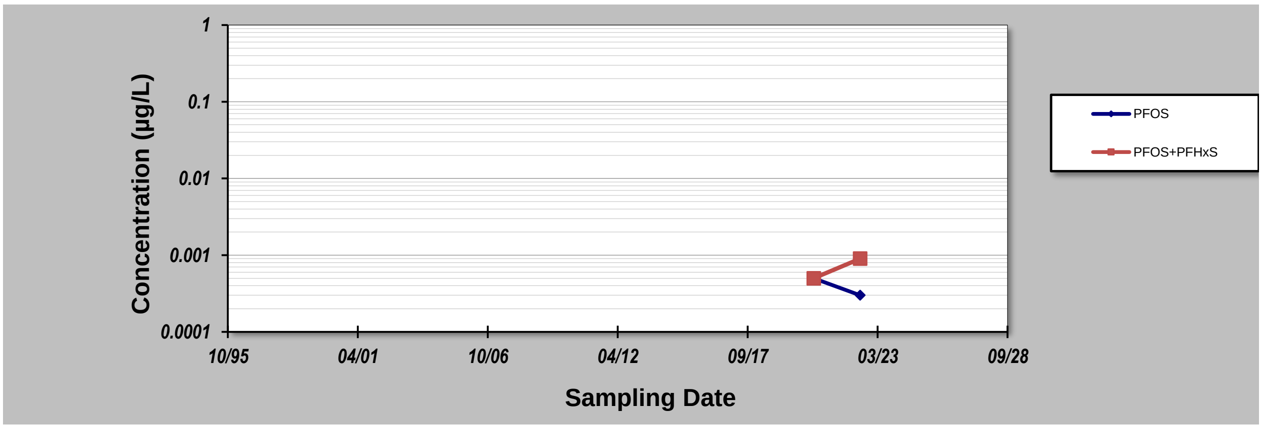
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1502M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS | PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
		PFOS	PFOS+PFHxS					
1	4-Jul-20	0.0005	0.0005					
2	20-Jun-22	0.0003	0.0009					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.35	0.40					
Mann-Kendall Statistic (S):		-1	1					
Confidence Factor:								
Concentration Trend:								



Notes:

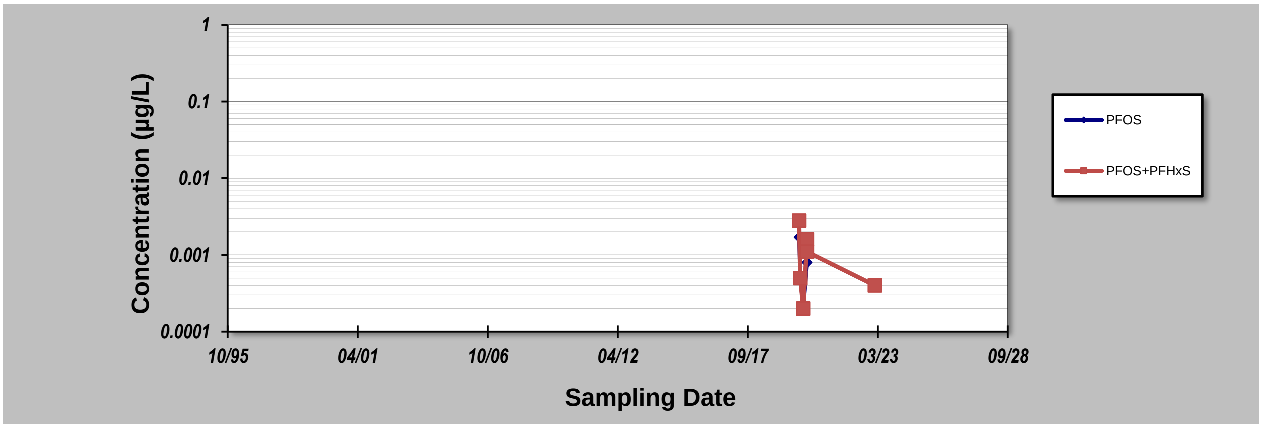
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1516M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)							
		PFOS	PFOS+PFHxS						
1	21-Nov-19	0.0017	0.0028						
2	10-Dec-19	0.0005	0.0005						
3	24-Jan-20	0.0002	0.0002						
4	25-Mar-20	0.0008	0.0016						
5	25-Mar-20	0.0011	0.0011						
6	30-Jan-23	0.0004	0.0004						
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
	Coefficient of Variation:	0.70	0.89						
	Mann-Kendall Statistic (S):	-3	-5						
	Confidence Factor:	64.0%	76.5%						
	Concentration Trend:	Stable	Stable						



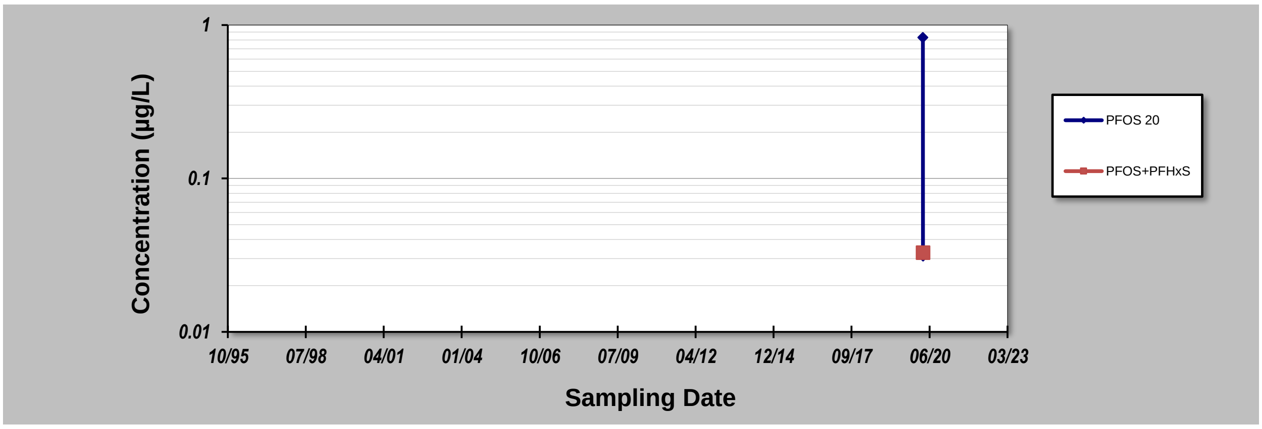
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1517M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	23-Jan-20	0.0213	0.0213					
2	25-Mar-20	0.83	1.14					
3	26-Mar-20	0.0312	0.0328					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.31						
Mann-Kendall Statistic (S):		-3						
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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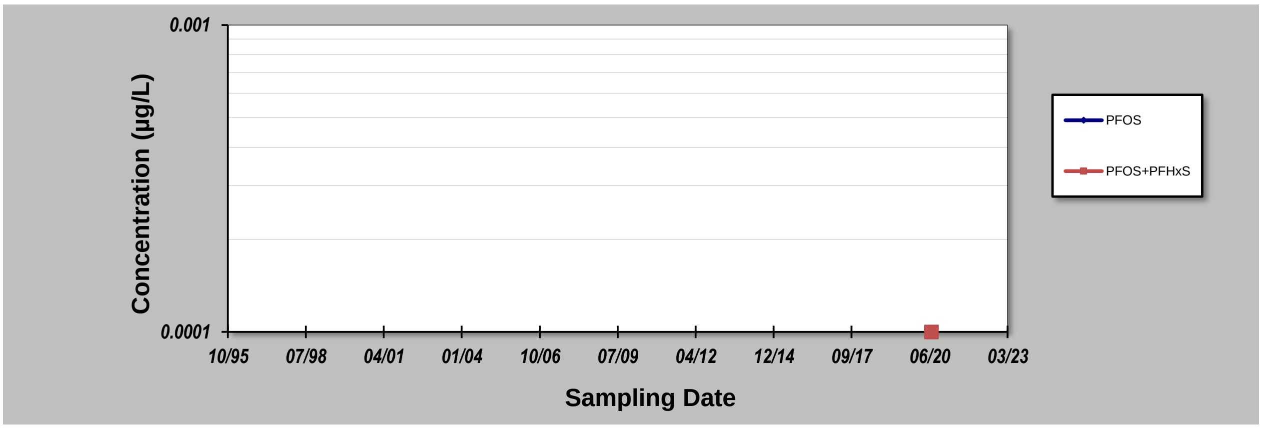
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1518M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		**PFOS**	**PFOS+PFHxS**					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	11-Jul-20	**0.0001**	**0.0001**					
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:								
Mann-Kendall Statistic (S):								
Confidence Factor:								
Concentration Trend:								



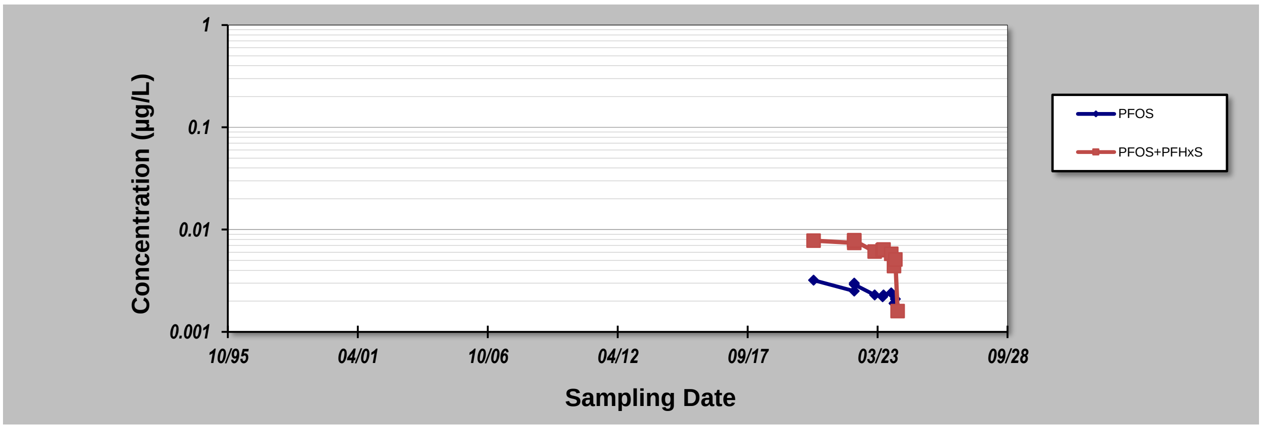
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1521M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)	
	Sampling Point ID:	PFOS	PFOS+PFHxS
1	4-Jul-20	0.0032	0.0078
2	20-Mar-22	0.0025	0.0074
3	20-Mar-22	0.003	0.0079
4	20-Mar-22	0.0029	0.0078
5	30-Jan-23	0.0023	0.0061
6	1-Jun-23	0.0022	0.0063
7	14-Jun-23	0.0023	0.0064
8	28-Jun-23	0.0026	0.0065
9	12-Jul-23	0.0025	0.0064
10	26-Jul-23	0.0024	0.0061
11	09-Aug-23	0.0022	0.0055
12	11-Oct-23	0.0024	0.0058
13	22-Nov-23	0.0019	0.0044
14	13-Dec-23	0.0021	0.0051
15	18-Jan-24	0.0016	0.0016
16			
17			
18			
19			
20			
	Coefficient of Variation:	0.20	0.31
	Mann-Kendall Statistic (S):	-34	-34
	Confidence Factor:	99.6%	99.6%
	Concentration Trend:	Decreasing	Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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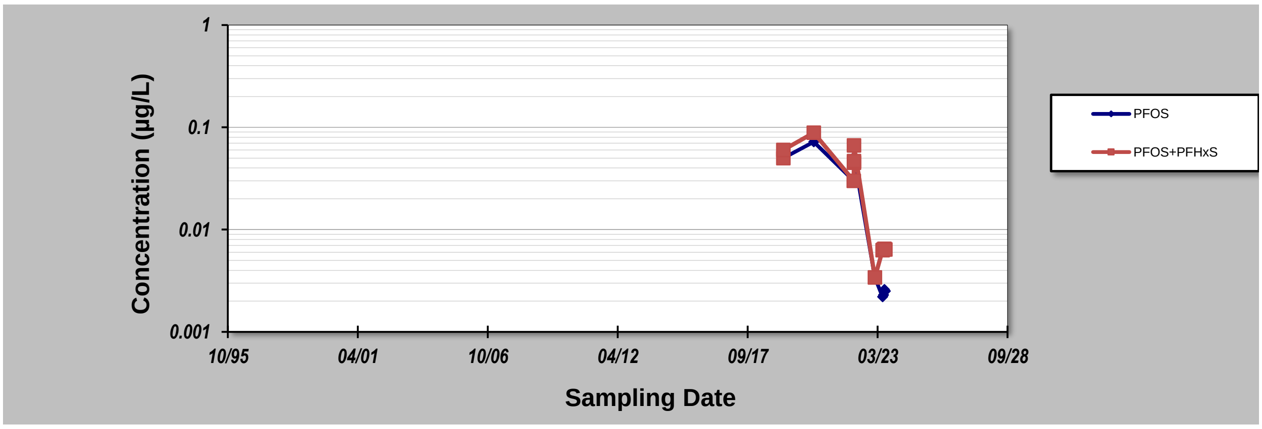
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1527M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID: PFOS PFOS+PFHxS

Sampling Event	Sampling Date	CONCENTRATION (µg/L)							
		PFOS	PFOS+PFHxS						
1	25-Mar-19	0.05	0.05						
2	25-Mar-19	0.05	0.06						
3	6-Jul-20	0.0721	0.0885						
4	15-Mar-22	0.03	0.03						
5	18-Mar-22	0.0304	0.045						
6	18-Mar-22	0.0323	0.0467						
7	18-Mar-22	0.0513	0.0664						
8	31-Jan-23	0.0034	0.0034						
9	1-Jun-23	0.0022	0.0063						
10	14-Jun-23	0.0023	0.0064						
11	28-Jun-23	0.0026	0.0065						
12	12-Jul-23	0.0025	0.0064						
13									
14									
15									
16									
17									
18									
19									
20									
Coefficient of Variation:		0.90	0.84						
Mann-Kendall Statistic (S):		-35	-27						
Confidence Factor:		99.2%	96.3%						
Concentration Trend:		Decreasing	Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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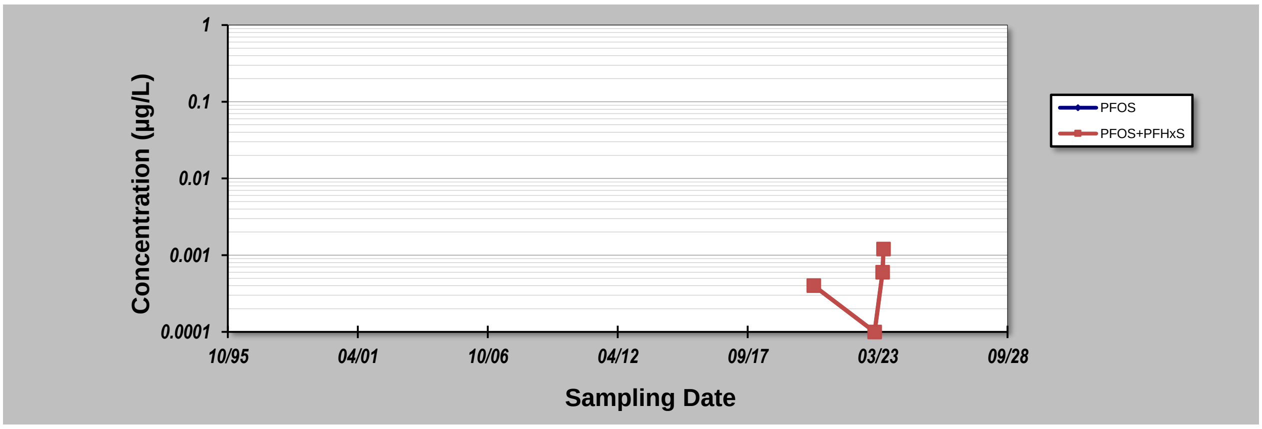
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1547M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)							
	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**						
1	5-Jul-20	**0.0004**	**0.0004**						
2	30-Jan-23	**0.0001**	**0.0001**						
3	1-Jun-23	**0.0006**	**0.0006**						
4	14-Jun-23	**0.0012**	**0.0012**						
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Coefficient of Variation:		0.81	0.81						
Mann-Kendall Statistic (S):		4	4						
Confidence Factor:		83.3%	83.3%						
Concentration Trend:		No Trend	No Trend						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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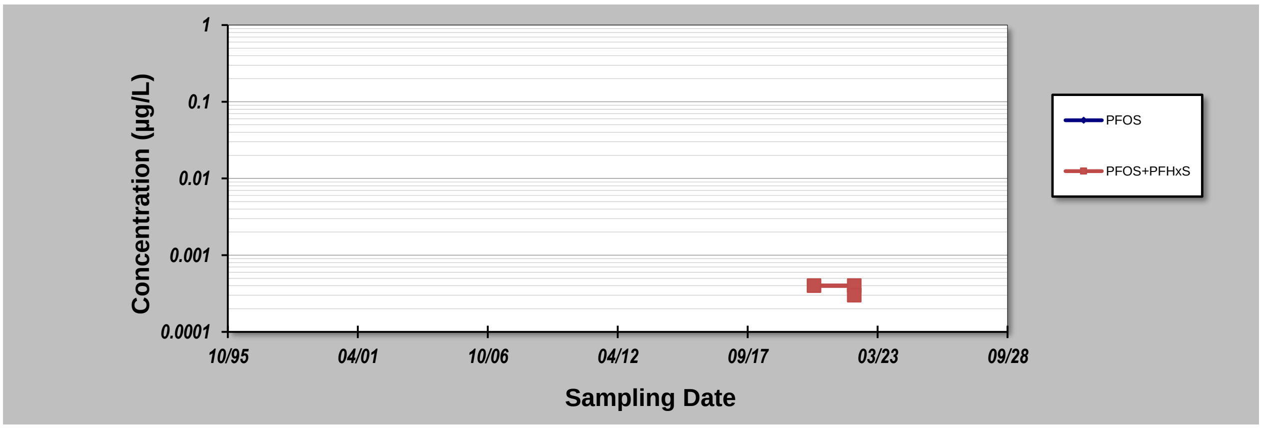
GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1549M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
Sampling Point ID:		PFOS	PFOS+PFHxS					
1	11-Jul-20	0.0004	0.0004					
2	19-Mar-22	0.0004	0.0004					
3	19-Mar-22	0.0003	0.0003					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.16	0.16					
Mann-Kendall Statistic (S):		-2	-2					
Confidence Factor:								
Concentration Trend:								



Notes:

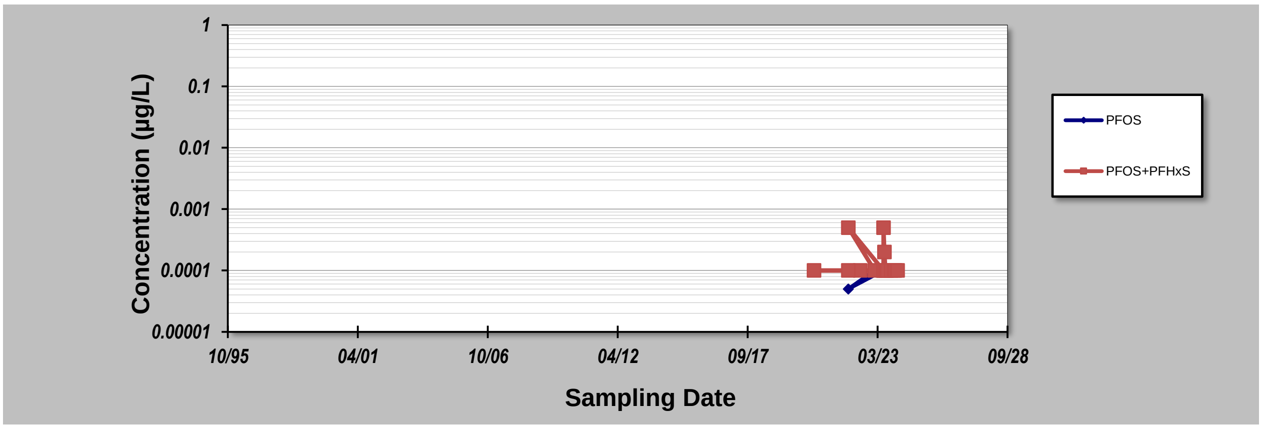
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1551M
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

Sampling Event	Sampling Date	CONCENTRATION (µg/L)						
	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**					
1	5-Jun-23	0.0001	0.0001					
2	11-Jul-20	0.0001	0.0001					
3	18-Jun-22	0.0001	0.0001					
4	19-Dec-21	0.0001	0.0001					
5	30-Jan-23	0.0001	0.0001					
6	20-Dec-21	0.00005	0.0005					
7	14-Jun-23	0.0001	0.0001					
8	14-Jun-23	0.0001	0.0001					
9	14-Jun-23	0.0002	0.0005					
10	28-Jun-23	0.0002	0.0002					
11	12-Jul-23	0.0001	0.0001					
12	26-Jul-23	0.0001	0.0001					
13	9-Aug-23	0.0001	0.0001					
14	11-Oct-23	0.0001	0.0001					
15	22-Nov-23	0.0001	0.0001					
16	13-Dec-23	0.0001	0.0001					
17	18-Jan-24	0.0001	0.0001					
18								
19								
20								
	Coefficient of Variation:	0.33	0.87					
	Mann-Kendall Statistic (S):	6	-6					
	Confidence Factor:	58.0%	58.0%					
	Concentration Trend:	No Trend	Stable					



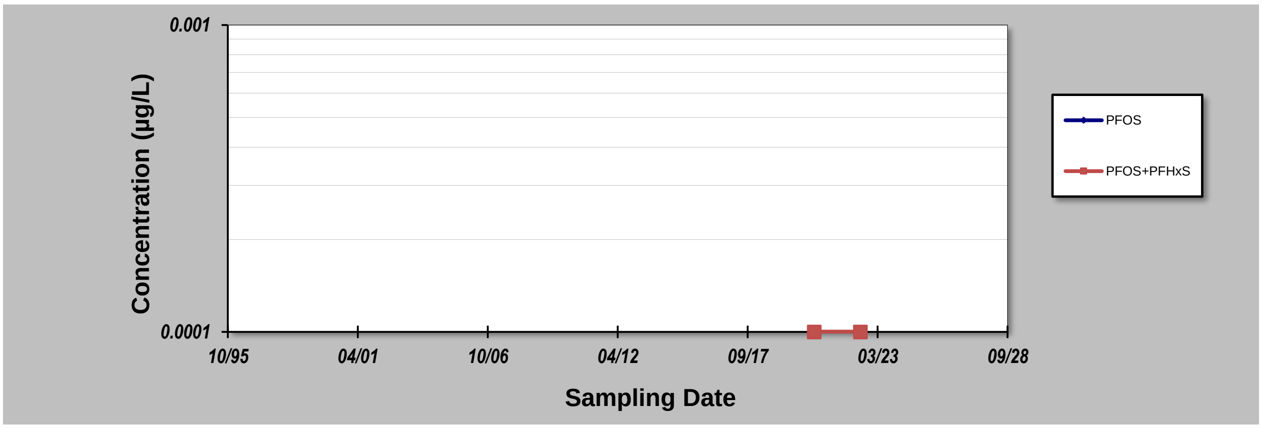
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: HWHB1811M
Conducted By:
Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		**PFOS**	**PFOS+PFHxS**					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	11-Jul-20	0.0001	0.0001					
2	21-Jun-22	0.0001	0.0001					
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00	0.00					
Mann-Kendall Statistic (S):		0	0					
Confidence Factor:								
Concentration Trend:								



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT

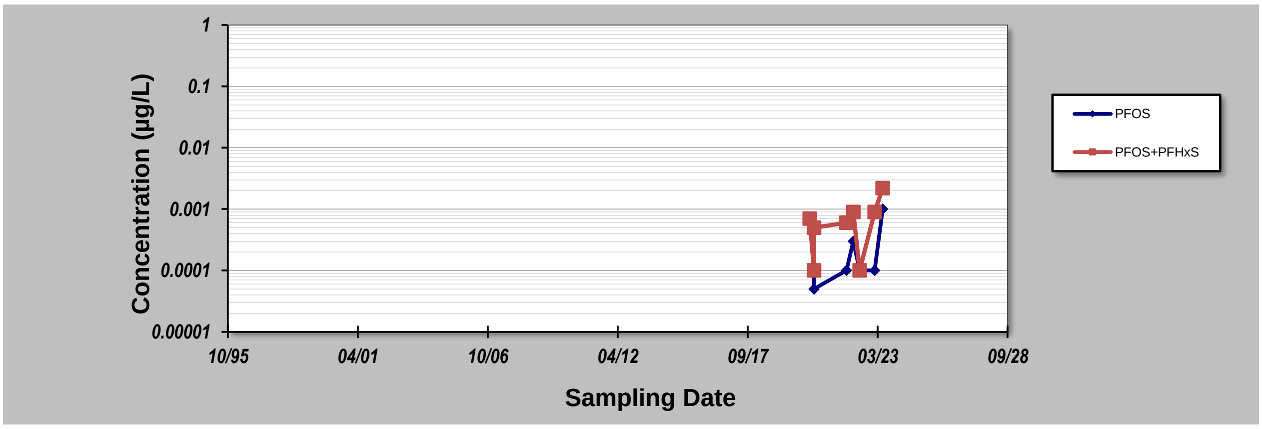
for Constituent Trend Analysis

Evaluation Date:
Facility Name: MW118
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

	Sampling Point ID:	**PFOS**	**PFOS+PFHxS**					
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**						
1	5-May-20	0.0007	0.0007					
2	9-Jul-20	0.0001	0.0001					
3	9-Jul-20	0.00005	0.0005					
4	20-Nov-21	0.0001	0.0006					
5	8-Mar-22	0.0003	0.0009					
6	14-Jun-22	0.0001	0.0001					
7	28-Jan-23	0.0001	0.0009					
8	2-Jun-23	0.001	0.0022					
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Coefficient of Variation:	1.15	0.88					
Mann-Kendall Statistic (S):	4	12					
Confidence Factor:	64.0%	91.1%					
Concentration Trend:	No Trend	Prob. Increasing					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*

2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.

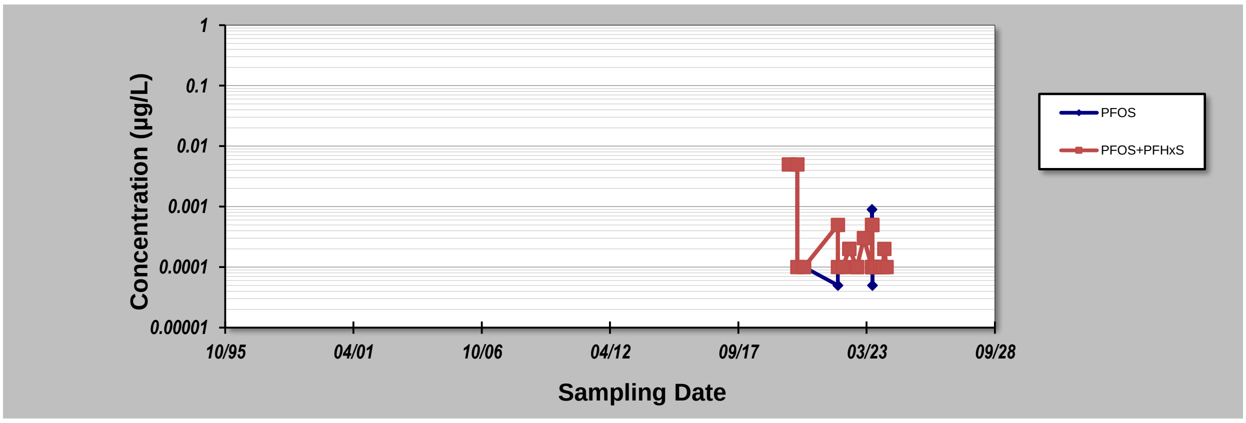
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:
Facility Name: WB26-GW04
Conducted By:

Job ID:
Constituent:
Concentration Units: µg/L

Sampling Point ID:		PFOS	PFOS+PFHxS
Sampling Event	**Sampling Date**	**CONCENTRATION (µg/L)**	
1	19-Nov-19	0.0050	0.0050
2	29-Mar-20	0.0050	0.0050
3	29-Mar-20	0.0001	0.0001
4	11-Jul-20	0.0001	0.0001
5	20-Dec-21	0.0001	0.0005
6	20-Dec-21	0.0001	0.0001
7	10-Mar-22	0.0001	0.0001
8	18-Jun-22	0.0002	0.0002
9	18-Jun-22	0.0002	0.0002
10	13-Oct-22	0.0001	0.0001
11	13-Oct-22	0.0001	0.0001
12	30-Jan-23	0.0003	0.0003
13	5-Jun-23	0.0001	0.0001
14	5-Jun-23	0.0001	0.0001
15	5-Jun-23	0.0009	0.0005
16	14-Jun-23	0.0001	0.0001
17	14-Jun-23	0.0001	0.0005
18	14-Jun-23	0.0001	0.0001
19	28-Jun-23	0.0001	0.0001
20	12-Jul-23	0.0001	0.0001
21	26-Jul-23	0.0001	0.0001
22	9-Aug-23	0.0001	0.0001
23	11-Oct-23	0.0001	0.0001
24	22-Nov-23	0.0001	0.0001
25	13-Dec-23	0.0002	0.0002
26	18-Jan-24	0.0001	0.0001
27			
28			
29			
30			
Coefficient of Variation:		2.54	2.43
Mann-Kendall Statistic (S):		-40	-68
Confidence Factor:		80.3%	93.0%
Concentration Trend:		No Trend	Prob. Decreasing

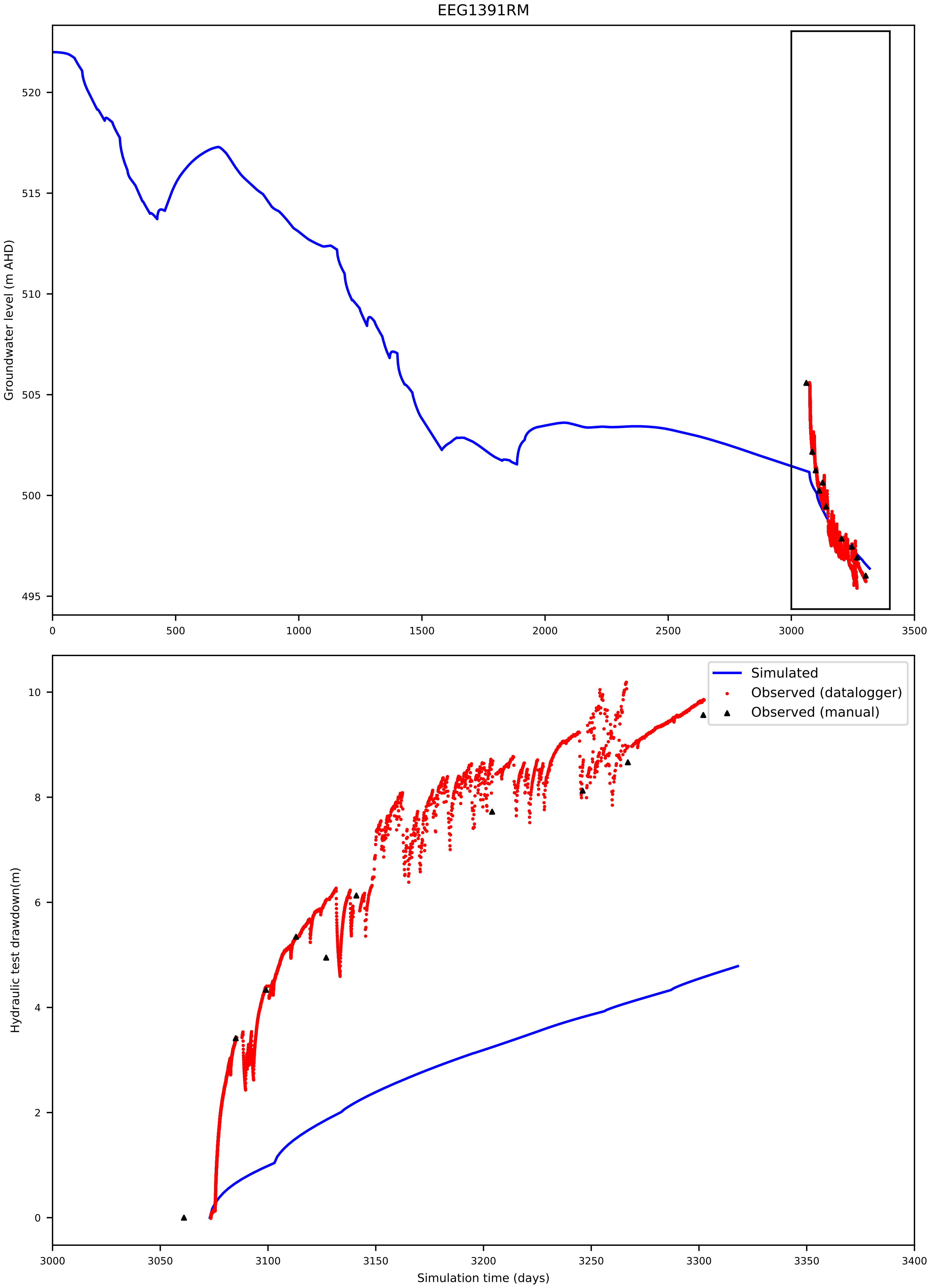


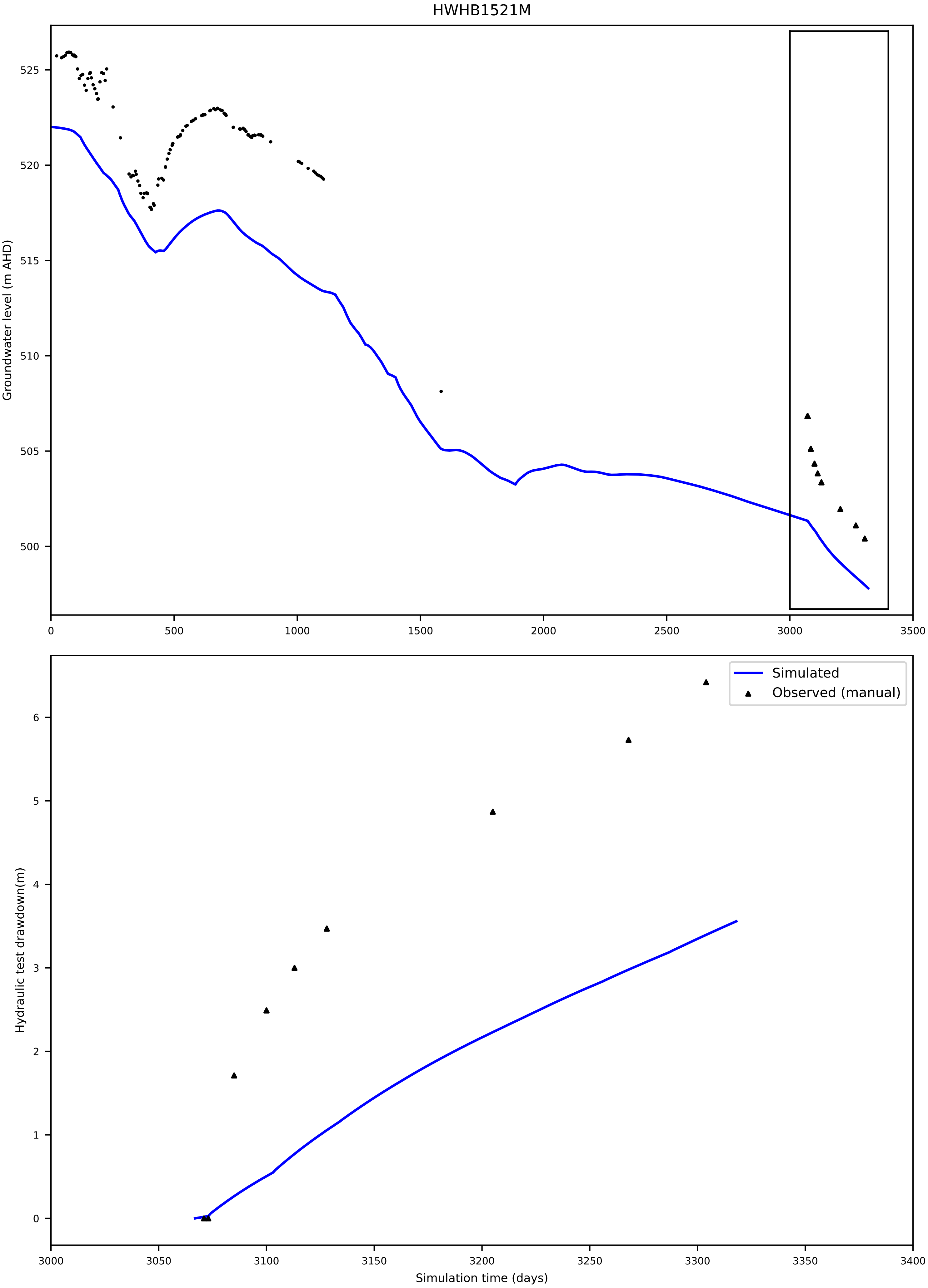
Notes:

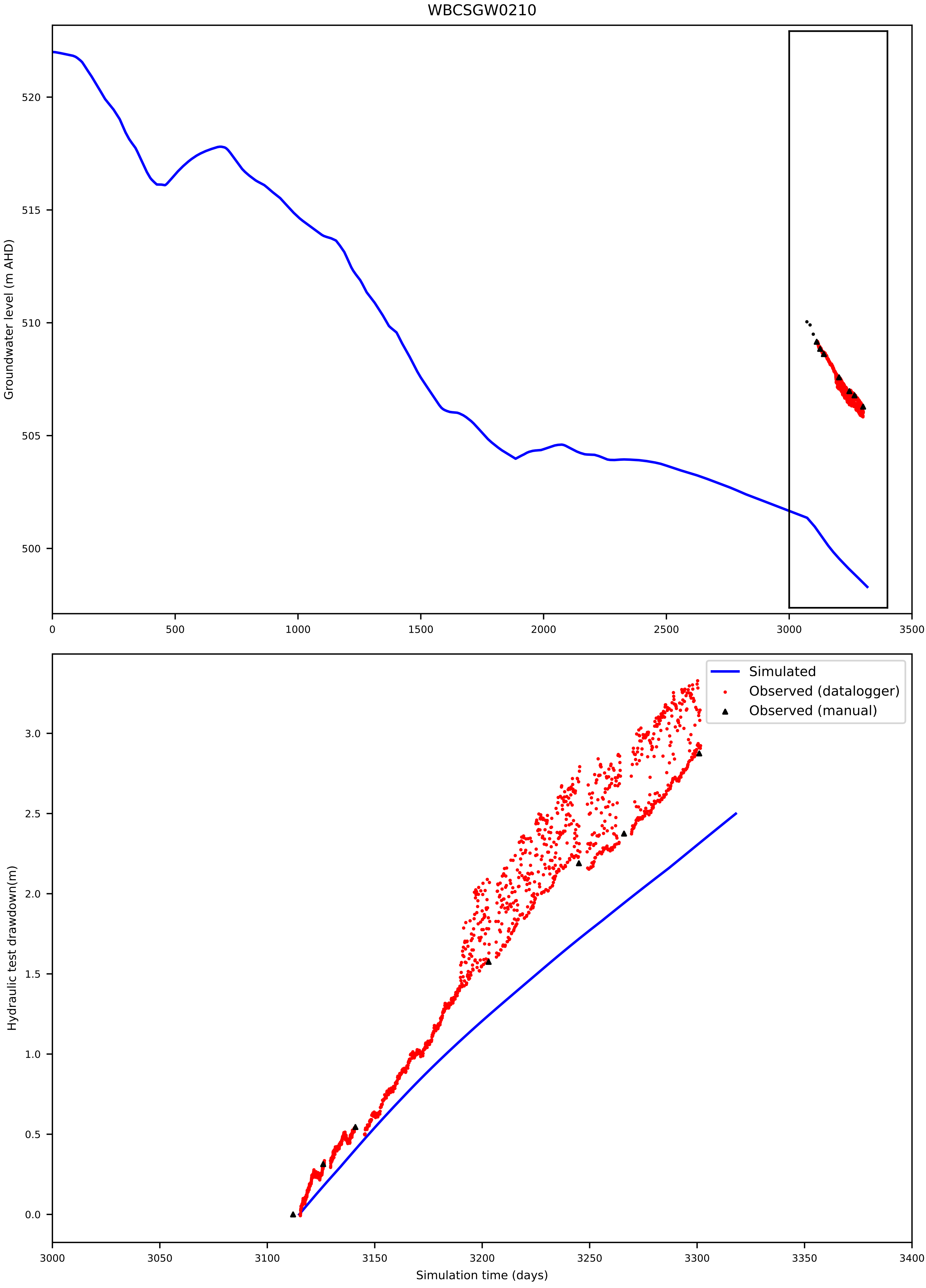
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

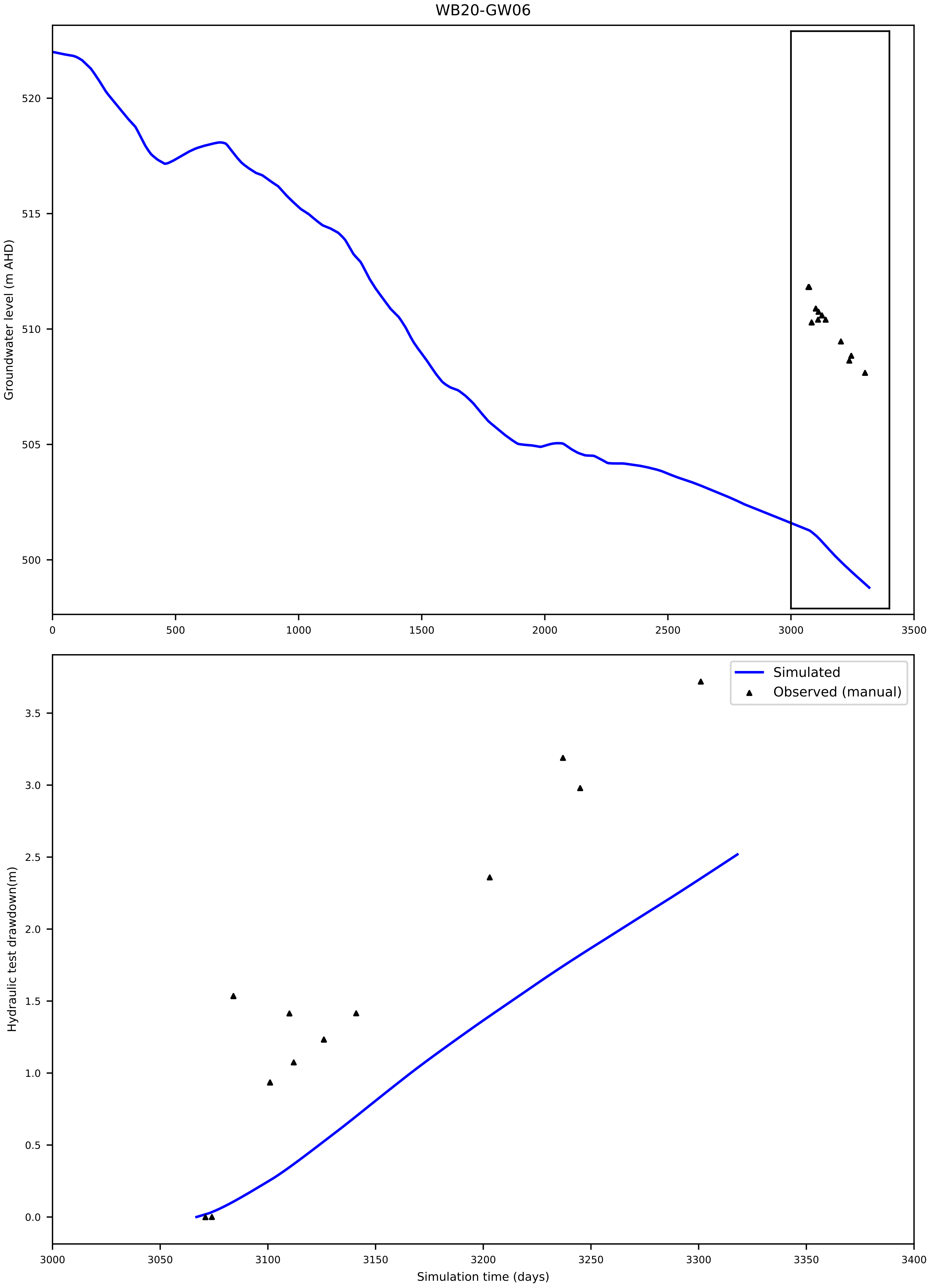
Appendix D

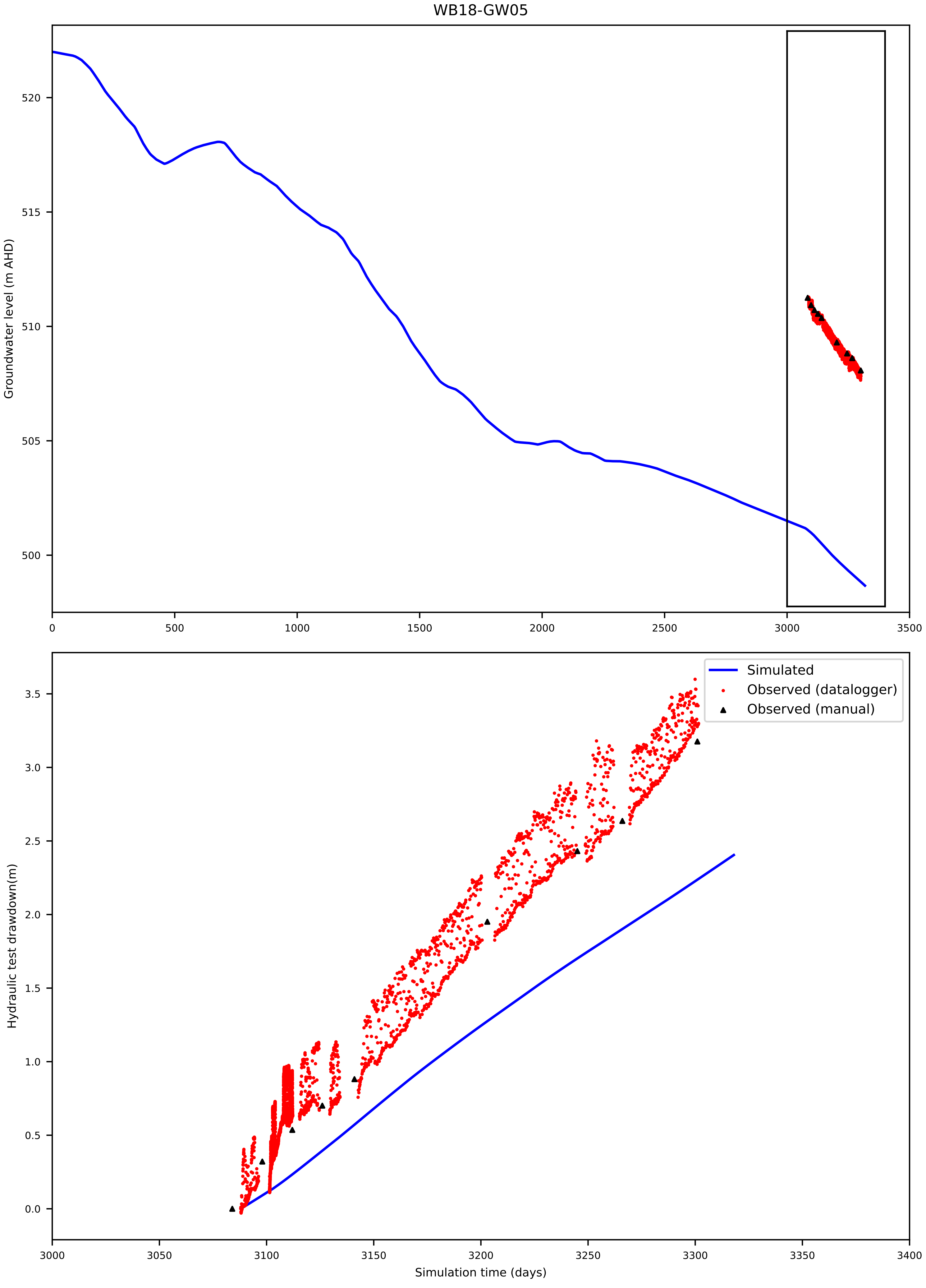
Simulated vs observed drawdown

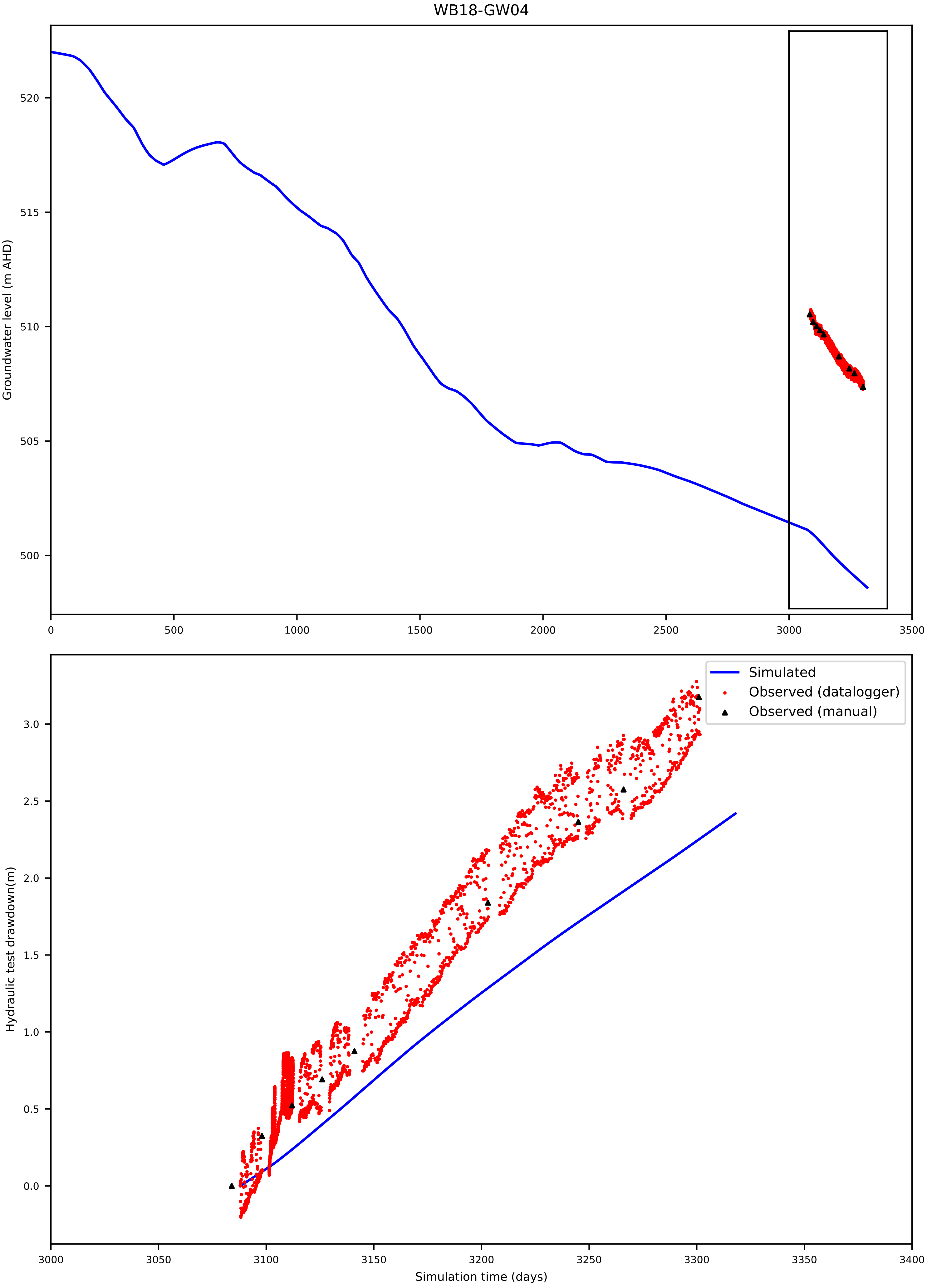

EEG1391RM
Groundwater level (m AHD)
520
515
510
505
500
495
0
500
1000
1500
2000
2500
3000
3500
Hydraulic test drawdown(m)
10
8
6
4
2
0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)
Simulated
Observed (datalogger)
Observed (manual)

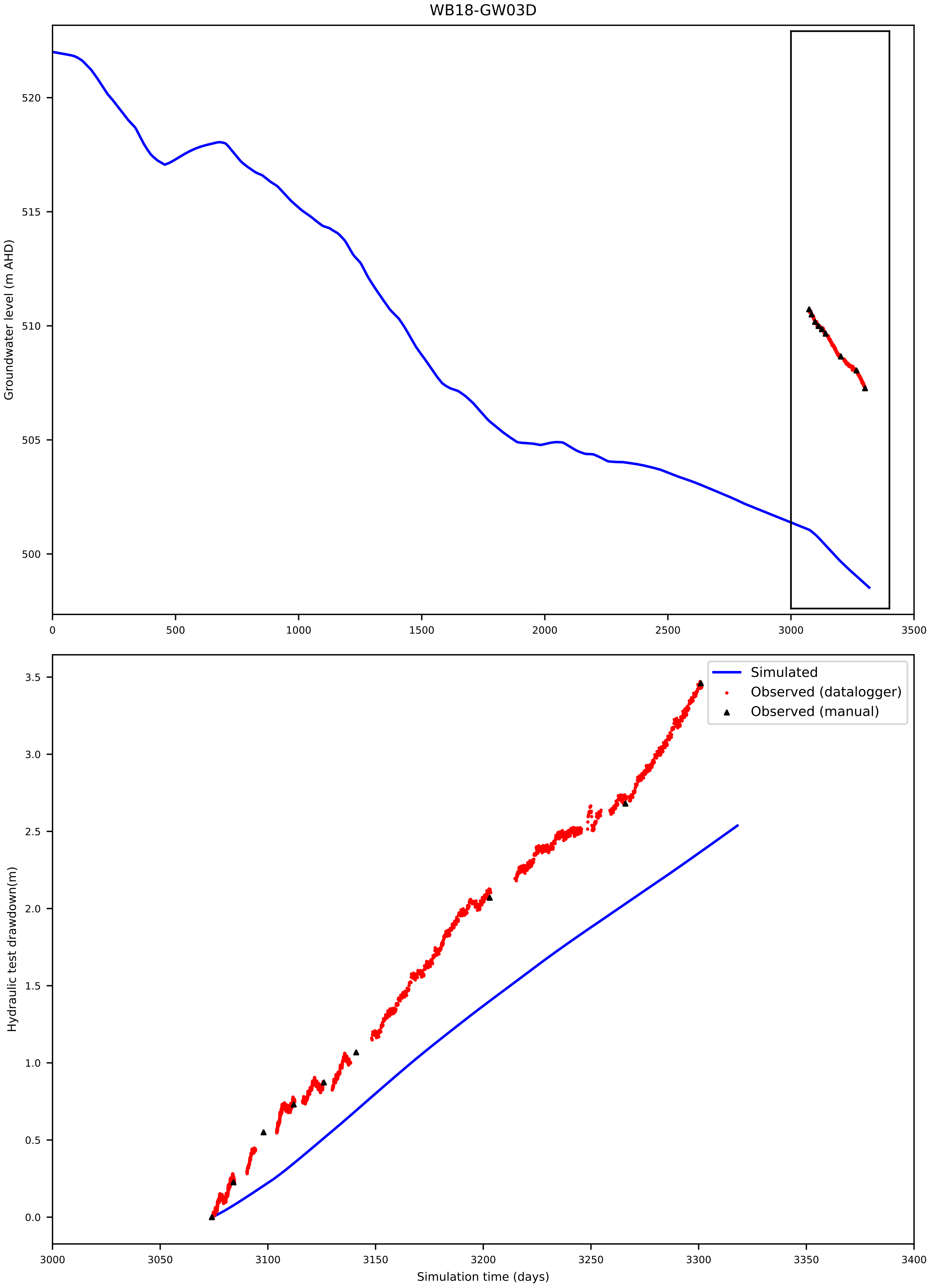

HWHB1521M
Groundwater level (m AHD)
525
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Hydraulic test drawdown(m)
6
5
4
3
2
1
0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)
Simulated
Observed (manual)

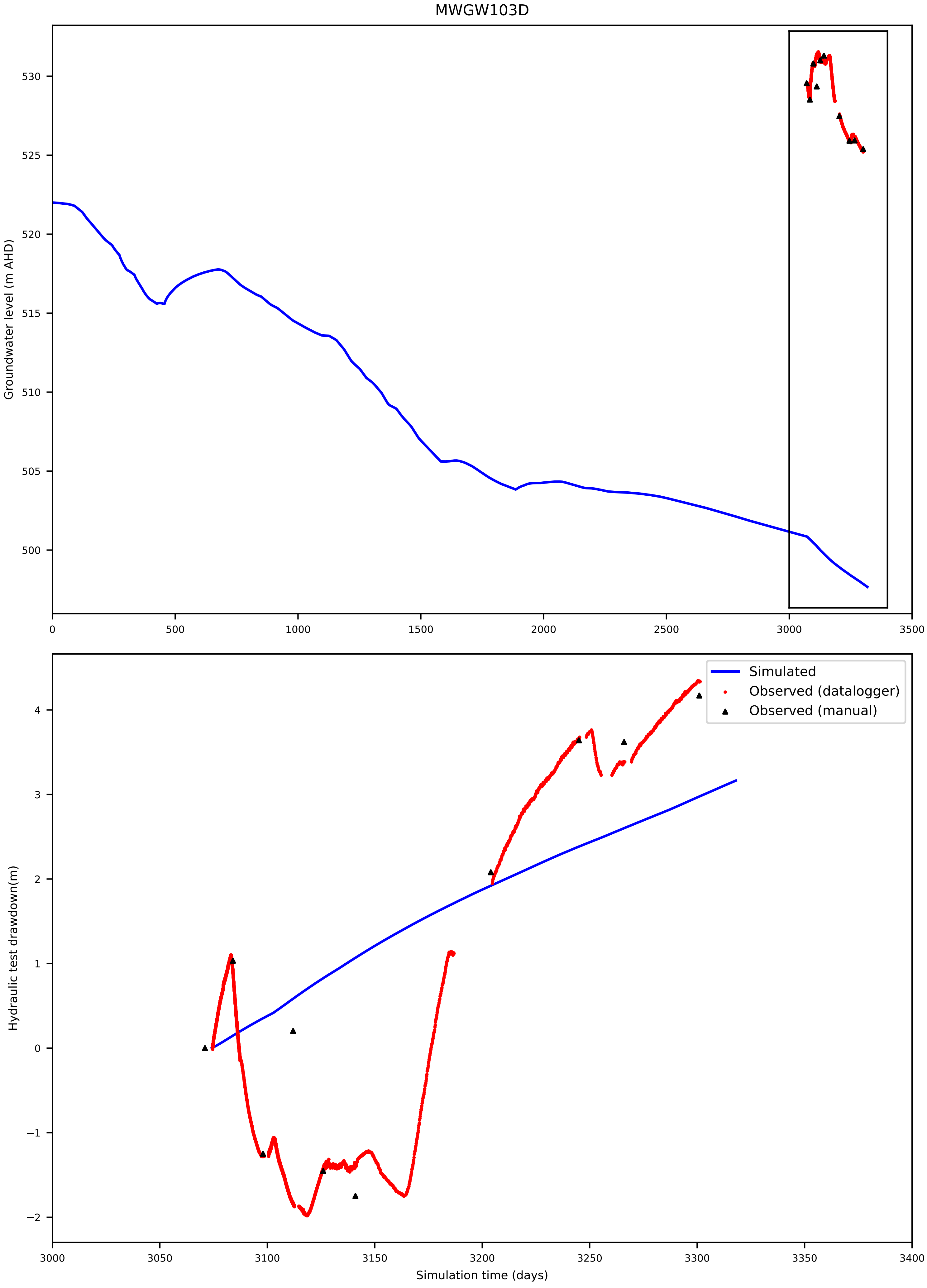

WBCSGW0210
Groundwater level (m AHD)
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Simulated
Observed (datalogger)
Observed (manual)
Hydraulic test drawdown(m)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)

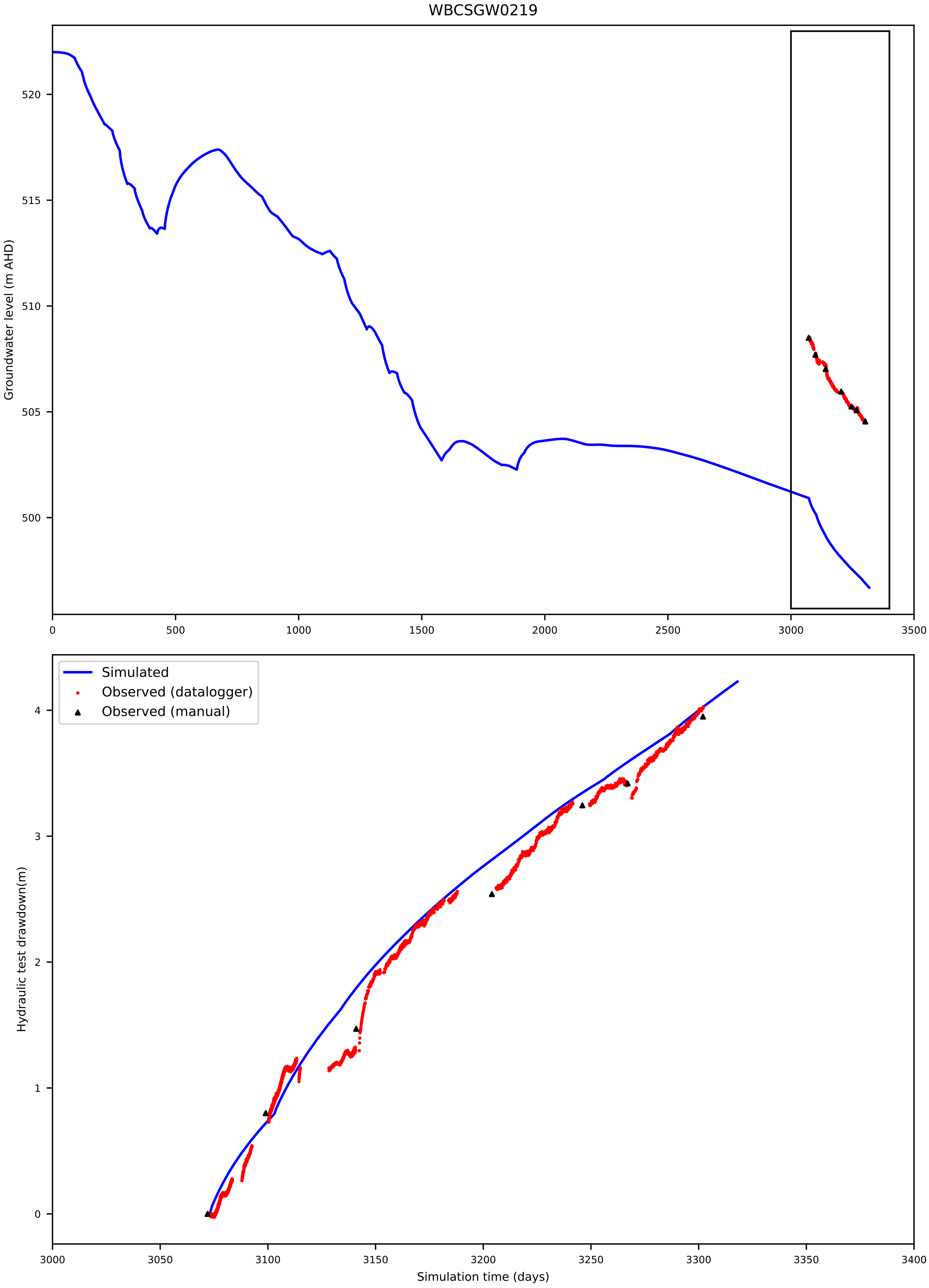

WB20-GW06
Groundwater level (m AHD)
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Simulated
Observed (manual)
Hydraulic test drawdown(m)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)

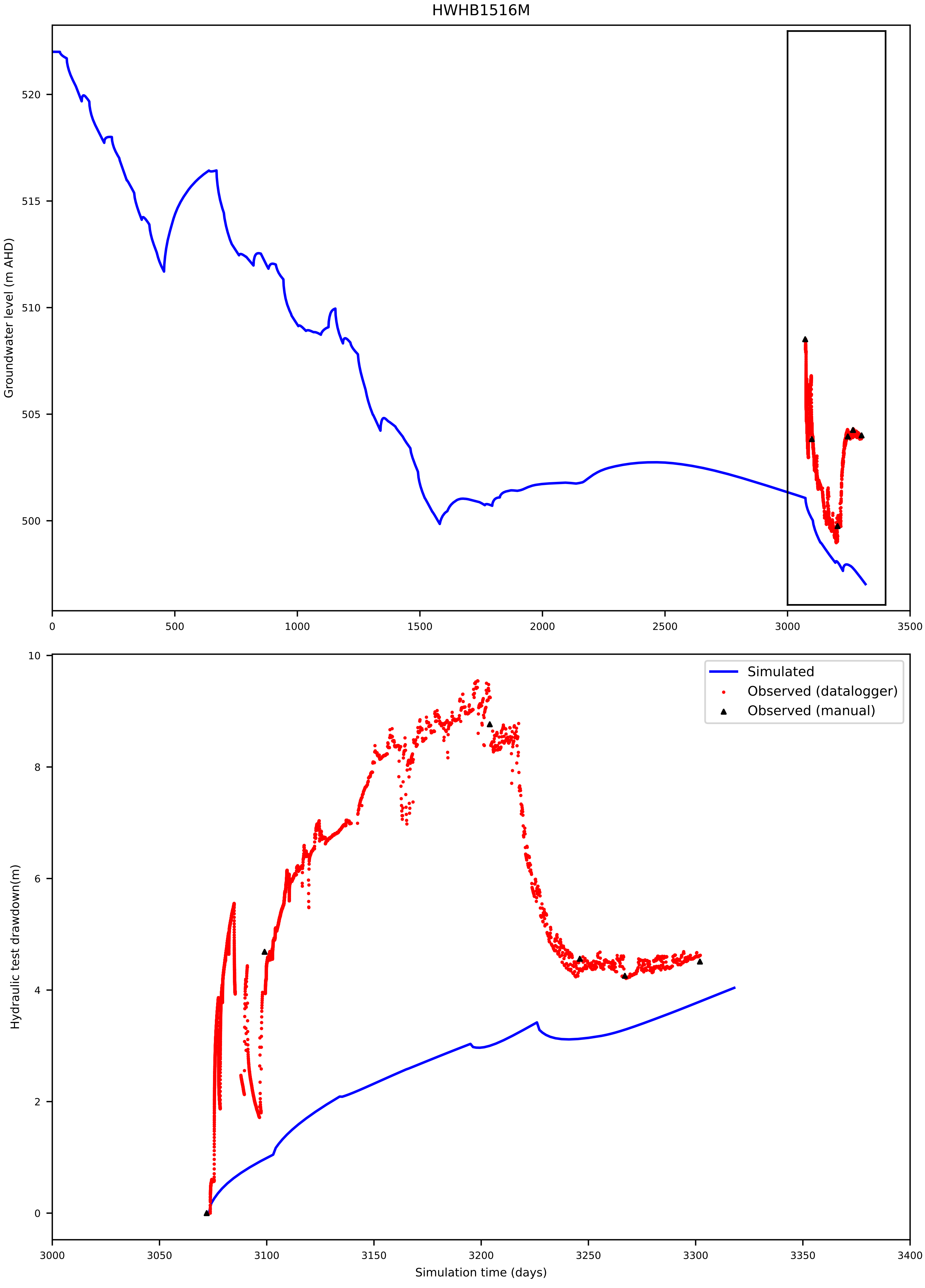

WB18-GW05
Groundwater level (m AHD)
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Hydraulic test drawdown(m)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)
Simulated
Observed (datalogger)
Observed (manual)

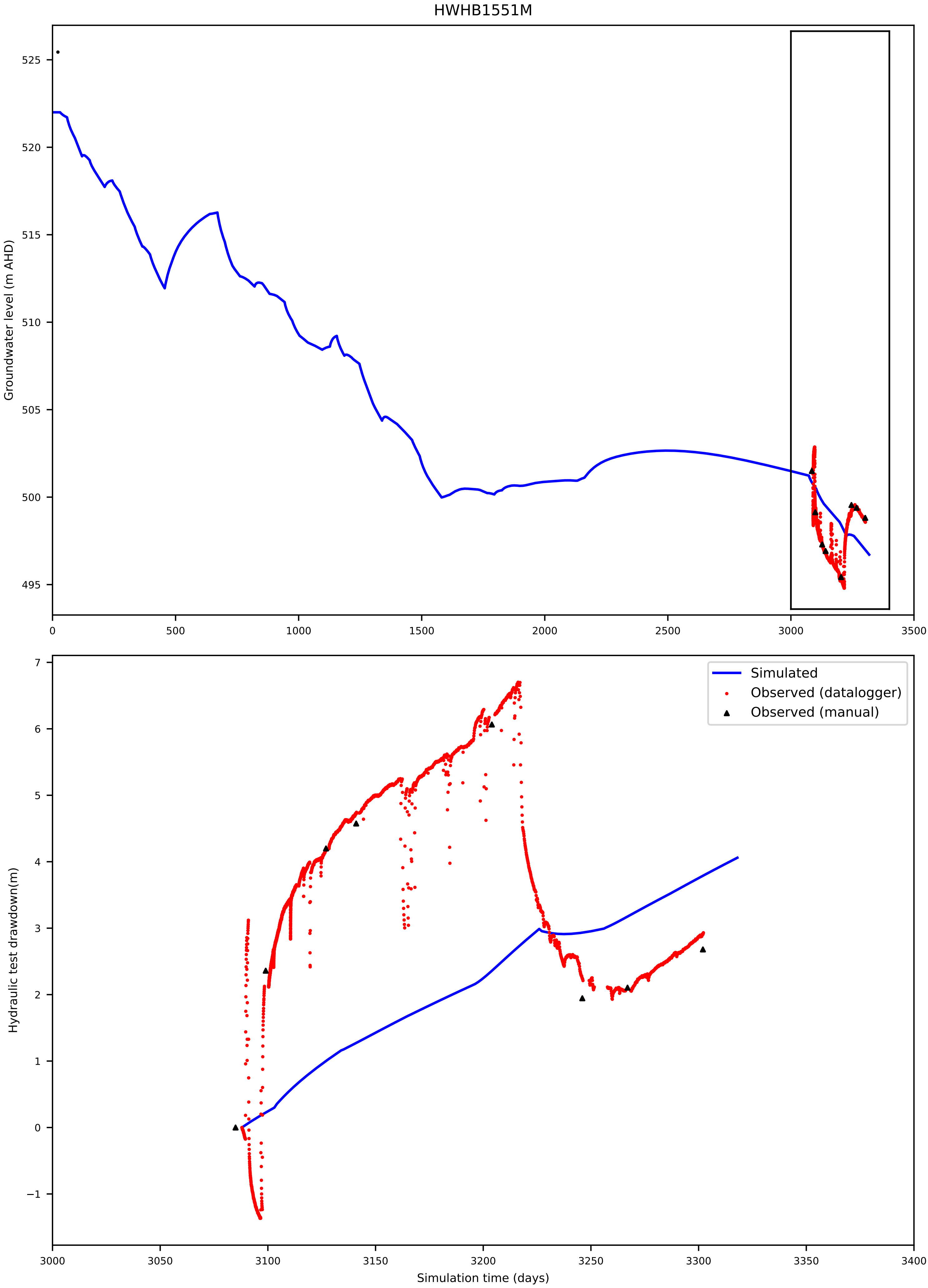

WB18-GW04
Groundwater level (m AHD)
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Hydraulic test drawdown(m)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)
Simulated
Observed (datalogger)
Observed (manual)

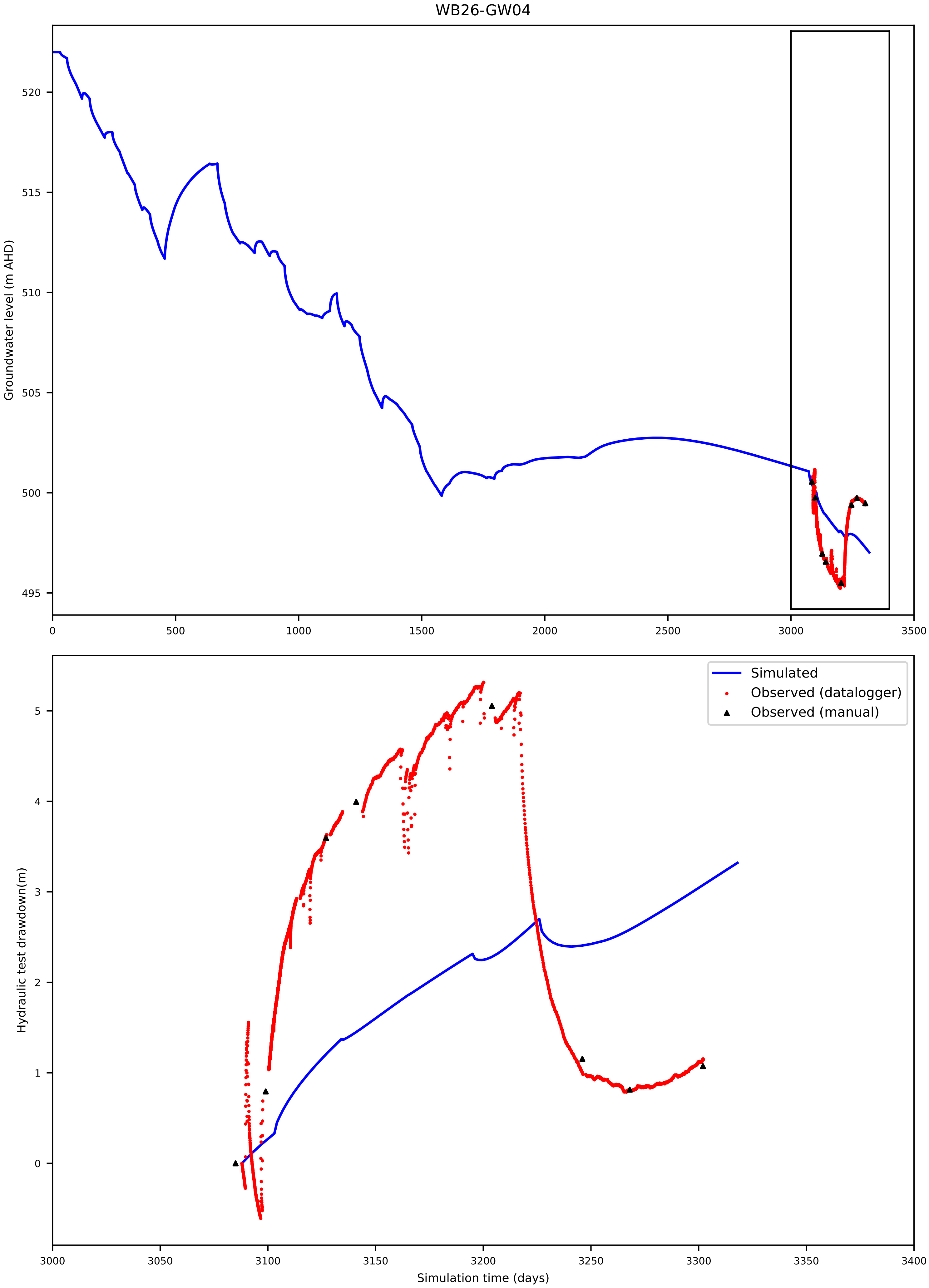

WB18-GW03D
Groundwater level (m AHD)
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Simulated
Observed (datalogger)
Observed (manual)
Hydraulic test drawdown(m)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)

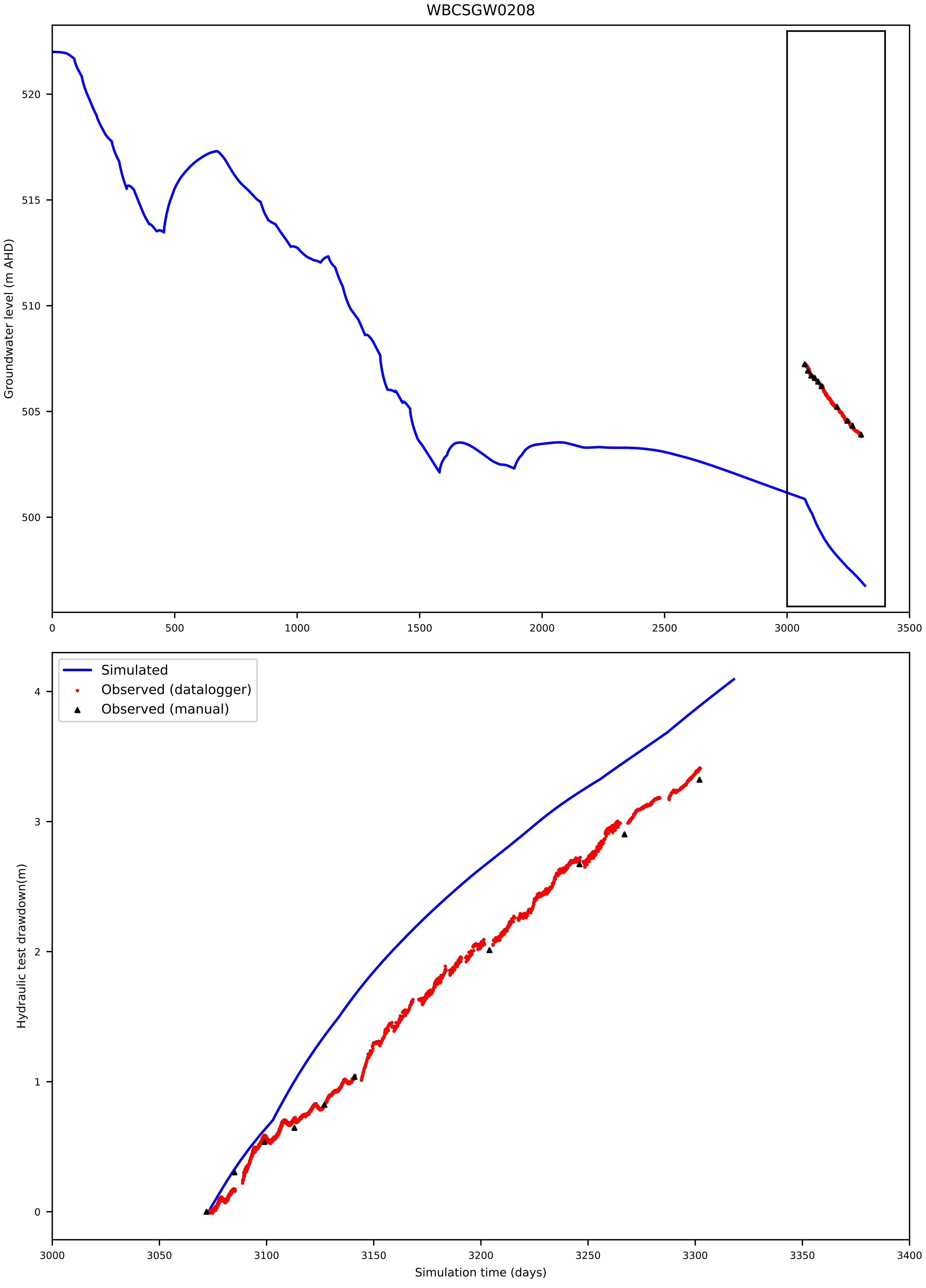

MWGW103D
Groundwater level (m AHD)
530
525
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Simulated
Observed (datalogger)
Observed (manual)
Hydraulic test drawdown(m)
4
3
2
1
0
−1
−2
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)

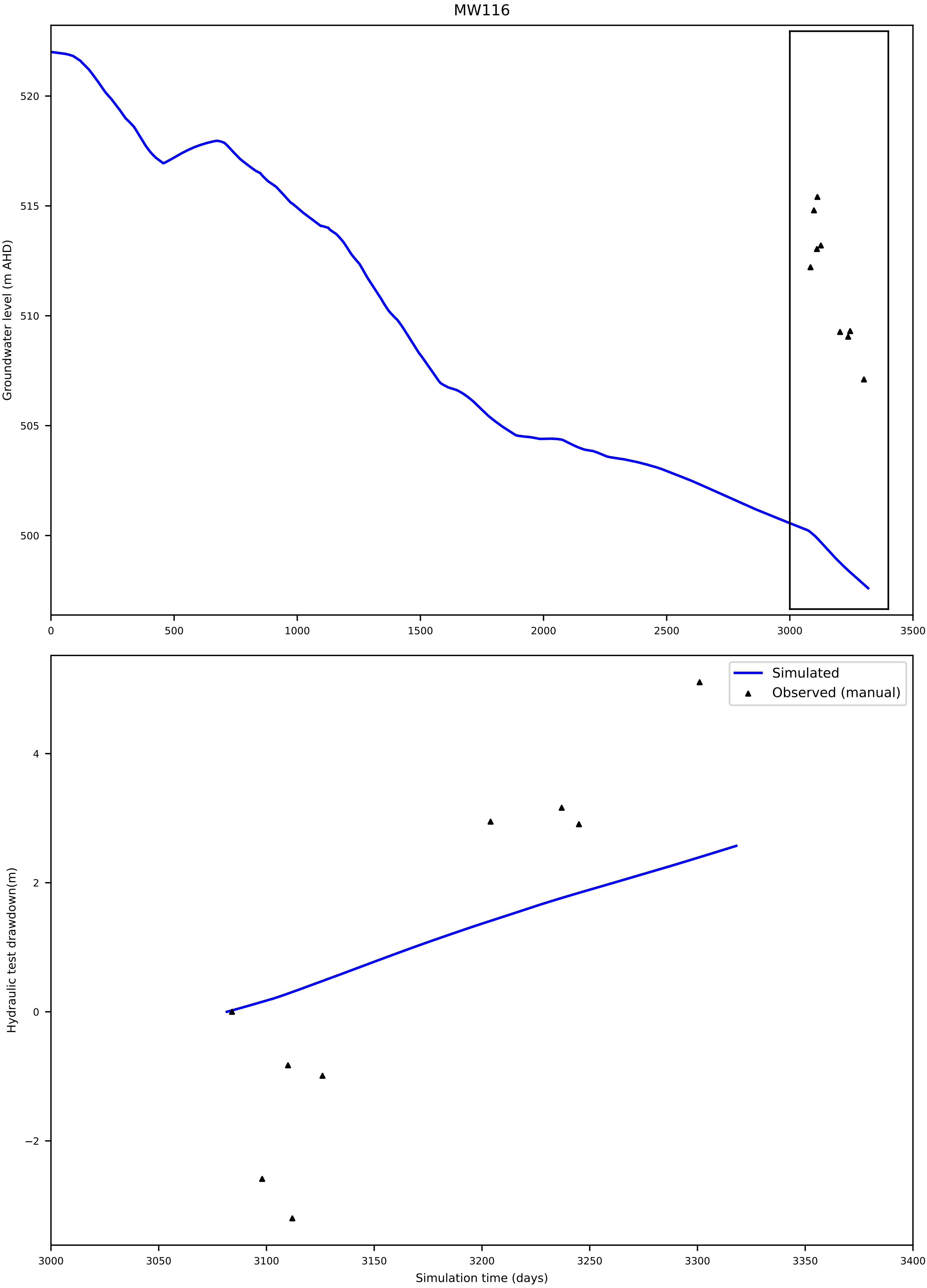

WBCSGW0219
Groundwater level (m AHD)
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Simulated
Observed (datalogger)
Observed (manual)
Hydraulic test drawdown(m)
4
3
2
1
0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)

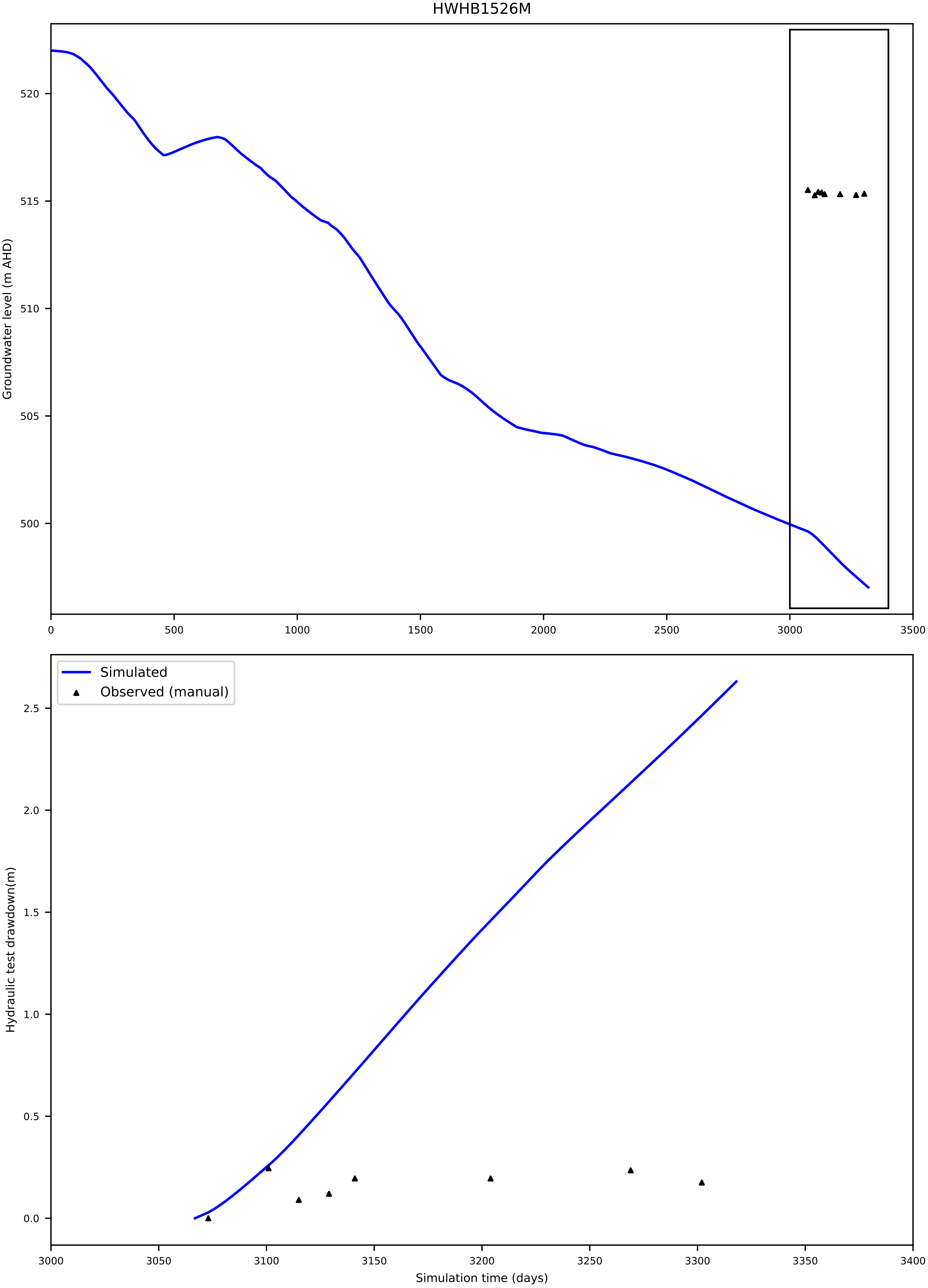

HWHB1516M
Groundwater level (m AHD)
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Hydraulic test drawdown(m)
10
8
6
4
2
0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)
Simulated
Observed (datalogger)
Observed (manual)


HWHB1551M
Groundwater level (m AHD)
525
520
515
510
505
500
495
0
500
1000
1500
2000
2500
3000
3500
Simulated
Observed (datalogger)
Observed (manual)
Hydraulic test drawdown(m)
7
6
5
4
3
2
1
0
−1
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)


WB26-GW04
Groundwater level (m AHD)
520
515
510
505
500
495
0
500
1000
1500
2000
2500
3000
3500
Hydraulic test drawdown(m)
5
4
3
2
1
0
Simulated
Observed (datalogger)
Observed (manual)
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)


WBCSGW0208
Groundwater level (m AHD)
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Hydraulic test drawdown(m)
Simulated
Observed (datalogger)
Observed (manual)
4
3
2
1
0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)


MW116
Groundwater level (m AHD)
500
505
510
515
520
0
500
1000
1500
2000
2500
3000
3500
Hydraulic test drawdown(m)
−2
0
2
4
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)
Simulated
Observed (manual)


HWHB1526M
Groundwater level (m AHD)
520
515
510
505
500
0
500
1000
1500
2000
2500
3000
3500
Simulated
Observed (manual)
Hydraulic test drawdown(m)
2.5
2.0
1.5
1.0
0.5
0.0
3000
3050
3100
3150
3200
3250
3300
3350
3400
Simulation time (days)

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